AECOM

February 13, 2017

Ms. Kira Heinrich
Division of Archaeology and Protection
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Re: ER# 2015-1839-042
Phase I Archaeological Survey Report
Shell Pipeline Company, LP
Falcon Ethane Pipeline Project (formerly Northeast Pipeline Project)
Allegheny, Beaver, Washington Counties, Pennsylvania

Dear Ms. Heinrich:

On behalf of Shell Pipeline Company, LP, AECOM is providing the enclosed Phase I Archaeological Survey Report for the proposed Falcon Ethane Pipeline Project.

Shell and AECOM request your consideration of and concurrence with the preliminary recommendations based on the enclosed documentation. If you have any questions or require additional information please contact Jennifer Rankin (609-694-1933; jennifer.rankin@aecom.com).

Sincerely,

AECOM

Jennifer C. Rankin
Senior Archaeologist

Christopher Bergman, Ph.D.
National Cultural Resource Management Lead, Oil & Gas Pipeline Projects

Brandon M. Walker, PE, CPESC
Project Manager

Enclosures (3)
Volume I-Text and Photographs
Volume II-Appendices
Volume III-Figures

cc: Kyle L. Webster, Shell Pipeline Company, LP

AECOM

Phase I Archaeological Survey Report
Falcon Ethane Pipeline Project

Washington, Allegheny, and Beaver Counties, Pennsylvania

Volume I: Text, Photographs, and Appendices
E.R. # 2015-1839-042

Prepared for
Shell Pipeline Company, LP

January 2017

Phase I Archaeological Survey Report
Falcon Ethane Pipeline Project

Washington, Allegheny, and Beaver Counties, Pennsylvania

Volume I: Text, Photographs, and Appendices

E.R. # 2015-1839-042

Prepared for:
Shell Pipeline Company, LP

Prepared by:

Jennifer C. Rankin, M.A.
Nick Arnhold, M.A.
Michael Way
Janna Napoli, M.A.
and
Frank J. Vento, Ph.D., P.G.

AECOM
681 Andersen Drive, Suite 400
Pittsburgh, Pennsylvania 15220

January 2017

Abstract

On behalf of Shell Pipeline Company, LP, AECOM completed a Phase I archaeological survey for the proposed Falcon Ethane Pipeline System (Project). This investigation was conducted in support of a Joint Permit Application (JPA) for a Pennsylvania Department of Environmental Protection (PADEP) Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers (USACE) Section 404 and Section 10 Permits. The Project is an approximately 95-mile-long pipeline located within Ohio, West Virginia, and Pennsylvania. It is comprised of three pipeline sections: Cadiz to Scio (Ohio), Scio to Monaca (Ohio, West Virginia, and Pennsylvania), and Houston to Monaca (Pennsylvania).

In Pennsylvania, the Project area is primarily comprised of mixed deciduous and regenerating forest, agricultural land, existing rights-of-way, and reclaimed strip mines. The southern terminus of the proposed Houston to Monaca line is located approximately one mile southeast of Westland, Pennsylvania in Washington County, then traverses in a general northward direction through Washington County, western Allegheny County, and into Beaver County, terminating approximately four miles southwest of Monaca, Pennsylvania. The Scio to Monaca line runs from the Pennsylvania/West Virginia border and traverses east through Beaver County until the eastern terminus ties into the Houston to Monaca line.

The Project in Pennsylvania consists of the installation of approximately 68.9 kilometers (42.8 miles) of new liquid ethane pipeline within new and existing right-of-way (ROW) in Washington, Allegheny, and Beaver Counties. The Project includes a 15 meter (50-foot) permanent right-of-way and a 15-meter (50-foot) temporary construction workspace for a nominal 30-meter- (100-foot-) wide construction corridor. Some areas will require an additional 7.6 meters (25 feet) of temporary workspace totaling to a 38-meter- (125-foot-) wide construction corridor. The Project also consists of approximately 29.8 kilometers (18.5 miles) of access roads, a 4-hectare (10-acre) compressor station. A total area of temporary and permanent ground disturbance is approximately 895 hectares (~2,435 acres).

The area of potential effects (APE) includes locations not only defined as USACE jurisdictional areas (e.g., streams, wetlands, and associated buffers), but, at the request of the PHMC (see below), all areas of project-related ground disturbance (i.e., workspace and access roads) within the study corridor, or limits of disturbance (LOD). Based on current project design as of August 2016, direct effects will be contained within an archaeological study corridor that is no more than 30.5 meters (100.0 feet) in width and 68.9 kilometers (42.8 miles) in length. The LOD also includes any additional temporary and horizontal directional drilling (HDD) workspace, comprising of a project total of approximately 895 hectares (~2,435 acres). Archaeological survey has been completed along 68.9 kilometers (42.8 miles) along the centerline, 100 percent of the total project length. This includes approximately 895 hectares (~2,435 acres) of pedestrian survey, with 301 hectares (744 acres) of that area also covered by shovel-testing. A total of 19,609 shovel test pits were excavated. Since August 2016, portions of the proposed alignment have been re-routed and will be reported in an addendum in 2017.

Phase I survey identified ten archaeological sites, twelve isolated finds, and three modern resources within the APE. The table below is a summary of AECOM's evaluation of National Register of Historic Places (NRHP) eligibility and recommendations (Table 1). Five of the archaeological sites (36WH1737, 36WH1736, 36WH1739, 36BV0395, and 36BV0010) and all twelve isolated finds, and three modern resources within the APE are recommended as not eligible for listing in the NRHP; therefore, no further work is recommended. Three resources (36WH0157, 36BV0019, and 36BV0095) identified within the APE were determined that there was insufficient data to evaluate the larger site. However, significant disturbance and/or negative results were recorded during archaeological testing of those localities within the APE. AECOM recommends that portions of those sites within the APE will not to contribute to the eligibility of the larger site and therefore, no further investigations of the portions of the sites within the APE are needed. Two of the archaeological sites (36WH1718 and 36AL0716) within the APE are potentially NRHP eligible. Design plans of these two site locations are contained within proposed horizontal directional drilling (HDD) locations; thus, will not be impacted. AECOM recommends the development of an Avoidance Plan for these locations that includes the culturally sensitive area to be marked on construction plans, fenced with high-visibility orange fencing during constructions, and monitored during construction to prevent unintentional damage.

Table 1: Recommendations for Archaeological Resources within the APE

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH0157	Houston-Monaca 4.45	Native American / Habitation	Insufficient Data, Non-Contributing	No further investigation or avoidance needed	Portion within the APE does not contribute to NRHP eligibility of the larger site
36WH1737	Houston-Monaca 5.05	Historic / Early to Middle 20th-century Farmstead Foundation	Not Eligible	No further investigation or avoidance needed	Demolition / Lack Depositional Integrity
36WH1718	Houston-Monaca 5.49	Historic / Early 20th-century Mining Complex	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	A and D; UMWA Labor Strikes/Violence in 1920s; African American
36WH1736	Houston-Monaca 5.71	Historic / Domestic	Not Eligible	No further investigation or avoidance needed	Lacks Depositional Integrity
36WH1739	Houston-Monaca 7.64	Historic / Domestic	Not Eligible	No further investigation or avoidance needed	Lacks Depositional Integrity
36AL0716	Houston-Monaca 16.8	Historic / Domestic	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	D; Historic Farmstead

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36BV0019	Houston-Monaca 23.95	Native American / Habitation	Insufficient Data, Non-Contributing	HDD Location / No further investigation or avoidance needed	Portion within the APE (HDD Workspace) does not contribute to NRHP eligibility of the larger site
36BV0395	Houston-Monaca 25.81	Historic / Foundation	Not Eligible	No further investigation or avoidance needed	Repurposed Foundation / Lacks Depositional Integrity
36BV0095	Houston-Monaca 32.80	Native American / Habitation	Insufficient Data, Non-Contributing	No Adverse Effect / HDD Location - Avoidance Plan	Portion within the APE does not contribute to NRHP eligibility of the larger site; Lacks Depositional Integrity
36BV0010	Houston-Monaca 33.90: Shell Cracker Terminus	Native American / Habitation	Not Eligible	No further investigation or avoidance needed	Previously Permitted by URS-AECOM / ER No. 2013-2037-007
ISOLATED FINDS					
36WH/075	Houston-Monaca 0.80	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36WH/078	Houston-Monaca 2.80	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36WH/079	Houston-Monaca 3.66	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36WH/076	Houston-Monaca 4.15	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36WH/077	Houston-Monaca 4.57	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/064	Houston-Monaca 23.86	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36BV/063	Houston-Monaca 26.60	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/067	Houston-Monaca 32.71	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36BV/062	Scio-Monaca 41.23	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36BV/061	Scio-Monaca 41.32	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/069	Scio-Monaca 44.03	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/068	Scio-Monaca 44.85	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
MODERN RESOURCES					
ALFi005-ST1	Houston-Monaca 14.88	Modern / Structure	Not Eligible	No further investigation or avoidance needed	Modern Garage
BVRa009-PM1	Houston-Monaca 29.11	Modern / Property Marker	Not Eligible	No further investigation or avoidance needed	Replacement ; Lacks Depositional Integrity
36BV0394	Scio-Monaca 41.22	Modern / Feature	Not Eligible	No further investigation or avoidance needed	Modern Feature

Four archaeological sites and one isolated find were identified outside of, but adjacent to the APE. These resources are summarized in the table below (Table 2). AECOM recommends that one isolated find (36BV/065) is not eligible for listing in the NRHP; therefore, no further investigation or avoidance measures are necessary. AECOM identified that one archaeological site (36AL0715) resulted in insufficient data to assess eligibility. There will be no adverse effect to this resource, therefore, AECOM recommends no further investigation or avoidance is needed. AECOM identified that three of the archaeological sites (36WH1738, 36BV0398, and 36BV0397) are potentially eligible for listing in the NRHP. AECOM recommends that no further investigation or avoidance is needed However, the development of an Avoidance Plan for these resources that includes the culturally sensitive area to be marked on construction plans, fenced with high-visibility orange fencing during constructions, and monitored during construction to prevent unintentional damage.

Table 2: Recommendations for Archaeological Resources Adjacent to the APE

PHMC or AECOM #	Mile Post (160613)	Cultural Affiliation / Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH1738	Houston-Monaca 5.31	Historic	Potentially Eligible; Insufficient Data	No Adverse Effect / HDD Location - Avoidance Plan	D; Historic Farmstead

36AL0715	Houston-Monaca 17.80	Native American	Insufficient Data	No Adverse Effect / No further investigation or avoidance needed	
36BV0398	Houston-Monaca 32.56	Native American / Habitation	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	D; Diagnostic Artifacts/Native American Hearth Feature
36BV0397	Houston-Monaca 37.72	Historic / Industrial and Domestic	Potentially Eligible	No Adverse Effect / Avoidance Plan	D; St. Joseph Lead: Experimental Farm; 19th century Farmstead
ISOLATED FINDS					
36BV/065	Houston-Monaca 24.49	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria

Eight archaeological sites, four isolated finds, and 3 modern resources were identified in the former study corridor or portions of the corridor that are no longer under consideration as part of the proposed alignment. These resources are located at adequate distances from the APE such that no further investigation or avoidance measures are necessary. These sites are summarized in the table below (Table 3).

Table 3: Recommendations for Archaeological Resources Outside the APE

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH1441	Houston-Monaca: Off-Alignment	Historic / Industrial	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted / ER No. 1989-1378-042
36WH1549	Houston-Monaca: Off-Alignment	Native American / Habitation	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted / ER No. 1989-1378-042
36BV0396	Houston-Monaca: Off-Alignment	Historic / Domestic	Insufficient Data	No Effect/Off-Alignment - No Further Work	
36BV0096	Houston-Monaca: Off-Alignment	Native American / Habitation	Insufficient Data	No Effect/Off-Alignment - No Further Work	Lacks Depositional Integrity
36BV0192	Houston-Monaca: Off-Alignment	Multicomponent / Prehistoric and Historic	Potentially Eligible	No Effect/Off-Alignment - No Further Work	D; Historic Farmstead
36BV0287	Houston-Monaca: Off-Alignment	Multicomponent / Prehistoric and Historic	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted by URS-AECOM / ER No. 2013-2037-007
36BV0011	Houston-Monaca: Off-Alignment	Native American / Habitation	Not Eligible	Off-Alignment - No Further Work	Lacks Depositional Integrity/Record of Disturbance
36BV0399	Scio-Monaca: Off-Alignment	Historic / Domestic	Insufficient Data	No Effect/Off-Alignment - No Further Work	
ISOLATED FINDS					

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36WH/074	Houston-Monaca: Off-Alignment	Historic / Isolated Find	Not Eligible	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
36BV/066	Houston-Monaca: Off-Alignment	Native American / Isolated Find	Not Eligible	No Effect/Off-Alignment - No Further Work	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/059	Scio-Monaca: Off-Alignment	Historic / Isolated Find	Insufficient Data	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
36BV/060	Scio-Monaca: Off-Alignment	Historic / Isolated Find	Insufficient Data	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
MODERN RESOURCES					
WHCa002-ST1	HOU-AR-01b: Off-Alignment	Modern / Structure	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Garage
WHMo004-ST1	Houston-Monaca: Off-Alignment	Modern / Feature	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Farm Feature
BVRa009-PC1	Houston-Monaca: Off-Alignment	Modern / Feature	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Pet Cemetery

Table of Contents

Abstract i
List of Figures, Photographs and Tables viii

1 Introduction and Project Description 1.1

2 Environmental Setting and Conditions 2.1

3 Background Research and Cultural Context 3.1
Native American Context 3.1
Historic Context 3.15
Pennsylvania County Histories 3.23

4 Archaeological Sensitivity Assessment 4.1

5 Research Design 5.1

6 Archaeological Survey Results 6.1
Proposed Houston to Monaca Line 6.1
Washington County 6.1
Allegheny County 6.27
Beaver County 6.46
Off-Alignment Results (Beaver County) 6.75
Proposed Scio to Monaca Line 6.82
Beaver County 6.82
Off-Alignment Results (Beaver County) 6.105

7 Archaeological Site Summaries and Recommendations 7.1
Proposed Houston to Monaca Line 7.1
Proposed Scio to Monaca Line 7.89

8 Summary and Recommendations 8.1

R References R.1

Appendix A: Artifact Logs
Appendix B: Geomorphology Report
Appendix C: Chance Finds Plan and Procedures
Appendix D: Isolated Find/Non-Site Documentation Forms
Appendix E: Pennsylvania Archaeological Site Survey Forms
Appendix F: Probability Model Testing Methodology Form
Appendix G: Archaeological Report Summary Form
Appendix H: Resumes of Contributors

List of Figures, Photographs and Tables

Figure (Volume II) **Mapbook**

1.1 Project Location Map on USGS Topographic Map II.1
1.2 Project Location on USGS Topographic Map II.2
3.1 1817 Melish-Whiteside Overview Maps II.3
3.2 1906 USGS Topographic Overview Maps II.4
4.1 Native American Site Sensitivity Overview Maps II.5
4.9 1817 Melish-Whiteside Maps II.6
4.24 1876 Caldwell Atlas Maps II.7
4.52 1906 USGS Topographic Maps II.8
4.80 1939 Aerial Photographs II.9
4.108 1967 Aerial Photographs II.10
6.1 Aerial Reference Maps of Project Area Segments and Testing Results II.11
6.103 Representative Soil Profiles II.12
7.1 Archaeological Resource Mapbooks II.13

Photograph **Page**

6.1 General view of the southern terminus of the Houston to Monaca Line, facing east. 6.1
6.2 General view of JA-Ch-006 from STP B71, facing east 6.2
6.3 General view of PACa003 from STP B12, facing southeast. 6.3
6.4 General view of PACa002 from STP C45, facing west 6.5
6.5 General view of PACa001 from STP C17, facing south 6.6
6.6 General view of PAMo004 from STP B96, facing south 6.8
6.7 General view of PAMo004 from STP C129, facing north 6.9
6.8 General view of PAMo005 from Hornhead Road, facing northwest. 6.10
6.9 General view of PAMo003 near STP C66, facing north 6.12
6.10 General view of PAMo003 at JA-Mo005, facing west 6.13

6.11 General view of PAMo002 at STP 37, facing northwest....6.14
6.12 View of Millers Run and Site 36WH1718, facing northeast....6.16
6.13 General View of PAMo001/PAMo006 at STP C64, facing northwest....6.17
6.14 General View of Site 36WH1739, facing east....6.18
6.15 General view of PARo004 at JA-Ro008 near STP C21, facing north....6.19
6.16 General view of PARo003 from STP C60, facing north....6.21
6.17 General view of golf course with PARo005, facing south....6.22
6.18 General View of PARo002 at JA-Ro003, facing north....6.23
6.19 General View of Site 36WH1441, facing northwest....6.24
6.20 General View of PARo001 near STP C76, facing south....6.25
6.21 General view of PANo002 at MP 12.7, facing northeast....6.27
6.22 General view of PANo004 at MP 13.3, facing south....6.29
6.23 General view of PANo003 near STP C5, facing east....6.30
6.24 General view of PANo001 near STP D9, facing north....6.31
6.25 General view of PAFi006, facing east....6.32
6.26 General view of PAFi005 from STP D47, facing north....6.34
6.27 General view of PAFi004 from STP E142, facing west....6.35
6.28 General view of PAFi004 at JA-Fi015, facing north....6.36
6.29 General view of PAFi003, facing west....6.38
6.30 General view of PAFi002 near STP D74, facing southeast....6.40
6.31 General view of PAFi008 from STP G77, facing northwest....6.41
6.32 General view of PAFi007, facing north. Note wetland and altered landscape....6.43
6.33 General view of PAFi001, facing northwest....6.44
6.34 General view of PAIn006 near STP D18, facing southeast....6.46
6.35 General view of PAIn005 near STP D62, facing west....6.48
6.36 General view of PAIn004 near STP C19, facing north....6.49
6.37 General view of wetlands/Raccoon Creek near STP B49, facing west....6.50
6.38 General view of Raccon Creek floodplain / 36BV0019 near STP C79, facing north....6.51
6.39 General view of PAIn003 near STP C49, facing northeast....6.52

6.40 General view of PAIn002 at the southern terminus, facing northwest 6.53
6.41 General view of PAIn007 near STP A83, facing southeast 6.55
6.42 General view of PARa010 near STP D118, facing north 6.56
6.43 General view of PARa009 near STP D70, facing south 6.58
6.44 View of displaced grave marker/property marker at PARa009, facing east 6.59
6.45 General view of PARa006 near STP A17, facing north 6.60
6.46 General view of PARa007 at JA-Ra018 off of Moffett Mill Rd, facing east 6.61
6.47 General view of PARa008 near STP D6, facing northeast 6.62
6.48 General view of Fishpot Run at MP 31.3, facing east 6.63
6.49 General view of PAPo006 near STP B37, facing east 6.64
6.50 General view of PAPo007, facing southeast 6.65
6.51 General view of PAPo012 near STP B12, facing east 6.67
6.52 General view of PAPo011 and Raccoon Creek flood plain/terrace, facing south 6.69
6.53 General view of PAPo011 and Raccoon Creek flood plain/terrace at STP C21, facing northeast 6.70
6.54 General view of PAPo014 near STP C50, facing west 6.71
6.55 General view of PAPo014 at JA-Ra038 near SR 18, facing northeast 6.72
6.56 General view of PAPo001 near STP D61, facing northwest 6.73
6.57 General view of PAPo002, facing west 6.75
6.58 General view of PAPo003, facing north 6.76
6.59 General view of PAPo008, facing northwest 6.77
6.60 General view of PAGr001 from Red Dog Road, facing west 6.80
6.61 General view of PAGr001 at STP D2, facing east 6.81
6.62 General view of PAGr002 near STP D42, facing northeast 6.82
6.63 General view of PAGr002 near STP D59, facing east 6.83
6.64 General view of PAGr003 near State Route 30, facing northeast 6.84
6.65 General view of PAGr015/PAGr014 and Mill Creek,facing south 6.86
6.66 General view of PAGf010 at STP D21, facing west 6.89
6.67 General view of PAGr007 near STP D37, facing southwest 6.91
6.68 General view of PASh001 at STP C18, facing east 6.92

6.69 General view of PASh001 from STP C6, facing west....6.93
6.70 General view of PARa002, facing north....6.94
6.71 General view of PARa002 from STP C3, facing east....6.96
6.72 General view of PARa003 at JA-Ra008, facing east....6.97
6.73 General view of PARa004 and Gums Run, facing north....6.99
6.74 General view of PARa005 at JA-Ra013, facing east....6.100
6.75 General view of PARa004 from STP D55, facing northeast....6.102
6.76 General view of PAGr005 at STP D60, facing northeast....6.104
6.77 General view of PAGr008 near STP D6, facing east....6.105
7.1 Overview of 36WH/075, facing west....7.1
7.2 Overview of 36WH/074, facing southwest....7.2
7.3 Cut rail spikes from 36WH/074....7.3
7.4 Overview of 36WH1735, facing northwest....7.4
7.5 Overview of 36WH1735 and modern debris, facing north....7.5
7.6 Overview of AECOM-WHCa002-ST1, facing north....7.6
7.7 Overview of 36WH/078, facing northwest....7.6
7.8 Overview of 36WH/079, facing northwest....7.7
7.9 Whiteware sherd from 36WH/079....7.8
7.10 Overview of AECOM-Mo004-ST1, facing west....7.9
7.11 Overview of 36WH/076, facing north....7.10
7.12 Overview of 36WH0157, facing west....7.11
7.13 Overview of 36WH/077, facing north....7.12
7.14 Overview of 36WH1737, facing northeast. Note stone piers....7.13
7.15 Stone Pier #1 at 36WH1737....7.14
7.16 Stone Pier #2 at 36WH1737....7.14
7.17 Stone Pier #3 at 36WH1737....7.15
7.18 Overview of 36WH1738, facing northwest....7.17
7.19 Overview of 36WH1738 and brick piers, facing southeast....7.17
7.20 View of modern fire pit at 36WH1738, facing west....7.18
7.21 View of a brick pier at 36WH1738, facing southeast....7.18

7.22 Cobalt blue bottle glass from 36WH1738 ....7.19
7.23 Overview of 36WH1718, facing west 7.20
7.24 Structure 1 at 36WH1718, facing northeast....7.21
7.25 Structure 1 shaft feature at 36WH1718, facing north 7.21
7.26 Structure 2 platform and shaft features at 36WH1718, facing west 7.22
7.27 Structure 3 at 36WH1718, facing northeast....7.23
7.28 Concrete piers at 36WH1718, facing east....7.24
7.29 Brick sample at 36WH1718....7.24
7.30 View of Montour #1 Mine, contributed by Mike Features, resident of Southview (Ciminel 2012)....7.26
7.31 View of Montour #1 Mine (Ciminel 2012)....7.26
7.32 View of 36WH1736, facing north 7.28
7.33 Cut nail from 36WH1736 ....7.29
7.34 View of 36WH1739, facing northwest 7.31
7.35 View of 36WH1739, facing northeast 7.31
7.36 View of representative household ceramics from 36WH1739 ....7.33
7.37 View of representative household glass from 36WH1739 ....7.33
7.38 Cut nail fragment from 36WH1739....7.35
7.39 View of 36WH1441, facing northwest 7.37
7.40 View of 36WH1549, facing south 7.38
7.41 View of 36AL0716, facing northwest 7.39
7.42 Structure 1 at 36AL0716, facing north 7.40
7.43 Structure 1/mortared cut stone at 36AL0716, facing northwest 7.40
7.44 Concrete Structure 2 at 36AL0716, facing east 7.41
7.45 Representative window glass from 36AL0716....7.42
7.46 Representative wire nails from 36AL0716 ....7.43
7.47 Representative cut nails from 36AL0716 ....7.43
7.48 Representative household items from 36AL0716....7.44
7.49 Representative personal items from 36AL0716 ....7.46
7.50 View of 36AL0715, facing north 7.47

7.51 Native American flaked stone debitage from 36AL0715 ..... 7.48
7.52 View of stone foundations at 36BV0396, facing southeast 7.49
7.53 View of depressions at 36BV0396, facing south 7.50
7.54 View of 36BV/064, facing north 7.51
7.55 View of 36BV0019 and Raccoon Creek flood plain, facing north 7.52
7.56 View of 36BV/065, facing north 7.53
7.57 View of foundations at 36BV0395, facing east 7.54
7.58 View of modern fire pit at 36BV0395, facing west 7.55
7.59 Cut nail from 36BV0395 ..... 7.56
7.60 View of 36BV/063, facing northeast 7.57
7.61 View of pet grave marker / displace cemetery marker at AECOM-BVRa009-PC1, facing south 7.58
7.62 View of grave marker / displaced cemetery mark at AECOM-BVRa009-PM1, facing north. 7.59
7.63 View of 36BV/066, facing west 7.60
7.64 View of 36BV0192, facing east 7.61
7.65 Representative ceramic from 36BV0192 ..... 7.63
7.66 Brick sample from 36BV0192 ..... 7.64
7.67 View of 36BV0398, facing northeast 7.65
7.68 Chert sidescraper from 36BV0398 ..... 7.68
7.69 Hammerstone from 36BV0398 ..... 7.69
7.70 Anvil from 36BV0398 ..... 7.70
7.71 Chert Biface from 36BV0398 ..... 7.71
7.72 Fire-cracked Rock from 36BV0398 ..... 7.72
7.73 View of 36BV/067, facing south. 7.73
7.74 View of 36BV0397, facing southeast 7.74
7.75 View of Foundation 1 at 36BV0397, facing southeast 7.75
7.76 View of Foundation 2 at 36BV0397, facing west 7.76
7.77 View of Foundation 3 at 36BV0397, facing northwest 7.77
7.78 View of Foundation 4 at 36BV0397, facing southwest 7.78

7.79 Representative ceramic from 36BV0397 ..... 7.79
7.80 View of 36BV0096 and Raccoon Creek terrace, facing southeast 7.81
7.81 View of 36BV0096 and Raccoon Creek flood plain and terrace, facing north 7.81
7.82 Representative glass from 36BV0397 ..... 7.83
7.83 View of 36BV0096, facing west 7.84
7.84 Flaked stone debitage from 36BV0096 ..... 7.85
7.85 Broken chert biface from 36BV0097 ..... 7.86
7.86 View of 36BV0011, facing north 7.87
7.87 View of 36BV/059, facing northeast 7.88
7.88 Representative ceramic from 36BV/059 ..... 7.89
7.89 Flaked stone debitage from 36BV/062 ..... 7.90
7.90 Cut nail from 36BV/060 ..... 7.91
7.91 Pipe bowl fragment from 36BV/060 ..... 7.92
7.92 View of 36BV0394, facing east 7.93
7.93 Profile of Feature 1 at 36BV0394, facing north 7.94
7.94 Barbed wire from 36BV0394 ..... 7.95
7.95 Flaked stone debitage from 36BV/069 ..... 7.96
7.96 View of 36BV0399, facing east 7.98

Table **Page**

4.1 Project area total acreage in Pennsylvania as of Sept. 22, 2015 ..... 4.2
4.2 Previous archaeological surveys in proximity to the APE 4.2
4.3 Previously recorded prehistoric archaeological sites 4.5
4.4 Previously recorded historic archaeological sites 4.9
4.5 Historic map resources used to assess historic sensitivity 4.10
7.1 36WH1736 Historic artifact summary 7.28
7.2 36WH1736 Architectural artifact summary 7.29
7.3 36WH1739 Historic artifact summary 7.32
7.4 36WH1739 Ceramic artifact summary 7.34
7.5 36WH1739 Glass artifact summary 7.34

7.6 36AL0716 Historic artifact summary 7.41
7.7 36AL0716 Architecture artifact summary 7.43
7.8 36AL0716 Ceramic artifact summary 7.44
7.9 36AL0716 Glass artifact summary 7.45
7.10 36AL0716 Indeterminate artifact summary 7.46
7.11 36BV0192 Historic artifact summary 7.62
7.12 36BV0192 Ceramic artifact summary 7.62
7.13 Prehistoric artifact assemblage at 36BV0398 ..... 7.65
7.14 Prehistoric debitage assemblage at 36BV0398 ..... 7.66
7.15 36BV0397 Historic artifact summary 7.78
7.16 36BV0397 Ceramic artifact summary 7.78
7.17 36BV0397 Glass artifact summary 7.79
7.18 36BV0095 Historic artifact summary 7.82
7.19 Prehistoric artifact assemblage at 36BV0096 ..... 7.98
8.1 Recommendations for archaeological resources within the APE 8.2
8.2 Recommendations for archaeological resources adjacent to the APE 8.4
8.3 Recommendations for archaeological resources outside the APE 8.5

1
Introduction

PROJECT DESCRIPTION

On behalf of Shell Pipeline Company, LP, AECOM completed a Phase I archaeological survey for the proposed Falcon Ethane Pipeline System (Project). This investigation was conducted in support of a Joint Permit Application (JPA) for a Pennsylvania Department of Environmental Protection (PADEP) Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers (USACE) Section 404 and Section 10 Permits. The Project is an approximately 95-mile-long pipeline located within Ohio, West Virginia, and Pennsylvania. It is comprised of three pipeline sections: Cadiz to Scio (Ohio), Scio to Monaca (Ohio, West Virginia, and Pennsylvania), and Houston to Monaca (Pennsylvania) (Appendix A, Figure 1.1).

In Pennsylvania, the Project area is primarily comprised of mixed deciduous and regenerating forest, agricultural land, existing rights-of-way, and reclaimed strip mines. The southern terminus of the proposed Houston to Monaca line is located approximately one mile southeast of Westland, Pennsylvania in Washington County, then traverses in a general northward direction through Washington County, western Allegheny County, and into Beaver County, terminating approximately four miles southwest of Monaca, Pennsylvania. The Scio to Monaca line runs from the Pennsylvania/West Virginia border and traverses east through Beaver County until the eastern terminus ties into the Houston to Monaca line.

The Project in Pennsylvania consists of the installation of approximately 68.9 kilometers (42.8 miles) of new liquid ethane pipeline within new and existing right-of-way (ROW) in Washington, Allegheny, and Beaver Counties (Appendix A, Figures 1.2 to 1.41). The Project includes a 15 meter (50-foot) permanent right-of-way and a 15-meter (50-foot) temporary construction workspace for a nominal 30-meter- (100-foot-) wide construction corridor. Some areas will require an additional 7.6 meters (25 feet) of temporary workspace totaling to a 38-meter- (125-foot-) wide construction corridor. The Project also consists of approximately 29.8 kilometers (18.5 miles) of access roads, a 4-hectare (10-acre) compressor station. A total area of temporary and permanent ground disturbance is approximately 895 hectares (~2,435 acres).

The area of potential effects (APE) includes locations not only defined as USACE jurisdictional areas (e.g., streams, wetlands, and associated buffers), but, at the request of the PHMC (see below), all areas of project-related ground disturbance (i.e., workspace and access roads) within the study corridor, or limits of disturbance (LOD). Based on current project design as of August 2016, direct effects will be contained within an archaeological study corridor that is no more than 30.5 meters (100.0 feet) in width and 68.9 kilometers (42.8 miles) in length. The LOD also includes any additional temporary and horizontal directional drilling (HDD) workspace, comprising of a project total of approximately 895 hectares (~2,435 acres). Archaeological survey has been completed along 68.9 kilometers (42.8 miles) along the centerline, 100 percent of the total project length. This includes approximately 895 hectares (~2,435 acres) of pedestrian survey, with 301 hectares (744 acres) of that area also covered by shovel-testing. A total of

19,609 shovel test pits were excavated. Since August 2016, portions of the proposed alignment have been re-routed and will be reported in an addendum in 2017.

Volume I of this report contains text, photographs, and appendices. Artifact inventories for each archaeological resource are in Appendix A. The geomorphological reports authored by Frank J. Vento, Ph.D., RPA, of QGEC can be found in Appendix B. Appendix C contains site-specific avoidance plans. Appendix D includes the chance finds plan and procedures Appendices E through H consisted of the PHMC forms. Volume II contains all figures for the report. Christopher Leary and Jennifer C. Rankin served as the archaeological Principal Investigators for the Project. Dr. Christopher Bergman served as senior oversight and internal review. Archaeological supervisor Nicholas Arnold directed the Phase I survey in Pennsylvania with the assistance of Crew Chief Michael Way. Archaeological technicians included Casey Campetti, Jenna Dillion, Amanda Filmyer, Sarah Kriebel, Troy Linebaugh, Kate McMonagle, Ethan Mott, Janna Napoli, Aaron Ridley, Jonathon Stroik. Matthew Harris and Mary Lennon developed the Native American sensitivity model. Jennifer C. Rankin was the primary author of the report with assistance from Dr. Frank Vento, Nicholas Arnhold and Michael Way. Artifacts were processed, analyzed and reported by Nicholas Arnhold (prehistoric) and Janna Napoli (historic). Historic background was developed by Ingrid Wuebber and Brian Albright. Meagan Ratini, Mary Lennon, and Casey Campetti managed GIS/field mapping and prepared the report graphics.

AGENCY CORRESPONDENCE

In response to the initial Section 106 consultation letter, it was the opinion of Pennsylvania Historical and Museum Commission (PHMC) on September 22, 2015 that the APE should not be limited to the Army Corps of Engineers (USACE) permit areas for proposed stream and wetland crossings, but should take into account all areas from which the Project may have direct or indirect (visual) effects. A letter sent to the PHMC on October 28, 2015, represents a revision from the initial Section 106 consultation by providing a sensitivity model to predict archaeological probability and revised testing strategy for all areas of temporary and permanent ground disturbance to the PHMC for the Project, in accordance with PHMC standards and the protocols of the USACE (the lead federal agency for the Project). In an email correspondence on November 10, 2016, the PHMC concurred with the revised testing strategy to adopt an archaeological sensitivity model to survey and review all areas of temporary and permanent disturbance.

REGULATORY STRUCTURE

The project required cultural resource studies to support the JPA to be submitted to the USACE and PADEP (Section 10/404 and Chapter 105, respectively). This Phase I/II survey was conducted in compliance with Section 106 of the NHPA of 1966 (16 USC § 470), as amended; the Advisory Council on Historic Preservation regulations carried forth in 36 Code of Federal Regulations Part 800 (36 CRF § 800); and the Pennsylvania History Code (37 Pa. Cons. § 500 *et seq.*). As per the *Secretary of the Interior's Professional Qualification Standards* (36 CFR § 61), archaeologists meeting the professional qualifications for archaeological investigation served as the Principal Investigators for cultural resource investigation and interpretation. The Phase I/II

survey strategy was developed in consultation with BHP. The survey followed the BHP's *Guidelines for Archaeological Investigations*, as revised in November 2008 and in April 2016.

2
Environmental Setting and Conditions

PHYSIOGRAPHY

The Shell Falcon pipeline corridor is situated within the Pittsburgh Low Plateau Section of the Appalachian Plateaus physiographic province. The dissected plateau exhibits moderately high-to-high relief (300'-600'), having broad major valleys that contain outwash terraces, and tributaries with lacustrine terraces. The bedrock in the section consists of medium-grained bedrock sequences, which are coarser than those in the Dunkard Basin to the south and the Marietta Plateau to the west. This section of the Appalachian Plateau province extends northeastward from Alabama into New York. The northwestern boundary of the province in Pennsylvania and in northeastern Ohio is the prominent scarp in Erie County, Pennsylvania and Ashtabula County, Ohio, which drops 300 to 600 ft. to the Eastern lake section of the Central Lowland Province (Briggs 1999). The Allegheny Front, an imposing escarpment that overlooks the more varied, linear, structurally developed ridges and valleys of the Ridge and Valley physiographic province, defines the southeastern boundary. The Allegheny Front marks an abrupt change in the style of deformation, the strata now turn up abruptly, and beyond they are heavily folded and faulted (Briggs 1999).

On the extreme northeastern boundary of the province is the Wyoming Valley prong of the Ridge and Valley Province. This boundary here separates a belt of Pennsylvanian age rocks on the west from Mississippian age rock of the Pocono Mountains to the east. Surface rocks of the plateau or foreland area, which extend from Pennsylvania into Kentucky, consist largely of Pennsylvanian age continental and coal bearing strata. These strata lie conformably above Mississippian and Devonian strata and are succeeded conformably in West Virginia and southwestern Pennsylvania by Permian age lithologies (Thornburg 1965).

The Pittsburgh Low Plateau Section is the largest section (6500 square miles) within the Appalachian Plateaus province. The section is sharply defined on the east by the west flank of Chestnut Ridge and to the north by the Glaciated Pittsburgh Plateau section. Base levels in the section are developed in the mostly homogeneous bedrock, shale, and chiefly subordinate sandstone, but locally dominate sandstone, siltstone and limestone (Briggs 1999). Most strata in the Pittsburgh Low Plateaus are gently folded, with dips of more than 5 degrees being rare; folds decrease in amplitude to the northwest. Anticlines and synclinal folds are subdued and are reflected by equally subdued linear topographic highs and lows (Briggs 1999). Jointing is an important structural control on stream channel orientation with many deep, incised streams exhibiting long straight segments. The entrenched or incised character of the streams in the region is clearly due to uplift and subsequent rapid down cutting in response to Quaternary epierogeny. The streams in the section are consequent and exhibit a decidedly dendritic drainage pattern. Glacial outwash terraces and benches are common along rivers (e.g., Ohio and Beaver Rivers) that served as outlets for glacial melt waters. The overall aspect of the Pittsburgh Low plateaus section is one of broad, rolling interfluves separated by relatively narrow, steep-walled, moderately incised valleys (Briggs 1999). The ridge tops across the region occur at nearly the same accordant elevation and reflect an erosional surface of late Mesozoic to

early Cenozoic age.

BEDROCK GEOLOGY

The Pennsylvanian age bedrock, which crops out in the general project area, is ascribable to the Allegheny Formation and Glenshaw and Casselman Formations of the Conemaugh Group and Monongahela Group of Pennsylvanian Age (see Figure X). The Casselman Formation of the Conemaugh Group consistently overlies the Glenshaw Formation. The Casselman Formation is present along the upper reaches of the drainage lines within the study area and on the hill tops and upper valley slopes along the lower reach of Raccoon Creek.

The Casselman Formation is a heterogeneous unit composed primarily of alternating layers of shale, siltstone, sandstone, and thin impure freshwater or brackish water limestones. In addition, the formation contains several thin, non-persistent coal seams and associated underclay beds. Minor red beds, though thin, can be found in the lower part of the formation. The formation ranges in thickness from 72 m (236 ft.) to as much as 160 m (525 ft.) along the Berlin syncline in Somerset County, Pennsylvania. The Glenshaw Formation locally caps the upland ridges/drainage divide and is characterized by cyclic sequences of shales, sandstone, marine limestones/shales, non-persistent thin red bed, and freshwater limestone beds and persistent coals (e.g., Freeport and Kittanning seams). The base of the Glenshaw Formation (or Conemaugh Group) is mapped at the bottom of the Upper Freeport Coal, which occurs at elevations in excess of 520 m (1700 ft.). The formation attains its greatest thickness of 375 ft. to the east of the study area in Somerset County, Pennsylvania. The distinguishing feature of the Glenshaw Formation is the presence of several widespread marine units that include in ascending order or succession: Brush Creek, Pine Creek, Woods Run and Ames. Each of these marine zones has both a limestone and shale facies. It should be noted that none of these limestone units contain chert suitable for lithic stone tool manufacture. The Brush Creek limestone to the south in Greene and Fayette Counties, as well as in northern West Virginia does contain cherty facies that were utilized extensively by prehistoric populations in the region. The chert artifacts recovered during the Phase I investigations are primarily pebble cherts of the Onondaga and Upper Mercer cherts procured from outwash deposits along the main stem of the Ohio River.

The Glenshaw Formation is well bedded in most places with the thickness of the beds varying based upon lithologies. Beds vary from a fraction of an inch to as much as several feet in some of the sandstone units. The shales in the formation are typically thin and fissile while the limestones range from well bedded to nodular in character. Upon prolonged weathering the formation tends to form landforms comprised of rolling ridges and hills of medium relief. Those parts of the formation which exhibit steeper natural structural dips display deeper, narrower stream valleys separated by broad-topped, steep-sided divides. Natural slopes are moderately stable except in those areas where red beds crop out. The formation typically displays good surface drainage.

The Conemaugh Group is overlain by rocks of the Monongahela Group that extends from the base of the Pittsburgh Coal to the base of the Waynesburg Coal. The Monongahela Group is

divided into the Pittsburgh and Uniontown Formations. The formations consist primarily of limestone, dolomitic limestone, calcareous mudstones, and shales. Nodular chert suitable for stone tool manufacture occurs within limestones of the Uniontown Formation. Westland Run and Robinson Run are underlain by rocks ascribable to the Monongahela Formation. The Glenshaw Formation is underlain by the Allegheny Formation and consists primarily of sandstones and shales with marine limestones (Vanport) and commercially important coal seams (Brookville, Scrubgrass etc.). Within the project area, the Allegheny Formation is restricted to the valley bottom zone and lower valley slopes of Raccoon Creek and Fishpot Run. The top of the Allegheny Group is mapped at the top of the upper Freeport Coal and Limestone while the base of the group is mapped at the base of the Brookville Coal. The Homewood Sandstone of the Pottsville Group directly underlies the Brookville Coal. A typical cyclothem sequence for the lower Pennsylvanian and upper Mississippian lithologies generally involves basal fluvial to deltaic sandstone emplaced on an erosional surface and laterally and vertically replaced by overbank shales (Donahue and Rollins 1979). Extensive coastal swamps develop over the top of the fluvial and deltaic sediments. A marine transgressive sequence then caps the cyclothem with shales and limestone.

UPPER PALEOZOIC DEPOSITIONAL HISTORY

During deposition of units ascribable to the Allegheny Formation in northeastern West Virginia and southwestern Pennsylvania, there was a general eastward shift of marine conditions that introduced a series of shallow marine transgressions into western Pennsylvania. This resulted in the deposition of the limestone (e.g., Vanport Limestone) and shales, with depositional environments ranging from shallow marine shelf, marine carbonate banks, coastal marshes and swamps, lagoons and distributary deltas, which graded into alluvial plain fluvial distributaries and interdistributary flood basins (Edmunds, Skema and Flint 1999). Sediment deposition during the lower interval of the Glenshaw Formation was primarily that of an alluvial plain with large isolated coal swamps, complex fluvial channels and freshwater lakes (Skema and others 1982). Deposition during the upper part of the formation consisted of a series of at least seven rapid, short-lived, eastward marine transgressions which resulted in the establishment of shallow-marine, coastal plain and lower delta plain conditions across all of western Pennsylvania (Donahue and Rollins 1974, Busch and Rollins 1984). By the beginning of the deposition ascribed to the Monongahela Group, the northeastern end of the Appalachian Basin was effectively severed from any marine connection. The general environment at this time was that of a relatively low energy alluvial plain containing widespread coal swamps and freshwater lakes (Edmunds, Skema and Flint 1999).

Structurally, the Appalachian Plateaus physiographic province is included within the Appalachian Plateaus structural province. Regionally, the units within this province consist of gently folded Devonian through Permian age sedimentary rocks which display shallow dips of less than 5° to the south/southeast or south/southwest, while the strike varies between 60° and 85° east of true north.

DRAINAGE AND HYDROLOGY

The fairly rugged topography of southwestern Pennsylvania is maturely dissected by numerous consequent and insequent rills, runs, and streams, which are part of the Ohio River drainage basin. The principal drainage line in the study area is the Ohio River, which has a normal pool of 665 feet. Prior to navigation controls, the Ohio River exhibited a nominal gradient of 10 feet per mile with an average discharge of 20800 cubic feet per second.

Geomorphologically, the Ohio River proper and its tributaries represent consequent streams, which have developed a dendritic drainage pattern on an older plateau surface. In places, Quaternary epierogenic uplift has caused entrenchment along some of the major rivers valleys. Some effect on the drainage evolution is rooted in epierogenic effects, such as regional up warping and rock fracturing; while controls on drainage may be exogenic and related to past climates.

Presently flows/discharges along the Ohio River and its major tributaries (e.g., Raccoon Creek) can vary drastically with low flows. These occur during the late summer and early fall, with high discharges occurring late winter and early spring in association with snowmelt and more effective precipitation (precipitation minus evapotranspiration). Flood recurrence data indicates that the low flood plain zone along all of the investigated streams all lie within the 100-year flood way zone. The high terraces (e.g., Parker Strath) along Raccoon Creek lie well above even the 500-year flood way zone. The Sewickley Gaging Station (680 ft. elevation) along the Ohio River in Pennsylvania and the Moffatt gaging station along Raccoon Creek were chosen as proxies for the study area. The Sewickley gage has over 82 years of continuous record for peak annual discharges. An annual peak flood series for these 82 years reveals that the largest single discharge occurred on March 18, 1936 with a stream flow of 574,000 cubic feet per second and a gage height of 34.75 ft. This height is roughly 35 ft. above the present river level. Other notably high discharge events include the 1943 (gage height 27.39 ft.), 1972 (gage height 24.42); and 1996 (gage height 33.34 ft.) floods. The Moffatts gaging station along Raccoon Creek has 91 years of record with the flood of record occurring on September 18, 2004 with a discharge of 22,000 cfs and rise above the gage datum of more than 14 ft. The 2004 flood event was a result of Hurricane Irene like from Hurricane Agnes in 1972 was responsible for some of the highest stream discharges in the region over the last 100 years. Other notable flood events along this reach of Raccoon Creek occurred in 1920, 1922 and 1963. Interestingly these years are not large peak discharges along the main stem of the Ohio River. Clearly, Raccoon Creek is affected by "upstream" flood controls (e.g., snow melt, intense localized thunder storms etc.

Today, as well as in the past, flooding along the main stem of the Ohio River and Raccoon Creek results from three basic storm types: 1.) Cyclonic storms, 2) Tropical storms and hurricanes (which move into the basin from the south/southeast), and 3) Intense, short, localized thunderstorms that occur during the summer and autumn. Cyclonic storms are caused by the converging inflow of warm air from the Atlantic Ocean within the warm sector (between the cold and warm fronts) of slow-moving mid- latitude cyclones embedded within a cool season meridional flow regime. Floods of this type can be especially large if they are augmented by snowmelt and/or saturated soil conditions. Tropical storms and hurricanes that have moved into the basin from the south/southeast have produced sizeable recent floods over both small and

large portions of the basin. For example, over the last 150 years, seven large floods (1903, 1936, 1955, 1972, 1975, 1996, and 2004) in the region were caused by intense tropical cyclonic storms. These systems caused significant flood deposition and erosion on low terraces bordering the major drainage lines. Localized short duration, intense thunderstorms which occur during the summer and autumn (warm season) seasons are highly localized events but cause significant upstream flooding over small watersheds. Floods of this type have rarely caused flooding along the main stem of the Ohio and Beaver Rivers. However, smaller tributary streams such as Fishpot Run, Peggs Run, and Potato Garden Run would be affected. In addition to the above, some areas in the basin (e.g., Oil Creek at Franklin, Pennsylvania) are flooded as a result of ice jams during late winter and early spring and are associated with first flush events (the first significant seasonal melt). In sum, runoff of flood proportions within the basin today results from a variety of factors, including storm intensity, distribution and duration, extent of rainfall, prior soil water budget conditions, extent of snow, depth and duration, valley configuration, and vegetative cover. Historically, the preponderance of spring floods on the Ohio River reflects the effect of the longer and more widespread spring rainfall augmented by snowmelt.

Based upon an exhaustive examination of hundreds of alluvial soil profiles it is clear that the occurrence of bank full discharges along drainage lines in Beaver and Allegheny Counties, Pennsylvania (especially along tributary stream valleys) has been more common over the last 150 years than prior to the European contact. This rate of increase is a function of the percentage of land now overlain by an impervious cover (roofs, pavement, cement) due to urbanization, an increase in deforested lands (timber, agriculture, strip-mines and pasture), and the percentage of area served by storm sewers. Since floods are a function of rainfall/runoff relations, urbanization has caused a tremendous number of changes in these relations, especially with regard to smaller streams and the short lag time between peak rainfall and peak discharges.

QUATERNARY HISTORY AND FLUVIAL GEOMORPHOLOGY

The Late Cenozoic (pre-Pleistocene) topography and drainage patterns of the Appalachian Plateau were much different from those of today. Topographic relief was much lower and drainage direction was dominantly north and northwest (Ray 1965, Wagner et al. 1970, Beynon and Donahue 1982) to basins ultimately occupied by the Great Lakes. Data supporting this northwestward drainage flow is based primarily on the northward slope of the upland surface as well as the occurrence of deep, glacially buried river valleys with gradients to the northwest. The diversion of the present upper Ohio drainage to the Gulf of Mexico was considered to be affected by Pleistocene glaciation (Kakthins and Delano 1999). There is no clear date for establishment of the northward drainage other than that it must have occurred after the end of the Permian, when the youngest Appalachian basin sediments were deposited, and long enough before the Pleistocene reversal for the development of fairly wide, mature valley bottoms now filled and buried with glacial drift (Kaktins and Delano 1999). At this time, prior to the Pleistocene reversal, the present Ohio River did not exist. In fact, two main river systems drained the western Appalachian Plateau.

The Teays-Mahomet River flowed from the piedmont area of Virginia and West Virginia northwest into Ohio, Indiana and Illinois (Beynon and Donahue 1980). Final drainage was either

through the pre-Great Lake Basins or the Mississippi River (Beynon and Donahue 1980). The other drainage network was the Monongahela-Beaver River system to which the Ohio River and Lower Allegheny were tributaries. This system drained the Allegheny Plateau and flowed north to what is today the Lake Erie Basin. During this time, the relatively flat land surface was epierogenically uplifted and the plateau rivers responded by incising their valleys. What is left today of this nearly flat, erosional surface is a sequence of flat-topped hills or summits with elevations of between 366 m-427 m (1200 ft. – 1400 ft.) above sea level. As incision slowed, a second terrace level was created. This terrace surface is commonly termed the Worthington Erosion surface and typically occurs along the major river valleys at elevations between 329 m-347 m (1080 ft.-1140 ft.) above sea level. In the study area the Worthington erosional surface lies topographically above the well-developed Park Strath Terrace which typically occurs at elevations ranging from 880 ft. to 960 ft.

Following establishment of the Worthington surface, a second period of incision occurred along the Ohio and Allegheny Rivers. Eventually, as incision slowed, lateral channel migration occurred forming a well-defined wide valley floor. The remnants of this early flood plain now lay ca. 275 m (900 ft.) above sea level or 61m (200 feet) below the Worthington Erosional Surface and 91.5 m-122 m (300 to 400 ft.) below the Allegheny Peneplain. This relic valley floor has been termed the Parker Strath from a typical occurrence near Parker, on the Allegheny River in northern Armstrong County (see Figure 22). The present Allegheny River and its associated tributaries from Olean, New York to Pittsburgh, Pennsylvania were three separate rivers: a Lower, Middle and Upper Allegheny. The Lower Allegheny began at the Clarion River and flowed south to join the Monongahela River at Pittsburgh. The Middle Allegheny course drains through present day Oil City and Franklin and then northwest along what is now French Creek to the ancestral Erie Basin. In New York State, the Upper Allegheny flowed through the present site of Olean, New York and into the Ancestral Erie Basin just south of Dunkirk, New York (Shepps et al. 1959).

Although five major glacial advances and retreats are recognized in the United States (Richmond and Fullerton 1987) only the last two advances (Illinoian and Wisconsinan) can be clearly demonstrated to have reached northwestern Pennsylvania. Sediments of the pre-Illinoian advance are not present south of the mapped Illinoian drift sheet and hence have been extensively reworked by later glacial advances and retreats. As the Illinoian glaciers advanced into northwestern Pennsylvania, the ice sheet blocked the north-flowing streams causing ponding (lake-formation) episodes to occur. However, by the time Illinoian ponding occurred in the Monongahela River, or shortly afterward, the course of the modern Ohio River had been created by a breach of the drainage divide near New Martinsville, West Virginia (Hamel 1987). With the onset of the Wisconsin ice advance about 70,000 years ago, glacial melt waters once again filled the Ohio and Allegheny River valleys. These major drainage outlets were filled with glacial outwash that in places reached a thickness in excess of 115 m (350 ft.) [e.g., along French Creek]. These Wisconsin age deposits are often termed the "first bottom" (Late Wisconsin outwash) and "second bottom" (Earlier Wisconsin outwash) soils along the Allegheny and Ohio Rivers at Pittsburgh. In the Shell Franklin project area along the Ohio River at Monaca, the high T4 terrace bordering SR 18 may correspond with the second bottom terraces and date to the early late Wisconsin while the lower T3, T2 and T1 terraces are of

probable late Wisconsin age with the lowermost T1 terrace containing a thick package of Holocene age over bank deposits. This high terrace present along the Raccoon Creek and the soils associated with this terrace is typically the Monongahela or Allegheny soil series.

During the terminal late Pleistocene and early Holocene, in response to increased evapotranspiration, a thicker vegetative cover, lowered base level, warmer temperatures, and a decrease in discharge and accompanying sediment load, the Ohio River as well as its major tributaries (Allegheny River, Monongahela River, Tygart River and Youghiogheny River) adjusted their channels by incising Wisconsin valley-fill deposits. The result was the emergence of several late Wisconsin age terraces currently at varying heights (15 ft. to 30 ft.) above the active river channels. These lower terraces are typically mantled (often disconformably) by a variably thick package of fine-grained, vertical accretionary deposits of Holocene age and/or historic fill. The T1 terrace within the project area is correlative with these persistent low terraces previously identified along other segments of the Allegheny and Upper Ohio River valleys (Vento et al. 2008).

MODERN CONDITIONS (CLIMATE, FLORA AND FAUNA) IN SOUTHWESTERN PENNSYLVANIA

Modern Climate

Southwestern Pennsylvania has a cool and humid, temperate climate. Precipitation is distributed through the year with a slight maximum occurring in May, June and July. Seasonal soil water budget deficits typically occur during late August, September, October and early November as a result of decreased effective precipitation (precipitation minus evapotranspiration). There may be wide fluctuations of precipitation within a given year. Although the region receives an average of 42 inches of rainfall per year, it has experienced extremes of 35 inches to as much as 56 inches.

The months of December, January and February frequently have temperatures below freezing. Unofficial recordings of minus 25 to minus 30 degrees Fahrenheit have been recorded in certain localities. Late spring, summer and early fall temperatures are warm and sometimes even hot, but average around 64° to 65° Fahrenheit. The average length of the growing season is 116 days. May 27 is the average date of the last freeze in spring, and there are occasional surges of several hour freezes in mid-September. These ephemeral extremes are found where valley inversions exist and air drainage is retarded in restricted valleys. Daily changes of temperature during the winter and early spring cause frequent freezing and thawing of the ground. This is most common on south and west slopes, which have little or no vegetative cover.

Modern Fauna

Beaver County, Pennsylvania and the surrounding counties support a wide range of terrestrial, avian, and riverine fauna. However, the contemporary fauna does not necessarily represent the full range of species that were available for exploitation by aboriginal populations during the late Pleistocene or Holocene. A cursory examination of late Pleistocene through recent (12,500 B.P. to Present) faunal remains represented statewide indicates that considerably more

species would have been available for aboriginal exploitation in the past than are now present, though population densities and distributions would have varied from that seen today.

White-tailed deer (*Odocoileus virginianus*) is the most abundant large mammal in the region. White-tailed deer are generally considered a forest species, but they more typically prefer edge or ecotonal zones which combine areas of brush, young trees and open meadow/pasture-lands (Rayburn and Braker 1981; Vento et al.1980). In pre-Columbian times, deer were probably distributed throughout the region at densities of 10-15 individuals per square mile (Hay et al. 1985:4). In the fall, this deer population congregated at localities, which were heavy in mast (nut) production. During the winter months, deer distribution was largely conditioned by the severity of weather. During moderate winters, a more even distribution over valley floors, hills, and ridge tops was maintained. Severe cold and snow, however, would have forced deer into sheltered coves and valleys. During the spring and summer an even distribution was again established (Hay et al. 1985; Taylor 1956).

Black bear (*Ursus americanus*), though uncommon in modern times, can be found throughout the more mountainous and less populated areas of the county. Black bears were probably distributed at a density of one adult bear for every 5-15 forested square miles (Hay et al. 1985; Kordeck 1973). Beech, sugar maple, and birch constitute their primary food supply, supplemented by acorns, black cherries and blueberries. During the fall and summer, preferred ranges encompass steep terrain with dense understory. Thus, most bears occur to the east and north of the study area in less urbanized and higher elevated sections of the Pittsburgh Low Plateaus.

Fur-bearing animals are found in nearly all regions and on most soil types in the county. These principal fur-bearing taxa include: raccoon (*Procyon lotor*), opossum (*Didephis marsupialis*), striped skunk (*Mephitis mephitis*), eastern spotted skunk (*Spilogale putorius*), wood chuck (*Marmota monax*), gray squirrel (*Sciurus carolinenis*), muskrat (*Ondatra zibethicus*), gray fox (*Urocyton cineroargenteus*), red fox (*Vulpes fulva*), eastern cottontail (*Sylvilagus floridanus*), and beaver (*Castor canadensis*).

Game fish species in streams and rivers included brook trout (*Salvelinus fontinalis*), rainbow trout (*Salmo gairdneri*), brown trout (*Salmo trutta*), bluegill (*Lepomis macrochirus*), sunfish (*Lepomis megalotis*), crappie bass (*Micropterus punctulatus*), largemouth bass (*Micropterus salomoides*), smallmouth bass (*Micropterus dolomicui*), muskellunge (*Esox masquinongy*), pickerel (*Esox niger*), yellow perch (*Perca flavescens*), and channel catfish (*Ictalurus punctatus*).

Most of the avifauna in the region consists of songbirds rather than game birds. However, several types of game birds are native or present in the project areas on either a permanent or seasonal basis. These include wild turkey (*Melagris gallopavo*), American woodcock (*Philohela minor*), ruffed grouse (*Bonasa umbellus*), and Canadian geese (*Branta sp*), as well as a large number of ducks (*Anas sp*) that stop to rest and feed on lakes, ponds, and rivers during their annual fall/spring migrations. During pre-Columbian times, wild turkey densities were probably on the order of 8-13 individuals per square mile. Ideal habitats for turkey

were those containing mature oak forests, with white oaks predominating. These conditions were found mainly on valley floors and lower valley slopes (Scheirier 1969).

Modern Flora

The study area is located in the Mixed Mesophytic Forest region which covers a majority of the Glaciated and Unglaciated Allegheny Plateau. The mixed mesophytic biome is considered the most complex and the oldest association of the Deciduous Forest Formation and is a community in which the dominant trees of the arboreal layer are communities of beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*), basswood (*Tilia heterophylla, T. heterophylla var. Michauxii, T. floridana, T. neglecta*), sugar maple (*Acer saccharum*), chestnut (*Castanea dentate*), sweet buckeye (*Aesculus octandra*), red oak (*Quercus borealis var. maxima*), white oak (*Q. alba*), and hemlock (*Tsuga Canadensis*) [Braun 1950:40]. Industry is considered the backbone of the economy and coal mining, steel factories, and electrical power plants are located along the Ohio River. Surface mining, farming, and industrial development have altered the landscape in much of the county. Naturally occurring plants consist of perennial grasses and weeds, nonconiferous and coniferous trees, nonconiferous and coniferous shrubs, and woody vines (USDA, 1995). Within the immediate study area, the vegetation consisted almost entirely of grasses and low scrubs. The principal trees consist primarily of sumac, locust, sugar maple, wild cherry, and red and white oaks.

PALEOENVIRONMENTAL CONDITIONS IN SOUTHWESTERN PENNSYLVANIA

The project area lies within the Unglaciated Plateaus section of the Oak-Chestnut Forest Region (Braun 1950). Extant secondary forests of the Ohio River drainage basin are composed of mesophytic species such as beech, white and red oak, sugar maple, ash, and walnut. However, the prehistoric forest was not only different from the modern forest in many respects, but was also in a state of gradual change for at least 8,000 years following the retreat of glacial ice. Watts (1979) has examined the pollen record for central Appalachia and the New Jersey Coastal Plain and has divided the post-glacial era into four periods: the Late Pleistocene, influenced by the proximity of the glacial front and ending about 13,000 yrs. B.P.; the Early Holocene, characterized by the in-migration of tree species from refugia in the south, ending about 9000 B.P.; the Hypsithermal, a warm, dry period lasting until 5500 yrs. B.P.; and the Late Holocene environment during which a relatively stable primary forest became established (Miller, Vento, Marine, and Pollack 2004).

Pollen data suggest that glacial ice began its final melt and retreat between 14,000 and 15,000 years ago (Watts 1979). At Longswamp, immediately south of the ice front, tundra vegetation with grasses, ericaceous shrubs and dwarf birch was present, suggesting a cold, dry, and windy environment. In the study area during maximum glacial advance, it is likely that similar vegetation occurred. As the glacier retreated, temperatures increased and organic soil horizons developed. Watts (1979) suggests that vegetation of this period may have been a mosaic; stands of spruce, dwarf shrubs, and wet meadows would have occupied areas free of permafrost and local areas of tundra would have been found on permanently frozen sites. This environment would have presented little in terms of edible plant resources for human

populations. However, large, cold-adapted herbivores such as mastodon, buffalo, and caribou were available as human prey (Miller, Vento, Marine, and Pollack 2004).

Beginning approximately 13,000 yrs. B.P., the climate and vegetation of the study area underwent changes as a result of the expansion of species ranges due to increasing temperatures. Webb and Bartlein (1988:6) define the period between 12,000 and 9,000 yrs. B.P. as a period of decreasing influence of the ice sheet and increasing influence of summer solar radiation, with atmospheric circulation patterns becoming more like those of the present. During this period, the modern vegetation gradient from northeast to southwest first appeared (Webb and Bartlein 1988). Fir, jack pine, paper birch, and white pine were among the earliest immigrants to the area, advancing from glacial-period refugia in the south. Hemlock was present in the study area by 9600 B.P., and oak was also present at a relatively early date. Beech and hickory appear in the pollen record by about 7500 yrs. B.P. Chestnut, an exceedingly slow migrant, was not found in the study area until approximately 5,500 yrs. B.P. Many of the arboreal species that became established at this time represent food resources such as fruits and nuts, known to have been utilized both by humans and by faunal species hunted by humans, such as deer, elk, bear, and other small mammals (Davis 1976, Miller, Vento, Marine, and Pollack 2004).

A worldwide reversal of the warming climate appears to have occurred during the Early Holocene, although there is debate as to its extent and cause. Termed the "Younger Dryas," the period is characterized by an expansion of boreal taxa including spruce, fir, larch, paper birch, and alder (Peteet et al. 1990; Kneller and Peteet 1999). Ice core data dates this 1500-year period, which began and ended abruptly, between 14,000 and 12,500 years ago (Fiedel 1999). The ice core dates are considered more accurate than radiocarbon dates, as radiocarbon dates during this period have been as much as 2000 years too young. At Alpine Swamp in northern New Jersey, radiocarbon dates place the boreal expansion between 11,000 and 10,000 yrs. B.P. The pollen record at Browns Pond in the central Appalachians of Virginia suggests a brief cold reversal at 12,260 yrs. B.P., possibly correlating with the Older Dryas identified in Europe (Kneller and Peteet 1999). No climatic reversal is evidenced between 11,000 and 10,000 yrs. B.P. at Browns Pond, suggesting that the Younger Dryas cooling may not have extended as far south as Virginia (Kneller and Peteet 1999).

Pollen evidence has been interpreted as indicating that the environment of 10,000 years ago resembled the modern Boreal forest, dominated by pine and without the deciduous food-bearing species that were abundant in the forest after 5000 yrs. B.P. (Fitting 1968; Ritchie 1979; Wright 1968). However, others have argued that the representation of deciduous elements such as oak in the early pollen profiles indicate the localized presence of deciduous vegetation in the early Holocene forest rather than contamination or long distance pollen transport (Dincauze and Mulholland 1977; Eisenberg 1978; Nicholas 1983; Miller, Vento, Marine and Pollack 2004). Davis et al. (1975) also support the presence of deciduous species in the early post-glacial forest. They have defined a "conifer-hardwood" forest in Maine as early as 9700 years ago. Delcourt and Delcourt (1980) show the presence of conifer-hardwood forests in the Mid-Atlantic region at 10,000 yrs. B.P. In addition to conifers and oak, these forests included cold-adapted, mesic species such as birch, elm, ash, ironwood, maple, and beech. Oak and hickory pollen are well represented at 10,000 yrs. B.P. in a core from

Browns Pond. The presence of carbonized grape, plum, and hackberry in a Paleoindian hearth at the Shawnee Minisink site on the Delaware River indicates that understory vegetation common in the temperate forest was present by this early period (Dent and Kauffman 1985).

Thus, by 10,000 yrs. B.P., the region consisted of a forested canopy, which contained a substantial component of temperate hardwoods. Deciduous hardwoods and their related understory species likely occupied favorable topographic and edaphic niches and initially occurred as patches within a predominantly coniferous forest. Eisenberg (1978) suggests that during the early post-glacial period, oak was also adapted to drier upland sites where soil formation was more advanced. In the southern section of the modern conifer-hardwoods found on the Appalachian Plateau, deciduous species have migrated northward along major valleys and their tributaries (Braun 1950), a situation that may resemble the early to mid-Holocene immigration of deciduous species along stream valleys from glacial refugia in the south (Miller, Vento, Marine and Pollack 2004).

Faunal data also supports the presence of a forest with a strong component of temperate species. Guilday (1982) identified a Holocene fauna, including six species of large mammals (deer, elk, mountain lion, timber wolf, bear, and bison) and a variety of small mammals such as rabbits, squirrel, grouse, and passenger pigeon. These mammals include mast feeders and browsers, as well as animals that subsist on fruit or bark. Two sources of faunal data evaluated by Guilday are located in central Pennsylvania--New Paris No. 4, a cave in Bedford County (Guilday et al. 1964), and Hosterman's Pit, located in Centre County to the west of the study region (Guilday 1967). The faunal complex at New Paris No. 4 was radiocarbon dated to 11300 B.P. ± 1000 yrs. and revealed a fauna in transition from predominantly boreal species to a greater admixture of temperate forest species. Pollen accompanying the faunal remains in the upper zone of the cave indicates the immigration of oak and birch into a predominantly pine-spruce community. At Hosterman's Pit, which dated to 9290 yrs. B.P. ± 1000 yrs., fauna include predominantly temperate forest species such as squirrel, pine mouse, rabbit, and deer. In addition to these central Pennsylvania sites, fauna associated with temperate conditions were present in levels dated ca. 11,300 yrs. B.P. at Meadowcroft Rockshelter in western Pennsylvania (Adovasio et al. 1985). These animals include box turtle, turkey, eastern mole, and pine or woodland vole (Miller, Vento, Marine and Pollack 2004).

Thus, the evidence suggests that faunal resources were diverse during the early Holocene, including both those adapted to boreal and those adapted to deciduous forests (Eisenberg 1978). Guilday et al. (1977) note that the distribution of fauna depended on biotic gradients related to variations in topographic and edaphic conditions. Eisenberg (1978) cites evidence of mammoth and white-tailed deer co-occurring in the northeast. The temperate forest faunal remains and pollen dating to ca. 11,300 yrs. B.P. at Meadowcroft may have been the localized result of favorable temperature and moisture regimes within the Cross Creek drainage (Adovasio et al. 1985).

There is evidence to suggest that the period between 9000 and 5500 yrs. B.P. was characterized by a climate warmer and drier than present. Evidence for this Hypsithermal Period is strong in the Midwest where pollen data shows an advance of the prairie eastward into Illinois, reaching

its maximum extent at about 7000 yrs. B.P. (Bartlein et al. 1984; King 1980). In the eastern United States, evidence for a warmer, drier period at this time, summarized by Graetzer (1986), includes a peak in grasses at Bear Meadows in Centre County, Pennsylvania (Kovar 1965), and xeric vegetation on the Cumberland Plateau in Tennessee (Delcourt 1979). Davis et al. (1980) point to an increase in the altitudinal range of hemlock and white pine as evidence of a warmer, drier period between 9000 and 5000 yrs. B.P. in New England. Watts (1979) in his examination of pollen diagrams in the Middle Atlantic region supports the hypothesis of a warmer, drier climate between 8500 and 5500 yrs. B.P. (Miller, Vento, Marine and Pollack 2004).

Effects of the warmer, drier climate included a decrease in the number of low order streams and biomass on ridges, as well as lower water volume in streams and a lowering of the water table (Graetzer 1986; Watts 1979). Evidence provided by correlations of pollen core data with pollen from surface samples from known vegetation types suggests that the overall composition of the vegetation did not change radically (Bradstreet and Davis 1975). However, changes in hydrology and decreases in productivity would likely have had some effect on the distribution of prehistoric populations. Specifically, upland areas would have become relatively less attractive, whereas major riverine areas such as the Ohio, Delaware and Susquehanna floodplains and terraces would have been relatively more attractive (Miller, Vento, Marine and Pollack 2004).

Although there is some disagreement regarding the occurrence of a mid-Holocene climatic optimum in the northeast, there is still greater disagreement regarding the climate following 5000 yrs. B.P. A number of researchers have presented evidence that is interpreted as indicating an environment characterized by severe climatic fluctuations, including a warm, dry, or xerothermic, period between 5000 and 2600 yrs. B.P. (Carbone 1976; Custer 1988; Curry and Custer 1982; Vento and Rollins 1989, Vento, Rollins and Vega et al. 2008). Joyce (1988) notes researchers have presented a variety of dates within this period for the proposed xerothermic. Curry and Custer (1982) argue that the xerothermic corresponds to the warm, dry conditions of the Atlantic/Subboreal period in the Blytt-Sernander system (described in Zeuner 1952), which was originally developed to describe European climatic change. However, this system is frequently applied without reservation to North America. In contrast, others researchers argue that although there were undoubted fluctuations in temperature and moisture after 5000 B.P., these were no more than low amplitude fluctuations of short duration (Beckerman 1986; Joyce 1988; Watts 1979). Impacts on vegetation were likely minimal and the composition of the forest, as a result, was similar to the present day forest in many respects (Miller, Vento, Marine and Pollack 2004).

Custer (1984, 1988) points to a decrease in hemlock and an increase in hickory in many of the major pollen studies of the northeastern United States. Hickory, in this sense, is considered an indicator of relatively dry conditions. However, as both Custer (1988) and Carbone (1976) remark, the inability to identify pollen to the species level renders such an interpretation problematical. Mesic species of hickory exist (*Carya cordiformis, Carya ovata*) and are common in the modern biota (Joyce 1988). Most xeric hickory species also grow and thrive on moist, fertile soils. The sudden and synchronous decline of hemlock across a wide range of

latitudes, cited as an indicator of dry conditions, is strongly supportive of disease rather than climatic change as the cause (Bhiry and Filion 1996; Davis 1983; Watts 1979, 1983). Likewise, pollen profiles do not exhibit significant increases in non-arboreal pollen such as grasses, amaranth, and chenopod that would suggest a significant decline in over story vegetation resulting from decreasing precipitation and increasing temperatures (Miller, Vento, Marine and Pollack 2004).

Carbone's (1976) quantitative analysis of data from the Shenandoah Valley is often cited to support the proposition that warm and dry conditions were present in the Middle Atlantic during the Late Holocene. The study followed a methodology developed by Webb and Bryson (1972), which utilized modern pollen samples and modern climatic data from 73 sample locations in the Midwest, and, using canonical correlation, calculated a set of mathematical transfer functions relating pollen frequency to climatic variables. Webb and Bryson then applied these transfer functions to three fossil pollen cores located within the same region. Carbone applied this methodology to raw data from Hack Pond, located in the Shenandoah Valley of Virginia. From this study Carbone concludes that the climate of the Shenandoah Valley involved a warm, dry period that culminated around 4350 yrs. B.P. (Miller, Vento, Marine and Pollack 2004). This period involved "increased temperatures…[and] increased desiccation and moisture stress" (Carbone 1976: 106). It is not clear in Carbone's discussion at what time temperature and precipitation reached modern conditions, although Carbone does state that "the climatic shifts of the last 4,000 to 5,000 years can be better understood as perturbations of the modern pattern rather than as actual long-term shifts" (Carbone 1976: 107). Problems in dating these shifts may arise from the fact that the most recent radiocarbon sample from Hack Pond was from a depth of approximately 140 cm and returned a date of 9520 ± 200 yrs. B.P. Although not explicitly stated, Carbone apparently assumed a constant rate of deposition over the last 9000 years, an assumption that may be invalid given what is known of variation in alluvial deposition during this period (Vento and Rollins 1989, Vento, Rollins, Vega et al. 2008).

A basic assumption of the Webb and Bryson (1972) study, upon which Carbone's work was based, is that climate can be considered the primary controlling factor for the composition of past vegetation. The authors indicate that this assumption is probably valid within the study region. This reasoning is likely based on the proposition that other factors controlling vegetation, such as topography and soils, is constant between the modern and fossil samples. Carbone's study violates this assumption in that, rather than developing transfer functions from sample sites in the Shenandoah Valley; he uses the same mathematical transfer functions developed by Webb and Bryson for the Midwest. These functions should not be considered applicable to regions where factors such as soil and topography are radically different from the Midwest (Miller, Vento, Marine and Pollack 2004).

Further, Carbone notes that Webb and Bryson caution that climatic factors controlling pine in the Midwest are different than factors controlling pine in the southeast (Carbone 1976: p.100). Carbone reasons that because deciduous vegetation in the two regions was similar, the pine problem is unlikely to significantly affect the overall results. However, any number of similar, but unrevealed, problems may exist in the study as a result of applying transfer functions

developed in the Midwest to the Middle Atlantic region (Miller, Vento, Marine and Pollack 2004).

Alluvial stratigraphy is also cited as evidence for warm, dry conditions in the Late Holocene. Increases in overbank deposition rates have been interpreted as indicating increased runoff resulting from decreased vegetative cover. Such interpretations are based in part on Knox's (1972) study of the morphology of stream channels and floodplains in southwestern Wisconsin. Knox interprets increased alluviation prior to 6000 yrs. B.P. as resulting from a warm, dry period in which climate was primarily influenced by dry westerlies. This period is well documented in the pollen profiles of the Midwest, which indicate an eastward migration of the Midwestern prairie prior to 6000 B.P. (King 1980). Following 6000 yrs. B.P., Knox theorizes that increasing rainfall and vegetation would have resulted in a decrease in the magnitude and frequency of peak flows, thus decreasing overbank deposition. Knox notes that the period of greatest sediment yield during the climatic evolution from humid to arid to humid conditions would have occurred at the end of the warm, dry period, during which vegetation was at a minimum but rainfall had increased (Miller, Vento, Marine and Pollack 2004).

Studies of alluvial stratigraphy in the Middle Atlantic region indicate that overbank deposition was rapid during the period between approximately 5000 and 3000 yrs. B.P. Vento and Rollins (1989), Vento, Rollins, Vega et al. (2008) have identified rapid vertical accretion in the Ohio and Susquehanna River basins, consisting of sediments with Late Archaic and Transitional Period cultural material. Scully and Arnold (1981) found evidence of increasing vertical accretion in the Upper Susquehanna Basin after 4900 yrs. B.P. Carbone (1976) points to the rapid deposition of culturally sterile, sandy clay loam between 5000 and 2700 years ago as an indication that vegetation was at a minimum as a result of increased temperatures and decreased rainfall (Miller, Vento, Marine and Pollack 2004).

Despite the significance of Knox's studies for understanding the relationship between the climatic changes of the climatic optimum and the stream channels and floodplain characteristics of the Midwest, the presence of similar alluvial characteristics in the Late Holocene (Subboreal) of the Middle Atlantic region does not necessarily indicate that the same climatic changes were in progress. Hydrological studies show that the magnitude of precipitation decrease needed to substantially affect the sediment yield and flood size is quite large. According to data gathered by Langbein and Schumm (1958), a decrease in precipitation causing vegetation change from forest to grassland would result only in a 30% increase in sediment yield. Late Archaic and Transitional Period overbank deposition apparently increased to at least this degree, yet there is no evidence in pollen profiles of grassland vegetation during this period. Data presented by Knox (1972) indicates that changes in mean annual precipitation have little effect on flood size above 650 mm mean annual precipitation. Modern precipitation in the Susquehanna, Delaware, and Ohio River basins are approximately 900 mm annually. Thus, for decreased rainfall to affect either the sediment yields of drainage basins or the magnitude of overbank flooding, arid conditions would have been required. As noted above, there is no evidence of vegetation changes in the Late Holocene pollen data of the Middle Atlantic region that would indicate a change to arid conditions. At most, the pollen data cited as evidence for a

warm, dry period would indicate a shift in overstory composition involving an increase in xeric species. However, as noted above, this interpretation of the pollen profile is not irrefutable (Miller, Vento, Marine and Pollack 2004).

Vento and Rollins (1989) and Vento et al. (2008) accept the hypothesis of a warm, dry Subboreal, and attribute rapid vertical accretion to changes in atmospheric circulation patterns. Based on Knox's (1983) discussion on the effects of zonal vs. meridional circulation, Vento et. al (2008) and Joyce (1988) point to an increase in meridional circulation that resulted in more frequent cyclonic storms, which caused more frequent overbank flooding. Miller (2008) notes that an explanation for the increase in alluvial deposition does not depend on an overall decrease in precipitation and/or decrease in vegetation. Although there are at present no independent supporting data for this interpretation, the hypothesis is not in conflict with the pollen data as is the hypothesis of severe climatic change (Miller, Vento, Marine and Pollack 2004).

Miller et al (2004) further notes that there is no conclusive evidence of a widespread warm, dry climate such as that hypothesized by Carbone (1976) and Curry and Custer (1982) for the period between 5000 and 2600 yrs. B.P. Rather, data suggest that modern levels of temperature and precipitation prevailed in the eastern United States and the Ohio River drainage basin in general. Cyclonic storms, as evidence by flood scouring and the deposition of coarse-grained material on the floodplain, likely occurred with greater frequency than in previous periods. Floodplain and terrace soils supported mesophytic species such as beech, oak, tulip tree, ash, sugar maple and walnut. Upland soils supported forest communities dominated by chestnut, hickory, and oak. The Late Holocene forest differed from the modern forest primarily in age structure, the Late Holocene vegetation being an all-aged forest containing a mosaic of gaps caused by falls of senescent trees and in various stages of regeneration. These gaps supported a variety of edible resources that grow best in the open, including blackberries, raspberries, and a variety of tubers (Miller, Vento, Marine and Pollack 2004).

Paleoflora

The major expansion of the Laurentide ice sheet took place beginning in the Late Wisconsin stage, about 23,000 years B.P. and culminated in a maximum ice advance at approximately 18,000 years B.P. The ice sheet was in full retreat once again by ca. 10,000 years B.P. Earlier glacial advances existed briefly far to the north of the project area from about 84,000 to 73,000 yrs. B.P. and were followed by a long interglacial/interstadial stage with accompanying soil horizon development at ca. 30,000 years B.P. Another climatic deterioration began at ca. 23,000 yrs. B.P. and culminated in the glacial maximum noted above at ca. 18,000 B.P. Interglacial/interstadial climatic conditions were again established but with a lengthy, slow transition characterized by several ice advances or pulses that lasted from ca. 15,000 years B.P. to ca. 10,000 yrs. B.P. (Watts 1980, Watts 1983:300). During all of the Pleistocene Epoch, ice was absent from this portion of northern Pennsylvania and specifically from the project area. Although ice never reached Allegheny County, the effects of glaciation in the form of periglacial landforms and features are clearly present throughout Allegheny County. Typical landscape features are rock fields, rock streams, alluvial fans and asymmetric valleys. A

number of late Wisconsin age floral localities in Pennsylvania (e.g., Rose Lake, Crider's Pond, Longswamp, Tannersville Bog and Corry Bog) have provided important information on the tentative reconstruction of the probable floral community present in the general project area during the full-glacial (Woodfordian Stade) and also during the final retreat of the late Pleistocene ice sheets.

At approximately 13,000 years B.P. the principal floral taxa present at Crider's Pond in south-central Pennsylvania included jack pine (*Pinus banksiana*), fir (*Albies sp*), birch (*Betula sp*) and alder (*Alnus rugosa*). These taxa replaced the species-poor spruce (*Picea sp*) woodland recorded for the full-glacial (circa. 18,000 yrs B.P.). A similar floral assemblage invaded the spruce (*Picea sp*)-dwarf birch (*Betula glandulosa*) association at Longswamp in southwestern Pennsylvania (Watts 1979); where gray birch (*Betula populifolia*) was also present (Watts 1983:306). Additionally, recent investigations at Corry Bog in northwestern Pennsylvania by Cotter (1983), Cotter and Crowl (1984) and Karrow et al. (1984) indicate that the spruce pollen zone in Pennsylvania occurs between 14,250 to 11,250 B.P. Cotter (1983) and Cotter and Crowl (1984) state that the herb pollen zone lasted from 18,500 to 14,250 B.P. and that the basal age of the spruce pollen zone of sites near the Woodfordian drift border of Pennsylvania is approximately 14,250 B.P. rather than the 12,600 B.P. as suggested by Karrow et al. (1984).

Watts (1983:307) notes that clear differences exist between the floral history of the periglacial region to the south (i.e., Longswamp and Crider's Pond) and that of the region, which was ice covered (i.e., Tannersville and Corry Bogs). Sedge-dominated pollen floras at Tannersville Bog parallel the grass dominated tundra flora at unglaciated Longswamp, which was located at the edge of the ice margin. Since Tannersville Bog is outside the drift border, in what must have been a similar ecotone during the late Pleistocene, it presently offers the best reconstruction of what probable taxa were present within the general study area during the period 25,000 to 10,000 yr B.P. At the end of the Pleistocene at Tannersville Bog, the demise of sedge, aspen (*Populus tremuloides*), and green alder (*Alnus crispa*) and the invasion of spruce (*Picea sp*), fir (*Albies sp*), jack pine (*Pinus banksiana*), gray birch (*Betula populifolia*) and pitch pine (*Pinus rigida*) can be demonstrated to have occurred between 13,000 and 9,000 yrs. B.P. (Watts 1983:307).

An in-depth review of tree successions has been discussed extensively in the recent literature (Davis 1976; Watts 1973; 1979; 1980; 1983). This data suggests that the population of each tree species behaved independently of other taxa in response to climatic change (Watts 1983:307). Davis (1969) notes that the northeastern forest advance was a relatively slow process. At Rodger's Lake, Connecticut glacial ice had retreated and tundra was present for over 2000 years before the invasion of spruce (*Picea sp*) took place, although spruce was already present in unglaciated Pennsylvania as the ice withdrew (Davis 1969). For a more detailed review of paleoclimatic changes in Pennsylvania as they relate to genetic stratigraphy and atmospheric circulation change see Vento and Rollins (1989).

In sum, following the retreat of the late Wisconsin glaciers ca. 15,000 years B.P., tundra plants colonized the landscape in south-central Pennsylvania. Tundra pollen assemblages from late-glacial deposits in the eastern United States contain high (up to 40%) percentages of

sedge pollen. At this time (circa. 15,000 yrs. B.P.) forests of spruce and pine in the south were replaced by deciduous trees (Davis 1983:179). At ca. 12,000 yrs. B.P. spruce woodland replaced tundra in western Maryland, western and central New York, and southern New England. The appearance of spruce over such a wide area indicates: 1) the rapid migratory speed of spruce and 2) a climatic amelioration at 12,000 yrs. B.P. that allowed spruce to grow in regions where it was previously limited by climate (Davis 1983:179). At about 10,000 yrs. B.P. forests of variable composition expanded across the northeast. These forests underwent a series of successive changes with the arrival of new northward migrating taxa. By 5,000 yrs. B.P. in the northeast, a number of taxa indicative of warming and drying declined in abundance. This vegetative trend signals the end of the Middle Holocene age Hypsithermal/Altithermal climatic event. According to Davis (1983:179), at about 2,000 yrs. B.P. (regionally between 5,000 to 1,000 yrs. B.P.) boreal elements of floral and faunal communities began to increase in greater frequency, which is suggestive of the onset of cooler climatic conditions. This cooling trend appears to continue even into the present.

Paleofauna

During the Late Pleistocene, the development of open grazing lands and boreal forests would have supported a wide array of mammals adapted to cool climates. Evidence suggests that these types of biomes along the glacier's southern margins were exploited by megafauna indigenous to these areas, specifically the woodland musk ox (*Ovibos moschatus*), mastodon and woolly mammoth (*Mammut* sp.), barren ground caribou (*Rangifer tarandus*), giant beaver (*Castoroides* sp.), and moose-elk (*Cervacles scotti*) [Cleland 1966: 91-92; Prufer and Baby 1963:55; Ritchie and Funk 1973]. Recent studies at Sheridan Rockshelter in Wyandot County, Ohio note the presence of flat headed peccary and giant beaver at 11,060 ±60 yrs. B.P. and 10,850 ±60 yrs. B.P., respectively (Waters, Stanford, Redmond, Tankersley 2009). The dates for these now extinct fauna overlap the date on a Clovis age bone point recovered during excavation of the site (Redmond and Tankersley 2005).

The Pleistocene fauna of the United States can be characterized as a combination of 1) extinct megavertebrates and 2) extant temperate megavertebrates and microvertebrates in association with now disjunctive large and small northern species (Semken 1983:192). The Holocene fauna of central Ohio is generally composed of the second category. Semken (1983) states that this reduction in the number of species has led a number of authors (Martin 1967, Martin and Webb 1974, and Semken 1974) to regard the Holocene biotic record as impoverished or depauperate as compared to the high species densities characteristic of the late Pleistocene (Graham 1976a, 1979). This faunal change is used to define the Pleistocene/Holocene transition. Clearly, the megafauna of the Late Pleistocene suffered massive extinction and was replaced by smaller animals that filled the opening faunal ecological niches. Discontinuities in the vertebrate record appear at roughly 12,500; 10,500; 8,500; and 5,000 yrs. B.P. Within the general project area the response time of various vertebrate species to deglaciation and subsequent climatic change was highly variable from one species to another. However, in a fashion similar to the pollen record for the Midwest and Northeast, the concept of a vertebrate transition within a few hundred years after deglaciation appears valid (Semken 1983).

3
Cultural Context

The proposed pipeline route in southwestern Pennsylvania traverses Greene Township, Shippingport Borough, Raccoon Township, Potter Township, and Independence Township in Beaver County; Findlay and North Fayette townships in Allegheny County; and, Robinson, Chartiers, and Mount Pleasant townships in Washington County. The route is located in Pennsylvania's Allegheny Plateaus physiographic province. It crosses the undulating terrain and shallow valleys of the Pittsburgh Low Plateau Section in the north and the narrow hills and steep-sided valleys of the Waynesburg Hills Section to the south (Sevon 2000).

NATIVE AMERICAN CONTEXT

Human occupation in the Upper and Middle Ohio Valley extends to approximately 16,000 B.P., as documented at Meadowcroft Rockshelter, the earliest known habitation site in eastern North America. The following chronology details the broad cultural changes in prehistory along the Upper and Middle Ohio River to provide context for pre-contact Native American lifeways.

PALEOINDIAN PERIOD: BEFORE 10,500 B.P.

The age of the earliest occupation of the American continents remains controversial. Although sites characterized by the presence of fluted points are considered by many to represent the first immigrants, hundreds of sites have been advanced as indicating an earlier, or pre-Clovis, occupation of the New World. Adovasio (1993) argues for the presence of humans in the region by circa 15,950 B.P. at the Meadowcroft Rockshelter site in Washington County, Pennsylvania. Recent findings at Cactus Hill in Sussex County, Virginia, have provided support for a pre-Clovis occupation. At this site, a radiocarbon date of 15,070±70 B.P. was associated with several clusters of core blade tools found below a Clovis occupation radiocarbon dated to 10,920 ± 250 B.P. (McAvoy and McAvoy 1997). Two spear points, described as "thin, lanceolate, almost triangular," were found in good context below the Clovis level (McAvoy and McAvoy 1997). Meltzer (1988) interpreted Paleoindian occupation as focused along major drainages and quarry locations. Many of the Paleoindian sites indicate anticipated mobility strategies that highlight riverine and quarry landscapes.

Traditional scenarios suggest that Paleoindian groups associated with fluted Clovis points first occupied the northeastern United States between 12,000 and 11,000 years ago. Pollen analyses indicate that during the period 12,000–10,000 B.P., the Middle Atlantic region was covered with a boreal forest composed primarily of pine and birch that shifted to pine and oak as temperatures warmed (Dent 1995). Similar vegetation cover extended throughout much of the region, although the presence of favorable microenvironments arising due to topography, solar exposure, and surface water (ponds, lakes, and rivers) exerted a considerable influence on pre-contact subsistence and adaptation strategies.

Paleoindian occupants would have co-inhabited the region with diverse fauna. The mammoth, oriented to more open habitats, disappeared from the area prior to the arrival of humans, but forest mastodons may have been contemporaries of the earliest Paleoindians. The image of early humans as hunters of megafauna requires substantial revision throughout the eastern United States due to differences in ecological niches (Meltzer 1993; Custer et al. 1994). The diet instead was based on the diversity of flora and fauna available. Deer and caribou would have been common inhabitants of the Early Holocene forests, as well as a range of smaller fauna (i.e. beaver, hare, and arctic fox) (Dent 1995). The proximity of stream and riverine habitats to Paleoindian archaeological sites supported aquatic resources, both animal and plant in nature.

Subsistence strategies during the Paleoindian period in the Eastern Woodlands were more diverse than the typically imagined big-game hunters of the Great Plains. Strategies included a diverse collection of plants including chenopod, blackberry, walnut, and hickory nuts, among others (Dent 1995). Meltzer argues that northeastern groups occupied open habitats and pursued mobile game, such as caribou, while southeastern groups in boreal forests exploited more diverse resources of flora and fauna. Differences in foraging strategies were likely related to the availability, distribution, and predictability of flora and fauna. The presence of caribou in the region increased the predictability of fauna distribution based on regular movement patterns which allowed for planned hunting instead of solely encounter hunting. Unlike on the Great Plains, regularly used flora was wider spread and more diverse. The availability of more diverse resources led to an increase in diversity of the diet.

A dominance of higher-quality cryptocrystalline lithic materials in Paleoindian lithic assemblages has long been noted and reflects, according to Goodyear (1979), the technological needs and organizational strategies of mobile populations. Lithic procurement patterns thus reflect the varying scales of subsistence territories and the different degrees of movement within those territories. The distribution of raw materials was anticipated through group organization and mobility strategies. Meltzer (1989) suggests a latitudinal distinction in raw material procurement patterns circa 11,500 to 10,000 B.P. Paleoindian sites in the northeastern United States are often, but not always, dominated by materials transported distances in excess of 60 miles, while those in the southeastern United States are generally dominated by locally available lithics. Curation of these materials within the organization of technology based on anticipated needs supported an increased mobility strategy for the purpose of resource acquisition throughout diverse ecological niches (Binford 1979).

Gramly and Funk (1990: 13-16) describe five types of sites during the Paleoindian period (quarry-workshops, habitations, kill-butchering sites, burials or caches, and isolated/stray finds). Sites along the Ohio River, particularly in floodplains near stream confluences indicate hunting activities and an anticipation of predictable fauna, like caribou (Broyles 1967). Paleoindian groups were small, highly mobile bands of hunter-gatherers with a subsistence strategy based on caribou and a diverse subset of resources.

Southwestern Pennsylvania contains several well-known Paleoindian sites, including one of the most prominent Paleoindian site in the eastern U.S, Meadowcroft Rockshelter (36Wh0297). Meadowcroft is located approximately 50.00 kilometers (31.07 miles) west of Pittsburgh,

Pennsylvania, and approximately 19.00 kilometers (11.80) miles west of the proposed pipeline corridor. The rockshelter proper is situated above Cross Creek, a tributary of the Ohio River, and consists of a large, south facing sandstone overhang. Initially investigated in 1973, archaeologists recovered artifacts from both the historic and prehistoric periods in North America. A majority of the artifacts came from later Woodland occupations of the rockshelter. Most notably though, are the artifacts recovered from middle and lower Stratum IIa. Middle Stratum IIa, bracketed by radiocarbon dates of 11,300 and 12,800 BP produced the unfluted Miller Lanceolate, while lower Stratum IIa produced nearly 700 artifacts and is bracketed by six radiocarbon dates between 12,800 and 16,175 BP (Meltzer 2009).

Other examples of formally excavated Paleoindian sites are found within the Raccoon Creek and Cross Creek drainages. Mungai Farm (36Wh0106) is situated on a ridge divide between a tributary of Raccoon Creek and the South Fork of Cross Creek, approximately 7.24 kilometers (4.50 miles) west of the proposed pipeline route. The site consists of multiple site localities spanning the Paleoindian Period through the later Archaic and Woodland Periods. Mungai Farm's Paleoindian component consists of Miller points, which were recovered from find spots near the headwaters of upland streams (MacDonald 2003:28). The Mungai Saddle (36Wh0110) is one such site, consisting of three fluted points and several reject preforms, though little else is documented about the assemblage Lantz (1984:211). The Pershina Farm Site (36Wh0608) also yielded Miller type points as the entirety of the identified Paleoindian component (Boldurian 1985:303). Isolated Paleoindian finds occur within 6.50 kilometers (4.00 miles) of the proposed pipeline corridor, including a fluted point recovered along Chartiers Creek at Lowry #10 (36Wh1119) and a series of three fluted points from a hilltop overlooking George's Run at Martin #7 (36Wh0059).

A total of 30 Paleoindian sites were identified within Allegheny, Beaver, and Washington Counties in Pennsylvania. The Paleoindian sites are broken into six site types including open habitation, prehistoric (n=14), open prehistoric site, unknown function (n=9), isolated find (n=2), rockshelter/cave (n=2), village (n=2), and unknown function open site greater than 20 meter radius (n=1). The site type distribution indicates limited variation in site types focusing on general purpose sites with small numbers of artifacts recovered. The "village" designations are attributable to later components for the two sites listed – Hayden Farm (36AL0026) and Cuprik (36WH0223).

EARLY ARCHAIC: 10,500–8000 B.P.

The Early Archaic had a similar cultural expression to the Paleoindian period with changes in the climate likely precipitating change in subsistence strategies and group behavior. Changes in social organization from the Paleoindian to Early Archaic include shifts in intrasite patterning of activities indicating larger social groups, increased population, longer stays at base camps, and increased activities at habitation sites (Gardner 1974). While many of the activities remain constant from the Paleoindian period, there was an increase in tool types that allowed access to a broader resource base. Gardner (1974) also argues that the appearance of new site types such as processing sites and the presence of notched points in a greater variety of ecological settings

indicates a reduction in the size of exploited areas and an increase in the exploitation of seasonally available resources (Dent 1995). Likewise, Stewart (1980) interprets broad settlement patterns from the Hagerstown Valley of Maryland as suggesting a refocusing of hunter-gatherer strategies on new species during the Early Archaic. Meltzer and Smith (1986) cite an increase in the number of plant and animal species utilized, as well as the addition of less-desirable resources, such as riverine species. The ecological range of caribou was shifting to the north with the shift to a primarily deciduous environment. The pattern of changing strategies would be expected, given the gradual yet significant changes in the environment due to shifting climate throughout the period.

Gardner (1989) defines three sub-phases of the Early Archaic period based on point types. The earliest sub-phase is characterized by corner-notched points, such as Palmer, Kirk, and Amos. Kirk and Palmer corner-notched points in the eastern United States date to circa 8900 to 9500 B.P. The subsequent phase of the Early Archaic is characterized by side-notched points with ground notches, including Warren, Big Sandy, and Kessel. The final stage is characterized by Kirk and other stemmed points. All three sub-phases were present in the Ohio Valley.

Bifurcate-base points, such as St. Albans, Kanawha, and LeCroy, are also characteristic of the Early Archaic period but their use extended into the Middle Archaic. St. Albans points have slight side notches and deep basal notches, and are found in contexts dating to circa 8900 to 8500 B.P. in the southeastern United States (Chapman 1985). LeCroy and Kanawha are stemmed points with bifurcate bases and generally date between circa 8500 and 7800 B.P. in the southeastern United States. Some evidence suggests that bifurcate-base points were in use in the northeastern United States earlier than 8,500 years ago (Bergman et al. 1994; Funk 1979).

Very little information is available on Early Archaic subsistence, although data points to the use of an increased variety of plant and animal resources (Meltzer and Smith 1986). Botanical remains from Early Archaic components at Shawnee Minisink included several types of fruit and berries—ground cherry, blackberry, cherry, grape, and pokeberry, with ground cherry by far most abundant (Dent and Kauffman 1985). Seeds of pioneer species—that is, plants that grow on open ground and are prolific seed producers—included amaranth, chenopodium, and smartweed. There is abundant evidence in the eastern United States to indicate that these species were utilized as foods later in the Archaic Period, but given their small numbers, the seeds may have been incidental inclusions in the Early Archaic context. Excavations at the St. Albans site recovered hickory, walnut, acorn, and chenopod (Snider 1971).

Because of the limited number of identified Early Archaic sites, analysis of settlement patterns and foraging strategies is problematic. Early Archaic sites occur with high frequency in close proximity to high-quality lithic resources, such as jasper, and riverine ecological niches (Gardner 1974; Hay and Stevenson 1984). Site data also suggest that in any given region, a greater variety of topographic settings were used relative to the Paleoindian period. Sites during the Early Archaic period combine larger base camps and smaller short-term sites. These settings were characterized by access to faunal and riverine resources, and as well as high-quality lithic sources. The inclusion of adzes and celts to the toolkit indicates an increased reliance on

woodworking activities. Woodworking may have included more permanent housing structures and canoe building.

One of the best-known Early Archaic sites in the eastern United States is St. Albans, a deeply stratified site located on the Kanawha River floodplain. The preliminary site report identified as many as 18 cultural zones with over 200 features (Broyles 1971). Features included prepared hearths, storage basins and pits, and clay floors (Dent 1995). The site provided valuable data on projectile point styles and sequence for the Early Archaic. A series of individual Early Archaic camps in stratified context was identified at Site 36PE16 on the Susquehanna River (Miller et al. 2007). In contrast to the St. Albans Site, the camps generally produced no features and very low artifact densities, suggesting very short-term occupations. Microwear analysis indicated that butchering and fresh hideworking were the predominant activities. The comparison of features of the sites here indicates multiple strategies of camp organization based on access to resources and mobility.

A total of 168 sites dated to the Early Archaic in the project area (Allegheny, Beaver, and Washington Counties) and can be divided into 11 site types. The primary site types identified include open habitation, prehistoric (n=93) and open prehistoric site, unknown function (n=34). The remaining site types in order of prevalence include lithic reduction (n=8), Primary Historic (n=7), village (n=6), unknown function open site greater than 20 meter radius (n=6), rockshelter/cave (n=4), historic and prehistoric (n=3), isolated find (n=3), unknown function surface scatter less than 20 meter radius (n=3), and cemetery (n=1). The historic sites are either primarily identified as historic sites based on the artifact assemblage or have mixed provenience. The increased variation in site types corresponds with the expectations for the time period indicated by an increase in sites and site types, but a relatively consistent expression of site based functions as indicated by potential site activities.

MIDDLE ARCHAIC: 8000–6000 B.P.

The Middle Archaic Period followed trends similarly to the Early Archaic Period. Population increased and there was an increase in the spectrum of resources exploited. With the increased population came a parallel increase in sedentism. The Middle Archaic climate, warmer and drier than present due to the Altithermal climate period, may have been somewhat less productive than during later periods. Use of some areas may have been limited due to lack of available surface water. Middle Archaic components are generally rare in the Ridge and Valley Province, although they frequently occur at multicomponent sites along the Susquehanna River floodplain. Populations may have been larger during the warm months with group fissioning during the colder months based on resource productivity.

Bifurcate-base points—such as St. Albans, Kanawha, and LeCroy—generally date to the period encompassing the end of the Early Archaic and the beginning of the Middle Archaic period. Although the use of bifurcate-base points began in the Early Archaic, many researchers assign them to the Middle Archaic because their distribution and lithic material appear to differ from Early Archaic point types (Carr 1998; Gardner 1989; Stewart and Cavallo 1991; Wall 1991).

Stanly notched-base projectile points have been argued to be a later form of the bifurcate base tradition (Chapman 1975).

Other projectile points characteristic of the Middle Archaic include Otter Creek, a side-notched point associated with the proto-Laurentian tradition, and Abbott and Kittatinny points, first identified at the Shawnee-Minisink Site (McNett 1985). The Amos point, a corner-notched projectile point, was present in the Upper Ohio Valley dating between 4790 B.C. and 4365 B.C. (Maslowski 1983). There is increasing evidence that triangular points, classified as Hunterbrook triangles, were in use during the Middle Archaic (Stewart and Cavallo 1991). Also, generalized stemmed and side-notched points are found in Middle Archaic contexts. Researchers have noted that points from the Middle Archaic are frequently fashioned from flakes rather than through biface reduction, suggesting an expedient technology that may be related to decreased mobility (Custer et al. 1994; Stewart and Cavallo 1991).

Gardner (1989) and Carr (1998) see a discontinuity in settlement patterns between Early Archaic and sites with bifurcate-base points that is interpreted as reflecting changes in adaptation associated with a more seasonal environment. Mobility strategies begin to shift toward logistical patterns of larger base camps and smaller, seasonally used resource extraction camps (Binford 1980). Carr (1998) concluded that bifurcate-base sites were more intensively used and/or more frequently re-visited than during earlier periods. His analysis of site data from Pennsylvania indicates that bifurcate points exhibit a wider range of lithic material types and a lower proportion of non-local materials than points from the Paleoindian or Early Archaic periods. There is some evidence to conclude that a shift from curated to more expedient technologies began during this period (Carr 1998; Stewart and Cavallo 1991).

In contrast to the predominance of multi-purpose tools found in Early Archaic contexts, Middle Archaic artifact assemblages reveal the gradual development of specialized technology, including an increase in the variety in tool types and the evolution of a groundstone tool technology (Stewart and Cavallo 1991). For instance, the occurrence of adzes and axes indicates the importance of heavy woodworking (Stewart and Cavallo 1991). The addition of formal plant-processing tools—such as grinding stones, mullers, and mortars and pestles—to the toolkit represents technological means of reducing the time and energy costs of food processing. The use of polished netsinkers and bannerstones also indicates the importance of tool technology in subsistence tasks.

Little evidence regarding the Middle Archaic diet is available. Stanly-like points were recovered near a cluster of features containing carbonized nutshell and surrounded by tools for processing nutmeats at the Rockelein Site (Dumont and Dumont 1979). Charred nutshells were associated with features of the Middle Archaic at Area D of Abbott Farm (Stewart and Cavallo 1991). Both sites are on the Delaware River. It is likely that Middle Archaic hunter-gatherers exploited a variety of nuts, berries, tubers, and faunal resources.

Middle Archaic settlement patterns are not well understood, because of the relatively low site density, but occur in a wider range of topographic setting in the Middle Atlantic region. Weed's (2002) site data analysis for western Pennsylvania indicates a continuation of the Early Archaic

focus on benches and terraces along streams. Most sites are small camps or habitation loci. Middle Archaic features generally consist of hearths and fire-cracked rock (FCR) clusters (Weed 2002). Social complexity is perceived as similar to the Early Archaic period, except for some development of cemetery-like mortuary sites (Dent 1995).

The Middle Archaic is better represented within the region than the Early Archaic, with sites within and in the vicinity of the proposed pipeline corridor. Site 36BV0019 is a lithic reduction site located on a terrace overlooking Raccoon Creek, and is within the footprint of the proposed project corridor. The PASS files note two bifurcate points within the lithic assemblage. The Wilson Triangle Site (36BV0020) is located 0.96 kilometers (0.60 miles) southeast of the proposed pipeline corridor on the Raccoon Creek floodplain, and yielded Saint Albans and LeCroy points, as well as bifurcates.

A total of 287 sites were identified in Allegheny, Beaver, and Washington counties. The increase in the number of sites is indicative of increased population. The sites can be split into 13 site types including: open habitation, prehistoric (n=141), open prehistoric site, unknown function (n=94), lithic reduction (n=16), unknown function open site greater than 20 meter radius (n=10), historic and prehistoric (n=9), village (n=6), unknown function surface scatter less than 20 meter radius (n=5), cemetery (n=1), primary historic (n=1), isolated find (n=1), other specialized aboriginal site (n=1), rockshelter/cave (n=1), and petroglyph/pictograph (n=1). While the site types include more diversity in function, the majority of sites retain the general use categories and tool working.

LATE ARCHAIC: 6000–4000 B.P.

The number of archaeological sites increases during the Late Archaic throughout the eastern United States partly due to the increased visibility of sites and partly due to population increase. A consequence of the population increase was a decrease in foraging territory available to each band, but an increased reliance on zones of resource diversity and predictability. Several facts support this conclusion. First, a variety of specialized tools have been recovered from archaeological contexts, suggesting continued technological innovations to efficiently exploit a wider variety of locally available resources. Second, lithic materials exhibit a wider variety of types and qualities than in earlier periods, suggesting an increased use of local lithic materials (Kinsey 1971; Snethkamp et al. 1981; Voight et al.1998). Finally, dietary data suggest that populations added wild seeds to their diet late in the Archaic period to increase the resource base (Struever and Vickery 1973; Yarnell 1993; Chapman and Watson 1993).

Projectile point types representative of the period include stemmed and corner-notched points classified as Brewerton, Big Sandy 2, and Lamoka, among others. The Lamoka tradition is a western variant of the Piedmont tradition of the Eastern Woodlands Piedmont in Eastern Pennsylvania highlighted by narrow, stemmed projectile points. The stemmed and notched points seem to have origins in the Amos and Big Sandy point types from the Middle Archaic. The McWhinney Heavy Stemmed type dated between 4000 – 1000 B.C. in the Upper Middle Ohio River Valley. The Merom/Trimble tradition projectile points related to the Riverton culture of the later portion of the Late Archaic into the Terminal Archaic. Late Archaic lithic

assemblages are also characterized by an increase in the number of tool types, including woodworking tools, and in the use of locally available, often poorer quality, lithic materials, including cobble sources (Voight et al. 1998).

The trends toward use of a wider variety of food resources, increasing population density, and increasing sedentism involved gradual shifts in settlement patterns. Rather than moving from resource locality to resource locality on a frequent basis, populations appear to have established base camps in productive localities and to have made logistical forays to procure specific, localized resources (Binford 1980; Custer and Wallace 1982). Site types resulting from this procurement strategy include base camps and special-purpose camps. Base camps were probably occupied for longer periods than during the earlier Archaic. Special-purpose camps would result from a number of procurement activities, including hunting and butchering, nut gathering and processing, and the like. Parallel to an increase in sedentism was the use of storage based technologies including storage pits and steatite and simple ceramic vessels.

Subsistence data indicates that hunting and gathering of wild food resources remained the basis of the Late Archaic period diet. Carbonized nutshell is common in Late Archaic features (Creasman 1994; Miller et al. 2005; Voight et al. 1998). In addition to fruit, nuts, and acorns, pioneer seed species that inhabit disturbed and open ground—such as maygrass, chenopodium, and little barley—were harvested. However, there is also evidence that plant husbandry began during this period (Yarnell 1993) and eventually resulted in the domestication of species including sunflower (*Helianthus annuus* var. *macrocarpus*), chenopodium, and sumpweed (*Iva annua* var. *macrocarpa*) in what has been defined as the Eastern Agricultural Complex (Struever and Vickery 1973). The earliest evidence of horticulture dates to 4250–3950 B.P. and comes from sites in Illinois, Missouri, and Tennessee (Yarnell 1993). Squash (*Cucurbita pepo*) has been radiocarbon dated to as early as 7000 B.P. at Koster and Napolean Hollow in Illinois (Fritz 1999). Squash has been identified at Site 36SN21, located on the Susquehanna River, in a feature dating to 3780 ± 60 B.P. (Miller 1995) and at the Memorial Park Site (36CN164) on the West Branch of the Susquehanna, dating to 5404 ± 552 B.P. (Hart and Asch Sidell 1997).

Associated with the increases in population density and sedentism, there was an apparent increase in trade among hunter-gatherer groups during the Late Archaic. Evidence for trade relationships is strongest in the Mississippi River Valley, where copper, galena, and other materials were passed through exchange networks (Goad 1978). Ethnographic evidence suggests that these trade relationships had political as well as economic functions.

Late Archaic in southwestern Pennsylvania have been investigated with a number of formal CRM excavations. Sites like John Bush Farm (36Bv0052) have yielded grooved adzes in association with lanceolate and Steubenville stemmed points. The site sits on an upland hill ridge/toe overlooking a tributary of Raccoon Creek and has been interpreted as a resource procurement camp (MacDonald 2003: 60). Leetsdale (36Al0450) is located approximately 7.25 kilometers (4.50 miles) east of the proposed project corridor, on a terrace of the Allegheny River. Leetsdale is an important multicomponent site with stratified deposits dating to the Early Archaic, Middle Archaic, Late Archaic, Transitional Archaic, and Early Woodland. The Late Archaic component is notable for three identified Late Archaic occupations, during which time

the site terrace was a river island. These occupations included shellfish remains, Brewerton points, and an open hearth (MacDonald 2003:60). Also noted was an abundance of flaking debris and other evidence of chert cobble reduction (Hardlines 2002).

A total of 490 sites were previously identified within Allegheny, Beaver, and Washington Counties that were dated to the Late Archaic period. This represents the largest collection of prehistoric sites within a time period in this region. The sites are divided into 11 site types including: open habitation, prehistoric (n=286), open prehistoric site, unknown function (n=130), lithic reduction (n=22), unknown function open site greater than 20 meter radius (n=20), unknown function surface scatter less than 20 meter radius (n=10), village (n=8), historic and prehistoric (n=7), rockshelter/cave (n=3), primary historic (n=2), isolated find (n=1), and burial mound (n=1). The site types indicate a large number of general use sites with scattered artifacts with an increase in village type sites and lithic reduction sites. The first burial mound is also identified during this time period.

TRANSITIONAL ARCHAIC: 4000–3000 B.P.

Transitional Archaic sites are recognized on the basis of distinctive technological changes that took place circa 3950 B.P. One such change was the increased manufacture and use of both steatite (soapstone) vessels and plain, thick ceramics. Steatite was used in the manufacture of bowls that were able to withstand the application of high temperatures used in cooking. Known quarry sites occur in northeastern Maryland and southeastern Pennsylvania (Ward and Custer 1988). The material was widely traded and occurs on Transitional Archaic sites throughout the Middle Atlantic region. However, it is far less prevalent in the Ohio River drainage than it is in the Susquehanna River drainage. Likewise, early pottery types, such as Marcey Creek and Thom's Creek, are not found in western Pennsylvania.

A second technological innovation of the period was the manufacture of projectile points known as broadspears, classified as Perkiomen and Susquehanna broadspears, as well as Ashtabula, Savannah River, and Buffalo Stemmed points. Broadspears were likely used with atlatls, or spearthrowers. Broadspears are found on some sites in the upper Ohio drainage but are less prevalent than on sites in regions to the east. Atlatl weights, or bannerstones, were common on Transitional Archaic sites.

Fishtail points—such as Forest Notched, Orient, and Dry Brook—are believed to be later in the Transitional Archaic sequence than broadspears (Kinsey 1972; Kraft 1970) and immediately precede the Adena period (Wilkins 1979). Forest Notched points were found in a context dating to circa 3050 B.P. at the Leetsdale Site (36Al480), located on the Ohio River (Miller and Marine 2005). The points are also found in Early Woodland contexts.

A number of authors have interpreted site data as supporting a shift in settlement patterns to a more riverine focus and an associated increase in reliance on riverine resources, such as anadromous fish (Funk 1976; Kinsey 1972; Turnbaugh 1975; Witthoft 1953). The prevalence of netsinkers on Transitional Archaic sites is also presented as evidence for the importance of fishing (Mouer 1991). The presence of adzes and other heavy woodworking tools at Transitional

Archaic sites indicated a continuation of woodworking based activities (Turnbaugh 1975). Woodworking may have been used to construct dugout canoes for use in transportation along trade routes.

Native cultigens continued in importance, as indicated by large numbers of seeds found on sites in Missouri, Arkansas, Kentucky, Tennessee, and Alabama (Yarnell 1993). At Calver Island, in the Susquehanna River, residue analysis of steatite bowl fragments yielded starches, including *Hordeum/Elymus* type, indicating that seeds from grasses such as little barley, wild rye, or wheatgrass were processed in the vessels. In addition, 10 chenopodium seeds were found in a feature that was radiocarbon-dated to circa 3900 B.P. (Miller et al. 2007). The seeds had morphological characteristics suggesting the possibility that they were cultivated.

A rise in burial ceremonialism has also been noted in the eastern United States during this period (Dincauze 1968; Ritchie 1980; Voight et al.1998). Burial ceremonialism during the Transitional Archaic involved the use of red ocher, as well as the placement of grave goods (Ritchie and Funk 1973; Ritchie 1980). The elaboration of burial treatment suggests the beginnings of status differentiation that may have accompanied the establishment of more formal leadership roles, and led to the Adena culture. This political development would be expected as a result of population increase and increased sedentism, which in turn increased the need for means of conflict resolution.

Archaeological sites identified within the Transitional Archaic period numbered 59 within Allegheny, Beaver, and Washington Counties in Pennsylvania. A total of nine site types made up the collection including: open habitation, prehistoric (n=29), open prehistoric site, unknown function (n=9), village (n=5), Historic and Prehistoric (n=3), rockshelter/cave (n=3), unknown function open site greater than 20 meter radius (n=3), unknown function surface scatter less than 20 meter radius (n=2), burial mound (n=2), lithic reduction (n=2), and Primary Historic (n=1). The variety of site types indicates a similar pattern to the Late Archaic, centered on general use habitation sites. The Transitional Archaic is not as well documented in western Pennsylvania which may account for the steep drop in site numbers.

EARLY WOODLAND: 3000–2000 B.P.

The Woodland period is marked by the widespread use and technological innovation of ceramics and by the developing focus on cultigen use in the eastern United States. There was a continued focus on hunting, fishing, and gathering during this period which maintained a semi-sedentary mobility strategy. The earliest indication of ceramics in the Upper Ohio Valley was recovered from an apparent Terminal Archaic context in a large hearth feature at Meadowcroft Rockshelter, in association with a squash (*Cucurbita pepo*) seed and a radiometric assay on wood charcoal of 3065 +/- 80 B.P. The same feature yielded a Half-Moon Cordmarked sherd from a context dated 2815 +/- 85 B.P. The Woodland period also represents the beginnings of semi-permanent hamlets and villages with deep storage features, although camps and special-purpose loci continued as parts of the settlement strategy.

Early Woodland points include Adena Stemmed, Cresap Stemmed, and Forest-Notched types. Ceramics diagnostic of the period include Half-Moon Cordmarked, Fayette Thick, and Adena Plain. Early Woodland ceramics are generally thick and friable. The coiled Half-Moon ceramics are often associated with Forest Notched projectile points.

In the Ohio Valley, the Early Woodland is manifest as the Adena cultural complex. Populations occupied dispersed farmsteads or hamlets and practiced mortuary ceremonialism focusing on burial mound construction. The ceremonial burial features indicated a hierarchy-based social system. Burial mounds in the Adena style have been dated to as early as 1000 B.C (Seaman 1986: 458). Farmsteads were composed of circular houses with ceramics and storage pits. In the later portion of the Adena period, earthworks such as circular enclosures were constructed around the base of mounds. Mound sites, such as the McKees Rock Mound, Peters Mound, and Crall Mound, were present in southwestern Pennsylvania, but were destroyed during modern development (Weed 2002). Charnel houses were built toward the end of the Early Woodland for use in the death rituals (Dent 1995).

Early Woodland villages and hamlets occur in both riverine and upland settings and include the Thorpe Site (George 1998), located on an upland bench and the Crawford-Grist #2 Site, located near the Monongahela River (Grantz 1986). The Early Woodland component at the Leetsdale Site, situated on an Ohio River terrace, was interpreted as a long-term base camp occupied by multi-family groups (Miller and Marine 2005). While the population was larger than the Late Archaic population, the size of habitation sites was small with larger sites likely used for ritual function. Five Early Woodland houses and a possible sweat house were identified by George (1998) at the Thorpe Site. Early Woodland feature types include large roasting pits, basin-shaped hearths, and post molds. Earth ovens were found, but are relatively infrequent.

The procurement of nuts and other plant foods continued during the Early Woodland. Hickory and walnut/butternut shells are found in hearths and storage pits on many sites. Acorn shells, which are more fragile and therefore less likely to survive, are nonetheless dominant at the Crawford-Grist Site (36FA262) in Fayette County. Evidence of plant domestication during the Early Woodland includes two squash seeds in association with Half-Moon ceramics at Meadowcroft Rockshelter (Adovasio and Johnson 1981). Pollen evidence indicated a decreased forest canopy possibly related to clearing space for garden plots (Crites and Kerr 1991).

Indications of social complexity are manifested in an elaboration of burial practices associated with Adena material culture originating in Illinois and Ohio. Adena influence, transmitted via the Ohio River corridor, is encountered on a reduced scale at various locations in counties within southwestern Pennsylvania. Relationships were maintained through the trade of exotic materials with symbolic meaning (Railey 1991).

A total of 303 Early Woodland sites were identified in Allegheny, Beaver, and Washington Counties. The sites are sub-divided into 12 site types with the most common sites being open habitation, prehistoric (n=150), open prehistoric site, unknown function (n=74). The remaining site type groups include: unknown function surface scatter less than 20 meter radius (n=15), village (n=14), lithic reduction (n=12), burial mound(n=11), unknown function open site greater

than 20 meter radius (n=10), Historic and Prehistoric (n=8), other specialized aboriginal site (n=3), rockshelter/cave (n=3), primary historic (n=3), and earthwork (n=1). The number of sites increases from the Transitional Archaic and includes a greater focus on mounds, earthworks, and village based sites indicating a potential focus on increased sedentism and more complex social organization.

MIDDLE WOODLAND: 2000–1600 B.P.

The transition to the Middle Woodland is marked in part by the emergence and subsequent disappearance of Hopewell material culture in the Midwestern core area of Illinois. Population size increased during this period and horticulture gained importance as a subsistence strategy.. Small mounds and other influences from the Hopewell are largely confined to the Beaver and Mahoning River drainages (Weed 2002). While hunting and gathering is still a major part of the subsistence strategy, maize was introduced at this time. Social complexity varies from egalitarian bands to the tribe based Hopewell groups.
The Hopewell cultural group, who first emerged approximately 2000 years ago, was recognizable based on the use of earthwork construction and a complex exchange system. It is widely believed that the Hopewell groups are a later form of the Adena Culture from the Early Woodland. The Hopewell Interaction Sphere was the network of trade that spanned from the east coast, to the west coast, to Mexico. Trade items included copper from the Great Lakes, shells from the Gulf of Mexico, and obsidian from the Northwest, among others.

Projectile Point types include Raccoon and Chesser Notched, Murphys Stemmed, Jack's Reef corner-notched and pentagonal, Kiski notched, Garvers Ferry, Norton Corner- notched points, and triangular points. Ceramic types include Mahoning Ware, but Watson limestone-tempered, cordmarked types predominate (Weed 2002). The Norton points appear to show specialization and a stratified society. They are not found in village settings, only in burial caches (Montet-White 1968).

Burial mounds and rituals were still practiced during this time period. The burials were highlighted by an increase in grave goods in caches in the mounds. Middle Woodland burial mounds in the Middle Ohio River include the Marietta Works and the Grave Creek Mound Complex (McMichael 1963).

The Middle Woodland Period in Allegheny, Beaver, and Washington Counties can be described from the 367 sites that were found from this period. The sites are grouped into 13 site types highlighted by open habitation, prehistoric (n=169) and open prehistoric site, unknown function (n=115) sites. Other site types identified in the region include: unknown function open site greater than 20 meter radius (n=17), villages (n=17), lithic reduction (n=12), historic and prehistoric (n=9), unknown function surface scatter less than 20 meter radius (n=8), primary historic (n=6), burial mound (n=5), rockshelter/cave (n=4), other specialized aboriginal site (n=2), isolated find (n=2), and earthwork (n=1). The expression of sites in the region is similar to the Early Woodland with a greater focus on villages and earthworks including burial mounds compared to the Archaic periods.

LATE WOODLAND: 1600–900 B.P.

Distinctions between the Middle and Late Woodland phases are difficult to define, since many material culture forms that appear in the former extend into the latter, including Chesser Notched points, Garvers Ferry points, and Watson cordmarked ceramics. Manker and Snyder point forms are more frequently associated with the Middle Woodland. Backstrum Side-Notched points reflect Late Woodland occupation (George 1992a). Three major distinctions separate the two periods: full sedentism, agriculture, and the bow and arrow. Squash, beans, and maize were used to much greater productivity along with the continued focus on local cultigens. Hunting was still practiced, but was now done with a bow and arrow, which increased the diversity in fauna available for exploitation. Chiefdom level populations were present by the end of the Late Woodland period.

Johnson (1986) and George (1992a) have argued that two spatial groupings of projectile points occurred in western Pennsylvania during the Late Woodland. Jack's Reef Corner-Notched and Pentagonal, Raccoon Notched, and Levanna points are less common in the unglaciated Upper Ohio Valley compared with the glaciated Allegheny Plateau. When these points are found in the unglaciated area (i.e., southwestern Pennsylvania), they are located in interior uplands away from floodplain settings. By contrast, a different distribution for Backstrum, Chesser, Bennington, Kiski, and Garvers Ferry points has been interpreted by Johnson (1991) and George (1992a) as reflecting potential variability in settlement patterns and/or stylistic differences among separate populations.

Two patterns (Childers phase, Woods phase) in projectile point styles and ceramic styles have led some to believe there was a population replacement at circa A.D. 800 (Niquette and Hughes 1990). The Childers phase included small central villages with smaller extraction sites. The ceramics were simply decorated with some cord-marking. The ceramics had an S-twist cordage making style that was replaced by a Z-twist style in the Woods phase. Also in the Woods phase was a settlement change to dispersed farmsteads and a focus on maize agriculture. Projectile point types changed from the Chesser dart points to the Jack's Reef point styles.

Late Woodland sites increased in size from the Middle Woodland, but the smaller extraction sites were still present. Excavated Middle and Late Woodland sites in southwestern Pennsylvania include the Winters Knuckles Site (36WM432), located on a high terrace overlooking the Youghiogheny River (George 1991); the Backstrum #1 Site (36WM453), situated on upland terrain near a spring-fed creek (George 1992b); and the Billy Site #3 (36WM717), a probable Middle Woodland hamlet (George 1992b). The Winters Knuckles Site produced a rectangular house pattern with associated hearths and a charcoal pit, which George interpreted as dating to circa 600–900 B.P. based on diagnostic artifacts. The Billy Site #3 also produced a rectangular house pattern with associated hearths. Many of the residences include storage and midden features.

Evidence from the Ohio River Valley suggests that Middle and Late Woodland subsistence included native weed seeds, such as maygrass, knotweed, sumpweed, goosefoot, and little barley along with maize, squash and beans. The use of native seeds in southwestern Pennsylvania was

documented at the Dunsfort Site (King 1993). Squash was found at the Billy Site #3 (George 1992b) and maize was found in a Middle Woodland context at the Meadowcroft Rockshelter (Adovasio and Johnson 1981).

Previous archaeological investigations in Allegheny, Beaver, and Washington Counties identified 335 Late Woodland sites. The sites were separated into 13 site types after analysis including: open habitation, prehistoric (n=167), open prehistoric site, unknown function (n=72), villages (n=40), lithic reduction (n=12), unknown function open site greater than 20 meter radius (n=11), Primary Historic (n=9), historic and prehistoric (n=7), unknown function surface scatter less than 20 meter radius (n=6), rockshelter/cave (n=5), burial mound (n=2), isolated find (n=2), earthwork (n=1), and other specialized aboriginal site (n=1). The sites are indicative of a focus on long term settlement sites and general use sites with a smaller focus on special purpose sites.

LATE PREHISTORIC: 900–500 B.P. (CONTACT)

The Late Prehistoric is marked by the appearance of villages and smaller dwelling clusters associated with Monongahela Culture. A dramatic increase in population and increased sedentism associated with agricultural activity is indicated by the village sites of varying sizes and refuse/storage pits containing charred corn, as well as other subsistence remains. Stockade villages suggest a need for defense, possibly arising from competition with neighboring groups for land or other resources. A broad-based pattern of hunting and gathering was evidently maintained, since pit features contain quantities of charred hickory, walnut, and hazelnut shells; various wild plant seeds; bones of mammals, birds, and fish; mussel shells; and wood charcoal.

Monongahela sites often represent villages or smaller hamlets based on subsistence strategies that included domestic cultigens. Typically, circular house patterns are evident in post molds. Two house types have been identified in the lower Monongahela River regions. Post molds indicate structures with out-sloping walls, whereas sites in other areas have post molds indicating tension-pole, wigwam-like structures (Johnson 2001). The house structures are often in one or more rings around an open plaza area. Central hearths have been identified in many house structures and may have been destroyed by plowing in others. Enclosed storage pits, storage/refuse pits, and middens are other commonly associated features. Some sites have evidence of a stockade surrounding the village. An associated ditch, or stockade trench, has been documented at some stockade villages, including Gnagey No. 3 (George 1983) and the Campbell Farm Site (Johnson 1981). Burials are located both within and outside of the structures.

Smaller habitation sites, such as hamlets and farmsteads, are less well-studied. Only a few Early and Middle Monongahela small habitation sites have been excavated, including Grays Landing (36FA368, Raber 1993), the Saddle Site (Church 1995), and Mon City (Hart 1994). Johnson et al. (1989) present data suggesting that small habitation sites were more frequently located on floodplains rather than in upland settings. Raber et al. (1990) argue that small habitation sites were seasonal occupations involving village populations that dispersed during late winter after stored foods had been depleted. In contrast, Hart (1994) suggests that at least some of the smaller sites may have been year-round habitations representing part of a divided-risk strategy, wherein

groups in different topographic settings participated in regional economic networks that would mitigate localized food shortages.

Monongahela populations utilized a variety of local and non-local lithic resources. Tools include projectile points, scraping tools, bifaces, drills, and groundstone tools, such as celts, hammerstones, and nutting stones. Projectile points are typically triangular. Personal items such as discoidals, chunky stones, cannel coal pendants, and pipes are commonly found on Monongahela sites. Bone tools and beads are also abundant. Relatively high frequencies of ceramics are found with decoration and surface treatments that distinguish temporal sub-periods. Grit- and limestone-tempered ceramics gave way to the predominant use of shell as temper.

Subsistence included domesticated crops such as maize, beans, squash, and sunflower. Although the recovery of charred nutshell indicates that wild plant foods continued to provide part of the diet, studies of human bones and teeth indicate that maize comprised a large proportion of the diet (Farrow 1986; Sciulli and Carlisle 1975, 1977). Faunal resources included deer, turtles, fish, and shell fish (Church 1994). Netsinkers are generally absent and bone fish hooks are rare, suggesting that fishing involved the use of weirs (Johnson et al. 1989).

Most Monongahela villages have evidence of trade or exchange, often in the form of exotic lithic materials, such as Vanport and Upper Mercer cherts from eastern Ohio. Marine marginella beads are the most frequently reported non-lithic trade item on Monongahela sites, whereas conch columnella beads are less common (Hart 1993). Both are generally found in burial contexts.

Archaeological investigations have identified a total of 13 Late Prehistoric sites in Allegheny, Beaver, and Washington Counties. The time period includes five site types. The sites can be divided into open habitation, prehistoric (n=5), open prehistoric site, unknown function (n=4), historic and prehistoric (n=2), isolated find (n=1), and village (n=1). The Late Prehistoric period is poorly defined, partially due to the influence of European populations on native groups, and partially due to limited cultural variation between the Late Woodland and Late Prehistoric.

HISTORIC CONTEXT

Settlement of Southwestern Pennsylvania

During the early contact period, Western Pennsylvania was occupied by various Native American groups, most notably the Iroquois and Shawnee. During this time, the fur trade acted as a primary means of commerce between Native Americans and Europeans. In addition, the fur trade provided opportunities and the impetus for Native Americans to dominate over other indigenous groups. The Iroquois Confederacy prospered greatly because of the fur trade, and, by 1640, had greatly expanded their territory through conquest and treaty. This expansion, which reached beyond their homeland in present-day upstate New York, was driven by the Iroquois's need to maintain their advantageous position within the fur trade. After the 1675 conquest of the Susquehannocks in the central Susquehanna River valley, the Iroquois Confederacy extended its

dominion over the Upper Ohio and Allegheny valleys, displacing many native groups (Wallace 2005:88; Schoolcraft 1847:155).

Fleeing European encroachment and Iroquois dominion in the east, the Delaware, Shawnee, and Mingo (western Seneca) Native American groups streamed into the rich hunting grounds of the sparsely occupied Upper Ohio Valley during the early eighteenth century. The refugees established settlements at Old Kittaning, Shawkunk (at the mouth of the Beaver River), Kuskuskee ("some fifteen or twenty miles above" Shawkunk), Logstown, and Catfish Camp (Bausman 1904a:14-17; Ward 2004:22, 25-26; Anderson 2000:13-14, 18, 22-23; Crumrine 1882:20). This area became an advantageous location for these groups, as the rivers and tributaries within the Upper Ohio Valley (such as the Ohio, Monongahela, Youghiogheny, and Allegheny) and the numerous Indian paths near the Ohio (e.g., the Great Path, the Raystown Path, the Catawba Path, etc.) served as important transportation and communication routes between southwestern Pennsylvania, the *Pays d'en Haut*, the Iroquois, and the British (Wallace 1998: [key]).

In the 1730s, fur traders and Scot-Irish squatters from Pennsylvania followed the displaced Delaware and Shawnee into the Ohio Country and beyond. The primary reason for this European presence was due to competition over control of the Upper Ohio Valley between Europe (the French), Pennsylvania, and Virginia. Each group attempted to gain control of this land through treaty, communication, and trade. For example, in order to avoid competing groups allying with the refugee Native American groups, Conrad Weiser met with the Delaware, Shawnee, and Mingos at Logstown in August of 1748. He was sent by the Government of Pennsylvania to placate the Indians in the Upper Ohio Valley and to dissuade them from allying themselves with the French. A year later, however, Captain Louis Bienville de Céloron visited Logstown in order to undo Weiser's work. His visit's purpose was to strengthen the ties between the French and the Native American groups in order to solidify the French Imperial claims to the Upper Ohio Valley. In 1749, speculators, surveyors, and traders from the Ohio Company of Virginia established a fortified post at Wills Creek along the Potomac. In 1752, they secured permission from the Logstown Indians to build a second post at the forks of the Ohio. In the early 1750s, Christopher Gist of the Ohio Company (based out of Cumberland, Maryland) made three scouting trips through the region on his way to the forks of the Ohio to investigate the construction of a fort (Anderson 2000:25, 27-28; Bausman 1904a:41, 146-147; Cushing 1889:19-20; Darlington 1893:138; Ward 2004:22-23).

By the mid-eighteenth century, English traders from Pennsylvania and Virginia had penetrated the Ohio Country with their superior trade goods. In order to prevent their alliance with the *Pays d'en Haut* from weakening, the French attempted to secure the region against further encroachment by constructing a chain of four forts within the Ohio Country. The Marquis of Duquesne, the new French Governor-General of Canada, took charge of this construction in order to maintain the Native American alliance and access to the Ohio River. In 1753, work was completed on three forts: Fort Presque Isle, Fort le Beouf, and Fort Machault. Fort Duquesne was completed in 1754 and was situated at the fork of the Ohio. That same year, amidst mounting tensions over claims to the Upper Ohio Valley, a company of thirty-five French soldiers were ambushed at Jumonville Glen by militiamen and Native Americans under the command of

George Washington. The French commander, Joseph Coulon de Villiers, was executed following the ambush. This action began the Seven Years War and the subsequent French counterattack at Fort Necessity (Ward 2004:23-24, 34-35; Anderson 2000:17, 31-35).

During the Seven Years War, French allied Indians from the Ohio and Susquehanna valleys terrorized the backcountry of Pennsylvania and Virginia. On occasion, this included native groups fighting large battles alongside their French allies. However, more often than not, the tactics of terrorization during this time consisted of small groups of Native Americans attacking isolated farmsteads, murdering, mutilating, and kidnapping settlers and burning their houses. In a frenzied panic, "many tens of thousands of settlers" in the backcountry fled their homes, seeking "safety in the east." In answer to the raids, English-speaking colonists along the frontier launched indiscriminate counter-attacks against local Indians. Although some stability returned to the Upper Ohio Valley with the capture of Fort Duquesne by British forces in 1758, intensive settlement of the region stagnated until the conclusion of hostilities with the French in 1763 and the suppression of Pontiac's Uprising in 1765 (Ward 2004:45-58, 67-70, 257; Slaughter 1986:93-95). In response to Pontiac's War, the British Crown sought to establish a new "Indian boundary" as a buffer between Indians and colonists in 1768. In 1784, the Treaty of Fort Stanwix effectively ended Indian control of Western Pennsylvania, as it officially ceded the remaining Iroquois land holdings to the state (Parker 1998:86; Wallace 2005:138).

The earliest permanent European settlements in southwestern Pennsylvania, in addition to trading posts and isolated farmsteads, included small settlements near the Maryland border, Mount Braddock, and the future city of Pittsburgh. Mount Braddock was established in Fayette County by Christopher Gist (of the Ohio Company, Cumberland, Maryland) in 1752, while the settlement of present-day Pittsburgh was established in 1760 in the shadow of Fort Pitt. The Fort Pitt settlement consisted of three-hundred soldiers, settlers, and Indian traders (Bausman 1904a:148; Rupp 1848:40; Fraise 1888:537). Other permanent Europeans settlements included McKees Rocks and Friedenstadt. McKees Rocks, located in Allegheny County, was settled by Alexander McKee in 1769, while Friedenstadt, a Moravian mission near the Indian town Kuskuskee, was established in 1770 (Bausman 1904a:148, 418; Fraise 1888:227). Early settlers constructed sturdy log cabins as a place of shelter, as well as a place of refuge during Indian attacks. Independently, settlers and settlements grew corn and flax, built mills, raised livestock, distilled whiskey, and wove fabric. However, they remained dependent on coastal manufacturing centers for "salt, iron, and other necessary articles" well into the nineteenth century (Bausman 1904a:172-174).

During the American Revolution, Pennsylvania's major military actions occurred east of the Allegheny Mountains and away from the Upper Ohio Valley. However, Shawnee and Delaware groups, allied to the British, frequently raided the area. As a result, a few military expeditions against hostile Indians were launched out of Fort Pitt and Fort McIntosh (Beaver, PA). While colonial officials at Fort Pitt attempted to maintain good relations with local Indians, indiscriminate attacks by settlers against Indians induced some natives to side with the British. As a result, in the final days of the revolution, on July 13, 1782, the King's Eighth Regiment and their Indian allies sacked and burned Hanna's Town in nearby Westmoreland County (Bausman

1904a: 67-73, 78-79, 84-85, 96; Boucher and Jordan 1906:136, 145, 150; WCHS 2011; Hassler 1900:176).

From Independence to the Civil War

The number of Pennsylvanians living west of the Allegheny Mountains grew rapidly from 75,000 in 1790 to 139,000 by the turn of the century (WITF 2010). To meet the needs of the region's increasing population, new counties were established in southwestern Pennsylvania during the final decades of the eighteenth century. These included Washington County, Beaver County, and Allegheny County.

In 1791, the Whiskey Rebellion took place in parts of Bedford, Allegheny, Westmoreland, Fayette, Somerset and Washington counties. The Whiskey Rebellion occurred in response to the government's bill to tax all distilled spirits. The bill was passed in order to generate revenue to reduce the national debt. (Durant 1876:57; Crumrine 1882:262-266; Cushing 1889:149-153). While the bill taxed all distilled spirits, whiskey gained the most attention, as it was one of the most popular liquors at the time. Passage of the bill therefore caused immediate dissention in rural, isolated southwestern Pennsylvania. This was particularly hard felt in this region because distilling whiskey was the only way to profitably export surplus grain to distant markets (Cushing 1889:151-152). Rebellion against the tax began in 1791, and consisted of harassment of local inspectors by angry farmers. By 1794, however, the rebellion transformed to a near military confrontation between local insurgents in Pittsburgh and 13,000 to 15,000 federal militias mustered from Pennsylvania, Maryland, New Jersey, and Virginia. Civil authority was quickly restored to the region, but not before a portion of the federal troops occupied Fort Pitt and the surrounding town. Amnesty was offered to the rebels who swore allegiance to the country. Many followers chose to return to their farms, but many of the leaders chose to leave the territory (Durant 1876:60).

The economy of southwestern Pennsylvania remained largely agricultural into the nineteenth century and, because of its remoteness, the material and social conditions that prevailed there were crude by contemporary standards. Indeed, in many ways Western Pennsylvania remained a frontier well into the nineteenth century. Elias Pym Fordham, a visitor from England travelling by wagon from Baltimore to Pittsburgh in 1817, wrote of Pennsylvania:

White people are seen working in the fields. They are cleaner than the Dutch, but the latter are not always boorish. If Maryland be the land of hills, Pennsylvania is the land of mountains. We have struggled over four distinct ridges—the North Mountains—the South Mountains—the Cove Mountains & the Sidelong [Sidling] Hills. The two last are infested with banditti, after whom about 40 young men went with their rifles about a week since. These men have not yet attacked travelers, but they plunder farmers of their clothes and cattle. They have women with them, and live in wigwams among the rocks (Fordham 1906:60-61).

While Pym was impressed with America's coastal areas, he saw little to commend the interior. From Pittsburgh he wrote:

The inhabitants of the interior of Pennsylvania are very different. Coarse in their manners, inquisitive to a tormenting degree, careless of giving pain or offense, and obstinate in persisting in their rudeness: these are the most common features in their characters. They are chiefly of Dutch, German, or Irish extraction; and in general seem to have preserved all the vices of their forefathers, and to have acquired a few others. Whisky is very cheap. With the labor of an hour a man may purchase as much as will make him ferocious … Travelling across a mountainous track, which will never be thickly inhabited, I have seen the worst of its [Pennsylvania's] population (Fordham 1906:64-65).

Thaddeus M. Harris of Massachusetts was more forgiving. After descending the Alleghenies and approaching the Youghiogheny River in 1803 he wrote:

The long tedious journey we had passed, through lonesome woods and over rugged ways, contributed not a little, perhaps, to enhance the agreeableness of the prospect now before us. Certainly there is something very animating to the feelings, when a traveler, after traversing a region without culture, emerges from the depths of solitude, and comes out upon an open, pleasant, and *cultivated* [emphasis added] country (Harris 1805:26-27).

Harris was impressed by the communities along the Monongahela River and the ample river traffic:

The settlements on both sides of this river are fine and extensive, and the land is good and well cultivated. Numerous trading and family boats pass continually. In the spring and fall the river seems covered with them. The former laden with flour, whiskey, peach-brandy, cider, bacon, iron, potters' ware, cabinet work, &c. all the produce or manufacture of the country, are destined for Kentucky and New Orleans, or the towns on the Spanish side of the Mississippi. The latter convey the families of emigrants with their furniture, farming utensils, &c. to the new settlements they have in view. These boats are generally called "Arks" (Harris 1805:30).

Harris arrived at Pittsburgh on April 15, 1803 and seemed equally well-impressed with the growing town as he was with the rest of Western Pennsylvania:

> We this morning arrived at Pittsburg, a post-town in Pennsylvania, and the capital of Alleghany County … it has rapidly increased in population, business, and prosperity within a few years past. It contains upward of four hundred houses, several of them large and handsomely built of brick; forty-nine are occupied as stores and shops. There are three congregations: an Episcopalian, a Presbyterian, and a Seceder. The number of inhabitants is about two thousand…There are two printing-offices, each of which issue a weekly news-paper; and many mechanics, who carry on most of the manufactures that are to be met with in any other part of the United States. Two glass-houses have been lately erected, and are wrought to great advantage. They make window-glass, bottles, &c. … Articles of cabinet work are, also, made at Pittsburg of their native woods, which supply many of the settlements on both sides of the Ohio and Mississippi … The tin plate manufactory, that for cutting nails, and the smiths' shops for making axes and farming utensils, find a ready and extensive market for all their articles (Harris 1805:39-42).

During the first half of the nineteenth century, the population in southwestern Pennsylvania was increasing steadily and the number of new settlements and manufactories were on the rise. Between 1800 and 1840 Beaver County's population rose from 5,776 to 29,368 (before dropping to 26,689 in 1850). While the cultivation of cereal grains (wheat, rye, barley, and oats), corn, hemp, and grass occurred, sheep raising and lumbering remained the backbone of the local economy during the early nineteenth century. By 1830 the Big Beaver River powered seven merchant grist mills and numerous manufactories were producing wool, iron, rags, and wood products. Still, most of the county's mineral resources (limestone, coal, and iron) remained underutilized, the exception being the several mineral springs that supported at least two salt works and a resort near Frankford where persons "laboring under chronic disease and general debility" take the waters (Gordon 1832:25-28; University of Virginia Library 2007).

Neighboring Allegheny County, the county seat of which was Pittsburgh, saw greater growth in the early nineteenth century. In addition to the "usual agricultural products of the country… [such as] wheat, rye, corn, oats, [and] whiskey," by the 1830s Pittsburgh's manufactories were producing iron, glass, delftware, cotton, wool, steamboats, and steam engines that were exported via the Western Division Canal to the Ohio Valley (west) or to Johnstown (southeast). Perhaps more impressively Allegheny County's population grew from 15,087 in 1800 to 138,290 in 1850 (Gordon 1832:10-13; University of Virginia Library 2007).

In contrast, Washington County experienced more modest gains in both population and industrial development. Between 1800 and 1850 its population rose from 28,298 to just 44,939. Similarly, it lagged behind both Allegheny County and Beaver County with respect to the growth of manufacturing. In addition to the county's chief occupation, cattle farming, and an "extensive" window glass manufactory in Williamsport, in 1830 Allegheny County claimed three modest wool manufactories (Gordon 1832:469-471; University of Virginia Library 2007).

After the 1830s, agriculture in the region began to slowly pivot away from wool and cereal production. Undersold by western producers, local farmers focused increasingly on "the raising of livestock" and "general farming, producing fruit, poultry, butter, and eggs" for growing local consumer markets (Bausman 1904a:279). At the same time, new mechanized farming technologies were reducing the labor needs of local farmers. By 1831 mechanical threshing machines were present in Beaver County, and in 1850 the first mechanical reapers were in operation (Bausman 1904a:279).

After the Confederate attack on Fort Sumter, southwestern Pennsylvania enlisted 75,000 volunteer soldiers, or upwards of 24 companies, to President Lincoln's cause. While Morgantown, West Virginia was the closest Southern forces ever approached to southwestern Pennsylvania, Lee's 1863 advance to Gettysburg was sufficiently disturbing to put Pittsburgh on defensive footing. Shops were closed and citizens were enlisted for two weeks to construct earthworks around the city under the supervision of government engineers. "The work was well done, and would have been serviceable, if ever needed; but no enemy ever appeared" (Fraise 1888:190-191; Bausman 1904a:498-522).

The Pittsburgh region made major contributions to the war effort through their growing industrial base and the benevolence of their citizenry. Throughout the duration of the war:

Shot, shell, cannon, armor-plates, saddles, harness, wagons, gun-carriages, caissons, clothing, accoutrements and munitions of war were produced here on an extensive scale, and the mills and manufactories wore the appearance of departments of an extensive arsenal. This condition of things, and the almost constant passage of troops through the streets, gave to the place more the appearance of an immense arsenal or camp than a city (Fraise 1888:189).

Supplementing their wartime production of materials, Pittsburgh, inspired by Northern cities like Boston, Cincinnati, and Chicago, Philadelphia, and New York, undertook to host a sanitary fair in 1864 to raise funds supporting the United States Sanitary Commission. Thousands visited the fair complex in Allegheny City Park and contributed over $360,000 to relief efforts (Fraise 1888:189).

Growth of Industry

After the Civil War, the development of labor-saving farm technologies like mechanical mowers, steam-powered tractors, and mechanized grain threshers steadily increased the amount of land that could be profitably cleared, cultivated, and harvested with local labor. Simultaneously, contributions from the scientific community and the educational efforts of organizations such as the State Grange (founded by Oliver Hudson Kelly in 1870), the Pennsylvania Board of Agriculture (founded 1876) and the Agricultural College of Pennsylvania (founded in 1862), reorganized and restructured traditional agricultural practices, increasing yields and mitigating the effects of crop and livestock illnesses and soil depletion on production (PHMC 2011b). Expanded market access and the increased speed brought on by the rail aided the development of an agricultural economy based on specialized producers (Boucher 1918:334).

As a result of these innovations, both technological and organizational, agricultural production in Western Pennsylvania increased drastically during the nineteenth century with a minimal increase in production costs. This agricultural transformation, which generated increased yields using relatively modest expenditures of capital, transformed Western Pennsylvania's farmers into market players on a regional and national scale. Whereas the local market and dinner table were previously the primary destinations for locally cultivated meats, grains, and vegetables, decreased production costs and increased surpluses meant that growing quantities of goods were leaving Western Pennsylvania by boat, barge, and train. Goods from this area therefore made their way to emerging and expanding urban markets in the Ohio and Mississippi valleys (Columbus, Cincinnati, St. Louis, Louisville, Chicago, Memphis, and New Orleans), and the East Coast (Baltimore, Washington, D.C., and Philadelphia) [Boucher and Jordan 1906: 443; Gordon 1832:483].

While agriculture continued to play a prominent role in the regional economy, increasingly during the nineteenth century southwestern Pennsylvania was dominated by a developing, large-scale, export-oriented mining industry that produced, what was arguably, Western Pennsylvania's most influential material contribution to the national economy: bituminous coal.

The presence of coal was noted in Western Pennsylvania as early as 1752 and the region's earliest settlers learned to use it as a domestic fuel source (Albert 1882:580; DiCiccio 1996:4, 14-15, 64; Boucher and Jordan 1906:458-460). However, with the exception of Pittsburgh and the Monongahela Valley, before 1840 most coal was mined and used at the local level as a heat and energy source for homes, the salt and glass industries, mills, and blast furnaces. The delay in the adoption of coal as a fuel source was in large part due to low population levels, the widespread availability of wood as fuel, and an underdeveloped transportation infrastructure (DiCiccio 1996:4).

Pittsburgh and the Monongahela Valley area were early exporters of coal, transporting it by barge to the Ohio and Mississippi Valleys as early as 1800 (DiCiccio 1996:17). By 1840 the area was exporting thirty percent of the coal it produced. However, it was not until the 1830s, with the completion of the Main Line Canal and Allegheny Portage Railroad that Western Pennsylvania coal producers had their first chance to funnel their product to lucrative markets on the East Coast (DiCiccio 1996:17, 32, 33; Treese & Becker 2004:14). Unfortunately, the costs and limited capacity of the canal and portage railroad system combined with competition from other coal producers in Virginia, north-central Pennsylvania, and Europe, undercut profits. The quantities of coal moved eastward were therefore minimal. Western Pennsylvania's coal market remained focused on the Ohio and Mississippi Valleys until the completion of the Pennsylvania Railroad Company in 1852. The rail consisted of a 249-mile railroad that linked Pittsburgh and Harrisburg, allowing Western Pennsylvania coal to significantly expand into the East Coast markets. By the end of the 1850s, Western-Pennsylvania bituminous coal had completely supplanted coal from Virginia and Wales at the Philadelphia Gas Works (DiCiccio 1996:33-36).

When the Southwest Branch of the Pennsylvania Railroad opened, connecting Greensburg (Westmoreland County) and Uniontown (Fayette County) (c.1873-c.1976), the Connellsville District (a.k.a. "the richest field of coal in western Pennsylvania") became nationally marketable (Boucher and Jordan 1906: 460; DiCiccio 1996:41). The region specialized in the production of high quality industrial coke, mining and "cooking" the coal into coke at local facilities and then shipping it to industrial centers. By 1880, due in large part to the railroads, the district had 7,000 coke ovens and produced two-thirds of the nation's coke, domestically exporting it to destinations in Pennsylvania, Illinois, Michigan, Ohio and California (DiCiccio 1996:41). By 1900, 30,000 coke ovens were in operation in the area of Fountain Mills (modern Scottdale, Westmoreland County) [The Gombach Group 2011b]. In the 1860s Pittsburgh's blast furnaces consumed massive volumes of Connellsville coke, each furnace having "an annual capacity of several thousand tons of iron." Consequently, the profitability of rural foundries and forges was undercut by Pittsburgh's modern industrialized iron producers. These rural facilities therefore drastically declined after 1860 (DiCiccio 1996:41).

The growth of the iron and steel industry and railroad expansion at the end of the nineteenth century spurred unprecedented growth in the coal and coke industry of southwestern Pennsylvania. At the end of the century, the United States surpassed Great Britain as the world's leading coal producer, and by 1920 the Pennsylvania bituminous coal industry employed more than 180,000 miners and produced 166.9 million net tons of coal annually (DiCiccio 1996:61-62). However, after the 1920s, this production drastically declined. This was due to a number of

reasons, including the introduction of alternative fuel sources, a reduction in demand, and the increased wage differentiation between union and nonunion miners. Mergers and informal arrangements proliferated as coal companies attempted to slow the industry's freefall. However, these efforts worked to little effect.

Coal and steel production began to increase once price controls were enacted during the first New Deal. The formation of Unions in the 1920s also helped to aid in an increased cost of living for miners. After the World War I coal boom subsided, in order to reduce costs, operators decreased wages. This sparked widespread unionization, protests, strikes, walkouts, and (frequently) violence between striking miners, coal company police, and hired strikebreakers. By the 1930s, coal companies were less able to reduce wages because of the establishment and influence of the United Mine Workers of America (UMWA). Because of this union, codified in the Appalachian Wage Agreement of 1933, coal companies increasingly looked to new technologies to reduce their labor costs, as they could no longer pay miners insubstantial wages. As a result, safer, faster, and more efficient surface-mining techniques that used mechanized excavators (and fewer miners) came to southwestern Pennsylvania in the late 1930s. "The Pittsburgh coal seam, located in Allegheny, Fayette, Washington, and Westmoreland Counties, was the first surface-mined in Pennsylvania." By 1950 surface-mining generated one-quarter of Pennsylvania's total coal production (DiCiccio 1996:150-152, 156-158, 162-172, 190-192, 201-202).

PENNSYLVANIA COUNTY HISTORIES

The proposed pipeline traverses through three counties in Pennsylvania: Washington, Allegheny, and Beaver. Washington County was established in 1781, and was carved from the western section of Westmoreland County, which was bounded on the north by the Ohio River and on the east by the Monongahela River (Appendix A, Figures 4.9 to 4.23 and 4.24 to 4.51). It originally encompassed all of Greene County and sections of Allegheny and Beaver counties south of the Monongahela River (Crumrine 1882:222-223). Allegheny County was established from parts of Westmoreland and Washington County in 1788 and its modern borders were established by 1800 (Cushing 1889:120-121). Beaver County was established in 1800 from a large portion of Allegheny County and a smaller portion of Washington County (Fraise 1888:121). The counties located along the proposed pipeline route all have a unique, yet similar history, as all were shaped by industrialization, mining, transportation, and agriculture.

Washington County

Washington County, named in honor of General George Washington, was first settled around 1766 or 1767. It was officially founded in 1781 as a direct result of an act created by the Pennsylvania General Assembly after decades of boundary disputes between Pennsylvania and Virginia. Washington County was created in order to provide more convenient access to governing bodies and services, as well as to provide more land for the increasing population of Western Pennsylvania. The county initially "embraced all of the lands lying west of the Monongahela and in the State," including modern Greene County and parts of Allegheny and

Beaver counties south of the Ohio (Crumrine 1882:223). That same year the county was divided into thirteen townships (Crumrine 1882:228). As new counties were erected in Southwestern Pennsylvania, revisions to Washington County's boundaries were made in 1788, 1789, 1796, and 1802 (Crumrine 1882:241).

The namesake of the county, George Washington, had frequented the area for many years and owned approximately 2,813 acres of land within the county itself. This land is currently marked by a Historic Marker on PA 980, north of PA 50, and is near the proposed pipeline route. In addition to purchasing land, tracts were given to him before and after the Revolution as payment for his surveyor and military services. By the end of the Revolution, Washington owned over 58,000 acres of land in Western Pennsylvania and West Virginia (Achenbach 2004; Ambler 1936).

In 1784, Washington traveled to Washington County to investigate the 2,813 acres awarded to him for his service during the French and Indian War. When he arrived, he noted that settlers had set up settlements on his land. These settlers had arrived during the 1770s, and had tilled, hunted, and generally taken care of the land, while their "landlord" had been absent for years. Therefore, they did not respond kindly to Washington showing up after years of not claiming his land. In order to avoid further land grabbing by "squatters," Washington filed suit to eject the illegal tenants from his land. After offering to buy the land outright, the squatters were met with refusal, as they could not match Washington's price. The lawsuit continued for two years. In 1786, the lawsuit was settled, with Washington being named the proper owner. As a show of "goodwill," Washington offered to clear the squatters of any back rent, but insisted they start paying rent after the verdict. The tenants refused and moved to land surrounding Washington's property. Washington retained control of the land until his death in 1799 (Achenbach 2004; Ambler 1936).

The county seat of Washington County was established in the town of Washington (originally named Bassett Town), the former location of Catfish Camp. Catfish Camp was originally inhabited by Native Americans and was called Wissamenking (Observer Reporter 1977). The name "Catfish Camp" was coined by Europeans settlers when they came across Delaware Indians camped by a large spring. Some historians believe that the name is derived from the chief of the Native Americans, as settlers mistakenly believed his name to be Chief Catfish. However, his real title was Chief Tingooqua, the meaning of which remains unknown.

During the 1780s, the town of Washington "was a vast thicket of black and red hawthorn, wild plumbs…and briars…the whole country was a dense forest…" (Observer Reporter 1977). Settlers slowly trickled in, with a sufficient number arriving by 1788. That same year, Chief Catfish moved his camp due to the increase in population. Soon after, the chief moved his camp for a final time into Ohio, as he perceived that "civilization" was too close.

In January of 1810, the town of Washington was officially granted a charter. The population did not seem to increase, however. On the other hand, Washington County itself grew steadily during the nineteenth century, from 5,776 in 1800 to 56,432 in 1900 (University of Virginia Library 2007). The increase may in part be due to the construction of the National Pike in 1820, which provided easy access from the Potomac to the Ohio River. As a result of the National Pike

construction, settlers trickled into the region. In addition, famous political figures, such as James Monroe, General U.S. Grant, Andrew Jackson, and General Lafayette, visited the area (Observer Reporter 1977). Early improvements in the county that also contributed to the population increase included the Pittsburgh and Steubenville Turnpike completed after 1822, the Washington and Williamsport Turnpike completed around 1831, and the Washington and Pittsburgh Turnpike completed in 1835 (Crumrine 1882:374, 378, 382-384). As a result of their construction, numerous public houses and taverns were opened along these routes (Crumrie 1882:379).

Washington County has a long history with industrialization and mining. The first coal "mine" in Washington County began production in the winter of 1830 "on a very limited scale." This mining was labor intensive and long, as boats were loaded and sent down the Monongahela on an eight-hour trip to Pittsburgh. Large-scale coal mining and transshipment did not occur in Washington County until the completion of the slack-water improvements to the Monongahela River in the 1840s (Crumrine 1882:367). During the nineteenth century coal mines were operated on the Chartiers, Panhandle, and Pittsburgh Southern railroads, as well as the Monongahela Division of the Pennsylvania Railroad. The mines shipped coal to markets in Pittsburgh, Waynesburg, and Canonsburg while much was also used locally in the town of Washington (Crumrine 1882:367-370). Sand was also quarried, washed, and sifted in Washington County near Belle Vernon since the 1830s for use in the manufacture of glass (Crumrine 1882:370).

Chartiers Township

The land surrounding Chartiers Township was settled in 1774. During this year, twenty or so families arrived and established settlements. The most prominent of these settlers and landowners were James Allison, Valentine Crawford, and Col. John Neville. James Allison purchased 1,000 acres of land, almost four hundred of which became known as "Mount Pleasant." He also became a prominent social and political figure within the area. In 1775, Valentine Crawford and Col. John Neville were gifted land for their military service. This land would eventually become part of Chartiers Township. However, the two men did not reside there. Instead, squatters arrived and began working the land until a lawsuit in 1803 informed them that they were tenants and had to pay rent to the proper owners (Crumrie 1882:707-708). The tenants then moved out. Chartiers Townships was officially founded in March of 1790 in accordance with a petition from the residents. Its boundaries were reduced in 1808 with the establishment of Mount Pleasant Township in the southeast and Canton in the north (Crumrie 1882:707).

Transportation was an important part of Chartiers Townships' growth and industry. During the early years, transportation relied on the Chartiers Creek, and by 1793, the creek was declared a public highway for boats. This assisted with the new coal industry, as well as farming, as people could send their goods to farther places. The advent of the railroad helped even more, as farmers and coal companies could send their wares further and faster, reaching as far as Pittsburgh in less than a day. Construction on the Chartiers Valley Railroad began in the early 1850s in order to provide access from Carnegie, PA to Washington, PA (PHMC 2016). Construction was

abandoned in 1856 due to financial issues. In 1867, the Chartiers Railway Company was founded and construction continued on the rail line, which was completed in 1871. Trolley lines to Washington were also established during the twentieth century as a means of easy and fast transportation. However, these were dismantled during the 1950s (Chartiers Township 2016).

Bituminous coal was discovered in Chartiers Township during the early 1800s and became one of its main exports for years following. During the early years of mining, small cargos of coal were shipped via the Chartiers Creek and Ohio River. However, with the arrival of the railroad during the late nineteenth century, mining became a prominent business for the area. As the work became more advanced and labor intensive, more workers arrived from the surrounding area. By 1900, the population of Chartiers Township had increased from 1,677 in 1850 to 2,141 (Chartiers Township 2016).

By the 1970s and 1980s, the coal industry drastically declined and the region saw a decline in mining and manufacturing employment. Today, Chartiers Township remains a relatively rural area, with agriculture a prominent industry. Pipelines are also common throughout the area, with a Mark West plant located within the proposed pipeline corridor (Chartiers Township 2016).

Mount Pleasant Township

First settled in the 1770s, Mount Pleasant Township in Washington County was officially founded by a petition of its residents in 1806. The township was created from unsettled land as well as a portion of Chartiers Township. By the end of the eighteenth century, a crossroads hamlet called Mount Pleasant (later Hickory) had been settled at the intersection of the Washington-Georgetown Road (PA-18) and Millers Run Road (PA-50). The settlement included a tavern, a smithy, and a store. An 1817 map of Washington County depicts Mount Pleasant and its "Seceder" church (the United Presbyterian Congregation of Mount Pleasant, established ca. 1790), Ranking's Mill on Raccoon Creek, and George's Mill on Millers Run. A post office was established for the township at Mount Pleasant around 1830 due to the population's increase to 1,327 (Cumrine 1882:850, 864; Knight 1817; Gordon 1832:311). In 1831, a further addition was made to the town from Chartiers Township.

During the 1860s, construction was completed on the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad. This railroad, owned by the Pennsylvania Railroad system, began in Pittsburgh and moved south through Washington County and into the northern panhandle of West Virginia (a.k.a. the Panhandle Route) [Morris 1902]. By the 1870s, Mount Pleasant was growing as new communities were established near Primrose Station on the Panhandle Railroad (16 miles southeast of Pittsburgh). In addition, communities were being established around the coal banks in Westland along Canonsburg Road (Westland Road). By the 1880s the town of Hickory featured "about forty dwellings, a United Presbyterian Church, Union school-house, post-office, hotel, three stores, and two physicians" (Caldwell 1876a:99; Crumrine 1882:864).

During the twentieth century, mining played a large role in the further development of Mount Pleasant Township. However, unlike the surrounding area, Mount Pleasant Township seems to have avoided resorting to extensive strip-mining in the twentieth century (USGS 1954).

In the 1870s, the Montour Railroad, owned by the Imperial Coal Company, was built in order to service the Pittsburgh Coal mining area. By the mid-twentieth century, the Montour Railroad was a major component of the Pittsburgh coal mining business. Various mines and patch towns (company towns) were established during the early part of the twentieth century. This included Westland and Southview in Mount Pleasant Township. By the first decade of the twentieth century, Westland was a sizeable Pittsburgh Coal Company patch town, whose drift mines were serviced by the Montour Railroad. The town of was particularly busy during World War II, and the Westland mines were in production as late as the 1980s (USGS 1904; Caine 2016).

In 1914 the Pittsburgh Coal Company opened a mine, Montour No.1, as well as a company town, Southview, along its Mifflin extension. Montour No. 1 Mine, originally located along the Montour Railroad, was one of three mines constructed by the Pittsburgh Coal Company in 1914 (Ciminel 2012). It is located in Southview, PA and was a shaft mine. The mine's shaft reached a depth of 30.5-meters (100-feet). By 1930, Montour No. 1 was producing 2,500 tons of coal daily (USGS 1904; Ciminel 2012; Caine 2016).

In 1927 and 1928, strikes took place against the Pittsburgh coal mines due to unfair wages. As a result, strikebreakers were brought in with promises of high wages and fair living conditions. According to Ronald L. Lewis (1987:116), African Americans were commonly brought in as strikebreakers so as to upend and ruin the communities of the coal miners, as they were seen as "scum" and "other." However, many strikebreakers soon learned that the wages were low and the living conditions were poor. The strikebreakers lived in camps where the homes were dirty and the food was inadequate. As a result, many strikebreakers joined the strike or left (Lewis 1987:115).

In 1927, 350 strikebreakers walked out of Montour No. 1 in protest of poor wages and the lack of recognition by the coal companies of the United Mine Workers of America (UMWA). Many of these strikebreakers were African American. Instead of peaceful negotiations, the strikebreakers were met with violence, as the coal and iron police beat the strikebreakers back. According to a reporter who visited the police shack that night, the shack was "full of colored boys, and they were a pretty badly frightened lot. Some of them had fresh bruises on their faces" (Lewis 1987:115). This strike is only a small part of the larger issue of racial disparity within Pittsburgh coal mining at this time, as seven out of ten workers who were murdered during the Pittsburgh coal strikes were African American (Lewis 1987:115).

It is unknown when exactly the mine closed. However, it is generally thought that the mine closed sometime between 1932 and 1939, as it appears abandoned in a 1939 aerial but was listed in a report by the PA Bureau of Mines in 1932 (Ciminel 2012).

Today, Mount Pleasant Township is primarily a rural, agricultural, and residential area.

Robinson Township

Robinson Township was one of the original thirteen townships created by the incorporation of Washington County by act of the Pennsylvania Legislature in 1781. In 1788 part of Robinson Township was appended to the newly erected Allegheny County and its boundaries were further reduced in 1836. The first settlement in the township was erected at Beelor's Fort (a large defensible blockhouse) in 1774. The settlement was later the site of the village of Candor (established before c.1817) and the Presbyterian Church of Raccoon (established before c.1786). The 1817 map of Washington County depicts the Presbyterian Church of Raccoon, (Abraham) Scott's grist and horse mill on Little Raccoon Creek, the Steubenville Turnpike, and the Charleston-Pittsburgh Road in Robinson Township (Crumrine 1882:900-905; Knight 1817).

At the outbreak of the Civil War the township was still sparsely occupied. Settlements in this area included Candor, the village at the North Star post office, and nascent settlements at Midway (formerly Egypt) and McDonald Stations. The Midway and McDonald Stations were located along the Pittsburgh, Cincinnati, Chicago, and St. Louis' Panhandle Railroad. By the 1880s, Midway featured "ten stores, [a] Methodist Church, Odd-Fellows' Hall, [a] drug-store, [a] school-house, [a] hotel, [a] millinery-store, [a] railroad station, [an] express- and telegraph-office, [a] post office, two coal-works, and two physicians." McDonald contained "three stores, [a] post-office, [a] church (Episcopal), [an] express- and telegraph-office, [a] depot, [a] grist-mill," and the forty-pupil Engleside (Episcopal) Academy (Pomeroy and Treat 1861; Crumrine 1882:903-904).

In addition to private coal banks "in all parts of the township," four coal companies operated in Robinson Township in 1882: the Pittsburgh and Walnut Hill Coal Company (whose "tipple and tracks are in Robinson township … at the east end of the village of Midway"), the Midway Coal Company (located at the "west end of Midway village"), the Robbins Block Coal Company (whose "delivery station is in Robinson township" but whose mines and works lay elsewhere), and, the Briar Hill Coal Company (southeast of McDonald Station). A 1906 map of Washington County depicts the location of Shaw Mine more than a mile north of Midway. By midcentury active strip mining of the area north and east of Midway was underway (Crumrine 1882:909-910; USGS 1906, 1954).

Allegheny County

This section will focus on the specific history of Allegheny County, particularly its rural areas. As numerous excellent histories of the city of Pittsburgh and its people, industries, railroads, triumphs and failures have been produced over the decades (e.g., Craig 1917, Fleming 1922, Hays 1989, Tarr 2004; Rooney and Peterson 2013, Dieterich-Ward 2016, etc.), and considering the distance between the proposed route and Pittsburgh (more than ten miles), only those aspects of the city's history touching on rural areas of western Allegheny County will be addressed.

Allegheny County was erected by act of the State Legislature from portions of Westmoreland and Washington counties in 1788. However, the subsequent establishment of Beaver, Butler, Armstrong, Venango, Mercer, Crawford, Warren, and Erie counties greatly reduced its size.

Dougal's 1817 map of Allegheny County shows numerous roads (many converging on or near Pittsburgh), mills, and churches in the county, as well as substantial settlements at Noblesburg, Pittsburgh, Allegheny, Birmingham, Elizabethtown, McKeesport, Middleton, and Pennsville. In the 1830s, rural Allegheny County exported "wheat, rye, corn, oats, [and] whiskey" while Pittsburgh produced "iron, glass, delft-ware, cotton and wool … steamboats, and steam engines" (Gordon 1832:12; Dougal 1817).

The population of Allegheny County in 1840 was 81,235; of these, 21,115 lived in Pittsburgh and 10,089 in Allegheny across the Ohio River; if one were to include adjoining towns to be part of the larger Pittsburgh commercial area, then approximately 50,000 Allegheny County residents lived in "the commercial capital of Western Pennsylvania" at midcentury.

By midcentury, rural areas of Allegheny County relied increasingly on grain and cattle production to provision growing consumer markets, as flax and wool production were becoming limited. Towns were "actively engaged in *manufactures* of all kinds, and in a large *commerce* to the west and southwest; [and] *steamboat-building*" (Burrowes 1850:257-259). An 1851 map of Allegheny County highlights the proliferation of named communities, commercial establishments, and residences across the county as well as an increasing density of occupation (particularly around Pittsburgh) (Sidney and Neff 1851).

After 1860, Pittsburgh's iron and steel industries flourished with the adoption of coke-fueled blast furnace technology. As a result, Allegheny County's population soared as rural laborers and immigrants flocked to the Ohio and Monongahela valleys seeking economic opportunities in the region's mills, mines, and factories. Allegheny County's population rose from 138,290 in 1850 to 775,058 in 1900—nearly half of whom lived in the city of Pittsburgh proper. Pittsburgh proper's population continued to rise, cresting at 676,806 in 1950 before entering a slow steady decline. The decline was increased by middle-class homeowners flight to suburbia after World War II and the collapse of the city's steel and electronics industries during the 1980s (University of Virginia Library 2007; United States Bureau of the Census 1998; Hoerr 1988).

North Fayette Township

The township of North Fayette within Allegheny County was settled some time before 1774, with a "substantial, well-constructed" blockhouse erected in 1778. However, North Fayette Township was officially founded in 1842 when it was annexed from Fayette Township. The township was bisected by the Mingo Trail, named and occupied by the Mingo Indians. As a result, raids by British allied Indians were frequent during the American Revolution. The 1817 map of Allegheny County depicts a number of towns and roads within North Fayette, namely Jefferystown on Montour Run, the Pittsburgh and Steubenville Turnpike (chartered in 1818), Noblesburg (Noblestown, established c. 1773), and Sturgeon's Mill on Robinsons Run. Fayetteville, "a scattered hamlet," developed around a tavern on the turnpike road in the 1820s (Cushing 1889b:17-18, 21-22; Dougal 1817). By the mid-nineteenth century, North Fayette Township was largely rural and sparsely settled, with the exceptions of crossroads communities at Champion, Sturgeon, Jeffreystown, Fayetteville, and Noblestown (Sidney and Neff 1851).

Throughout the nineteenth and twentieth century, North Fayette was known for agriculture and coal mining. Although coal was available throughout the township, during the nineteenth century it could only be efficiently mined in the vicinity of Montour Run. At Montour Run, the Imperial Coal Company operated the Cliff, Montour, Santiago, and Dickson mines, as well as the Montour Railroad and adjacent coke ovens. The mines' 500 workers shipped between 800 and 1,000 tons of coal daily by rail to northern Ohio. By the middle of the twentieth century, coal mining had spread outside of Montour Run and was being mined via strip mining in the vicinity of North Star (i.e., Santiago) and Champion (Cushing 1889b:9, 19; USGS 1955).

Findlay Township

Findlay Township in Allegheny County, otherwise known as "Second Moon" Township, was established in 1819 and resulted from a petition by northern Moon Township's residents who wanted to split from the town. In 1823, the northern "Second Moon" Township was renamed Findlay Township in honor of Pennsylvania governor William Findlay (Findlay Township 2016).

Dougal's 1817 map of Allegheny County depicts various buildings that were present in Findlay during the early nineteenth century, including Guy's Mill on Montours Run, Cavil's Mill on Raredon Run, and Hopewell Presbyterian Church (established 1814) above Potato Garden Run in Findlay Township. Forbes' Mill and Strauss' Mill were in operation on Potato Garden Run by midcentury. Valley Presbyterian Church near Guy's Mill was established in 1840. Within Findlay, the village of Clinton was established in 1826 and its post office was constructed two years later. By the middle of the twentieth century, large areas east of Clinton and south of Potato Garden Run were being strip mined (Cushing 1889b:10-12; Dougal 1817; Neff & Rea 1851; Findlay Township 2016; USGS 1904; USGS 1954).

The Imperial Coal Company operated two mines in North Fayette Township and one in Findlay Township in the late 1900s. The company town of Imperial (originally Montour City) was erected near Guy's Mill in 1879 by the Imperial Coal Company to serve as the terminus for the Montour Railroad (chartered in 1877). Imperial consisted of a community of 130 houses, most of them owned by the coal company, and "present[ed] the features usually associated with mining towns"(Cushing 1889b:10-12; Dougal 1817; Neff & Rea 1851; Findlay Township 2016; USGS 1904; USGS 1954)

During the twentieth century, towns were established within Findlay Township. By the turn of the century, the crossroads village east of Hebron Church was known as Cork, the community at Forbes' Mill was known as Virsoix, and the community at the intersection of Potato Garden Run Road and Burgettstown Road was known as Bald Knob. (Cushing 1889b:10-12; Dougal 1817; Neff & Rea 1851; Findlay Township 2016; USGS 1904; USGS 1954). Today, the Pittsburgh International Airport owns approximately 8,000 acres in the northern part of the township. However, described in the late 1880s as "exclusively agricultural," Findlay Township has been repeatedly bypassed by other major regional transportation routes and, consequently, has remained relatively rural into the present day (Cushing 1889b:10-12; Neff & Rea 1851; Findlay Township 2016).

Beaver County

Beaver County was established in 1800 from a large section of Allegheny County and a smaller section of Washington County. Settlement was stilted in this area until the Treaty of Greenville passed in 1795 (Beaver County 2016). The county seat, the town of Beaver (est. 1791), is the former site of Sawkunk, an Indian settlement (Fraise 1888:121; Bausman 1904a:1-3, 1904b:620) and Fort McIntosh, a frontier fort constructed in 1778 (Carner 1973).

Transportation infrastructure in the remote county advanced slowly during the nineteenth century. During this time, Beaver County possessed "no turnpike, corduroy, or toll-roads," only a network of trails and crude earthen roads erected by the county and state after 1804. Indeed, the only road in the county with mileposts was the twenty-mile-long state road from the Ohio River near Vanport to Frankfort Spring (Bausman 1904a:237-238). Around 1833 the Beaver section of the Pennsylvania Canal, located from the mouth of Beaver Creek to New Castle in Lawrence County, was completed. This was a vast improvement that "did incalculable good for the Beaver Valley while it lasted" (Bausman 1904a:245-248). In 1840 the population of Beaver County was 29,638 and in 1850 agriculture supplemented by "some *silk* and *wine*, and various manufactured articles" formed the basis of the local economy (Burrowes 1850:284).

A railroad connecting the Beaver Valley with Conneaut, Ohio was contemplated in the early part of the century. However, "the project went down in the general wreck of the finances of this region that accompanied the closing of the United States' Bank" (Bausman 1904a:251-253). A railroad line accessible and convenient to Beaver County would not be completed until 1852 when the Ohio and Pennsylvania Railroad was constructed. The railroad line connected Allegheny, Pennsylvania with Alliance, Ohio (Bausman 1904a:254). Other rail lines followed, including, among others, a branch of the Cleveland and Pittsburgh Railroad, which was completed before 1862. The Cleveland and Pittsburgh Railroad entered the county at Glasgow and terminated at Rochester and the Darlington Cannel Coal Railroad (incorporated 1852) (Bausman 1904a:251-263). The addition of these railroads drastically increased the county's population. Over the course of the nineteenth century Beaver County's population grew from 5,776 in 1800 to 56,432 in 1900 (University of Virginia Library 2007).

A number of manufacturers and extractive industries were established in Beaver County during the nineteenth century. Iron ore was mined by stripping, drifting, and working "in a small way" at the Bassenheim Furnace in Franklin Township (1814-1824), at Homewood Furnace near Rock Point using coal or coke (1858-c.1868), and at Beaver Falls or Brighton Furnace using charcoal (1804-1826) (Bausman 1904b:1191, 1265-1266; Sharp and Thomas 1965:90-91). In 1828, a wire mill was erected in Fallston along the Beaver River, opposite New Brighton Shipping on the Beaver Canal and Ohio River. The manufacture of rivets was added in 1852 to the wire mill, and wire nails in 1887.

The Harmony Society, a group of Christian pietists who founded Economy in 1825, developed the industrial community of Beaver Falls in 1859. There, the factories produced "cutlery, files, saws, axes, hoes, shovels, etc." A saw works followed in 1871 at Beaver Falls and a steelworks in 1875 that produced "plow, spring, cutlery, file, and tool steel." Rodworks, rolling mills, steel

works, and tool manufactories followed including two for the manufacture of bicycle tubing (Bausman 1904b:1266-1269).

Like the other counties, coal was commonly found in Beaver County. However, it was not mined intensively during the nineteenth century "as there…[was] little coal in the county that…[would] justify mining for shipment. The veins generally are thin and irregular" (Bausman 1904b:1192). Beaver County did, however, find a lucrative product in natural gas, albeit only temporarily. By the 1880s natural gas was being extracted at Baden, New Sheffield, Woodlawn, Shannopin, and other locations in the county. However, production was abandoned by the first decade of the twentieth century as the local supply had "fallen off" (Bausman 1904a:287).

Other important nineteenth-century industries included flat-boat, keel-boat, and steamboat construction in river towns like Phillipsburg, Freedom, Sharon, and Industry (before c.1826), as well as increased manufacture of "many grades of brick for house building, public street paving…and every purpose for which fire-bricks are used" during the late nineteenth century. Oil refining from shale and coal occurred at Cannelton from 1859 to 1872 and was another important industry within Beaver County, Pennsylvania (Bausman 1904a:285, 296-303).

Independence Township

Originally settled in the last two decades of the eighteenth century, Independence Township in Beaver County was officially founded in 1848 and was formed from the southwestern section of Hopewell Township. Several manmade features are depicted in the township on the 1817 map of Beaver County, including the road from Walker's Mill (Hopewell Township) to Washington County, Bryan's Mill on Service Run, Walker's Mill on Raccoon Creek, and Wilson's Mill on Raredon Creek.

By 1860 a number of small communities were present in Independence Township, including an unnamed crossroads hamlet in the northwest of the township at Bryan's Mill on Service Creek, the village of Independence (settled in the 1790s) and its post office "Seventy-Six" (established in 1828) near Walker's Mill, and Bock's Mills (Bocktown) on Raredon Creek near Wilson's Mill. New Bethlehem United Methodist Church, east of Bocktown, was established in 1865. However, the township remained relatively rural and unpopulated into the twentieth century. During the last decade of the nineteenth century, Independence Township lost approximately one-third of its residents, its population falling from 932 in 1890 to 610 in 1900 (Bausman 1904b:907-909, 922-924; McCullough 1817; Ames 1860).

Although it is intersected by a number of pipelines and oil wells within its borders, during the twentieth century Independence Township avoided the widespread strip-mining seen in other areas of southwestern Pennsylvania. The area is mainly agricultural and residential today (USGS 1954a). The township has ready access to Raccoon Creek State Park and State Game Lands, and is home to part of the Ambridge Reservoir on Service Creek. In addition, while the township remains largely rural and wooded, the population has increased to over two thousand people (USGS 1954a; United States Census Bureau 2010a).

Raccoon Township

Raccoon Township in Beaver County Pennsylvania was formed in 1833 from parts of Moon and Greene townships. Its name is derived from the creek that forms its eastern border, Raccoon Creek. Early settlements during this time mainly consisted of farms. The 1817 map of Beaver County depicts a salt spring and Baker's Mill on Raccoon Creek, the road from Beaver Borough to Washington County paralleling the Ohio River, and the Service United Presbyterian Church established before 1792 near Service Run. Bethlehem Presbyterian Church was established in 1832 and was located north of Haden Run. A second church building was built in 1880. Mt. Pleasant United Presbyterian Church was established in 1877 by members of the Service United Presbyterian congregation (Bausman 1904b:913-914, 915, 917-920, 922; McCullough 1817; Ames 1860; Caldwell 1876:63; BCHR 2016a).

By 1860 a number of villages were present in Raccoon Township. In addition to an unnamed community on Haden Run (later incorporated into Shippingport Borough), crossroads communities were formed at Holt, McCleary, Green Garden, and Service. These towns were northeast of Mechanicsburg and became post office towns in the 1860s and 1870s.

In the 1950s the Ambridge Water Authority erected the Service Creek Reservoir, inundating the village of Service (Bausman 1904b:913-914, 915, 917-920, 922; McCullough 1817; Ames 1860; Caldwell 1876:63; BCHR 2016a).

During the twentieth century, farming made way to industry as the main source of employment within Raccoon Township.

Potter Township

Potter Township was formed in 1912 from sections of Moon and Raccoon Townships. Together, the foundation of Potter Township and Shippingport Borough isolated Raccoon Township from the Ohio River waterfront.

Since 1853 Potter Township (then Moon Township) was the home of the Beaver County Home and Hospital, a place of refuge for people who "were suddenly homeless and with means of support." Although some residents were moved to a former county tuberculosis sanitarium in 1956, the facility remained in operation until 1959 when a new nursing and geriatric center was built in Brighton Township. The former almshouse property was purchased in 1959 by the Zinc Corporation of America (BCHR 2016a; The Times 2014; Bauder 2003).

Beginning in the 1930s the St. Joe's Lead Company and the Koppers Company established plants, railroads, and factory towns in Potter Township (e.g., Josephtown and Kobuta). The St. Joseph Lead Company constructed a zinc smelter within Monaca, PA in 1931 (St. John Lead Co. 1964) and operated it until it was bought out by Horsehead Corporation sometime after 1987 (McKee 1992). Only a few miles away, the St. Joseph Lead Co. operated a 470-acre experimental farm in an attempt to prove that, "you could have productive farming in the shadow of a major manufacturing plant." Beginning in 1931 hundreds of hogs and beef cattle were

raised, slaughtered, prepared, and served in the company cafeteria which served up to four tons of beef and pork from the farm every month. It is unknown when this farm was dismantled; however, it had to occur sometime after 1969, as it is present on the 1969 aerial, but appears gone after that. Aerial photography of the area from 1939, 1958, and 1967 confirms the presence of the farm during this time. By the 1993 aerial, the farmstead complex is gone (BCHR 2016a; Megill n.d.; Tronzo, *Beaver County Times*, August 12, 1987; Samuel 2012; Maykuth 2016).

During the latter half of the twentieth century, the population and economy in Potter Township saw a slow decline as industries and manufacturing moved out of the area. The current population continues to remain under one thousand people. In 2016 Shell Oil Company committed to building a $3.2 billion ethane cracker plant on the former site of the St. Joseph Lead Company facility in Potter County (BCHR 2016a; Megill n.d.; Tronzo, *Beaver County Times*, August 12, 1987; Samuel 2012; Maykuth 2016). Industry continues to play an integral role in Potter Township.

Greene Township

Greene Township was founded in 1812 from sections of Hanover and "Second Moon" (Findlay) Townships. In 1830 Greene Township had 1,709 inhabitants; however the township's population suffered a general decline during the last several decades of the nineteenth century. By 1900, the population had dwindled from 1,249 in 1880 to 1,023. This was in large part "due to the changed conditions in the business of farming and to the gravitation of population towards the towns and cities [i.e., Pittsburgh]" (Gordon 1832:186; Bausman 1904b:898).

The 1817 McCullough map of Beaver County identifies "George Town" and Chrisloe's Ferry on the Ohio River and "Hooks Town" in the center of Greene Township at the confluence of Mill Creek. In addition, Moody's Run is depicted with Calwell's Mill to the west and Millar's Fulling Mill to the east. A church is depicted south of Hookstown at the intersection of the Washington and Pittsburgh roads on the 1817 McCullough map. This is likely Mill Creek Presbyterian Church, founded prior to 1784 (Bausman 1904b:898-899; McCullough 1817).

In 1832, Hookstown, located near the center of Greene Township, featured 40 dwellings, two stores, and two taverns (Gordon 1832:186). Five years later a Pittsburgh-area business directory identified a combined grist-and-saw mill in Hookstown as well as two tanneries, two smithies, a wagonmaker, two tailors, and two hatters. The town of Georgetown was described as "a small village, pleasantly situated on high ground, on the south bank of the Ohio River" (Harris 1837:263-264). In 1843, Hookstown was incorporated as a borough. Two years later, the town was ravaged by "Hookstown Fever," (possibly typhus) which affected nearly one-quarter of the borough's 350 inhabitants and killed eight (including two doctors).

In 1860 a "Coal Works" was erected approximately 0.8 miles north-northwest of Hookstown on Mill Creek. However, it does not appear on Caldwell's 1876 atlas map of the township (Ames 1860; BCHR 2016a Caldwell 1876:77). The Ames map seems to depict several rows of coke ovens arranged perpendicular to Mill Creek in the vicinity of Ford Reed Road. By that time,

Georgetown on the Ohio River featured several dozen residences, two merchants, and a hotel, while the population of Green Township had reached 1,923 (Ames 1860).

By 1876 Hookstown featured dozens of residences, three churches, two grocers, two dry goods and variety stores, a carpet shop, several cabinet shops, a saw-and-grist mill, several wagonworks, a blacksmith shop, two tanneries, several horse traders, and a harness shop. Prominent residents included wealthy farmers, merchants, millers, and skilled craftsmen (Caldwell 1876:81, 172).

Georgetown likewise had grown. In addition to several dozen residences, the town featured two churches and a public school, a hotel and store, several horse traders, a saw-and-grist mill, and a large cemetery. Among Georgetown's prominent residents were farmers and shop keepers as well as rivermen, pilots, and steamboat captains (Caldwell 1876:100, 171).

Shippingport Borough

Shippingport is not depicted on the 1817 map of Beaver County. However, the 1860 map of Beaver and Lawrence counties shows Shippingport as a small unnamed waterfront village located above Christler's Ferry. An 1876 atlas identifies the village variously as "Shippinsport" or "Shippingport," although the community was known locally as Christler's Landing until its incorporation in 1910. The village featured a landing on the Ohio River, Brotherton & Stiles' steam grist and saw mill, a public schoolhouse, a dry-goods and groceries store, and more than a dozen houses arranged along Ferry Hill Road. A post office was established there around 1862 and "some boats" were built there in the nineteenth century.

In the early twentieth century Shippingport was described as a "thriving little village on the Ohio River." In 1957 Shippingport became the site of the Unites States' first "large-scale civilian atomic power plant," the Shippingport Atomic Power Station. Shippingport operated ferry services until 1964, when a bridge was built across the Ohio River. (McCullough 1817; Ames 1860; Caldwell 1876:37, 77; Bausman 1904a:297, 1904b:899; BCHR 2016b; USNRC 2016). By 2010, the population was 214, less than half of the population it had during the mid-twentieth century (United State Census Bureau 2010b).

4
Archaeological Sensitivity Assessment

ARCHAEOLOGICAL SENSITIVITY

Archaeological sensitivity has been assessed through pedestrian survey of the entire study area, intensive STP testing, geomorphological assessment and background research, in addition to a predictive model (Appendix A, Figure 4.01 to 4.08). Given the high degree of variability for archaeological site location and environmental variation, the archaeological sensitivity model created is a weighted statistical combination of previously identified archaeological site locations and environmental variables including such features as topographic slope and the distance to wetlands, streams, and water bodies, while taking into account areas of extensive disturbance, such as reclaimed strip mines and residential or industrial development areas. This model is modified for the study area from a baseline model designed to address the sensitivity of prehistoric site-presence throughout the Pennsylvania Commonwealth using archaeological predictive modeling (Harris et al. 2015). As no single model can account for the full range of Native American habitation location decisions, this model is simply a guide for the field effort. The model also does not account for historical resources; the sensitivity assessment for historic sites is based on previously recorded archaeological sites, historic map reviews, and background research. The true assessment of prehistoric and historic sensitivity will take place in the field, based upon on-the-ground observations, background research, and geomorphological assessment to modify the model's recommendations in the field and to set the testing interval accordingly.

The setting of the study area is moderately rugged topography dissected by numerous consequent and insequent rills, runs, and streams that are part of the Ohio River drainage basin. As part of this APE in Pennsylvania, Raccoon Creek is the principal drainage crossing the study area, a second order tributary to the Ohio River. The uplands are characterized by moderately incised slopes chiefly composed of moderately steep, sloping landforms lying above mostly flat and broad bottoms. Based on previously recorded archaeological sites and an overall assessment of the landscape, the study area has variable potential for the presence of prehistoric historic archaeological sites within the study area. Using site data provided by CRGIS and environmental parameters that correlate with site distribution, the sensitivity model presented in the September 22, 2015 scoping letter to the PHMC identified 13.63 acres (6.00 %) of the study area as high probability, 102.63 acres (45.10%) at medium probability, and 111.43 acres (48.90%) at low probability (Table 1).

Table 4.1. Project Area Total Acreage in Pennsylvania as of Sept. 22, 2015

Total Acreage in 100-foot Corridor	Acres
Total Area of Corridor (Pennsylvania)	507.91
Previously Surveyed	16.71

Mining (No Probability)	83.38
Sensitivity Model - Steep (Pedestrian Survey Only)	243.34
Sensitivity Model - Low (Pedestrian Survey/ Judgmental STP Testing)	102.29
Sensitivity Model - Moderate Interval STP Testing	103
Sensitivity Model - High Interval STP Testing	59.28

Based on adjustments to the APE due to re-alignment of the pipeline corridor during the archaeological survey, the project APE increased to a total of 893.58 acres. As a result, the sensitivity model was adjusted accordingly and currently identifies 16.78% of the study area as high probability, 37.56% at medium probability, and 45.66% at low probability (see Appendix H for Probability Model Testing Form).

PREHISTORIC ARCHAEOLOGICAL SURVEYS AND SITES

AECOM consulted the PHMC online mapping system (CRGIS) in August and October 2015 and again in June and November 2016, in an effort to locate inventoried cultural resources identified within the one-mile radius Project study buffer. For an archival study of above-ground resources, refer to the literature review and Section 106 Consultation Letter provided to the PHMC on September 15, 2015. The archaeological archival study included a review of the Pennsylvania Archaeological Site Survey (PASS) forms, isolated find forms, and the National Register of Historic Places (NRHP). In conjunction with the resource-inventory research, an examination was undertaken of previous Cultural Resource Management (CRM)-related reports on file at the PHMC, which were completed within the townships containing portions of the Project. The synthesis of these data is intended to provide a clearer picture of cultural resource sensitivity within the limits of the Project, as well as an overview of the previous investigations conducted across the region.

Previous Archaeological Surveys

Background research identified 30 PASS-inventoried archaeological surveys within the one-mile radius of the Project area (Table 2). Twelve archaeological surveys fall directly within the APE.

Table 4.2. Previous Archaeological Surveys in proximity to the APE

PHMC ER#	Title	Reference	Distance to Project (m)	Mile Post	Line
2012-1650-042-G	*Addendum 1, Phase I Cultural Resource Investigations for the Proposed Oak Grove to Ft. Beeler and Ft. Beeler to Houston Ethane Pipeline Project, Marshall County, West Virgina and Washington County, Pennsylvania*	S&ME/Green 2013	467.9	0.2-0.5	Houston-Monaca

2008-0424-125-B	*Phase I Archaeological Investigation of Proposed Cellular Phone Tower Pads and Access Roadways in Westmoreland and Washington Counties*	Nemacolin Archaeological/Nass 2007	771.4	2.2	Houston-Monaca
2015-0534-125-A	*Phase I Archaeological Survey Yonkers to Cowden Pipeline*	Tetra Tech, Inc/Lackett 2015	1210.7	6.1	Houston-Monaca
1995-0511-125-E	*Lit Rev & Arch Srvy, Proposed Sewer Pipeline, Robinson, Cecil & Mt Pleasant Twps, Midway & McDonald Boros, WA Co, Pa*	ASC Group/Whitman et al. 1999	0	7.3	Houston-Monaca
1989-1378-042-UUU	*Southern Beltway Transportation Project, S.R. 0022 to Interstate 79, Allegheny and Washington Counties, Pennsylvania, Phase Ib Archaeological Survey*	CHRS, Inc/Basalik 2014	0	7.9-11.4	Houston-Monaca
1994-2434-125-B	*Ph I Arch. Surv. At The Proposed Waste Coal Fueled Powere Generation Facility, WH CO., PA*	John Milner Assoc./Catts 1994	976	12	Houston-Monaca
2013-2179-003-D	*Phase I Archaeological Report, Proposed Construction of Well Pads, Impoundment Areas, Gas Pipeline, and Associated Access Roads, Greater Pittsburgh, International Airport, Findlay and Robinson Townships, Allegheny County.*	Arch Consult of Midwest/Jackson 2013	0	12.7-13.4	Houston-Monaca
1989-1378-042-N	*Addendum, Phase I Arch. Survey, Additional Right-of-Way on Tan and Green Alignments, Southern Beltway, PA 60 to US 22, Washington and Allegheny Co,PA*	A&HC/Rue 2000	0	13.4-18.1	Houston-Monaca
1989-1378-042-C	*PhI Arch Survey Prop S.Beltway PA 60 to SR 22 Robinson Twp,Washington Co, Findlay Twp, Allegheny Co,PA*	A&HC/Tidlow 1996	0	14.5-18.4	Houston-Monaca
1998-1880-003-C	*Phase I Archaeological Survey Report, Potato Garden Water and Sewer Expansion Project, Findlay Township, Allegheny County, Pennsylvania*	GAI/MacDonald 2006	0	15.3-17.1	Houston-Monaca
2009-2142-003-B	*Negative Survey Form, Route 30 Sanitary Sewer Project, Findaly Township, Allegheny County*	CDC, Inc/Davis 2009	612.7	18.9-19.7	Houston-Monaca
2004-0278-003-C	*Phase I Archaeological Survey, PIT Proposed Site 12 Phase II Development, Findlay Township, Allegheny County*	ASC Group/tanilla 2012	863.5	20.3-21	Houston-Monaca
1991-4547-007-D	*Ph I Arch. Surv. Rpt., Prop. Interconnection Of Pipeline Facilities, Independence Twp., BV CO., PA*	AHCI/Miller 1991	535.2	21	Houston-Monaca
2005-1240-007-C	*Phase I Archaeological Survey, Clinton U.S. Army Reserve local Training Area (LTA)(PA018), Independence Township, Beaver County*	Kiebeknecht and Harshbarger 2013	1477.29	21.1	Houston-Monaca
2006-0300-007-A	*Archaeological and Geomorphological Invest. for the Proposed Raredon Stream Restoration Project, Independence Twp., Beaver Co., PA*	Hunter Research Org. /Anderson 2005	1092.1	24	Houston-Monaca
1991-1517-007-A	*Ph I Cult. Res. Inventory, Prop. Wetland Replace. Site, GPIA Midfield Terminal Proj., Independence Twp., BV CO., PA*	Berger/Waite 1991	0	24	Houston-Monaca
1995-3109-007	*Ph.I Cult.Res.Survey, Line N Ntl.Gas Pipeline Replac.Proj., Centre,Hopewell,Independence Twps,BV Co,Pennsylvania*	Garrow & Assoc., Inc/Baker 1995	377.9	27	Houston-Monaca

2012-1291-007-A	*Phase I/II Archaeological Investigation, Site 36BV0094, Mariner West Ethane Transmission Line, Ohio River Crossing, Potter Township, Beaver County*	Tetra Tech, Inc/Marine 2012	486.66	32.6	Houston-Monaca
2012-2431-042-E	*Negative Survey Form, Mariner West Ethane Line Reroute, 36BV0097 Site Area, Potter Township, Beaver County*	Tetra Tech, Inc/ Marine 2013	387.8	32.8	Houston-Monaca
1986-0679-007-B	*Ph I Arch. Surv., St. Joe Fly Ash Disposal Site, BV CO., PA*	Cosgrove and Michael 1986	41.1	32.9	Houston-Monaca
2013-2037-007	*Phase Ia and Ib Archaeological Investigations for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Dugas 2014	0	33.8	Houston-Monaca
2013-2037-007	*Phase II Archaeological Investigations for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Dugas 2014	0	33.8	Houston-Monaca
2013-2037-007	*Addendum Report 1 - Magnotta-Buffinton Site (36BV0386), Phase I and II Archaeological Investigations for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Dugas 2014	0	33.8	Houston-Monaca
2013-2037-007	*Addendum Report 2 - Lewis-Beils Site (36BV0387), Phase I and II Archaeological Investigations for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Dugas and Rankin 2015	0	33.8	Houston-Monaca
2013-2037-007	*Addendum Report 3 - Mall Lot 2, Geomorphological Assessment for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Vento, Rankin and Dugas 2015	0	33.8	Houston-Monaca
2013-2037-007	*Addendum Report 4 - Site 36BV0051, Phase I/II Archaeological Investigations for the Proposed Petrochemicals Complex, Potter and Center Townships, Beaver County, Pennsylvania*	URS/Rankin 2015	0	33.8	Houston-Monaca
2004-2421-007-F	*Phase I Archaeological Survey, Proposed First Energy 540 Acre Little Blue Run East Landfill Expansion, Greene Township, Beaver County*	Weller & Assoc./Weller 2011	1158.4	39.9	Scio-Monaca
2004-2421-007-B	*Ph. I Arch. Survey, Little Blue Run Disposal Area, Greene Twp, Beaver Co, Pa*	CDC, Inc/Davis 2004	1158.4	39.9	Scio-Monaca
2006-0942-042-A	*Arch. Reconnaissance of Ohio River Islands National Wildlife Refuge in PA, WV, and KY (and Phase I Arch. Survey of Manchester Isl. No. 2, KY)*	Arch. And Hist. Consultants/Diamanti 2005	1541.8	43.9	Scio-Monaca
1995-1000-007-B	*Ph I Arch. Survey, Prop. Towboat Dock, Shippingport Twp., BV CO., PA*	AARCON/Fox and Dwyer 1995	1568.5	44.9	Scio-Monaca

Previously Recorded Prehistoric Archaeological Sites

Background research identified 119 PASS-inventoried prehistoric archaeological sites within the one-mile radius of the Project area (Table 3). With the current APE, only three prehistoric archaeological sites fall within the APE.

Table 4.3. Previously Recorded Prehistoric Archaeological Sites

PASS #	Site Type	Temporal Component	Setting	NRHP Status	Distance from Centerline (m)	Mile Post	Line
36WH0231	Open Habitation	Prehistoric	Ridge Top	Undetermined	914.22	0	Houston-Monaca
36WH1481	Open Habitation	Prehistoric - Archaic	Terrace	Undetermined	1,125.10	0.1	Houston-Monaca
36WH0037	Isolated Find	Prehistoric	Floodplain	Demolished	207.5	0.35	Houston-Monaca
36WH0208	Open Habitation	Prehistoric - Archaic	Middle Slopes	Undetermined	948.93	3.5	Houston-Monaca
36WH0229	Open Habitation	Prehistoric	Upper Slopes	Undetermined	1,303.30	3.8	Houston-Monaca
36WH0158	Open Habitation	Prehistoric - Archaic	Middle Slopes	Undetermined	512.4	4	Houston-Monaca
36WH0191	Open Habitation	Prehistoric	Middle Slopes	Undetermined	892.8	4	Houston-Monaca
36WH0156	Open Habitation	Prehistoric - Archaic	Saddle	Undetermined	219	4.1	Houston-Monaca
36WH0157	Open Habitation	Prehistoric - Archaic and Transitional	Stream Bench	Undetermined	0	4.4	Houston-Monaca
36WH0159	Open Habitation	Prehistoric	Terrace	Undetermined	142.4	4.4	Houston-Monaca
36WH0155	Open	Prehistoric	Stream Bench	Undetermined	769.2	4.7	Houston-Monaca
36WH0190	Open	Prehistoric	Upper Slopes	Undetermined	376.8	5.1	Houston-Monaca
36WH0209	Open Habitation	Prehistoric - Arcahic and Transitional	Hill Ridge/ Toe	Undetermined	114.5	5.1	Houston-Monaca
36WH0241	Historic and Prehistoric	Prehistoric - Archaic / Historic	Middle Slopes	Undetermined	652.8	5.5	Houston-Monaca
36WH0142	Open	Prehistoric	Terrace	Undetermined	672.5	5.5	Houston-Monaca
36WH1310	Open	Prehistoric - Archaic	Terrace	Undetermined	984.6	8	Houston-Monaca
36WH0024	Open Habitation	Prehistoric - Late Archaic	Lower Slopes	Undetermined	1,399.80	8.3	Houston-Monaca
36WH1549	Scatter	Prehistoric	Floodplain	Not Eligible	63.75	11.3	Houston-Monaca
36WH0800	Open	Prehistoric – Archaic (Middle, Late) and Woodland (Middle)	Stream Bench	Undetermined	80.2	12	Houston-Monaca
36WH0608	Village	Prehistoric - Archaic	Terrace	Undetermined	422.2	12.3	Houston-Monaca
36AL0383	Unknown	Prehistoric - Late Archaic	Hill Ridge/ Toe	Not Eligible	1542.7	18.4	Houston-Monaca
36BV0015	Open Habitation	Prehistoric - Late Archaic	Ridge Top	Not Eligible	1,562.90	22.3	Houston-Monaca
36BV0018	Open Habitation	Prehistoric	Hill Top	Undetermined	1,395.90	22.8	Houston-Monaca
36BV0376	Open Habitation	Prehistoric - Early Archaic	Ridge Top	Not Eligible	1,501.10	22.8	Houston-Monaca

36BV0125	Open Habitation	Prehistoric	Terrace	Undetermined	1,027.30	22.88	Houston-Monaca
36BV0206	Scatter	Prehistoric	Floodplain	Undetermined	683.6	23.3	Houston-Monaca
36BV0017	Open Habitation	Prehistoric - Archaic	Upland Flat	Undetermined	871.6	23.3	Houston-Monaca
36BV0207	Scatter	Prehistoric	Hill Ridge/ Toe	Undetermined	1435.7	23.3	Houston-Monaca
36BV0021	Open Habitation	Prehistoric - Archaic and Woodland (Middle)	Floodplain	Undetermined	470.2	23.4	Houston-Monaca
36BV0115	Open Habitation	Prehistoric	Hill Ridge/ Toe	Undetermined	1047	23.4	Houston-Monaca
36BV0124	Open Habitation	Prehistoric	Floodplain	Undetermined	721.2	23.45	Houston-Monaca
36BV0179	Open Habitation	Prehistoric - Middle Woodland	Stream Bench	Undetermined	200.6	23.5	Houston-Monaca
36BV0372	Open	Prehistoric	Floodplain	Not Eligible	974.4	23.5	Houston-Monaca
36BV0205	Open	Prehistoric - Archaic and Woodland (Early,Middle)	Floodplain	Undetermined	1114.5	23.5	Houston-Monaca
36BV0372	Open	Prehistoric	Floodplain	Not Eligible	974.4	23.5	Houston-Monaca
36BV0052	Isolated Find	Prehistoric - Middle Archaic	Hill Ridge/ Toe	Undetermined	1,537.80	23.5	Houston-Monaca
36BV0084	Scatter	Prehistoric	Floodplain	Undetermined	681.3	23.7	Houston-Monaca
36BV0378	Open	Prehistoric	Floodplain	Not Eligible	785.6	23.7	Houston-Monaca
36BV0177	Open	Prehistoric - Archaic and Woodland (Middle)	Floodplain	Undetermined	935.3	23.75	Houston-Monaca
36BV0204	Open Habitation	Prehistoric - Early Woodland	Floodplain	Undetermined	439.6	23.8	Houston-Monaca
36BV0203	Open Habitation	Prehistoric	Terrace	Undetermined	200	23.85	Houston-Monaca
36BV0059	Open Habitation	Prehistoric - Middle Woodland	Floodplain	Undetermined	535.7	23.85	Houston-Monaca
36BV0019	Scatter	Prehistoric - Middle Archaic	Terrace	Undetermined	0	23.9	Houston-Monaca
36BV0250	Open	Prehistoric - Archaic(Late), Transitional, and Woodland	Floodplain	Undetermined	44.5	24	Houston-Monaca
36BV0280	Open	Prehistoric	Floodplain	Undetermined	128.1	24	Houston-Monaca
36BV0175	Scatter	Prehistoric - Arcahic and Woodland	Floodplain	Undetermined	1155.7	24.1	Houston-Monaca
36BV0174	Scatter	Prehistoric - Middle Woodland	Floodplain	Undetermined	1164.1	24.1	Houston-Monaca
36BV0176	Open Habitation	Prehistoric - Middle Woodland	Floodplain	Undetermined	1,272.90	24.2	Houston-Monaca
36BV0118	Open Habitation	Prehistoric	Floodplain	Undetermined	1,296.20	24.3	Houston-Monaca

36BV0119	Open Habitation	Prehistoric	Terrace	Undetermined	76.7	24.4	Houston-Monaca
36BV0117	Scatter	Prehistoric - Archaic	Saddle	Undetermined	640	24.4	Houston-Monaca
36BV0037	Open Habitation	Prehistoric - Middle Archaic	Hill Ridge/ Toe	Undetermined	476.2	24.8	Houston-Monaca
36BV0116	Open Habitation	Prehistoric	Terrace	Undetermined	799	24.8	Houston-Monaca
36BV0202	Open Habitation	Prehistoric - Archaic and Woodland (Late)	Floodplain	Undetermined	1,484.40	24.8	Houston-Monaca
36BV0036	Open Habitation	Prehistoric - Middle Archaic and Woodland	Terrace	Undetermined	400.1	25	Houston-Monaca
36BV0035	Open Habitation	Prehistoric - Archaic	Floodplain	Undetermined	866.2	25	Houston-Monaca
36BV0178	Open Habitation	Prehistoric - Middle Archaic	Stream Bench	Undetermined	1396	25.1	Houston-Monaca
36BV0180	Open Habitation	Prehistoric - Arcahic through Contact	Floodplain	Undetermined	582	25.25	Houston-Monaca
36BV0171	Open Habitation	Prehistoric - Late Archaic	Stream Bench	Undetermined	1246.8	25.6	Houston-Monaca
36BV0114	Open Habitation	Prehistoric - Middle Woodland	Floodplain	Undetermined	668.7	25.7	Houston-Monaca
36BV0113	Open Habitation	Prehistoric	Floodplain	Undetermined	894.1	25.7	Houston-Monaca
36BV0173	Open Habitation	Prehistoric - Late Woodland	Floodplain	Undetermined	1280.2	25.7	Houston-Monaca
36BV0061	Open Habitation	Prehistoric - Middle Woodland	Hill Top	Undetermined	915.9	25.9	Houston-Monaca
36BV0169	Open Habitation	Prehistoric - Archaic and Woodland (Late)	Floodplain	Undetermined	1607.2	26	Houston-Monaca
36BV0112	Open Habitation	Prehistoric	Upland Flat	Undetermined	749.2	26.1	Houston-Monaca
36BV0374	Open Habitation	Protohistoric	Hill Ridge/ Toe	Not Eligible	402.4	26.6	Houston-Monaca
36BV0375	Open Habitation	Prehistoric	Stream Bench	Not Eligible	400.3	26.7	Houston-Monaca
36BV0379	Open Habitation	Prehistoric	Floodplain	Not Eligible	560.3	26.7	Houston-Monaca
36BV0111	Open Habitation	Prehistoric	Floodplain	Undetermined	881.4	26.75	Houston-Monaca
36BV0110	Open Habitation	Prehistoric	Lower Slopes	Undetermined	444.4	26.8	Houston-Monaca
36BV0161	Open Habitation	Prehistoric	Floodplain	Undetermined	581.7	27	Houston-Monaca
36BV0049	Open Habitation	Prehistoric	Terrace	Undetermined	1324.2	27	Houston-Monaca
36BV0274	Open Habitation	Prehistoric - Archaic	Hill Top	Undetermined	1304.7	27.1	Houston-Monaca
36BV0022	Open Habitation	Prehistoric - Archaic and Woodland	Terrace	Undetermined	1589.9	27.2	Houston-Monaca
36BV0109	Open Habitation	Prehistoric	Floodplain	Undetermined	860.7	27.3	Houston-Monaca

36BV0159	Other	Prehistoric - Middle Archaic and Middle Woodland	Terrace	Undetermined	1340.8	27.35	Houston-Monaca
36BV0078	Village	Prehistoric - Archaic and Woodland (Late)	Floodplain	Undetermined	1267.9	27.4	Houston-Monaca
36BV0108	Open Habitation	Archaic	Terrace	Undetermined	1580.6	27.5	Houston-Monaca
36BV0048	Open Habitation	Prehistoric	Hill Ridge/Toe	Undetermined	431.7	29.7	Houston-Monaca
36BV0193	Open Habitation	Archaic	Floodplain	Undetermined	548.7	30.5	Houston-Monaca
36BV0102	Open Habitation	Prehistoric	Floodplain	Undetermined	779.5	30.5	Houston-Monaca
36BV0101	Open Habitation	Prehistoric	Floodplain	Undetermined	548.2	30.75	Houston-Monaca
36BV0100	Open Habitation	Prehistoric	Ridgetop	Undetermined	210.6	30.9	Houston-Monaca
36BV0099	Open Habitation	Prehistoric	Floodplain	Undetermined	901.1	31.1	Houston-Monaca
36BV0216	Rock Shelter/Cave	Prehistoric	Middle Slopes	Undetermined	1354.2	31.1	Houston-Monaca
36BV0217	Rock Shelter/Cave	Prehistoric	Middle Slopes	Undetermined	1408.6	31.3	Houston-Monaca
36BV0221	Open Habitation	Archaic	Upland Flat	Undetermined	225.2	31.8	Houston-Monaca
36BV0097	Open Habitation	Prehistoric	Hilltop	Undetermined	714.4	31.9	Houston-Monaca
36BV0354	Open	Prehistoric	Floodplain	Undetermined	1491.8	32	Houston-Monaca
36BV0192	Open Habitation	Archaic	Terrace	Undetermined	1029.3	32.1	Houston-Monaca
36BV0098	Open Habitation	Prehistoric	Terrace	Undetermined	1333.1	32.2	Houston-Monaca
36BV0191	Lithic Reduction	Archaic	Floodplain	Undetermined	268.6	32.3	Houston-Monaca
36BV0055	Open Habitation	Prehistoric	Floodplain	Undetermined	1002.7	32.3	Houston-Monaca
36BV0058	Open Habitation	Archaic-Woodland	Floodplain	Undetermined	316.8	32.5	Houston-Monaca
36BV0096	Open Habitation	Archaic	Terrace	Undetermined	205.6	32.6	Houston-Monaca
36BV0232	Open Habitation	Prehistoric	Terrace	Undetermined	440.4	32.7	Houston-Monaca
36BV0231	Open Habitation	Prehistoric	Terrace	Undetermined	286	32.7	Houston-Monaca
36BV0050	Open Habitation	Early Archaic-Early Woodland	Floodplain	Undetermined	236.2	32.7	Houston-Monaca
36BV0094	Open Habitation	Prehistoric	Floodplain	Undetermined	157	32.7	Houston-Monaca
36BV0230	Open Habitation	Archaic and Historic	Floodplain	Undetermined	138.7	32.8	Houston-Monaca
36BV0095	Open Habitation	Prehistoric	Floodplain	Undetermined	0	32.8	Houston-Monaca
36BV0011	Scatter	Archaic-Woodland	Hilltop	Undetermined	217.4	33.2	Houston-Monaca
36BV0044	Scatter	Woodland	Floodplain	Undetermined	435.3	33.6	Houston-Monaca

36BV0045	Open Habitation	Woodland	Floodplain	Demolished	612.8	33.6	Houston-Monaca
36BV0010	Scatter	Archaic-Woodland	Terrace	Not Eligible	0	33.8	Houston-Monaca
36BV0087	Open Habitation	Prehistoric	Floodplain	Undetermined	20	33.7	Houston-Monaca
36BV0012	Scatter	Archaic-Woodland	Terrace	Undetermined	173.1	33.8	Houston-Monaca
36BV0046	Scatter	Prehistoric	Floodplain	Not Eligible	534.7	33.8	Houston-Monaca
36BV0057	Open Habitation	Archaic-Woodland	Saddle	Undetermined	1009.5	33.8	Houston-Monaca
36BV0056	Scatter	Woodland	Hilltop	Undetermined	1266.6	33.8	Houston-Monaca
36BV0030	Scatter	Archaic-Woodland	Floodplain	Not Eligible	1495.5	33.8	Houston-Monaca
36BV0051	Open Habitation	Prehistoric	Floodplain	Eligible	1495.5	33.8	Houston-Monaca
36BV0262	Open Habitation	Woodland	Hill Top	Undetermined	1431.8	33.8	Houston-Monaca
36BV0003	Open Habitation	Middle Archaic-Late Woodland	Floodplain	Undetermined	1184.8	41.8	Houston-Monaca
36BV0249	Open Habitation	Archaic	Terrace	Undetermined	1600.8	42.3	Scio-Monaca
36BV0247	Open Habitation	Archaic	Hill Ridge/Toe	Undetermined	1302.8	42.4	Scio-Monaca
36BV0060	Open Habitation	Early Archaic	Island	Undetermined	1530.1	44	Scio-Monaca
36BV0089	Petroglyph/Pictograph	Prehistoric	Beach	Undetermined	1156.5	44.6	Scio-Monaca
36BV0004	Village	Woodland	Terrace	Demolished	1465.5	44.8	Scio-Monaca

Previously Recorded Historic Archaeological Sites

Background research identified nine PASS-inventoried historic archaeological sites within the one-mile radius of the Project area (Table 4). None of those fall directly within the APE.

Table 4.4. Previously Recorded Historic Archaeological Sites

PASS #	Site Type	Temporal Component	Setting	NRHP Status	Distance from Centerline (m)	Mile Post	Line
36WH0035	Isolated Find	Historic - Present	Floodplain	Undetermined	1,072.60	0.35	Houston-Monaca
36WH1625	Farmstead	Historic - Present	Middle Slopes	Undetermined	897.4	0.35	Houston-Monaca
36WH0241	Historic and Prehistoric	Prehistoric - Archaic / Historic	Middle Slopes	Undetermined	652.8	5.5	Houston-Monaca
36WH1441	Historical Industrial Site	Historic	Upland Flat	Not Eligible	105.9	10.9	Houston-Monaca
36WH1178	Historic Domestic Site	Historic - (1875-1900), (1900-1925)	Upper Slopes	Not Eligible	1,016.30	11.9	Houston-Monaca

36AL0582	Farmstead	Historic - (1800-1900)	Upland Flat	Undetermined	1528.9	16.3	Houston-Monaca
36AL0382	Historic Domestic Site	Historic - Present	Saddle	Not Eligible	945.4	18.4	Houston-Monaca
36BV0374	Open Habitation	Protohistoric	Hill Ridge/ Toe	Not Eligible	402.4	26.6	Houston-Monaca
36BV0377	Historic Domestic Site	Historic - (1800-2000)	Lower Slopes	Not Eligible	461.4	27	Houston-Monaca

As discussed above, the prehistoric sensitivity model does not account for the potential presence of historic archaeological resources.

In conjunction with the prehistoric sensitivity model, several historic map and aerial sources were reviewed (Table 5). These maps were used as guides in preparation for the field assessment, during the field survey, and for shaping the discussion and any evaluations of the resources identified.

Table 4.5. Historic Map Resources Used to Assess Historic Sensitivity

Date	Reference	Title/Resource	Appendix A Figure No.
1817	J. Melish	*Atlas of Washington, Allegheny and Beaver Counties, Pennsylvania*	Figures 4.9 to 4.23
1876	J.A. Caldwell	*Illustrated, Historical, Centennial Atlas of Washington, Allegheny and Beaver Counties, Pennsylvania*	Figures 4.24 to 4.51
1906	USGS Topographic Map	*PA 15-Minute Quadrangle*	Figures 4.52 to 4.79
1939	Aerial Photographs	*USDA Aerial Photograph*	Figures 4.80 to 4.107
1967	Aerial Photographs	*USDA Aerial Photograph*	Figures 4.108 to 4.135

GEOMORPHOLOGICAL ASSESSMENT

The geological and soil studies conducted within the APE were performed by Dr. Frank J. Vento (PG-001831-G), Professor Emeritus, Department of Anthropology, Geography and Earth Science, Clarion University of Pennsylvania, President, QGEC, LLC. Dr. Vento is a licensed professional geologist (PG-001831-G) and Registered Professional Archaeologist (RPA). The study included a review of both general and specific references on the bedrock geology, quaternary history, and previous archaeological work conducted within the general area. In addition, topographic maps, geologic and soil survey maps and reports, and hydrologic information were reviewed.

The assessment and its objectives were developed in consultation with the AECOM, the Pennsylvania Bureau for Historic Preservation (PA BHP). A summary of the objectives of the geomorphological study are as follows:

- Determine the ages of the landforms (flood plain/terraces) and associated soils of any first, second or third order flood plain or low terrace landforms that will be impacted by the APE; and
- Determine the depths to which archaeological testing should extend to ensure recovery of any and all potentially significant cultural resources.

Geomorphological investigations were undertaken at two separate crossings of Raccoon Creek, Fishpot Run, Mill Creek, Peggs Run, Robinson Run, Potato Garden Run, Millers Run and Westland Run. Results of the assessment determine that no deep testing would be required within the APE. This section only summarizes the results in the context of archaeological sensitivity. Complete results from the geomorphological investigation, photographs, and figures are presented as Appendix C.

Westland Run

Westland Run and Robinson Run are the only two tributaries of Chartiers Creek along the pipeline corridor. From the APE Westland Run flows south to its confluence with Chartiers Creek just west of Export, Pennsylvania. Chartiers Creek then flows due east to its confluence with the Ohio River at McKees Rocks, Pennsylvania. Westland Run is a second order tributary of the Ohio River. During the field-testing only a single, narrow, flood scoured T0 flood plain zone was present along the open-cut pipeline corridor. The T0 landform lies at a nominal interpolated elevation of 1030 ft. and is situated less than 1 m (3.3 ft.) above the active stream channel. Westland Run exhibits a gradient of 68 ft. per mile and can be considered in the initial stage of drainage development based upon its low discharge, moderately steep gradient, weak meandering channel habit and absence of higher terraces.

In the immediate study area, a deep mine shaft (horizontal shaft) is situated at less than 300 m (1000 ft.) to the north of the pipeline corridor at an elevation of 1038 ft. To the south and east of the pipeline corridor is a now abandoned strip mine. The soils in the study area are mapped as Mine Dump. Field-testing in the project area corridor supports the soil survey mapping as Mine Dump Land. Most of the proposed right-of-way (ROW) is situated along a ground utility transmission line with deep disturbance to the soils. In the wooded area lying nearer to the active stream channel the soils consisted of a 20 cm to 40 cm thick dark brown (10YR3/3) silt loam A-horizon that contained more than 40% matrix supported coal, slag and rounded rock fragments. The A-horizon was underlain by coarse grained lateral accretion deposits consisting of coal rock fragments, slag, shale and sandstone. The valley bottom zone in the immediate study area has no potential to contain in situ prehistoric cultural resources due to flood scouring during historic times as well as impact from utility line construction.

Robinson Run

Robinson Run is a second order tributary of the Ohio River. From the study area corridor Robinson Run flows southeast to its confluence with Chartiers Creek. In the immediate study

area the valley bottom zone is bound to the north by a railway line along the distal margin of the flood plain zone a large abandoned strip mine. Immediately to the southeast are several large "tipple" piles that are on the active flood plain. The vegetation along the valley bottom consists of both facultative and obligate wetland species. The T0 flood plain soils are mapped as Fluvaquents (Entisols) and as Mine Dump soils. The valley bottom zone is bound to the north and south by moderately steep valley slopes defended by the Casselman Formation of the Conemaugh Group.

During the geomorphology field-testing only a single, low lying T0 flood plain zone was encountered along the valley bottom zone. The T0 flood plain is situated less than 1 m (3.3 ft.) above the active stream channel. A large wetland area is situated on both sides of the active stream channel with standing water. The hydric soils encountered on the poorly drained flood plain zone consisted of a 11 cm to 40 cm thick black (10YR3/1) organic rich granular silt loam A horizon which was underlain by a variably thick , gray to grayish brown (10YR6/1 to 10YR6/2) clay loam Cg horizon. The Cg horizon documents slackwater deposition on the flood plain during historic times and is underlain by relict, lateral accretion deposits of historic age.

Auger probes and shovel tests emplaced on the valley bottom zone encountered strongly hydric soils are recent/historic age. The profiles consisted of a variably thick organic rich dark brown (10YR3/2) silt loam A horizon which contained both shale and coal rock fragments. The A horizon was underlain by a gleyed, gray (10YR2/1) Cg horizon which in turn was underlain by historic lateral accretion deposits. The lateral accretion deposits contained abundant coal, shale and sandstone rock fragments. While the low bottom zone has no potential to contain in situ prehistoric cultural resources, the proposed pipeline corridor will employ an HDD to limit impact to the flood plain zone. The HDD on the north side of the stream will lie within the strip-mined area while to the south the HDD will lie on a high hill at a nominal elevation of 1200 ft. Based upon the above, no additional archaeological investigations are warranted or recommended on the strip mined portion of the HDD or on the valley bottom zone of Robinson Run.

Millers Run

The proposed pipeline corridor at Millers Run will entail the use of HDD to avoid impact to the valley bottom zone. Millers Run flows due east to its confluence with Chartiers Creek at Bridgeville, Pennsylvania. The HDD pad on the north side of the stream lies at an interpolated elevation of 1110 ft. while on the south side of the stream the HDD is situated on a high hill at an interpolated elevation of 1260 ft. The bedrock units along the propose pipeline corridor are mapped to the Washington and Waynesburg Formations of the Upper Pennsylvanian Monongahela Group. The soils on the valley bottom zone are ascribable to the Mine Dump series. The valley bottom zone valley slopes within the project area corridor have been significantly impacted by both deep as well as surface mining. There are numerous mine spoil piles and pits both upstream and downstream from the pipeline corridor.

The principal landform on the valley bottom zone is a low-lying T0 flood plain zone situated 1 m to 1.2 m (3.3 ft. to 4 ft.) above the active stream channel. The valley bottom zone has been impacted by mining as well as from construction of an active railway line and utilities for homes bordering the roadway and stream. The extant Montour Mine building structures occur

throughout the valley bottom zone in the entire project area corridor with obvious disturbance to the soils. The mining structures are large with deep "footers" that in some cases extend more than 2 m (6.6 ft.) into the ground. Exposed bank cuts along the T0 landform indicates that the soils are entirely recent in age and consist of coarse-grained flood deposits (A/Fill-C horizons). The absence of any subsoil horizons is not unexpected given the degree of historic disturbance to the soils as well as the high flow velocities associated with historic deforestation and mining activities**.** The residual soils at the HDD to the north of the active channel are mapped to the Glenford soil series while the HDD on the south side of the stream channel the residual soils are mapped to the Guernsey and Culleoka soil series. Given the age and disturbance to the soils on the valley bottom zone as well as the use of HDDs along the project area corridor, no additional archaeological testing is warranted or recommended on the valley bottom zone.

Potato Garden Run

Potato Garden Run is a second order tributary of the Ohio River. From the proposed pipeline corridor Potato Garden Run flows due north to its confluence with Raccoon Creek at Murdocksville, Pennsylvania. The pipeline crosses Potato Garden Run along the upper contributory reach of the stream. The valley bottom zone of the stream will not be impacted due to an HDD situated to the northeast of the stream channel on a high, probable late Wisconsin age terrace situated more than 10 m (33 ft.) above the stream. The HDD lies at a nominal elevation of 1110 ft. The interpolated elevation of the narrow valley bottom zone is 1070 ft. while at its confluence with Raccoon Creek the stream elevation is 860 ft.

Potato Garden Run is in the early initial stage of development and exhibits a gradient of more than 100 ft. per mile. The mapped soils in the project area are ascribable to the Atkins series while the bedrock is mapped to the Casselman Formation of the Conemaugh Group. Like many streams in the region, surface coal mining has significantly impacted Potato Garden Run. Abundant springs and seeps transporting mine acid drains into the stream within the general study area. During the field-testing, the low bottom zone was no formally tested due to standing water across the low lying flood plain. Numerous anastomosing small channels cross the valley bottom zone all of which contain shale channers, mine acid, and coal rock fragments. The valley slopes and uplands both southeast and northeast of the stream channel have been strip-mined. The effect of mining has allowed for increased surface runoff, higher sediment yields and higher stream discharges along Potato Garden Run. The soils on the low flood plain zone, which lies less than 1 m (3.3 ft.) above the stream channel (s), are of recent age and have no potential to contain in situ prehistoric cultural resources. Based upon the geomorphology assessment no archaeological testing is warranted or recommended on the low lying, flood scoured flood plain zone. Several standard shovel test probes can effectively test the higher T1 terrace.

Peggs Run

Peggs Run is a small second order tributary of the Ohio River. Peggs Run flows due west to its confluence with the Ohio River at Shippingport, Pennsylvania. The artificial pool at Shippingport is 665 ft. The stream gradient along the tested reach of Peggs Run is 80 ft. per

mile. The valley bottom zone is bound by steep, bedrock defended valley slopes. The bedrock that crops out at Peggs Run is ascribable to the Glenshaw Formation of the Conemaugh Group.

The open cut along Peggs Run will impact a very narrow low lying T0 flood plain zone which is situated less than 0.6 m above the active stream channel at nominal interpolated elevation of 950-ft The soils along Peggs Run consisted of a 12 cm to 22 cm thick dark brown (10YR3 /3) gravelly loam sand A horizon which was underlain by coarse sands and gravels. The immature soil profile is of historic age and documents extensive flood scouring along the valley bottom zone. The effect of historic deforestation has allowed for increased slope wash, higher sediment yields and increased surface runoff. The Entisol/Fluvaquent soils along the valley bottom zone of Peggs Run have no potential to contain in situ prehistoric cultural resources.

Mill Creek

The proposed pipeline corridor at Mill Creek will employ an open cut along the valley bottom zone and lower valley slopes. Mill Creek is a second order tributary of the Ohio River. From the proposed pipeline crossing Mill Creek flows north to its confluence with the Ohio River at Georgetown, Pennsylvania. The stream pattern is the region is dendritic with consequent streams incising bedrock of the Casselman and Glenshaw Formations of the Conemaugh Group. Mill Creek exhibits a gradient of 60 ft. per mile. Mill Creek can be classified as a stream in the initial stage of development based upon its low discharge, moderately steep gradient, weak meandering channel habit and absence of higher, well defined terraces. During the field survey along a low-lying T0 flood plain zone was present bordering the active stream channel. The T0 flood plain zone lies less than 1.2 m (4 ft.) above the active stream channel and lies within the boundary of the 100-year flood way zone. The vegetation on the T0 flood plain consists of both facultative and obligate wetland species. The soils in the project area corridor on the T0 flood plain are mapped to the Atkins series.

During the geomorphology field-testing five auger probes were emplaced within the project area corridor. Two auger probes were excavated on the T0 landform while three additional probes were excavated on a broad sloping alluvial/colluvial fan, which intersects the flood plain. It should be noted that during the geomorphology field survey, standing water was present along portions of the T0 flood plain along the proposed pipeline corridor. The soils encountered on the T0 landform consisted of a strongly hydric profile with 20 cm thick dark brown to black (10YR 3/3 to 10YR 3/2) clay loam A horizon. The A horizon was underlain by a 10 cm thick grayish brown clay loam, massive, plastic Cg1 horizon. The Cg1 horizon was then underlain by a 30 cm thick, gray (10YR2/1) plastic, massive, clay Cg2 horizon. The Cg2 horizon was underlain by gravelly pebbly sands (lateral accretion). The water table was encountered at the base of the A horizon during testing. In several other areas of the flood plain zone closer to the active stream channel the surface A horizon was immediately underlain by coarse grained lateral accretion deposits. The soils on the T0 landform are of historic age and have no potential to contain in situ prehistoric cultural resources.

Raccoon Creek Crossing #2

Raccoon Creek Crossing #2 will be accomplished by employing an HDD on both side of the active stream channel. On the east bank the valley bottom zone is nonexistent due to the fact that the channel cut bank of Raccoon Creek is incising the lower valley slopes. The HDD on the east side of the stream lies at an interpolated elevation of 960 ft. The 900 ft. to 960 ft. elevation range marks the position of the Illinoian Stage Parker Strath Terrace. The soils on the east bank are mapped to the Monongahela series. On the west bank the pipeline corridor crosses a broad flood plain zone which contains expansive wetland areas. The proposed HDD on the west bank lies at a nominal elevation of 710 ft. on the distal margin of a broad T0 flood plain zone. The soils mapped to the HDD on the east bank is the Allegheny silt loam.

Auger and shovel test probes emplaced on the high, Parker Strath Terrace (T1 terrace) on the east bank consisted of a 12 cm to 24 cm thick dark brown (10YR3/3) silt loam Ap horizon that was underlain disconformably by a 20 cm to 30 cm thick yellowish brown (10YR4/6) weak subangular blocky silt loam Bw1 horizon. In places the Bw1 horizon was underlain conformably by a yellowish brown (10YR4/6) moderate subangular blocky silt loam Bw2 horizon. The Bw2 horizon was then underlain by a pebbly gravelly loam sand C horizon. Testing in the proposed HDD area on the east bank can be accomplished by standard shovel test probes.

Though along the proposed HDD corridor, the distal margin of the flood plain was investigated by a series of auger tests to characterize the landform in the context of the adjacent T1 terrace. No buried soil generations were noted along the valley bottom zone of Raccoon Creek. The absence of multiple, stacked soil generations indicates continuous slow vertical accretion of the flood plain. Based upon the color, texture and structure observed on the T0 flood plain zone the age of the vertical accretion deposits are no older than late middle Holocene.

Fishpot Run

The proposed pipeline corridor will entail an open cut along the valley bottom zone of Fishpot Run. Fishpot Run is a second order tributary of the Ohio River. From the proposed pipeline crossing, Fishpot Run flows 300 m (1000 ft.) due east to its confluence with Raccoon Creek. The soils in the project area corridor on the narrow (30 m wide) valley bottom zone are mapped to both the Tilsit soils and to the Gilpin-Weikert Complex. The Tilsit and Gilpin-Weikert soils are residual soils with fragic or argillic subsoil horizons formed on bedrock of the Allegheny Formation and Glenshaw Formations, however, immediately to the east of the corridor are alluvial soils mapped to the Philo series. The nominal interpolated elevation of the valley bottom zone at the proposed crossing is 730 ft. while the elevation of Raccoon Creek is 710 ft. The stream exhibits a gradient of 80 ft. per mile. The narrow valley bottom zone is bound to the north and south by steep, valley slopes defended by the younger Glenshaw Formation of the Conemaugh Group.

The alluvial soils along the valley bottom zone of Fishpot Run are recent/historic in age. The narrow valley bottom is flood scoured and the soils can best be classified as Fluvaquents (Entisols). The profile consists of a variably thick (12 cm to 18 cm) dark brown (10YR3/3) channery silt loam A horizon which is underlain by a 20 cm to 28 cm thick dark yellowish brown

(10YR4/4) channery silt loam CB horizon which is then underlain by relict, coarse grained lateral accretion deposits of probable historic age. Given the very late Holocene age of the soils on the low bottom zone no additional archaeological inventory investigations are warranted or recommended.

Raccoon Creek Crossing #1

The proposed crossing along Raccoon Creek between MP 22.9 and 23.4 will be accomplished by horizontal directional drilling (HDD). The pipeline corridor crosses the stream in a north to south orientation. On the south bank the broad T0 flood plain is situated on the inside of a broad meander bend with soils mapped to the Pope series. The T0 flood plain lies at a nominal elevation of 810 ft. The HDD on the south side of the stream is situated at a nominal elevation of 880 ft. on a high T1 terrace of probable Illinoian age. The HDD on the south side of the stream is situated approximately 25 m (80 ft.) above the active stream channel which lies at an interpolated elevation of 800 ft. and on the same probable Illinoian Stage terrace (Parker Strath Terrace). The soils along the south bank at the location of the HDD are mapped to the Monongahela series. Monongahela soils are often associated with high terraces of the early Wisconsin Stage or to the Illinoian Stage Parker Strath terrace within the Ohio River drainage basin. The T1 terrace lies well above the 500-year flood way zone. The bedrock units which underlie the alluvium on both the T1 terrace and the lower flood plain zone is ascribable to the Glenshaw Formation of the Conemaugh Group.

On the north bank the T0 flood plain zone is broader than that on the south bank. The T1 terrace situated at 80 ft. above the active stream on the north bank is narrow being bound to the north by steep, bedrock slopes defended by sandstones of the Glenshaw Formation of the Conemaugh Group. The HDD on the north side of the stream is situated at a nominal elevation of 820 ft. A large wetland area lies along the distal margin of the flood plain in the immediate area of the proposed HDD.

Auger probes emplaced on the high, Parker Strath Terrace (T1 terrace) on the south bank consisted of a 15 cm to 20 cm thick dark brown (10YR3/3) silt loam Ap horizon that was underlain disconformably by a 25 cm thick yellowish brown (10YR4/6) weak subangular blocky silt loam Bw1 horizon. The Bw1 horizon was underlain conformably by a yellowish brown (10YR4/6) moderate subangular blocky silt loam Bw2 horizon. The Bw2 horizon was then underlain by a pebbly gravelly loam sand C horizon. Testing in the proposed HDD area on the south bank can be accomplished by standard shovel test probes. During the field testing standing water was present in “pockets” within the wetland zones of the T0 and T1 terrace landforms. The T0 landform lies well within the mapped boundary of the 100-year flood way zone. The thickness of the hydric soil package on the distal margin of the flood plain zone and the clayey texture of the soils indicates a long period of hydric soil conditions with the slack water deposition of clays in the distal portion of the Raccoon Creek flood plain.

Testing on the low lying T0 flood plain zone was limited to the area of the proposed HDD corridor which is situated along the distal margin of the flood plain of Raccoon Creek. There are no proposed impacts to this area, but the data through a series of auger tests was performed to characterize the landform in the context of the adjacent T1 terrace. In this area a small, first order

tributary bisects the proposed pipeline corridor and lies just south of the HDD. The HDD along the pipeline corridor is located within a community park area where there has been limited grading as well as impact from a buried, gas utility line. In the area of the proposed HDD much of it consists of a wetland area dominated by obligate wetland species.

5
Research Design and Methodology

RESEARCH DESIGN

The overall approach to the Phase I survey for the Project was developed in consultation with the PHMC through their review of a project scoping letter dated September 22, 2015. In response to the initial Section 106 consultation letter, it was the opinion of the PHMC that the APE should not be limited to the USACE permit areas for proposed stream and wetland crossings, but should take into account all areas from which the Project may have direct or indirect (visual) effects. A letter sent to the PHMC on October 28, 2015, represented a revision from the initial Section 106 consultation by providing a sensitivity model to predict archaeological probability and revised testing strategy for all areas of temporary and permanent ground disturbance to the PHMC for the Project, in accordance with PHMC standards and the protocols of the USACE. In an email correspondence on November 10, 2016, the PHMC concurred with the revised testing strategy to adopt an archaeological sensitivity model to survey and review all areas of temporary and permanent disturbance. This section below and the following section (Chapter 5) reflect the approach presented in the project scoping letter.

OBJECTIVES

The primary objective of the Phase I archaeological survey was to identify potentially significant archaeological sites within the study corridor. Where sites were encountered, additional testing was conducted to define site size within the study corridor, approximate site boundaries, make provisional NRHP eligibility recommendations, and to work with pipeline design teams to avoid or minimize impacts to the archaeological resources.

Large-scale identification surveys have the potential to provide data for evaluating Native American settlement patterns. As discussed below, expectations regarding site locations were developed and implemented using a GIS-based predictive model. Field testing methods were designed to provide comparable sampling throughout the project area. The model also does not account for historical resources, in which the sensitivity assessment is based on previously recorded archaeological sites, historic map reviews, background research, and a pedestrian survey of the complete APE.

METHODOLOGY

Archaeological Field Survey

Methods for the identification of archaeological sites were consistent with the PHMC's guidelines: Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations (2008, 2016). The 100-foot (122-meter) study corridor was visually inspected via pedestrian survey to identify rockshelters, foundations, or other surface indications of archaeological sites regardless of field conditions (i.e. in areas of excessive slope, standing water). A GIS-based predictive model was used to identify areas of high, medium, and low

sensitivity for Native American sites, and nineteenth century historic maps were used to identify areas of high sensitivity for historic sites. Based on the archaeological sensitivity model, previous archaeological surveys, and accepted practice, relatively level landforms within approximately 300 feet of perennial water sources and similar settings adjacent to previously-recorded archaeological sites were categorized as having a high probability for the presence of archaeological sites. In addition, areas in proximity to historic roads and structure locations indicated on historic maps were also categorized as high probability areas. Areas of moderate probability encompassed level to gently sloping landforms between approximately 300 and 600 feet from a perennial water source. Areas with a low probability to contain archaeological sites include areas of steeper slope (≥ 15 percent) and areas at more than 600 feet distant from perennial water sources.

Geomorphological investigations were conducted at stream crossings with the potential to contain buried archaeological sites for which survey permission was available. These investigations were undertaken at two separate locations of Raccoon Creek, Peggs Run, Fishpot Run, Mill Creek, Robinson Run, Millers Run, Potato Garden Run and Westland Run.

The survey was limited to a 100-foot (122-meter) study corridor. Subsurface testing in high probability areas was accomplished by shovel test pits (STPs) excavated at 15-meter (~50-foot) intervals on landforms where archaeological sites could be expected within one meter (~3.3 feet) of the surface. In high probability areas where archaeological sites may be present below one meter, test units (TUs) measuring one-meter-square or larger were excavated at 30-meter intervals. Subsurface testing in medium probability areas were conducted by STPs at 30-meter (~98 feet) intervals, with closer-interval STPs excavated on a judgmental basis. STPs in low sensitivity areas were excavated on a judgmental based (i.e. near locally prominent landforms).

In portions of the study corridor where soil visibility was greater than 70 percent (except in areas of no-till agriculture), systematic surface survey for artifacts was conducted along transects spaced at 3.0-meter (9.8-foot) intervals in high probability areas. Surface survey transects in areas of medium and low probability were spaced at 6.0-meter (19.6-foot) intervals. In general, subsurface testing was not conducted on excessive slopes (≥ 15 percent slope) or in areas of standing water. As noted above, these settings were visually inspected for the presence of rockshelters, lithic sources, and structural remnants. If evidence of these features was identified in areas of excessive slope or standing water, subsurface testing was be conducted on a judgmental basis.

All soils from STPs and TUs were excavated by natural horizons. Soils from each horizon were screened separately through one-quarter-inch wire mesh. Data from STPs and TUs was recorded on standardized forms. Soil profiles were recorded using the Munsell color system and standard texture classifications. Excavations were completely backfilled, compacted, and the sod replaced. The location of survey transect beginning and end points, STPs, TUs, surface artifacts, and features were mapped with a hand-held Global Positioning System (GPS) unit with sub- meter accuracy. Digital photography was used to record surface conditions, select excavation profiles, cultural features, and identified archaeological sites.

In order to facilitate the field study, a grid of potential test locations at 15-meter (49.2-foot) intervals was established in the project GIS across the study corridor and loaded into a GPS unit for navigation in the field. The study corridor contained eight STP transects that were aligned parallel to the centerline. The transects were assigned letters A through G from east to west, pre-plotting a 300-foot corridor in preparation for routing changes. Typically Transects C through E represented the 100-foot (122-meter) study corridor based on the original design. The corridor was then divided into survey segments from north to south with respect to landmarks such as roads and streams by county. STP numbering ran from north to south within each survey segment.

Field maps showing the GIS model-based archaeological sensitivity ranking of each potential test location were used to guide the in-field assessment of archaeological sensitivity and testing interval. Accurate navigation to pre-plotted test locations in the field was accomplished using sub-meter-accurate handheld GPS equipment.

Artifact and Data Analysis

Artifacts were transported to the AECOM archaeological laboratory in Pittsburgh, Pennsylvania where they were processed, cataloged, and analyzed according to the State Museum of Pennsylvania standards and the Secretary of the Interior's Standards and Guidelines for Curation (36 CFR 79). The objectives of laboratory processing and analysis were to determine—to the extent possible—the date, function, and cultural affiliation of the site, as well as to prepare the artifacts for curation.

Prehistoric artifacts were cataloged in terms of material type, form, function, and, if possible, cultural affiliation. No prehistoric pottery was identified. Debitage was classified using morphological traits such as presence of a platform and bulb of percussion, the type of platform, dorsal flake scars, and presence of cortex. Evidence of thermal alteration on debitage was tabulated. Lithic tools were analyzed by functional type, manufacturing stage, and culture-historical type.

Historic artifacts included ceramics, glass, and metal. Historic artifacts were analyzed in terms of type of material, form, function, and temporal attributes. Historic ceramics were characterized by paste, glaze, and decoration. Major categories included red-bodied earthenware and whiteware. Vessel function was inferred whenever possible, based on vessel shape and size. Maker's marks were recorded and identified if present. Quality of evidence permitting, the date and place of manufacture was specified for each vessel in the assemblage.

Glass containers were characterized by type, color, and element (body, rim, base). Whenever the quality and completeness of the vessel was sufficient, the date of manufacture and the function of the bottle were specified. Window glass was characterized by color. Nails were classified b manufacturing process. Decorations or maker's marks were recorded when present, and a date and place of manufacture were specified when possible.

The information from laboratory analysis was entered into a Microsoft Access database. The database is designed to facilitate the generation of tables of artifact sub-assemblages from the sites, as well as to generate data for mapping analysis.

Artifacts were prepared for curation according to the State Museum of Pennsylvania guidelines. Following completion of the project, field records and photographs will be submitted to the State Museum for curation. AECOM will attempt to secure gift agreements from private landowners for donation of artifacts recovered from their property.

6
Archaeological Survey Results

PROPOSED HOUSTON TO MONACA LINE

WASHINGTON COUNTY

Survey Segment PACa005
Eastern Terminus: MP 0.00; Tract 170-009-00-00-0006-00
Western Terminus: MP 0.04 and Segment PACa003; Tract 170-009-00-00-0006-00
Start Lat/Long: 40.2644, -80.2601
End Lat/Long: 40.2642, -80.2610
Area/Length: 0.06 kilometers (0.04 miles)
Associated Access Roads: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.1 / None

Survey segment PACa005 is a work space expansion at the Houston processing plant, marking the southern terminus (MP 0.00) of the Houston-Monaca line. PACa005 extended east for 0.06 kilometers (0.04 miles) to PACa003, representing the southern terminus of the pipeline corridor for the Houston-Monaca line. The segment is located within an existing natural gas processing plant and storage facility (Photograph 6.1), exhibiting extensive disturbance due to construction-related activities on site. Modern conditions throughout the segment are related to industry. No vegetation is present and the landform shows extensive post-depositional modification. Soils associated with this segment are documented as Dormont series and Weikert-Culleoka complex (SSURGO, accessed 2016). Due to extensive disturbance, intact soils related to potential resources are no longer present.

Photograph 6. 1. General view of the southern terminus of the Houston to Monaca Line, facing east.

Sensitivity modeling for this segment is defined as no potential due to surface modification, suggesting there is no potential for the identification of cultural resources within PACa005. A total of 19 STPs were pre-plotted prior to the in-field assessment of the conditions. All 19 STPs were removed from testing strategies due to extensive disturbance during the pedestrian survey.

Survey Segment PACa003/PACa004
Southeastern Terminus: MP 0.04 and Segment PACa005; Tract 170-009-00-00-0006-00
Northern Terminus: Westland Road
Start Lat/Long: 40.2724, -80.2687
End Lat/Long: 40.2642, -80.2610
Area/Length: 1.48 kilometers (0.92 miles)
Access Roads: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36WH/074, 36WH/075, 36WH1735
Map Pages/STP Illustrations: Figures 6.1 to 6.3 / Figures 6.104 to 6.105

Survey segment PACa003 began at the Houston processing plant and extended west across Western Avenue, then veered to the north before terminating at Westland Road. The segment was situated parallel between an existing, cleared utility corridor to the west-northwest and Westland Run (JA-Ch006) to the east-southeast. In the limited areas beyond the cleared utility corridor, sparse, deciduous tree cover is defined with push piles associated with post-depositional modification to the landscape. An open cut for the corridor crossing Westland Run at MP 0.98 is proposed (Photograph 6.2). The segment was primarily situated within the existing corridor and/or the workspace of the corridor. In addition, a portion of the segment was located within the Chartiers Railway corridor. The railway was constructed in the later portion of the 19th century, and opened ca. 1871. The Westland Branch of the railway was abandoned by 1955.

Photograph 6. 2. General view of JA-Ch006 from STP B71, facing east.

This segment paralleled a hillslope and modified bench (8 to 25 percent slopes), crossing onto the narrow flood plain zone/footslope of Westland Run. A heavily-modified terrace was identified near Western Avenue, located entirely within existing utility corridors and stations. Soil series within this segment were documented primarily as associated with Dormont and Culleoka complexes derived from fine-loamy residuum weathered from sandstone and shale. Soils associated with strip mining do occur within the segment (SSURGO, accessed 2016). The Newark complex soil package was commonly associated with the flood plain and the foot- and toe-slopes of Westland Run. Soil consisted of mixed alluvium derived from limestone, sandstone, and shale that exhibits high run-off and poorly drained.

During the geomorphological assessment of Westland Run, a ground utility transmission line with deep disturbance to the soils was identified. In the wooded area lying nearer to the active stream channel, the soils consisted of a 0.20 to 0.40 meters (0.66 to 1.31 feet) thick dark brown (10YR3/3) silt loam A-horizon that contained more than 40 percent matrix supported coal, slag and rounded rock fragments. The A-horizon was underlain by coarse grained lateral accretion deposits consisting of coal rock fragments, slag, shale and sandstone. The valley bottom zone in the immediate study area has no potential to contain in situ resources due to flood scouring during historic times as well as impacts from utility line construction.

The archaeological survey contained a total of 36 excavated shovel tests. A total of 187 STPs were removed from testing strategies due to the presence of an existing utility corridor along the proposed workspace. In areas not exhibiting extensive disturbance, a typical soil profile is represented by STP B7 and D18. STP B7, north of the utility corridor, revealed a 0.21 meter (0.69 feet) very dark grayish brown (10YR 3/2) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) sandy silt loam B-horizon. STP D18, at the edge of the utility corridor, revealed a 0.25 meter (0.82 feet) very dark grayish brown (10YR 3/2) silt loam with sand Ap-horizon that terminated at bedrock (Photograph 6.3).

Photograph 6. 3: General view of PACa003 from STP B12, facing southeast.

Newly identified archaeological resources within this segment consisted of two isolated finds and remnants of a bridge structure. The first isolated find, 36WH/074, was a single rail spike recovered from STP C12 with a second rail spike recovered from the radial 5.00 meters (16.40 feet) north of the original positive STP. The railroad spikes were associated with the Chartiers Railway corridor. The second isolated find, 36WH/075 was recovered from STP D18 near the utility corridor edge. The isolated find included the recovery of a large brick fragment. The brick fragment may be related to disturbances from the Chartiers Railway. A bridge structure, 36WH1735, was identified at the northern portion of the line. The bridge had collapsed into Westland Run. The bridge was a single span with concrete supports on either side with iron beams lying across the supports.

Survey Segment PACa002
Western Terminus: Westland Road
Eastern Terminus: Approximately 0.64 kilometers (0.40 miles) east of 170-009-00-00-0002-01 and 170-009-00-00-0002-03 Parcel Boundary
Start Lat/Long: 40.2724, -80.2686
End Lat/Long: 40.4868, -80.3109
MP Range: 0.96 – 1.44
Length: 0.74 kilometers (0.46 miles)
Access Road: HOU-AR-01b
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: WHCa002-ST1
Map Pages/STP Illustrations: Figure 6.2 to 6.3 / Figure 6.106

Survey segment PACa002 begins at Westland Road and follows an east-by-northeast trajectory for 0.74 kilometers (0.46 miles) before terminating east of the existing pipeline corridor. The segment is defined by a sloping, wooded drainage. Soils within this segment include Dormont silt loam, Culleoka channery silt loam, and Dormont-Culleoka complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates high probability testing along the western portion of the segment and adjacent to a small drainage channel flowing across the corridor (Photograph 6.4). Modeling indicates low probability testing included steeply-sloped areas, particularly along the eastern portion of the segment.

Photograph 6.4: General view of PACa002 from STP C45, facing west.

Access Road HOU-AR-01b is located at the western terminus of survey segment PACa002. The access road extends 87.50 meters (287.07 feet) northeast off of Westland Road and crosses the proposed pipeline route. The access road follows an existing transportation ROW. The access road was pedestrian surveyed.

The archaeological survey contained 31 excavated shovel tests. Four shovel tests were removed from testing strategies due to saturated conditions, excessive slope, and general disturbances. Shovel test D26 in JA-Ch005 revealed a 0.22 meter (0.72 feet) yellowish brown (10YR 5/4) silt loam A-horizon underlain by a brownish yellow (10YR 6/6) silty clay B-horizon. Shovel test C48, in the woods east of Westland Road, revealed a 0.24 meter (0.79 feet) thick dark yellowish brown (10YR 4/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon.

No previously identified archaeological sites were located near Segment PACa002. A small garage, a modern resource (WHCa002-ST1), was present at the termination of access road HOU-AR-01b. The garage was made of textured cinderblocks and a cement floor. Plywood boards visible as part of the roof were stamped with “Aug 97”.

Survey Segment PACa001/PACa001-A
Northern Terminus: The parcel boundary between 170-002-00-00-0002-00 and 460-009-00-00-0028-00
Southern Terminus: Approximately 0.40 miles east of 170-009-00-00-0002-01 and 170-009-00-00-0002-03 Parcel Boundary
Start Lat/Long: 40.4868, -80.3109
End Lat/Long: 40.2914, -80.2622
MP Range: 1.44 – 2.59

Length: 1.85 kilometers (1.15 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.3 to 6.6 / Figure 6.103, 6.107 to 6.108

Survey segment PACa001 begins east of a existing utility corridor and follows a northern trajectory for 1.85 kilometers (1.15 miles) before terminating at a drainage channel between Chartier and Mount Pleasant Townships. Segment PACa001-A was a sliver added on the east side of PACa001 from a reroute. The segment is characterized by sloped, wooded drainages (Photograph 6.5). Survey Segment PACa001-A is currently off-alignment due to a subsequent shift in the location of the workspace. Soils within this segment include Culleoka channery silt loam, Weikert-Culleoka complex, Dormont-Culleoka complex, and Dormont silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment is primarily low probability due to steeply-sloped areas. High probability testing areas are located around the four jurisdictional areas within the segment as well as along a hilltop segment between MPs 1.95 and 2.15 and at the southern end of the segment.

Photograph 6. 5: General view of segment PACa001from STP C17, facing south.

The archaeological survey of segments PACa001 and PACa001-A included the excavation of 86 shovel tests. Nineteen shovel tests were removed from testing strategies due to excessive slope and saturated conditions. Shovel test D102 revealed 0.12 meter (0.39 feet) thick very dark brown (10YR 2/2) silt loam AO-horizon underlain by a yellowish brown (10YR 5/6) silt loam Bt-horizon. Shovel tests on the hilltop at the southern portion of segment PACa001 revealed a similar profile, with slight mottling in the A-horizon. Shovel test D92 revealed a 0.15 meter

(0.54 feet) thick brown (10YR 4/3) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) Bt-horizon.

No archaeological resources were previously identified within segment PACa001 and no archaeological resources were identified during the recent survey of the segment.

Survey Segment PAMo004/PAMo004-A/PAMo004-B
Northern Terminus: Parcel Boundary between 460-013-00-00-0031-00 and 460-010-00-00-0031-02
Southern Terminus: Parcel Boundary between 46-009-00-00-0028-00 and 170-002-00-00-0002-00
Start Lat/Long: 40.2930, -80.2634
End Lat/Long: 40.3100, -80.2672
MP Range: 2.59 – 3.38; 3.69 – 4.06
Length: 1.88 kilometers (1.17 miles)
Access Road: HOU-AR-04
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: WHMo004-ST1, 36WH/078
Map Pages/STP Illustrations: Figure 6.6 to 6.9 / Figures 6.109 to 6.110

Survey segment PAMo004 is 1.88 kilometers (1.17 miles) long and begins at the boundary between the parcels and follows a northerly trajectory before terminating at the parcel boundary. A reroute required the addition of Segment PAMo005 and split segment PAMo004 around Hornhead Road. The segment is defined by large, gently sloping agricultural fields separated by steeper sloped wooded drainages (Photograph 6.6). Soils within this segment include Dormont-Culleoka complex, Guernsey silt loam, Dormont silt loam, Culleoka channery silt loam, and Weikert-Culleoka complex (SSURGO, accessed 2016). The sensitivity model for this segment indicates high probability portions interspersed with low probability testing in steeply-sloped areas.

Photograph 6.6: General view of PAMo004 from STP B96, facing south.

Access road HOU-AR-04 is located at MP 3.35 in survey segment PAMo004 off of Hornhead St. This access road extends approximately 237.50 meters (779.20 feet) in a generally east direction before entering the proposed pipeline LOD at MP 3.35. Access road HOU-AR-04 follows an existing transportation ROW and was pedestrian surveyed.

Survey segment PAMo004-A covers a workspace area between MP 3.7 and 3.8. The segment consisted of 13 shovel tests extending west of PAMo004. Segment PAMo004-A has an increasing slope to the northeast toward a hilltop. The vegetation consists of primarily secondary growth plants and briar bushes. Survey shift PAMo004-B begins at the southern end of PAMo004, at the intersection with PACa001 and PACa001-A, and extends north approximately 0.35 kilometers (0.22 miles) to the hilltop. The topography of the segment includes a narrow U-shaped drainage with wood slopes shifting to a hilltop pasture.

Photograph 6. 7: General view of PAMo004 near C129, facing north.

The archaeological survey contained a total of 143 excavated shovel tests. Forty STPs were removed from testing strategies due to excessive slope and general disturbances. Shovel Test C140, on the hilltop, revealed a 0.26 meter (0.85 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam with trace clay B-horizon. Shovel test D125 in JA-Mo007 revealed a 0.38 meter (1.25 feet) dark grayish brown (10YR 4/2) silt loam Ap-horizon underlain by a grayish brown (10YR 5/2) silty clay Bg-horizon. Shovel test C25 on the hill top and shoulder above JA-Mo005 revealed a 0.25 meter (0.82 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam trace clay B-horizon.

Newly identified archaeological resources within this segment consist of one historic structure and one isolated find. WHMo004-ST1 is a well pump feature found on a wooded slope south of 36WH0156. The pump was on the western side of the corridor at the edge of the 300-ft corridor. The pump had a rectangular cement base with an iron pipe extending vertically with a U-shaped bend at the top. The isolated find, 36WH/078, included the recovery of a rusted metal hook in the first stratum of shovel test C139 in the pasture near MP 2.76. The pasture was on the hilltop overlooking JA-Mo007. The associated radial STPs were found to be negative.

Survey Segment PAMo005
Northern Terminus: MP 3.69
Southern Terminus: MP 3.38
Start Lat/Long: 40.3021, -80.2648
End Lat/Long: 40.3049, -80.2682
MP Range: 3.38 – 3.69
Length: 0.45 kilometers (0.28 miles)
Previously Identified Archaeological Resources: None

Newly Identified Archaeological Resources: 36WH/076
Map Pages/STP Illustrations: Figure 6.8 / Figure 6.111

Survey segment PAMo005 begins at MP 3.38 at the tree-line north of access road HAR-AR-04 and extends to the northwest for approximately 0.45 kilometers (0.28 miles) to just before the northern boundary of parcel 460-010-00-00-0031-00. The segment is defined by gently sloping agricultural fields separated by Hornhead Street and an unnamed tributary to Westland Run (Photograph 6.8). Soils within this segment include Dormont-Culleoka complex, Guernsey silt loam, and Dormont silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly high probability testing strategies. The probability model in the agricultural field west of the tributary was changed to high probability testing during survey due to the topography of the field.

Photograph 6. 8 General view of PAMo005 from Hornhead Road, facing northwest.

The archaeological survey contained a total of 62 excavated shovel tests. Thirteen STPs were removed from the testing strategy due to excessive slope, saturated conditions, and post-depositional disturbances. Segment PAMo005 and a small section in Segment PAMo004 north of PAMo005 are planned for HDD between the workspaces on either side of Hornhead Road. Shovel test D25, in the workspace, revealed a 0.25 meter (0.82 feet) thick dark yellowish brown (10YR 4/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon with tabular cobbles and traces of clay. Shovel test D17 in JA-Mo005 revealed a 0.15 meter (0.49 feet) dark yellowish brown (10YR 3/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test D12, in the agricultural field west of Hornhead Street, revealed an approximately 0.28 meter (0.92 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silty clay loam B-horizon. Tabular cobbles were common in the B horizon of the agricultural field.

No previously identified archaeological resources were identified within PAMo005. Newly identified archaeological resources within this segment consist of one isolated find, 36WH/076. The isolated find included historic artifacts identified within two shovel tests and one radial shovel test and included one window glass fragment and three fragments of bottle glass. The testing strategy was shifted to 7.50-meter (21.61 feet) interval radial STPs between the positive tests, but no additional artifacts were recovered.

Survey Segment PAMo003/PAMo003-A/PAMo003-B
Northern Terminus: Parcel 460-012-00-00-0031-00
Southern Terminus: Parcel Boundary between 460-013-00-00-0031-00 and 460-010-00-00-0031-02
Start Lat/Long: 40.3100, -80.2672
End Lat/Long: 40.3257, -80.2610
MP Range: 4.06 – 5.35
Length: 2.08 kilometers (1.29 miles)
Access Road: HOU-AR-06
Previously Identified Archaeological Resources: 36WH0157
Newly Identified Archaeological Resources: 36WH/076, 36WH/077, 36WH1737, 36WH1738
Map Pages/STP Illustrations: Figure 6.9 to 6.12 / Figure 6.112 to 6.113

Survey segment PAMo003 is a 2.08-kilometer (1.29-mile) segment that begins at the tree-line at the western side of the parcel and proceeds east before turning north at a utility corridor and terminating at the Pittsburgh & WVa Railway Co. Parcel. The segment is defined by large, gently sloping agricultural fields separated by steeper sloped wooded drainages (Photograph 6.9). Soils within this segment include Dormont-Culleoka complex, Culleoka channery silt loam, Guernsey silt loam, and Weikert-Culleoka complex (SSURGO, accessed 2016). Sensitivity modeling for this segment was shifted during survey to mostly high probability, particularly between archaeological sites. Modeling indicates low probability in steeply-sloped areas, north of Route 50.

Access road HOU-AR-06 is located approximately 300.00 meters (984.25 feet) west of MP 4.8 near survey segment PAMo003 off of Millers Run Road. The access road follows an existing, disturbed farm road that extends generally northeast for 0.97 kilometers (0.61 miles) before terminating near STP E13. Shovel tests (n=5) were placed judgmentally to confirm the presence of the existing farm road. The entirety of the access road was pedestrian surveyed

Photograph 6.9: General view of PAMo003 near STP C66, facing north.

Survey segment PAMo003-A was added to account for an HDD workspace on the northern portion of the line. The segment was pedestrian surveyed only due to excessive slope. Segment PAMo003-B was a workspace to the east of the 300-foot corridor at MP 5.1.

The archaeological survey contained a total of 337 excavated shovel tests. Twenty-three shovel tests that were removed from testing strategies as a result of excessive slope. Shovel test C137 in JA-Mo005 revealed a 0.26-meter (0.85 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay loam B-horizon. Shovel test D106 revealed a 0.46 meter (1.51 feet) dark yellowish brown (10YR 4/4) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test D93 excavated in the agricultural area north of MP 4.5 revealed a 0.27 meter (0.89 feet) thick dark yellowish brown (10YR 4/4) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay B-horizon. Shovel test C55, within a drainage, revealed a 0.55 meter (1.80 feet) thick dark yellowish brown (10YR 4/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Traces of clay were present the closer you were to the drainage. The soils within STP C46 of JA-Mo017 included a 0.31 meter (1.02 feet) thick dark brown (7.5YR 3/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon.

Photograph 6.10: General view of PAMo003 at JA-Mo005, facing west.

Previously identified Site 36WH0157 is a prehistoric (Middle to Transitional Archaic), open habitation site. The site was on the stream bench of an unnamed tributary of Miller's Run. The centerline of the corridor bisected the site from east-to-west, then turned north at the eastern end of the site boundary. Testing at a 15-meter interval within the mapped location of the site did not identify the presence of the occupation. Additional shovel tests were added at 7.5 meter (24.61 feet) intervals across the site, but no artifacts were recovered.

Newly identified archaeological resources within this segment included: 36WH/076, 36WH/077, 36WH1737, 36WH1738. Archaeological resources 36WH/076 and 36WH/077 were prehistoric, non-diagnostic isolated finds. Site 36WH1737 was a foundation from a potential mid-twentieth century farmstead. Site 36WH1738 was a series of brick structural piers found on the slope above a historic mining complex, 36WH1718.

Survey Segment PAMo002
Northern Terminus: Parcel 460-021-00-00-0013-00
Southern Terminus: Parcel 460-012-00-00-0031-00
Start Lat/Long: 40.3257, -80.2610
End Lat/Long: 40.3426, -80.2649
MP Range: 5.36 – 6.57
Length: 1.95 kilometers (1.21 miles)
Access Road: HOU-AR-06a, HOU-AR-07, HOU-AR-07a, HOU-AR-07c
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36WH1718, 36WH1736
Map Pages/STP Illustrations: Figures 6.12 to 6.15 / Figures 6.114 to 6.115

Survey segment PAMo002 begins at the railroad parcel and follows a northern trajectory for 1.95 kilometers (1.21 miles) before terminating at the Parcel 460-021-00-00-0013-. The segment is defined by large, gently sloping agricultural fields separated by wooded property boundaries (Photograph 6.11). Soils within this segment include Glenford silt loam, Dormont silt loam, Culleoka channery silt loam, Weikert-Culleoka complex, and Dormont-Culleoka complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates primarily medium probability with high probability testing on broad hilltops. Modeling indicates low probability along steeply-sloped areas.

Photograph 6.11: General view of PAMo002 at STP 37, facing northwest.

Access road HOU-AR-06a is located near MP 5.5 and extends approximately 100.00 meters (328.08 feet) south of Southview Road. This access road follows an existing transportation ROW and was subsequently pedestrian surveyed. Access road HOU-AR-07 is located on the opposite side of Southview Road and extends generally north for approximately 100.00 meters (328.08 feet) before terminating at the proposed HDD workspace at MP 5.6. This access road consists of an existing gravel transportation ROW and was pedestrian surveyed. Access road HOU-AR-07a is located at MP 6.1 and extends west for approximately 325.00 meters (1066.27 feet) off of Primrose Road and crosses JA-Mo023. The access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-07c is located at MP 6.6 and extends generally west for approximately 500.00 meters (1640.42 feet) before terminating at the northern terminus of survey segment PAMo002. This access road follows an existing transportation ROW for 250.00 meters (820.21 feet) before crossing an overhead utility corridor. Shovel tests (n=10) were placed within the corridor, while the rest of the access road was pedestrian surveyed.

The archaeological survey contained a total of 182 excavated shovel tests. Forty-three STPS were removed from testing strategies due primarily to the Site 36WH1718 being avoided due to the proposed HDD, but also excessive slope and saturated soils. The southern agricultural field displayed a similar soil profile to the northern section. Shovel test D98 revealed a 0.30 meter (0.98 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay B-horizon. Shovel test B87 is representative of JA-Mo014 with a 0.24 meter (0.79 feet) dark yellowish brown (10YR 4/4) clay loam Ag-horizon underlain by a yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) clay loam Bg-horizon. The landform changed in near a drainage channel and was characterized in STP C54 by a 0.20 meter (0.66 feet) dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottled silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) clay B-horizon. Shovel test C12, near another drainage, revealed a 0.30 meter (0.98 feet) thick brown (10YR 4/3) silt loam with trace clay Ap-horizon underlain by a yellowish brown (10YR 5/6) clay loam B-horizon.

The industrial complex site, 36WH1718 was identified as Montour Mine #1 (Photograph 6.12). The mine was a deep mine owned by the Pittsburgh Coal Company and was used for the extraction of bituminous coal from 1914 to no later than 1939. Southview, the existing and adjacent town, was originally developed as a coal patch town. The mine will not be impacted by the proposed pipeline corridor. A concurrent survey for a proposed wastewater collection and treatment construction project identified the resource (Frye et al. 2016) documented the resource, however, the proposed LOD for that project did not contribute to the NR-eligibility of the resource.

Newly identified archaeological resources within this segment consist of one historic scatter, directly west of the town of Southview The historic scatter, 36WH1736, was identified initially by a positive shovel test at STP D98 near MP 5.55. Artifacts recovered include ten nails, three window glass fragments, and three unidentifiable glass fragments.

Photograph 6.12: View of Millers Run and Site 36WH1718, facing northeast.

Survey Segment PAMo001/PAMo001-A/PAMo001-B/PAMo001-C/PAMo006
Northern Terminus: Noblestown Road
Southern Terminus: Parcel 460-021-00-00-0013-00
Start Lat/Long: 40.3426, -80.2649
End Lat/Long: 40.3602, -80.2738
MP Range: 6.57 – 8.01
Length: 2.32 kilometers (1.44 miles)
Access Road: HOU-AR-07c, HOU-AR-09
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36WH1739
Map Pages/STP Illustrations: Figures 6.15 to 6.18 / Figure 6.116 to 6.117

Survey segment PAMo001 begins at the Crawford parcel and follows a northerly trajectory for 2.32 kilometers (1.44 miles) before terminating at Noblestown Road. The segment is defined by a manicured golf course followed by wooded slopes surrounding a large sloping agricultural field (Photograph 6.13). Soils within this segment include Dormont silt loam, Weikert-Culleoka complex, Culleoka channery silt loam, and Dormont-Culleoka complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates low probability through the golf course and steeply-sloped areas. High probability testing occurred on the shoulder slopes and hilltop of the agricultural field.

Photograph 6.13: General view of PAMo001/ PAMo006 from STP C64, facing northwest.

Segment additions PAMo001-A, PAMo001-B, and PAMo001-B were extensions of the 300-foot corridor associated with HDD workspaces. PAMo001-A and PAMo001-B were on the east side of the 300-foot corridor between MP 7.37 and MP 7.47. The extensions added one and four STPs respectively. Segment addition PAMo001-C was between MP 7.83 and MP 7.9. The workspace extended west of the 300-foot corridor. The extension added 16 STPs. The two HDD workspaces are connected by a segment shift from the original center line location that necessitated the addition of segment PAMo006. The segment shift created a westward extension of the former PAMo001 corridor. The segment extended from MP 7.4 to MP 7.9 and included a drainage channel. An electric fence and access road passed roughly perpendicularly through the segment at MP 7.57.

Access road HOU-AR-07c is located at MP 6.6 and extends generally west for approximately 500.00 meters (1640.42 feet) before terminating at the northern terminus of survey segment PAMo002. This access road follows an existing transportation ROW for 250.00 meters (820.21 feet) before crossing an overhead utility corridor. Ten STPs were placed within the corridor. The remainder of the access road was pedestrian surveyed. Access road HOU-AR-09 is located at MP 7.7 and extends generally west for approximately 0.72 kilometers (0.45 miles) off of Fort Cherry road before terminating at STP D34. This access road follows an existing gravel transportation ROW. At STP AR2-15 a 100.00 meter (328.08 feet) extension follows a south ward trajectory up a steep sleep.

The archaeological survey contained a total of 118 excavated shovel tests. Forty-five STPs were removed from testing strategies due to excessive slope and post-deposition modification of soils. Shovel tests excavated in a drainage channel parallel to Fort Cherry Road revealed a series of fluvial deposits. Shovel test C75 revealed an 0.21-meter (0.69 feet) dark yellowish brown (10YR

3/4) channery silt loam Ap-Horizon underlain by a yellowish brown (10YR 5/4) channery silt loam Bt1-horizon extending to 0.46 meters (1.51 feet) below ground surface. The Bt1-horizon was followed by a 0.20-meter (0.66 feet) thick yellowish brown (10YR 5/4) very channery silt loam Bt2-horizon and then terminated at a yellowish brown (10YR 5/6) sandy clay BC-horizon. Shovel test C64, on the hilltop pasture north of Fort Cherry Road, revealed a 0.20 meter (0.66 feet) dark yellowish brown (10YR 3/4) channery silt loam Ap-horizon followed by a yellowish brown (10YR 5/6) channery silt loam Bt-horizon. Shovel test D7 in PAMo006 at the base of the slope revealed a 0.32 meter (1.05 feet) mottled brown (10YR 4/3) and brownish yellow (10YR 6/4) disturbed silt loam Ap-horizon underlain by a brownish yellow (10YR 6/4) silt loam B-horizon. Shovel test C17, on the wooded hilltop and slopes on the northern side of the corridor, revealed a 0.24 meter (0.79 feet) dark yellowish brown (10YR 3/4) silt loam A-horizon underlain by a strong brown (7.5YR 5/6) silt loam Bt-horizon.

Shovel testing in PAMo006 at the base of the slope identified a historic scatter site adjacent to the electric fence (Figure 6.14). The site, 36WH1739, is partially in the cow pasture, but extends into the drainage and along the base of the slope to the east. Combined with radial shovel testing, the site had 11 positive STPs that spanned over an area approximately 30 meters (98.43 feet) by 20 meters (66.62 feet).

Photograph 6.14: General view of Site 36WH1739, facing east.

Survey Segment PARo004/PARo004-A/PARo006
Northern Terminus: MP 9.8
Southern Terminus: Noblestown Drive
Start Lat/Long: 40.3602, -80.2738
End Lat/Long: 40.3837, -80.2750

MP Range: 8.01 - 9.8
Length: 2.86 kilometers (1.78 miles)
Access Road: HOU-AR-09b
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.18 to 6.24 / Figure 6.118

Survey segment PARo004 begins at Noblestown Drive and follows a northern trajectory for 2.86 kilometers (1.78 miles) before terminating at MP 9.8 in Parcel 550-018-00-00-0001-00. The segment is defined by large, strip mined fields and existing utility corridors between two well pads (Photograph 6.15). Soils within this segment include Dormont-Culleoka complex, Guernsey silt loam, Weikert-Culleoka complex, Dormont silt loam, Culleoka channery silt loam, and Brooke silty clay loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to previous strip mining activity and utility corridors.

Segments PARo004-A and PARo006 were iterations of a proposed HDD workspace. PARo004-A was the original added workspace which was then replaced by PARo006. The segments are between MP 8.3 and MP 8.4 and are west of the southern well pad. The soil has been disturbed by strip mining activity and no longer has the potential for cultural resources.

Photograph 6.152: General view of PARo004 at JA-Ro008 near STP C21, facing north.

Access road HOU-AR-09b begins at approximately MP 9.5 and extends generally southward for approximately 2.58 kilometers (1.60 miles) off of Quicksilver Road before terminating at STP E161 in survey segment PARo004. An extension of HOU-AR-09b begins at STP AR-105 and

extends generally west for 1.28 kilometers (0.79 miles) before terminating at Quicksilver Road. This access road follows an existing transportation ROW that serves as access for the well pads.

The archaeological survey contained a total of 105 excavated STPs. Another 123 STPs were removed from testing strategies due to heavy strip mining and utility corridor disturbance. Shovel test C187 in a wetland area revealed a 0.19-meter (0.62 feet) thick very dark gray (10YR 3/1) silt loam Oa-horizon underlain by a grayish brown (10YR 5/2) and yellowish brown (10YR 5/8) mottled silt loam Btg-horizon. Shovel testing in the remainder of the segment was heavily disturbed by strip mining and utility corridor construction. Shovel Test C124 is representative of the disturbance. The STP revealed a dark yellowish brown (10YR 3/4) and yellowish brown (10YR 5/6) mottled silt loam fill soil with sandy loam.

No archaeological resources were identified.

Survey Segment PARo003
Northern Terminus: MP 10.68
Southern Terminus: MP 9.8
Start Lat/Long: 40.3833, -80.2748
End Lat/Long: 40.3940, -80.2863
MP Range: 9.8 – 10.68
Length: 1.40 kilometers (0.87 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.24 to 6.26 / None

Survey segment PARo003 begins on a hilltop east of a well pad and extends in a northwestern trajectory for 1.40 kilometers (0.87 miles) terminating shortly south of Quicksilver Road (Photograph 6.16). The survey segment is characterized by small upland areas that were disturbed by strip mining operations. The vegetation in the area included mostly shrub-like grasses. Two parallel-running utility corridors bisected the segment in a general east/west orientation. The corridor ran to the east of a well pad facility and associated drainages. Original soils in this segment include Dormont silt loam, Culleoka channery silt loam, Dormont-Culleoka complex, and Brooke silty clay loam (SSURGO, accessed 2016), but the segment was previously strip mined leaving depleted, fill soils across the entirety of the segment. The probability model for this segment included primarily low probability testing due to the strip mining, with high probability testing near streams and wetlands.

Photograph 6.16: General view of PARo003 from STP C60, facing north.

The archaeological survey contained a total of 41 excavated shovel tests. Fifteen STPs were removed from the testing strategy due to excessive slope and utility corridor disturbance. Shovel test excavation within segment PARo003 revealed disturbed soils from previous strip mine operations. The soil in STP C76 is representative of the disturbance and consisted of a 0.15 meter (0.49 feet) brown (10YR 4/3), brown (10YR 5/3), and reddish gray (2.5YR 5/1) sandy clay loam Fill underlain by a yellowish brown (10YR 5/6) and reddish gray (2.5YR 5/1) silty clay Fill 2. There were some minor color changes within the fill soils, but the entirity of PARo003 had been disturbed.

No archaeological resources were identified.

Survey Segment PARo005/PARo002/PARo002-A
Northern Terminus: Robinson Highway
Southern Terminus: MP 10.68, east of Quicksilver Road
Start Lat/Long: 40.3920, -80.2853
End Lat/Long: 40.3989, -80.2887
MP Range: 10.69 – 11.45
Length: 1.22 kilometers (0.76 miles)
Access Road: HOU-AR-09c
Previously Identified Archaeological Resources: 36WH1441, 36WH1549
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.26 to 6.27 / Figures 6.118 to 6.119

Survey segment PARo005 begins 0.16 kilometers (0.10 miles) east of Quicksilver road and extended northwest then northeast for 1.22 kilometers (0.76 miles) to Robinson Highway. The segment is defined by strip-mined slopes and hilltops with a majority of secondary growth vegetation. A small section of the segment north of Quicksilver Road included a golf course property where HDD was planned (Photograph 6.17). Soils within this segment include Culleoka channery silt loam and disturbed soils from strip mine activities (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates primarily low and medium probability. The hilltop at MP 11 was adjusted to judgmentally survey the workspace, but was modified due to strip-mining activity. JA-Ro004 was surveyed at high probability.

Photograph 6.17: General view of golf course within PARo005, facing south.

Survey segments PARo002 and PARo002-A were remnants of a larger section that was changed due to realignment (Photograph 6.18). Segment PARo002-A was added to shift the 300-foot corridor from PARo002 to Robinson Road. The small segments extended from the northern section of PARo005 and terminated at Robinson highway. PARo002 was a 0.14 kilometer (0.09 mile) section that extended northeast from MP 11.29 to 11.37. The segment started at Laska Lane and continued up a short slope to a modified hilltop. Segment PARo002-A extended from the northern terminus of PARo002 to Robinson Highway, 0.13 kilometers (0.08 miles) to the northeast.

Access road HOU-AR-09c is located at MP 11.3 and extends generally south for approximately 575.00 meters (1886.48 feet) before terminating at STP D32 in survey segment PARo005. This access road follows an existing transportation ROW and was pedestrian surveyed.

Photograph 6.18: General view of JA-Ro003, facing north.

The archaeological survey contained a total of 58 excavated shovel tests. Forty-eight STPs were removed from testing strategies due to saturated soils, excessive slope, and general disturbances. Shovel testing on the hilltop between MP 10.95 and MP 11.1 revealed a fill package with mottled dark brown (10YR 3/3) and yellowish brown (10YR 5/4) silt loam soils. Shovel test C30 is representative of the disturbed soils. Shovel test D1 in JA-Ro004 revealed an approximately 0.19 meter (0.62 feet) dark grayish brown (10YR 4/2) silt loam disturbed Ap-Horizon underlain by a 0.08-meter (0.26 feet) thick light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) silty clay fill. A yellowish brown (10YR 5/6) silty clay loam BC-Horizon was under the fill.

Previously identified site 36WH1441 is a historic industrial site documented in 2008 (Photograph 6.19). The site is described as a single foundation dating no earlier than 1900. The mapped location of the foundation is within the former alignment, therefore the site is no longer in the corridor due to a realignment.

Photograph 6.19: General view of site 36WH1441, facing northwest.

The second previously identified site, 36WH1549, was documented in May of 2015. The site was described as a prehistoric site near a farmhouse. No diagnostic artifacts were recovered, but a small amount of lithic debitage and fire-cracked rock was recovered during the previous survey. The site was discovered on a low-order tributary of Little Raccoon Run. The survey of Segment PARo002 recovered no additional artifacts, but a large portion of the site was disturbed by logging equipment and activity.

The realignment shifted the corridor to the west of both existing archaeological sites. Neither of the sites will be affected by construction of the pipeline under the current alignment. No new archaeological resources were identified in PAMo005.

Survey Segment PARo001/PARo001-A/PARo001- B
Northern Terminus: Allegheny and Washington County Boundary
Southern Terminus: Robinson Highway – State Route 980
Start Lat/Long: 40.4014, -80.2874
End Lat/Long: 40.4157, -80.2848
MP Range: 11.45 – 12.7
Length: 2.01 kilometers (1.25 miles)
Access Road: HOU-AR-10, HOU-AR-11
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.27 to 6.30 / Figure 6.120

Survey segment PARo001 starts at Robinson Highway – State Route 980 and extends in northern trajectory for 2.01 kilometers (1.25 miles) before terminating at the boundary of Allegheny and

Washington counties. The survey segment is characterized by a relatively flat topography in a shrub and brush upland, with several small wetlands and drainages. Large portions of the segment included modified soils from strip mining and an existing utility corridor that crossed the proposed pipeline corridor (Photograph 6.20). Soils in this segment include Weikert-Culleoka complex, Culleoka channery silt loam, Dormont-Culleoka complex, Dormont silt loam, and Guernsey silt loam (SSURGO, accessed 2016). The probability model for this segment indicated high, medium, and low probability areas depending on the extent of soil disturbance, presence of jurisdictional areas, and slope. The segment north of MP 11.8 showed evidence of strip mining activities and modified soils.

Photograph 6.20: General view of PARo001 near STP C76, facing south.

Survey segment PARo001-A extended the 300-foot corridor to the east from MP 12.1 to MP 12.7. The extension was necessary due to a line shift and the addition of a small workspace at MP 12.54. Segment PARo001-B was a small sliver at the southern side of the segment east of Robinson highway due to realignment.

Access road HOU-AR-10 is located at MP 11.9 and extends east for approximately 375.00 meters (1230.31 feet) off of Beagle Club Road and crosses a small drainage before terminating at STP E92 in survey segment PARo001. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-11 is located at MP 12.7 and extends north for approximately 0.92 kilometers (0.57 feet) off of Beagle Club Road. This access road follows an existing transportation ROW and partially extends into the strip mined landform.

The archaeological survey contained a total of 84 excavated STPs. Sixty-two STPs were removed from testing strategies due to saturated conditions and general disturbance. Shovel test A143 in JA-Ro003 revealed an approximately 0.18-meter (0.59 feet) thick brown (10YR 4/3) silt

loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam Bw-horizon extending to 0.41 meters (1.35 feet) below ground surface. The Bw-horizon was over a second Bw-horizon with strong brown (7.5YR 5/6) sandy loam soils that extended to a depth of 0.79 meters (2.59 feet) below ground surface. The shovel test terminated at a strong brown (7.5YR 5/8) sandy loam BC-horizon with 70 percent angular pebbles. Excavations of shovel test D94 revealed a 0.32-meter (1.05 feet) brown (10YR 4/3) and brownish yellow (10YR 6/6) silty clay disturbed Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay B-horizon. Shovel tests further north from JA-Ro002 were disturbed by previous strip mining activities through the remaining portion of the segment. Shovel test D60 was representative of the disturbed soils and included a grayish brown (10YR 5/2), brownish yellow (10YR 6/6), and yellowish brown (10YR 5/4) mottled silty clay fill package.

No archaeological resources were identified.

ALLEGHENY COUNTY

Survey Segment PANo002
Northern Terminus: MP 12.85
Southern Terminus: Washington/Allegheny County Line
Start Lat/Long: 40.4158, -80.2850
End Lat/Long: 40.4178, -80.2839
MP Range: 12.7 – 12.84
Length: 0.23 kilometers (0.14 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.30 / Figure 6.121

Survey segment PANo002 begins at the Washington and Allegheny county line and extended north 0.23 kilometers (0.14 miles) to the tree-line between MP 12.8 and 12.9. The segment is defined by a steep slope between strip-mined areas (Photograph 6.21). Soils within this segment include Culleoka-Weikert shaly silt loam, Weikert-Culleoka complex, and soils disturbed from strip mining (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to slope greater than 15 percent. The corridor through this segment was rerouted and left a small portion of PANo002 that was able to be surveyed.

Photograph 6.21: General view of PANo002 at MP 12.7, facing northeast.

The archaeological survey contained a two excavated shovel tests. Two STPs were removed from the testing strategy due to saturated conditions and an existing utility corridor. Shovel test A85 revealed a profile with dark gray (Gley 1 4/N) clay loam gleyed soils at ground surface. The

remainder of the segment was on a slope with a grade exceeding 15 percent. No archaeological resources had been identified within PANo002.

No archaeological resources were identified.

Survey Segment PANo004
Northern Terminus: William Penn Highway
Southern Terminus: MP 12.85
Start Lat/Long: 40.4178, -80.2839
End Lat/Long: 40.4273, -80.2823
MP Range: 12.85 – 13.56
Length: 1.12 kilometers (0.70 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.30 to 6.32 / Figure 6.121

Survey segment PANo004 begins at the tree-line between MP 12.8 and MP 12.9 and extended along a northern trajectory for 1.12 kilometers (0.70 miles) to William Penn Highway. The segment is defined by a large, strip-mined hilltop and saddle with a slope to the highway which is bisected by an existing in-ground transmission corridor (Photograph 6.22). Soils within this segment include Dormont silt loam, Guernsey silt loam, Library silty clay, and soils that were disturbed through strip mining activity (SSURGO, accessed 2016). Sensitivity modeling for this segment includes mostly low probability due to strip-mining. Sections of the segment were surveyed at medium probability, but these sections reinforced the evidence of strip-mining.

Photograph 6.22: General view of PANo004 near MP 13.3, facing south.

The archaeological survey contained a single excavated shovel test and six shovel tests that were not excavated in segment PANo004. The shovel tests were removed from the testing strategy due to excessive slope and strip-mining disturbance. Shovel testing on the hilltop indicated the presence of a farm road that disturbed the soils. Shovel test D38 is representative of the strip mining disturbance to the soils. The STP revealed a mottled dark brown (10YR 3/3) and yellowish brown (10YR 5/6) silt loam fill-horizon.

No archaeological resources were identified.

Survey Segment PANo003
Northern Terminus: MP 13.91
Southern Terminus: William Penn Highway
Start Lat/Long: 40.4279, -80.2828
End Lat/Long: 40.4302, -80.2870
MP Range: 13.61 – 13.91
Length: 0.48 kilometers (0.30 miles)
Access Road: HOU-AR-11a
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.32 / Figure 6.121

Survey segment PANo003 starts at William Penn Highway and follows a northwest trajectory for 0.48 kilometers (0.30 miles) before terminating at MP 13.91. The segment is defined by wooded slopes to a strip-mined hilltop (Photograph 6.23). Soils within this segment include

Dormont silt loam and Guernsey silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability due to slopes greater than 15 percent.

Photograph 6.23: General view of PANo003 near STP C5, facing east.

Access road HOU-AR-11a is located near MP 13.7 and extends northeast for approximately 75.00 meters (246.06 feet) from Steubenville Pike. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of four excavated shovel tests in the segment. Five additional shovel tests were removed from testing strategies due to strip-mining disturbance or excessive slope. Shovel test C4, on the hilltop, revealed dark brown (10YR 3/3) and yellowish brown (10YR 5/4) silt loam soils from a fill package likely associated with strip-mining activity. The disturbance extends throughout the hilltop.

No archaeological resources were identified.

Survey Segment PANo001
Northern Terminus: North Fayette and Findlay Township Line
Southern Terminus: MP 13.91
Start Lat/Long: 40.4302, -80.2871
End Lat/Long: 40.4315, -80.2879
MP Range: 13.91 – 14.02
Length: 0.18 kilometers (0.11 miles)
Associated USACE Jurisdictional Areas: JA-Fi023
Access Road: None
Previously Identified Archaeological Resources: None

Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.32 to 6.33 / Figure 6.121

Survey segment PANo001 begins at MP 13.91 and extends north 0.18 kilometers (0.11 miles) to the North Fayette and Findlay Township boundary. The segment is defined by a wooded slope (Photograph 6.24). Soils within this segment include Guernsey silt loam and Dormont silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to excessive slope and a small section of high probability testing within a drainage channel. Realignment diverted the corridor around much of PANo001, but the small section remaining was surveyed.

Photograph 6.24: General view of PANa001 near STP D9, facing north

The archaeological survey contained a total of eight excavated shovel tests in this segment. Three shovel tests were removed from testing strategies due to excessive slope. Shovel test C4 within JA-Fi023 revealed an approximately 0.14 meter (0.46 feet) thick brown (10YR 4/2) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silty clay to silty clay loam B horizon.

No archaeological resources were identified within Segment PANo001 previously, and no new resources were identified within the current survey.

Survey Segment PAFi006/PAFi010
Northern Terminus: Potato Garden Run Road
Southern Terminus: North Fayette and Findlay Township Line
Start Lat/Long: 40.4315, -80.2879
End Lat/Long: 40.4346, -80.2914

MP Range: 14.02 – 14.37
Length: 0.55 kilometers (0.34 miles)
Access Road: HOU-AR-12a, HOU-AR-12a.1
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.33 / Figure 6.122

Survey segment PAFi006 begins at the North Fayette and Findlay Township boundary and extends north and then west for 0.55 kilometers (0.34 miles) to Potato Garden Run Road. The segment is defined by a drainage leading to strip-mined side-slopes transitioning to a second drainage with a wide wetland area (Photograph 6.25). Soils within this segment include Dormont silt loam, Culleoka channery silt loam, and strip mined soils (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to the slope and sections of high probability testing within the jurisdictional areas. A small workspace was also surveyed at MP 14.2. Survey segment PAFi010 was added for survey coverage of the workspace where it extended east of the 300-foot corridor.

Photograph 6.25: General view of segment PAFi006, facing east.

Access road HOU-AR-12a is located near MP 14.3 and extends generally southeast for approximately 75.00 meters (246.06 feet) off of Boggs Road before terminating at STP C16 in survey segment PAFi006. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-12a.1 is located near MP 14.4 and extends north for approximately 100.00 meters (328.08 feet) off of Potato Garden Run Road before terminating at STP D97 in survey segment PAFi005. This access road follows a strip mined land form and was pedestrian surveyed.

The archaeological survey contained a total of 11 excavated shovel tests. Twenty-three STPs were removed from the testing strategy due to saturated conditions, steep slope, and post-deposition disturbances. Shovel test D35 in JA-Fi023 revealed a 0.19 meter (0.62 feet) thick dark greyish brown (10YR 4/2) silt loam A-horizon underlain by a yellowish brown (10YR 5/4) silty clay loam Bw-horizon. The side slope was tested in the middle of the segment near MP 14.1, but the soils were disturbed due to strip-mining activity. Shovel testing in the workspace at MP 14.2 also showed post-deposition disturbance. Shovel testing in JA-Fi022 revealed fill soils through the majority of the wetland area. Shovel test D4 revealed a 0.10 meter (0.33 feet) very dark grayish brown (10YR 3/2) silt loam AO-horizon underlain by a dark grey (Gley 1 4/N) clay Bg-horizon.

No archaeological resources were previously identified. No new resources were identified within the current survey.

Survey Segment PAFi005/PAFi005-A/PAFi005-B
Northern Terminus: Potato Garden Run Road, MP 15.28
Southern Terminus: Potato Garden Run Road, MP 14.37
Start Lat/Long: 40.4346, -80.2916
End Lat/Long: 40.4467, -80.2925
MP Range: 14.37 – 15.28
Length: 1.46 kilometers (0.91 miles)
Access Road: HOU-AR-12c, HOU-AR-13
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: ALFi005-ST1
Map Pages/STP Illustrations: Figures 6.33 to 6.35 / None

Survey segment PAFi005 begins at Potato Garden Run Road near Boggs Road and runs north, parallel with the road for 1.46 kilometers (0.91 miles) before intersecting with Potato Garden Run Road again. The segment is defined by a large, strip-mined hilltop leading to a steep, wooded slope to a stretch of disturbed, strip-mined soils (Photograph 6.26). The northern portion of the segment was built up through waste piles from the strip mining process. Soils within this segment include Klinesville channery loam, Penn channery silt loam, Pattenburg gravelly loam and Rowland silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability due to the post-deposition disturbances.

Photograph 6.26: General view of PAFi005 from STP D47, facing north.

Access road HOU-AR-12c is located near MP 14.8 and extends north approximately 200.00 meters (656.17 feet) off of Potato Garden Run Road and crosses JA-Fi021 before terminating at STP C50 in survey segment PAFi005. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-13 is located near MP 15.3 on the western side of Potato Garden Run Road. This access road extends general southwest for approximately 0.80 kilometers (0.50 miles) before terminating at MP 15.2. The access road follows a strip mined landform and was pedestrian surveyed.

Survey segment PAFi005-A is at the northern terminus of segment PAFi005. The segment was added to account for a slight shift in the workspace between MP 15.2 and MP 15.3. Segment PAFi005-B was added to cover a shift in the southern section of the segment and to add survey coverage for a large workspace at MP 14.45. The segment is primarily on a hilltop that was disturbed by strip mining activity. A small portion of the segment paralleled the west side of Segment PAFi005 north of the hilltop, but was also disturbed by strip mining and construction activities.

The archaeological survey contained a total of 20 excavated shovel tests. One hundred twenty-three STPs were removed from the testing strategy due to strip-mining within the segment primarily, and saturated conditions. Shovel test JUD001 on the hilltop near the workspace revealed strip-mined soils, consisting of a 0.49 meter (1.61 feet) thick dark gray (10YR 4/1) mottled with greyish brown (10YR 5/2) and brownish yellow (10YR 6/8) silty clay fill-horizon. No further shovel testing was attempted north of MP 14.6 due to the strip-mine waste and construction disturbances.

Newly identified archaeological resources within this segment consist of one structural foundation, ALFi005-ST1. This structure consists of a concrete floor with a slight extension to the east from the northern portion. A displaced gas pump was found on the east side of the structure, but it does not appear to have been associated with the structure.

Survey Segment PAFi004/PAFi004-A/PAFi004-B/PAFi009/PAFi012
Northern Terminus: Southern Beltway
Southern Terminus: Potato Garden Run Road
Start Lat/Long: 40.4468, -80.2924
End Lat/Long: 40.4652, -80.2895
MP Range: 15.28 – 16.8
Length: 2.43 kilometers (1.51 miles)
Access Road: HOU-AR-13a.1, HOU-AR-13a.2, HOU-AR-13a.4
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.35 to 6.39 / Figure 6.123

Survey segments PAFi004, PAFi004-A, PAFi004-B, PAFi009, and PAFi012 began at Potato Garden Run Road and followed a northeast and then northwest trajectory for 1.51 miles before terminating at the top of the slope above the Southern Beltway. The segment is defined by a slightly sloped agricultural field, yielding to steeply sloped, wooded, drainages, and then to a strip mined field (Photograph 6.27).

Photograph 6.27: General view of PAFi004 from STP E142, facing west.

Segment PAFi004-A was included as a shift of the centerline west of the 300-foot corridor to the north of Burgettstown Road. Segment PAFi005-B is a shift in the 100-foot corridor and a workspace that extended north of the 300-foot corridor starting east of Potato Garden Run Road

and continuing to just south of Burgettstown Road. Survey segment PAFi009 is a small reroute between MP 15.9 and MP 16.3 that created a jug handle to the east of the centerline. Survey segment PAFi012 is a reroute and HDD location starting at MP 16.62 and ending at PAFi011 and the Southern Beltway.

Soils within this segment include Dormont silt loam, Wharton silt loam, Culleoka channery silt loam, Library silty clay loam, Atkins silt loam, and disturbed strip mine soils (SSURGO, accessed 2016). The agricultural field at the southern side of the segment was excavated at high probability. The slopes south of Burgettstown Road were primarily surveyed at low probability due to slope exceeding a 15 percent grade. The northern section was sporadically tested due to past strip-mining disturbances (Photograph 6.28).

Photograph 6.3: General view of PAFi004 at JA-Fi015, facing north.

Access road HOU-AR-13a.1 is located at MP 15.4 on the eastern side of Potato Garden Run Road. The access road extends approximately 525.00 meters (1722.44 feet) off of Burgettstown Road before terminating at MP 15.4. Twenty STPs were excavated along the farm lane. Access road HOU-AR-13a.2 is located near MP 16 and extends generally southeast 300.00 meters (984.25 feet) before terminating at STP C88 in survey segment PAFi004. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-13a.4 locate near MP 16.3 extends north for approximately 50.50 meters (164.04 feet) north of Burgettstown Road before terminating at STP B3 in survey segment PAFi004. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 54 excavated shovel tests. Ninety-two STPs were removed from testing strategies due to strip-mining, saturated soils, and slope. Shovel test D156 near HOU-AR-13a.1revealed a 0.28 meter (0.92 feet) thick dark greyish brown (10YR 4/2) silty

clay loam Ap-horizon underlain by a brownish yellow (10YR 6/6) silty clay loam Bt-horizon. Shovel test D144 in the agricultural fields revealed 0.25 meter (0.82 feet) brown (10YR 4/2) silt loam Ap-horizon underlain by a brownish yellow (10YR 6/6) silty clay loam Bt-horizon. Shovel tests excavated north of Burgettstown Road revealed disturbed soils from past strip-mining activity.

No archaeological resources were previously identified within the LOD in PAFi004. The recent archaeological survey did not identify new cultural resources within the segment.

Survey Segment PAFi003/PAFi003-A/PAFi003-B/PAFi011
Northern Terminus: Washington Road
Southern Terminus: Southern Beltway
Start Lat/Long: 40.4670, -80.2906
End Lat/Long: 40.4748, -80.2993
MP Range: 16.96 – 17.67
Length: 1.14 kilometers (0.71 miles)
Access road: HOU-AR-13a
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36AL0716
Map Pages/STP Illustrations: Figures 6.40 to 6.41 / Figure 6.124

Survey segment PAFi003 begins on the north side of the Southern beltway and follows a northwest trajectory for 1.14 kilometers (0.71 miles) before terminating at Washington Road. The segment is defined by strip-mined and wooded slopes between jurisdictional areas (Photograph 6.29). Soils within this segment include Atkins silt loam, Gilpin, Weikert, and Culleoka shaley silt loams, Wharton silt loam, Cavode silt loam, Gilpin silt loam, Ernest silt loam, and disturbed soils from strip mining activity (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to slope and post-deposition disturbances.

Photograph 6.29: General view of PAFi003, facing west.

Segment shift PAFi003-A is a small extension of the 300-foot corridor at access road HOU-AR-13a. Segment shift PAFi003-B was added to account for an HDD workspace that extended outside of the 300-foot corridor between MP 17 and MP 17.1. The segment was completely on excessive slopes. Segment PAFi011 is a small segment at the southern end of PAFi003 that was added over Point Park Road to account for a reroute and HDD area. The soils were disturbed by construction of the Southern Beltway and Point Park Road in this area.

Access road HOU-AR-13a, near MP 17.35, extends generally west for 1.20 kilometers (0.74 miles) from U.S. Highway 30 before terminating at MP 17.35. This access road follows an existing transportation ROW. This access road was pedestrian surveyed.

The archaeological survey contained a total of 54 excavated shovel tests. Sixty-nine STPs were removed from testing strategies due to strip-mining disturbance, excessive slope, and saturated soils. The majority of the southern half of PAFi003 was disturbed by strip mining activity, but STP D68, near the identified site, revealed a 0.26 meter (0.85 feet) thick brown (10YR 4/3) silt loam disturbed Ap-horizon underlain by a strong brown (7.5YR 5/4) silty clay B-horizon. Shovel test B62, in JA-Fi013, revealed a 0.24 meter (0.79 feet) thick dark yellowish brown (10YR 4/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon, all subsequently excavated STPs showed evidence of strip-mining disturbance. Shovel tests in JA-Fi011 and JA-Fi012 revealed disturbed soils from strip mining. Shovel tests in JA-Fi009/010 were not disturbed. Excavated shovel test, E4, revealed a 0.24 meter (0.79 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 4/6) silty clay B-horizon.

No previously identified archaeological resources were mapped within PAFi003. One new archaeological site, 36AL0716, was identified. The site included a series of foundations within the 300-foot corridor. The structures are described as a structural complex and include a garage, an L-shaped foundation, a small rectangular foundation, and a series of stone and cement walls in a backward L-shape. The L-shaped foundation has a potential brick "patio" extending from the northeast corner. The site will be avoided through HDD.

Survey Segment PAFi002
Northern Terminus: MP 19.48
Southern Terminus: Washington Road
MP Range: 17.67 – 17.88; 18.88 – 19.48
Start Lat/Long: 40.4748, -80.2994
End Lat/Long: 40.4918, -80.3175
Length: 1.5 kilometers (0.93 miles)
Access roads: HOU-AR-13c
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36AL0715
Map Pages/STP Illustrations: Figures 6.41 to 6.43 and 6.45 to 6.46 / Figure 6.125

Survey segment PAFi002 is a split segment due to two reroutes. Segment PAFi002 begins at Washington Road and follows a northeast trajectory for 0.21 miles before a reroute shifted the line requiring a new segment, PAFi008. Segment PaFi008 reconvenes with PAFi002 in a wide drainage channel valley, then extends northwest for 0.72 miles before another reroute terminates the segment. The segment is defined by a wide wetland area and drainage leading to wooded slopes, then to manicured lawns in a housing development before terminating in agricultural fields near slopes to artificially created ponds (Photograph 6.30). Soils within this segment include Atkins silt loam, Wharton silt loam, Gilpin, Weikert, and Culleoka shaly silt loams, Ernest silt loams, Guernsey-Vandergrift silt loams, and Dormont silt loams (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas with areas of medium probability in agricultural fields/manicured lawns, and high probability in jurisdictional areas.

Photograph 6.30: General view of PAFi002 near STP D74, facing southeast.

Access road HOU-AR-13c, located near MP 19.45, extends generally southwest for approximately 425.00 meters (1394.36 feet), crossing JA-Fi026 before terminating at STP C28 in PAFi002. This access road follows a farm lane and a total thirteen STPs were excavated. The rest of the access road was pedestrian surveyed.

The archaeological survey contained a total of 49 excavated STPs. Forty-seven STPs were removed from testing strategies primarily due to saturated soils, but excessive slope was also a determining factor. Shovel test A182 revealed a 0.23 meter (0.75 feet) thick dark greyish brown (10YR 4/2) silt loam A-horizon underlain by a grey (10YR 6/1) mottled with a yellowish brown (10YR 5/6) silty clay Bg-horizon. Shovel testing in the wide wetland area revealed disturbed soils from construction practices. Shovel test C68 in the plowed field north of Moody Road revealed a 0.32 meter (1.05 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a light yellowish brown (10YR 6/4) silt loam B-horizon. Shovel test C34 revealed a truncated A-horizon with a 0.15 meter (0.49 feet) thick very dark grayish brown (10YR 3/2) silt loam AO-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon with 50 percent gravels. Shovel test C26 at the northern portion of the segment in the agricultural field revealed a 0.33 meter (1.08 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon.

Newly identified archaeological resources within this segment consist of one prehistoric site. Site 36AL0715 included three non-diagnostic, chert flakes found within the first stratum of STP B183 in JA-Fi009/010. The radial STPs were negative.

Survey Segment PAFi008
Northern Terminus: MP 18.76

Southern Terminus: MP 17.89
Start Lat/Long: 40.4776, -80.2988
End Lat/Long: 40.4853, -80.3080
MP Range: 17.89 – 18.76
Length: 1.38 kilometers (0.86 miles)
Access Road: HOU-AR-13a2
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.43 to 6.44 / Figure 6.126

Survey segment PAFi008 is associated with RDR 60 of the Houston to Monaca line. The segment begins in Segment PAFi002 at MP 17.88 and follows a northeast then northwest trajectory for 1.43 kilometers (0.89 miles) before reconnecting with PAFi002 at MP 18.75. The segment is defined by the wetland and drainage of PAFi009/010 leading to wooded slope drainages with several paved roads in-between (Photograph 6.31). Soils within this segment include Wharton silt loam, Gilpin, Weikert, and Culleoka shaly silt loams, Dormont silt loam, Gilpin silt loam, Ernest silt loam, Atkins silt loam, and disturbed soils from strip mine activity (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas

Photograph 6.31: General view of PAFi008 from STP G77, facing northwest.

Access road HOU-AR-13a2, located near MP 18.4, extends generally southwest for 1.40 kilometers (0.86 miles) on Youthtown Dr. before terminating at STP D45 in PAFi008. The access road follows an existing transportation ROW and was pedestrian surveyed.

A small shift in the centerline occurred between MP 18.1 and MP 18.5. The shift moved the ROW around HOU-AR-13c from wooded side slopes to a clearing from MP 18.3 to MP 18.4. The shovel testing in the shift was focused on this clearing. The soils within the space indicated extensive post-deposition disturbances and stripping of the A-horizon. The shift remained within the 300-foot corridor.

The archaeological survey contained a total of 91 excavated shovel tests. Fifty-five STPs were removed from testing strategies due to excessive slopes and saturated soils. Shovel test C82 revealed a 0.24 meter (0.79 feet) thick dark grayish brown (10YR 4/2) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test C69 in JA-Fi024 revealed a 0.13 meter (0.43 feet) brown (10YR 4/3) silt loam A-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test revealed a 0.23 meter (0.75 feet) brown (10YR 4/3) sandy loam A-horizon underlain by a brown (10YR 5/3) sandy loam B-horizon.

No archaeological resources were previously identified within segment PAFi008 and no archaeological resources were identified during the recent survey of the segment.

Survey Segment PAFi007/PAFi013
Northern Terminus: MP 20.2
Southern Terminus: MP 19.47
Start Lat/Long: 40.4918, -80.3175
End Lat/Long: 40.5014, -80.3145
MP Range: 19.47 – 20.3
Length: 1.17 kilometers (0.74 miles)
Access Road: HOU-AR-14
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.46 to 6.48 / Figure 6.127

Survey segment PAFi007 connects segments PAFi001 with PAFi002 after a reroute. The segment begins near MP 19.47 and follows a northeast trajectory for 1.17 kilometers (0.73 miles) before terminating near MP 20.2. The segment is defined by large, sloping agricultural fields (Photograph 6.32). Soils within this segment include Dormont silt loam, Ernest silt loam, Warton silt loam, Gilpin silt loam, and Culleoka channery silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability testing due to slope and disturbed soils. Small sections of medium and high probability testing were found in hilltops and slope bottoms.

Photograph 6.32: General view of PAFi007, facing north. Note wetland and altered landscape.

Access road HOU-AR-14, located near MP 19.9, extends approximately 0.90 kilometers (0.65 miles) north from Ferguson Road before terminating at STP F102. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 20 excavated STPs. Twelve STPs were removed from the testing strategy due to saturated conditions and post-depositional disturbance. Shovel test H101 in the agricultural field on the southern side of the corridor from MP 19.5 to MP 19.7 revealed a 0.35 meter (1.15 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a light yellowish brown (10YR 6/4) silt loam Bg-horizon. Shovel test H26 in the agricultural fields and pasture land between Lincoln Highway and Ferguson Road revealed a 0.30 meter (0.98 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test H12 in the fields north of Ferguson Road revealed a 0.24 meter (0.79 feet) thick very dark brown (10YR 2/2) silt loam A horizon underlain by a greenish black (GLEY 1 2.5/10Y) clay gley stratum.

No archaeological resources have been previously identified within PAFi007. No archaeological resources were identified in the current survey of the segment.

Survey Segment PAFi001
Northern Terminus: Parcel boundary of 62-223-0113.00 and 66-223-0108.000
Southern Terminus: MP 20.2
Start Lat/Long: 40.5014, -80.3145
End Lat/Long: 40.5144, -80.3129
MP Range: 20.2 – 21.15
Length: 1.51 kilometers (0.94 miles)

Access Road: HOU-AR-14a.0
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.48 to 6.50 / Figure 6.128

Survey segment PAFi001 begins at MP 20.2 and follows a northern trajectory for 0.94 miles before terminating at the parcel boundary of 62-223-0113.00 and 66-223-0108.000. The segment is defined by large, sloping agricultural hilltops separated by steeper sloped wooded drainages (Photograph 6.33). Soils within this segment include Wharton silt loam, Gilpin, Weikert, and Culleoka shaly silt loams, Philo silt loam, Gilpin silt loam, and Gilpin-Upshur complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates primarily low probability in steeply-sloped areas with high probability testing near drainages and on hilltops.

Photograph 6.33: General view of PAFi001, facing northwest.

Access road HOU-AR-14a.0, located near MP 20.45, extends east for approximately 0.80 kilometers (0.50 miles) from Bocktown Cork Road before terminating at STP E80 in PAFi001. This access road follows an existing transportation ROW as well as relatively flat pasture. A total of eight STPs were excavated in the pasture, while the rest of the access road was pedestrian surveyed.

The archaeological survey contained a total of 28 excavated STPs. Thirty-two STPs were removed from the testing strategy due to excessive slope and saturated conditions. Shovel test C100 in the field on the southern side of the corridor revealed a 0.20 meter (0.66 feet) thick brown (10YR 4/3) silty clay loam Ap-horizon underlain by a yellowish brown (10YR 6/4) silty clay B-horizon. Shovel test D87, near a drainage, revealed an approximately 0.30-m (0.98 feet) dark yellowish brown (10YR 3/4) silty clay loam A-horizon that reached the water table. Shovel

test C74 in the agricultural fields revealed a 0.25 meter (0.82 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a light yellowish brown (10YR 6/4) silt loam B-horizon. Shovel test C64 revealed an approximately 0.22-m (0.72 feet) thick dark brown (10YR 3/3) silt loam AO-horizon underlain by a light yellowish brown (10YR 6/4) silty clay B-horizon. Shovel test D1 within the agricultural field at the northern end of the segment revealed a 0.33 meter (1.08 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silty clay B-horizon.

No archaeological resources had been previously identified within Segment PAFi001. No new archaeological resources were identified during the recent cultural survey.

BEAVER COUNTY

Survey Segment PAIn006
Northern Terminus: Parcel boundary of 66-223-0102.000 and 66-213-0190.000
Southern Terminus: Parcel boundary of 62-223-0113.00 and 66-223-0108.000
Start Lat/Long: 40.5144, -80.3129
End Lat/Long: 40.5271, -80.3096
MP Range: 21.15 – 22.19
Length: 1.66 kilometers (1.03 miles)
Access Road: HOU-AR-14a.2
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.50 to 6.52 / Figure 6.129

Survey segment PAIn006 begins 0.016 kilometers (0.01 miles) south of access road HOU-AR-14a.2 and extends north for 1.66 kilometers (1.03 miles) and terminates at the Parcel boundary of 66-223-0102.000 and 66-213-0190.000. The segment is defined by sloped agricultural and pastoral fields separated by steeply sloped, wooded drainages (Photograph 6.34). Soils within this segment include Wharton silt loam, Gilpin-Weikert complex, Gilpin silt loam, and Gilpin-Upshur complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas with high and medium probability testing along drainage valleys and ridges respectively.

Photograph 6.344: General view of PAIn006 near STP D18, facing southeast.

Access road HOU-AR-14a.2, located near MP 21.2, extends east for 300.00 meters (984.25 feet) from Bocktown Cork Road before terminating at STP E109 in PAIn006. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of eight excavated STPs. Fifty-one STPs were removed from testing strategies due to excessive slope. Shovel test D104, in the agricultural field on the southern side of the corridor, revealed a 0.35 meter (1.15 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/4) silt loam B-horizon. Shovel test C49 in the agricultural field north of East Hookstown Grade Road revealed a 0.35 meter (1.15 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a dark yellowish brown (10YR 4/6) silty sand B-horizon. Shovel test C12 in the agricultural field at the northern side of the segment revealed a 0.25 meter (0.82 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silty clay B-horizon.

No archaeological resources had been previously identified within Segment PAIn006. No new archaeological resources were identified during the recent cultural survey.

Survey Segment PAIn005/PAIn005-A
Northern Terminus: Bocktown Cork Road
Southern Terminus: Parcel boundary of 66-213-0190.000, and 66-223-0102.000
Start Lat/Long: 40.5271, -80.3096
End Lat/Long: 40.5396, -80.3137
MP Range: 22.19 – 23.24
Length: 1.66 kilometers (1.03 miles)
Access Road: HOU-AR-14a, HOU-AR-15
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV0396
Map Pages/STP Illustrations: Figures 6.52 to 6.54 / Figure 6.130

Survey segments PAIn005 and PAIn005-A begin at the parcel boundary of 66-213-0190.000, and 66-223-0102.000 and follow a northern trajectory for 1.66 kilometers (1.03 miles) before terminating at Bocktown Cork Road. The segment is defined by large, gently sloping agricultural fields separated by steeper sloped wooded drainages (Photograph 6.35). Soils within this segment include Gilpin silt loam, Gilpin-Weikert complex, Gilpin-Upshur complex, Clymer loam, and Ernest silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low and medium probability.

Photograph 6.35: General view of PAIn005 near STP D62, facing west.

Survey segment PAIn005-A was added as a segment shift between MP 22.5 and MP 22.6. The shift moved the centerline west of the existing 300-foot corridor. The new segment was on a steep wooded slope in parcel 66-213-0192.004. The area also included a small portion of JA-In011.

Access road HOU-AR-14a, located near MP 22.3, extends east for 250.00 meters (820.21 feet) from Bocktown Cork Road before terminating at STP E110 in PAIn005. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-15, located near MP 23.1, extends east for approximately 225.00 meters (738.19 feet) from Bocktown Cork Road before terminating near STP E18 in PAIn005. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 36 excavated STPs. Twenty-eight STPs were removed from testing strategies due to excessive slopes. Shovel testing in the woods parallel to HOU-AR-15 specifically D42 revealed a 0.27 meter (0.89 feet) dark brown (10YR 3/3) silt loam AO-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test E30 revealed a 0.32 meter (1.05 feet) thick dark grayish brown (10YR 4/2) silt loam Ap-horizon underlain by a yellowish brown (10YR 6/4) silt loam Bt-horizon. Shovel test D12 in the woods west of the Five Points Hunting Club revealed a 0.22 meter (0.72 feet) brown (10YR 4/2) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silt loam Bt-horizon.

Newly identified archaeological resources within this segment consist of one structure: Site 36BV0396 was a historic foundation/feature south of Bocktown Cork Road. The site consists of two perpendicular, intact walls, two depressions, and a stone wall. The walls were perpendicular and consisted of tightly stacked and squared stone with small amounts of mortar. Slate shingles

were located approximately 5.18 meters (17.00 feet) to the south of the walls corner. The main structure is located outside of the study corridor, but the larger depression lies within the 300-foot corridor.

Survey Segment PAIn004/PAIn004-A
Northern Terminus: Ridge Road
Southern Terminus: Bocktown Cork Road
Start Lat/Long: 40.5574, -80.3193
End Lat/Long: 40.5396, -80.3136
MP Range: 23.24 – 24.56
Length: 2.12 kilometers (1.32 miles)
Access Road: HOU-AR-15a, HOU-AR-15c, HOU-AR-15d, HOU-AR-15e, HOU-AR-16
Previously Identified Archaeological Resources: 36BV0019
Newly Identified Archaeological Resources: 36BV/064
Map Pages/STP Illustrations: Figure 6.54 to 6.57 / Figures 6.131 to 6.132

Survey segment PAIn004 begins at Ridge Road and follows a southern trajectory for 2.09 kilometers (1.3 miles) before terminating at Bocktown Cork road. The survey segment is characterized by relative flat agricultural fields, wooded uplands, and a floodplain of Raccoon Creek (Photograph 6.36 and 6.37). Soils mapped in this segment include Gilpin-Upshur complex, Guernsy-Vandergrift Complex, Ernst silt loam, Atkins silt loam, Pope silt loam, Wharton-Gilpin silt loam, Monongahela silt loam, Gilpin-Weikert, and Gilpin silt loam (SSURGO, accessed 2016). Shovel testing in this segment included a mix of high and medium probability.

Photograph 6.36: General view of PAIn004 near STP C19, facing north.

Photograph 6.37: General view of wetlands/Raccoon Creek near SP B49, facing west.

A workspace was added to the LOD that extended outside of the original 300-foot corridor. A new survey segment, PAIn004-A, was added to cover the workspace extension.

Access road HOU-AR-15a, located near MP 23.2, extends east for approximately 100.00 meters (328.8 feet) from Bocktown Cork Road before terminating at STP E5 in PAIn004. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-15c, located near MP 23.9, extends west for approximately 225.00 meters (738.19 feet) from PA Route 151 and terminating at STP B73 in PAIn004. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-15d, located near MP 24.2 and extends east for 200.00 meters (656.17 feet) from Cowpath Road before terminating at STP E46 in PAIn004. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-15e, located near MP 24.3, extends west for 200.00 meters (738.19 feet) from Cowpath Road before terminating at STP D36 in PAFi004. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-16, located near MP 24.5, extends west for 225.00 meters (738.19 feet) before terminating at MP 24.5. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 159 excavated shovel tests. Ninety-three STPs were removed from testing strategies due to excessive slope and saturated conditions. Shovel testing on a wooded hill top STP C127 revealed a 0.24 meters (0.79 feet) dark yellowish brown (10YR 3/4) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/4) silt loam with trace clay B-horizon. Shovel test B79, on the relative flat grassy terrace in parcel 66-213-0162.003, revealed a 0.25-meters (0.82 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a light yellowish brown (10YR 6/4) silt loam Bt-horizon. Shovel test E7 in JA-In004 revealed a

disturbed 0.15 meter (0.49 feet) mottled brown (10YR 4/3) and yellowish brown (10YR 5/6) silty clay loam A/B-horizon. The disturbance was from current housing construction.

The segment bisected site 36BV0019 (Photograph 6.38). The site is a prehistoric site of unknown function. Artifacts were recovered as a surface scatter with a less than 20.00-meter (65.62 feet) radius. The assemblage included two bifurcate projectile points, dating the site to the Early to Middle Archaic period. No cultural material was recovered within the existing site boundary.

Photograph 6.38: General view of the Raccoon Creek floodplain / 36BV0019 near STP C70, facing north.

One isolated find (36BV/064) was recovered from PAIn004. A historic ceramic sherd was recovered from STP C81. No additional artifacts were recovered from radial STPs.

Survey Segment PAIn003
Northern Terminus: Tank Farm Road
Southern Terminus: Ridge Road
Start Lat/Long: 40.5745, -80.3201
End Lat/Long: 40.5574, -80.3193
MP Range: 24.57 – 25.87
Length: 2.09 kilometers (1.30 miles)
Access Road: HOU-AR-16c, HOU-AR-16d
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV0395
Map Pages/STP Illustrations: Figure 6.57 to 6.60 / Figure 6.133

Survey segment PAIn003 begins at Ridge Road and continues north for 2.09 kilometers (1.3 miles) before terminating at Tank Farm Road. This survey segment is characterized by a wooded

sloped and ravine environments in an upland setting. Soils mapped for this segment include Clymer loam, Gilpin-Weikert Complex, Guernsey-Vandergrift Complex, Monongahela silt loam, Wharton-Gilpin silt loam, Gilpin-Upshur Complex, and Hazleton Channery Loam (SSURGO, accessed 2016). Shovel testing in this segment included a mix of high, medium, and low probability.

Photograph 6.39: General view of PAIn003 near STP C49, facing northeast.

Access road HOU-AR-16c, located near MP 25.35, extends west for 325.00 meters (1066.27 feet) from Cowpath Road before terminating at STP C61. This access road crosses JA-In022 and JA-In017, and is situated within an existing utility ROW. A total of five STPs were excavated. The remainder of the access road was pedestrian surveyed. Access road HOU-AR-16d, located near MP 25.85, extends west for 400.00 meters (1312.34 feet) from Tank Farm Road and crosses JA-In020 before terminating at STP B8 in PAIn003. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained 66 excavated STPs. Eighty-seven STPs were removed from testing strategies due to excessive slope, saturated conditions, and general disturbances. Shovel testing south of Tank Farm Road revealed a 0.35-meters (1.15 feet) very dark grayish brown (10YR 3/2) silt loam Ao horizon underlain by a yellowish brown (10YR 5/6) silt loam Bt horizon. Shovel testing on a hill top, between STPs C48 and C52, revealed a 0.35-meters (1.15 feet) brown (10YR 4/3) silt loam Ao horizon underlain by yellowish brown (10YR 5/4) silt loam Bt horizon.

An above-ground historic foundation was documented on the center line approximately 0.27 km (0.17 miles) south of Tank Farm Road. The landscape was wooded and slightly sloped. Site 36BV0395 consists of a dry laid stone foundation with four associated rock walls. The remaining

dry laid foundation is roughly rectangle in plan and measures 11.58 meters (38.00 feet) in length and 5.49 meters (18 feet) in width.

Survey Segment PAIn002/PAIn002- A
Northern Terminus: Service Creek Road
Southern Terminus: Tank Farm Road
Start Lat/Long: 40.5816, -80.3265
End Lat/Long: 40.5746, -80.3201
MP Range: 25.87 – 26.57
Length: 1.13 kilometers (0.70 miles)
Access Road: HOU-AR-17a
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/063
Map Pages/STP Illustrations: Figures 6.60 to 6.61 / Figures 6.134 to 6.135

Survey segment PAIn002 begins at Service Creek Road and continues roughly south and southeast for 1.13 kilometers (0.70 miles). This survey segment starts at a small T-1 floodplain at the northern terminus. The segment rises from the flood plain through wooded side slopes then terminates at a flat hill top at its southern terminus (Photograph 6.40). Soils mapped for this segment include Pope silt loam, Gilpin-Weikert Complex, Wharton-Gilpin Complex, Gilpin-Upshur Complex, Gilpin silt loam, and Wharton silt loam (SSURGO, accessed 2016). Shovel testing in this segment included a mix of high, medium, and low probability.

Photograph 6.40: General view of PAIn002 at the southern terminus, facing northwest.

A shift in the 100-foot corridor along the centerline necessitated the extension of the 300-foot corridor to the west. This was done by adding segment shift PAIn002-A. The shift started at Service creek road and extended south to MP 26.3.

Access road HOU-AR-17a, located near MP 26.6, extends generally southwest for 125.00 meters (410.11 feet) from Service Creek Road and crosses JA-In001 before terminating at STP D7 in PAIn001. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 76 excavated shovel tests. Thirty-nine STPs were removed from the testing strategy due to excessive slope and saturated conditions. Shovel test D57 in the open hill top revealed a 0.25 meter (0.82feet) brown (10YR 4/3) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/6) silt loam Bt-horizon. Shovel test D18 of the wooded hill top revealed a 0.08 meter (0.26 feet) very dark grayish brown (10YR 3/2) silt loam Ao-horizon underlain by a light yellowish brown (10YR 6/4) silt loam Bt-horizon. Shovel test C14, on flat terrace just above the T-1 flood plain, revealed a 0.10 meter (0.33 feet) dark brown (10YR3/3) silt loam Ao-horizon underlain by a light yellowish brown (10YR 6/4) silty clay loam Bt-horizon. Shovel test E2, on the T1 flood plain of Service Creek, revealed 0.32 meters (1.05 feet) brown (10YR 4/3) silt loam Ap-horizon, underlain by a 0.47 meter (1.54 feet) dark yellowish brown (10YR 4/4) sandy silt Bw-horizon underlain brown (7.5YR 4/3) sandy C-horizon.

One Isolated find, 36BV/063, was recovered from the segment. The isolated find, with a prehistoric tested cobble was identified in STP C3 near the northern terminus of the segment. The area where the artifact was recovered is now part of a proposed HDD and will not be impacted.

Survey Segment PAIn001/001-A/PAIn007
Northern Terminus: MP 27.54
Southern Terminus: Service Creek Road
Start Lat/Long: 40.5817, -80.3263
End Lat/Long: 40.5930, -80.3320
MP Range: 26.58 – 27.54
Length: 1.53 km (0.95 mi.)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.62 to 6.64 / Figure 6.136

Survey segments PAIn001, PAIn001-A, and PAIn007 begin at Service Creek Road and follow a northwest trajectory for 1.53 kilometers (0.95 miles) before terminating at MP 27.54. The segment is defined by large, steeply sloped wooded drainages intersected by ridgetops disturbed by existing utility corridors (Photograph 6.41). Soils within this segment include Wharton silt loam, Gilpin-Weikert complex, Gilpin-Upshur complex, Hazelton channery loam, and Guernsey-Vandergrift complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas and along utility corridors. Small sections of high

probability testing are present on the ridgetops, but much of this space is disturbed by above-ground and below-ground utilities.

Photograph 6.41: General view of PAIn007 near STP A83, facing southeast

Segment PAIn001-A was a small addition to PAIn001 to account for a shift in the 100-foot corridor along the southern side of the segment. The corridor initially shifted west and PAIn001-A covered the extension outside of the 300-foot corridor. PAIn007 was introduced to account for a larger shift in the alignment to the east that eliminated all of PAIn001-A and portions of PAIn001. The segment also includes a small workspace on the southern side to be used as a workspace for a proposed HDD location across Service Creek Road.

The archaeological survey contained a total of 54 excavated STPs in the segments. Fifty-nine STPs were removed from testing strategies primarily due to excessive slope and disturbance from the existing utility corridor. Shovel test C18 on the ridgetop within PAIn007 along the eastern side of the ridge away from the utility corridor revealed an approximately 0.20 meter (0.66 feet) thick very dark grayish brown (10YR 3/2) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/4) silty clay loam B-horizon. Much of the remainder of the segment was disturbed by the installation of the utility corridors.

No archaeological resources were present within the PAIn001/001-A/007 area. The recent survey did not identify any additional archaeological resources.

Survey Segment PARa010
Northern Terminus: Green Garden Road
Southern Terminus: Parcel Boundary of 75-013-0158.007 and 75-193-0157.000
Start Lat/Long: 40.6029, -80.3463

End Lat/Long: 40.5931, -80.3323
MP Range: 27.54 – 28.67
Length: 1850.75 kilometers (1.15 miles)
Access Road: HOU-AR-19b, HOU-AR-19c, HOU-AR-19d
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.64 to 6.66 / Figure 6.136

Survey segment PARa009 begins at Green Garden Road and follows a southern trajectory 1850.75 kilometers (1.15 miles) before terminating at the parcel boundary of 75-013-0158.007 and 75-193-0157.000. The segment is characterized by wooded side slopes with multiple drainages cross cut by an in-ground gas transmission line (Photograph 6.42). The landscape has undergone post-depositional disturbances from ongoing logging activities. Soils mapped for this segment include Guernsey-Vandergrift Complex, and Gilpin-Upshur Complex (SSURGO, accessed 2016). Shovel testing in this segment included a mix of high, medium, and low probability.

Photograph 6.42: General view of PARa010 near STP D118, facing north.

Access road HOU-AR-19b, located near MP 27.75, extends northeast for 250.00 meters (820.21 feet) from Davis Road before terminating near STP D101 in PARa010. This access road follows an existing transportation ROW for existing pipeline access and was pedestrian surveyed. Access road HOU-AR-19c, located near MP 28.2, extends generally east for 525.00 meters (1722.44 feet) from Davis Road before terminating at STP D58 in PARa010. This access road follows an existing farm lane which serves as an access to an existing pipeline corridor. A total of ten STPs were excavated and the rest of the access road was pedestrian surveyed. Access road HOU-AR-19d, located near MP 28.7, extends generally south for 125.00 meters (410.11 feet) and crosses

JA-Ra026 before terminating at STP C7 in PARa010. This access road follows an existing transportation ROW for existing pipeline access and was pedestrian surveyed.

The archaeological survey contained a total of 41 excavated STPs. One hundred forty-one STPs were removed from testing strategies due to a existing utility corridor and excessive slope. The bulk of the shovel testing in this survey segment occurred on the slightly sloped (10%-15%) wooded areas along the D transect. The C transect typically fell within the disturbed, existing utility corridor. Shovel test E42 in the wooded area revealed a 0.10-meters (0.33feet) black (10YR 2/1) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/6) silt loam Bt-horizon. Post-depositional disturbances included heavy logging throughout the segment.

No archaeological resources were previously identified within segment PARa010 and no archaeological resources were identified during the recent survey of the segment.

Survey Segment PARa009
Northern Terminus: Parcel Boundary of 75-182-0304.001 and 75-182-0386.001
Southern Terminus: Green Garden Road
Start Lat/Long: 40.6152, -80.3489
End Lat/Long: 40.6029, -80.3463
MP Range: 28.67 – 29.67
Length: 1.61 kilometers (1.00 miles)
Access Road: HOU-AR-20
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: BVRa009-PM1, BVRa009-PC1
Map Pages/STP Illustrations: Figures 6.66 to 6.68 / Figure 6.137

Survey segment PARa009 begins at Green Garden Road and follows a northern trajectory for 1.61 kilometers (1.00 miles) before terminating at the parcel boundary of 75-182-0304.001 and 75-182-0386.001. This segment is characterized by multiple steeply sloped hills and ravine environments. This segment is wooded but also parallels an in-ground utility line, and crosses an above ground power lines. Soils mapped for this segment include Gilpin-Weikert Complex, Gilpin Silt Loam, Guernsey-Vandergrift Complex, Gilpin-Upshur, and Vandergrift-Gilpin (SSURGO, accessed 2016). Shovel testing in this segment included a mixture of high, medium, and low probability.

Photograph 6.43: General view of PARa009 near STP D70, facing south.

Access road HOU-AR-20, located 0.75 kilometers (0.46 miles) west of MP 28.7, extends generally north from Green Garden Road for 0.97 kilometers (0.60 miles) before terminating at STP E90 in PARa009. This access road follows an existing transportation ROW for utility corridor access and was pedestrian surveyed.

The archaeological survey contained a total of 23 excavated STPs. One hundred thirty-five STPs were removed from testing strategies due to a existing utility corridor and excessive slope. The bulk of the shovel testing occurred on the relatively flat hill top between STPs C48 and C32. Shovel test D38 in this area revealed a 0.09 meter (0.30 feet) thick dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam Bt-horizon. Most shovel tests in survey segment PARa009 occurred on slopes with a greater than 15 percent grade or were located in an existing ROW for an in ground utility line.

A historic grave stone, BVRa009-PM1, was documented near MP 29.1 on the proposed centerline located between STPs C67 and D66 (Photograph 6.44). The grave stone had been displace and now serves as a property marker. Near possible pet cemetery, BVRa009-PC1 was also documented. This pet cemetery consisted of two cobbles with designs and names painted on the surface. Another possible pet burial marker consisted of a footstone, most likely moved and repurposed, with a name scratched into the surface. This pet cemetery was out of the 100ft buffer of C and D transects.

Photograph 6.44: View of displaced grave marker/property marker at PARa009, facing east

Survey Segment PARa006/PARa011/PARa012
Northern Terminus: Parcel Boundary of 75-182-0303.000 and 75-182-0302.000
Southern Terminus: MP 30.05
Start Lat/Long: 40.6212, -80.3485
End Lat/Long: 40.6236, -80.3480
MP Range: 30.05 – 30.21
Length: 0.26 kilometers (0.16 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.69 to 6.70 / Figure 6.139

Survey segment PARa006 begins at MP 30.05 and follows a north trajectory for 0.23 kilometers (0.14 miles) before terminating at the parcel boundary of 75-182-0303.000 and 75-182-0302.000. This segment is characterized by moderate to steep sloped uplands bisected by an existing in-ground utility line (Photograph 6.45). Soils within this segment include Tilsit silt loam, Gilpin silt loam, and Gilpin-Weikert (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low and medium probability. Horizontal directional drilling will be used through this segment between two workspaces. One of the workspaces was added between MP 30 and 30.1. The HDD will extend north to MP 30.4 where the second workspace was added into PARa007.

Photograph 6.45: General view of PARa006 near STP A17, facing north.

Survey segment PARa011 was added to cover a meter station on the northwest corner of the Houston-Monaca and Scio-Monaca intersection at MP 30.02. The meter station is partially within multiple utility corridors that disturbed soils in the southern and eastern sections of the segment. Survey Segment PARa012 was an addition to the meter station workspace that was added to the western side of Segment PARa011. The segment rests between a existing utility corridor and Access Road HAR-AR-73.

The archaeological survey contained 12 excavated STPs. Twelve STPs were removed from the testing strategy due to excessive slope and an existing utility corridor. Shovel Test C2, along the tree line paralleling the existing utility corridor, revealed a 0.14 meter (0.46 feet) yellowish brown (10YR5/4) silt loam AB-horizon underlain by a yellowish brown (10YR5/8) Bt-horizon.

No archaeological resources were previously identified within these segments and no new archaeological resources were identified.

Survey Segment PARa007/PARa007-A/PARa007-B/PARa007-C
Northern Terminus: Private Drive
Southern Terminus: Parcel Boundary of 75-182-0303.000 and 75-182-0302.000
Start Lat/Long: 40.6311, -80.3486
End Lat/Long: 40.6237, -80.3473
MP Range: 30.21 – 30.79
Length: 0.93 kilometers (0.58 miles)
Access Road: HOU-AR-21
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None

Map Pages/STP Illustrations: Figures 6.70 to 6.71 / Figure 6.139

Survey segment PARa007 begins at a private drive at MP 30.79 and follows a north trajectory for 0.93 kilometers (0.58 miles) before terminating at the parcel boundary of Parcel Boundary of 75-182-0303.000 and 75-182-0302.000. This segment is characterized by steep side slopes, in a wooded upland, bisected by an existing utility line (Photograph 4.46). Soils within this segment include Gilpin-Weikert, Ernest silt loam, and Gilpin silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability due to excessive slope.

Photograph 6.46: General view of PARa007 at JA-Ra018 off of Moffett Mill Road, facing east.

Survey segments PARa007-A, PARa007-B, and PARa007-C are associated with a shift in the LOD and the installation of a workspace that extended outside of the 300-foot corridor. Segment PARa007-A includes a line shift west of the 300-foot corridor. Segments PARa007-B and PARa007-C are associated with a workspace connected to the HDD to the south. The workspace is between MP 30.39 to MP 30.47.

Access road HOU-AR-21, located near MP 30.35, extends generally north for 175.00 meters (574.15 feet) from Moffett Mill Road before terminating at STP D17. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey included two excavated STPs. Sixty-one STPs were removed from the testing strategy for excessive slope. Shovel test D16 was excavated close to the existing utility corridor and revealed a mottled dark greyish brown (10YR 4/2) and yellowish brown (10YR 5/4) silt loam fill layer caused by post-depositional disturbances. Excessive slope limited the ability to test much of the segment.

No archaeological resources were previously identified within these segments and no new archaeological resources were identified.

Survey Segment PARa008
Northern Terminus: MP 31.11
Southern Terminus: Private Drive at MP 30.79
Start Lat/Long: 40.6375, -80.3490
End Lat/Long: 40.6312, -80.3485
MP Range: 30.79 – 31.11
Length: 0.52 kilometers (0.33 miles)
Access Road: HOU-AR-22
Previously Identified Archaeological Resources: 36BV0100
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.71 to 6.72 / Figure 6.140

Survey segment PARa008 begins at a private drive and follows a northward trajectory for 724.20 meters (2376.00 feet) before terminating at the parcel boundary of 73-172-0214.002, 73-172-0214.001, and 73-002-0206.000. This segment is characterized by a steeply sloped ravine environment sharply rising onto gently sloped hill tops. The segment is bisected by an existing in-ground utility line and Fishpot Run (Photographs 6.47 and 6.48). Soils within this segment include Gilpin-Weikert, Ernest silt loam, and Gilpin silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability due to excessive slope.

Photograph 6.47: General view of hilltop in PARa008 near STP D6, facing northeast.

Photograph 6.48: General view of Fishpot Run at MP 31.3, facing east.

Access road HOU-AR-22, located at the southern terminus of PARa008, extends generally northeast 175.00 meters (570.15 feet) from the end of Maplehurst Dr. and crosses JA-Ra020 before terminating at STP D1 in PARa008. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey included 31 excavated STPs. Forty-one STPs were removed from testing strategies due to excessive slope and post-depositional disturbances. Shovel test C16 was representative of the soil profile of the segment. The shovel test was in the northern portion of the site revealed a 0.32 meter (1.05 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam with trace clay B-horizon. The southern portion of the line was not able to be excavated due to slopes exceeding a 15 percent grade.

No cultural resources were identified during the current survey of segment PARa008. Previously identified site 36BV0100, the Sandy Beach Hill site, was 0.21 kilometers (0.13 miles) east of the southern section of PARa008. The site was identified as an open habitation prehistoric site.

No archaeological resources were previously identified within segment PARa008 and no new archaeological resources were identified during the recent survey of the segment.

Survey Segment PAPo006/ PAPo015
Northern Terminus: MP 31.74
Southern Terminus: MP 31.11
Start Lat/Long: 40.6357, -80.3495
End Lat/Long: 40.6416, -80.3561
MP Range: 31.11 – 31.74

Length: 1.01 kilometers (0.63 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.72 to 6.73 / Figure 6.140

Survey segment PAPo006 begins at milepost 31.1 and extends northwest for 1.01 kilometers (0.63 miles) before terminating at Mowry Road. The segment is defined by a steeply sloped drainage to Fishpot Run and was paralleled by a existing utility corridor (Photograph 6.49). The northern portion of the segment contains a small section of an agricultural field but then slopes down to Mowry Road. Fishpot Run is present at the southern end of the segment. Fishpot Run is a deeply incised, narrow stream valley. Soils within this segment include Gilpin-Weikert complex and Gilpin silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas with high probability testing in the jurisdictional areas.

Photograph 6.49: General view of PAPo006 near STP B37, facing east.

Survey Segment PAPo015 was a small shift in the centerline between segments PAPo006 and PAPo007 at Mowry Road. The segment made a small jug-handle to the west of the former alignment starting at MP 31.7. No shovel tests were able to be excavated within the segment and JA-Po014 due to the presence of an in-ground utility corridor. The jurisdictional area is a wetland area with a small drainage to Fishpot Run. The segment re-entered PAPo007 at MP 31.74.

The archaeological survey contained a total of 11 excavated shovel tests. One hundred forty STPs were removed from testing strategies due to excessive slope and a existing utility corridor.

Shovel test B35 in the agricultural field in the northern portion of the segment, revealed a 0.30 meter (0.98 feet) dark brown (10YR 3/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon. The southern section of the segment was not able to be tested due to slopes exceeding a 15 percent grade.

No previously identified cultural resources were in the vicinity of PAPo006. The current archaeological survey did not recover any cultural resources.

Survey Segment PAPo007
Northern Terminus: Boundary between Parcels 73-172-0213.008 and 73-172.203.000
Southern Terminus: MP 31.74
Start Lat/Long: 40.6416, -80.3561
End Lat/Long: 40.6422, -80.3557
MP Range: 31.74 – 31.78
Length: 0.06 kilometers (0.04 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.73 to 6.74 / 6.145

Survey segment PAPo007 begins at milepost 31.75 and extends northwest for 0.06 kilometers (0.04 miles) before terminating at the boundary between Parcels 73-172-0213.008 and 73-172.203.000. The segment is defined by a ridgetop above a steep slope (Photograph 6.50). Soil within this segment includes Gilpin silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment includes mostly low probability for steep slopes.

Photograph 6.50: General view of PAPo007, facing southeast.

Survey Segment PAPo007 was initially extended northwest from PAPo006 for approximately 0.56 kilometers (0.90 miles) before terminating at a private drive and a turn in the utility corridor, but Reroute 68 required a change in the path of the corridor. The pipeline was the angled west from PAPo006 then back to the northeast through PAPo007 to PAPo012. The only remaining portion of PAPo007 was a 0.06 kilometers (0.04 miles) diagonal through the southern portion of the original segment.

The archaeological survey contained a total of zero excavated shovel tests. Four STPs were removed from the testing strategy due to steeply-sloped areas and an existing utility corridor. Shovel test C22, northwest of the current alignment, was excavated in the forest paralleling the utility corridor. The shovel test revealed a 0.22 meter (0.72 feet) dark brown (10YR 3/3) silt loam AO-horizon underlain by a light brown (10YR 6/4) silt loam B-horizon. No shovel tests were excavated along the current alignment due to slope.

No archaeological resources were previously identified within segment PARa007 and no new archaeological resources were identified during the recent survey of the segment.

Survey Segment PAPo012/PAPo017/PAPo018
Northern Terminus: MP 32.54
Southern Terminus: MP 31.8
Start Lat/Long: 40.6426, -80.3563
End Lat/Long: 40.6516, -80.3473
MP Range: 31.78 – 32.57
Length: 1.27 kilometers (0.79 miles)
Access Road: HOU-AR-25, HOU-AR-26
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.73 to 6.75 / Figures 6.141 to 6.143

Survey segment PAPo0012/17/18 begins at milepost 31.8 and extends north, northeast for 1.27 kilometers (0.79 miles) before terminating at MP 32.54. The segment is defined by steeply sloped wooded uplands with a large, low lying wetland in the middle of the survey segment (Photograph 6.51). Soils within this segment include Gilpin-Weikert complex, Ernest silt loam, Monongahela silt loam, Weikert-Rock outcrop complex, and Gilpin silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates high probability testing due the proximity of Raccoon Creek as well as previously identified archaeological resources in the area. Shovel tests were designated high probability regardless of slope.

Photograph 6.51: General view of PAPo012 near STP B12, facing east.

Survey segments PAPo017 and PAPo018 were added to PAPo012 in order to cover slight shifts in the workspace of the proposed pipeline route. The additional segments cross the same land forms and are included within this segment description. Segment PAPo017 was a sliver added to the 300-foot corridor of the segment after the centerline shifted slightly north. Segment PAPo018 was a small triangular segment that was added to the corridor between segments PAPo011 and PAPo012. The segment was added to fill in a gap for a shift in the centerline. The segment was on excessive slope.

Access road HOU-AR-25, located near MP 31.95, extends generally west for 1.30 kilometers (0.81 miles) from Mowry Road before terminating at STP D10 in PAPo012. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HOU-AR-26, located near MP 32.1, extends 0.85 kilometers (0.53 miles) generally west and south from Raccoon Creek Road before terminating at STP D22 in PAPo012. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 53 excavated STPs. Two hundred forty-four STPs were removed from the testing strategy due to excessive slope. Shovel tests between the two-track road and the side slope appear at times to have been disturbed. Shovel test C34 along the road revealed a 0.20 meter (0.66 feet) very dark grayish brown (10YR 3/2) silt loam AO-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test C70 on the ridgetop revealed a 0.20 meter (0.66 feet) very dark grayish brown (10YR 3/2) silt loam AO-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon.

The majority of the survey segment is located on the wooded, steep, side-slope. Shovel tests were excavated on small benches along this side slope at STP C34 revealed a 0.20 meters (0.66

feet) thick very dark grayish brown (10YR 3/2) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel testing near the water tank on top of the ridge at STP C70 north of JA-Po010 revealed a 0.31 meter (1.02 feet) very dark grayish brown (10YR 3/2) silt loam Ao-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon.

No archaeological resources were previously identified within these segments and no new archaeological resources were identified.

Survey Segment PAPo011/PAPo013/PAPo019
Northern Terminus: MP 33.07
Southern Terminus: MP 32.54
Start Lat/Long: 40.6504, -80.3484
End Lat/Long: 40.6562, -80.3421
MP Range: 32.54 – 33.07
Length: 0.85 kilometers (0.53 miles)
Access Road: None
Previously Identified Archaeological Resources: 36BV0095
Newly Identified Archaeological Resources: 36BV0398, 36BV/067
Map Pages/STP Illustrations: Figure 6.75 / Figures 6.143 to 6.144

Survey segments PAPo011, PAPo013, and PAPo019 began at MP 32.54, travel northeast to an HDD workspace, and then is directionally drilled under Raccoon Creek to terminate at MP 33.07 for a distance of 0.85 kilometers (0.53 miles). The segment is defined by a steep wooded slope, transitioning to a floodplain, and terminating on a steep, wooded slope (Photograph 6.52). Soils within this segment include Gilpin silt loam, Monongahela silt loam, Allegheny silt loam, Philo silt loam, and Gilpin-Weikert Complex (SSURGO, accessed 2016). Sensitivity modeling for this segment included primarily high probability testing with low probability testing on slopes with a grade in excess of 15 percent.

Photograph 6.52: General view of PAPo001 and Raccoon Creek flood plain/terrace, facing south.

Survey Segment PAPo013 is a small segment that connected Segments PAPo011 with PAPo014. The segment is completely within the Raccoon Creek floodplain (Photograph 6.53). Survey segment PAPo019 is a small sliver that connects the 300-foot corridors Segment PAPo014 and Segment PAPo011. The segment straddles Raccoon Creek and extends onto the floodplain on both sides of the creek. A small shift in the HDD route moved the workspace slightly outside of the 100-foot corridor for Segment PAPo011 at approximately MP 32.85.

Photograph 6.53: General view of PAPo001 and Raccoon Creek flood plain/terrace at STP C21, facing northeast.

The survey of Segments PAPo011, PAPo013, and PAPo019 included the excavation of 143 STPs. Sixty-nine shovel tests were removed from testing strategies due to excessive slope, a utility corridor, and saturated conditions. Shovel test E7, within the site boundary for 36BV0398, revealed 0.25 meter (0.82 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test E14, at the edge of the upland ridge revealed a 0.28 meter (0.92 feet) brown (10YR 4/3) and yellowish brown (10YR 5/6) mottled sandy silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test C22, on the floodplain of Raccoon Creek near the slope, revealed a 0.28 meter (0.92 feet) dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon.

Site 36BV0095, the Potters Bridge site, was identified as an open habitation, prehistoric site. The site was at a wide section of the floodplain of Raccoon Creek at a bend in the stream channel. This resource was evaluated during the investigation and subject to the geomorphological assessment.

Two new cultural resources were identified within Segment PAPo011: 36BV0398 and 36BV/067. Site 36BV0398 is a prehistoric site on the hilltop overlooking Raccoon Creek. The site has been documented as a habitation site. The southern section of Segment PAPo011 was realigned due to the identification of Site 36BV0398. The second site, 36BV/067, was an isolated find that included the recovery of two historic artifacts on a narrow shoulder above the Raccoon Creek flood plain/terrace. The artifacts included two window glass fragments.

Survey Segment PAPo014

Northern Terminus: Shell Cracker Plant, Monaca, PA
Southern Terminus: MP 33.06
Start Lat/Long: 40.6562, -80.3421
End Lat/Long: 40.6629, -80.3394
MP Range: 33.06 – 33.81
Length: 1.21 kilometers (0.75 miles)
Access Road: None
Previously Identified Archaeological Resources: 36BV0010
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.76 to 6.77 / Figure 6.144

Survey segment PAPo014 began at Raccoon Creek Road and extended to the northern end of the pipeline. A reroute to RDR 68 shifted the start point of Segment 14 to MP 33.06, north of Raccoon Creek. The corridor then turned north along a utility corridor to Route 18, then tuned east again before terminating within the construction area of the Shell Plant property after a total of 1.21 kilometers (0.75 miles). The segment is defined by a steep wooded slope transitioning to wooded uplands disturbed by above and below ground utilities, a second wooded slope, and then to the disturbed and cleared Shell Cracker Plant parcels (Photograph 6.54). Soils within this segment include Monongahela silt loam, Gilpin-Weikert complex, Conotton gravelly loam, and Urban land (SSURGO, accessed 2016). The soil north of MP 33.3 is disturbed by the construction processes at the Shell parcel. Sensitivity modeling for this segment included a mix of low, medium, and high probability testing. The upland area was a mix of medium and high probability testing with low probability testing through the excessive slopes and disturbed soils.

Photograph 6.54: General view of PAPo014 near STP C50, facing west.

A shift of the centerline occurred within segment PAPo014. The shift began at MP 33.28 and extended to the northern end of the Houston to Monaca line within the Shell Plant. The shift started at the hilltop and extended southwest down the slope following an existing in-ground utility before entering the Shell plant proper. Due to the location of the shift within a utility corridor and the Shell plant, no additional shovel testing was required in the segment.

The archaeological survey contained a total of 27 excavated STPs. Two hundred eighteen STPS were removed from testing strategies due to post-depositional disturbances and excessive slope. Shovel test C48, on the hilltop west of JA-Po015, revealed a 0.22 meter (0.72 feet) thick dark brown (10YR 3/3) silt loam Ao-horizon underlain by at yellowish brown (10YR 5/4) silt loam B-horizon. Shovel tests within the hilltop drainage area were similar in stratigraphy to STP C48.

Photograph 6.55: General view of JA-Ra038 at State Route 18, facing northeast.

No newly identified resources were recovered within Segment PaPo014.

Site 36BV0010, Bald Head Mountain, was documented as a prehistoric site scatter in April 1951, a multi-component Early Archaic and Woodland Period site. The site has been previously permitted by the proposed Petrochemical Plant project and has since been demolished.

OFF-ALIGNMENT RESULTS (BEAVER COUNTY)

Survey Segment PAPo001
Northern Terminus: Raccoon Creek Road
Southern Terminus: Private Road, Junk Yard Alley
Start Lat/Long: 40.6375, -80.3500
End Lat/Long: 40.6441, -80.3408
MP Range: N/A
Length: 1.21 kilometers (0.75 miles)
Previously Identified Archaeological Resources: 36BV0192
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.78 / Figure 6.149

Survey segment PAPo001 begins at a private road named Junkyard Alley, and extends northeast for 1.21 kilometers (0.75 miles) before terminating at Raccoon Creek Road. This segment is characterized by a terrace at the northern terminus turning into an increasingly sloped, ravine topography to the southern terminus (Photograph 6.56). Soils within the segment include: Philo silt loam, Gilpin-Weikert complex, Gilpin silt loam, Ernest silt loam, Purdy silt loam, Tyler silt loam, and Monongahela silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly high probability except in areas of steep slope. A large reroute shifted the corridor west of the area leaving the entirety of segment PAPo001 off-alignment.

Photograph 6.56: General view of PAPo001 near STP D61, facing northwest

The archaeological survey contained a total of 83 excavated shovel tests. Forty-three STPs were removed from testing strategies due to excessive slope. Shovel test B83 on the terrace at the northern terminus revealed a 0.25 meter (0.82 feet) brown (10YR4/3) silty clay AB horizon underlain by a light yellowish brown (10YR 6/4) clay loam Btg horizon. Shovel test D64, across the wooded sloping ravine, revealed a 0.22 meter (0.72 feet) thick black (10YR2/1) silt loam AO-horizon. Underlying the AO-horizon was a yellowish brown (10YR5/6) silt loam Bt-horizon. Shovel test C41, excavated on an upland hilltop located in the southern portion of the segment, revealed a 0.12 meter (0.39 feet) black (10YR2/1) channery silt loam AO-horizon underlain by a yellowish brown (10YR5/8) channery silt loam Bt-horizon.

The previously identified site, 36BV0192, is a prehistoric, open habitation site. The site consists of an unknown number of chipped stone tools of an unknown material. Shovel testing at 15.00 meter (49.21 feet) intervals did not reveal any more prehistoric cultural material, but did identify a possible historic component to the site. The new portion of the site is potentially part of a historic farmstead.

Survey Segment PAPo002
Northern Terminus: Parcel Boundary
Southern Terminus: Raccoon Creek Road
Start Lat/Long: 40.6441, -80.3408
End Lat/Long: 40.6570, -80.3375
MP Range: N/A
Length: 1.40 kilometers (0.87 miles)
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.79 / Figure 6.150

Survey segment PAPo002 begins at Raccoon Creek Road and extends northward for 1.40 kilometers (0.87 miles) before terminating at the parcel boundary of 73-173-0246.000 and 73-173-0308.000. The segment is characterized by Raccoon Creek floodplain near the southern terminus of the survey segment transitioning to steeply sloped ravines in a wooded upland setting (Photograph 6.57). Soils within this segment include Gilpin-Weikert, Allegheny silt loam, Monongahela silt loam, and Tyler silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly high probability with low probability testing in steeply-sloped areas. An existing power line corridor ran parallel to the ROW and impacted the soils in several areas. Survey segment PAPo002 was only partially completed due to a reroute of the proposed pipeline corridor. Segment PAPo002 is off-alignment from the current route of the pipeline ROW and will not be impacted.

Photograph 6.57: General view of PAPo002 landform, facing west.

The archaeological survey contained a total of 48 excavated STPs. A total of 53 STPs were removed from the testing strategy due to excessive slope and general disturbances. Shovel test D91 in the northern portion of the segment revealed a 0.09 meter (0.30 feet) thick dark greyish brown (10YR4/2) channery silty clay loam overlaying a yellowish brown (10YR5/4) channery silty clay loam Bt-horizon. Shovel test D58 on the side slope revealed a 0.12 meter (0.39 feet) thick black (10YR2/1) silt loam A-horizon, underlain by a yellowish brown (10YR5/4) channery silt loam Bt-horizon.

No archaeological resources were previously identified within segment PAPo002 and no new archaeological resources were identified during the recent survey of the segment.

Survey Segment PAPo003
Northern Terminus: 40.6623, -80.3380
Southern Terminus: Parcel Boundary of 73-173-0246.000 and 73-173-0308.000
Start Lat/Long: 40.6570, -80.3375
End Lat/Long: 40.6623, -80.3380
MP: N/A
Length: 0.37 kilometers (0.23 miles)
Previously Identified Archaeological Resources: 36BV0011
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.77 / Figure 6.150

Survey segment PAP003 begins at the parcel boundary of Parcel Boundary of 73-173-0246.000 and 73-173-0308.000 and extends north 0.37 kilometers (0.23 miles) before terminating at the

previously proposed starting point for the Houston-Monaca line, 40.6623, -80.3380. Segment PAPo003 was characterized by wooded uplands, although the landscape has drastically changed due to current construction on parcel 73-173-0246.000 (Photograph 6.58). Soils mapped in this segment include Conotton gravelly loam, Gilpin-Weikert complex, and Gilpin silt loam (SSURGO, accessed 2016). The probability model for this survey segment indicated mostly high probability testing due to the proximity to previously identified archaeological sites.

Photograph 6.58: General view of PAPo003, facing north.

The archaeological survey included seven excavated STPs. Thirty-four STPs were removed from testing strategies due to post-depositional disturbances. Survey Segment PAPo003 is no longer within the current alignment along the proposed pipeline route. Shovel testing at STP C9, within Site 36BV0011, revealed a 0.08 brown (10YR 4/3) channery silt loam A-horizon underlain by a yellowish brown (10YR 5/4) channery silt loam Bw-horizon. The highly disturbed soils were characteristic of the survey segment due to current construction.

No cultural material was recovered in the segment and it is likely that Sites 36BV0010 and 36BV0011 are no longer intact due to construction on parcel 73-173-0246.000. Site 36BV0011 is a prehistoric surface scatter recovered on a hilltop, dating to the Early Archaic and Early Woodland Period. Evaluation of this resource demonstrated extensive disturbance.

Survey Segment PAPo005/PAPo008
Northern Terminus: Raccoon Creek Road
Southern Terminus: 40.6457, -80.3596
Start Lat/Long: 40.6457, -80.3596
End Lat/Long: 40.6536, -80.3500
MP: Off-Alignment

Length: 1.20 kilometers (0.74 miles)
Previously Identified Archaeological Resources: 36BV0096
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figures 6.74 to 6.75 / Figure 6.146

Survey segment PAPo005/PAPo008 begins at 40.6457, -80.3596 and extends northeast for 1.20 kilometers (0.74 miles) before terminating at Raccoon Creek Road. Segment PAPo008 extended north by northwest from Segment PAPo007 before turning east toward Raccoon Creek. Segment PAPo005 overlapped PAPo008 at the eastern end of the segments to complete the survey of a wide workspace in the area. The segment then connected with Segment PAPo004 on the terrace above Raccoon Creek. Survey segments PAPo005 and PAPo008 are no longer on the current alignment of the proposed pipeline route due to a reroute.

The segment is characterized be a previously existing in-ground utility corridor in the southern portion of the segment, which led to steep, wooded uplands, followed by a sparsely vegetated terrace overlooking Raccoon Creek at the northern end of the segment (Photograph 6.59). Soils mapped in this segment include Tilsit silt loam, Gilpin-Weikert complex, Gilpin silt loam, Monongahela silt loam, and Weikert-Rock outcrop complex (SSURGO, accessed 2016). The probability model for the segments includes mostly low probability due to excessive slope with clusters of high and medium probability in streams/wetlands and in the uplands.

Photograph 6.59: General view of PAPo008, facing northwest.

The archaeological survey consisted of a total of 60 excavated shovel tests. Another 32 STPs were removed from testing strategies due to slope and utility corridor disturbance. Shovel testing in the wooded uplands in the middle of Segment PAPo008 at STP C14 revealed a 0.15 meter (0.49 feet) dark brown (10YR 3/3) silt loam Ao-horizon underlain by a light yellowish brown

(10YR 6/4) silt loam B-horizon. Shovel testing along the B-line transect was extremely limited due the presence of an existing utility corridor. Shovel testing in PAPo005 at STP B7 also revealed a 0.15 meter (0.49 feet) very dark grayish brown (10YR 3/2) mottled with light brown (10YR 6/4) silt loam Fill-horizon. Shovel testing at STP B14 in PAPo005, on the terrace overlooking Raccoon Creek, revealed a 0.30 meter (0.98 feet) dark yellowish brown (10YR 3/4) silty sand Ap-horizon underlain by a strong brown (7.5YR 5/6) fine sandy silt B-horizon.

Site 36BV0096 cuts into survey segment PAPo005. The site is a prehistoric site.

Survey Segment PAPo004
Eastern Terminus: Raccoon Creek
Western Terminus: 40.6526, -80.3505
Start Lat/Long: 40.6526, -80.3505
End Lat/Long: 40.6544, -80.3447
MP: Off-Alignment
Length: 0.57 kilometers (0.35 miles)
Previously Identified Archaeological Resources: 36BV0095, 36BV0096
Newly Identified Archaeological Resources: 36BV0396
Map Pages/STP Illustrations: Figure 6.75 / Figures 6.147 and 6.148

Survey segment PAPo004 extended eastward from PAPo005 for 0.57 kilometers (0.35 miles) before terminating at Raccoon Creek. This segment is characterized by a sparsely wooded high terrace transitioning to a floodplain of Raccoon Creek. Soils mapped in this segment include Monongahela silt loam, Weikert-Rock outcrop complex, Allegheny silt loam, and Philo silt loam (SSURGO, accessed 2016). The probability model shows high probability for this segment due to the proximity of previously recorded archaeological sites 36BV0095 and 36BV0096.

The archaeological survey included a total of 62 excavated shovel tests. Nine STPs were removed from testing strategies due to saturated conditions and general disturbances. Shovel testing on the terrace overlooking Raccoon Creek at STP A3 revealed a 0.41 meter (1.35 feet) dark brown (10YR 3/3) fine sandy silt loam Ap-horizon underlain by a brown (7.5YR 4/4) fine sandy silt loam with trace clay BC-horizon extending to 0.73 meters (2.40 feet) followed by a brown (7.5YR 4/4) fine sand C-horizon. Shovel test B17 was within Site BVGr004-FC1. The soil profile revealed a 0.24 meter (feet) dark grayish brown (10YR 4/2) silt loam disturbed Ap-horizon underlain by a dark yellowish brown (10YR 4/6) silty clay B-horizon. Shovel testing on the Raccoon Creek floodplain at STP B24 revealed a 0.36 meter (1.18 feet) dark yellowish brown (10YR 4/4) silty clay Ap-horizon underlain by a 0.31 meter (1.02 feet) brown (10YR 4/3) with iron-oxide silty clay loam Bg-horizon, underlain by a dark yellowish brown (10YR 4/4) silty sand with 30 percent angular gravels Bc-horizon.

Two previously identified archaeological resources and one new archaeological site were identified within or crossing into this segment, 36BV0095, 36BV0096 and 36BV0396. Site 36BV0095 is a Native American habitation site. Site 36BV0096 is also a previously identified Native American habitation site identified as an Early Woodland period occupation within the Ap-horizon. Extensive disturbed as documented, though large portions of the site remain intact.

Site 36BV0396 is a newly identified site. The site is a historic farmstead complex associated with the St. Joseph Lead Experimental Farm. Both localities have been subject to realignment and will not be impacted.

PROPOSED SCIO TO MONACA LINE

Beaver County

Survey Segment PAGr001
Western Terminus: Pennsylvania/West Virginia Border
Eastern Terminus: Red Dog Road Ext.
Start Lat/Long: 40.5824, -80.5190
End Lat/Long: 40.5856, -80.5085
MP Range: 38.46 – 39.05
Length: 0.95 kilometers (0.59 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.80 to 6.81 / Figure 6.151

Survey segment PAGr001 begins at the West Virginia and Pennsylvania border and follows an east by northeast trajectory for 0.95 kilometers (0.59 miles) before terminating at Red Dog Road Extension. The segment is defined by wooded drainages on side slopes (Photograph 6.60). A existing powerline corridor runs parallel to the survey corridor. Soils within the segment include Gilpin silt loam, Atkins silt loam, Guernsey silt loam, Guernsey-Vandergrift complex. Gilpin-Upshur complex, Hazelton channery loam, Clymer loam, and Gilpin-Weikert complex. Sensitivity modeling for this segment indicates mostly low probability testing with small amounts of high probability testing.

Photograph 6.60: General view of PAGr001 from Red Dog Road, facing west.

The archaeological survey contained a total of 38 excavated STPs. A total of 14 STPs were removed from the testing strategy due to excessive slopes saturated soils. Shovel testing at the base of the drainage between MP 38.5 to MP 38.7 in STP C13 revealed a 0.14 meter (0.46 feet) thick brown (10YR 4/3) silt loam A-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. The soils at the base of the slope were saturated with indications of long periods of standing water. Shovel testing along the powerline corridor revealed disturbed soils in STP C28 with a brown (10YR 4/3) and dark yellowish brown (10YR 4/6) mottled silty clay loam fill soil with angular gravels. Shovel testing on the west facing side slope was disturbed by a combination of the powerline corridor and localized push-piles, likely associated with the powerline corridor construction (Photograph 6.61). The soil in STP D46 in the push-pile was a 0.15 meter (0.49 feet) thick brown (10YR 4/3) and dark yellowish brown (10YR 4/6) mottled silty clay loam fill with angular gravels underlain by a yellowish brown (10YR 5/6) silty clay loam B-horizon.

Photograph 6.61: General view of PAGr001 at STP D2, facing east.

No archaeological resources were identified within Segment PAGr001.

Survey Segment PAGr002
Western Terminus: Red Dog Road Extension
Eastern Terminus: Route 30 – Lincoln Highway
Start Lat/Long: 40.5856, -80.5085
End Lat/Long: 40.5876, -80.4975
MP Range: 39.05 – 39.64
Length: 0.95 kilometers (0.59 miles)
Access Road: HAR-AR-56a, HAR-AR-57

Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.81 to 6.82 / Figure 6.152

Survey segment PAGr002 begins at Red Dog Road Extension and follows an east by slight northeast trajectory for 0.59 miles before terminating at Route 30, Lincoln Highway. The segment is defined by large, gently to steep sloping wooded areas bisected by agricultural/pastoral fields that sloped to an unnamed tributary of Mill Creek (Photograph 6.62). Soils within this segment include Gilpin-Weikert complex, Clymer loam, Gilpin-Upshur complex, Guernsey-Vandergrift complex, Hazelton channery loam, Gilpin silt loam, Atkins silt loam, and Ernest silt loam (SSURGO, accessed 2016). The sensitivity model for this segment indicates mostly low probability modeling in steeply-sloped areas. A small section between the wooded areas in parcel 62-190-0115.003 was changed to high probability to test the intersection of multiple landforms. The wide shoulder slope above the tributary was excavated at medium probability. The centerline continued to parallel the existing powerline corridor.

Photograph 6.62: General view of PAGr002 near STP D42, facing northeast.

A slight shift in the corridor occurred within the segment beginning at MP 39.56 and extending to MP 39.74. The shift was on a shoulder on the north facing slope along the existing powerline corridor. The shoulder shifted from a wooded side slope to the powerline corridor to agricultural fields. The shift avoided an existing pipeline corridor within the segment. A cultural resources survey occurred on July 14, 2016 and cleared the shift for continued work.

Access road HAR-AR-56a, located near MP 39.2, extends east for approximately 225.00 meters (738.19 feet) from Red Dog Road Ext and terminates at D10 in PAGr002. This access road follows an existing transportation ROW and was pedestrian surveyed. Access road HAR-AR-57,

located near MP 39.2, extends generally east for 275.0 meters (902.23 feet) from Red Dog Road Ext and terminates at STP B16 in PAGr002. This access road follows an existing farm lane. A total of seven STPs were excavated. The remainder of the access road was pedestrian surveyed.

The survey contained a total of 28 excavated STPs, including two on access road HAR-AR-57 in PAGr002. Five shovel tests were removed from the testing strategy due to the existing utility corridor and excessive slope. Shovel test C10 uncovered a 0.20 meter (0.66 feet) brown (10YR 4/3) silt loam A-horizon underlain by a strong brown (7.5YR 5/6) silty clay loam B-horizon. Shovel testing in the agricultural fields and pasture at STP D42 revealed a 0.15 meter (0.49 feet) brown (10YR 4/3) mottled with dark yellowish brown (10YR 4/6) silty clay loam disturbed Fill-horizon. The soils were likely disturbed by the existing powerline corridor. Shovel testing on the shoulder slope at STP C49 revealed a 0.32 meter (1.05 feet) dark yellowish brown (10YR 3/4) silt loam A-horizon underlain by a yellowish brown (10YR 5/4) silt loam Bw-horizon with 20 percent gravels. Shovel test C56 excavated within the floodplain revealed 0.37 meter (1.21 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon with 20 percent gravel. Shovel tests closer to the tributary the subsoil included a gray (GLEY 1 5/N) sandy clay Gley/Bg-horizon (Photograph 6.63).

Photograph 6.63: General view of PAGr002 near STP D59, facing east.

No previously identified archaeological resources had been uncovered within the 300-foot corridor. No new archaeological resources were identified in segment PAGr002.

Survey Segment PAGr003/PAGr002-A
Western Terminus: Route 30 – Lincoln Highway
Eastern Terminus: RDR 67/72 – MP 40.06
Start Lat/Long: 40.5876, -80.4975

End Lat/Long: 40.5972, -80.4831
MP: 39.64 – 40.06
Length: 0.66 kilometers (0.41 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/059
Map Pages/STP Illustrations: Figure 6.82 to 6.83 / None

Survey segment PAGr003 begins at Route 30, Lincoln Highway, and follows an east-to-northeast trajectory for 0.66 kilometers (0.41 miles) before terminating at MP 40.06. The segment previously continued northeast and ended at Red Dog Road. The segment is defined by a gently sloping manicured lawn followed by a secondary-growth and wooded powerline corridor and steep to gently sloping agricultural/pastoral fields (Photograph 6.64). Soils within this segment include Ernest silt loam, Gilpin silt loam, Gilpin-Weikert complex, and Guernsey-Vandergrift complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates high, medium, and low probability shovel testing. The model indicates high testing at near wetlands and within the manicured lawn, medium probability testing through the power corridor, and low probability in steeply-sloped areas. Access road HAR-AR-57c is no longer being used due to a reroute.

Photograph 6.645: General view of PAGr003 near State Route 30, facing northeast.

Survey Segment PAGr002-A was a sliver along the southern side of PAGr003 that was added due to a slight shift in the centerline route. The adjustment to the 300-foot corridor spanned between MP 39.7 and MP 39.9. The route shifted to follow the existing corridor starting further west in the segment.

The archaeological survey of segments PAGr002-A and PAGr003 contained a total of 118 excavated STPs. Twenty-nine STPs were removed from testing strategies due to excessive slope, saturated conditions, and utility corridors. Discussion with the landowner in Parcel 62-190-0124.004 revealed that the manicured lawn had been largely altered through ground-moving activities in association with the construction of the house which disturbed the soils within the first portion of the segment. Shovel testing parallel to the utility corridor at STP D46 revealed a 0.32 meter (1.05 feet) very dark grayish brown (10YR 3/2) silt loam A-horizon with 60 percent gravel underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test D56 within the agricultural fields and pasture land revealed a 0.08 meter (0.26 feet) dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 4/6) silt loam B-horizon. Shovel testing at STP C73 on the hilltop agricultural fields revealed a 0.24 meter (0.79 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam to clay B-Horizon. Shovel test G4 revealed 0.26 meter (0.85 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon with traces of clay.

Newly identified archaeological resources within this segment consist of one isolated find: 36BV/059. The isolated find consisted of two ceramic stoneware fragments and one brick fragment found within the first stratum of STP C61. The isolated find is no longer within the corridor.

Survey Segment PAGr015/PAGr014
Eastern Terminus: MP 41.04
Western Terminus: MP 40.07
Start Lat/Long: 40.5896, -80.4906
End Lat/Long: 40.5906, -80.4728
MP Range: 40.07 – 41.04
Length: 1.54 kilometers (0.96 miles)
Access Road: HAR-AR-57d
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/062, 36BV0394
Map Pages/STP Illustrations: Figure 6.83 to 6.85 / Figure 6.153

Survey segment PAGr015 begins at an overhead utility corridor at MP 40.07 and extends east 1.54 kilometers (0.96 miles) before terminating at MP 41.04. The segment is defined by a wooded uplands area sloping to cleared pastures then a long wetland area leading to the Hookstown Fairgrounds, before terminating across Main Street in a wetland area. Mill Creek, a perennial stream near MP 40.7 and its associated drainages and wetlands, was present around the Hookstown Fairgrounds (Photograph 6.65). Soils within this segment include Gilpin-Weikert complex, Gilpin silt loam, Ernest silt loam, Atkins silt loam, Brinkerton silt loam, and Wharton silt loam. Sensitivity modeling for this segment includes mostly high probability, with medium probability modeling on the wooded hilltop and low probability modeling within sloped area.

Photograph 6.65: General view of PAGr015/PAGr014 and Mill Creek, facing south.

Survey Segment PAGr014 was included with the alignment and ran parallel to PAGr008 prior to a reroute moving the corridor south of access road HAR-AR-57d. Segment PAGr014 was not surveyed before the reroute was made.

Access road HAR-AR-57d, located near MP 41, extends west 600.00 meters (1968.50 feet) from State Route 168 and crosses Mill Creek before terminating north of MP 40.55. This access road follows an existing transportation ROW and was pedestrian surveyed

The archaeological survey contained a total of 174 excavated STPs. Fifty-four STPs were removed from the testing strategy due to general disturbances, saturated conditions, and excessive slope. Shovel test C10, at the western end of Segment PAGr015, revealed a 0.23 meter (0.75 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by at yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test C22, at the prehistoric positive STP in the upland area, revealed a 0.16 meter (0.52 feet) brown (10YR 4/3) silt loam A-horizon underlain by at yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test C46, within the pasture revealed a 0.22 meter (0.72 feet) dark brown (10YR 3/3) silt loam Ap-horizon underlain by a brown (7.5YR 5/4) silt loam Bt-horizon with 60 percent gravels. Shove test D72, at the edge of Mill Creek, revealed a 0.36 meter (1.18 feet) dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a mottled brown and dark yellowish brown (10YR 5/3 and 10YR 3/4) silty clay Bg-horizon. Shovel test E99, on the eastern edge of the segment, revealed a 0.27 meter (0.89 feet) dark brown (10YR 3/3) silt loam Ap-horizon underlain by a dark gray (Gley 4/N) clay loam Bg-horizon.

No archaeological resources were previously identified within the area surrounding Segment PAGr015 or PAGr014. Newly identified archaeological resources within this segment consist of one prehistoric isolated find and one historic feature. Site 36BV/062 included one prehistoric chert flake

isolated find within the first stratum of STP C22 in a wooded upland near MP 40.3. Site 36BV0394 was identified as a fire pit feature in STP E100 of Segment PAGr015. The feature was documented as modern based on a shotgun shell base found within the pit.

Survey Segment PAGr012/PAGr011

Eastern Terminus: MP 41.47
Western Terminus: MP 41.04
Start Lat/Long: 40.5906, -80.4728
End Lat/Long: 40.5931, -80.4672
MP Range:
Length: 0.68 kilometers (0.42 miles)
Access Road: HAR-AR-57e
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/061
Map Pages/STP Illustrations: Figure 6.85 / Figure 6.153 and 6.154

Survey segment PAGr012 begins at MP 41.04 and extends east then northeast 0.68 kilometers (0.42 miles) before terminating at MP 41.47. The segment is defined by a cleared wetland area transitioning to a grassy terrace and terminating in a pasture. Soils within this segment include Gilpin silt loam, Wharton silt loam, Guernsey-Vandergrift complex, and Tilsit silt loam. Sensitivity modeling for this segment includes a mix of high, medium, and low probability testing.

Survey Segment PAGr011 was included in a reroute and followed a similar path to PAGr012. A later reroute. Subsequently an additional reroute shifted the centerline to the south. A new segment, PAGr012, was created to cover the survey LOD. A small section of PAGr011 was surveyed before the reroute was cleared. The survey area shifted and the segment became obsolete.

Access road HAR-AR-57e, located near MP 41, extends east for approximately 275.00 meters (902.23 feet) from State Route 168 and crosses the wetland area before terminating at STP C13 in PAGr012. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 50 excavated STPs. Twenty-four STPs were removed from the testing strategy due to post-depositional disturbances and saturated conditions. Shovel test D12, on the western side of the corridor near site 36BV/061, revealed a 0.11 meter (0.36 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test D38, in the pasture east of Pittsburgh Grade Road, revealed a 0.21 meter (0.69 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. Shovel test E52, on the east side of the corridor revealed a 0.31 meter (1.02 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon.

No archaeological resources were previously identified within the area surrounding Segments PAGr012 or PAGr011. Newly identified archaeological resources within this segment consist of one prehistoric isolated find: 36BV/061. Site 36BV/061included one prehistoric chert flake found within the first stratum of STP D13 at the edge of a slope to a drainage channel. All of the associated radials were found to be negative.

Survey Segment PAGr009/PAGr009-A

Western Terminus: Pittsburgh Grade Road
Southern Terminus: S.R. 3018
Start Lat/Long: 40.5924, -80.4693
End Lat/Long: 40.5980, -80.4552
MP Range: 41.47 – 42.18
Length: 2.25 kilometers (1.40 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.86 to 6.87 / Figure 6.154

Survey segment PAGr009 initially started at Pittsburgh Grade Road and extended 1.34 kilometers (0.83 miles) east by northeast to State Route 3018. A reroute shifted the workspace south, around the beginning of PAGr009, but intersected with PAGr009 approximately 0.14 kilometers (0.09 miles) east of Pittsburgh Grade road near the boundary of Parcels 62-191-0175.001 and 62-191-0174.000. The segment is defined by agricultural fields separated by a sloped and wooded drainage. Soils within this segment include Gilpin silt loam, Ernest silt loam, Atkins silt loam, Gilpin-Weikert complex, and Guernsey silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates primarily medium probability testing through the agricultural fields with low probability testing on the slopes and high probability testing in the jurisdictional area.

Segment PAGr009-A was a sliver of a workspace that followed the north side of Segment PAGr009. The segment shift was added to account for the full 300-foot workspace after several shifts occurred. Currently PAGr009-A is off-alignment and will not be impacted.

The archaeological survey contained a total of 56 excavated STPs. A total of 36 STPs were removed from testing strategies due to an existing utility corridor, excessive slope, and saturated conditions. Shovel testing in the jurisdictional area was disturbed by a existing utility corridor. Shovel testing in the agricultural field at STP C36 west of JA-Gr021 revealed a 0.40 meter (1.31 feet) thick dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a brownish yellow (10YR 6/6) silt loam B-horizon. Shovel test C76 in the agricultural fields east of the drainage channel revealed a 0.30 meter (0.98 feet) thick brown (10YR 4/3) mottled with strong brown (7.5YR 4/6) silt loam Ap-horizon underlain by a strong brown (7.5YR 4/6) silt loam B-horizon.

No archaeological resources were previously identified within PAGr009. The recent survey of the segment revealed no new archaeological resources.

Survey Segment PAGr010/PAGr013
Eastern Terminus: MP 43.31
Western Terminus: McCleary Road
Start Lat/Long: 40.5980, -80.4551
End Lat/Long: 40.6054, -80.4401
MP Range: 42.18 – 43.31

Length: 1.83 kilometers (1.14 miles)
Access Road: HAR-AR-66
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.87 to 6.89 / Figure 6.155

Survey segment PAGr010 begins at McCleary Road and follows an east to north trajectory for 1.83 kilometers (1.14 miles) before terminating at MP 43.31 in Parcel 62-191-0220.000. The segment is defined by agricultural fields giving way to steeply sloped and wooded drainages (Photograph 6.66). These streams are situated in a steeply sloped wooded upland environment with Peggs Run occupying a steeply sloped wooded upland valley. Soils within this segment include Gilpin silt loam, Guernsey-Vandergrift complex, Gilpin-Upshur complex, Gilpin-Weikert complex, and Tilsit silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly low probability in steeply-sloped areas with areas of medium probability in the western half of the segment and high probability testing in jurisdictional areas.

Photograph 6.66: General view of PAGr010 from STP D21, facing west.

Survey segment PAGr013 was added to account for a slight southern shift in the centerline within PAGr010. The segment consisted of two transects between MP 42.8 and MP 42.4 as an extension of the 300-foot corridor.

Access road HAR-AR-66, located 225.00 meters (738.19 feet) east of MP 43.1, extends generally northwest for approximately 450.00 meters (1476.38 feet) from Shaffer Road before terminating at STP D114. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 58 excavated STPs. One hundred twenty-six STPs were removed from the testing strategy due to extensive slope, a existing utility corridor, and saturated conditions. The east-to-west portion of Segment PAGr010 followed an existing utility corridor. The majority of shovel tests in this area showed post-depositional disturbances. Shovel test C66 revealed a 0.25 meter (0.82 feet) thick very dark grayish brown (10YR 3/2) silt loam A-horizon underlain by a gray (10YR 5/1) silty clay Bg-horizon. Shovel test D93 revealed a 0.06 meter (0.20 feet) dark brown (10YR 3/3) silty clay Ao-horizon underlain by a yellowish brown (10YR 5/6) clay B-horizon. Shovel test D105 revealed a 0.12 meter (0.39 feet) thick dark brown (10YR 3/3) silt loam AO-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon. Shovel test D118 in the agricultural field at the northern portion of the segment revealed a 0.34 meter (1.12 feet) thick brown (10YR 4/3) silt loam Ap-horizon with 50 percent gravel underlain by a strong brown (7.5YR 5/6) silt loam B-horizon.

No archaeological resources were previously identified around PAGr010 and PAGr013. No new archaeological resources were identified within the proposed corridor.

Survey Segment PAGr007

Western Terminus: MP 43.31
Eastern Terminus: Greene and Shippingport Municipality border, east of Shaffer Road
Start Lat/Long: 40.6051, -80.4401
End Lat/Long: 40.6082, -80.4341
MP Range: 43.31 – 43.7
Length: 0.64 kilometers (0.40 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.89 / Figure 6.155

Survey segment PAGr007 initially began at Route 168, but a reroute shifted the start point to the east approximately 0.32 kilometers (0.20 miles) near MP 43.31. The route followed a northeast trajectory for 0.64 kilometers (0.40 miles) before terminating at the border between Greene and Shippingport municipalities. The segment is defined by steep, wooded slopes and a plowed hilltop (Photograph 6.67). Soils within this segment include Vandergrift-Gilpin Complex, Gilpin-Weikert Complex, Guernsey-Vandergrift Complex, Gilpin silt loam, and Tilsit silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly high probability survey on the hilltop with low probability testing in steeply-sloped areas.

Photograph 6.67: General view of PAGr007 near STP D37, facing southwest.

The archaeological survey contained a total of 33 excavated shovel tests. Twenty-four STPs were removed from testing strategies due to excessive slope, saturated conditions, and general disturbances. Shovel testing on the ridgetop at STP C20 on the western side of the corridor revealed a 0.32 meter (1.05 feet) thick dark yellowish brown (10YR 4/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silty clay Bw-horizon. Shovel testing in the agricultural fields and pasture land revealed an approximately 15-cm brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) clay B-horizon. Shovel tests excavated near the wood line revealed an approximately 30-cm thick brown (10YR 4/3) silty clay Ap-horizon underlain by a strong brown (7.5YR 5/6) clay B-horizon.

No archaeological resources were identified within the 300-foot corridor. No previously identified archaeological resources are present within the segment.

Survey Segment PASh001/PASh001-A
Northern Terminus: Greene and Shippingport Township border
Southern Terminus: Green Hill Road
Start Lat/Long: 40.6082, -80.4341
End Lat/Long: 40.6162, -80.4174
MP Range: 43.7 – 44.74
Length: 1.67 kilometers (1.04 miles)
Access Road: HAR-AR-68
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/069, 36BV0399, 36BV/068
Map Pages/STP Illustrations: Figure 6.90 to 6.91 / Figure 6.156

Survey segment PASh001 begins at the Greene/Shippingport border and follows a northeast trajectory for 1.04 miles before terminating at Green Hill Road. The segment is defined by large, agricultural hilltops separated by a steeply sloped, wooded drainage (Photographs 6.68 and 6.69). Soils within this segment include Tilsit silt loam, Gilpin silt loam, Gilpin-Weikert Complex, Guernsey-Vandergrift Complex, and Gilpin-Upshur complex (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly high probability on all upland settings with low probability testing in steeply-sloped areas.

Photograph 6.68: General view of PASh001 at STP C18, facing east.

Photograph 6.69: General view of PASh001 from STP C69, facing west.

Survey Segment PASh001-A represents a shift in the centerline at MP 44.5 that extended the 300-foot corridor north of PASh001. The segment shift terminates at Green Hill road.

Access road HAR-AR-68, located near MP 44.8, extends generally northwest for approximately 225.00 meters (738.19 feet) from Moores Road before terminating at STP A104. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 144 excavated shovel tests. Sixty STPs were removed from testing strategies due to excessive slope and post-depositional disturbances. Shovel testing in the agricultural field on the western side of the corridor near Site 36BV/069 in STP B11 revealed a 0.35-meters (1.15 feet) thick dark grayish brown (10YR 4/2) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silt loam Bt-horizon. Shovel test C40 in the orchard on the ridge consisted of a 0.30 meters (0.98 feet) thick brown (7.5YR 4/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam Bt-horizon. Shovel testing in the unnamed tributary to Peggs Run included disturbed soils from the construction of the Strip Mine Road and excessive slopes. It was deemed unsafe to access the tributary due to excessive slope and loose gravels and soils. STP A86, excavated in the agricultural hilltop, revealed a 0.28 meter (0.92 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon. The area around the artificial pond was disturbed. The soil in 36BV0399, at STP C106, revealed a 0.30 meters (0.98 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam Bt-horizon.

No previously identified archaeological resources were present within the surveyed parcels of PASh001.Three sites were identified in the segments. Sites 36BV/068 and 36BV/069 were prehistoric isolated finds. Neither site included diagnostic artifacts. Site 36BV/068 was in the

orchard to the west of the segment while 36BV069 was in the agricultural field to the east side of the segment. The third site, 36BV0399 was a historic scatter. The site included domestic artifacts including ceramics and iron hardware,

Survey Segment PARa001/PARa001-A
Western Terminus: Green Hill Road
Eastern Terminus: Shippingport Road
Start Lat/Long: 40.6162, -80.4174
End Lat/Long: 40.6172, -80.4044
MP Range: 44.74 – 45.47
Length: 1.17 kilometers (0.73 miles)
Access Road: HAR-AR-69
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.91 to 6.92 / Figure 6.157

Survey segment PARa001 begins at Green Hill Road and follows an eastern trajectory for 1.17 kilometers (0.73 miles) before terminating at Shippingport Road. The segment is defined by large, wooded slopes that followed existing utility corridors (Photograph 6.69). Soils within this segment include Gilpin-Upshur Complex, Gilpin silt loam, and Gilpin-Weikert Complex (SSURGO, accessed 2016) Sensitivity modeling for this segment indicates mainly low probability in steeply-sloped areas with some areas of medium to high probability on ridge tops and shoulder slopes.

Photograph 6.70: General view of PARa002, facing north.

A slight shift in the centerline altered the 300-foot corridor of PARa001 at Green Hill Road. The corridor shifted north and added segment shift PARa001-A.
Access road HAR-AR-69, located near MP 44.95, extends generally northeast for approximately 100.00 meters (328.08 feet) from Green Hill Road before terminating at STP F7 in PARa001. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 32 excavated STPs. Thirty-five STPs were removed from testing strategies due to general disturbances and excessive slope. Shovel test C4 in the manicured lawn on the eastern side of Green Hill Road revealed a 0.05 meter (0.16 feet) brown (7.5YR 4/2) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam Bt-horizon. The centerline bisected a septic tank and leech bed area behind the house. Logging activities for the installation of the powerline corridor disturbed many of the soils on the west side of the ridge. Shovel testing at STP C30 revealed a 0.13 meter (0.43 feet) thick brown (10YR 4/3) silt loam A-horizon underlain by a yellowish brown (10R 5/4) channery silt loam Bw-horizon. Shovel test C66 revealed a very dark grayish brown (10YR 3/2) mottled with reddish brown (5YR 5/4) silt loam disturbed Fill with 80 percent gravel. The majority of the corridor, particularly east of the low drainage valley followed a existing utility corridor that resulted in disturbed soils.

There were no previously identified archaeological resources within the 300-foot corridor or the parcels surveyed. No new archaeological resources were identified..

Survey Segment PARa002
Western Terminus: Shippingport Road
Eastern Terminus: Frankfort Road - Route 18
Start Lat/Long: 40.6172, -80.4043
End Lat/Long: 40.6167, -80.3990
MP Range: 45.48 – 45.76
Length: 0.45 kilometers (0.28 miles)
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.92 to 6.93 / Figure 6.157

Survey segment PARa002 begins at Shippingport Road and follows a existing utility corridor for 0.45 kilometers (0.28 miles) before terminating at Frankfort Road – Route 18. The segment is defined by two ridges separated by a sloped drainage (Photograph 6.71). Soils within this segment include Gilpin silt loam, Gilpin-Upshur complex, Gilpin-Weikert complex, and Tilsit silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly medium probability separated by low probability in steeply-sloped areas.

Photograph 6.71: General view of PARa002 from STP C3, facing east.

The archaeological survey contained a total of one excavated shovel test. Eighteen STPs were removed from testing strategies due to excessive slope and post-depositional disturbances. Shovel test C30, in the manicured lawn on the eastern side of the corridor west of Frankfort Road, revealed a truncated A-horizon, due to leveling, underlain by a yellowish brown (10YR 5/4) silt loam B-horizon. The majority of the centerline was within a existing utility corridor and showed signs of disturbance and some areas were located on excessive slope.

No previously identified archaeological resources were within the project area in PARa002. No new archaeological resources were identified.

Survey Segment PARa003/PARa003-A
Western Terminus: PA State Route 18
Eastern Terminus: Patterson Road
Start Lat/Long: 40.6166, -80.3989
End Lat/Long: 40.6163, -80.3686
MP Range: 45.77 – 47.37
Length: 2.57 Kilometers (1.60 miles)
Access Road: HAR-AR-70, HAR-AR-70b
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.93 to 6.96 / Figure 6.158

Survey segment PARa003 begins at PA State Route 18 and continues in an eastward trajectory for 2.57 Kilometers (1.60 miles) ending at Patterson Road (Photograph 6.72). This segment is characterized by steeply sloped ravine environments following above and in-ground utility lines.

Soils mapped in this segment include Gilpin silt loam, Gilpin-Upshur Complex, Wharton silt loam, Gilpin-Weikert Complex, Atkins silt loam, and Tilsit silt loam. Shovel testing in this segment included mostly medium and low probability due to the steep undulations in the topography. High probability testing occurred in the jurisdictional areas.

Photograph 6.72 General view of PARa003 at JA-Ra008, facing east.

Survey segment PARa003-A represented a slight shift in the 300-foot corridor between MP 46.1 and Patterson Road. The 100-foot corridor did not extend into the segment shift and therefore no additional shovel testing was needed. The segment was pedestrian surveyed only for above ground resources.

Access road HAR-AR-70, located near MP 45.9, extends east for 425.00 meters (1394.36 feet) from State Route 18 and crosses JA-Ra004 before terminating at STP D31. The access road follows an existing transportation ROW and was pedestrian surveyed. Access road HAR-AR-70b, located near MP 46.6, extends north for 575.00 meters (1880.48 feet) from Green Garden Road before terminating at STP C98 in PARa003. This access road follows an existing transportation ROW and was pedestrian surveyed.

The archaeological survey contained a total of 11 excavated STPs. One hundred fifty-three STPs were removed from the testing strategy due to excessive slope and post-depositional disturbances. Shovel testing in this segment was sporadic due to steep slopes and the in-ground gas transmission line that fell within the testable transects. Shovel test D61 that was excavated in this segment within a drainage channel revealed disturbed soils consisting of a 0.15 meter (0.49 feet) thick mottled brown (10YR4/3) and yellowish brown (10YR5/4) silty clay loam Fill-horizon. Shovel test B115 that was excavated in this segment revealed a 0.12 meter (0.39 feet) thick dark yellowish brown (10YR4/4) silt loam A-horizon underlain by a yellowish brown

(10YR5/4) silt loam B-horizon. Shovel test D160 that was excavated within another drainage revealed a 0.11 meter (0.36 feet) thick brown (10YR4/3) channery silt loam Ap-horizon underlain by a yellowish brown (10YR5/4) channery silt loam Bt-horizon =.

No archaeological resources were previously identified within these segments and no new archaeological resources were identified.

Survey Segment PARa004
Western Terminus: Patterson Road
Eastern Terminus: Parcel Boundary 75-182-0336.003 and 75-182-0298.000
Start Lat/Long: 40.6163, -80.3685
End Lat/Long: 40.6196, -80.3605
MP Range: 47.37 – 47.88
Length: 0.80 kilometers (0.50 miles)
Associated USACE Jurisdictional Areas: JA-Ra010, JA-Ra011
Access Road: None
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.96 to 6.97 / Figure 6.159

Survey segment PARa004 begins at Patterson Road and continues in an eastward trajectory ending at the parcel boundary of 75-182-0336.003 and 75-182-0298.000. This segment is characterized by steeply sloped ravine topography in a wooded upland setting crossed by utility corridors (Photograph 6.73). Soils encountered in this segment include Tilsit silt loam, and Gilpin-Weikert soil series. Shovel testing in this segment included mostly medium and low probability due to the steep undulations in the topography.

Photograph 6.73: General view of PARa004 and Gums Run, facing north.

The archaeological survey contained a total of 22 excavated STPs. Fifteen total STPs were removed from testing strategies due to excessive slope and post-depositional disturbances. Shovel test D10 in the relatively flat, power line corridor, on the western portion of the segment revealed in a 0.15 meter (0.49 feet) thick brown (10YR4/3) and yellowish brown (10YR5/6) disturbed soils, resulting in the mottling of the silt loam with trace clay A and B horizons. One transect (D) followed the existing utility corridor revealing disturbed soils as previously described. Transect C was located in the tree line and shovel tests were completed on flat or gradually sloped areas. C22 best represents the shovel tests, excavated within this portion of the segment. C22 revealed a 0.02 meter (0.07 feet) black (10YR2/1) OA horizon underlain by a 0.18 meter (0.59 feet) thick brown (10YR4/3) silt loam AB horizon underlain by a yellowish brown (10YR5/6) silt loam Bt horizon.

No archaeological resources were previously identified within segment PARa004 and no new archaeological resources were identified during the recent survey of the segment.

Survey Segment PARa005
Western Terminus: Parcel Boundary of 75-182-0336.003) and 75-182-0298.000
Eastern Terminus: Intersection of Harrison-Monaca and Houston-Monaca
Southern Terminus: Parcel Boundary of 75-182-0298.000 and 75-182-0386.001
Start Lat/Long: 40.6196, -80.3604
End Lat/Long: 40.6159, -80.3498
MP Range (Harrison-Monaca): 47.88 – 48.52
MP Range (Houston-Monaca): 29.68 – 30.05
Length: 1.60 km (0.99 miles)
Access Road: HAR-AR-73

Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.97 / Figure 6.159

Survey segment PARa005 begins at the parcel boundary of Parcels 75-182-0336.003 and 75-182-0298.000 and extends in eastern trajectory for 1.03 kilometers (0.64 miles) before taking a southward trajectory for 0.56 kilometers (0.35 miles) terminating at the parcel boundary of Parcels 75-182-0298.000 and 75-182-0386.001. This survey segment is characterized by its relatively flat topography in a wooded upland, dotted with steep ravine topographies. An existing utility corridor bisects the segment in a general east/west orientation. The southern extent of this survey segment was also bisected by an existing utility corridor running in a north/south orientation. Soils in this segment include Tilsit silt loam, Gilpin silt loam, Gilpin-Weikert, and Guernsey Vandergrift (SSURGO, accessed 2016). The probability model for this segment indicated both high and medium probability.

Photograph 6.74: General view of PARa005 at JA-Ra013, facing east.

Access road HAR-AR-73, located 400.00 meters (1312.34 feet) north of MP 48.1, extends east for 0.85 kilometers (0.53 miles) from the end of Christina Dr. before terminating 100.00 meters (328.08 feet) north of MP 48.6. This access road follows an existing transportation ROW for existing pipeline access and was pedestrian surveyed.

The archaeological survey contained a total of 136 excavated STPs. Forty-four STPs were removed from testing strategies due to excessive slope and post-depositional disturbances. Shovel test excavation in the gently sloping wooded uplands at STP C62, revealed a 0.05-meters (0.16 feet) black (10YR 2/1) silt loam OA-horizon underlain by a 0.18 meters (0.59 feet) yellowish brown (10YR5/4) silt loam BA-horizon underlain by a brownish yellow (10YR 6/6)

silt loam Bt-horizon. Excavations south of the intersection of both the Harrison-Monaca, and Houston-Monaca lines, at STP C76 revealed a 0.17 meters (0.56 feet) brown (7.5YR 4/4) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam Bt-horizon. Most shovel tests on the C transect fell within an existing utility line. Shovel tests on the north-south section, west of the utility corridor at STP D84, revealed a 0.02 meter (0.06 feet) black (10YR 2/1) silt loam Ao-horizon underlain by a 0.12 meters (0.39 feet) dark yellowish brown (10YR 4/4) silt loam Ap-horizon underlain by a brownish yellow (10YR 6/6) silt loam B-horizon.

No archaeological resources were previously identified within segment PARa005 and no new archaeological resources were identified during the recent survey of the segment.

OFF-ALIGNMENT RESULTS (BEAVER COUNTY)

Survey Segment PAGr004
Western Terminus: Red Dog Road
Eastern Terminus: Hill Road
Start Lat/Long: 40.5972, -80.4830
End Lat/Long: 40.6054, -80.4750
MP Range: N/A
Length: 1.19 kilometers (0.74 miles)
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: 36BV/060
Map Pages/STP Illustrations: Figure 6.99 to 6.102 / Figure 6.160

Survey segment PAGr004 begins at Red Dog Road and follows a northeast trajectory for 1.19 kilometers (0.74 miles) before terminating at Hill Road. The segment is defined by large sloping pastoral fields separated by steeply sloped, wooded drainages (Photograph 6.75). Soils within this segment include Gilpin silt loam, Tilsit silt loam, Ernest silt loam, Gilpin-Weikert complex, Monongahela silt loam, and Guernsey silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly medium to high probability with low probability survey in steeply-sloped areas. Mill Creek is located between Little Blue Road and Georgetown Road.

Photograph 6.75: General view of PARa004 from STP D55, facing northeast.

The archaeological survey contained a total of 56 STPs. Nineteen STPs were removed from testing strategies due to excessive slope and saturated conditions. Multiple reroutes shifted the centerline in Segment PAGr003 to avoid Segment PAGr004 completely. Shovel testing in the agricultural field on the western side of Mill Creek on the ridge at STP C12 revealed a 0.27

meter (0.89 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silt loam with trace clay Bw-horizon. Shovel test C26, on the terrace above Mill Creek, revealed a 0.28 meter (0.92 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) channery silt loam with trace clay Bw-horizon. Shovel test C44, in the drainage to Mill Creek east of Georgetown Road, revealed a brown (10YR 4/3) mottled with strong brown (7.5YR 5/6) silt loam disturbed Fill-horizon most likely from the construction of a utility corridor (powerline). Shovel testing on the eastern ridge, at STP D66, revealed a 0.32 meter (1.05 feet) thick dark yellowish brown (10YR 3/4) silt loam Ap-horizon with 30 percent gravel underlain by a light yellowish brown (10YR 6/4) silt loam B-horizon.

Newly identified archaeological resources within this segment consist of one isolated find. Isolated find 36BV/060 included one historic ceramic fragment and one wire nail found within the first stratum of STP D78 in the pasture approximately 15.00 meters (49.21 feet) west of Hill Road. The isolated find is currently off-alignment due to a reroute and will not be impacted.

Survey Segment PAGr005
Western Terminus: Hill Road
Eastern Terminus: Cain Road
Start Lat/Long: 40.6054, -80.4750
End Lat/Long: 40.6072, -80.4615
MP Range: Off-Alignment
Length: 1.57 kilometers (0.98 miles)
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.83 / None

Survey segment PAGr005 begins at Hill Road and follows an eastern trajectory for 1.57 kilometers (0.98 miles) before terminating at Cain Road. The segment is defined by large, gently sloping agricultural fields separated by a steeply sloped drainage (Photograph 6.76). Soils within this segment include Guernsey silt loam, Gilpin-Weikert Complex, Atkins silt loam, Gilpin silt loam, Tilsit silt loam, Guernsey-Vandergrift Complex, and Ernest silt loam (SSURGO, accessed 2016). Sensitivity modeling for PAGr005 indicates mostly medium probability with sections of high probability in jurisdictional areas and ridgetops. Low probability modeling was present in areas with excessively steep slopes.

Photograph 6.766: General view of PAGr005 at STP D60, facing northeast.

The archaeological survey contained a total of 35 excavated STPs. Seven STPs were removed from testing strategies due to excessive slope. A reroute shifted the centerline to avoid survey segment PAGr005. Shovel testing on the western side of the corridor at STP C8 revealed dark gray (GLEY 1 4/N) hydric clay loam with Ag-horizon with iron oxide inclusions. Shovel testing in the agricultural fields and pasture at STP D20 revealed a 0.32 meter (1.05 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. Shovel test D43 around the drainage channel revealed a 0.15 meter (0.49 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a dark greenish gray (GLEY1 4/1) silty clay Bg-horizon. Excavations in the agricultural area east the drainage at STP D66 revealed a 0.30 meter (0.98 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon with colluvial gravels.

No archaeological resources were previously identified within segment PAGr005 and no new archaeological resources were identified during the recent survey of the segment.

Survey Segment PAGr008
Northern Terminus: Parcel Boundary between 62-190-0126.000 and 62-190-0122.000
Southern Terminus: Pittsburgh Grade Road
Start Lat/Long: 40.5924, -80.4693
End Lat/Long: 40.5980, -80.4552
MP Range: N/A
Length: 1.37 kilometers (0.85 miles)
Previously Identified Archaeological Resources: None
Newly Identified Archaeological Resources: None
Map Pages/STP Illustrations: Figure 6.83 to 6.85 / None

Survey segment PAGr008, the westernmost portion of RDR 67 began at the parcel boundary between 62-190-0126.000 and 62-190-0122.000 and extended east 1.37 kilometers (0.85 miles) to east of Main Street. The original segment continued east for 0.26 miles to Pittsburgh Grade Road. The realignment shifted the centerline to the south of PAGr008 starting at MP 40.06. Segment PAGr014 was created to address the sections of the centerline that fall outside of the 300-foot corridor of PAGr008. The segment is defined by wooded slopes which lead to agricultural and cleared land, followed by a wide forested wetland area, and finally to cleared lawns, poorly manicured (Photograph 6.77). Soils within this segment include Gilpin silt loam, Ernest silt loam, Monongahela silt loam, Atkins silt loam, Brinkerton silt loam, Wharton silt loam, and Tilsit silt loam (SSURGO, accessed 2016). Sensitivity modeling for this segment indicates mostly medium to high probability with low probability in steeply-sloped areas.

Photograph 6.77: General view of PAGr008 near STP D6, facing east.

The archaeological survey contained a total of 74 excavated STPs. Fifty-four STPs were removed from testing strategies due to a existing utility corridor, excessive slope, and saturated conditions. A reroute, shifted PAGr008 off-alignment from the ROW. Shovel test B30 revealed a 0.31 meter (1.02 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silty clay B-horizon. Shovel test B66 revealed a 0.24 meter (0.79 feet) thick dark brown (10YR 3/3) silt loam A-horizon underlain by a 0.56 meter (1.84 feet) thick strong brown (7.5YR 4/6) silt loam Bw-horizon. The Bw-horizon was underlain by a yellowish brown (10YR 5/4) silt loam with iron oxide staining Bg-horizon. Shovel test C90 in the fields to the east revealed a 0.27 meter (0.89 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon.

No archaeological resources were previously identified within PAGr008. The recent survey of the segment revealed no new archaeological resources.

7
Archaeological Site Descriptions

PROPOSED HOUSTON TO MONACA LINE

36WH/075 (AECOM-WHCa003-IF2)

Isolated find 36WH/075 consists of one historic artifact recovered from STP D18 along survey segment PACa003 at Houston to Monaca MP 0.80 (Figures 6.2, 7.01 to 7.05; Photograph 7.1). The isolated find is situated along a modified terrace west of Westland Run and Western Avenue. The area is characterized by a sparse deciduous forest and a moderate understory mix of ferns and grasses, disturbed by extensive logging, utility corridor construction, and other industrial activity. A utility corridor is located no more than 5.00-meters (16.40-feet) east of the isolated find. The total area of the isolated find is approximately 45 sq. meters (484.38 feet).

Photograph 7.1: Overview of 36WH/075, facing west.

STP excavation yielded one historic artifact within the Ap/Fill horizon, a single brick fragment. STP D18 consisted of 0.25-meters (0.82-feet) thick very dark grayish brown (10YR 3/2) loam to silt loam Ap/Fill horizon, terminating at angular rock. All radial STPs tested negative.

Resource 36WH/075 is a non-diagnostic isolated find that does not meet PHMC site criteria. In addition, the isolated find appears to be contained within a disturbed context. Therefore, AECOM recommends that 36WH/075 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36WH/074 (AECOM-WHCa003-IF1)

Isolated find 36WH/074 consists of two historic artifacts from STP C12 and a radial STP along survey segment PACa003 (Figures 6.2, 7.06 to 7.10; Photograph 7.2). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The isolated find is situated along a modified terrace west of Westland Run and Western Avenue. The area is characterized by a sparse deciduous forest and a moderate understory mix of ferns and grasses, likely disturbed by extensive logging, utility corridor construction, and other industrial activity. A utility corridor is located no more than 5.00-meters (16.40-feet) east of the isolated find. The total area of the isolated find is 64 sq. meters (688.89 sq. feet).

Photograph 7.2: Overview of 36WH/074, facing southwest.

STP testing yielded a total of two historic artifacts, two rail spikes, dating to the mid-nineteenth century (Photograph 7.3). The artifacts were recovered from STP C12 and a surrounding radial, C12 + 5 meters north. STP C12 revealed a 0.30-meters (0.99-feet) thick very dark grayish brown (10YR3/2) silt loam Ap-horizon underlain by a light yellowish brown and dark brown (10YR6/4 and 10YR3/3) mottled decaying sandstone BC-horizon. The rail spikes were recovered only from the Ap-horizon. All radial STPs tested negative.

Photograph 7.3: Cut rail spikes from 36WH/074.

Rail spikes, or cut rail spikes, were invented in 1832 by Robert Livingston Stevens (Raidabaugh, G. P. 1915). Typically, rail spikes measure between 5.5 inches and 6 inches (139.7- and 152.4-millimeters) in length. The rail spikes recovered measure 5.75 inches and 5.86 inches (146.05- and 148.84-millimeters). The rail spikes are possibly associated with the Chartiers Valley Railroad. Construction began in the early 1850s in order to provide access from Carnegie, PA to Washington, PA (Pennsylvania Historic and Museum Commission 2016). Construction was abandoned in 1856 due to financial issues. In 1867, the Chartiers Railway Company was founded and continued construction on the rail line. Because of the aforementioned information, the spikes date to ca. 1850 at the earliest.

Isolated find 36BV/074 does not meet PHMC site criteria. The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. As a result, additional information to assess the resource may not have been fully completed. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

36WH1735 (AECOM-WHCa003-ST1)

Site 36WH1735 consists of structural remains from a demolished bridge. It was identified during pedestrian reconnaissance and shovel testing along survey segment PACa003 at Houston to Monaca MP 0.99 (Figures 6.2, 7.11 to 7.15; Photograph 7.4). The resource is located crossing Westland Run and west of Western Avenue. Deciduous forest with a closed canopy dominates the immediate site vicinity. The total area of 36WH1735 is 142 sq. meters (1528.48 sq. feet).

Photograph 7.4: Overview of 36WH1735, facing northwest.

The resource consists of structural beams and four concrete bridge footers. These structural items extend across Westland Run and measure approximately 3.7-meters (12-feet) in length. Tree branches, modern trash and debris are scattered across (Photograph 7.5). The concrete footers appear to be in their original location. The steel beams have been displaced and lying diagonal across the footers or within the stream. The area has previously been heavily impacted by mining and is situated within a utility corridor. No shovel testing was completed in the vicinity due to disturbance.

Photograph 7.5: Overview of 36WH1735 and modern debris, facing north.

Site 36WH1735 is west of Western Avenue and according to historic maps, has never carried the roadway over the stream. There are no nearby properties on the early maps, and the 1939 aerial shows a wooded area and an agricultural field. Presence of concrete and reinforced beams indicates association with the PCCSTL railroad, likely a railroad bridge at some point in time. Portions of the railroad resources indicated in the CRGIS file (Key #155445) are SHPO eligible, but these are resources are primarily linked to tunnels and intact portions of railway buildings. Therefore, AECOM recommends 36WH1735 as not eligible for listing on the NRHP as the resource lacks integrity and the immediate landscape has been modified since use as a bridge. AECOM recommends that no further investigations or avoidance are warranted unless design plans change.

AECOM-WHCa002-ST1

A small garage was identified at MP 1.03 at the termination of access road HOU-AR-01b (Figures 6.3, 7.16 to 7.20; Photograph 7.6). The garage was made of textured cinderblocks and a cement floor. Plywood boards visible as part of the roof were stamped with “Aug 97”, suggesting modifications to the structure within the past two decades No additional resources were identified during the survey that may be in association with this structure. This structure will be evaluated in the architectural history report.

Photograph 7.6: Overview of AECOM-WHCa002-ST1, facing north.

36WH/078 (AECOM-WHMo004-IF1)

Isolated find 36WH/078 consists of one historic artifact recovered from STP C140 along survey segment PAMo004 at Houston to Monaca MP 2.80 (Figures 6.6, 7.21 to 7.25; Photograph 7.7). The site is located on a hilltop within an agricultural field and pasture. The total area of the isolated find is 45 sq. meters (484.38 sq. feet).

Photograph 7.7: Overview of 36WH/078, facing northwest.

The recovered artifact is single fragment (snap) from a horse halter from the plow zone (Ap horizon) of STP C140. Shovel Test C140 consists of a 0.26-meters (0.85-feet) thick brown (10YR 4/3) silt loam Ap horizon underlain by a yellowish brown (10YR 5/6) silt loam with trace clay B-horizon. The horse halter fragment is associated with the Tack group. The fragment is called a "snap" and connects the cheekpieces to the throatlatch on a horse halter. No dates are acquired from this fragment, as a manufacturing technique cannot be determined. The artifact is likely associated with historic plowing of the agricultural fields. Radial STPs (n=8) were excavated at intervals in line with the transect grid. Results of radial STP testing were negative.

Isolated find 36WH/078 does not meet PHMC site criteria. AECOM recommends that 36WH/078 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36WH/079 (AECOM-WHMo005-IF1)

Isolated find 36WH/079 consists of five historic artifacts from STPs C8, D12 and one radial along survey segment PAMo005 at Houston to Monaca MP 3.66 (Figures 6.8, 7.26 to 7.30; Photograph 7.8). The site is located along a hillslope in an agricultural field west of Hornhead Street. A mixed forest borders the isolated find to the east. The total area of the isolated find is approximately 130 sq. meters (1399.31 sq. feet).

Photograph 7.8: Overview of 36WH/079, facing northwest

Shovel testing yielded a total of five historic artifacts, dating primarily from the early/mid nineteenth century to the present and is characterized by vessel glass, window glass, and whiteware (Table 7.4). The material was recovered from two shovel test pits, C8 and D12, and one radial, D12 + 5 meters north. STP D12 revealed a 0.28-meters (0.9-feet) thick brown (10YR

4/3) silt loam Ap-horizon underlain by a strong brown (7.5YR 5/6) silty clay loam B-horizon. Artifacts were recovered only from the Ap-horizon.

Household. Four artifacts were recovered in association with the Household group. These include three glass fragments and one whiteware sherd. The three glass fragments are colorless and have a slight amethyst tint (solarized), indicating that manganese is present in the glass. All appear to be from one vessel. According to the SHA Historic Glass Bottle Identification and Information Website (Lindsey 2016), manganese is not typically present in glass after World War I. Based on this information, the glass most likely dates before 1915-1920. At minimum there is one glass vessel present in this assemblage.

The whiteware sherd recovered from 36WH/079 is a small body sherd (Photograph 7.9). Whiteware became popular in the U.S. beginning in 1820 (des Fontaines 1990:4) and continues to the present. At minimum, there is one ceramic vessel present in this assemblage.

Photograph 7.9: Whiteware sherd from 36WH/079

Architecture. One window glass fragment was recovered from 36WH/079. The glass measured 3.43 mm (0.14 inches) in thickness. According to Weiland (2009:36), glass that exceeds 3.00 mm (0.12 inches) is considered modern.

Isolated find 36WH/079 does not meet PHMC site criteria. AECOM recommends that 36WH/079 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

AECOM-Mo004-ST1

WHMo004-ST1 is a well pump feature found near STP F19 on a wooded slope south of 36WH0156 (Figures 6.9, 7.31 to 7.35; Photograph 7.10). The pump was on the western side of the APE at the edge of the 300-ft corridor, as part of the pedestrian survey. The pump had a rectangular cement base with an iron pipe extending vertically with a U-shaped bend at the top. This resource is modern.

Photograph 7.10: Overview of AECOM-Mo004-ST1, facing west.

36WH/076 (AECOM-WHMo003-IF1)

Resource 36WH/076 is a Native American isolated find from STP B137. The resource was identified during shovel testing of survey segment PAMo003 at Houston to Monaca MP 4.15 (Figures 6.9, 7.36 to 7.38; Photograph 7.11). The site is located near the base of a slope in an agricultural field, overlooking a narrow floodplain of an unnamed tributary to Millers Run. The total area of the isolated find is 45 sq. meters (484.38 sq. feet).

Photograph 7.11: Overview of 36WH/076, facing north

The Native American artifact was a single chert flake recovered from STP B137, recovered from the Ap2-horizon approximately 0.15 to 0.26-meters (0.54 to 0.85 feet) below ground surface. STP B137 consisted of 0.26-meter (0.85 feet) brown (10YR 4/3) silt loam Ap-horizon and dark yellowish brown (10YR 4/4) Ap2-horizon underlain by a yellowish brown (10YR 5/6) silty clay loam B-horizon, derived from both colluvial and alluvial processes. A total of 12 radial and judgmental STPs were excavated around the isolated find. Judgmental STPs were also excavated at 7.50-meter (24.61-feet) intervals to the north and east of the positive STP, due to the proximity of previously identified archaeological sites 36BV0156, 36BV0157, and 36BV0159. All radials and judgmentals were negative.

The chert flake fragment was a gray, unidentified chert variety. The proximal fragment of the flake was recovered with a snap fracture, likely associated with later stage reduction. There was no evidence of bifacial resharpening on the flake. The flake had a flat platform and a diffuse bulb of percussion. There was no evidence of heat treatment.

Resource 36WH/076 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/076 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36WH0157

Previously identified site 36WH0157 is a prehistoric, open habitation site. The site was on the stream bench of an unnamed tributary of Miller's Run. The corridor bisects the site from east-to-west, then turned north at the eastern end of the site boundary along survey segment PAMo003 near MP 4.4 (Figure 6.10; Photograph 7.12). Existing documentation for 36WH0157 suggests

that flaked stone debitage and a small number of chipped stone tools were recovered from the site. The chipped stone tools recovered indicate Middle Archaic, Late Archaic, and Transitional Archaic occupations. Testing at a 15-m interval within the mapped location of the site did not reveal any cultural material. Additional shovel tests were added at 7.5 meter (24.61 feet) intervals across the site, but results remained negative.

Photograph 7.12: Overview of 36WH157, facing west.

Based on negative results that include close-interval shovel testing, AECOM recommends that proposed impacts within the APE do not contribute to the eligibility of the larger site. AECOM recommends that no further investigations or avoidance are warranted unless design plans change. No extensive disturbance was identified at Site 36WH0157, therefore, a Record of Disturbance form was not completed in the occurrence that new information is presented regarding the resource.

36WH/077 (AECOM-WHMo003-IF2)

Resource 36WH/077 is a Native American isolated find from STPs C92 and D91. The isolated find was identified during shovel testing of survey segment PAMo003 at Houston to Monaca MP 4.57 (Figures 6.10, 7.39 to 7.41; Photograph 7.3). The site is located at the edge of the agricultural field, close to an incised drainage surrounded by wooded slopes. The total area of the isolated find is 140 sq. meters (1506.05 sq. feet).

Photograph 7.13: Overview of 36WH/077, facing north.

STP D91, excavated at the site boundary in the agricultural area north, revealed a 0.27 meter (0.89 feet) thick dark yellowish brown (10YR 4/4) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay B-horizon. A small dirt path was identified in the site boundary that had been used as a farm road starting at Hornhead Road. Shovel tests along the farm road had an increase in compaction and slight mottling of the Ap-horizon.

The isolated find was initially identified by STP C92 testing positive for a single Native American flake in the Ap-horizon. Eight radial shovel tests were excavated around the surface find. No additional artifacts were recovered at this time. A shift in the proposed pipeline added an additional transect west of the original excavated transects. One prehistoric artifact was recovered from STP D91 in the Ap-horizon. Radial shovel tests were excavated around the positive STP with additional judgmental STPs at 7.5-meter (24.61-feet) intervals on grid around the two positive shovel tests. This was due to the proximity of previously identified Native American sites. No additional artifacts were recovered.

The Native American assemblage includes one early-stage flake and one mid-stage flake. primary flake from STP C92 had a flat platform and a prominent bulb of percussion. The flake is dark gray with slightly opaque edges. There is an acute distal edge angle on the flake, but no evidence of use-wear. The flake recovered from STP D91 is a complete flake with a hinge fracture at the distal end. The flake material type is described as light brownish gray with tan inclusions. The platform is flat with a prominent bulb of percussion. The flake appears to have little to no flake scaring on the dorsal surface indicating early to mid-stage reduction. The flake material has many impurities and there is no evidence of use apparent on the edges.

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36WH1737 (AECOM-WHMo003-ST1)

Site 36WH1737 consists of eight cut stone footers and several piles of tabular stones. It was identified during systematic pedestrian survey and shovel testing of survey segment PAMo003 at Houston to Monaca MP 5.05, north of Millers Run Road (Figures 6.11, 7.42 to 7.46; Photograph 7.14). The site is located on an artificially modified shoulder along a hillslope with the recent formation of an upland drainage pattern, seeps, and wetland. The site location is within a small, wooded area surrounded by open agricultural fields. The forest understory within the wooded area is moderate to dense with invasive plant species often associated with disturbance. The total area of the site is approximately 84.87 sq. meters (913.53 sq. feet).

Photograph 7.14: Overview of 36WH1737, facing northeast. Note stone piers.

There were a total of eight cut stone risers that formed the south and east walls of a previous farmstead structure (Photographs 7.15 to 7.17). Diffuse piles of tabular field stone were identified within the structural boundaries. Push piles are also present within the wooded area. The total area of the stone footers and stone debris measure approximately 17.00-meters by 10.50-meters (55.80-feet by 34.20-feet). The cut stone footers are roughly hewn with marks from tools. Each footer is plain/not inscribed, and includes numerous grooves on the top flats and worn smooth to be indicative as weight-bearing. The average dimensions of each pier is roughly 1.32 meters (1.00 feet) by 1.32 meters (1.00 feet) and extends from the ground surface approximately 2.64 meters (2.00 feet). This suggests that the stone footers served as support piers for a structure.

Photograph 7.15: Stone Pier #1 at 36WH1737

Photograph 7.16: Stone Pier #2 at 36WH1737

Photograph 7.17: Stone Pier #3 at 36WH1737

Judgmental STPs (n=14) were excavated within 7.50-meter (21.61-feet) intervals around the structure, but no additional cultural materials were identified. The soils within STP C46 included a heavily mottled 0.31-meter (1.02-feet) thick dark brown (7.5YR 3/4) silt loam surface horizon underlain by a strong brown (7.5YR 5/6) silt loam B-horizon. STP D39 included a 0.31-meters (1.02-feet) dark yellowish brown (10YR4/4) silt loam Ap-horizon underlain by a yellowish brown (10YR5/4) silt loam with decayed sandstone B-horizon. There does appear to be truncation of the initial B-horizon deposit that would typically appear at the interface of the Ap-/B-horizons. Soil analysis does suggest that the area was artificially terraced for a structural foundation and farming workspace at 36WH1737. Architectural debris, roofing slate, large metal bar fragments were scattered sporadically. No artifacts were recovered from STP testing.

The layout of the stones suggests that there was an open face/access to the north and the aerials confirm that based on the layout of the workspace associated with the agricultural building.

The aerial images from 1939, 1952, and 1967 illustrate land use of this site location, specifically illustrating the presence of a building (likely an agricultural outbuilding (possible granary) on the site of the stone pillars (see Figures 7.42 to 7.46). The structure and its aerial shadow are clearly visible on the 1939 image. The GPS-ed position of the stone pillars fit the footprint for the building – its size, shape, and orientation. The 1952 image is sharper, clearly showing the structure and associated farm roads leading to it. The structure is no longer visible on the 1967 aerial, with the location clearly overgrown with trees, while the fields around it continue to be used as farm fields. Today, the wooded area looks largely unchanged from how is appears in 1967. Based on the layout of the stones and the historic imagery, it appears that a door access or open face would appear to the north. Historic aerial imagery demonstrates farm road access and workspace area to the north end of the structure.

Based on the condition of the resource, including the displacement/disorientation of the existing stone piers, AECOM recommends 36WH1737 as not eligible for listing in the NRHP as the resource lacks integrity. In addition, the resource is unlikely to provide significant information to the region's history. Therefore, AECOM recommends that no further investigations or avoidance are warranted unless design plans change.

36WH1738 (AECOM-WHMo003-ST2)

The investigations at 36WH1738 identified eleven brick pillars/pedestals, a brick lined hearth, and a single historic artifact. The site was identified during systematic pedestrian survey and shovel testing of survey segment PAMo003 at Houston to Monaca MP 5.31 and is within a section of the alignment that is part of a proposed HDD location (Figures 6.12, 7.47 to 7.51; Photographs 7.18 to 7.19). Realignment changes have shifted since the original survey and this locality is no longer within the proposed corridor, however, is adjacent. The site is located on an upper hillslope, south of the Wheeling-Lake Erie Railroad. The site is situated within a deciduous forest with a thin closed canopy with a sparse forest understory. An open, grassy agricultural field and/or pasture is located approximately 20.00-meters (65.60-feet) south of the site. The total area of 36WH1738 is 62.54 sq. meters (673.17 sq. feet).

Site 36WH1738 is located directly upslope from Montour Mine #1 (36WH1718). The site consists of eleven square brick pillars that are weight-bearing piers. A circular brick-lined hearth is also associated with the site, however, is likely a modern feature of the cultural landscape with reuse of the brick and the presence of modern beer and soda cans (Photograph 7.20). The piers are positioned in a rectangular pattern, located on a sloped landform that has been modified to be level-lying. The support piers are arranged in a pattern that appears to have once support an overhang structure that provides could potential access into a cut into the bank of the hillslope, perhaps for industrial purposes. Another interpretation is that this could be a storage facility housing equipment or materials storage. The piers encompass approximately 86.50 square meters (283.80 square feet), and each pier measure approximately 1.25-meters by 1.25-meters (4.10-feet by 4.10-feet) (Photograph 7.21).

Photograph 7.18: Overview of 36WH1738, facing northwest.

Photograph 7.19: Overview of 36WH1738 and brick piers, facing southeast.

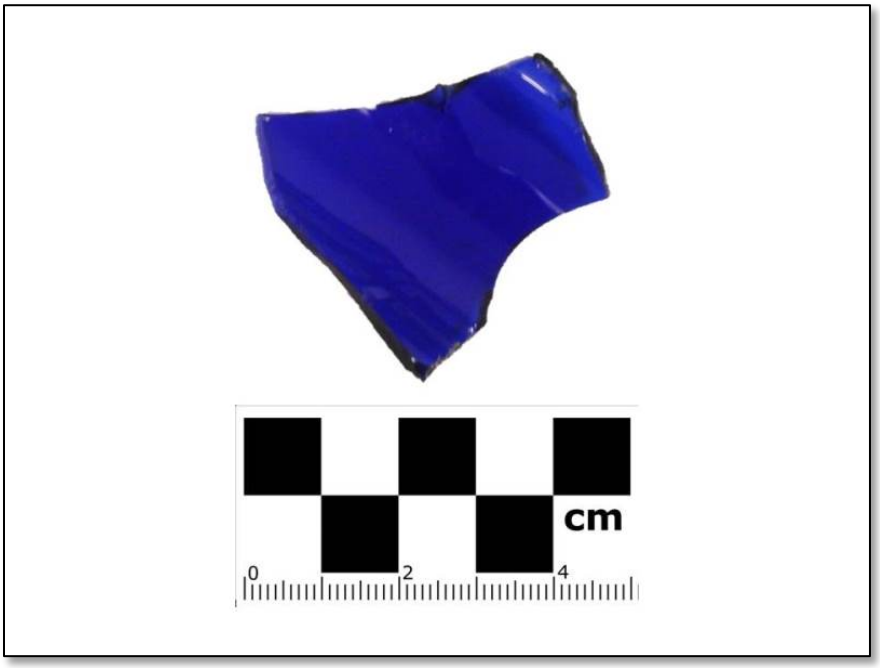
Photograph 7.20: View of Modern Fire Pit at 36WH1738, facing west.

Photograph 7.21: View of brick pier at 36WH1738, facing southeast

Soil profiles in context with 36WH1738 included an uppermost soil matrix described as Fill in depth from a range of 0.04-meters (0.13-feet) to 0.26-meters (0.85-feet) below ground surface. Typically that package consisted of a dark yellowish brown (10YR3/4) silt loam mottled with a black and yellowish brown (10YR2/1 and 10YR5/4) silt loam. That soil matrix was typically underlain by a secondary fill package described as yellowish brown (10YR5/4) silt loam mottled

with a brownish yellow (10YR6/6) silt loam. Only a single STP tested positive for cultural materials, STP JUD001. Beyond the pre-plotted STP testing strategies, seven additional STPs were judgmentally placed. The artifact from STP JUD001 is described as a single cobalt blue vessel glass fragment, recovered from the uppermost fill package.

The Household item comprises the entirety of the historic assemblage. The sherd is cobalt blue and does not have any diagnostic markers (Photograph 7.22). Cobalt blue bottles appear most often after 1890 and continue to the present (Fike 1987:13). However, cobalt blue is not a useful tool for dating (Lindsey 2016). While cobalt blue is not as popular as other colors, it does appear in the United States as early as the latter half of the eighteenth century.



Photograph 7.22: Cobalt blue bottle glass from 36WH1738

This section of the APE is now part of a proposed HDD location corridor, and there will be no adverse effect to this resource. Furthermore, the realignment changes have shifted the APE to the west since the original survey and this locality is no longer within the proposed HDD corridor, though it is adjacent to the resource. Therefore, AECOM recommends that no further investigations at 36WH1738 are warranted unless design plans change, but do recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction.

36WH1718 (AECOM-WHMo002-IC1)

Site 36WH1718, or Montour No. 1, consists of a multi-structure complex, four sets of concrete pillars, and a brick sample. It was identified during systematic pedestrian survey and shovel testing of survey segment PAMo002 at Houston to Monaca MP 5.59, and is within a section of the alignment that is part of a proposed HDD location (Figures 6.12, 7.52 to 7.56; Photograph

7.23). The site is located on a ridge above the southern bank of Millers Run, a perennial stream, and at the bottom of a steep hillside. It is located within a primarily deciduous forest, with a closed canopy dominating the area. Pine trees are sparsely scattered throughout. The understory is a mixture of relatively dense. A dirt road intersects through the middle of the site area. The site is overlooked to the north by the Pittsburgh and WV Railway Company, Wheeling-Lake Erie Railroad. This resource was previously evaluated as part of a wastewater collection and treatment construction project (Frye et al. 2016; ER#2002-2514-125).

Photograph 7.23: Overview of 36WH1718, facing west.

The existing multi-structure complex within the proposed LOD consists of three primary structures. Each structural foundation is composed of concrete with gravel aggregates. Brick wall fall was also located adjacent to a few of the structures. Therefore, it is likely some structures had brick walls.

Structure 1, the westernmost structure, measures 27.8-meters by 13.7-meters (91.25-feet by 45-feet) (Photograph 7.24). A small shaft resides along the south wall and measures 1.5-meters by 1.5-meters (5-feet by 5-feet) (Photograph 7.25). Structure 1 is a deep rectangular structure that is split into two chambers. The westernmost chamber measures 10.7-meters by 13.7-meters (35-feet by 45-feet), and contains two concrete pillars that measure approximately 0.9-meters (3-feet) in width. The easternmost room measures 17.1-meters by 13.7-meters (56.25-feet by 45-feet). It contains four pillars that measure 0.9-meters (3-feet) in width and two thicker rectangular pillars that measure approximately 1.8-meters by 1.2-meters (6-feet by 4-feet) in width. The structure has been partially filled in since its last use and currently has an approximate depth of 4.6- to 6.1-meters (15- to 20-feet).

Photograph 7.24: Structure 1 at 36WH1718, facing northeast.

Photograph 7.25: Structure 1 shaft feature at 36WH1718, facing north.

Structure 2 (Photograph 7.26), the easternmost structure, is an L-shaped structure and measures 27.4-meters by 10.7-meters (90-feet by 35-feet) at its maximum. The structure is a concrete slab foundation that contains a rectangular shaft within the southeast corner. The shaft opening measures 3-meters by 1.5-meters (10-feet by 5-feet). Along the west wall of the shaft there is a slight opening where a metal ladder resides. An additional shaft is also present directly south of

the southeast corner. This shaft is square and much smaller than the previous shaft, measuring 1.5-meters by 1.5-meters (5-feet by 5-feet).

Photograph 7.26: Structure 2 platform and shaft features at 36WH1718, facing west.

Structure 3 is the final structure present in the complex (Photograph 7.27). Structure 3 is not as well preserved as the other structures. It is a square foundation measuring 7.6-meters by 7.6-meters (25-feet by 25-feet). It is comprised of concrete and contains a concrete pillar and a shaft. The pillar measures 0.91-meters (3 feet) in width, while the shaft measures 0.76-meters by 0.76-meters (2.5-feet by 2.5-feet).

Photograph 7.27: Structure 3 at 36WH1718, facing northeast.

Three separate sets of concrete pillars were also identified in close proximity to these structures. Each pillar measures 0.76-meters (2.5-feet) in width and has exposed rebar. A set of four pillars is located approximately 12.2-meters (40-feet) west of Structure 1 (Photograph 7.28), a set of six pillars is located 4.6-meters (15-feet) east of Structure 1's northeast corner, and one pillar is located approximately 18.9-meters (62-feet) away from the northeast corner of Structure 2. To the south of the main area of the site, and across the dirt road, there are a few other structures. This includes a set of four pillars, as well as a possible drainage. These were located approximately 40-meters (130-feet) south of the main complex, at the base of the hill below the train tracks. The pillars have the same measurements as those listed above.

Photograph 7.28: Concrete piers at 36WH1718, facing east.

The Phase I archaeological investigations in 36WH1718 were limited to a pedestrian survey only, as this section of the alignment is part of a proposed HDD location. Two complete brick samples were collected in an area adjacent to the west wall of Structure 1 (Photograph 7.29)

Photograph 7.29: Brick sample at 36WH1718

This section of the APE has been re-aligned to avoid the resource and now part of a proposed HDD location corridor. There will be no adverse effect. Therefore, AECOM recommends that no further investigations are necessary unless design plans change. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction.

AECOM and Shell recognized the importance of this resource and offer in this report, the background research completed prior and during the archaeological survey for future resource determinations. Based on the limited research presented below and the integrity of the existing structures, AECOM recommends 36WH1718 (Montour No. 1) as potentially eligible for listing on the NRHP. Site 36WH1718 fulfills criteria A and D under the NRHP's Criteria for Eligibility: "That are associated with events that have made a significant contribution to the broad patterns of our history; or…That have yielded or may be likely to yield, information important in history or prehistory".

Background Research of Montour No. 1

Montour No. 1, originally located along the Montour Railroad, was one of three mines constructed by the Pittsburgh Coal Company in 1914 (Ciminel 2012). It is located in Southview, PA and was a shaft mine. The mine's shaft reached a depth of 30.5-meters (100-feet). It is unknown when exactly the mine closed. It is generally thought that the mine closed sometime between 1932 and 1939, as it appears abandoned in a 1939 aerial but was listed in a report by the PA Bureau of Mines in 1932. The village of Southview was considered to be a first-class miner's patch (Ciminel 2012), though newspaper articles from that period suggest otherwise during the late 1920s (e.g., *Brownsville Telegraph* October 21 1929 for examples from the October 20, 1929 riot).

Photograph 7.30: View of Montour #1 Mine, contributed by Mike Feathers, resident of Southview (Ciminel 2012)

Photograph 7.31: View of Montour #1 Mine (Ciminel 2012)

In the 1920s, labor strikes were organized by the UMWA in response to the decrease in pay following WWI. During the war, demand for coal had been artificially inflated. Therefore, following the end of WWI demand for coal significantly decreased. This decrease combined with conservation efforts in the 1920s led mine operators to reduce costs. In seeking to reduce costs, mine operators pressured unionized miners to accept reductions in wages and even asked that

they leave the UMWA (Marcus et. al 2004; Pennsylvania State University 1976). In all, some 110 mines in Pennsylvania changed from union to nonunion operation during 1925.

In February 1927 the union representatives met with representatives of the mining operators in Miami. The operators requested a reduction of the Jacksonville scale as well as union acceptance of the principle that wages should be tied to the changing price of coal. No agreement was reached in Miami, which led the union leadership to begin planning for a nationwide strike (Marcus et. al 2004). The strike began on April 1, 1927. Some 45,000 miners struck throughout Pennsylvania, and over another 100,000 miners struck nationwide. Western Pennsylvania was the most seriously impacted (Pennsylvania State University 1976). The 1927 strike was one of the longest and most bitter strikes in Pennsylvania coal-industry history. Coal miners from Montour Mine No. 1, under the Pittsburgh Coal Company, took part in the 1927 Indiana bituminous strike. The walk-out effectively closed down all mining activity in the bituminous fields of western Pennsylvania (Marcus et. al 2004; McDonald and Lynch 1939).

During that time in 1927, the hired 350 strikebreakers walked out of Montour No. 1 in protest of poor wages and the lack of recognition by the coal companies of the UMWA. Many of these strikebreakers were African American. Instead of peaceful negotiations, the strikebreakers were met with violence, as the coal and iron police beat the strikebreakers back. According to a reporter who visited the police shack that night, the shack was “full of colored boys, and they were a pretty badly frightened lot. Some of them had fresh bruises on their faces” (Lewis 1987:115). This strike is only a small part of the larger issue of racial disparity within Pittsburgh coal mining at this time, as seven out of ten workers who were murdered during the Pittsburgh coal strikes were African American (Lewis 1987:115).

Montour No. 1 is important to U.S. labor history, African American history, and the industrial history of Western Pennsylvania and Washington County. The resource has potential to provide significant information on UMWA labor strikes in the 1920s and the violence that ensued with the African strikebreakers. According to Lewis (1987:116), African Americans were commonly brought in as strikebreakers so as to upend and ruin the communities of the coal miners, as they were seen as “scum” and “other.” Prior to the strikes, only seven percent of coal miners employed by Pittsburgh Coal were African American. After 1928, African Americans made up forty percent of the company’s coal mining labor force (Lewis 1987:113). Based on the limited background research completed, Montour Mine No. 1 and associated coal patch town, Southview could potentially provide significant information. In addition, there is a lack of coal mines designated as National Register eligible within Washington County. According to the Dept. of Environmental Protection (2013), there are currently 201 to 400 mines abandoned in Washington County. However, only one bituminous coal mining site is considered National Register eligible by SHPO: Mathies Mine.

36WH1736 (AECOM-WHMo002-HS1)

Site 36WH1736 consists of a historic artifact scatter. It was identified during systematic pedestrian survey and shovel testing of survey segment PAMo002 at Houston to Monaca MP 5.6, north of Southview Road (Figures 6.13, 7.57 to 7.61; Photograph 7.33). The site is located in

an agricultural field west of Southview. A deciduous wood line is located to the east of the site. The entire site covers an area of the field approximately 11.00-meters by 13.00-meters (36.00-feet by 43.00-feet). Total area of 36WH1736 is 127.00 sq. meters (1367.02 sq. feet).

Photograph 7.32: View of 36WH1736, facing north.

The area is within a radius of a telephone pole. In addition, the 1967 historic aerial identified a disturbance. STP testing confirmed fill horizons within the site area, with profiles that also appeared intact. The typical intact STP revealed a 0.30-meters (0.98-feet) thick brown (10YR 4/3) silt loam mottled Ap-horizon underlain by a yellowish brown (10YR 5/6) silty clay B-horizon or silty clay loam Bt-horizon. All artifacts were recovered from fill-related horizons or the plow zone.

Site 36WH1736 yielded a total of eighteen historic artifacts (Table 7.1). The only date range recovered from this site are from two cut nails, producing a date of early nineteenth to late nineteenth century. The assemblage is characterized by vessel glass, window glass, and nails. The material was recovered from one shovel test pit, D98, and three surrounding radials, D98 + 10 meters south, D98 + 5 meters south, and D98 + 5 meters south + 5 meters east. The remaining radials (n=15) were negative and were excavated at 2.50-, 5.00-, 7.50-, and 10.00-meter (8.2-, 16.4-, 24.6-, and 32.8-feet) intervals in an attempt to define site boundaries. Artifacts were recovered exclusively from Fill horizons or the Ap-horizon.

Table 7.1. 36WH1736 Historic artifact summary

H/P	Group	Glass	Metal	Total
Historic	Architectural	3	10	13
	Household	1	0	1
	Indeterminate	4	0	4

Household. The Household group is comprised solely of one colorless glass sherd, which represents one glass vessel (Table 7.11). The sherd is curved and appears to belong to some type of vessel. No dates can be ascertained from the glass fragment.

Architecture. The Architectural group represents the majority of the artifact assemblage, and contains thirteen artifacts in total (Table 7.2). The assemblage is comprised of three window glass sherds, two cut nails, and eight unidentified nails. The window glass fragments have a thickness of 2.41-mm (0.09-inches), 2.27-mm (0.09-inches), and 2.43 mm-(0.10 inches).

Site WHMo002-HS1 contains two cut nails and eight unidentified nails. The cut nails are Type B, as there is no pinch under the head (Photograph 7.33). The nail heads are therefore not hand finished, producing a date range of 1805 to 1900 (Smith 1975:5-7; Nelson 1968:6). Eight of the nails are too rusted and fragmented to determine the specific type of nail. The date ascertained from the Architecture group therefore produces a date range of early nineteenth century to the early twentieth century.

Photograph 7.33: Cut nail from 36WH1736.

Table 7.2. 36WH1736 Architecture Artifact Summary

Group	Object	Manufacture Technique	Total
Architectural	Window glass, aqua	Indeterminate	3
Architectural	Cut nail, complete	Machine	2
Architectural	Unidentified nail	Indeterminate	8
Grand Total			13

Indeterminate. Four glass sherds were recovered in association with the Indeterminate group. This group is reserved for artifacts that do not fit into one of the other groups, or cannot be identified and attributed to the appropriate category. Three of the glass sherds are colorless, burnt, and belong to three separate vessels. The fourth glass sherd is small and colorless. The glass sherds lack diagnostic features for dating.

The site location of 36WH1736 is adjacent west of the town of Southview, the former coal patch town established by the Pittsburgh Coal Company, operators of the Montour No.1 Mine. The single diagnostic nail provided a date range of early to late nineteenth century, which would pre-date the coal town association. The 1906 atlas shows a drive extending west from modern Church Street across the site area to a structure approximately 500 feet west of the site. This property (house, outbuildings) is also visible on the 1939 and 1967 aerials. The 1876 atlas depicts the property of "William Berry" with 385 acres. The orientations of the residence and access drives are consistent with what is shown on the later maps – extending west from present-day Church Street. However, the cluster is isolated and clusters around the location of a utility pole. Based on disturbance noted in the soil profiles, the artifacts do not retain contextual integrity. AECOM recommends 36WH1736 as not eligible for listing in the NRHP as the resource lacks integrity. In addition, the resource is unlikely to provide significant information to the region's history. Therefore, AECOM recommends that no further investigations or avoidance are warranted unless design plans change.

36WH1739 (AECOM-WHMo006-HS1)

Site 36WH1739 consists of a moderate density historic artifact scatter and a prehistoric isolated find. It was identified during systematic pedestrian survey and shovel testing of survey segment PAMo006 at Houston to Monaca MP 7.64, west of Fort Cherry Road (Figures 6.17, 7.62 to 7.66; Photographs 7.34 and 7.35). The site is located within a U-shaped basin in agricultural field at the base of a hill. A wooden fence line and farm road runs through the middle of the site. The total site area of 36WH1739 is approximately 940.00 sq. meters (10118.1 sq. feet).

Photograph 7.34: View of 36WH1739, facing northwest.

Photograph 7.35: View of 36WH1739, facing northeast.

Soil profile assessments and historic map research determine that the site formation process is a product of extensive landscape modification and redeposited fill associated with the construction of a drainage pond to improve agricultural conditions post-1967. The uppermost soil matrix was a redeposited A-horizon with a minimum depth of 0.26-meters (0.85-feet) and a maximum depth of 0.62-meters (2.03-feet). Soils located along the westernmost edge of the site were the deepest,

with the redeposited horizon reaching the maximum depth. A drainage pipe was encountered within STP D7 + 5 meters south. Shovel tests located nearest to the farm road exhibited extensive disturbance. Soils are therefore described as redeposited fill associated with landscape modifications to redirect drainage patterns to a man-made pond. Based on the historic imagery and topographic maps, it is more of a probable that this is a cut/fill scenario, with soil being redeposited to the current site location from the cut from the pond. As a result, it is probable that the artifacts recovered from 36WH1739 do not retain contextual integrity.

Site 36WH1739 yielded a total of thirty historic artifacts (Table 7.3) and one Native American non-diagnostic artifact. The historic artifacts have dates that primarily span from the mid-nineteenth century to the present. The assemblage is characterized by whiteware, ironstone, coarse earthenware, nails, and bottle glass. The material was recovered from four shovel test pits, STP D6, D7, E8, and F11, and seven surrounding radials, D6 + 5 meters west, D7 + 5 meters north, E8 + 10 meters south, E8 + 10 meters west, E8 + 5 meters east, E8 + 10 meters south + 10 meters west, and E8 + 10 meters south + 5 meters east. The remaining radials (n=23) and judgmental (n=8) were excavated at 5.00- and 10.00-meter (16.4- and 32.8-feet) intervals and were negative. Artifacts were recovered only from the redeposited A-horizon.

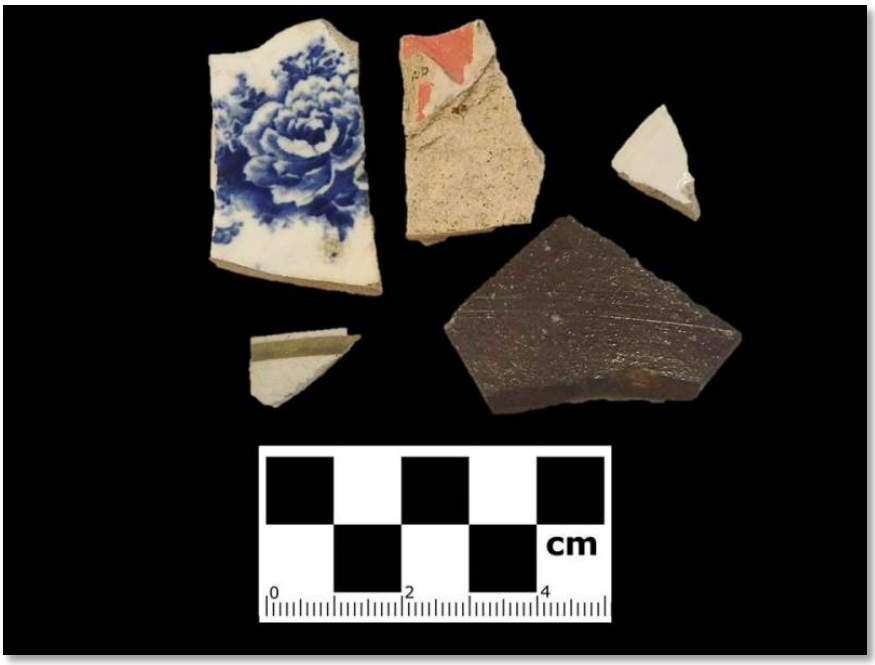
Table 7.3. 36WH1739 Historic artifact summary

H/P	Group	Ceramic	Glass	Metal	Total
Historic	Architectural	0	0	5	5
	Household	11	12	0	23
	Hardware	1	0	0	1
	Indeterminate	0	1	0	1

Historic Period

Household. The Household group represents the majority of the archaeological assemblage from Site 36WH1739. The assemblage is comprised of twenty-three artifacts, including eleven ceramic fragments and twelve glass fragments.

Eleven ceramic sherds were recovered from Site 36WH1739 and are represented within the Household group (Table 7.4). The assemblage includes ironstone, whiteware, and coarse earthenware (Photograph 7.36 and 7.37). Five ironstone sherds are present in the Household assemblage and represent three separate vessels. Three are small body and rim sherds and are undecorated. Two of the sherds are scalloped edged with a blue floral transfer print. These sherds provide a beginning date of mid-eighteenth century, as ironstone was prevalent in the United States beginning around 1840 and continued throughout the twentieth century (Brown and Bewick 1982:6).



Photograph 7.36: View of representative household ceramic from 36WH1739.

Photograph 7.37: View of representative household glass from 36WH1739.

Three whiteware fragments were recovered in association with the Household group and represent three vessels. Two of the fragments are rim fragments and are undecorated. The third fragment is also a rim/body sherd, with a painted olive green lined rim. Whiteware became popular in the U.S. beginning in 1820 (des Fontaines 1990:4) and continues to the present.

The last Household ceramic is a coarse earthenware body sherd. The sherd is crudely hand-painted red. Because coarse earthenware encompasses a large span of time in the U.S., beginning in the 1600s (Miller et al 2000:11), and because the artifact represented is a small sherd, an accurate date range cannot be reached from this artifact. In total, eight ceramic vessels are represented within the Household assemblage.

Table 7.4. 36WH1739 Ceramic artifact summary

Group	Object	Prime Decoration	Begin Date	End Date	Total
Household	Whiteware, rim fragment	Painted, olive green lined rim	1820	2016	1
Household	Ironstone, rim/body fragment	Undecorated	1840	2016	1
Household	Ironstone, body fragment	Undecorated	1840	2016	4
Household	Ironstone, rim/body fragment	Scalloped edged, blue floral transfer print	1840	2016	2
Household	Coarse earthenware, body fragment	Painted, red			1
Household	Whiteware, rim fragment	Undecorated	1820	2016	2
Grand Total					11

Twelve fragments of historic glass are also represented within the Household group and represent nine separate vessels (Table 7.5). Eight fragments are colorless body fragments, and represent five vessels. A colorless, rectangular bottle base was recovered from Site 36WH1739. Because of the placement of the seam line, the glass was either manufactured via multipart mold or machine made. The bottle base is not complete enough to differentiate between the two and absolutely date. In addition, colorless glass is difficult to date as it spans from the early nineteenth century and continues to the present (Maples 1998:107).

Another glass artifact recovered in association with the Household group is a solarized, slightly rounded body sherd. The sherd has a strong amethyst tint, indicating manganese was added to the glass during manufacture in order to produce a colorless appearance. Manganese is not typically present in glass after World War I (Lindsey 2016). Therefore, the glass most likely dates to before 1915-1920.

A bottle rim was also recovered in association with the Household group. The rim is aqua and machine made, indicating that the bottle glass dates to after 1900. Therefore, the glass fragment provides a date range of 1900 to the present. The last glass fragment within the Household group is a small, aqua lamp glass fragment. No dates can be derived from this artifact.

Table 7.5. 36WH1739 Glass artifact summary

Group	Object	Manufacture Technique	Begin Date	End Date	Total

Household	Bottle glass, base, colorless	Machine made	1890	2016	1
Household	Bottle glass, rim, aqua	Machine made	1890	2016	1
Household	Vessel glass, solarized, amethyst tint	Unidentified		1920	1
Household	Lamp glass, fragment, aqua	Unidentified			1
Household	Vessel glass, body, colorless	Multipart mold or machine made		2016	8
Grand Total					12

Architectural. Five artifacts were recovered in association with the Architecture group. These artifacts consist exclusively of unidentified nail fragments (Photograph 7.38). The nails were too rusted to determine the nail type. Therefore, no dates can be derived from these nail fragments.

Photograph 7.38: Cut nail fragment from 36WH1739

Hardware. One coarse earthenware sewage pipe fragment was recovered in association with the Hardware group. The sherd is glazed and has a dark brown paste. No dates can be derived from this artifact.

Indeterminate. One small, aqua colored glass sherd was recovered in association with the Indeterminate group. This group is reserved for artifacts that do not fit into one of the other groups, or cannot be identified and attributed to the appropriate category. The glass sherd lacks diagnostic features for dating.

Prehistoric Period

Debitage. The single complete Native American flake was recovered from the historic scatter. The material used is an unidentified gray chert. The flake has a faceted platform with a noticeable bulb of percussion. No retouch is evident on the flake and no heat treatment is visible. The dorsal surface shows evidence of multi-directional flaking. A small eraillure scar is visible on the ventral surface. There has a visible arch to the shape of the flake from the proximal to distal surface indicating a potential for a biface resharpening flake.

Considering the multiples sources recording evidence of landscape modification, the artifacts recovered from 36WH1739 do not retain contextual integrity. Soils are described as redeposited fill associated with landscape modifications to redirect drainage patterns to a man-made pond. The creation of the man-made pond was post-1967 according to the 1967 historic aerial. Based on the historic imagery, it is more of a probable that this is a cut/fill scenario, with soil being redeposited to the current site location as a result of the cut from the pond, significantly closer to the historic farmstead. Therefore, AECOM recommends that 36WH1739 as not eligible for listing on the NRHP based on the contextual integrity of the cultural deposits and no further investigation or avoidance is needed.

36WH1441

Site 36WH1441 is a previously identified historic industrial site documented in 2008 and evaluated by a separate environmental study (ER# 1989-1378-042). At that time, it was determined that this resource was not eligible for listing on the NRHP. This resource was documented during survey of segment PARo002, and has since been realigned and no longer within the APE (Figures 6.26, 7.67 to 7.69; Photograph 7.39).

Photograph 7.39: View of 36WH1441, facing northwest

36WH1549

Site 36WH1579 is a previously identified prehistoric site documented in 2015 and evaluated by a environmental study (ER# 1989-1378-042). At that time, it was determined that this resource was not eligible for listing on the NRHP. This resource was documented during survey of segment PARo002, and has since been realigned and no longer within the APE (Figures 6.27, 7.70 to 7.72; Photograph 7.40).

Photograph 7.40: View of 36WH1549, facing south.

AECOM-ALFi005-ST1

A resource was identified during the survey of segment PAFi005, consisting of a single concrete pad in a strip mine. The structure consists of a concrete floor shaped like a L. A displaced gas pump was found on the east side of the structure. The resource appears to be less than 50-years old (Figures 6.34, 7.73 to 7.77).

36AL0716 (AECOM-ALFi003-ST1)

Site 36AL0716 consists of a multi-structure residential complex and a historic artifact scatter. The site is located northeast from and adjacent to Point Park Road. (Figures 6.40, 7.78 to 7.82; Photograph 7.41) The surrounding area consists of a deciduous forest with a sparse canopy and dense briars. Strip mining is prominent around this complex. Modern debris was scattered throughout the surface of the. The total area of the site is approximately 4870.00 sq. feet (52420.24 sq. feet).

Photograph 7.41: View of 36AL0716, facing northwest.

The multi-structure complex is comprised of one stone structure, one cement structure, two concrete structures, and two stone walls. Stone Structure 1 is an L-shaped structure with a stone wall adjacent to its southwest corner (Photographs 7.42 and 7.43). It measures approximately 8-meters by 15-meters (26.2-feet by 49.2-feet). The structure consists of a stone walled building, measuring approximately 0.6- to 0.9-meters in height (2- to 3-feet). The stones are rectangular and mortared. In addition, along the north and east walls there are openings for windows, along the north wall there is an opening for a door, and along the south wall there is an opening for a chimney. In addition to these features, brick flooring was uncovered at 0.11-meters (0.36-feet) below ground surface during the excavation of JUD008, north and adjacent to Stone Structure 1.Two stone walls are located to the northwest of Stone Structure 1, approximately 20-meters away (65.6-feet). The walls measure 6.5- and 3-meters in length (21.3-feet and 9.8-feet).

Photograph 7.42: Structure 1 at 36AL0716, facing north.

Photograph 7.43: Structure 1/mortared cut stone at 36AL0716, facing northwest.

One cement structure is present northwest of Stone Structure 1. It consists of one wall, measuring 6-meters in length (19.7-feet). Two rectangular concrete structures were identified southwest (Concrete Structure 1) and southeast (Concrete Structure 2) of Stone Structure 1. According to the field map, both concrete structures measure 5.5-meters by 3-meters (18-feet by 9.8-feet). Concrete Structure 2 is better preserved than Concrete Structure 1. Concrete Structure

1 appeared to be wall fall. Concrete Structure 2 had three standing walls and appeared to have once been a garage (Photograph 7.44).

Photograph 7.44: Concrete Structure 2 at 36AL0716, facing east.

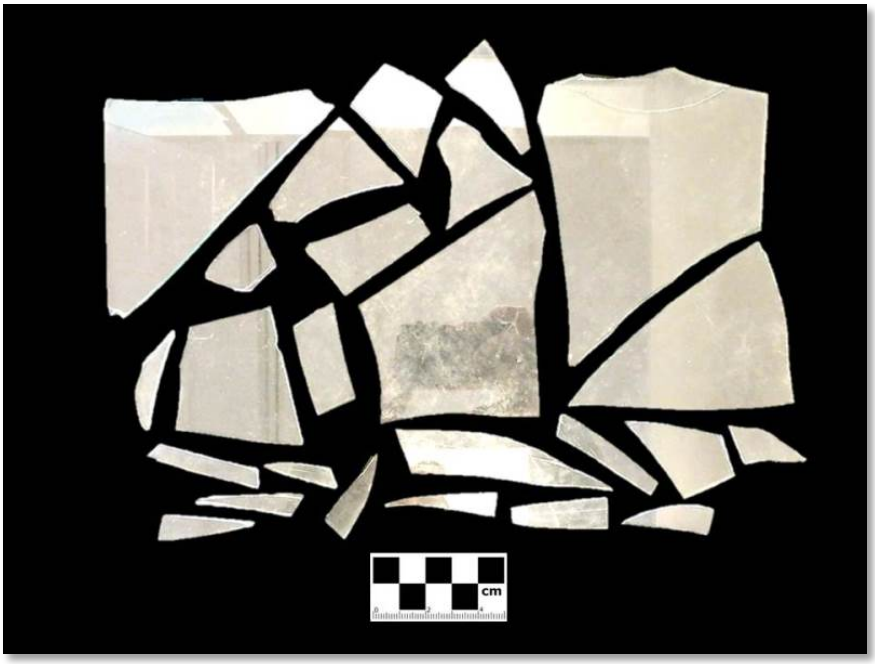
Shovel test pits excavated in and around the site were a mosaic of intact and fill-related deposits associated with construction and demolition. Typical profiles included Ap-, AO-horizon, or fill-related horizons that reached a minimum depth of 0.26-meters (0.85-feet) and a maximum depth of 0.35-meters (1.1-feet) below ground surface. The horizons were then underlain by a strong brown (7.5YR 5/4) silty clay Bw-horizon. All artifacts were recovered from the uppermost soil deposits.

Site 36AL0716, yielded a total of eighty-three historical artifacts (Table 7.6). Artifact dates suggest a depositional terminus post quem (TPQ) of the mid-nineteenth century. The assemblage is characterized by window glass, wire and cut nails, porcelain, a porcelain button, ironstone, clinker/slag, and miscellaneous ferrous metal fragments. Modern plastic was discarded from JUD001 during excavations. The material was recovered from six shovel test pits: JUD001, JUD002, JUD005, JUD006, JUD012, and JUD018. Artifacts were recovered from the Ap- and AO-horizons. The remaining excavated judgmentals (n=13) were negative.

Table 7.6. 36AL0716 Historical artifact summary

H/P	Group	Ceramic	Glass	Metal	Other	Total
Historic	Architectural	0	28	30	0	58
	Household	8	2	0	0	10
	Hardware	0	0	2	0	2
	Personal	1	0	0	1	2
	Indeterminate	0	4	2	5	11

Architecture. The Architecture group represents the majority of the artifact assemblage, and contains fifty-eight artifacts in total. The assemblage is comprised of twenty-eight window glass sherds, twelve wire nails, nine cut nails, four cut or wrought nails, and five unidentified nails (Photograph 7.45). Twenty-four of the window glass sherds are light green/aqua, while four of them are aqua. Three of the aqua fragments have a thickness that exceeds 3.00 mm, and are therefore considered "modern" (Weiland 2009:36). The light green/aqua fragments have a mean thickness of 2.66 mm.



Photograph 7.45: Representative window glass from 36AL0716

Site 36AL0716 contains twelve wire nails, nine cut nails, four cut/wrought nails, and five unidentified nails (Photographs 7.46 and 7.47; Table 7.7). The wire nails are complete and produce a beginning date of late nineteenth to early twentieth century. The cut nails are Type B, as there is no pinch under the head. The nail heads are therefore not hand finished, producing a date range of 1805 to 1900 (Smith 1975:5-7; Nelson 1968:6). Four of the nails recovered are square nails, indicating that they are not wire nails, and therefore predate the twentieth century. However, the nails are too rusted to differentiate between hand wrought (pre-eighteenth century), or cut (1790-ca.1900) [Nelson 1968:8].Based on the other artifacts in the assemblage, it is most likely that these nails are cut, as the remaining artifacts post-date wrought nail production. Finally, five of the nails are too rusted to determine the type of nail. The date ascertained from the Architecture group therefore produces a tentative date range of early nineteenth century to the present.

Photograph 7.46: Representative wire nails from 36AL0716

Photograph 7.47: Representative cut nails from 36AL0716

Table 7.7. 36AL0716 Architecture Artifact Summary

Group	Object	Manufacture Technique	Total
Architectural	Window glass, light green/aqua	Indeterminate	24
Architectural	Window glass, aqua, modern	Indeterminate	3

Architectural	Window glass, aqua	Indeterminate	1
Architectural	Wire nail, complete	Machine	12
Architectural	Cut nail, complete	Machine	9
Architectural	Cut or wrought nail	Indeterminate	4
Architectural	Unidentified nail	Indeterminate	5
Grand Total			58

Household. Excavations at Site ALFi003-ST1 recovered ten household related artifacts: eight ceramics sherds and two glass fragments. The ceramic assemblage consists of seven porcelain sherds and one ironstone sherd, while the glass assemblage consists of two bottle glass fragments (Photograph 7.48; Table 7.8).

Photograph 7.48: Representative household items from 36AL0716

Table 7.8. 36AL0716 Ceramic Artifact Summary

Group	Object	Prime Decoration	Begin Date	End Date	Total
Household	Porcelain, rim/body fragment	Undecorated		2016	3
Household	Porcelain, base/body fragment	Undecorated		2016	3
Household	Porcelain, rim/body fragment	Embossed, floral		2016	1
Household	Ironstone, body fragment	Undecorated	1840	2016	1
Grand Total					8

The seven sherds of porcelain represent three separate vessels. Six of the fragments are undecorated; while one is embossed with a floral design (leaves). The undecorated fragments represent two separate vessels. Three of the undecorated sherds are from the rim/body of some type of tableware or teaware, while the remaining three undecorated sherds are from the base/body of another vessel. Because porcelain spans a long period of time, an accurate date range cannot be produced.

The ironstone sherd within the assemblage is small and undecorated. Ironstone was prevalent in the United States beginning around 1840 and continued throughout the twentieth century (Brown and Bewick 1982:6), and up until the present.

The seven sherds of porcelain represent three vessels. The ironstone sherd represents its own vessel. In total, there are a minimum of four ceramic vessels present in this assemblage.

Two fragments of historic glass are also represented within the Household group, and represent two separate vessels (Table 7.9). The first sherd is a small colorless rim sherd that is difficult to date, as colorless glass spans a long period of time (Maples 1998:107). There is a small seam line on the rim, indicating that the sherd was either mold-made (ca. 1750) [Jones 1983:169] or machine-made (ca. 1900). However, it is difficult to choose between these two types of manufacturing, as the sherd and seam line are too small. The colorless glass therefore dates from the mid eighteenth century to the present.

Table 7.9. 36AL0716 Glass Artifact Summary

Group	Object	Manufacture Technique	Begin Date	End Date	Total
Household	Bottle glass, colorless	Mold or machine made	ca. 1750	2016	1
Household	Bottle glass, lime green	Indeterminate	1890	2016	1
Grand Total					2

The second glass fragment is a small, lime green glass body fragment. The lime green bottle glass is most likely from a modern bottle. According to the Historic Glass Bottle Identification & Information Website, this very bright green is "almost exclusively a 20th century feature," although it was present at the end of nineteenth century (Lindsey 2016). It therefore produces a date range of 1890 to the present.

Hardware. Excavations recovered two artifacts within the Hardware category. This included a piece of copper wire and a burnt hinge and screw. It is possible that the screw in the hinge is machine made. However, it is too rusted and burnt to properly identify. No dates can be ascertained from these artifacts.

Personal. Two artifacts were recovered in association with the Personal group: a porcelain button and a leather fragment with brass grommets (Photograph 7.49). The porcelain button is mold made and has four holes. It is most likely Prosser Molded, which produced highly compressed, heated ceramic buttons. This manufacturing technique was very common with

porcelain buttons from 1840 until 1920 (Sprague 2002:111; Luscomb 1992:156-158). The leather fragment with brass grommets appears to be a fragment of a shoe. No date can be derived from the leather fragment.

Photograph 7.49: Representative personal items from 36AL0716

Indeterminate. Eight artifacts are represented within the Indeterminate group (Table 7.10). This group is reserved for artifacts that do not fit into one of the other groups, or cannot be identified and attributed to the appropriate category. The artifacts within this category include one slag fragment, four pieces of "clinker," a flat metal fragment (possible tin can), copper wiring surrounded by a thick piece of iron, and four small colorless glass fragments.

Table 7.10. 36AL0716 Indeterminate artifact summary

Group	Material	Object	Total
Indeterminate	Slag	Slag	1
Indeterminate	Clinker	Clinker	4
Indeterminate	Tin/Aluminum	Indeterminate, possible tin can fragment	1
Indeterminate	Copper/Iron	Copper wire and iron	1
Indeterminate	Glass	Glass fragment, colorless	4
Grand Total			11

This section of the APE has been re-aligned to avoid the resource and now part of a proposed HDD location corridor. There will be no adverse effect to Site 36AL0716. Therefore, AECOM recommends that no further investigations are necessary unless design plans change. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction.

36AL0715 (AECOM-ALFi002-NA1)

Site 36AL0715 is a low density Native American site. The site was identified during shovel testing of survey segment PAFi002 at Houston to Monaca MP 17.80, west of Washington Road (Figure 6.41, 7.83 to 7.85; Photograph 7.30). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is situated within a wetland from an upland drainage that formed an unnamed tributary of Potato Garden Run. The uplands northwest of the wetland area were artificially leveled to create a recreation park. The total area of 36AL0715 is approximately 44 sq. meters (473.61 sq. feet).

Photograph 7.50: View of 36AL0715, facing north.

Soil profiles in the wetland area ware variable due to alluvium, colluvium, and standing water. The site consists of three Native American artifacts from a single STP. STP B183 consisted of revealed a 0.23 meter (0.75 feet) thick dark greyish brown (10YR 4/2) silt loam A-horizon underlain by a grey (10YR 6/1) mottled with a yellowish brown (10YR 5/6) silty clay Bg-horizon. All artifacts were recovered from the A-horizon. Radials were excavated in grid intervals, but no additional artifacts were recovered.

The three Native American artifacts are 3 fragments of flaked stone debitage (Photograph 7.51). The artifacts lack diagnostic attributes. Two of the artifacts were chert flakes with a pink hue over a white to tan body. The flakes were likely reddened from heat treatment. The material is similar in appearance to some of the Flint Ridge varieties of cherts. The larger of the flakes is a complete secondary flake with a flat platform and slight hinge fracture on the distal edge. The larger flake has a slight patina on the dorsal surface along three flake scars. The smaller artifact is a distal, tertiary flake that had begun to hinge before terminating. The flake is nearly complete and has at least three flake scars on the distal surface. There is no evidence of use wear on either

of the flakes. It is possible that the flakes came from a single nodule, but the smaller flake would have been a later reduction from the original core. The third flake is a mid to late stage, proximal flake. The artifact has a flat platform and a diffuse bulb of percussion. The material used during flaking appears to be Upper Mercer chert. A large fracture is present in the flake just above the platform that removed a large portion of the flake. No use-wear is present on the remaining portion of the flake.

Photograph 7.51: Native American flaked stone debitage from 36AL0715

The APE and proposed impacts to Site 36AL0715 have been subject to realignment and will have no adverse effect on the resource. Based on natural topographic boundaries of the resource (i.e., wetlands), AECOM recommends that no further investigations or avoidance are warranted for 36AL0715 unless design plans change.

36BV0396 (AECOM-BVIn005-ST1)

Site 36BV0396 consists of mortared stone walls and depressions. It was identified during systematic pedestrian survey and shovel testing of survey segment PAIn005 along the Houston to Monaca corridor (Figures 6.54, 7.86 to 7.90). This resource is now off-alignment of the proposed corridor. The site is located on a middle hillslope, less than 20-meters (65.6-feet) south of Bocktown Cork Road. A young deciduous forest surrounds the site area. The total site area is approximately 72.00 sq. meters (775.00 sq. feet).

The structure consists of two intact walls intersecting at a 90-degree angle (Photograph 7.52). The north-south oriented wall measures 3.7-meters (12-feet) and the east-west oriented wall measures 3.4-meters (11-feet). The walls consist of tightly stacked rectangular stones with little mortar remaining. Slate shingles were located approximately 5.18-meters (17.00-feet) east of the southeast corner. Two ovoid depressions are also associated with the structure. The smaller of

the two is adjacent to the eastern border of the stone walls and measures approximately 8.5-meters (28-feet) north-south and 4-meters (13-feet) east-west (Photograph 7.53). The larger of the two was located approximately 13.4-meters (44-feet) west of the stone walls and measures approximately 13.7-meters (45-feet) north-south and 9.8-meters (32-feet) east-west. A rock wall, approximately 25.9-meters (85-feet) in length, is located southeast of the main wall, oriented northwest-southwest. In total, the site area measures approximately 26.2-meters by 21.3-meters (86-feet by 70-feet).

Photograph 7.52: View of stone foundations at 36BV096, facing southeast.

Photograph 7.53: View of depressions at 36BV0396, facing south.

The function of the structure and depressions are unknown at this time and no definitive date range can be listed here. However, a multi-structure complex within the site area appears on aerials from 1939 and 1958. Therefore, it existed at least as far back as 1939. The structure was torn down between 1958 and 1967, as it is absent from the 1967 aerial. No artifacts were recovered in association with Site 36BV0396.

The APE and proposed impacts at Site 36BV0396 have been subject to realignment and no effect to this resource. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

36BV/064 (AECOM-BVIn004-IF1)

Isolated find 36BV/064 is low density historic artifact scatter from two positive STPs. The resource was identified during systematic pedestrian survey and shovel testing of survey segment PAIn004 at Houston to Monaca MP 23.86 (Figures 6.56, 7.91 to 7.95; Photograph 7.54). The site is located south of Bocktown Road, on a hilltop overlooking Raccoon Creek. The area consists of a relatively flat grassy terrace with deciduous trees bordering the site area. The total site area is approximately 84 sq. meters (904.17 sq. feet).

Photograph 7.54: View of 36BV/064, facing north.

STP C81 revealed a 0.26-meters (0.85-feet) brown (10YR4/3) silt loam Ap-horizon, underlain by a yellowish brown (10YR5/4) silt loam B-horizon. This STP and radial STP C81 +10 meters west yielded three historic artifacts from the Ap-horizon, consisting of one refined earthenware sherd and two cut or wrought nail fragments. The remaining radials (n=7) were negative.

Household. The Household category is comprised of one refined earthenware sherd. The fragment is too small to determine the typology of the refined earthenware and an accurate date range cannot be produced. The refined earthenware sherd represents one ceramic vessel in the assemblage.

Architecture. The Architecture group consists of two small square nail fragments. The pieces are rust-covered, with the only discernible feature being their square shape, indicating that they are fragments from a cut or wrought nail. These nail types do not typically appear on sites after 1880, although they continue to be manufactured until the end of the nineteenth century (Smith 1975:5-7). An end date of 1880-1900 can therefore be assigned to these based on this feature.

Isolated find 36WH/064 does not meet PHMC site criteria. AECOM recommends that 36WH/064 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV0019

Site 36BV0019 is a previously identified Native American site dating to the Early to Middle Archaic period. The resource is primarily within a proposed HDD location corridor, with the exception of a portion of the proposed HDD workspace cutting into a small portion of the site

boundary (Figures 6.56, 7.96 to 7.98; Photograph 7.55). Archaeological survey produced negative results.

Photograph 7.55: View of 36BV0019 and Raccoon Creek flood plain, facing north.

With the exception of a small, southern portion of the site, the majority of Site 36BV0019 lies within a proposed HDD location corridor. This section of the APE has been re-aligned to avoid environmental resources and now part of the proposed HDD location corridor. There will be no adverse effect. AECOM recommends that proposed impacts within the APE do not contribute to the eligibility of the larger site. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction that may impact potential preserved areas.

36BV/065 (AECOM-BVIn004-IF2)

Isolated find 36BV/065 consists of one Native American artifact recovered from STP C14. It was identified during shovel testing of survey segment PAIn004 at Houston to Monaca MP 24.49 (Figures 6.57, 7.99 to 7.101; Photograph 7.56). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is located in an agricultural field northwest of a hilltop. The total area of the isolated find is 45 sq. meters (484.38 sq. feet).

Photograph 7.56: View of 36BV/065, facing north.

Soils in the agricultural field were poorly drained and the agricultural field may have been artificially leveled in the past. STP C14, the location of the artifact find, revealed a 0.21 meter (0.69 feet) thick strong brown (7.5YR 4/6) and yellowish red (5YR 4/6) mottled silty clay loam Ap-horizon underlain by a yellowish red (5YR 4/6) silty clay loam B horizon. The artifact was recovered from the Ap-horizon, comprised of a primary chert flake.

The flake is a primary chert flake reduced from an unidentified chert variety with a dark grayish-brown matrix with a lighter orange-brown cortex. The flake can be defined as micro-debitage and showed evidence of a slight hinge fracture. Approximately 20 percent of the cortex remained. The flake has no evidence of use-wear or heat treatment.

Resource 36WH/065 is a non-diagnostic isolated find that does not meet PHMC site criteria. The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. As a result, additional information to assess the resource may not have been fully completed. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

36BV0395 (AECOM-BVIn003-ST1)

Site 36BV0395 consists of a series dry-laid stone stacked wall and two historic artifacts. It was identified during a systematic pedestrian survey and shovel testing of segment PAIn003 at Houston to Monaca MP 25.81 (Figures 6.60, 7.102 to 7.106). The site is located southeast of Tank Farm Road along a bench on a steep hillside. Deciduous forest with a relatively sparse closed canopy dominates the area. The total area is approximately 64.00 sq. meters (688.89 sq. feet).

The main stacked wall is composed of dry laid field stone, and measures 8-meters by 4.2-meters (26.25-feet by 13.75-feet). Collapsed stone walls extend from the southeast and southwest corners, as well as from the central north wall. A fourth collapsed wall is located northwest of the main structure and measures 4.6-meters in length (15-feet). A gap measuring approximately 0.45-meters (1.5-feet) is present in the south wall. An apparent circular hearth was present in the northwest corner of the main structure, and was surrounded by moss-covered angular cobbles. Evidence of recent activity was present, and included a grilling grate, a wooden ladder, and a hunter's tree stand adjacent to the structure's southern wall. Large boulders and possible rubble were located west and northwest of the main structure (Photographs 7.57 and 7.58).

Photograph 7.57: View of foundations at 36BV0395, facing east.

Photograph 7.58: View of modern fire pit at 36BV0395, facing west.

Shovel testing of positive STP JUD001 revealed organic soils that were characterized by a very dark grayish brown (10YR 3/2) silt loam AO-horizon and a yellowish brown (10YR 5/6) silt loam Bt-horizon. The AO-horizon reached a depth of 0.35 meters (1.15 feet). A total of two historic artifacts were recovered from STP JUD001, from the AO-horizon. The assemblage is comprised of one cut nail and an unidentified ferrous metal fragment (Photograph 7.59). The remaining radials and judgmental STPs (n=16) were excavated surrounding the site and were negative.

Photograph 7.59: Cut nail from 36BV0395.

Architecture. The Architecture group is comprised of one cut nail. The head of the nail was not hand finished, which means that the nail head was machine finished. Therefore, the cut nail is a later cut nail (Type B), with a date range of 1805 to 1900 (Smith 1975:5-7; Nelson 1968:6).

Indeterminate. One unidentified ferrous metal fragment represented the Indeterminate group. This group is reserved for artifacts that do not fit into one of the other groups, or cannot be identified and attributed to the appropriate category. The fragment is too rusted to determine its original use.

It is clear that the resource has been modified in the recent past and the field stone repositioned to several an alternative purpose. The historic maps do not indicate a structure or farmstead nearby, but rather an orchard associated with the Reed Property. It is possible that this may once have been a field stone wall or property marker in the vicinity. In addition, STP testing of the locality yielded only two artifacts. Based on the condition and integrity of the resource, AECOM recommends 36BV0395 as not eligible for listing in the NRHP. In addition, the resource is unlikely to provide significant information to the region's history. Therefore, AECOM recommends that no further investigations or avoidance are warranted unless design plans change.

36BV/063 (AECOM-BVIn002-IF1)

Isolated find 36BV/063 consists of one Native American artifact recovered from STP C3 along survey segment PAIn002 at Houston to Monaca MP 26.60 (Figures 6.61, 7.107 to 7.109; Photograph 7.60). The resource is located within a deeply incised valley. The isolated find is

located between Service Creek and a private driveway on semi-manicured grass. The total area of the isolated find is 45 sq. meters (484.38 sq. feet).

Photograph 7.60: View of 36BV/063, facing northeast.

STP C3 revealed a 0.32 meter (1.05 feet) brown (10YR 4/3) silt loam Ap-horizon, underlain by a 0.47 meter (1.54 feet) dark yellowish brown (10YR 4/4) sandy silt Bw-horizon underlain brown (7.5YR 4/3) sandy C-horizon. Eight radial shovel tests were excavated on grid, but no additional prehistoric artifacts were recovered. The artifact is a non-diagnostic piece of debitage recovered from the Ap-horizon.

The artifact was a small, early reduction flake with approximately 60 percent cortex remaining. Three sides of the artifact show flake scars, but the size and impurities in the material indicate the potential for natural flaking. It is also possible that the debitage is flake shatter as all flake scars seem to originate from a single point. The chert is a dark gray with a tan/brown cortex. Water worn edges are present on non-flaked surfaces.

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

AECOM-BVRa009-PC1

The field survey documented a grave marker (footer stone) along survey segment PARa009 at Houston to Monaca MP 28.8 (Figures 6.66, 7.110 to 7.114; Photograph 7.61). Upon further examination, it was determine that this was in association of a larger pet cemetery. This particular set of stones had been re-purposed and inscribed with the pet's name.

Photograph 7.61: View of pet grave marker / displace cemetery marker at AECOM-BVRa009-PC1, facing south.

AECOM-BVRa009-PM1

The field survey documented a grave marker along survey segment PARa009 at Houston to Monaca MP 29.1 between STPs C67 and D66 (Figures 6.67, 7.115 to 7.119; Photograph 7.62). Background research was completed to determine if a family plot was associated with this hilltop or if the stone had displaced. Upon further investigation, it was determine that this grave marker was once located at the nearby a local cemetery. Inquires with the landowner determined that this marker served only as property marker for the neighboring parcel.

Photograph 7.62: View of grave marker / displaced cemetery marker at AECOM-BVRa009-PM1, facing

36BV/066 (AECOM-BVPo005-IF1)

Isolated find 36BV/066 consists of a prehistoric isolated find from STP F75 recovered during systematic pedestrian survey and shovel testing of survey segment PAPo001. The locality is west of the intersection between Raccoon Creek Road and East Mowry Road and within a section of the corridor that has since been realigned and will no longer be impacted (Figures 6.78,7.120 to 7.122; Photograph 7.63). The site is located on a terrace and is characterized by tall grasses and briars. Resource 36BV/066 is in close proximity to Site 36BV0192, a previously identified prehistoric site. The total site area of the isolated find is 45 sq. meters (484.38 sq. feet).

Photograph 7.63: View of 36BV/066, facing west.

STP F75 revealed a 0.21-meter (0.69-feet) thick brown (10YR4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR5/6) silt loam Bw-horizon. A single chert flake was recovered from STP F75 was identified in the Ap-horizon. Radial shovel testing did not recover additional prehistoric artifacts.

The chert flake is comprised of an unidentified dark gray chert. The artifact is a proximal fragment of a bifacial thinning flake. The angle of the platform and flaking on the dorsal and ventral surfaces of the platform indicate a pressure flaked biface resharpening flake. The distal end has a post-deposition snap fracture. Previous retouch of the proximal edge is evident, but no additional retouch is observed. A small portion of cortex may be present on the distal edge of the flake, though it may be a change in the chert material matrix. The flake shows evidence of weathering.

Resource 36WH/065 is a non-diagnostic isolated find that does not meet PHMC site criteria. The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. As a result, additional information to assess the resource may not have been fully completed. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

36BV0192 (AECOM-BVPo001-HS1)

Site 36BV0192, a historic farmstead, consists of a moderate density historic artifact scatter. It was identified during systematic pedestrian survey and shovel testing of segment PAPo001, west of the intersection between Raccoon Creek Road and East Mowry Road. The locality is within a section of the corridor that has since been realigned and will no longer be impacted (Figures 6.78, 7.123 to 7.127; Photograph 7.64) The find is a new component within 36BV0192, a

previously identified Native American site. The site is located on a terrace and is characterized by tall grasses and briars. The artifact scatter encompasses an area approximately 16.5-meters by 21-meters (54-feet by 69-feet).

Photograph 7.64: View of 36BV0192, facing east.

Shovel testing revealed a mosaic of soil profiles within the site area. Shovel tests closest to the road revealed a fill context. The first stratum encountered was one of a number of soil horizons, including A-, Ap/Fill, Ap-, and OA-horizon. This stratum had a minimum depth of 0.13-meters (0.43-feet) below ground surface and a maximum depth of 0.34-meters (1.1-feet) below ground surface. Soil color and texture included a brown silt loam mottled with a yellowish brown silt loam (10YR4/3 and 10YR5/4), a brown (10YR4/3) silt loam, and a dark yellowish brown (10YR4/4 or 10YR3/4) silt loam. Soils typically included two strata. However, three shovel tests displayed three strata, and included a Fill 1, Apb-, and AB-horizon. Depths reached a minimum of 0.41-meters (1.3-feet) and a maximum depth of 0.44-meters (1.4-feet) below ground surface. Soil texture and color included a very dark grayish brown (10YR3/2) silt loam, a yellowish brown (10YR5/4) silt loam, and a dark yellowish brown (10YR4/4) silt loam. STPs were terminated in strata that were typically a yellowish brown or dark yellowish brown silt loam, either a deep Fill 2 context, Bt-, or B-horizon. All artifacts were recovered in fill packages, Ap-horizon, or Apb-horizons.

Site 36BV0192 yielded a total of 23 historic artifacts (Table 7.11). The artifacts have dates that primarily span from the early nineteenth century to the early twentieth century. The assemblage is characterized by whiteware, stoneware, window glass, bottle glass, and brick. The materials were recovered from one shovel test pits, STP B86, and six surrounding radials, B86 + 10 meters east + 10 meters south, B86 + 5 meters north, B86 + 10 meters east, B86 + 10 meters west, F75

+ 5 meters west, and F75 + 10 meters west. Additional radials were excavated (n=5), but no additional artifacts were recovered. No Native American artifacts were recovered during testing.

Table 7.11. 36BV0192 Historic artifact summary

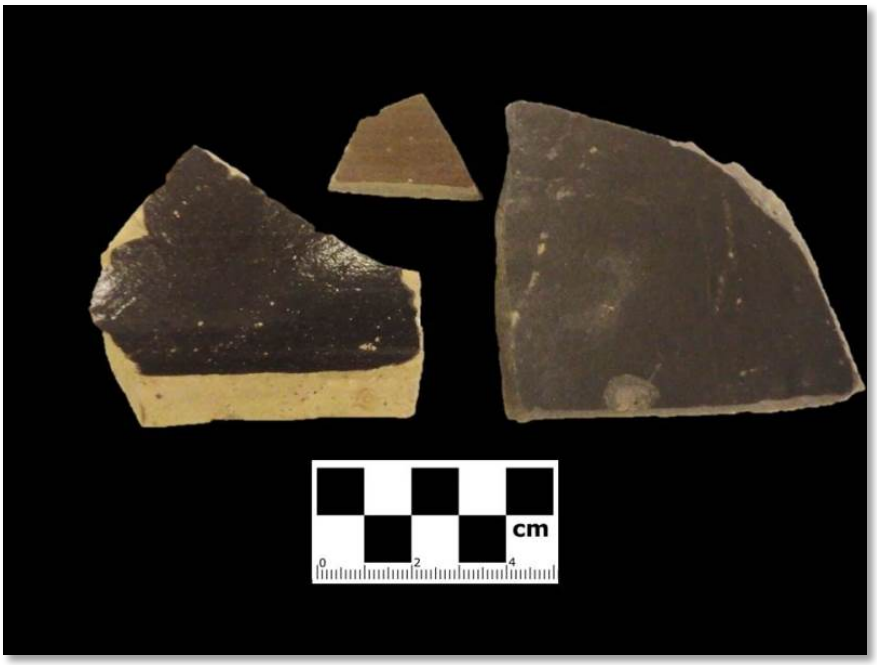
H/P	Group	Ceramic	Glass	Total
Historic	Architectural	7	7	14
	Household	5	4	9

Household. The Household group represents less than half of the artifacts from 36BV0192. Excavations recovered nine household related artifacts. The assemblage includes five ceramic sherds and four pieces of glass. The ceramic assemblage consists of three sherds of stoneware, one sherd of whiteware, and one sherd of unidentified refined earthenware (Table 7.12).

Table 7.12. 36BV0192 Ceramic artifact summary

Group	Object	Prime Decoration	Begin Date	End Date	Total
Household	Stoneware, tan body and base fragment	Albany-type slip, salt glaze	1805	1930	1
Household	Stoneware, gray body fragment	Albany-type slip	1805	1930	1
Household	Stoneware, gray body fragment	Salt glaze	ca. 1705	1930	1
Household	Whiteware, body fragment	Undecorated	1820	2016	1
Household	Refined earthenware	Undecorated		2016	1
Grand Total					5

The three sherds of stoneware represent three separate vessels, all of which were most likely utilized as some type of food storage container, jug, or crock (Photograph 7.65). Two of the stoneware sherds are similar in appearance, as each has a salt glazed exterior and an Albany-type slip interior. However, one sherd is tan-colored, while the other is gray. Salt glaze stoneware has a long production date range in the United States, from 1705 to 1930, and therefore does not provide a narrow date range for the archaeological assemblage (Ketchum 1991:86). Albany slip glaze, however, was popular during the nineteenth century and continued to be produced into the twentieth century (Raycraft and Raycraft 1990:10; Ramsey 1939: 21-22, 59). According to Raycraft and Raycraft, the Albany-type slip glaze became less popular after 1910, and has a terminal date of 1925. These two sherds therefore provide a date range of 1805 to 1930.



Photograph 7.65: Representative ceramic from 36BV0192

The third stoneware sherd is a gray-colored body sherd, with a salt glaze exterior and a gray, buff bodied interior. Because there are no other diagnostic features present on the sherd, aside from the salt glaze, the sherd provides a date range of 1705 to 1930.

The whiteware sherd recovered from Site BVPo001-HS1 is a small body sherd. Because it is refined earthenware one can assume that this originates from some type of tableware or teaware. Whiteware became popular in the U.S. beginning in 1820 as another replacement for porcelain, and continues to be present in households to this day (des Fontaines 1990:4).

The last ceramic sherd recovered from the site is a refined earthenware sherd. However, the fragment is too small to determine the specific typology of refined earthenware. Because of this, an accurate analysis and date range cannot be provided.

The three stoneware sherds represent three separate vessels, the whiteware sherd represents one vessel, and the refined earthenware sherd represents one vessel. At minimum, there are five vessels represented in the assemblage.

Four pieces of historic glass are also represented within the Household group. Three of the sherds are small and colorless. Colorless glass is difficult to date as it spans a broad period of time and continues to the present (Maples 1998:107). The colorless glass sherds are most likely from the same vessel, as the thickness (4.12 mm and 4.09 mm [0.16 inches and 0.16 inches]) and color are very similar. In addition, these sherds were recovered from the same STP, albeit from two different strata. These three sherds of bottle glass therefore most likely represent one vessel.

The fourth piece of glass recovered within the Household group includes one amber bottle glass sherd. The sherd is small and rounded, indicating it may have belonged to a bottle. The sherd lacks further diagnostic features for dating.

Architecture. The Architecture group represents the majority of the artifact assemblage, and contains thirteen artifacts in total. The assemblage is comprised of seven window glass sherds and seven brick fragments (Photographs 7.66). Four of the window sherds were aqua, while three of them were colorless. No dates can be derived from the window glass fragments. No dates can be derived from the brick fragments.

Photograph 7.66: Brick sample from 36BV0192

Site 36BV0192, a historic farmstead, has the potential to contribute to the regions history based on cultural materials recovered from historic fill deposits and/or stratified deposits. The APE and proposed impacts to Site 36BV0192 have been subject to realignment and will have no adverse effect on the resource. AECOM recommends that no further investigations or avoidance are warranted unless design plans change.

36BV0398 (AECOM-BVPo011-NA1)

Site 36BV0398 is a Native American site on a ridge overlooking a slight bend at Raccoon Creek. The site was identified during systematic pedestrian survey and shovel testing of survey segment PAPo011 at Houston to Monaca MP 32.56 (Figures 6.75, 7.128 to 7.130; Photograph 7.67). The proposed pipeline impactions of this section of the alignment were re-designed to avoid this resource. The ridgetop contained an access road that wrapped up to a water storage tank west of the site. The ridgetop was also clear of trees and contained a large amount of secondary growth vegetation, shrub-like plants, and invasive species. As the slopes increased in steepness from the

ridge, the landscape became more wooded. The total area of 36BV0398 is 4143.00 sq. meters (44595.88 sq. feet).

Photograph 7.67, View of 36BV0398, facing northeast.

Artifacts were recovered from a total of 20 STPs and Radial STPs. The site yielded a total of 75 artifacts, two organic/faunal specimens, and a hearth feature. No archaeological sites were previously documented at this location. The full extent of the site boundaries were tested along this ridge, following the natural topography. The soils associated with the ridge are typical of upland soils. Shovel test E7 is representative of the soils within the site. Excavations of the STP revealed a 0.25 meter (0.82 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon.

The prehistoric artifact assemblage contains 75 artifacts including two bone fragments, one diagnostic projectile point, a hammerstone, a sidescraper, an anvil, flaked stone debitage and FCR (Table 7.13). The projectile point was a Rossville projectile point that typically dates within the Early Woodland Period (ca. 2,800 – 1,000 B.P.), but have been associated to the Late Archaic/Transitional Archaic Period (4,850 – 2,800 B.P.) as well (PHMC 2016). Some sources push the date of the Rossville points to the Late Archaic.

Table 7.13. Prehistoric artifact assemblage at 36BV0398.

H/P	Group	Chert	Sandstone	Unknown Lithic	Bone	Total
Prehistoric	**Debitage**	49		-	-	**49**
	Tool	2	2	-	-	**4**
	FCR	-	21	1	-	**22**
	Faunal	-	-	-	2	**2**

Debitage. Debitage makes up the largest group of artifacts in the prehistoric assemblage from site BVPo011-NA1. The site includes a total of 49 Debitage Group artifacts from 16 shovel tests (Table 7.14). The complete collection is comprised of flakes in varying stages of the core and tool reduction process. The Debitage Group includes one biface thinning flake, 2 core reduction flakes, three early stage reduction and primary flakes, 11 middle stage reduction and secondary flakes, 31 late stage reduction and tertiary flakes, and one thinning flake.

Table 7.14. Prehistoric Debitage assemblage at 36BV0398.

H/P	Typology	Total
Prehistoric	Biface Thinning	1
	Core Reduction	3
	Early Stage Reduction/Primary	2
	Middle Stage Reduction/Secondary	11
	Late Stage Reduction/Tertiary	31
	Thinning	1
Total		49

The biface thinning flake is a long, thin flake recovered from STP E7 + 10 meters north. The flake was recovered from the Ap-horizon, within 0.30 meters (0.98 feet) of the ground surface. The flake is complete with no evidence for breaking. The material is an unidentified chert with small amounts of greenish gray inclusions, but the majority has a light grayish tan coloring. The majority of the flake appears to have a lower quality crypto-crystalline structure. The platform of the flake has a steep angle, likely indicating that the flake is a bifacial thinning flake. There is a diffuse bulb of percussion indicating soft-hammer or pressure flaking techniques were used which indicates later stage reduction. There is no evidence of use-wear or heat treatment on the flake.

The core reduction flakes, early stage reduction flakes, and primary flake will be discussed together due to similarities in the reduction process. The core reduction flakes include three flakes recovered from STP E7 + 10 meters east. The early stage reduction flake was recovered from STP F8. The primary flake was recovered from STP C7. The three core reduction flakes have an arched appearance and minimal cortex. The flakes were potentially from two nodules of unidentified gray cherts. The nodule with two flakes appears to have small, white fossil inclusions while the second nodule has tan inclusions. No use-wear or heat treatment is apparent. Negative flake scars on the surfaces of the flakes are rough. The early reduction flake is larger with a narrow platform and expanding, curving base. The dorsal side has a single flake scar that created a mesial ridge that appears to have been used as a guide for subsequent flaking. The material is a mottled tan and gray unidentified chert. Cortex amount is close to 50 percent. The primary flake is long and thin with 100 percent cortex. The flake appears to be primarily cortex. The flake has a flat platform with a tan and darker brown cortex. Heat treatment may have been present.

The middle stage reduction flakes are comprised of four varieties of chert. The first is a dark gray chert with a rough texture and white striations. This is not believed to be Upper Mercer Chert.

The second variety is medium gray in appearance with tan mottling. This chert has a higher quality structure and smoother texture. The third variety is lighter gray with tan flecking. The last type is a light tan chert. Two of the flakes may have originated as potlid fractures and were not intentionally flaked. The remainder of the assemblage includes eight complete flakes and one proximal flake. Cortex is present on all flakes, but flake scars are also apparent. Four of the flakes have evidence of heat treatment. The flakes appear to have been used in core reduction and flaking and were subsequently abandoned. No evidence of use-wear is apparent.

The late stage and tertiary reduction flakes from BVPo011-NA1 include 31 flakes from 11 shovel tests. The flake materials include Upper Mercer chert, four unidentified varieties of gray cherts, and three varieties of unidentified tan cherts. Twenty-one of the flakes are complete, two are distal fragments, one is a mesial fragment, and two flakes are proximal fragments. Both of the proximal flakes show evidence of reddening from heat treatment. None of the flakes have use-wear. The primary method of reduction identified was soft hammer reduction but a small number of the flakes have pronounced bulbs of percussion indicating hard hammer reduction. One hinge fracture was present, but the remainders of the fractures are likely from post-depositional processes. No diagnostic attributes are present on any of the debitage in the collection.

Tool. The tool assemblage at BVPo011-NA1 included four tools: a Rossville Projectile Point, a sidescraper, a sandstone anvil, and a hammerstone. Only the projectile point was diagnostic, but all three tools indicate activities that may have been practiced at the site. The artifacts were recovered from three shovel tests.

The sidescraper was recovered from STP B7 with the scapula of a small mammal in the Ap-horizon within 0.31 meters (1.02 feet) of ground surface (Photograph 7.68). The sidescraper was unifacially flaked with one edge worked. The maximum length of the flake was 43.80 mm (1.72 inches) with a maximum width of 26.14 mm (1.03 inches) and a mesial thickness of 4.95 mm (0.19 inches). The working edge was approximately 27.18 mm (1.07 inches) long. There was no retouch on the ventral surface. A possible potlid is present on the ventral surface. Impurities within the ventral surface resulted in a large flake with an unintentional portion of material. The platform on the flake was flat with limited preparation evident. The bulb is semi-diffuse making the reduction process hard to determine. The sidescraper would indicate evidence of hide preparation or woodworking at the site.

Photograph 7.68: Chert scraper from 36BV0398

The hammerstone was recovered from STP E7 + 5 meters west within the hearth feature (Photograph 7.69). The tool was recovered close to the projectile point indicating an activity area within the site. The hammerstone was roughly fist sized and weighed 323.70 grams (11.42 ounces). The hammerstone was small enough to use one-handed (Adams 2002: 151). Obvious use-wear is evident on one edge of the hammerstone with a potential second area of use visible on a separate side of the project. No grinding or shaping was apparent on the tool. Weathering and potential heat fractures are present on the hammerstone in the form of a large crack around the circumference. The hammerstone may have been used until the group was ready to move on, and then was dumped into the fire pit as waste. The presence of the hammerstone indicated lithic reduction within the site.

Photograph 7.69: Hammerstone from 36BV0398

The anvil was recovered from STP E7 + 5 meters north in the same stratum as the hammerstone (Photograph 7.70). Due to the shape and appearance, the anvil appeared to have been a piece of FCR, but on further investigation a steep indentation was observed in the stone. The angle of the indentation is too steep and rough to have been used for a grinding surface for plant material processing. Due to the shape of the indentation and the presence of the hammerstone, the artifact is believed to be an anvil. The anvil was slightly larger than the hammerstone and weighed 770.70 grams (ounces). No other indentations were visible. The artifact was recovered from a potential hearth feature with a large collection of FCR. With the anvil and hammerstone, lithic reduction was likely in this location of the site.

Photograph 7.70: Anvil from 36HV0398

The projectile point has been identified as a Rossville point (Photograph 7.71). The artifact was recovered from STP E7 within the Ap-horizon. Adena-stemmed projectile points typically date within the Early Woodland Period (ca. 2,800 – 1,000 B.P.), but have been associated to the Late Archaic/Transitional Archaic Period (4,850 – 2,800 B.P.) as well (PHMC 2016). The projectile point is 43.01 mm (1.69 inches) long by 19.36 mm (0.76 inches) wide by 9.26 mm (0.36 inches) thick. The projectile point has a stem with a curved base and excurvate blade. The ratio of working area to blade area is approximately 1.40:1 (25.09mm to 17.92mm [0.99 inches to 0.71 inches]). The resharpening process of the projectile point seems to have originated at the point and extended outward. Long flake scars extend from the tip toward the base on both sides. The stem is nearly as wide as the body of the point with tapering starting close to the base. A small amount of resharpening is present on the point.

Photograph 7.71: Chert Biface from 36BV398

Fire-cracked Rock. The Fire-cracked rock group included a total of 22 artifacts (Photograph 7.72). The artifacts are broken into two categories, FCR and Rock fragment. One rock fragment was collected from STP C8 because it was believed to have been FCR. The rock was sandstone, but upon further inspection is non-cultural. Twenty-one sandstone fragments are believed to be FCR. Nineteen of the fragments were from Feature 1 in STP E7 + 5 meters west. The feature was truncated, but appeared to have been a hearth feature. The remaining two fragments were recovered from STPs JUD004 and JUD008.

Photograph 7.72: Fire-cracked Rock from 36BV0398

Faunal/Organic. Two faunal specimens were recovered from excavations of BVPo011-NA1. The specimen was recovered from STP B7 in the Ap-horizon. The specimens were fragments of a right-sided proximal scapula fragment from a small to medium sized mammal (Lyman 1994). The scapula may have been from a small deer. The sidescraper was recovered from the same STP. It does not appear likely that the scapula had been utilized as a tool.

A truncated hearth feature was identified in STP E7 + 5-meters west. The hearth was identified at the Ap- to B-horizon interface. A large number of FCR fragments as well as a chert flake, the anvil, and the hammerstone were recovered. The feature was identified by the large number of FCR. Limited charcoal was present in the feature. Upon initial documentation of the radial the hearth was covered in plastic and the shovel test was closed in case future work was required. The full extent of the hearth was not identified as it extended beyond the boundaries of the STP.

This section of the APE has been re-aligned to avoid the resource; therefore there will be no adverse effect to the resource. AECOM recommends that no further investigations are necessary unless design plans change. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction.

36BV/067 (AECOM-BVPo011-IF1)

Site BVPo011-IF1 is an isolated find that consists of two historic artifacts identified in STP B23 and a radial (Figures 6.75, 7.131 to 7.135; Photograph 7.73). It was identified during systematic pedestrian survey and shovel testing of segment PAPo011 at MP 32.71, west of Raccoon Creek Road. The site is located on a middle hillslope, west of a floodplain and Raccoon Creek. Deciduous trees cover the landscape, with thick brush dominating the area. This includes bushes, briars, vines, grasses, and flowering plants. A dirt road is located approximately 15-meters (49.2-

feet) away from the isolated find. The total area of the isolated find is 64 sq. meters (688.89 sq. feet).

Photograph 7.73: View of 36BV/067, facing south.

The soil profile at STP B23 revealed a 0.40-meters (1.3-feet) thick brown (10YR4/3) or dark yellowish brown (10YR3/4) silt loam Ap-horizon underlain by a yellowish brown (10YR5/4 or 10YR5/6) thick silt loam B-horizon. The assemblage is characterized by two sherds of window glass. The material was recovered from one shovel test pit, STP B23, and one radial, STP B23 + 5 meters east. Artifacts were recovered from the Ap-horizon. Additional radials (n=7) within the transect grid were negative.

The assemblage is defined as architectural based on two window glass sherds (one aqua and one colorless). The colorless window glass fragment has a thickness of 1.73 mm (0.07 inches), while the aqua window glass fragment has a thickness of 1.88 mm (0.07inches).

Isolated find 36WH/067 does not meet PHMC site criteria. AECOM recommends that 36WH/067 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV0397 (AECOM-BVPo004-FC1)

Site 36BV0397, a farmstead complex, consists of four foundations and a low density artifact scatter. The site was identified during systematic pedestrian survey and shovel testing of segment PAPo004 of the Houston-Monaca Line near MP 37.72, west of Raccoon Creek and Raccoon Creek Road (Figures 6.75, 7.136 to 7.140; Photograph 7.74). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is located on a

terrace, uphill from a floodplain and at the base of a slope from a second terrace. Sparse deciduous trees describe the landscape, with an understory consisting of a mix of sparse leaf litter, grasses, and shrubs. Raccoon Creek Road is located approximately 25-meters (82-feet) east of the site. The total site area is 8,436 square meters (90,804 square feet).

Photograph 7.74: View of 36BV0397, facing southeast.

The farmstead complex dates to the nineteenth century (Ames and Barker 1860) and was in use throughout the twentieth century. Aerial photography of the area from 1939, 1958, and 1967 confirms the presence of the farm during this time. The twentieth century farmstead complex is likely associated with the St. Joseph Lead Company Experimental Farm. The St. Joseph Lead Company constructed a zinc smelter within Monaca, PA in 1931 (St. John Lead Co. 1964) and operated it until it was bought out by Horsehead Corporation sometime after 1987 (McKee 1992). The St. Joseph Lead Co. operated a 470-acre experimental farm in an attempt to prove that, "you could have productive farming in the shadow of a major manufacturing plant." The livestock raised at the farm was then butchered and served in the company cafeteria every month (Tronzo 1987). The removal of this farmstead complex occurred sometime between 1969 and 1993, as is evidenced by further aerial photography.

Foundation 1 is a cement pad that was approximately 5.80 meters (19.00 feet) wide by 8.34 meters (27.35 feet) long (Photograph 7.75). The foundation, the southernmost at Site 36BV0397, was approximately 50 meters (164 feet) west of Raccoon Creek Road. The foundation was mostly visible at ground surface. Moss and industrial waste material covered parts of the feature. A young tree was growing from the southeast corner of the pad. A cement footer surrounded the foundation and extended a small distance above the feature floor.

Photograph 7.75: View of Foundation 1 at 36BV0397, facing southeast

Foundation 2 has three poured concrete walls with a cut stone slab roof (Photograph 7.76). An iron pipe extended vertically from the northwest corner of the roof. The stone slab appeared to be in two pieces, separated by the pipe. The slab to the west of the iron pipe appeared to be larger and extended west of the cement walls. The other slap was smaller and covered the majority of the structure. The structure was built into the east facing slope with the opening on the east side of the structure. The aboveground dimensions of the feature were approximately 2.63 meters (8.63 feet) wide by 2.43 meters (7.97 feet) deep by 1.5 meters (4.92 feet) tall. The dimensions of the foundation were difficult to measure due to the unknown condition and stability of the structure. The southern wall of the structure was damaged and a corner was likely broken. Currently, the foundation base was filled with water making the depth and condition impossible to determine. Vegetation in the area consisted of thin trees, decaying leaves, and secondary growth shrubs. The feature was approximately 16 meters (53 feet) west-northwest of Foundation 1.

Photograph 7.76: View of Foundation 2 at 36BV0397, facing west.

Foundation 3 is a raised concrete pad approximately 22 meters (74 feet) north of Foundation 2. The pad was made from concrete reinforced with rebar and appeared to be hollow (Photograph 7.7). The dimensions of the foundation were approximately 4.83 meters (15.84 feet) wide by 6.35 meters (20.83 feet) deep by 1.00 meters (3.28 feet) tall. A tree and some secondary growth vegetation were growing on the top of the foundation. Visible damage to the foundation was present in the southeast corner of the feature. Additionally, rusted metal hardware was present at regular intervals around the edge of the foundation floor. The area surrounding the feature had moss and industrial waste material surrounding the area. The foundation was identified at the base of the slope from the upper terrace. The feature is visible from aerial photographs of the area.

Photograph 7.77: View of Foundation 3 at 36BV0397, facing northwest.

Foundation 4 was the largest of the features at Site 36BV0397. The foundation is a cement pad located approximately 5.76 meters (18.90 feet) north of Foundation 3 (Photograph 7.78). The cement pad is at ground level. Portions of the foundation exterior included small cement footers, approximately 0.15 meters (0.5 feet) tall. The cement pad was thoroughly cracked by root action and had secondary growth shrubs and some small trees growing through and around the feature. A layer of decaying leaves, sedimentation, and in some places standing water was present over much of the feature making the full size difficult to determine. The foundation was the northernmost of the features at the site and was approximately 43 meters (140 feet) west of Raccoon Creek Road.

Photograph 7.78: View of Foundation 4 at 36BV0397, facing southwest

Shovel testing within the site area revealed a 0.24-meters (0.79-feet) dark grayish brown (10YR4/2) silt loam Fill-horizon underlain by a dark yellowish brown (10YR 4/6) silty clay B-horizon. Industrial waste material (i.e. slag), similar in nature to the material found at the Josephtown Site, covered the majority of the site area and was found as a predominate component in the fill horizon of the STPs throughout the site (Dugas et al. 2014). The industrial waste was noted, but not collected.

Site 36BV0397, yielded a total of eight historic artifacts (Table 7.15). These artifacts have dates that primarily span from the late nineteenth century to the present. The assemblage consists of stoneware, window glass, bottle glass, and a nail. The material was recovered from shovel test pits A17 and B18. Artifacts were recovered from the Ap-horizon. No radial shovel tests were excavated do to consultations with the design to re-route around the historic farm complex.

Table 7.15. 36BV0397 Historic artifact summary

H/P	Group	Ceramic	Glass	Metal	Total
Historic	Household	2	3	0	5
	Architectural	0	2	1	3

Household. The Household group represents the majority of the artifacts from Site 36BV0397. Excavations recovered five household related artifacts. The assemblage includes two stoneware sherds and three glass sherds (Table 7.16).

Table 7.16. 36BV0397 Ceramic artifact summary

Group	Object	Prime Decoration	Begin Date	End Date	Total

Household	Stoneware, tan body fragment	Albany-type slip, exterior	1805	1925	1
Household	Stoneware, tan body fragment	Albany-type slip, interior and exterior	1805	1925	1
Grand Total					2

The two body sherds of stoneware represent two separate vessels (Photograph 7.79). However, both are decorated with an Albany-type slip glaze. On one sherd, the glaze is located exclusively on the exterior, while on the other sherd the glaze is located on both the exterior and interior. Albany slip glaze was popular during the nineteenth century and continued to be produced into the twentieth century (Raycraft and Raycraft 1990:10; Ramsey 1939: 21-22, 59). According to Raycraft and Raycraft, the Albany-type slip glaze became less popular after 1910, and has a terminal date of 1925. These two sherds therefore provide a date range of 1805 to 1925.

Photograph 7.79: Representative ceramic from 36BV0397

Three pieces of historic glass are also represented within the Household group (Table 7.17). Two of the sherds are colorless and machine made. They most likely belong to the same vessel, as they have a similar appearance and were recovered from the same STP. The third sherd is amber and machine made, with a ghost seam running near the bottle seam line. The ghost seam indicates that the bottle was possibly formed from the blow-and-blow glassmaking process. It therefore was manufactured from either a semi- or fully machine-made bottle process (Lindsey 2016). The three sherds of bottle glass therefore represent two vessels and produce a date range of 1874 to the present.

Table 7.17. 36BV0397 Glass Artifact Summary

Group	Object	Manufacture Technique	Begin Date	End Date	Total
Household	Bottle glass, amber	Machine Made	1874	2016	1
Household	Vessel glass, colorless	Machine Made	1874	2016	2
Grand Total					3

Architecture. The Architecture group contains three artifacts in total. The assemblage is comprised of two window glass sherds (one aqua and one colorless) and one nail fragment. The colorless window glass fragment has a thickness of 1.93 mm (0.08 inches), while the aqua window glass fragment has a thickness of 1.48 mm (0.06 inches). No dates can be derived from the window glass sherds. One nail fragment was also recovered from Site 36BV0397.

This section of the APE has been re-aligned to avoid the resource. Therefore, AECOM recommends that no further investigations at Site 36BV0397 are necessary unless design plans change. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction.

36BV0095 (AECOM-BVPo011-NA2)

Site 36BV0095 is a previously identified open habitation, Native American site situated on terraces and a floodplain of Raccoon Creek. The boundary for the previously identified site is approximately 4.77 hectares (11.8 acres). A portion of 36BV0095 (floodplain and T1 terrace) is part of pipeline alignment that is a proposed HDD location and will not be impacted (Figures 6.75, 7.141 to 7.143 Photographs 7.80 and 7.81). As a result, the systematic pedestrian survey and shovel testing was completed only within the area of proposed open cut and the T2 terrace, along survey segment Po011 at Houston to Monaca MP 32.80. At present, the 36BV0095 was a short grass open field. Review of historic aerials until present identified large portions of the site potential disturbed from disturbance to maintain the landscape as a recreational area. It was predicted that the uppermost deposits of the site had been disturbed in the area of the proposed pipeline corridor.

Photograph 7.80: View of 36BV0096 and Raccoon Creek terrace, facing southeast

Photograph 7.81: View of 36BV0096 and Raccoon Creek flood plain and terrace, facing north

The soil profiles at 36BV0095 are variable as a result of severe impacts to the T2 terrace. Areas of heavy disturbance are with the proposed workspace, corridor, and to areas to the west. To the east, soils are a mosaic of fill-related and intact soil deposits. Only a small cluster (*n*=3) of Native American artifacts and a scatter (*n*=5) of historic artifacts were recovered and did not demonstrate any sort of patterning. All cultural materials were recovered from fill deposits.

Prehistoric artifacts recovered include three chert flakes recovered in three shovel tests. The historic artifacts provide a date range that spans from the late nineteenth century to the present. The assemblage consists of vessel glass, a nail, and a bottle base fragment (Table 7.18). The artifacts were recovered from four shovel test pits within the Fill-related deposits.

Table 7.18. 36BV0095 Historic artifact summary

H/P	Group	Glass	Metal	Total
Historic	**Household**	3	0	3
	Architectural	0	1	1
	Indeterminate	1	0	1

Prehistoric Period

Debitage. Two flakes at 36BV0095 were recovered from STPs D36 and D40. The flake from STP D40 was the distal fragment of a tertiary flake. The flake was small, indicating a later stage reduction but the platform was missing. The flake was made from an unidentified gray mottled chert variety. The artifact recovered from STP D36 was the distal fragment of a late-stage reduction flake. The flake was slightly reddened indicating potential heat treatment. The chert was bisected into brown and tan sides with fossil inclusions in the tan section of the flake. No cortex remained. No retouch was present on either of the flakes.

The flake fragment was recovered from STP C23. No radial STPs were excavated around STP due to the integrity of deposits. The artifact was a distal flake fragment that had been snap fractured. The flake is thick indicating an early to middle stage reduction flake. The material used to create the flake was Upper Mercer Chert. No distinguishing characteristics are present on the flake including retouch, heat treatment, or flake scars. The flake is potentially a piece of reduction shatter.

Historic Period

Household. The Household group is made up of three glass sherds, two colorless and one green. The glass sherds represent three separate vessels. The lime green bottle base is most likely from a modern bottle. According to the Historic Glass Bottle Identification & Information Website, this very bright green is "almost exclusively a 20th century feature," although it was present at the end of nineteenth century (Lindsey 2016). The bottle base also has parison mold lines, indicating that the bottle is either semi- or fully-machine made. It therefore produces a date range of 1890 to the present.

Photograph 7.82: Representative glass from 36BV0095

Architecture. The Architecture group contains one artifact in total. One nail was recovered from 36BV0095. Because it is too rusted, no diagnostic features can be identified and no dates can be provided.

Portions of 36BV0095 (flood plain and T1 terrace) are part of a proposed HDD location corridor and will not to be impacted. Therefore, AECOM recommends that no further investigations are necessary unless design plans change. Based on the lack of integrity of and post-depositional modifications to 36BV0095, AECOM recommends that proposed impacts within the APE do not contribute to the eligibility of the larger site. AECOM does recommend an avoidance plan for any landscape clearing or construction-related activities associated with pipeline construction that may impact potential preserved areas (e.g., flood plain) of Site 36BV0095.

36BV0096 (AECOM-BVPo004-NA1)

Site 36BV0096 is a previously identified open habitation, Native American site situated on a high terrace overlooking Raccoon Creek. The site was evaluated during systematic pedestrian survey and shovel testing of survey segment PAMo004 (Figures 6.75, 7.144 to 7.146; Photograph 7.83). This location has been subject to realignment and no impacts are proposed to this locality. Local vegetation is invasive grass and scrub brush species on a broad terrace. Current shovel testing extended the boundaries of the previously identified site to approximately 1.57 hectares (3.87 acres), bound by natural topographic boundaries.

Photograph 7.83: View of 36BV0096, facing west.

Shovel testing on the terrace at STP A3 revealed a deep 0.41 meter (1.35 feet) dark brown (10YR 3/3) fine sandy silt loam Ap-horizon underlain by a brown (7.5YR 4/4) fine sandy silt loam with trace clay BC-horizon extending to 0.73 meters (2.40 feet) followed by a brown (7.5YR 4/4) fine sand C-horizon. The soil packages decreased in thickness closer to the eastern edge of the terrace. Soils west of STP A3 in Segment PAPo005, outside of the site boundary, were disturbed, exhibiting Fill horizons with up to 40 percent slag and push piles appearing with decreasing distance to the western slopes.

The artifact assemblage included 17 artifacts from 12 shovel tests. The Native American assemblage included debitage and a biface base (Table 7.19). The historic assemblage included one whiteware sherd. All artifacts were recovered from the relatively deep Ap-horizon soils.

Table 7.19. Prehistoric artifact assemblage at 36BV0096

H/P	Group	Chert	Chalcedony	Total
Prehistoric	**Debitage**	14	1	**15**
	Tool	1	0	**1**

Debitage. The debitage assemblage from 36BV0096 included a total of 15 flakes (Photograph 7.84). Of the flakes, 14 are chert materials divided into five varieties and one is a potential chalcedony flake. The five varieties of cherts include three unidentified gray chert varieties, a Flint Ridge chert flake, and a potential Upper Mercer chert flake.

Photograph 7.84: Flaked stone debitage from 36BV0096

The debitage group included 14 tertiary flakes and one decortication flake. The decortication flake is large with greater than 80 percent cortex remaining on the dorsal surface. The flake has impurities in the ventral surface that created an uneven fracture plane. The decortication flake may be naturally created. Of the tertiary flakes, four are complete flakes, five unidentified flake fragments including one piece of flake shatter, one mesial fragment, two proximal fragments, and two distal fragments. One tertiary flake has a facetted platform and pronounced bulb of percussion indicating hard hammer percussion. None of the flakes show evidence of retouch. One flake is reddened and one flake has a potential potlid fracture, indicating thermal alteration.

Tool. One chipped stone tool was recovered within the site. The artifact is an Adena Stemmed projectile point base (Photograph 7.85). Adena Stemmed points typically date within the Early Woodland Period, but may extend from the Late Archaic to the Hopewell period (2,800-2,100 B.P.) (PHMC 2016). The Adena Culture is centralized around the Ohio River Valley and extends into other parts of the Middle Atlantic region. Many of the larger Adena Stemmed points are believed to function as knives more than projectiles (Fogelman 1988:155). The artifact was recovered from STP A6 within the Ap-horizon.

Photograph 7.85: Broken chert biface from 36BV0097

The projectile point found within the site is a base fragment that has a snap fracture just above the hafted area. This is a common breaking point and indicated an impact break. The projectile point is 29.95 mm (1.18 inches) wide at the blade, 19.41 mm (0.76 inches) wide at the top of the stem, 13.21 mm (0.52 inches) wide at the base of the stem, and 8.20 mm (0.32 inches) thick. The stem is contracting with a flat to slightly convex base. The shoulders above the haft are slightly wider than the stem. Little to no grinding was observed along the hafted surface.

Household. The Household group comprises the entirety of the historic assemblage, and is made up of one whiteware sherd. Because it is refined earthenware one can assume that this originates from some type of tableware or teaware. Whiteware became popular in the U.S. beginning in 1820 and continues to the present (des Fontaines 1990:4).

The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. Therefore, AECOM recommends that no further investigation or avoidance is needed at 36BV0096. If design plans change, additional archaeological testing may be required.

36BV0011

Site 36BV0011, is an open-air, Native American site. The resource was previously permitted for the Proposed Petrochemical Complex (ER# 2013-2037-007) and determined to be not eligible (Figure 6.77; Photograph 7.86). Site 36BV0011 has been impacted by construction-related activities.

Photograph 7.86: View of 36BV0011, facing north.

36BV0010

Site 36BV0010, Bald Head Mountain, is a multi-component Early Archaic and Woodland period site. The resource was previously permitted for the Proposed Petrochemical Complex (ER# 2013-2037-007) and determined to be not eligible ((Figure 6.77). Site 36BV0010 has been impacted by construction-related activities.

PROPOSED SCIO TO MONACA LINE

36BV/059 (AECOM-BVGr003-IF1)

Resource 36BV/059 is an isolated find consisting of three historic artifacts. It was identified during systematic pedestrian survey and shovel testing of segment PAGr003 (Figures 6.83, 7.153 to 7.157; Photograph 7.87). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is located within a cow pasture. The pasture is clear of tree cover, with grass and sporadic shrub bush.

Photograph 7.87: View of 36BV/059, facing northeast.

Shovel testing revealed a 0.28-meters (0.9-feet) thick dark yellowish brown (10YR3/4) silt loam Ap-horizon underlain by a yellowish brown (10YR5/4) silt loam B-horizon. Artifacts were recovered from the Ap-horizon. Survey results yielded a total of three historic artifacts from a single STP, C61. A date acquired from one of the artifacts produced a mid to late nineteenth century date. The assemblage consists of coarse earthenware, ironstone, and brick.

Household. The Household group is comprised of one coarse earthenware sherd and one ironstone sherd (Photograph 7.88). Because coarse earthenware encompasses a large span of time in the U.S., beginning in the 1600s (Miller et al 2000:11), and because the artifact represented is a small sherd, an accurate date range cannot be produced from this artifact.

Photograph 7.88: Representative ceramic from 36BV/059

The ironstone sherd is plain and lighter bodied. It is not thick like the majority of the older ironstone. According to Majewski and O'Brien (1987:124), thin-bodied ironstone was popular from 1880-present. It is therefore possible that this sherd dates to this time period.

The coarse earthenware sherd represents one ceramic vessel. The ironstone sherd represents one ceramic vessel. In total, there are a minimum of two ceramic vessels present in this assemblage.

Architecture. One brick fragment is associated with the Architecture group within 36BV/059.

Isolated find 36BV/074 does not meet PHMC site criteria. The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. As a result, additional information to assess the resource may not have been fully completed. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

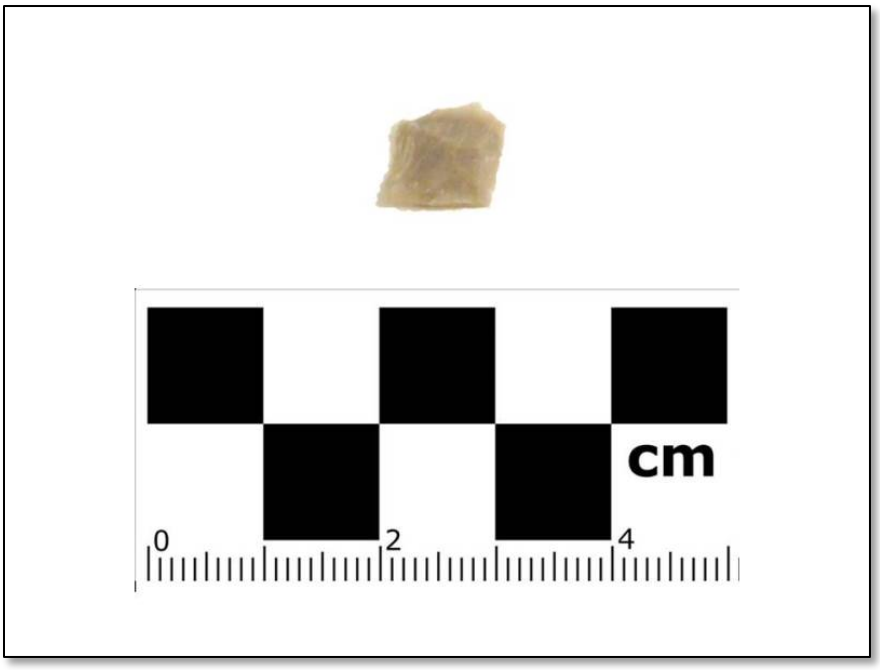
36BV/062 (AECOM-BVGr015-IF1)

Resource 36WH/062 is a prehistoric isolated find during systematic pedestrian survey and shovel testing of survey segment PAGr015 near MP 41.23. The site is located at the eastern edge of a wooded, upland ridge. An unnamed tributary of Mill Creek was present at the base of the slope to the east. Evidence of logging activity is present near the site location including a potential logging road and cut trees.

Despite evidence of logging activity around 36WH/062, soils remained intact. The isolated find was recovered from STP C22, comprised of 0.16 meter (0.52 feet) brown (10YR 4/3) silt loam

Ap-horizon underlain by at yellowish brown (10YR 5/4) silt loam B-horizon. The artifact was recovered from the Ap-horizon. Radial STPs were excavated around the positive STP, however, produced negative results.

The artifact is described as a single chert flake (Photograph 7.89). The chert was light gray with slight translucence when held to the light. The chert variety remains unidentified. The debitage assemblage included a complete, tertiary flake. No cortex remained and no heat treatment was visible. The platform was faceted with a diffuse bulb of percussion potentially indicating soft hammer percussion. A small amount of the side of the flake may have broken off post-depositional. No retouch was visible on the flake. The flake is thin, but it does not appear to be a biface resharpening flake based on the angle of the platform.



Photograph 7.89: Flaked stone debitage from 36BV/062

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV/060 (AECOM-BVGr004-IF1)

Resource 36BV/059 is an isolated find consisting of two historic artifacts from a single STP. It was identified during systematic pedestrian survey and shovel testing of segment PAGr004, west of Hill Road. The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is located on a hilltop within a cow pasture less than 20-meters (65.6-feet) from Hill Road and along a utility corridor.

On site soil association consisted of Guernsey silt loam at Site BVGr004-IF1 (USDA Soil Survey Staff). Shovel testing at STP D78, revealed a 0.38 meter (1.2 feet) thick dark yellowish brown (10YR 3/4) silt loam Ap-horizon underlain by a yellowish brown (10YR5/4) silt loam B-horizon.

Shovel testing of STP D78 yielded a total of two historic artifacts. These artifacts have dates that span from the early nineteenth century to the late nineteenth century. The assemblage is characterized by one cut nail and one pipe bowl fragment. Both artifacts were recovered from the Ap-horizon.

Architecture. The Architecture group contains one artifact, a cut nail (Photograph 7.90). The nail is a Type B cut nail, as the head was not hand finished. The date range for the cut nail is 1805 to ca. 1900 (Smith 1975:5-7; Nelson 1968:6).

Photograph 7.90: Cut nail from 36BV/060

Personal. One ceramic sherd was recovered in association with the Personal group. The sherd is small and has a buff white appearance. The ceramic is likely a pipe bowl fragment, possibly produced from kaolin clay (Photograph 7.91). In the United States, kaolin pipes date from the early seventeenth century to the late nineteenth century, ca. 1700- ca. 1900 (Oswald 1975). In addition, there appears to be char marks along the interior of the pipe bowl fragment.

Photograph 7.91: Pipe bowl fragment from 36BV/060

Isolated find 36BV/074 does not meet PHMC site criteria. The proposed pipeline impacts to the resource have been subject to realignment and no impacts are proposed to the locality. As a result, additional information to assess the resource may not have been fully completed. If design plans change, additional archaeological testing and/or background research may be required and will be reported in a later addendum report.

36BV0394 (AECOM-BVGr015-HS1)

Site 36BV0394 consists of a fire feature (Feature 1) that includes low density historic and modern artifact scatter. It was identified during systematic pedestrian survey and shovel testing of segment PAGr015 at Houston to Monaca MP 41.22, east of Main Street. (Figures 6.85, 7.166 to 7.170; Photograph 7.92). The site is located at the base of a hill in an agricultural field. Deciduous trees and a wetland border the site to the south. Tall grasses, briars, and bushes characterize the landscape. The feature is at the location of the Hookstown Fairgrounds.

Photograph 7.92: View of 36BV0394, facing east.

Feature 1 was identified within shovel test E100 and consists of a thin ash layer. The ash layer was 0.02-meters (0.07-feet) thick and consisted of a greasy texture. The soil profile is described as 0.17-meter (0.56-feet) very dark grayish brown (10YR3/2) and very dark gray (10YR3/1) silt loam A-horizon. This was underlain by a black (10YR2/1) ash layer (Feature 1) that reached a depth of 0.19-meters (0.62-feet). The last stratum was a light yellowish brown (10YR6/4) silt loam B-horizon.

Feature 1 deposits consisted of historic artifacts within the thin ash deposit (Photograph 7.93). These artifacts have dates that primarily span from the late nineteenth century to the present. The assemblage is characterized by glass, an ammunition shell, and barbed wire. Plastic was also identified, and substantially discarded from the ask deposit. Radials (*n*=8) were excavated, but produced negative results.

Photograph 7.93: Profile of Feature 1 at 36BV0394, facing north.

Arms. Excavations recovered one shotgun shell base within the Arms group. The shotgun shell base is brass and measures 21.96-millimeters (0.86-inches) with a 10.98-millimeters (0.43-inches) diameter. In addition, the base is machine press-stamped with, "NITRO EXPRESS 12 GA." According to Frank C. Barnes and John T. Amber (1972), Nitro Express cartridges were first produced in 1898. Therefore, the shotgun shell produces a date range of 1898 to the present.

Hardware. Two barbed wire fragments were recovered in association with the Hardware group (Photograph 7.94). According to Turner (1969:5-6), barbed wire has a beginning date of 1874, and continues to the present. This date coincides with the approval of Joseph F. Glidden and Isaac L. Ellwood's barbed wire patent. These fragments therefore produce a date range of late nineteenth century to the present.

Photograph 7.94: Barbed wire from 36BV0394

Indeterminate. One small, colorless glass sherd was recovered in association with the Indeterminate group. This group is reserved for artifacts that do not fit into one of the other groups, or cannot be identified and attributed to the appropriate category. The glass sherd lacks diagnostic features for dating.

The feature does not exhibit the characteristics of a formal hearth feature, but rather a closer association to a refuse burn pit. It is unclear if the feature is associated with the fairgrounds or with general maintenance of the landscape. Modern items (i.e., plastic) and the wide-temporal range of the historic artifacts do suggest that this feature is modern. AECOM recommends 36BV0394 as not eligible for listing on the NRHP and no further investigation or avoidance is needed.

36BV/061 (AECOM-BVGr012-IF1)

Site 36BV/061 is a Native American isolated find consisting of a single fragment of debitage. It was identified during systematic pedestrian survey and shovel testing of segment PAGr012 west of an unnamed tributary of Mill Creek near MP 41.32. The resource is located within a narrow floodplain of the tributary in a cleared field. The artifact was identified approximately 10 meters (32.81 feet) from a culvert and access road crossing the creek bed.

STP D13 revealed a 0.11 meter (0.36 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/6) silt loam B-horizon. The artifact was recovered from the Ap-horizon. Radial shovel tests produced negative results.

The artifact was a single, chert flake. The flake was small, somewhere between secondary and tertiary reduction, with a thick body. The dorsal side had a single ridge from previous flake scars. The chert was a medium to dark gray with one corner lighter. The chert variety was unidentified. No retouch, heat treatment, or cortex was present.

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV/069 (AECOM-BVSh001-IF1)

Resource 36BV/069 is a Native American isolated find consisting of one flake fragment. The site was identified during systematic pedestrian survey and shovel testing of survey segment PASh001 at Houston to Monaca MP 44.03, east of the border between Greene and Shippingport Townships. The site is located within an upland area used for an abandon orchard.

STP C10 revealed a 0.35-meters (1.15 feet) thick dark grayish brown (10YR 4/2) silt loam Ap-horizon underlain by a yellowish brown (10YR 5/4) silt loam Bt-horizon. The flake fragment was recovered from the Ap-horizon. Radial STPs produced negative results.

The artifact is a distal flake fragment with a snap fracture at the mesial side and a hinge fracture at the distal side (Photograph 7.95). The chert material was unidentified with a greenish-gray coloration. The flake was late-stage reduction based on the size and the lack of cortex/presence of flake scars on the dorsal surface.

Photograph 7.95: Flaked stone debitage from 36BV/069

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV/068 (AECOM-BVSh001-A-IF1)

Resource 36BV/068 is a Native American isolated find consisting of one biface fragment. The site was identified during systematic pedestrian survey and shovel testing of segment PASh001-A at Houston to Monaca MP 44.85. The site is located in the northeast corner of the agricultural field on the broad hilltop.

The Native American biface fragment was recovered from STP B15. The STP profile consisted 0.30 (0.98 feet) brown (10YR 4/3) silt loam Ap-horizon underlain by strong brown (7.5YR 4/6) silt loam B-horizon. The artifact was recovered from the Ap-horizon. Radial STPs produced negative results.

The artifact is a chert biface flake. The fragment was likely flaked off from a biface, but it is possible that it is a fragment of a core that was flaked to prepare a new platform. The dorsal surface has a prominent ridge with flake scars on both sides, potentially the previous working edge of the biface. It appears that the ridge was used as a guide for removal of the flake. This may have been done for resharpening purposes. The material is a dark gray, unidentified variety of chert with light brown impurities. No retouch was identified post flake removal. The ventral surface has a slight helix shape. The flake was intentionally removed from a core or biface as a method of preparing future flaking surfaces.

Resource 36WH/077 is a non-diagnostic isolated find that does not meet PHMC site criteria. Therefore, AECOM recommends that 36WH/077 is not eligible for listing in the NRHP and no further investigation or avoidance is warranted.

36BV0399 (AECOM-BVSh001-HS1)

Site 36BV0399 is a historic artifact scatter. It was identified during systematic pedestrian survey and shovel testing of segment PASh001 (Figures 6.91, 7.180 to 7.184; Photograph 7.96). The locality is within a section of the corridor that has since been realigned and will no longer be impacted. The site is located in an open field. Deciduous trees and a wooden fence border the northern edge of the site. Green Hill Road is located less than 40-meters (131.2-feet) south of the site area. The site encompasses an area of approximately 14.5-meters by 16.5-meters (47.6-feet by 54.1-feet).

Photograph 7.1: View of 36BV0399, facing east.

Results of the survey identified a total of six historic artifacts within five STPs (Table 7.20). STP C109 consisted of 0.30 meters (0.98 feet) thick brown (10YR 4/3) silt loam Ap-horizon underlain by yellowish brown (10YR 5/6) silt loam Bt-horizon. Artifacts were recovered from the Ap-horizon. These artifacts have dates that span from the mid-nineteenth century through the twentieth century. The assemblage is characterized by ironstone, stoneware, a metal washer, and bottle glass. The material was recovered from one shovel test pit, C109, and four surrounding radials, C109 + 5 meters east, C109 + 5 meters west, C109 + 5 meters south, and C109 + 10 m west. Additional radials (n=2) were negative.

Table 7.20. 36BV0399 Historic artifact summary

H/P	Group	Ceramic	Glass	Metal	Total
Historic	Household	3	2	0	5
	Hardware	0	0	1	1

Household. The Household group represents the largest artifact grouping from 36BV0399. Excavations recovered five household related artifacts. The assemblage included three ceramic sherds and two glass sherds. There are two sherds of ironstone and one sherd of stoneware. The two ironstone sherds are small and undecorated. Based on their appearance, it is possible that these come from the same vessel. In addition, these sherds likely date from the mid-eighteenth century, as ironstone was prevalent in the United States beginning around 1840 and continued throughout the twentieth century (Brown and Bewick 1982:6).

The stoneware ceramic within the assemblage has a Bristol-type slip, which was common on jars, crocks, and jugs from 1880 to 1925 (Raycraft and Raycraft 1990:6). The stoneware sherd was recovered 0.20 to 0.30 meters (0.66 to 0.98 feet) below ground surface within STP C109.

The two sherds of ironstone represent one vessel. The stoneware sherd represents one vessel. In total, there are a minimum of two ceramic vessels present in this assemblage.

There are two glass fragments associated with the Household group within this assemblage. One is an amber glass sherd and the other is a colorless glass sherd. Both are vessel glass. However, the type of vessel cannot be verifiably determined. The amber sherd appears to have belonged to a square or rectangular shaped bottled (perhaps a medicine bottle). While the sherd does have an obvious seam line, it is too small to provide an accurate date range, as multi-part molds and fully machine-made bottles span a broad range of time, from the mid-eighteenth century to the present (Miller et. al 2000:8).

The colorless glass fragment has no diagnostic features for dating and, therefore, no accurate date range could be obtained.

The amber glass sherd represents one vessel, while the colorless glass sherd represents another. In total, there are two glass vessels present within this assemblage.

Hardware. One iron washer made up the entirety of the Hardware group. The washer is large, measuring 63.95 mm (2.52 inches) in diameter and weighing 63.9 grams (2.25 ounces). The washer was recovered ten meters west of STP C109, along a wooden fence-line.

The proposed pipeline impacts to Site 36BV0399 have been subject to realignment and no impacts are proposed to the locality. If design plans change, additional archaeological testing may be required.

8
Summary and Recommendations

On behalf of Shell Pipeline Company, LP, AECOM completed a Phase I archaeological survey for the proposed Falcon Ethane Pipeline System (Project). This investigation was conducted in support of a Joint Permit Application (JPA) for a Pennsylvania Department of Environmental Protection (PADEP) Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers (USACE) Section 404 and Section 10 Permits. The Project is an approximately 95-mile-long pipeline located within Ohio, West Virginia, and Pennsylvania. It is comprised of three pipeline sections: Cadiz to Scio (Ohio), Scio to Monaca (Ohio, West Virginia, and Pennsylvania), and Houston to Monaca (Pennsylvania).

In Pennsylvania, the Project area is primarily comprised of mixed deciduous and regenerating forest, agricultural land, existing rights-of-way, and reclaimed strip mines. The southern terminus of the proposed Houston to Monaca line is located approximately one mile southeast of Westland, Pennsylvania in Washington County, then traverses in a general northward direction through Washington County, western Allegheny County, and into Beaver County, terminating approximately four miles southwest of Monaca, Pennsylvania. The Scio to Monaca line runs from the Pennsylvania/West Virginia border and traverses east through Beaver County until the eastern terminus ties into the Houston to Monaca line.

The Project in Pennsylvania consists of the installation of approximately 68.9 kilometers (42.8 miles) of new liquid ethane pipeline within new and existing right-of-way (ROW) in Washington, Allegheny, and Beaver Counties. The Project includes a 15 meter (50-foot) permanent right-of-way and a 15-meter (50-foot) temporary construction workspace for a nominal 30-meter- (100-foot-) wide construction corridor. Some areas will require an additional 7.6 meters (25 feet) of temporary workspace totaling to a 38-meter- (125-foot-) wide construction corridor. The Project also consists of approximately 29.8 kilometers (18.5 miles) of access roads, a 4-hectare (10-acre) compressor station. A total area of temporary and permanent ground disturbance is approximately 895 hectares (~2,435 acres).

The area of potential effects (APE) includes locations not only defined as USACE jurisdictional areas (e.g., streams, wetlands, and associated buffers), but, at the request of the PHMC (see below), all areas of project-related ground disturbance (i.e., workspace and access roads) within the study corridor, or limits of disturbance (LOD). Based on current project design as of August 2016, direct effects will be contained within an archaeological study corridor that is no more than 30.5 meters (100.0 feet) in width and 68.9 kilometers (42.8 miles) in length. The LOD also includes any additional temporary and horizontal directional drilling (HDD) workspace, comprising of a project total of approximately 895 hectares (~2,435 acres). Archaeological survey has been completed along 68.9 kilometers (42.8 miles) along the centerline, 100 percent of the total project length. This includes approximately 895 hectares (~2,435 acres) of pedestrian survey, with 301 hectares (744 acres) of that area also covered by shovel-testing. A total of 19,609 shovel test pits were excavated. Since August 2016, portions of the proposed alignment have been re-routed and will be reported in an addendum in 2017.

Phase I survey identified ten archaeological sites, twelve isolated finds, and three modern resources within the APE. The table below is a summary of AECOM's evaluation of National Register of Historic Places (NRHP) eligibility and recommendations (Table 8.1). Five of the archaeological sites (36WH1737, 36WH1736, 36WH1739, 36BV0395, and 36BV0010) and all twelve isolated finds, and three modern resources within the APE are recommended as not eligible for listing in the NRHP; therefore, no further work is recommended. Three resources (36WH0157, 36BV0019, and 36BV0095) identified within the APE were determined that there was insufficient data to evaluate the larger site. However, significant disturbance and/or negative results were recorded during archaeological testing of those localities within the APE. AECOM recommends that portions of those sites within the APE will not to contribute to the eligibility of the larger site and therefore, no further investigations of the portions of the sites within the APE are needed. Two of the archaeological sites (36WH1718 and 36AL0716) within the APE are potentially NRHP eligible. Design plans of these two site locations are contained within proposed horizontal directional drilling (HDD) locations; thus, will not be impacted. AECOM recommends the development of an Avoidance Plan for these locations that includes the culturally sensitive area to be marked on construction plans, fenced with high-visibility orange fencing during constructions, and monitored during construction to prevent unintentional damage.

Table 8.1: Recommendations for Archaeological Resources within the APE

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH0157	Houston-Monaca 4.45	Native American / Habitation	Insufficient Data, Non-Contributing	No further investigation or avoidance needed	Portion within the APE does not contribute to NRHP eligibility of the larger site
36WH1737	Houston-Monaca 5.05	Historic / Early to Middle 20th-century Farmstead Foundation	Not Eligible	No further investigation or avoidance needed	Demolition / Lack Depositional Integrity
36WH1718	Houston-Monaca 5.49	Historic / Early 20th-century Mining Complex	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	A and D; UMWA Labor Strikes/Violence in 1920s; African American
36WH1736	Houston-Monaca 5.71	Historic / Domestic	Not Eligible	No further investigation or avoidance needed	Lacks Depositional Integrity
36WH1739	Houston-Monaca 7.64	Historic / Domestic	Not Eligible	No further investigation or avoidance needed	Lacks Depositional Integrity
36AL0716	Houston-Monaca 16.8	Historic / Domestic	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	D; Historic Farmstead

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36BV0019	Houston-Monaca 23.95	Native American / Habitation	Insufficient Data, Non-Contributing	HDD Location / No further investigation or avoidance needed	Portion within the APE (HDD Workspace) does not contribute to NRHP eligibility of the larger site
36BV0395	Houston-Monaca 25.81	Historic / Foundation	Not Eligible	No further investigation or avoidance needed	Repurposed Foundation / Lacks Depositional Integrity
36BV0095	Houston-Monaca 32.80	Native American / Habitation	Insufficient Data, Non-Contributing	No Adverse Effect / HDD Location - Avoidance Plan	Portion within the APE does not contribute to NRHP eligibility of the larger site; Lacks Depositional Integrity
36BV0010	Houston-Monaca 33.90: Shell Cracker Terminus	Native American / Habitation	Not Eligible	No further investigation or avoidance needed	Previously Permitted by URS-AECOM / ER No. 2013-2037-007
ISOLATED FINDS					
36WH/075	Houston-Monaca 0.80	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36WH/078	Houston-Monaca 2.80	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36WH/079	Houston-Monaca 3.66	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36WH/076	Houston-Monaca 4.15	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36WH/077	Houston-Monaca 4.57	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/064	Houston-Monaca 23.86	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36BV/063	Houston-Monaca 26.60	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/067	Houston-Monaca 32.71	Historic / Isolated Find	Not Eligible	No further investigation or avoidance needed	Does not meet PHMC site criteria
36BV/062	Scio-Monaca 41.23	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36BV/061	Scio-Monaca 41.32	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/069	Scio-Monaca 44.03	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/068	Scio-Monaca 44.85	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
MODERN RESOURCES					
ALFi005-ST1	Houston-Monaca 14.88	Modern / Structure	Not Eligible	No further investigation or avoidance needed	Modern Garage
BVRa009-PM1	Houston-Monaca 29.11	Modern / Property Marker	Not Eligible	No further investigation or avoidance needed	Replacement ; Lacks Depositional Integrity
36BV0394	Scio-Monaca 41.22	Modern / Feature	Not Eligible	No further investigation or avoidance needed	Modern Feature

Four archaeological sites and one isolated find were identified outside of, but adjacent to the APE. These resources are summarized in the table below (Table 8.2). AECOM recommends that one isolated find (36BV/065) is not eligible for listing in the NRHP; therefore, no further investigation or avoidance measures are necessary. AECOM identified that one archaeological site (36AL0715) resulted in insufficient data to assess eligibility. There will be no adverse effect to this resource, therefore, AECOM recommends no further investigation or avoidance is needed. AECOM identified that three of the archaeological sites (36WH1738, 36BV0398, and 36BV0397) are potentially eligible for listing in the NRHP. AECOM recommends that no further investigation or avoidance is needed However, the development of an Avoidance Plan for these resources that includes the culturally sensitive area to be marked on construction plans, fenced with high-visibility orange fencing during constructions, and monitored during construction to prevent unintentional damage.

Table 8.2: Recommendations for Archaeological Resources Adjacent to the APE

PHMC or AECOM #	Mile Post (160613)	Cultural Affiliation / Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH1738	Houston-Monaca 5.31	Historic	Potentially Eligible; Insufficient Data	No Adverse Effect / HDD Location - Avoidance Plan	D; Historic Farmstead

36AL0715	Houston-Monaca 17.80	Native American	Insufficient Data	No Adverse Effect / No further investigation or avoidance needed	
36BV0398	Houston-Monaca 32.56	Native American / Habitation	Potentially Eligible	No Adverse Effect / HDD Location - Avoidance Plan	D; Diagnostic Artifacts/Native American Hearth Feature
36BV0397	Houston-Monaca 37.72	Historic / Industrial and Domestic	Potentially Eligible	No Adverse Effect / Avoidance Plan	D; St. Joseph Lead: Experimental Farm; 19th century Farmstead
ISOLATED FINDS					
36BV/065	Houston-Monaca 24.49	Native American / Isolated Find	Not Eligible	No further investigation or avoidance needed	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria

Eight archaeological sites, four isolated finds, and 3 modern resources were identified in the former study corridor or portions of the corridor that are no longer under consideration as part of the proposed alignment. These resources are located at adequate distances from the APE such that no further investigation or avoidance measures are necessary. These sites are summarized in the table below (Table 8.3).

Table 8.3: Recommendations for Archaeological Resources Outside the APE

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
ARCHAEOLOGICAL SITES					
36WH1441	Houston-Monaca: Off-Alignment	Historic / Industrial	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted / ER No. 1989-1378-042
36WH1549	Houston-Monaca: Off-Alignment	Native American / Habitation	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted / ER No. 1989-1378-042
36BV0396	Houston-Monaca: Off-Alignment	Historic / Domestic	Insufficient Data	No Effect/Off-Alignment - No Further Work	
36BV0096	Houston-Monaca: Off-Alignment	Native American / Habitation	Insufficient Data	No Effect/Off-Alignment - No Further Work	Lacks Depositional Integrity
36BV0192	Houston-Monaca: Off-Alignment	Multicomponent / Prehistoric and Historic	Potentially Eligible	No Effect/Off-Alignment - No Further Work	D; Historic Farmstead
36BV0287	Houston-Monaca: Off-Alignment	Multicomponent / Prehistoric and Historic	Not Eligible	No Effect/Off-Alignment - No Further Work	Previously Permitted by URS-AECOM / ER No. 2013-2037-007
36BV0011	Houston-Monaca: Off-Alignment	Native American / Habitation	Not Eligible	Off-Alignment - No Further Work	Lacks Depositional Integrity/Record of Disturbance
36BV0399	Scio-Monaca: Off-Alignment	Historic / Domestic	Insufficient Data	No Effect/Off-Alignment - No Further Work	
ISOLATED FINDS					

PHMC or AECOM #	Mile Post	Cultural Affiliation / Site Type	NRHP Eligibility Recommendation	Recommended Action	Justification
36WH/074	Houston-Monaca: Off-Alignment	Historic / Isolated Find	Not Eligible	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
36BV/066	Houston-Monaca: Off-Alignment	Native American / Isolated Find	Not Eligible	No Effect/Off-Alignment - No Further Work	Non-Diagnostic Isolated Find; Does not meet PHMC site criteria
36BV/059	Scio-Monaca: Off-Alignment	Historic / Isolated Find	Insufficient Data	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
36BV/060	Scio-Monaca: Off-Alignment	Historic / Isolated Find	Insufficient Data	No Effect/Off-Alignment - No Further Work	Does not meet PHMC site criteria
MODERN RESOURCES					
WHCa002-ST1	HOU-AR-01b: Off-Alignment	Modern / Structure	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Garage
WHMo004-ST1	Houston-Monaca: Off-Alignment	Modern / Feature	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Farm Feature
BVRa009-PC1	Houston-Monaca: Off-Alignment	Modern / Feature	Not Eligible	No Effect/Off-Alignment - No Further Work	Modern Pet Cemetery

APPENDIX A
Artifact Log

FS #	Provenience	Entry#	Count	H/P	Class	Material	Object	Typology	Surface/Decoration	Colors	Element	Begin Date	End Date
51	PAGr003	1	1	Historic	Ceramic	Coarse Earthenware	Tableware/Cookware	Unidentified	Unglazed		Body		
51	PAGr003	2	1	Historic	Ceramic	Clay	Brick Fragment	Unidentified			Fragment		
51	PAGr003	3	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone			Body	1880	2016
52	PAGr004	1	1	Historic	Ceramic	Clay	Pipe Bowl	Buff Body			Fragment	1700	1900
52	PAGr004	2	1	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
53	PASh001	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray/Tan	Proximal Fragment		
53	PASh001	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		gray/tan			
54	PASh001	1	1	Historic	Ceramic	Stoneware	Unidentified	Slip Glazed	Bristol-Type Slip		Body	1880	1925
55	PASh001	1	1	Historic	Glass	Glass	Bottle	Multi Part Mold or Machine made	Undecorated	Amber	Body		2016
55	PASh001	2	1	Historic	Glass	Glass	Bottle	Indeterminate		Colorless	Body		2016
56	PASh001	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone	Undecorated		Body	1840	2016
57	PASh001	1	1	Historic	Metal	Iron	Washer	Unidentified			Complete		
58	PASh001	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone	Undecorated		Rim	1840	2016
60	PAMo003	1	1	Prehistoric	Lithic	Chert	Flake	Primary		Gray	Complete		
61	PAMo003	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Proximal Fragment		

62	PAPo001	1	1	Historic	Ceramic	Stoneware	Tableware/Cookware	Salt Glazed/Slip Dipped	Undecorated		Body	1805	1930
63	PAPo001	1	1	Prehistoric	Lithic	Chert	Flake	Biface Thinning		Dark Gray/Gray	Proximal Fragment		
64	PAPo001	2	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
64	PAPo001	1	2	Historic	Ceramic	Clay	Brick Fragment	Unidentified			Fragment		
65	PAPo001	5	2	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
65	PAPo001	6	2	Historic	Glass	Glass	Window Glass			Colorless	Fragment		
65	PAPo001	1	1	Historic	Ceramic	Stoneware	Tableware/Cookware	Salt Glazed/Slip Dipped	Undecorated		Body/Base	1805	1930
65	PAPo001	2	1	Historic	Ceramic	Stoneware	Tableware/Cookware	Salt Glazed	Undecorated		Body	1705	1930
65	PAPo001	3	4	Historic	Ceramic	Clay	Brick Fragment	Unidentified			Fragment		
65	PAPo001	4	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware			Fragment	1820	2016
66	PAPo001	1	2	Historic	Glass	Glass	Vessel	Unidentified	Undecorated	Colorless	Body		
66	PAPo001	2	1	Historic	Ceramic	Refined Earthenware	Unidentified	Unidentified			Rim		
67	PAPo001	1	1	Historic	Glass	Glass	Bottle	Indeterminate	Undecorated	Colorless	Body		2016
68	PAPo001	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
69	PAPo001	1	1	Historic	Ceramic	Clay	Brick	Unidentified			Fragment		
70	PAPo001	1	1	Historic	Glass	Glass	Window Glass			Colorless	Fragment		
71	PAPo001	1	1	Historic	Glass	Glass	Bottle	Unidentified		Amber	Body		

72	PAMo003	1	1	Historic	Glass	Glass	Vessel	Unidentified	Undecorated	Blue	Body		2016
73	PAIn004	1	2	Historic	Metal	Iron	Nail	Cut or Wrought			Fragment		1900
74	PAIn004	1	1	Historic	Ceramic	Refined Earthenware	Unidentified	Ironstone	Undecorated		Body	1840	1885
75	PAIn003	1	1	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
75	PAIn003	2	1	Historic	Metal	Iron	Unidentified	Unidentified			Fragment		
76	PAIn002	1	1	Prehistoric	Lithic	Chert	Flake	Early Stage		Gray/Tan	Indeterminate		
77	PAPo004	1	1	Prehistoric	Lithic	Chert	Flake	Early Stage		Black	Complete		
78	PAPo004	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Tan	Complete		
79	PAPo004	1	3	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Fragment		
80	PAPo004	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Fragment		
81	PAPo004	1	2	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Complete		
82	PAPo004	2	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Complete		
82	PAPo004	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Red/Gray	Medial Fragment		
83	PAPo004	1	1	Prehistoric	Lithic	Chalcedony	Flake	Tertiary		Opaque White/pink	Proximal Fragment		
83	PAPo004	2	1	Prehistoric	Lithic	Chert	Projectile Point	Adena Stemmed		Dark Gray	Proximal Fragment		
84	PAPo004	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware	Undecorated		Body	1820	2016
85	PAPo004	1	1	Historic	Glass	Glass	Vessel	Unidentified	Undecorated	Colorless	Body		
86	PAPo004	1	1	Historic	Metal	Iron	Nail	Unidentified			Fragment		

86	PAPo004	2	1	Historic	Glass	Glass	Unidentified	Machine Made	Molded Pattern	Colorless		1890	2016
87	PAPo004	1	1	Historic	Metal	Iron	Nail	Unidentified			Fragment		
87	PAPo004	2	1	Historic	Glass	Glass	Vessel	Unidentified	Undecorated	Amber	Body	1874	2016
87	PAPo004	3	1	Historic	Ceramic	Stoneware	Tableware/Cookware	Slip Glazed	Albany-Type Slip		Body	1805	1920
87	PAPo004	4	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
87	PAPo004	5	2	Historic	Glass	Glass	Unidentified vessel	Machine Made	Undecorated	Colorless		1890	2016
88	PAPo004	1	1	Historic	Glass	Glass	Bottle	Machine Made	Undecorated	Green	Base	1890	2016
89	PAPo004	2	1	Historic	Ceramic	Stoneware	Tableware/Cookware	Slip Glazed	Albany-Type Slip		Body	1805	1920
89	PAPo004	1	1	Historic	Glass	Glass	Window Glass			Colorless	Fragment		
90	PAMo002	2	1	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
90	PAMo002	1	3	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
91	PAMo002	1	2	Historic	Metal	Iron	Nail	Unidentified			Fragment		
91	PAMo002	2	1	Historic	Metal	Iron	Nail	Cut			Fragment	1805	1900
91	PAMo002	3	1	Historic	Glass	Glass	Unidentified vessel	Unidentified		Colorless	Body		
91	PAMo002	4	1	Historic	Glass	Glass	Unidentified vessel	Unidentified		Colorless	Body		
92	PAMo002	1	1	Historic	Glass	Glass	Unidentified	Unidentified		Colorless	Fragment		
92	PAMo002	2	6	Historic	Metal	Iron	Nail	Unidentified			Fragment		
93	PAFi003	8	3	Historic	Ceramic	Porcelain	Tableware		Undecorated		Body/Base		2016
93	PAFi003	1	3	Historic	Glass	Glass	Window Glass			Aqua	Fragment		

93	PAFi003	2	4	Historic	Glass	Glass	Unidentified	Unidentified		Colorless	Body		
93	PAFi003	3	1	Historic	Glass	Glass	Unidentified vessel	Unidentified		Green	Body	1890	2016
93	PAFi003	4	1	Historic	Glass	Glass	Bottle			Colorless	Rim/Body		2016
93	PAFi003	5	24	Historic	Glass	Glass	Window Glass			Light green/aqua	Fragment		
93	PAFi003	7	3	Historic	Ceramic	Porcelain	Tableware		Undecorated		Rim/Body		2016
93	PAFi003	14	3	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
93	PAFi003	6	1	Historic	Ceramic	Porcelain	Button		Undecorated		Complete	1840	2016
93	PAFi003	15	4	Historic	Metal	Iron	Nail	Cut or wrought			Fragment		1900
93	PAFi003	13	9	Historic	Metal	Iron	Nail	Wire			Complete	1890	2016
93	PAFi003	12	1	Historic	Metal	Tin	Unidentified	Unidentified			Fragment		
93	PAFi003	11	1	Historic	Other	Slag	Slag				Complete		
93	PAFi003	10	1	Historic	Metal	Copper Alloy	Wire				Fragment		
93	PAFi003	9	1	Historic	Other	Leather	Leather and grommet				Fragment		2016
93	PAFi003	16	5	Historic	Metal	Iron	Nail	Unidentified			Fragment		
94	PAFi003	1	4	Historic	Other	Other	Clinker				Complete		
95	PAFi003	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone	Undecorated		Body	1840	2016
95	PAFi003	2	2	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
96	PAFi003	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		

97	PAFi003	1	1	Historic	Ceramic	Porcelain	Tableware	Unidentified	Embossed		Rim/Body		2016
98	PAFi003	1	1	Historic	Metal	Iron	Unidentified				Fragment		2016
98	PAFi003	2	4	Historic	Metal	Iron	Nail	Cut			Complete	1805	1900
98	PAFi003	4	1	Historic	Metal	Copper Alloy	Wire	Unidentified			Fragment		2016
98	PAFi003	3	3	Historic	Metal	Iron	Nail	Wire			Complete	1890	2016
99	PAMo005	1	3	Historic	Glass	Glass	Bottle	Unidentified	Undecorated	Colorless	Body		1920
100	PAMo005	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware	Undecorated		Body	1820	2016
101	PAPo005	1	1	Prehistoric	Lithic	Chert	Blade	Tertiary		Tan/Gray	Proximal Fragment		
102	PAPo005	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Dark Gray	Distal Fragment		
103	PAIn004	1	1	Prehistoric	Lithic	Chert	Flake	Secondary		Dark Gray	Complete		
104	PAPo005	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Distal Fragment		
105	PAPo005	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Dark Gray	Fragment		
106	PAPo005	1	1	Prehistoric	Lithic	Chert	Flake	Decortication		Gray	Complete		
107	PAMo003	1	1	Prehistoric	Lithic	Chert	Flake	Mid Stage		Gray/Tan	Complete		
108	PASh001-A	1	1	Prehistoric	Lithic	Chert	Biface	Biface Fragment		Gray	Fragment		
109	PAFi002	2	2	Prehistoric	Lithic	Chert	Flake	Tertiary		Pink/White	Fragment		
109	PAFi002	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Proximal Fragment		
110	PAMo005	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
111	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Early Stage		Tan	Complete		

112	PAPo011	1	1	Prehistoric	Lithic	Chert	Projectile Point	Rossville		Gray	Complete		
113	PAPo011	1	1	Prehistoric	Lithic	Chert	Scraper	Sidescraper		tan/gray	Complete		
113	PAPo011	2	2	Prehistoric	Lithic	Chert	Flake	Late Stage		gray/black	Complete		
113	PAPo011	3	2	Organic	Bone	Bone	Scapula			tan	Proximal Fragment		
114	PAPo011	1	1	Prehistoric	Lithic	Sandstone	Hammerstone			tan	Complete		
114	PAPo011	2	12	Prehistoric	Lithic	Chert	Flake	Late Stage		gray/tan/black			
114	PAPo011	3	20	Prehistoric	Lithic	Sandstone	FCR			Brown/Red	Indeterminate		
115	PAPo011	6	3	Prehistoric	Lithic	Chert	Flake	Mid Stage		Gray			
115	PAPo011	1	1	Prehistoric	Lithic	Sandstone	FCR			tan/red	Complete		
115	PAPo011	2	1	Prehistoric	Lithic	Chert	Flake	Thinning flake		tan/red	Proximal Fragment		
115	PAPo011	3	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray/tan	Distal Fragment		
115	PAPo011	4	2	Prehistoric	Lithic	Chert	Flake	Mid Stage		Gray	Complete		
115	PAPo011	5	3	Prehistoric	Lithic	Chert	Flake	Mid Stage		dark gray	Complete		
116	PAPo011	3	3	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Complete		
116	PAPo011	2	1	Prehistoric	Lithic	Chert	Flake	Mid Stage		Gray	Complete		
116	PAPo011	1	1	Prehistoric	Lithic	Sandstone	FCR			Tan/Red	Fragment		
117	PAPo011	1	3	Prehistoric	Lithic	Chert	Flake	Core Reduction Flake		gray/tan	Complete		
118	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Secondary		Tan/Yellow	Complete		
118	PAPo011	2	1	Prehistoric	Lithic	Unknown	Rock Fragment			Brown			

118	PAPo011	3	3	Prehistoric	Lithic	Chert	Flake	Tertiary		gray/tan			
119	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Tan	Medial Fragment		
119	PAPo011	2	1	Prehistoric	Lithic	Chert	Flake	Late Stage		Black	Distal Fragment		
120	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Late Stage		tan	Proximal Fragment		
121	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Primary		tan	Complete		
122	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Complete		
123	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Secondary		gray/tan	Proximal Fragment		
124	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Black	Proximal Fragment		
125	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		gray/tan	Complete		
126	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Biface Thinning		Gray/tan	Complete		
127	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Distal Fragment		
128	PAPo011	1	1	Historic	Glass	Glass	Bottle Glass			Colorless	Body		2016
128	PAPo011	2	1	Prehistoric	Lithic	Chert	Flake	Early Stage		gray/tan	Distal Fragment		
129	PAPo011	1	2	Prehistoric	Lithic	Chert	Flake	Tertiary		Black/Gray	Complete		
129	PAPo011	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		light gray	Complete		
129	PAPo011	2	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Black			
130	PAGr012	1	1	Prehistoric	Lithic	Chert	Flake	Secondary		Gray	Complete		
131	PAPo011	1	1	Historic	Glass	Glass	Window Glass			Colorless	Fragment		
132	PAPo011	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		

133	PACa003	1	1	Historic	Metal	Iron	Spike	Cut			Complete	1850	
134	PACa003	1	1	Historic	Metal	Iron	Spike	Cut			Complete	1850	
135	PACa003	1	1	Historic	Ceramic	Clay	Brick Fragment	Unidentified			Fragment		2016
136	PACa002	1	1	Historic	Glass	Glass	Unidentified			Colorless	Fragment		
136	PACa002	2	1	Historic	Glass	Glass	Unidentified			Colorless	Fragment		
137	PAMo006	1	1	Prehistoric	Lithic	Chert	Flake	Tertiary		Gray	Complete		
138	PAMo006	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware	Painted		Rim	1820	2016
139	PAMo006	2	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone	Undecorated		Rim/Body	1840	2016
139	PAMo006	1	4	Historic	Metal	Unknown	Nail	Unidentified			Fragment		
140	PAMo006	1	4	Historic	Glass	Glass	Vessel	Unidentified	Undecorated	Colorless	Body		
141	PAMo006	7	1	Historic	Glass	Glass	Bottle	Machine Made		Colorless	Base	1890	2016
141	PAMo006	1	3	Historic	Ceramic	Refined Earthenware	Unidentified	Ironstone	Undecorated		Body	1840	2016
141	PAMo006	2	1	Historic	Glass	Glass	Unidentified	Unidentified		Solorized	Body		1920
141	PAMo006	3	1	Historic	Glass	Glass	Bottle	Multipart mold or machine made		Aqua	Rim		2016
141	PAMo006	4	1	Historic	Glass	Glass	Unidentified	Unidentified		Colorless	Body		
141	PAMo006	6	1	Historic	Glass	Glass	Unidentified	Unidentified		Colorless	Body		

141	PAMo006	8	2	Historic	Ceramic	Refined Earthenware	Plate	Ironstone	Scalloped		Rim/Body	1840	2016
141	PAMo006	5	1	Historic	Glass	Glass	Unidentified	Unidentified		Colorless	Body		
141	PAMo006	9	1	Historic	Ceramic	Coarse Earthenware	Unidentified	Buff Body	Painted		Body		
142	PAMo006	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware	Undecorated		Rim	1820	2016
143	PAMo006	1	1	Historic	Metal	Unknown	Nail	Unidentified			Complete		
144	PAMo006	1	1	Historic	Glass	Glass	Lamp Glass	Unidentified		Aqua	Fragment		
145	PAMo006	1	1	Historic	Glass	Glass	Vessel	Multipart mold or machine made		Colorless	Body		
146	PAMo006	1	1	Historic	Ceramic	Refined Earthenware	Tableware	Ironstone	Undecorated		Body	1840	2016
146	PAMo006	2	1	Historic	Ceramic	Refined Earthenware	Tableware	Whiteware	Undecorated		Rim	1820	2016
146	PAMo006	3	1	Historic	Glass	Glass	Unidentified	Unidentified		Aqua	Fragment		
147	PAMo006	1	1	Historic	Ceramic	Coarse Earthenware	Pipe	Unidentified			Fragment		
148	PAMo002	2	1	Historic	Ceramic	Clay	Brick	Unidentified			Complete		
148	PAMo002	1	1	Historic	Ceramic	Clay	Brick	Unidentified			Complete		
149	PAMo004	1	1	Historic	Metal	Iron	Buckle	Unidentified			Fragment		
150	PAGr015	1	1	Prehistoric	Lithic	Chert	Debitage			Gray	Complete		
151	PAGr015	3	1	Historic	Metal	Brass	Artillery Shell	Unidentified			Fragment	1898	2016

151	PAGr015	2	2	Historic	Metal	Iron	Barbed wire	Unidentified			Fragment	1874	2016
151	PAGr015	1	1	Historic	Glass	Glass	Unidentified			Colorless	Fragment		
152	Raccoon Creek #1	1	1	Historic	Metal	Copper Alloy	Bullet				Complete		
153	Raccoon Creek #1	1	2	Prehistoric	Lithic	Chert	Debitage			Gray	Complete		
154	Raccoon Creek #1	1	1	Historic	Metal	Iron	Unidentified						
155	Raccoon Creek #1	1	1	Historic	Metal	Copper Alloy	Bullet				Complete		
156	Raccoon Creek #1	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		
155	Raccoon Creek #1	1	1	Historic	Metal	Copper Alloy	Bullet				Complete		
156	Raccoon Creek #1	1	1	Historic	Glass	Glass	Window Glass			Aqua	Fragment		

APPENDIX B
Geomorphology Report

Geomorphology Investigations along the Shell Ethane Pipeline Corridor in Pennsylvania

Prepared by

Dr. Frank J. Vento, PG-001831-G, RPA

and Thomas Vento, MS Student Geology/GIS Specialist

Quaternary Geological and Environmental Consultants, LLC.

4640 Walten Woods Drive Erie, Pennsylvania 16511

Submitted to AECOM

Pittsburgh, Pennsylvania

August 16, 2016

TABLE OF CONTENTS

Table of Contents i

1.0 INTRODUCTION 1
1.1 Predictive Model for the Pennsylvania Shell Falcon Pipeline Corridor 1
1.2 Purpose of the Geomorphology Investigation 1
1.3 Scope of Investigation for Predictive Model Development and Field Testing 1
1.4 Geomorphology Considerations 2
1.4.1 First-Order Tributaries 2
1.4.2 Second-Order Tributaries 3
1.4.3 Third- and Fourth-Order Tributaries 3

2. ENVIRONMENTAL OVERVIEW 5
2.1 Physiography 5
2.2 Bedrock Geology 6
2.3 Upper Paleozoic Depositional History 7
2.4 Drainage and Hydrology 7
2.5 Mapped Soils 9
2.6 General Climate 9
2.7 Detailed Climate Analysis 10
2.7.1 Temperature 10
2.7.2 Precipitation 11
2.8 Quaternary History and Fluvial Geomorphology 13
2.9 Paleoflora 14
2.10 Paleofauna 16
2.10.1 Holocene Fauna 17
2.11 Modern Fauna 17
2.12 Modern Flora 19
2.13 Paleoclimate 19
2.14 Summary: Paleoenvironmental Contexts 22

3. RESULTS OF GEOMORPHOLOGY INVESTIGATIONS 29
3.1 Raccoon Creek Crossing #1 (MP 22.9-23.4) 29
3.2 Fishpot Run (MP 31.3) 30
3.3 Raccoon Creek Crossing #2 (MP 32.7 to 33) 30

3.4 Mill Creek (MP 41) 32
3.5 Peggs Run 33
3.6 Potato Garden Run (MP 15.4) 33
3.7 Millers Run 34
3.8 Robinson Run 34
3.9 Westland Run (MP 1.0) 35

4. REFERENCES 37

1.0 INTRODUCTION

1.1 PREDICTIVE MODEL FOR THE PENNSYLVANIA SHELL FALCON PIPELINE CORRIDOR

The proposed pipeline corridor in Pennsylvania crosses a large number of external and internal drainage links. However, only eight streams have the potential to contain Holocene-age alluvial soils, which exceed 1.0 meter (3.3 feet) in thickness. These streams are listed in Table 1 by name, milepost and stream order. It was determined that each of these drainage lines will require a Phase IA geomorphological assessment in order to ensure any and all potentially significant cultural resources are identified. Phase I testing will assess the landforms present, the age of the soils, and the depths of the deposits.

The character of the drainage patterns, drainage net and stream channels are in part controlled by the lithology and structure of the bedrock units**.** In the Pittsburgh Low Plateaus Section of the Allegheny Plateaus physiographic province the streams exhibit a dendritic drainage pattern. The consequent form of the streams is due to the nearly flat-lying nature of the sedimentary rocks. The following discussion provides a proposal for the geomorphological and archaeological investigation of the alluvial settings crossed by the proposed pipeline corridor in Pennsylvania. It should be noted that the predictive model was developed prior to assessing the need for horizontal directional drilling (HDD) or an open cut approach along the pipeline corridor. As a result of potential changes to the line and the method/option of crossing drainage lines, the soils along all landforms were examined and tested by soil auger probes.

1.2 PURPOSE OF THE GEOMORPHOLOGY INVESTIGATION

The Phase IA predictive geomorphological study and its objectives were developed in consultation with the cultural resource contractor (AECOM) and the guidelines developed by the Pennsylvania Bureau for Historic Preservation (PABHP). This study has three principal objectives:

1) Determine the testing methods that should be employed at each of the stream crossings along the proposed pipeline corridor.

2) Propose methods for conducting geomorphological (Phase IA) deep testing at those stream crossings identified as having the potential to contain thick (>1 meter) Holocene alluvial deposits;

3) Determine the depths to which testing should extend to ensure recovery of any and all potentially significant cultural resources.

1.3 SCOPE OF INVESTIGATION FOR PREDICTIVE MODEL DEVELOPMENT AND FIELD TESTING

The following predictive model and recommendations for testing at specific stream crossings was developed by Dr. Frank J. Vento (PG-001831-G), President, QGEC, LLC and Professor Emeritus, Department of Geology, Clarion University of Pennsylvania. The study included a review of both general and specific references on the bedrock geology, soils, Quaternary history, and previous archaeological work relevant to field testing along the proposed pipeline corridor.

In addition, topographic maps, soil maps, aerial photographs, LANDSAT images and LIDAR images were examined to aid in developing the predictive model for the Phase I archaeological investigations which will be conducted by AECOM, Inc. It should be noted that Dr. Vento has more than 36 years of experience working as a fluvial geomorphologist in the region and has examined several thousand-soil profiles at archaeological sites present in alluvial soils. Many of the larger drainage lines which will be impacted by the proposed pipeline have been studied by Dr. Vento as part of previous cultural resource management investigations or awarded research grants (e.g., Vento and Rollins 1989; Vento et al. 1994, 2008).

1.4 GEOMORPHOLOGY CONSIDERATIONS

Given the length of the proposed pipeline corridor and the complexity of the soils, slope conditions, and bedrock units which occur along the study corridor, a series of variables were used to determine the testing methods, the proposed depth of testing, and, if warranted, Phase IA geomorphological deep testing to characterize the nature and thickness of the alluvial soils. These variables included: soil type, stream gradient, stream discharge, valley bottom zone width, valley morphology, channel habit, channel width, stream order, occurrence and age of previously recorded sites, and potential for disturbance from historic activities (e.g., roads, railway lines etc.). Table 1 lists the mile post, stream name (if named), stream order and proposed methods for geomorphological testing at each locality. Testing methods include: shovel tests in areas where the alluvial soils are inferred to be less than 1.0 meter (3.3 feet) in thickness, and additional Phase IA deep geomorphological investigations at those areas which have the potential to contain thick (>1.0 meter) Holocene-age alluvial soils.

1.4.1 First-Order Tributaries

The majority of streams along the proposed pipeline corridor includes small rills and gullies as well as first-order tributaries, and will not require deep testing. Given the width of the valley bottom zone and the recent-to-late Holocene-age of the soils, testing can be accomplished by standard shovel test probes. The first-order tributaries typically exhibit a steep stream gradient, narrow valley bottom, absence of higher terraces (aside from possible structural benches), straight channel habit, and low discharge. The absence of a thick alluvial package is not unexpected given the fact that these small streams are not graded or in equilibrium; channel deepening dominates over active lateral channel migration and overbank deposition.

The soils associated with these streams are best classified as Entisols (Fluvents or Udifluvents). Entisol soils are young (late Holocene to recent in age) and display poorly developed horizons. Most of these streams have been affected by historic deforestation which caused increased sediment yields and higher stream discharges. At some of the first-order tributaries, steep valley slopes that would preclude any geomorphological field-testing immediately bind the channel. Along some of the first-order tributaries, thin or shallow alluvial soils may be interfingering with, or capped by, colluvium supplied by mass wasting processes acting along the valley slopes. In these cases, the depths of testing and methods employed might have to be modified during the field studies. The cause for possible site burial along these small tributaries is likely due to increased sediment yields and more active mass wasting caused by historic deforestation. Testing along these small first-order streams should extend to the top of relic lateral accretion deposits and/or bedrock.

1.4.2 Second-Order Tributaries

Seven streams (Potato Garden Run, Mill Creek, Millers Run, Robinson Run, Fishpot Run, Westland Run, and Peggs Run) along the proposed pipeline corridor can be classified as second-order tributaries (Figure 1 and Table 1) All of the streams are consequent, having formed their channels on relatively flat-lying sedimentary rocks. Second-order streams exhibit a lower gradient, higher discharge, and broader (wider) valley bottom zone than first-order streams. Many of the second-order streams displayed a weak meandering channel habit. Soils associated with these streams can be ascribed to either the Entisol or Inceptisol orders. Inceptisol soils are of probable Holocene-age and show better soil horizon development than Entisol soils. The subsoil horizons associated with Inceptisols are often cambic in nature. In most cases only a single sola will be encountered along the identified second-order tributaries. The thickness of the alluvial package present along these second-order tributaries will likely vary from 1.0 meter (3.3 feet) to 1.5 meters (5.0 feet) in thickness. Presently, horizontal directional drilling (HDD) will be employed along three streams (Potato Garden, Millers Run, Robinson Run) to avoid impact to the alluvial soils along the valley bottom zone. The position of the HDD entry and exit points will lie well above the valley bottom zone. The soils at the HDD loci will be residual in origin, having formed from the *in situ* weathering of the Pennsylvanian Period bedrock. Regardless, auguring of the landforms present on the valley bottom zone at all seven streams will be undertaken to assess the thickness, age, potential for the occurrence of prehistoric cultural resources, and the depths to which testing should extend, to identify any and all potentially significant cultural resources. If the Phase IA geomorphological field-testing by auger probes indicates a thin (< 1.0 meter) package of Holocene-age alluvium, shovel testing can be employed to test the valley bottom zone. The probable landforms, which will be encountered along these second-order streams, include multiple late Holocene-age floodplain zones, as well as possible terraces of earlier Holocene/late Wisconsin-ages. The thickness of the Holocene-age alluvium present on a given landform will be controlled, in part, by its height above the active stream channel and valley morphology.

1.4.3 Third- and Fourth-Order Tributaries

Only a single third-order tributary, Raccoon Creek, will be crossed by the proposed pipeline corridor. The corridor crosses the valley bottom zone of Raccoon Creek twice; however, in both areas horizontal directional drilling (HDD) will be employed to avoid the thicker Holocene alluvial soils that might be present on the valley bottom zone (Figure 1 and Table 1). The HDD entry and exit points lie well above the active valley bottom zone and occur either on high hill tops or sloping upland areas. Raccoon Creek is a major tributary of the Ohio River and can be classified as a moderate-sized consequent drainage line that exhibits a meandering channel habit, a potentially thick package of Holocene-age vertical accretion deposits, and a graded condition. The soils on the valley bottom zone of Raccoon Creek are primarily Inceptisols (Fluvaquentic Dystrochrepts). To date, Dr. Vento has conducted previous geological deep testing on the Ohio River as well as Raccoon Creek. Based upon these studies, it is likely that the floodplain zones and terraces will contain Holocene alluvial soils ranging in thickness from 1.5 meters (5.0 feet) to in excess of 3.0 meters (> 11.0 feet).

Stream	Milepost	Stream Order
Raccoon Creek	22.6-23.4	3
Raccoon Creek	32.7 to 33.2	3
Peggs Run	43.05	2
Fishpot Run	30.4-30.5	2
Mill Creek		
Robinson Run (north bank only)	7.6	2
Millers Run		2
Potato Garden Run	14.6-14.8	2
Westland Run		

Table 1. Stream name, milepost, and stream order.

2. ENVIRONMENTAL OVERVIEW

2.1 PHYSIOGRAPHY

Geologically, the Shell Falcon Pipeline Corridor is situated within the Pittsburgh Low Plateau Section of the Appalachian Plateaus physiographic province. The dissected plateau exhibits moderately high-to-high relief (300 – 600 feet), having broad major valleys that contain outwash terraces, and tributaries with lacustrine terraces. The bedrock in the section consists of medium-grained bedrock sequences, which are coarser than those in the Dunkard Basin to the south and the Marietta Plateau to the west. This section of the Appalachian Plateau province extends northeastward from Alabama into New York. The northwestern boundary of the province in Pennsylvania and in northeastern Ohio is the prominent scarp in Erie County, Pennsylvania and Ashtabula County, Ohio, which drops 91.44 to 182.88 meters (300 to 600 feet) to the Eastern lake section of the Central Lowland Province (Briggs 1999). The Allegheny Front, an imposing escarpment that overlooks the more varied, linear, structurally developed ridges and valleys of the Ridge and Valley physiographic province, defines the southeastern boundary. The Allegheny Front marks an abrupt change in the style of deformation; the strata turn up abruptly and beyond the front they are heavily folded and faulted (Briggs 1999).

On the extreme northeastern boundary of the province is the Wyoming Valley prong of the Ridge and Valley Province. This boundary separates a belt of Pennsylvanian-age rocks on the west from Mississippian-age rocks of the Pocono Mountains to the east. Surface rocks of the plateau or foreland area, which extend from Pennsylvania into Kentucky, consist largely of Pennsylvanian-age continental and coal-bearing strata. These strata lie conformably above Mississippian and Devonian strata and are succeeded conformably in West Virginia and southwestern Pennsylvania by Permian-age lithologies (Thornbury 1965).

The Pittsburgh Low Plateau Section is the largest section within the Appalachian Plateau Province, encompassing 10,460 square kilometers (6,500 square miles). This section is sharply defined on the east by the west flank of Chestnut Ridge and to the north by the Glaciated Pittsburgh Plateau section. Base levels in the section are developed in the mostly homogeneous bedrock, shale, and chiefly subordinate sandstone, but locally dominate sandstone, siltstone and limestone (Briggs 1999). Most strata in the Pittsburgh Low Plateaus are gently folded, with dips of more than five degrees being rare; folds decrease in amplitude to the northwest. Anticlines and synclinal folds are subdued and are reflected by equally subdued linear topographic highs and lows (Briggs 1999). Jointing is an important structural control on stream channel orientation with many deep, incised streams exhibiting long straight segments. The entrenched or incised character of the streams in the region is clearly due to uplift and subsequent rapid down cutting in response to Quaternary epierogeny. The streams in the section are consequent and exhibit a decidedly dendritic drainage pattern. Glacial outwash terraces and benches are common along rivers (e.g., Ohio and Beaver Rivers) that served as outlets for glacial melt waters. The overall aspect of the Pittsburgh Low Plateau section is one of broad, rolling interfluves separated by relatively narrow, steep-walled, moderately incised valleys (Briggs 1999). The ridge tops across the region occur at nearly the same accordant elevation and reflect an erosional surface of late Mesozoic to early Cenozoic Ages.

2.2 BEDROCK GEOLOGY

The Pennsylvanian-age bedrock, which crops out in the general project area, is ascribable to the Allegheny Formation, and Glenshaw and Casselman Formations of the Conemaugh Group and Monongahela Group of the Pennsylvania Age. The Casselman Formation of the Conemaugh Group consistently overlies the Glenshaw Formation. The Casselman Formation is present along the upper reaches of the drainage lines within the study area, and on the hill tops and upper valley slopes along the lower reach of Raccoon Creek.

The Casselman Formation is a heterogeneous unit composed primarily of alternating layers of shale, siltstone, sandstone, and thin impure freshwater or brackish water limestones. In addition, the formation contains several thin, non-persistent coal seams and associated underclay beds. Minor red beds, though thin, can be found in the lower part of the formation. The formation ranges in thickness from 72 meters (236 feet) to as much as 160 meters (525 feet) along the Berlin syncline in Somerset County, Pennsylvania. The Glenshaw Formation locally caps the upland ridges/drainage divide and is characterized by cyclic sequences of shales, sandstone, marine limestones/shales, non-persistent thin red bed, and freshwater limestone beds and persistent coals (e.g., Freeport and Kittanning seams). The base of the Glenshaw Formation (or Conemaugh Group) is mapped at the bottom of the Upper Freeport Coal, which occurs at elevations in excess of 520 meters (1700 feet). The formation attains its greatest thickness of 114 meters (375 feet) to the east of the study area in Somerset County, Pennsylvania. The distinguishing feature of the Glenshaw Formation is the presence of several widespread marine units that include in ascending order of succession: Brush Creek, Pine Creek, Woods Run and Ames. Each of these marine zones has both a limestone and shale facies. It should be noted that none of these limestone units contain chert suitable for lithic stone tool manufacture. The Brush Creek limestone to the south in Greene and Fayette Counties, as well as in northern West Virginia does contain cherty facies that were utilized extensively by prehistoric populations in the region. The chert artifacts recovered during the Phase I investigations are primarily pebble cherts of the Onondaga and Upper Mercer cherts procured from outwash deposits along the main stem of the Ohio River.

The Glenshaw Formation is well bedded in most places, with the thickness of the beds varying based upon lithologies. Beds vary from a fraction of an inch to as much as several feet in some of the sandstone units. The shales in the formation are typically thin and fissile, while the limestones range from well-bedded to nodular in character. Upon prolonged weathering, the formation tends to form landforms of rolling ridges and hills of medium relief. Those parts of the formation which exhibit steeper natural structural dips display deeper, narrower stream valleys separated by broad-topped, steep-sided divides. Natural slopes are moderately stable except in those areas where red beds crop out. The formation typically displays good surface drainage.

The Conemaugh Group is overlain by rocks of the Monongahela Group that extends from the base of the Pittsburgh Coal to the base of the Waynesburg Coal. The Monongahela Group is divided into the Pittsburgh and Uniontown Formations. The formations consist primarily of limestone, dolomitic limestone, calcareous mudstones, and shales. Nodular chert suitable for stone tool manufacture occurs within limestones of the Uniontown Formation. Westland Run and Robinson Run are underlain by rocks ascribable to the Monongahela Formation. The

Glenshaw Formation is underlain by the Allegheny Formation and consists primarily of sandstones and shales with marine limestones (Vanport) and commercially important coal seams (Brookville, Scrubgrass etc.). Within the project area, the Allegheny Formation is restricted to the valley bottom zone and lower valley slopes of Raccoon Creek and Fishpot Run.

The top of the Allegheny Group is mapped at the top of the upper Freeport Coal and Limestone, while the base of the group is mapped at the base of the Brookville Coal. The Homewood Sandstone of the Pottsville Group directly underlies the Brookville Coal. A typical cyclothem sequence for the lower Pennsylvanian and upper Mississippian lithologies generally involves basal fluvial to deltaic sandstone emplaced on an erosional surface and laterally and vertically replaced by overbank shales (Donahue and Rollins 1979). Extensive coastal swamps develop over the top of the fluvial and deltaic sediments. A marine transgressive sequence then caps the cyclothem with shales and limestone.

2.3 UPPER PALEOZOIC DEPOSITIONAL HISTORY

During deposition of units ascribable to the Allegheny Formation in northeastern West Virginia and southwestern Pennsylvania, there was a general eastward shift of marine conditions that introduced a series of shallow marine transgressions into western Pennsylvania. This resulted in the deposition of the limestone (e.g., Vanport Limestone) and shales, with depositional environments ranging from shallow marine shelf, marine carbonate banks, coastal marshes and swamps, lagoons, and distributary deltas, which graded into alluvial plain fluvial distributaries and interdistributary flood basins (Edmunds, Skema and Flint 1999). Sediment deposition during the lower interval of the Glenshaw Formation was primarily that of an alluvial plain with large isolated coal swamps, complex fluvial channels and freshwater lakes (Skema, Sholes, and Edmunds 1982). Deposition during the upper part of the formation consisted of a series of at least seven rapid, short-lived, eastward marine transgressions which resulted in the establishment of shallow-marine, coastal plain and lower delta plain conditions across all of western Pennsylvania (Donahue and Rollins 1974, Busch and Rollins 1984). By the beginning of the deposition ascribed to the Monongahela Group, the northeastern end of the Appalachian Basin was effectively severed from any marine connection. The general environment at this time was that of a relatively low energy alluvial plain containing widespread coal swamps and freshwater lakes (Edmunds et al. 1999).

Structurally, the Appalachian Plateaus physiographic province is included within the Appalachian Plateaus structural province. Regionally, the units within this province consist of gently folded Devonian- through Permian-age sedimentary rocks which display shallow dips of less than five degrees to the south/southeast or south/southwest, while the strike varies between 60 degrees and 85 degrees east of true north.

2.4 DRAINAGE AND HYDROLOGY

The fairly rugged topography of southwestern Pennsylvania is maturely dissected by numerous consequent and insequent rills, runs, and streams which are part of the Ohio River drainage basin. The principal drainage line in the study area is the Ohio River, which has a normal pool of 202 meters (665 feet). Prior to navigation controls, the Ohio River exhibited a nominal gradient of 10 feet per mile with an average discharge of 20,800 cubic feet per second.

Geomorphologically, the Ohio River proper and its tributaries represent consequent streams, which have developed a dendritic drainage pattern on an older plateau surface. In places, Quaternary epierogenic uplift has caused entrenchment along some of the major rivers valleys. Some effect on the drainage evolution is rooted in epierogenic effects, such as regional up warping and rock fracturing, while controls on drainage may be exogenic and related to past climates.

Presently, flows/discharges along the Ohio River and its major tributaries (e.g., Raccoon Creek) can vary drastically with low flows. These occur during the late summer and early fall, with high discharges occurring during late winter and early spring in association with snowmelt and more effective precipitation (precipitation minus evapotranspiration). Flood recurrence data indicates that the low flood plain zone along all of the investigated streams all lie within the 100-year flood way zone. The high terraces (e.g., Parker Strath) along Raccoon Creek lie well above even the 500-year flood way zone. The Sewickley Gaging Station (680 feet elevation) along the Ohio River in Pennsylvania and the Moffatt gaging station along Raccoon Creek were chosen as proxies for the study area. The Sewickley gage has over 82 years of continuous record for peak annual discharges. An annual peak flood series for these 82 years reveals that the largest single discharge occurred on March 18, 1936 with a stream flow of 574,000 cubic feet per second and a gage height of 34.75 feet. This height is roughly 35 feet above the present river level. Other notably high discharge events include the 1943 (gage height 27.39 feet), 1972 (gage height 24.42); and 1996 (gage height 33.34 feet) floods. The Moffatts gaging station along Raccoon Creek has 91 years of record with the flood of record occurring on September 18, 2004 with a discharge of 22,000 cubic feet per second and rise above the gage datum of more than 14 feet. The 2004 flood event was a result of Hurricane Irene, and as with Hurricane Agnes in 1972 was responsible for some of the highest stream discharges in the region over the last 100 years. Other notable flood events along this reach of Raccoon Creek occurred in 1920, 1922 and 1963. Interestingly these years are not large peak discharges along the main stem of the Ohio River. Clearly, Raccoon Creek is affected by “upstream” flood controls (e.g., snow melt, intense localized thunder storms, etc.) (Figures 2 and 3).

Today, as well as in the past, flooding along the main stem of the Ohio River and Raccoon Creek results from three basic storm types: 1) cyclonic storms, 2) tropical storms and hurricanes (which move into the basin from the south/southeast), and 3) intense, short, localized thunderstorms that occur during the summer and autumn. Cyclonic storms are caused by the converging inflow of warm air from the Atlantic Ocean within the warm sector (between the cold and warm fronts) of slow-moving mid- latitude cyclones embedded within a cool season meridional flow regime. Floods of this type can be especially large if they are augmented by snowmelt and/or saturated soil conditions. Tropical storms and hurricanes that have moved into the basin from the south/southeast have produced sizeable recent floods over both small and large portions of the basin. For example, over the last 150 years, seven large floods (1903, 1936, 1955, 1972, 1975, 1996, and 2004) in the region were caused by intense tropical cyclonic storms. These systems caused significant flood deposition and erosion on low terraces bordering the major drainage lines. Localized, short duration, intense thunderstorms which occur during the summer and autumn (warm season) seasons are highly localized events but cause significant upstream flooding over small watersheds. Floods of this type have rarely caused flooding along the main stem of the Ohio and Beaver Rivers. However, smaller tributary streams such as Fishpot Run, Peggs Run, and Potato Garden Run would be affected. In addition to the above, some areas in the basin (e.g., Oil Creek at Franklin, Pennsylvania) are flooded as a result of ice jams during late

winter and early spring and are associated with first flush events (the first significant seasonal melt). In sum, runoff of flood proportions within the basin today results from a variety of factors, including storm intensity, distribution and duration, extent of rainfall, prior soil water budget conditions, extent of snow, depth and duration, valley configuration, and vegetative cover. Historically, the preponderance of spring floods on the Ohio River reflects the effect of the longer and more widespread spring rainfall augmented by snowmelt.

Based upon an exhaustive examination of hundreds of alluvial soil profiles, it is clear that the occurrence of bank full discharges along drainage lines in Beaver and Allegheny Counties, Pennsylvania (especially along tributary stream valleys) has been more common over the last 150 years than prior to the European contact. This rate of increase is a function of the percentage of land now overlain by an impervious cover (roofs, pavement, cement) due to urbanization, an increase in deforested lands (timber, agriculture, strip mines and pasture), and the percentage of area served by storm sewers. Since floods are a function of rainfall/runoff relations, urbanization has caused a tremendous number of changes in these relations, especially with regard to smaller streams and the short lag time between peak rainfall and peak discharges.

2.5 MAPPED SOILS

Given the complexity and variation in the soils encountered during the field testing at the various stream crossings, the specific mapped soil series are discussed in detail in the Results of Geophysical Investigation section of the report. It should be noted that the soils observed during the field-testing were often quite different from the mapped soils described in the county soil surveys. In addition, of the nine stream crossings, five will employ horizontal directional drilling (HDD) to avoid impact to the alluvial soils on the valley bottom zone. In all cases, the HDD boring entry points and exit points are situated well above the valley bottom zone on hill tops or side slopes that are mantled by residual soils formed in Pennsylvanian Period bedrock.

2.6 GENERAL CLIMATE

Southwestern Pennsylvania has a cool and humid, temperate climate. Precipitation is distributed throughout the year with a slight maximum occurring in May, June and July. Seasonal soil water budget deficits typically occur during late August, September, October and early November as a result of decreased effective precipitation (precipitation minus evapotranspiration). There may be wide fluctuations of precipitation within a given year. Although the region receives an average of 42 inches of rainfall per year, it has experienced extremes from 35 inches to as much as 56 inches.

The months of December, January, and February frequently have temperatures below freezing. Unofficial recordings of - 25 to - 30 degrees Fahrenheit have been recorded in certain localities. Late spring, summer, and early fall temperatures are warm and sometimes even hot, but average around 64 to 65 degrees Fahrenheit. The average length of the growing season is 116 days. May 27 is the average date of the last freeze in spring, and there are occasional surges of several-hour freezes in mid-September. These ephemeral extremes are found where valley inversions exist and air drainage is retarded in restricted valleys. Daily changes of temperature during the winter and early spring cause frequent freezing and thawing of the ground. This is most common on south and west slopes, which have little or no vegetative cover.

2.7 DETAILED CLIMATE ANALYSIS

In the Koppen Climate Classification system, southwestern Pennsylvania is classified as a Humid Continental (*Dfa*) climate. This climate classification is characterized by frequent weather changes associated with the passage of migratory pressure systems, most notably during the cool season. This high degree of variability is associated with the regional location within the global westerly wind belt. This results in a high amount of diurnal and seasonal variability.

2.7.1 Temperature

As one would expect, the warmest months occur during the summer season while the coolest temperatures occur during winter. The warmest month on record is July, which is only slightly warmer on average than August. Average winter temperatures are fairly low with all three winter months recording below freezing normal temperatures. Diurnally, low temperatures during the cold season may dip below 32 degrees Fahrenheit with regularity. Occasionally, the diurnal high temperature may remain below the freezing mark as well. However, although this condition may persist in the northern reaches of the climate region, such a condition is largely intermittent in Pennsylvania. Coldest temperatures are usually the result of migratory anticyclones that migrate into the region when persistent jet stream troughing occurs over the eastern United States. The typical progression of events includes passage of a fairly strong mid-latitude cyclone embedded within the jet flow. As the cyclone, and more particularly the cold front, progresses through the area, winds shift from southwesterly to northwesterly. Such veering indicates onset of the anticyclone that follows the temperatures through nighttime radiational cooling (loss of diurnally stored terrestrial radiation).

Average summer temperatures exceed 90 degrees Fahrenheit only occasionally for most of the region, but may be expected to occur for short durations during July and August in southern portions of the region. The most extreme heat waves are accompanied by relatively dry conditions that result from a persistent anticyclone-blocking pattern over the North Atlantic Ocean. Such blocking inhibits the migration of mid-latitude cyclones through the region in addition to providing low-level subsidence that inhibits convective precipitation through the region. However, normal summertime conditions are somewhat humid as a result of warm air advection from the southwestern North Atlantic and the Gulf of Mexico. Such flow is stimulated by the strength and position of the North Atlantic Subtropical High pressure cell. This semi-permanent feature reaches maximum strength and pole ward position during the height of the summer months in July and August (Davis et al. 1997). This occurrence results in fairly high humidity (50-70% - 8 p.m. readings) for the region, although not nearly as high as the humidity recorded in the southern United States.

Examining the temperature data for southwestern Pennsylvania over the period 1895-1991, there is an apparent high degree of inter-annual variation that exists for the region about the long-term average temperature of approximately 49 degrees Fahrenheit. The early record was mainly below normal while the middle portion remained largely above normal. The last half of the record shows primarily below normal average temperatures until a slight warming trend during the late 1980s and early 1990s. Even though a cycle is qualitatively apparent, statistical testing revealed no long-term trends of any kind. However, the Chow statistical test

for a changing variance supports the qualitative assumption of a decrease in temperature variability through the time-series.

Testing reveals that a statistically significant decrease in variability began in the early 1940s and continues through the recent record. Such a change is inherently related to changes in jet stream variability. Leathers and Palecki (1992) denote a statistically significant change in long wave (jet) amplitude beginning in the late 1950s and continuing through the recent record. They show that in approximately 1958 the polar jet increased in amplitude over North America. Because of the continental distribution of mountains and oceanic currents, the jet has shown persistent troughing over the eastern United States since that time. This accounts for both the latter record decrease in temperatures and the decrease in variability seen in the time-series.

2.7.2 Precipitation

In the region, the wettest month on average is actually two months, July and August, both of which normally record 4.02 inches of precipitation. The totals are largely associated with convective precipitation generated from the high average temperatures and the influx of moist air about the lee of the North Atlantic Subtropical High pressure cell. Evapotranspiration also plays a role as a moisture source, as evapotranspiration rates are typically highest during the warmest months. However, the high evapotranspiration rates may quickly deplete soil moisture storage, especially during the latter portion of summer. Therefore, evapotranspiration is likely an important source of water vapor only for early summer convective processes. The high evapotranspiration rates through summer are also responsible for vegetative stress. Even though the highest precipitation totals are achieved during the summer months, the totals are not high enough to offset the amount of evapotranspiration. Therefore, soil moisture deficits are usually common during July and August throughout the region. Also, a normal three to four week dry period is normal for the region as long, wave blocking patterns become established in the North Atlantic. Such blocking is normally associated with strengthening and migration of the Subtropical High pressure cell during early summer. Large-scale moisture advection into the region does not occur until after the Subtropical High pressure cell becomes entrenched in its pole ward position.

The driest month on record is February, which typically records 2.87 inches of precipitation. This ‘dry’ period occurs as the jet stream adjusts to its typical wintertime position. The normal position for the jet during the winter months includes a moderate to highly amplified ridge over the western United States and a moderate to highly amplified trough over the eastern United States. This results in variable but normally warm temperatures for much of the West Coast and variable but mainly cold temperatures for much of the East Coast. Precipitation is generated by mid-latitude cyclones that typically originate in the deepest portion of the jet trough as a result of upper atmospheric speed divergence (venting) and cyclonic wind shear. The cyclones usually migrate through the trough and dissipate into the downstream ridge. For the eastern United States, the downstream ridge is typically located over the North Atlantic Ocean. Therefore, the northeastern United States represents the dissipation (occlusion) region for most mid-latitude cyclones that generate anywhere in the United States east of the Rocky Mountains.

Because mid-latitude cyclones represent the primary precipitation-forcing mechanism for the region and are inherently linked to the jet stream, it is prudent to examine the annual characteristics of jet stream variations. The jet represents a thermal boundary between cold, polar-induced air to the north and warm, equatorial-induced air to the south. The jet gains its energy from the thermal contrast associated with the latitudinal thermal gradient. During the winter months, the latitudinal thermal gradient reaches a maximum as the pole is shrouded in perpetual darkness. During this time, average jet stream location dips toward the equator as the atmosphere seeks to balance the extreme latitudinal thermal inequalities. During the height of winter (February), average jet position is located along the northern Gulf of Mexico. Cyclones generated in the jet trough typically develop over the western Gulf of Mexico where a steep local-scale thermal gradient exists between the relatively cold continent and the warm waters of the Gulf. This baroclinic region is responsible for the generation of some of the most extreme mid-latitude cyclones on record. Once formed, the Gulf Lows migrate up the east coast of the United States between the Appalachians and the coast, bringing copious precipitation in the form of rain, sleet, freezing rain and/or snowfall, depending upon a particular area's location to the center of the low. Dissipation typically occurs over the New England states. During the spring months, jet position increases poleward as the polar region warms with increased solar incidence through the Arctic Circle. Such warming decreases the latitudinal thermal gradient and the jet responds accordingly. Average jet stream position is typically located over the middle portion of the United States (with the trough located over the northern Gulf States, Tennessee and Kentucky area). Cyclogenesis usually occurs with regularity over Colorado. These Colorado Lows skirt through the trough region over the Gulf States and finally northeastward where dissipation typically occurs into the downstream ridge located over the New England states. Summertime mid-latitude cyclones usually originate in Alberta, Canada as the jet retreats to its most pole-ward position near the United States and Canadian border. This is in response to the modest latitudinal thermal gradient that exists during the summer months. During this time, the polar region receives constant diurnal insulation that raises temperatures to comfortable levels. Therefore, not only is the jet located at relatively high latitude, but mid-latitude cyclone frequencies and magnitude decline as the atmosphere becomes inherently barotropic (even with regard to temperature distribution). The Alberta Clippers that form during these times are relatively weak as compared to the Gulf and Colorado Lows. They typically migrate across the northern tier of states and occlude over the extreme northeastern United States and southern Canada. Such migration occasionally produces mid-latitude cyclone induced precipitation in Pennsylvania and an influx of cooler, drier air even during July and August.

No matter when or where mid-latitude cyclones form, in some way they all affect the northeastern United States, which virtually always represents the occlusion region. Long periods of unbroken cloudiness and light precipitation are normal for the region, especially during the cool season, as one mid-latitude cyclone dissipates and another progress into the region. Of note is a statistically significant trend toward increased precipitation values through the temporal period and an increase in precipitation variability. The increasing slope is statistically significant at the 0.05 alpha level. The increase in variability begins around 1930 and continues through the remainder of the record. Such increases in slope and variability are again associated with jet stream variance. The meridional period denoted by Leathers and Palecki (1992) began during the late 1950s. This may account for a large portion of both precipitation trends denoted. Such persistent troughing may also detail the extreme recent fluxes in variability as well. Vega et al.

(1995) show that embedded within persistent jet troughing phases are periods of reversed flow. Reversed flow regimes are opposite that of the normal ridge-trough scenario. During these phases, a persistent ridge builds over the eastern United States while the western United States is affected by a deep and persistent trough. Such flow regimes, although relatively uncommon, are quite persistent, lasting up to one month. Over the last 50 years, it has been shown that such reversed flow episodes are becoming more commonplace. This interspersed with normal periods of zonal (deamplified) flow account for the extreme variability that has taken place during historic times.

2.8 QUATERNARY HISTORY AND FLUVIAL GEOMORPHOLOGY

The Late Cenozoic-age (pre-Pleistocene) topography and drainage patterns of the Appalachian Plateau were much different from those of today. Topographic relief was much lower and drainage direction was dominantly north and northwest (Ray 1965; Wagner et al. 1970; Beynon and Donahue 1982) to basins ultimately occupied by the Great Lakes. Data supporting this northwestward drainage flow is based primarily on the northward slope of the upland surface, as well as the occurrence of deep, glacially buried river valleys with gradients to the northwest. The diversion of the present Upper Ohio River drainage to the Gulf of Mexico was considered to be affected by Pleistocene-age glaciation (Kaktins and Delano 1999). There is no clear date for establishment of the northward drainage other than that it must have occurred after the end of the Permian-age, when the youngest Appalachian basin sediments were deposited, and long enough before the Pleistocene-era reversal for the development of fairly wide, mature valley bottoms now filled and buried with glacial drift (Kaktins and Delano 1999). At this time, prior to the Pleistocene-age reversal, the present Ohio River did not exist. In fact, two main river systems drained the western Appalachian Plateau.

The Teays-Mahomet River flowed from the piedmont area of Virginia and West Virginia northwest into Ohio, Indiana and Illinois (Beynon and Donahue 1980). Final drainage was either through the pre-Great Lake Basins or the Mississippi River (Beynon and Donahue 1980). The other drainage network was the Monongahela-Beaver River system, to which the Ohio River and Lower Allegheny River were tributaries. This system drained the Allegheny Plateau and flowed north to what is today the Lake Erie Basin. During this time, the relatively flat land surface was epierogenically uplifted and the plateau rivers responded by incising their valleys. What is left today of this nearly flat, erosional surface is a sequence of flat-topped hills or summits with elevations of between 366-427 meters (1,200-1,400 feet) above sea level. As incision slowed, a second terrace level was created. This terrace surface is commonly termed the Worthington Erosion surface, and typically occurs along the major river valleys at elevations between 329-347 meters (1,080-1,140 feet) above sea level. In the study area, the Worthington erosional surface lies topographically above the well-developed Park Strath Terrace, which typically occurs at elevations ranging from 268-292 meters (880-960 feet).

Following the establishment of the Worthington surface, a second period of incision occurred along the Ohio and Allegheny Rivers. Eventually, as incision slowed, lateral channel migration occurred, forming a well-defined wide valley floor. The remnants of this early flood plain now lay circa 275 meters (900 feet) above sea level or 61 meters (200 feet) below the Worthington Erosional Surface, and 91.5-122 meters (300 to 400 feet) below the Allegheny Peneplain. This relic valley floor has been termed the Parker Strath from a typical occurrence near Parker, on

the Allegheny River in northern Armstrong County (Figure 22). The present Allegheny River and its associated tributaries from Olean, New York to Pittsburgh, Pennsylvania were three separate rivers: a Lower, Middle and Upper Allegheny. The Lower Allegheny began at the Clarion River and flowed south to join the Monongahela River at Pittsburgh. The Middle Allegheny course drains through present day Oil City and Franklin and then northwest along what is now French Creek to the ancestral Erie Basin. In New York State, the Upper Allegheny flowed through the present site of Olean, New York and into the Ancestral Erie Basin just south of Dunkirk, New York (Shepps et al. 1959).

Although five major glacial advances and retreats are recognized in the United States (Richmond and Fullerton 1987), only the last two advances (Illinoian and Wisconsinan) can be clearly demonstrated to have reached northwestern Pennsylvania. Sediments of the pre-Illinoian advance are not present south of the mapped Illinoian drift sheet and hence have been extensively reworked by later glacial advances and retreats. As the Illinoian glaciers advanced into northwestern Pennsylvania, the ice sheet blocked the north-flowing streams, causing ponding (lake-formation) episodes to occur. However, by the time Illinoian ponding occurred in the Monongahela River, or shortly afterward, the course of the modern Ohio River had been created by a breach of the drainage divide near New Martinsville, West Virginia (Hamel 1987). With the onset of the Wisconsin ice advance about 70,000 years ago, glacial melt waters once again filled the Ohio and Allegheny River valleys. These major drainage outlets were filled with glacial outwash that in places reached a thickness in excess of 115 meters (350 feet) (e.g., along French Creek). These Wisconsin-age deposits are often termed the "first bottom" (Late Wisconsin-age outwash) and "second bottom" (Earlier Wisconsin-age outwash) soils along the Allegheny and Ohio Rivers at Pittsburgh. In the Shell Franklin project area along the Ohio River at Monaca, the high T4 terrace bordering SR 18 may correspond with the second bottom terraces and date to the early late Wisconsin-age; the lower T3, T2 and T1 terraces are of probable late Wisconsin age, with the lowermost T1 terrace containing a thick package of Holocene-age overbank deposits. The high terrace present along the Raccoon Creek and the soils associated with this terrace are typically the Monongahela or Allegheny soil series.

During the terminal late Pleistocene and early Holocene, in response to increased evapotranspiration, a thicker vegetative cover, lowered base level, warmer temperatures, and a decrease in discharge and accompanying sediment load, the Ohio River as well as its major tributaries (Allegheny River, Monongahela River, Tygart River and Youghiogheny River) adjusted their channels by incising Wisconsin-age valley-fill deposits. The result was the emergence of several late Wisconsin-age terraces currently at varying heights (15 feet to 30 feet) above the active river channels. These lower terraces are typically mantled (often disconformably) by a variably thick package of fine-grained, vertical accretionary deposits of Holocene-age and/or historic fill. The T1 terrace within the project area is correlative with these persistent low terraces previously identified along other segments of the Allegheny and Upper Ohio River valleys (Vento et al. 2008).

2.9 PALEOFLORA

The major expansion of the Laurentide ice sheet took place beginning in the Late Wisconsin stage, about 23,000 BP and culminated in a maximum ice advance at approximately

18,000 BP The ice sheet was in full retreat once again by circa 10,000 BP Earlier glacial advances existed briefly far to the north of the project area from about 84,000 to 73,000 BP and were followed by a long interglacial/interstadial stage with accompanying soil horizon development at circa 30,000 BP Another climatic deterioration began at circa 23,000 BP and culminated in the glacial maximum noted above at circa 18,000 BP Interglacial/interstadial climatic conditions were again established, but with a lengthy, slow transition characterized by several ice advances, or pulses, that lasted from circa 15,000 to circa 10,000 BP (Watts 1980; 1983). During all of the Pleistocene Epoch, ice was absent from this portion of northern Pennsylvania and specifically from the project area. Although ice never reached Allegheny County, the effects of glaciation in the form of periglacial landforms and features are clearly present throughout Allegheny County. Typical landscape features are rock fields, rock streams, alluvial fans and asymmetric valleys. A number of late Wisconsin- age floral localities in Pennsylvania (e.g., Rose Lake, Crider's Pond, Longswamp, Tannersville Bog and Corry Bog) have provided important information on the tentative reconstruction of the probable floral community present in the general project area during the full-glacial (Woodfordian Stade) and also during the final retreat of the late Pleistocene-age ice sheets.

At approximately 13,000 BP the principal floral taxa present at Crider's Pond in south-central Pennsylvania included jack pine (*Pinus banksiana*), fir (*Albies sp*), birch (*Betula sp*) and alder (*Alnus rugosa*). These taxa replaced the species-poor spruce (*Picea sp*) woodland recorded for the full-glacial (circa 18,000 BP). A similar floral assemblage invaded the spruce (*Picea sp*) and dwarf birch (*Betula glandulosa*) association at Longswamp in southwestern Pennsylvania (Watts 1979) where gray birch (*Betula populifolia*) was also present (Watts 1983). Additionally, recent investigations at Corry Bog in northwestern Pennsylvania by Cotter (1983), Cotter and Crowl (1984) and Karrow et al. (1984) indicate that the spruce pollen zone in Pennsylvania occurs between 14,250 to 11,250 BP Cotter (1983) and Cotter and Crowl (1984) state that the herb pollen zone lasted from 18,500 to 14,250 BP and that the basal age of the spruce pollen zone of sites near the Woodfordian drift border of Pennsylvania is approximately 14,250 BP, rather than the 12,600 BP as suggested by Karrow et al. (1984).

Watts (1983) notes that clear differences exist between the floral history of the periglacial region to the south (e.g. Longswamp and Crider's Pond) and that of the region, which was ice covered (e.g. Tannersville and Corry Bogs). Sedge-dominated pollen floras at Tannersville Bog parallel the grass dominated tundra flora at unglaciated Longswamp, which was located at the edge of the ice margin. Since Tannersville Bog is outside the drift border, in what must have been a similar ecotone during the late Pleistocene, it presently offers the best reconstruction of what probable taxa were present within the general study area during the period 25,000 to 10,000 BP. At the end of the Pleistocene at Tannersville Bog, the demise of sedge, aspen (*Populus tremuloides*), and green alder (*Alnus crispa*), and the invasion of spruce (*Picea sp*), fir (*Albies sp*), jack pine (*Pinus banksiana*), gray birch (*Betula populifolia*) and pitch pine (*Pinus rigida*) can be demonstrated to have occurred between 13,000 and 9,000 BP (Watts 1983).

An in-depth review of tree successions has been discussed extensively in the recent literature (Davis 1976; Watts 1973, 1979, 1980, 1983). This data suggests that the population of each tree species behaved independently of other taxa in response to climatic change (Watts 1983). Davis (1969) notes that the northeastern forest advance was a relatively slow process.

At Rodger's Lake, Connecticut glacial ice had retreated and tundra was present for over 2,000 years before the invasion of spruce (*Picea sp*) took place, although spruce was already present in unglaciated Pennsylvania as the ice withdrew (Davis 1969). For a more detailed review of paleoclimatic changes in Pennsylvania as they relate to genetic stratigraphy and atmospheric circulation change, see Vento and Rollins (1989).

In sum, following the retreat of the late Wisconsin glaciers circa 15,000 BP, tundra plants colonized the landscape in south-central Pennsylvania. Tundra pollen assemblages from late-glacial deposits in the eastern United States contain high (up to 40%) percentages of sedge pollen. At this time (circa 15,000 BP), forests of spruce and pine in the south were replaced by deciduous trees (Davis 1983). At circa 12,000 BP, spruce woodland replaced tundra in western Maryland, western and central New York, and southern New England. The appearance of spruce over such a wide area indicates: 1) the rapid migratory speed of spruce, and 2) a climatic amelioration at 12,000 BP that allowed spruce to grow in regions where it was previously limited by climate (Davis 1983). At about 10,000 BP, forests of variable composition expanded across the northeast. These forests underwent a series of successive changes with the arrival of new, northward-migrating taxa. By 5,000 BP in the northeast, a number of taxa indicative of warming and drying declined in abundance. This vegetative trend signals the end of the Middle Holocene-age Hypsithermal/Altithermal climatic event. According to Davis (1983), at about 2,000 BP (regionally between 5,000 to 1,000 BP) boreal elements of floral and faunal communities began to increase in greater frequency, which is suggestive of the onset of cooler climatic conditions. This cooling trend appears to continue even into the present.

2.10 PALEOFAUNA

During the Late Pleistocene, the development of open grazing lands and boreal forests would have supported a wide array of mammals adapted to cool climates. Evidence suggests that these types of biomes along the glacier's southern margins were exploited by megafauna indigenous to these areas, specifically the woodland musk ox (*Ovibos moschatus*), mastodon and woolly mammoth (*Mammut* sp.), barren ground caribou (*Rangifer tarandus*), giant beaver (*Castoroides* sp.), and moose-elk (*Cervacles scotti*) (Cleland 1966; Prufer and Baby 1963; Ritchie and Funk 1973). Recent studies at Sheridan Rockshelter in Wyandot County, Ohio note the presence of flat headed peccary and giant beaver at 11,060+/-60 BP and 10,850+/-60 BP, respectively. The dates for these now- extinct fauna overlap the date on Clovis-age bone points recovered during excavation of the site (Redmond and Tankersley 2005).

The Pleistocene fauna of the United States can be characterized as a combination of 1) now extinct mega vertebrates, and 2) extant temperate mega vertebrates and micro vertebrates in association with now disjunctive large and small northern species (Semken 1983). The Holocene-age fauna of central Ohio is generally composed of the second category. Semken (1983) states that this reduction in the number of species has led a number of authors (Martin 1967, Martin and Webb 1974; and Semken 1974) to regard the Holocene biotic record as impoverished or depauperate as compared to the high species densities characteristic of the late Pleistocene (Graham 1976, 1979). This faunal change is used to define the Pleistocene/Holocene-age transition. Clearly, the mega fauna of the Late Pleistocene suffered massive extinction, and was replaced by smaller animals that filled the opening faunal ecological niches. Discontinuities in the vertebrate record appear at roughly 12,500, 10,500,

8,500, and 5,000 BP. Within the general project area, the response time of various vertebrate species to deglaciation and subsequent climatic change was highly variable from one species to another. However, in a fashion similar to the pollen record for the Midwest and Northeast, the concept of a vertebrate transition within a few hundred years after deglaciation appears valid (Semken 1983).

2.10.1 Holocene Fauna

To date, no vertebrate remains have been recovered from the geomorphology or Phase I archaeological testing completed by AECOM along the pipeline corridor, thus specific biotic reconstructions cannot be made for the immediate study area. However, the faunal inventory utilized by the aboriginal inhabitants of the project area may be inferred from other dated, regional paleontological and archaeological sites, which have yielded information concerning Holocene-age vertebrates in this portion of northeastern West Virginia and southwestern Pennsylvania. The mammalian vertebrate fauna from Hosterman's Pit, Pennsylvania, dated at 9,290 BP is modern in every aspect (Guilday 1967). This is in direct contrast to the 11,300 BP fauna from Unit B of New Paris Sinkhole No.4, which lies circa 80 kilometers (50 miles) to the north; the latter contains a strong boreal component represented by the northern bog lemming (*Synatomys borealis*), collared lemming (*Dicrostonyn hudsonius*), yellow cheeked vole (*Phenacomys intermdius*) and the arctic shrew (*Sonex arcticus*). Similar boreal fauna were also identified at Bootlegger Sink, York County, Pennsylvania (Guilday, Hamilton, and McGrady 1966). Based on the above dates of 9,290 BP and 11,300 BP, the change from a boreal to near-contemporary faunal community must have occurred within this 2,000-year interval in central Pennsylvania (Guilday 1971). Arguments are bolstered by the Unit A fauna at New Paris Sinkhole No.4, which contains a large number of temperate species and overlies the strong boreal taxa represented by Unit B fauna at the site.

Guilday (1967) notes that all zooarchaeological faunas from the northeast during the last 6,000 years contain taxa which are essentially modern. This hypothesis is based on a number of sites, and the longevity of the eastern woodlands Holocene-age record is confirmed by 11 superimposed strata (11,300 to 750 BP) at Meadowcroft Rockshelter in southwestern Pennsylvania (Adovasio et al. 1977), as well as the Archaic to Contact period (8,920 BP to 490 BP) faunal succession at Sheep Rock Shelter in southeastern Pennsylvania (Guilday and Parmalee 1965). The only evidence for the "climatic optimum" or "Hypsithermal Climatic Event" between 5,500 and 3,500 BP in the eastern forests was noted by Guilday (1965) at the Lamoka Lake Site, New York. Evidence for warming at the Lamoka site is based on the presence of fox squirrel (*Sciurus niger*) and the box turtle (*Terrapene carolina*), each of which reflects a warming trend and perhaps a reduction of the closed-canopy deciduous forest at that time (Vento and Rollins 1989; Vento et al. 2008).

2.11 MODERN FAUNA

Beaver County, Pennsylvania and surrounding counties support a wide range of terrestrial, avian, and riverine fauna. However, the contemporary fauna does not necessarily represent the full range of species that were available for exploitation by aboriginal populations during the late Pleistocene or Holocene. A cursory examination of late Pleistocene through Recent (12,500 BP to present) faunal remains represented statewide indicates that considerably more

species would have been available for aboriginal exploitation in the past than are now present, though population densities and distributions would have varied from that seen today.

White-tailed deer (*Odocoileus virginianus*) is the most abundant large mammal in the region. White-tailed deer are generally considered a forest species, but they more typically prefer edge or ecotonal zones which combine areas of brush, young trees and open meadow/pasture-lands (Rayburn and Braker 1981; Vento et al. 1980). In pre-Columbian times, deer were probably distributed throughout the region at densities of circa ten to fifteen individuals per square mile (Hay et al. 1985). In the fall, this deer population congregated at localities that which were heavy in mast (nut) production. During the winter months, deer distribution was largely conditioned by the severity of weather. During moderate winters, an even distribution over valley floors, hills and ridge tops was maintained. Severe cold and snow, however, would have forced deer into sheltered coves and valleys. During the spring and summer an even distribution was again established (Hay et al. 1985; Taylor 1956).

Black bear (*Ursus americanus*), though uncommon in modern times, can be found throughout the more mountainous and less populated areas of the county. Black bears were probably distributed at a density of circa one adult bear for every five to fifteen forested square miles (Hay et al. 1985; Kordeck 1973). Beech, sugar maple and birch constitute their primary food supply, supplemented by acorns, black cherries and blueberries. During the fall and summer, preferred ranges encompass steep terrain with dense understory. Thus, most bears occur to the east and north of the study area in less urbanized, higher elevations of the Pittsburgh Low Plateaus section.

Fur-bearing animals are found in nearly all regions and on most soil types in the county. These principal fur-bearing taxa include raccoon (*Procyon lotor*), opossum (*Didephis marsupialis*), striped skunk (*Mephitis mephitis*), eastern spotted skunk (*Spilogale putorius*), wood chuck (*Marmota monax*), gray squirrel (*Sciurus carolinenis*), muskrat (*Ondatra zibethicus*), gray fox (*Urocyton cineroargenteus*), red fox (*Vulpes fulva*), eastern cottontail (*Sylvilagus floridanus*) and beaver (*Castor canadensis*).

Game fish species in streams and rivers include brook trout (*Salvelinus fontinalis*), rainbow trout (*Salmo gairdneri*), brown trout (*Salmo trutta*), bluegill (*Lepomis macrochirus*), sunfish (*Lepomis megalotis*), crappie bass (*Micropterus punctulatus*), largemouth bass (*Micropterus salomoides*), smallmouth bass (*Micropterus dolomicui*), muskellunge (*Esox masquinongy*), pickerel (*Esox niger*), yellow perch (*Perca flavescens*) and channel catfish (*Ictalurus punctatus*).

Most of the avifauna in the region consists of songbirds rather than game birds. However, several types of game birds are native or present in the project areas on either a permanent or seasonal basis. These include wild turkey (*Melagris gallopavo*), American woodcock (*Philohela minor*), ruffed grouse (*Bonasa umbellus*) and Canadian geese (*Branta sp*), as well as a large number of ducks (*Anas sp*) who stop to rest and feed on lakes, ponds and rivers during their annual fall/spring migrations. During pre-Columbian times, wild turkey densities were probably on the order of eight to thirteen individuals per square mile. Ideal habitats for turkey were those containing mature oak forests with white oaks predominating. These conditions were found mainly on valley floors and lower valley slopes (Scheirer 1969).

2.12 MODERN FLORA

The study area is located in the Mixed Mesophytic Forest region, which covers a majority of the Glaciated and Unglaciated Allegheny Plateau. The mixed mesophytic biome is considered the most complex and the oldest association of the Deciduous Forest Formation, and is a community in which the dominant trees of the arboreal layer are communities of beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*), basswood (*Tilia heterophylla, T. heterophylla var. Michauxii, T. floridana, T. neglecta*), sugar maple (*Acer saccharum*), chestnut (*Castanea dentate*), sweet buckyeye (*Aesculus octandra*), red oak (*Quercus borealis var. maxima*), white oak (*Q. alba*), and hemlock (*Tsuga Canadensis*) (Braun 1950). Naturally occurring plants consist of perennial grasses and weeds, nonconiferous and coniferous trees, nonconiferous and coniferous shrubs, and woody vines (USDA 1995). Within the immediate study area, the vegetation consisted almost entirely of grasses and low scrubs. The principal trees consist primarily of sumac, locust, sugar maple, wild cherry, and red and white oaks. Industry is considered the backbone of the economy, and coal mining, steel factories, and electrical power plants are located along the Ohio River. Surface mining, farming, and industrial development have altered the landscape in much of the county.

2.13 PALEOCLIMATE

The past 20,000 years have been marked by significant climatic fluctuations. Cool versus warm periods induced large- and small-scale glacials and interglacials. The most recent large-scale glacial maximum occurred between 14,000 and 22,000 BP. Deglaciation began approximately 10,000-14,000 BP. Presently; we reside within the Holocene-age interglacial that began about 10,000 BP. The past 20,000 years are marked by a wealth of direct and proxy climate data, making fairly detailed climatic reconstructions possible (Crowley and North 1991). Techniques used for climatic reconstructions include examination of glacial moraines, pollen, lake levels, oceanic records (biogenic and non-biogenic), deep sea sediments, ice cores, and radiocarbon (C14) analysis. The majority of current understanding of Quaternary paleoclimates stems from the CLIMAP (Climate/Long Range Investigation Mapping and Prediction) initiative, which sought to reconstruct climates from the midpoint of the last glacial maximum (~18,000 BP) (Crowley and North 1991).

The last glacial maximum, termed the Wisconsin in North America, lasted from 22,000 - 14,000 BP. The largest accumulation of ice in North America was termed the Laurentide ice sheet. This ice sheet may have been linked directly to the Cordilleran ice sheet in northwestern North America, and indirectly to the Fennoscandian ice sheet in northwestern Europe through a thicker Arctic Ocean ice shelf (Broecker 1975; Denton and Hughes 1981). Laurentide ice thickness varied between 3,500 and 4,000 meters (11,482-13,123 feet) (CLIMAP 1981). To the north of the study area, the Illinoian and then Wisconsin ice sheets may have attained a thickness in excess of 400 meters (1,350 feet). This estimate is based upon the occurrence of till deposits on the high ridge tops and the ice thickness versus gradient needed to override the preglacial topography. The generation of such a large ice sheet required ocean evaporation on the order of $50\text{-}60 \times 10^6$ km^3 of water. This effectively lowered mean seal levels 121 ± 5 meters (Fairbanks 1989). The ice sheet extended from the eastern flank of the Rocky Mountains to the Atlantic shore and from the Arctic Ocean to the Missouri and Ohio Rivers.

With the expansion of the Laurentide ice sheet, atmospheric circulation patterns adjusted toward the equator. The ice sheet caused expansion of the circumpolar vortex which caused equator-ward adjustments in polar fronts and sea ice (CLIMAP 1976, 1981). Such adjustments caused dramatic changes in North Atlantic Ocean circulation, which had dramatic impacts on northern hemisphere climates (Crowley and North 1991).

Presently, the northeast North Atlantic is seasonally ice free to 78°N (the Norwegian Sea). This stems from mean advection of the warm North Atlantic Current (Gulf Stream). During the last ice age, the polar front migrated to approximately 45°N (McIntyre et al 1976). North of this point, sea ice was present through winter. As such, a substantial region (120°W - 90°E, and north of 45-50°N) was covered by ice and/or tundra. At elevations greater than 2,000 meters above sea level, substantial ice expansion occurred by 18,000 BP, evidenced by lowered snow lines of approximately 1000 meters (3,280 feet). This equates to an overall temperature decline of 5-6 degrees Celsius (Bonnefille and Riollet 1988). Proxy records also indicate a reduction in summer ablation (Cooke and Hayes 1982).

Large changes of climate occurred in areas bordering the ice sheet (Watts 1983; Wright 1987), including significant areas of eastern Ohio, northeastern West Virginia and southwestern Pennsylvania. Tundra extended south of the ice margins but this region was spatially limited as compared to that which occurred in Europe (Pewe 1983). Instead, in North America, spruce-pine boreal forests replaced most tundra, except in a zone immediately adjacent the ice sheet (Delcourt and Delcourt 1985). South of 35°N, oak-hickory forest and local prairie vegetation dominated. This in conjunction with low lake levels in Florida support the notion of overall ice age aridity (Crowley and North 1991). It is estimated that the mean position of the polar front boundary was approximately 34°N, a position about 1,200 miles south of the current polar front boundary (which occurs in Canada) (Delcourt 1979; Delcourt and Delcourt 1983). Surface air temperatures were reduced approximately 10 degrees Celsius near the Laurentide ice sheet (Flint 1971; Barry 1983). Temperature changes south of the ice sheet were more severe in winter than summer. This likely stemmed from outbreaks of polar air from the ice sheet. Temperatures were approximately 15-20 degrees Celsius below present from Tennessee and South Carolina (Delcourt 1979; Watts 1980).

Most of the planet was drier during the last glaciation, but patterns varied by latitude. Declines in precipitation were approximately 50% below present values in high latitude regions (Beer et al. 1985). In some areas, increases in precipitation occurred. In the mid-latitudes this was associated with displaced westerly circulation regimes and the development of pluvial lakes in the Great Basin of western North America. The lakes formed from a combination of lower overall temperatures which reduced mean evaporation rates, increases in precipitation, and/or meltwater runoff and blockage of drainage systems (Brakenridge 1978; Grosswald 1980; Benson and Thompson 1987).

Equator-ward displacements of migratory lows along the maximum temperature gradient boundary further displaced precipitation toward the equator. Changes in wind direction and speed were also noted from the glacial distribution of aeolian features in North America (Wells 1983). Mean wind directions at present are from the southwest. During the last glaciation, the

mean direction was from the northwest, which advected cold air directly from the ice sheet. This had a significant effect on evaporation rates south of the ice sheet. Evaporation from the Gulf Stream, one of the largest latent heat transfers from oceans to air, was significantly reduced under this scenario. As such, an offsetting increase, of up to 50% of the current latent heat transfer, occurred through synoptic scale circulation events (Sarnthein et al 1981). Global surface wind speeds were approximately 20-50% greater than present. This induced a strong effect on ocean circulation and sea ice formation (Crowley and Parkinson 1988).

Ice cores suggest CO_2 levels of about 200 ppm (Barnola et al. 1987). Methane concentrations were about 2% of present values (Stauffer et al. 1988). The latter reflects increased aridity as wetlands are the primary source of methane (Matthews and Fury 1987). Since both gases are greenhouse gases, climate feedbacks accounted for a reduction of about 1.5 degrees Celsius, or about 40% of the glacial/interglacial signal (Crowley and North 1991). Deglaciation marks the most rapid climate change recorded in the geologic record. Residual remnants of the Laurentide ice sheet lasted until 6,000-7,000 BP in northern Canada; however, most ice disappeared over a 5,000-year period between 14,000-9,000 BP. The major phase of deglaciation occurred from 13,000-14,000 BP (Bryson et al 1969; Mix and Ruddiman 1985). Abrupt warming occurred approximately 13,000 BP followed by a climate reversal at 11,000 BP (the Younger Dryas in Europe), then another abrupt warming at 10,000 BP. A third step took place at about 8,000 BP with the final outflow of the Laurentide ice occurred from Hudson Strait and Hudson Bay (Mix and Ruddiman 1985; Patterson and Hammer 1987) into the North Atlantic. Clearly, ablation of the ice sheet triggered rapid changes in mean sea levels (Fairbanks 1989).

During the Younger Dryas (10,000-11,000 BP), temperatures were reduced, which triggered equatorward displacement of the North Atlantic polar front. Cooling was especially strong in the circum-subpolar North Atlantic. The cool period may have been triggered by meltwater-induced changes in air-sea circulation. Proglacial lakes, many dammed, caused catastrophic release of discharge in certain areas. This is best exemplified by the Lake Missoula, Montana dam burst, which is the largest flood recorded in the geologic record. The result caused widespread channeled scablands (Buetz 1923).

Early deglaciation melt waters discharged through the Mississippi River (Kenett and Shackleton 1975; Broecker et al. 1988). However, by about 11,000 BP, ice sheet ablation opened up the St. Lawrence River drainage network (Broecker et al. 1989). The outflow caused a low salinity lens in the subpolar North Atlantic, which depressed sea surface temperatures (Ruddiman and McIntyre 1981). The lens affected deep sea mixing and diminished North Atlantic deep-water production. This triggered atmospheric circulation changes in the Atlantic that resulted in decreased atmospheric convection (Folland et al. 1986). Such changes led to climate feedbacks, which ultimately cooled the hemisphere.

The early and middle Holocene (10,000 – 4,500 BP) was warmer than the last 4,500 years, even with Laurentide ice sheet remnants present in high latitudes. The warmth represented mainly summer increases in temperature over annual increases. This is based on latitudinal displacements of vegetative zones in eastern North America (Crowley and North 1991). Streams during this period stabilized their channels and developed a meandering (versus

braided) channel habit. The early and middle Holocene was a time of active flood plain aggradation.

The Midwestern United States was approximately two degrees Celsius warmer than present, with most of the increases associated with the summer season (Webb 1985; Bartlein et al. 1984). Warm waters penetrated into higher latitudes during the early Holocene (Hays et al. 1976). Such conditions ultimately led to wetter climate regimes.

By 3,500-4,500 BP there was a return to various warmer and drier, and in areas cooler and drier, climates indicative of the late middle Holocene. This period, known as the SubBoreal or neoglaciation stimulated circulation patterns in the North Atlantic similar to present (Ruddiman 1968). Several episodes of warm and moist conditions occurred during the SubAtlantic (3,000 to 1,750 BP and again during the NeoAtlantic (1,100 to 750 BP). During the Little Ice Age (1450- 1890 BP), cooler conditions returned to the northern hemisphere. This moderate glaciation followed the warmest part of the Holocene. There were two main cool stages about 100 years in length, primarily the seventeenth and nineteenth centuries. Coldest decades occurred during the mid-late 1600s and early and late 1800s. Much of this period overlaps the period of meteorological instruments, which began in the early 1700s (Crowley and North 1991). The Little Ice Age was predominantly a wintertime phenomenon with winter cooling in the United States and marked summer droughts. Southward shifts in mean circulation regimes were common during the cool season. Temperatures were about 1-1.5 degrees Celsius lower than present (Allison and Kruss 1977; Lamb 1977; Zhang and Crowley 1989). Over North America, a more meridional circulation regime, similar to the circulation regime that dominates the present, was normal (Crowley and North 1991).

2.14 SUMMARY: PALEOENVIRONMENTAL CONTEXTS

The project area lies within the Unglaciated Plateaus section of the Oak-Chestnut Forest Region (Braun 1950). Extant secondary forests of the Ohio River drainage basin are composed of mesophytic species such as beech, white and red oak, sugar maple, ash, and walnut. However, the prehistoric forest was not only different from the modern forest in many respects, but was also in a state of gradual change for at least 8,000 years following the retreat of glacial ice. Watts (1979) has examined the pollen record for central Appalachia and the New Jersey Coastal Plain, and has divided the post-glacial era into four periods: the Late Pleistocene, influenced by the proximity of the glacial front and ending about 13,000 BP; the Early Holocene, characterized by the in-migration of tree species from refugia in the south, ending about 9,000 BP; the Hypsithermal, a warm, dry period lasting until 5,500 BP; and the Late Holocene environment during which a relatively stable primary forest became established (Miller, Vento, Marine, and Pollack 2004).

Pollen data suggest that glacial ice began its final melt and retreat between 14,000 and 15,000 years ago (Watts 1979). At Longswamp, immediately south of the ice front, tundra vegetation with grasses, ericaceous shrubs, and dwarf birch was present, suggesting a cold, dry, and windy environment. In the study area during maximum glacial advance, it is likely that similar vegetation occurred. As the glacier retreated, temperatures increased and organic soil horizons developed. Watts (1979) suggests that vegetation of this period may have been a mosaic; stands of spruce, dwarf shrubs, and wet meadows would have occupied areas

free of permafrost, and local areas of tundra would have been found on permanently frozen sites. This environment would have presented little in terms of edible plant resources for human populations. However, large, cold-adapted herbivores such as mastodon, buffalo, and caribou were available as human prey (Miller et al. 2004).

Beginning approximately 13,000 BP, the climate and vegetation of the study area underwent changes as a result of the expansion of species ranges due to increasing temperatures. Webb and Bartlein (1988) define the period between 12,000 and 9,000 BP as a period of decreasing influence of the ice sheet and increasing influence of summer solar radiation, with atmospheric circulation patterns becoming more like those of the present. During this period, the modern vegetation gradient from northeast to southwest first appeared (Webb and Bartlein 1988). Fir, jack pine, paper birch, and white pine were among the earliest immigrants to the area, advancing from glacial-period refugia in the south. Hemlock was present in the study area by 9,600 BP, and oak was also present at a relatively early date. Beech and hickory appear in the pollen record by about 7,500 BP. Chestnut, an exceedingly slow migrant, was not found in the study area until approximately 5,500 BP. Many of the arboreal species that became established at this time represent food resources such as fruits and nuts, known to have been utilized both by humans and by faunal species hunted by humans, such as deer, elk, bear, and other small mammals (Davis 1976; Miller et al. 2004).

A worldwide reversal of the warming climate appears to have occurred during the Early Holocene, although there is debate as to its extent and cause. Termed the Younger Dryas, the period is characterized by an expansion of boreal taxa including spruce, fir, larch, paper birch, and alder (Peteet et al. 1990; Kneller and Peteet 1999). Ice core data places this 1,500-year long period, which began and ended abruptly, between 14,000 and 12,500 years ago (Fiedel 1999). The ice core dates are considered more accurate than radiocarbon dates, which during this period have been shown to be as much as 2,000 years too young. At Alpine Swamp, in northern New Jersey, radiocarbon dates place the boreal expansion between 11,000 and 10,000 BP. The pollen record at Browns Pond in the central Appalachians of Virginia suggests a brief cold reversal at 12,260 BP, possibly correlating with the Older Dryas identified in Europe (Kneller and Peteet 1999). No climatic reversal is evidenced between 11,000 and 10,000 BP at Browns Pond, suggesting that the Younger Dryas cooling may not have extended as far south as Virginia (Kneller and Peteet 1999).

Pollen evidence has been interpreted as indicating that the environment of 10,000 years ago resembled the modern Boreal forest, dominated by pine and without the deciduous food-bearing species that were abundant in the forest after 5,000 BP (Fitting, 1968; Ritchie 1979). However, others have argued that the representation of deciduous elements such as oak in the early pollen profiles indicate the localized presence of deciduous vegetation in the early Holocene forest, rather than contamination or long distance pollen transport (Dincauze and Mulholland 1977; Eisenberg 1978; Milleret al. 2004). Davis et al. (1975) also support the presence of deciduous species in the early post-glacial forest. They have defined a “conifer-hardwood” forest in Maine as early as 9,700 years ago. Delcourt and Delcourt (1980) show the presence of conifer-hardwood forests in the Mid-Atlantic region at 10,000 BP. In addition to conifers and oak, these forests included cold-adapted, mesic species such as birch, elm, ash, ironwood, maple, and beech. Oak and hickory pollen are well represented at 10,000 BP in a core from Browns Pond. The presence of carbonized grape, plum, and hackberry in a

Paleoindian hearth at the Shawnee Minisink site on the Delaware River indicates that understory vegetation common in the temperate forest was present by this early period (Dent and Kauffman 1985).

Thus, by 10,000 BP the region consisted of forest canopy which contained a substantial component of temperate hardwoods. Deciduous hardwoods and their related understory species likely occupied favorable topographic and edaphic niches and initially occurred as patches within a predominantly coniferous forest. Eisenberg (1978) suggests that during the early post-glacial period, oak was also adapted to drier upland sites where soil formation was more advanced. In the southern section of the modern conifer-hardwoods found on the Appalachian Plateau, deciduous species have migrated northward along major valleys and their tributaries (Braun 1950), a situation that may resemble the early to mid-Holocene immigration of deciduous species along stream valleys from glacial refugia in the south (Miller et al. 2004).

Faunal data also support the presence of a forest with a strong component of temperate species. Guilday (1982) has identified a Holocene fauna including six species of large mammals (deer, elk, mountain lion, timber wolf, bear, and bison) and a variety of small mammals such as rabbits, squirrel, grouse, and passenger pigeon. These mammals include mast feeders and browsers, as well as animals that subsist on fruit or bark. Two sources of faunal data evaluated by Guilday are located in central Pennsylvania: New Paris No. 4, a cave in Bedford County (Guilday et al. 1964); and Hosterman's Pit, located in Centre County to the west of the study region (Guilday 1967). The faunal complex at New Paris No. 4 was radiocarbon dated to 11,300 BP ± 1000 years, and revealed a fauna in transition from predominantly boreal species to a greater admixture of temperate forest species. Pollen accompanying the faunal remains in the upper zone of the cave indicates the immigration of oak and birch into a predominantly pine-spruce community. At Hosterman's Pit, which dated to 9,290 BP ± 1000 years, fauna include predominantly temperate forest species such as squirrel, pine mouse, rabbit, and deer. In addition to these central Pennsylvania sites, fauna associated with temperate conditions were present in levels dated circa 11,300 BP at Meadowcroft Rockshelter in western Pennsylvania (Adovasio et al. 1985). These animals include box turtle, turkey, eastern mole, and pine or woodland vole (Miller et al. 2004).

Thus, the evidence suggests that faunal resources were diverse during the early Holocene, including both those adapted to boreal and those adapted to deciduous forests (Eisenberg 1978). Guilday et al. (1977) note that the distribution of fauna depended on biotic gradients related to variations in topographic and edaphic conditions. Eisenberg (1978) cites evidence of mammoth and white-tailed deer co-occurring in the Northeast. The temperate forest faunal remains and pollen dating to circa 11,300 BP at Meadowcroft may have been the localized result of favorable temperature and moisture regimes within the Cross Creek drainage (Adovasio et al. 1985).

There is evidence to suggest that the period between 9,000 and 5,500 BP was characterized by a climate warmer and drier than present. Evidence for this Hypsithermal Period is strong in the Midwest, where pollen data shows an advance of the prairie eastward into Illinois, reaching its maximum extent at about 7,000 BP (Bartlein et al. 1984; King 1980). In the eastern United States, evidence for a warmer, drier period at this time, summarized by Graetzer (1986), includes a peak in grasses at Bear Meadows in Centre County, Pennsylvania (Kovar 1965),

and xeric vegetation on the Cumberland Plateau in Tennessee (Delcourt 1979). Davis et al. (1980) point to an increase in the altitudinal range of hemlock and white pine as evidence of a warmer, drier period between 9,000 and 5,000 BP in New England. Watts (1979), in his examination of pollen diagrams in the Middle Atlantic region, supports the hypothesis of a warmer, drier climate between 8,500 and 5,500 BP (Miller et al. 2004).

Effects of the warmer, drier climate included a decrease in the number of low order streams, lower water volume in streams generally, a decrease in biomass on ridges, and a lowering of the water table (Graetzer 1986; Watts 1979). Evidence provided by correlations of pollen core data with pollen from surface samples from known vegetation types suggests that the overall composition of the vegetation did not change radically (Bradstreet and Davis 1975). However, changes in hydrology and decreases in productivity would likely have had some effect on the distribution of prehistoric populations. Specifically, upland areas would have become relatively less attractive, whereas major riverine areas such as the Ohio, Delaware and Susquehanna floodplains and terraces would have been relatively more attractive (Miller et al. 2004).

Although there is some disagreement regarding the occurrence of a mid-Holocene climatic optimum in the Northeast, there is still greater disagreement regarding the climate following 5,000 BP. A number of researchers have presented evidence that is interpreted as indicating an environment characterized by severe climatic fluctuations, including a warm, dry, or xerothermic, period between 5,000 and 2,600 BP (Carbone 1976; Custer 1988; Curry and Custer 1982; Vento and Rollins 1989; Vento et al. 2008). Joyce (1988) notes that researchers have presented a variety of dates within this period for the proposed xerothermic period. Curry and Custer (1982) argue that the xerothermic corresponds to the warm, dry conditions of the Atlantic/Sub-boreal period in the Blytt-Sernander system (described in Zeuner 1952), originally developed to describe European climatic change, but frequently applied without reservation to North America. In contrast, others researchers argue that although there were undoubted fluctuations in temperature and moisture after 5,000 BP, these were no more than low amplitude fluctuations of short duration (Beckerman 1986; Joyce 1988; Watts 1979). Impacts on vegetation were likely minimal and the composition of the forest, as a result, was similar to the present day forest in many respects (Miller et al. 2004). Custer (1984, 1988) points to a decrease in hemlock and an increase in hickory in many of the major pollen studies of the northeastern United States. Hickory, in this sense, is considered an indicator of relatively dry conditions. However, as both Custer (1988) and Carbone (1976) remark, the inability to identify pollen to the species level renders such an interpretation problematical. Mesic species of hickory exist (*Carya cordiformis, Carya ovata*) and are common in the modern biota (Joyce 1988). Most xeric hickory species also grow and thrive on moist, fertile soils. The sudden and synchronous decline of hemlock across a wide range of latitudes, cited as an indicator of dry conditions, is strongly supportive of disease rather than climatic change as the cause (Bhiry and Filion 1996; Davis 1983; Watts 1979, 1983). Likewise, pollen profiles do not exhibit significant increases in non-arboreal pollen such as grasses, amaranth, and chenopod, which would suggest a significant decline in over story vegetation resulting from decreasing precipitation and increasing temperatures (Miller et al. 2004).

Carbone's (1976) quantitative analysis of data from the Shenandoah Valley is often cited to support the proposition that warm and dry conditions were present in the Middle Atlantic

during the Late Holocene. The study followed a methodology developed by Webb and Bryson (1972), who utilized modern pollen samples and modern climatic data from 73 sample locations in the Midwest and, using canonical correlation, calculated a set of mathematical transfer functions relating pollen frequency to climatic variables. Webb and Bryson then applied these transfer functions to three fossil pollen cores located within the same region. Carbone applied this methodology to raw data from Hack Pond, located in the Shenandoah Valley of Virginia. From this study Carbone concludes that the climate of the Shenandoah Valley involved a warm, dry period that culminated around 4,350 BP (Miller et al. 2004). This period involved "increased temperatures, increased desiccation and moisture stress" (Carbone 1976). It is not clear in Carbone's discussion at what time temperature and precipitation reached modern conditions, although Carbone states "the climatic shifts of the last 4,000 to 5,000 years can be better understood as perturbations of the modern pattern rather than as actual long-term shifts" (Carbone 1976). Problems in dating these shifts may arise from the fact that the most recent radiocarbon sample from Hack Pond was from a depth of approximately 1.40 meters and returned a date of 9,520 ± 200 BP. Although not explicitly stated, Carbone apparently assumed a constant rate of deposition over the last 9,000 years, an assumption that may be invalid given what is known of variation in alluvial deposition during this period (Vento and Rollins 1989; Vento et al. 2008).

A basic assumption of the Webb and Bryson (1972) study, upon which Carbone's work was based, is that climate can be considered the primary controlling factor for the composition of past vegetation. The authors indicate that this assumption is probably valid within the study region. This reasoning is likely based on the proposition that other factors controlling vegetation, such as topography and soils, is constant between the modern and fossil samples. Carbone's study violates this assumption in that, rather than developing transfer functions from sample sites in the Shenandoah Valley; he uses the same mathematical transfer functions developed by Webb and Bryson for the Midwest. These functions should not be considered applicable to regions where factors such as soil and topography are radically different from the Midwest (Miller et al. 2004).

Further, Carbone notes that Webb and Bryson caution that climatic factors controlling pine in the Midwest are different than factors controlling pine in the southeast (Carbone 1976). Carbone reasons that because deciduous vegetation in the two regions was similar, the pine problem is unlikely to significantly affect the overall results. However, any number of similar, but unrevealed, problems may exist in the study as a result of applying transfer functions developed in the Midwest to the Middle Atlantic region (Miller et al. 2004).

Alluvial stratigraphy is also cited as evidence for warm, dry conditions in the Late Holocene are alluvial characteristics. Increases in overbank deposition rates have been interpreted as indicating increased runoff resulting from decreased vegetative cover. Such interpretations are based in part on Knox's (1972) study of the morphology of stream channels and floodplains in southwestern Wisconsin. Knox interprets increased alluviation prior to 6,000 BP as resulting from a warm, dry period in which climate was primarily influenced by dry westerlies. This period is well documented in the pollen profiles of the Midwest, which indicate an eastward migration of the Midwestern prairie prior to 6,000 BP (King 1980). Following 6,000 BP, Knox theorizes that increasing rainfall and vegetation would have resulted in a decrease in the magnitude and frequency of peak flows, thus decreasing overbank deposition.

Knox notes that the period of greatest sediment yield during the climatic evolution from humid to arid to humid conditions would have occurred at the end of the warm, dry period, during which vegetation was at a minimum but rainfall had increased (Miller et al. 2004).

Studies of alluvial stratigraphy in the Middle Atlantic region indicate that overbank deposition was rapid during the period between approximately 5000 and 3000 BP. Vento and Rollins (1989) and Vento, Rollins, Vega, et al. (2008) have identified rapid vertical accretion in the Ohio and Susquehanna River basins, consisting of sediments with Late Archaic and Transitional Period cultural material. Scully and Arnold (1981) found evidence of increasing vertical accretion in the Upper Susquehanna Basin after 4,900 BP. Carbone (1976) points to the rapid deposition of culturally sterile, sandy clay loam between 5,000 and 2,700 years ago as an indication that vegetation was at a minimum as a result of increased temperatures and decreased rainfall (Miller et al. 2004).

Despite the significance of Knox's studies for understanding the relationship between the climatic changes of the climatic optimum and the stream channels and floodplain characteristics of the Midwest, the presence of similar alluvial characteristics in the Late Holocene (Sub-boreal) of the Middle Atlantic region does not necessarily indicate that the same climatic changes were in progress. Hydrological studies show that the magnitude of precipitation decrease needed to affect substantially the sediment yield and flood size is quite large. According to data gathered by Langbein and Schumm (1958), a decrease in precipitation causing vegetation change from forest to grassland would result only in a 30% increase in sediment yield. Late Archaic and Transitional Period overbank deposition apparently increased to at least this degree, yet there is no evidence in pollen profiles of grassland vegetation during this period. Data presented by Knox (1972) indicate that changes in mean annual precipitation have little effect on flood size above 650 millimeter mean annual precipitation. Modern precipitation in the Susquehanna, Delaware and Ohio River basins are approximately 900 millimeters annually. Thus, arid conditions would have been required for decreased rainfall to affect either the sediment yields of drainage basins or the magnitude of overbank flooding. As noted above, there is no evidence of vegetation changes in the Late Holocene-age pollen data of the Middle Atlantic region that would indicate a change to arid conditions. At most, the pollen data cited as evidence for a warm, dry period would indicate a shift in over story composition involving an increase in xeric species. However, as noted above, this interpretation of the pollen profile is not irrefutable (Miller et al. 2004).

Vento and Rollins (1989) and Vento et al. (2008) accept the hypothesis of a warm, dry Sub-boreal; they attribute rapid vertical accretion to changes in atmospheric circulation patterns. Based on Knox's (1983) discussion of the effects of zonal vs. meridional circulation, Vento et al (2008), as well as Joyce (1988), point to an increase in meridional circulation which resulted in more frequent cyclonic storms, causing more frequent overbank flooding. Miller (2004) notes that such an interpretation does not depend on an overall decrease in precipitation and/or decrease in vegetation to explain the increase in alluvial deposition. Although at present there are no independent supporting data for this interpretation, the hypothesis is not in conflict with the pollen data as is the hypothesis of severe climatic change (Miller et al. 2004).

Miller et al. (2004) further notes that there is no conclusive evidence of a widespread warm, dry climate such as that hypothesized by Carbone (1976) and Curry and Custer (1982) for the period between 5,000 and 2,600 BP. Rather, data suggest that modern levels of temperature and precipitation prevailed in the eastern United States and the Ohio River drainage basin in general. Cyclonic storms, as evidence by flood scouring and the deposition of coarse-grained material on the floodplain, likely occurred with greater frequency that in previous period. Floodplain and terrace soils supported mesophytic species such as beech, oak, tulip tree, ash, sugar maple and walnut. Upland soils supported forest communities dominated by chestnut, hickory, and oak. The Late Holocene forest differed from the modern forest primarily in age structure, the Late Holocene vegetation being an all-aged forest containing a mosaic of gaps caused by falls of senescent trees and in various stages of regeneration. These gaps supported a variety of edible resources that grow best in the open, including berries such as blackberries, raspberries, and a variety of tubers (Miller et al. 2004).

3. RESULTS OF GEOMORPHOLOGY INVESTIGATIONS

The geomorphology assessment presented below is based upon the in-field examination of the landforms and associated soils examined at Raccoon Creek Crossing #1, Raccoon Creek Crossing #2, Fishpot Creek, Mill Creek, Peggs Run, Potato Garden Run, Millers Run, Robinson Run and Westland Run along the proposed Shell Falcon pipeline corridor.

Stream Name	Landform	Soil Profile	Geomorphic Recommendations
Raccoon Creek #1-south bank	Parker Strath	Ap-Bw1-Bw2-C	STPs
Raccoon Creek #1-north bank	T0	A-Cg-C, A-CB-Cg-C	No testing warranted, hydric, disturbed in areas, recent alluvium
Fishpot Run		A-CB-C	No testing warranted, recent alluvium
Raccoon Creek #2-east bank	Parker Strath	Ap-Bw1-Bw2-C	STPs
Raccoon Creek #2-east bank	T0	A-AB-Bw-C; AC-Cg1-Cg2	STPs, along levee zone, no testing in marsh area distal portion of flood plain
Mill Creek	T0	A-Cg1-Cg2-C3	No testing warranted, yydric soils, recent alluvium
Mill Creek	Alluvial Fan	Ap-Bw-C	STPs
Peggs Run	T0	A-C	No testing warranted, recent alluvium
Potato Garden Run	T0	Fill/A-C	No testing warranted, recent alluvium
Potato Garden Run	T1	A-Bw1-Bw2-C	STPs
Millers Run	T0	Disturbed/Fill/A-C	No testing warranted, disturbed, recent alluvium
Robinson Run	T0	A-Cg-C	No testing warranted, recent alluvium, hydric
Westland Run	T0	Fill/A-C	No testing warranted, disturbed, recent alluvium

Table 2: Geomorphic Recommendations for Stream Crossings

3.1 RACCOON CREEK CROSSING #1 (MP 22.9-23.4)

The proposed crossing along Raccoon Creek between MP 22.9 and 23.4 will be accomplished by horizontal directional drilling (HDD). The pipeline corridor crosses the stream in a north to south orientation. On the south bank, the broad T0 flood plain is situated on the inside of a broad meander bend with soils mapped to the Pope series. The T0 flood plain lies at a nominal elevation of 810 feet above sea level. The HDD on the south side of the stream is situated at a nominal elevation of 880 feet above sea level on a high T1 terrace of probable Illinoian age. The HDD on the south side of the stream is situated approximately 25 meters (80 feet) above the active stream channel, which lies at an interpolated elevation of 800 feet above sea level and on the same probable Illinoian Stage terrace (Parker Strath Terrace). The soils along the south bank at the location of the HDD are mapped to the Monongahela series. Monongahela soils are often associated with high terraces of the early Wisconsin Stage or to the Illinoian Stage Parker Strath terrace within the Ohio River drainage basin. The T1 terrace lies well above the 500-year flood way zone. The bedrock units which underlie the alluvium on both the T1 terrace and the lower flood plain zone are ascribable to the Glenshaw Formation of the Conemaugh Group (Figures 4-10).

On the north bank, the T0 flood plain zone is broader than that on the south bank. The T1 terrace situated at 80 feet above the active stream on the north bank is narrow, being bound to the north by steep, bedrock slopes defended by sandstones of the Glenshaw Formation of the Conemaugh Group. The HDD on the north side of the stream is situated at a nominal elevation of 820 feet above sea level. A large wetland area lies along the distal margin of the flood plain in the immediate area of the proposed HDD (see Figures 4-10).

Auger probes emplaced on the high, Parker Strath Terrace (T1 terrace) on the south bank consisted of a 15 to 20-centimeter thick dark brown (10YR 3/3) silt loam Ap horizon that was underlain disconformably by a 25-centimeter thick yellowish brown (10YR 4/6) weak subangular blocky silt loam Bw1 horizon. The Bw1 horizon was underlain conformably by a yellowish brown (10YR 4/6) moderate subangular blocky silt loam Bw2 horizon. The Bw2 horizon was then underlain by a pebbly gravelly loam sand C horizon. Testing in the proposed HDD area on the south bank can be accomplished by standard shovel test probes. Testing on the low-lying T0 flood plain zone was limited to the area of the proposed HDD, which is situated along the distal margin of the flood plain of Raccoon Creek. In this area, a small, first-order tributary bisects the proposed pipeline corridor and lies just south of the HDD. The HDD along the pipeline corridor is located within a community park area where there has been limited grading as well as impact from a buried, gas utility line. In the area of the proposed HDD, much of it consists of a wetland area dominated by obligate wetland species. During the field testing, standing water was present in “pockets” within the wetland zone. The T0 landform lies well within the mapped boundary of the 100-year flood way zone. Four auger probes were excavated within the “footprint” of the HDD as well as several auger probes were excavated to the south of the HDD and unnamed tributary. Auger Probe 1 was abandoned due to fill comprised of coarse gravel. Auger Probes 2 and 3 were excavated within the proposed HDD and consisted of a 50-centimeter thick black (10YR 2/1) organic rich (nearly histic) clay loam A horizon, which was underlain by a more than 50-centimeter thick gray (10YR 5/1) massive, plastic clay Cg horizon. The probes were abandoned at 1.0 meter (3.3 feet) below ground surface due to the water table which was encountered within 50-centimeter of the ground surface. Auger Probes 4, 5 and 6

were excavated to the south of the proposed HDD and unnamed tributary in an area that lacked the obligate and facultative wetland species noted in the area of Auger Probes 2 and 3. The soil profiles encountered were quite similar and consisted of a 50-centimeter thick dark brown (10YR 3/3) silt loam A horizon. The A horizon was underlain by a 24-centimeter thick weak subangular blocky to strong granular dark yellowish brown (10YR 3/4) silt loam BC/weak Bw horizon. The B horizon was underlain by a 46-centimeter thick mottled, grayish brown (10YR 5/2) clay loam CB horizon. The CB horizon was underlain by thick gray (10YR 5/1) massive plastic clay Cg horizon. The probe was abandoned at 1.40 meters (4.7 feet) below ground surface due to the water table. The thickness of the hydric soil package on the distal margin of the flood plain zone and the clayey texture of the soils indicates a long period of hydric soil conditions, with the slack water deposition of clays in the distal portion of the Raccoon Creek flood plain (see Figures 4-10).

3.2 FISHPOT RUN (MP 31.3)

The proposed pipeline corridor will entail an open cut along the valley bottom zone of Fishpot Run. Fishpot Run is a second-order tributary of the Ohio River. From the proposed pipeline crossing, Fishpot Run flows 300 meters (1,000 feet) due east to its confluence with Raccoon Creek. The soils in the project area corridor on the narrow (30 meters wide) valley bottom zone are mapped to both the Tilsit soils and to the Gilpin-Weikert Complex. The Tilsit and Gilpin-Weikert soils are residual soils with fragic or argillic subsoil horizons formed on bedrock of the Allegheny Formation and Glenshaw Formations, however, immediately to the east of the corridor are alluvial soils mapped to the Philo Series. The nominal interpolated elevation of the valley bottom zone at the proposed crossing is 730 feet above sea level, while the elevation of Raccoon Creek is 710 feet above sea level. The stream exhibits a gradient of 80 feet per mile. The narrow valley bottom zone is bound to the north and south by steep valley slopes defended by the younger Glenshaw Formation of the Conemaugh Group (Figures 11-15).

The alluvial soils along the valley bottom zone of Fishpot Run are recent/historic in age. The narrow valley bottom is flood scoured, and the soils can best be classified as Fluvaquents (Entisols). The profile consists of a variably thick (12 to 18 centimeters) dark brown (10YR 3/3) channery silt loam A horizon, which is underlain by a 20 to 28-centimeter thick dark yellowish brown (10YR 4/4) channery silt loam CB horizon, which is then underlain by relict, coarse grained lateral accretion deposits of probable historic age. Given the very late Holocene-age of the soils on the low bottom zone, no additional archaeological inventory investigations are warranted or recommended.

3.3 RACCOON CREEK CROSSING #2 (MP 32.7 TO 33)

Raccoon Creek Crossing #2 will be accomplished by employing an HDD on both side of the active stream channel. On the east bank, the valley bottom zone is nonexistent due to the fact that the channel cut bank of Raccoon Creek is incising the lower valley slopes. The HDD on the east side of the stream lies at an interpolated elevation of 960 feet above sea level. The 900 to 960 foot elevation range marks the position of the Illinoian Stage Parker Strath Terrace. The soils on the east bank are mapped to the Monongahela series. On the west bank, the pipeline corridor crosses a broad flood plain zone which contains expansive wetland areas. The proposed HDD on the west bank lies at a nominal elevation of 710 feet above sea level on the distal margin of a

broad T0 flood plain zone. The sols mapped to the HDD on the east bank are the Allegheny silt loam (Figures 16-27).

Auger and shovel test probes emplaced on the high, Parker Strath Terrace (T1 terrace) on the east bank consisted of a 12 to 24-centimeter thick dark brown (10YR 3/3) silt loam Ap horizon that was underlain disconformably by a 20 to 30-centimeter thick yellowish brown (10YR 4/6) weak subangular blocky silt loam Bw1 horizon. In places, the Bw1 horizon was underlain conformably by a yellowish brown (10YR 4/6) moderate subangular blocky silt loam Bw2 horizon. The Bw2 horizon was then underlain by a pebbly gravelly loam sand C horizon. Testing in the proposed HDD area on the east bank can be accomplished by standard shovel test probes.

On the distal margin of the flood plain (Auger Probe 2), augering encountered a 60-centimeter thick dark yellowish brown (10YR 4/4) loose loam sand AC horizon, which was then underlain by coarse sands and gravels. The water table was encountered at 60 centimeters below ground surface. Auger Probe 3 was situated in a wetland area approximately 40 meters (120 feet) from the roadway. The soil profile consisted of a 30-centimeter thick dark brown (10YR 3/3) massive clay loam AC horizon. The AC horizon was underlain by a 70-centimeter thick gray to grayish brown, plastic, massive Cg1 horizon. The Cg1 horizon contained redox of iron along relict root casts as well as small manganese nodules. The Cg1 horizon was underlain by a massive, organic-rich, plastic gray (10YR 2/1) clay. Augering was terminated at 1.20 meters below ground surface in the massive, gray clay due to the water table. Auger 4 was situated approximately 10 meters (33 feet) from the roadway outside the obvious wetland area. The profile consisted of a 30-centimeter thick dark brown (10YR 3/3) silt loam A horizon. The A horizon was underlain by a 10-centimeter thick dark yellowish brown (10YR 4/4) AB horizon. The AB horizon was underlain by a 20-centimeter thick, yellowish brown (10YR 4/6) weak subangular blocky silt loam Bw horizon. The Bw horizon was underlain by a 30-centimeter thick loam sand C1 horizon. The C1 horizon was then underlain by coarse sand with gravel. The water table was encountered at 60 centimeters below ground surface. Auger 5 was excavated adjacent to an unnamed small rill which drains across the flood plain zone into Raccoon Creek. The profile consisted of a 40-centimeter thick dark brown (10YR 3/2) very dark brown clay loam A horizon. The A horizon was underlain by a more than 80-centimeter thick, massive grayish brown clay Cg horizon. The probe was abandoned at 1.20 meters below ground surface due to the water table.

Auger 6 was excavated closest to the active stream channel. The profile consisted of a 30-centimeter thick dark brown (10YR 3/4) silt loam A horizon. The A horizon was underlain by a 10-centimeter thick dark yellowish brown (10YR 4/3) AB horizon. The AB horizon was underlain by a 20-centimeter thick, yellowish brown (10YR 4/6) weak subangular blocky silt loam Bw horizon. The Bw horizon was underlain by a 60-centimeter-thick mottled yellowish brown (10YR 4/6) strong granular silt loam BC horizon. The BC horizon was then underlain by coarse sands and gravels (C1). The water table was encountered at 80 centimeters below ground surface. It is clear that as one proceeds east toward the active stream channel the soils are progressively less hydric and exhibit an A/Ap-Bw (cambic B) profile. No buried soil generations were noted along the valley bottom zone of Raccoon Creek. The absence of multiple, stacked soil generations indicates continuous slow vertical accretion of the flood plain. Based upon the color, texture and structure observed on the T0 flood plain zone, the age of the vertical accretion deposits are no older than late middle Holocene.

3.4 MILL CREEK (MP 41)

The proposed pipeline corridor at Mill Creek will employ an open cut along the valley bottom zone and lower valley slopes. Mill Creek is a second-order tributary of the Ohio River. From the proposed pipeline crossing Mill Creek flows north to its confluence with the Ohio River at Georgetown, Pennsylvania. The stream pattern is the region is dendritic with consequent streams incising bedrock of the Casselman and Glenshaw Formations of the Conemaugh Group. Mill Creek exhibits a gradient of 60 feet per mile. Mill Creek can be classified as a stream in the initial stage of development based upon its low discharge, moderately steep gradient, weak meandering channel habit and absence of higher, well defined terraces. During the field survey, a low-lying T0 flood plain zone was present bordering the active stream channel. The T0 flood plain zone lies less than 1.2 meters (4.0 feet) above the active stream channel and lies within the boundary of the 100-year flood way zone. The vegetation on the T0 flood plain consists of both facultative and obligate wetland species. The soils in the project area corridor on the T0 flood plain are mapped to the Atkins series (Figures 24-28).

During the geomorphology field-testing, five auger probes were placed within the project area corridor. Two auger probes were excavated on the T0 landform, while three additional probes were excavated on a broad sloping alluvial/colluvial fan that intersects the flood plain. It should be noted that during the geomorphology field survey, standing water was present along portions of the T0 flood plain along the proposed pipeline corridor. The soils encountered on the T0 landform consisted of a strongly hydric profile with a 20-centimeter thick dark brown to black (10YR 3/3 to 10YR 3/2) clay loam A horizon. The A horizon was underlain by a 10-centimeter thick grayish brown clay loam, massive, plastic Cg1 horizon. The Cg1 horizon was then underlain by a 30-centimeter thick, gray (10YR 2/1) plastic, massive, clay Cg2 horizon. The Cg2 horizon was underlain by gravelly pebbly sands (lateral accretion). The water table was encountered at the base of the A horizon during testing. In several other areas of the flood plain zone closer to the active stream channel, the surface A horizon was immediately underlain by coarse grained lateral accretion deposits. The soils on the T0 landform are of historic age and have no potential to contain *in situ* prehistoric cultural resources.

Three auger probes were emplaced on the lower valley slopes or fan that intersects the valley bottom zone. In all probes, the soils consisted of a variably thick (10-18 centimeter) dark brown (10YR 3/4) channery silt loam Ap horizon which was underlain by a 20- to 40-centimeter thick, yellowish brown (10YR 4/6) channery silt loam Bw horizon. The B-horizon was underlain by weathered shale bedrock. Standard shovel test probes can accomplish testing on the alluvial/colluvial fan.

The soil profiles encountered on the low lying flood plain zone on the west side of the stream channel consisted of a 28- to 40-centimeter thick very dark greyish brown (10YR 3/2) silty clay A horizon with 40-50 percent gravels. The A horizon was nearly histic in composition with abundant decomposed and partially decomposed organics present as well as streaks of iron oxides along root casts. The A horizon was underlain by a strong brown (7.5YR 4/6) clay loam Bg/Cg horizon also exhibiting redox of iron oxides along relict root rhizomes. The soils were disturbed inside of the fence for the miniature historic village. There was also some standing water sporadically in the area.

3.5 PEGGS RUN

Peggs Run is a small second-order tributary of the Ohio River. Peggs Run flows due west to its confluence with the Ohio River at Shippingport, Pennsylvania. The artificial pool at Shippingport is 665 feet above sea level. The stream gradient along the tested reach of Peggs Run is 80 feet per mile. The valley bottom zone is bound by steep, bedrock defended valley slopes. The bedrock that crops out at Peggs Run is ascribable to the Glenshaw Formation of the Conemaugh Group.

The open cut along Peggs Run will impact a very narrow, low-lying T0 flood plain zone which is situated less than 0.6 meters above the active stream channel at nominal interpolated elevation of 950 feet above sea level. The soils along Peggs Run consisted of a 12- to 22-centimeter thick dark brown (10YR 3/3) gravelly loam sand A horizon which was underlain by coarse sands and gravels. The immature soil profile is of historic age and documents extensive flood scouring along the valley bottom zone. The effect of historic deforestation has allowed for increased slope wash, higher sediment yields and increased surface runoff. The Entisol/Fluvaquent soils along the valley bottom zone of Peggs Run have no potential to contain *in situ* prehistoric cultural resources (Figures 29-33).

3.6 POTATO GARDEN RUN (MP 15.4)

Potato Garden Run is a second-order tributary of the Ohio River. From the proposed pipeline corridor Potato Garden Run flows due north to its confluence with Raccoon Creek at Murdocksville, Pennsylvania. The pipeline crosses Potato Garden Run along the upper contributory reach of the stream. The valley bottom zone of the stream will not be impacted due to an HDD situated to the northeast of the stream channel on a high, probable late Wisconsin-age terrace situated more than 10.0 meters (33.0 feet) above the stream. The HDD lies at a nominal elevation of 1,110 feet above sea level. The interpolated elevation of the narrow valley bottom zone is 1,070 feet above sea level, while at its confluence with Raccoon Creek the stream elevation is 860 feet above sea level.

Potato Garden Run is in the early initial stage of development and exhibits a gradient of more than 100 feet per mile. The mapped soils in the project area are ascribable to the Atkins series, while the bedrock is mapped to the Casselman Formation of the Conemaugh Group. Like many streams in the region, surface coal mining has significantly impacted Potato Garden Run. Abundant springs and seeps transporting mine acid drains into the stream within the general study area. During the field-testing, the low bottom zone was not formally tested due to standing water across the low lying flood plain. Numerous anastomosing small channels cross the valley bottom zone, all of which contain shale channers, mine acid, and coal rock fragments. The valley slopes and uplands both southeast and northeast of the stream channel have been strip mined. The effect of mining has allowed for increased surface runoff, higher sediment yields and higher stream discharges along Potato Garden Run (Figures 34-37). The soils on the low flood plain zone, which lies less than 1.0 meter (3.3 feet) above the stream channel(s), are of recent age and have no potential to contain *in situ* prehistoric cultural resources.

A narrow (10.0 meter/32.9 feet wide) T1 terrace on the southeast side of the valley bottom zone was identified and examined by auger probes. The terrace lies 6.0 meters (19.5 feet) above the

active stream channel. The terrace is bound to the northeast by the low flood plain zone and to the southeast by a steep berm that rises to a paved roadway. The soils on the T1 terrace consisted of a 30-centimeter thick dark brown (10YR 3/4) silt loam A horizon, which was underlain by a 30-centimeter thick dark yellowish brown (10YR 4/4) weak subangular blocky silt loam Bw1 horizon. The Bw1 horizon was conformably underlain by a 40-centimeter thick yellowish brown (10YR 4/6) moderate subangular blocky silt loam Bw2 horizon. The Bw2 horizon was underlain by gravelly pebbly sands (lateral accretion). Based upon the geomorphology assessment, no testing is warranted or recommended on the low lying, flood scoured flood plain zone. Several standard shovel test probes can effectively test the higher T1 terrace (see Figures 34-37).

3.7 MILLERS RUN

The proposed pipeline corridor at Millers Run will entail the use of HDD to avoid impact to the valley bottom zone. Millers Run flows due east to its confluence with Chartiers Creek at Bridgeville, Pennsylvania. The HDD pad on the north side of the stream lies at an interpolated elevation of 1,110 feet above sea level, while on the south side of the stream the HDD is situated on a high hill at an interpolated elevation of 1,260 feet above sea level. The bedrock units along the propose pipeline corridor are mapped to the Washington and Waynesburg Formations of the Upper Pennsylvanian Monongahela Group. The soils on the valley bottom zone are ascribable to the Mine Dump series. The valley bottom zone valley slopes within the project area corridor have been significantly impacted by both deep and surface mining. There are numerous mine spoil piles and pits both upstream and downstream from the pipeline corridor (Figures 38-42).

The principal landform on the valley bottom zone is a low-lying T0 flood plain zone situated 1.0 to 1.2 meters (3.3 to 4.0 feet) above the active stream channel. The valley bottom zone has been impacted by mining as well as by construction of an active railway line and utilities for homes bordering the roadway and stream. The extant Montour Mine building structures occur throughout the valley bottom zone in the entire project area corridor with obvious disturbance to the soils. The mining structures are large with deep "footers" that in some cases extend more than 2.0 meters (6.6 feet) into the ground. Exposed bank cuts along the T0 landform indicate that the soils are entirely recent in age and consist of coarse-grained flood deposits (A/Fill-C horizons). The absence of any subsoil horizons is not unexpected, given the degree of historic disturbance to the soils as well as the high flow velocities associated with historic deforestation and mining activities**.** The residual soils at the HDD to the north of the active channel are mapped to the Glenford soil series, while the HDD on the south side of the stream channel the residual soils are mapped to the Guernsey and Culleoka soil series. Given the age and disturbance to the soils on the valley bottom zone as well as the use of HDDs along the project area corridor, no additional testing is warranted or recommended on the valley bottom zone (see Figures 38-42).

3.8 ROBINSON RUN

Robinson Run is a second-order tributary of the Ohio River. From the study area corridor, Robinson Run flows southeast to its confluence with Chartiers Creek. In the immediate study area, the valley bottom zone is bound to the north by a railway line and along the distal margin of the flood plain zone is a large abandoned strip mine. Immediately to the southeast are several

large “tipple” piles that are on the active flood plain (Figures 43-46). The vegetation along the valley bottom consists of both facultative and obligate wetland species. The T0 flood plain soils are mapped as Fluvaquents (Entisols) and as Mine Dump soils. The valley bottom zone is bound to the north and south by moderately steep valley slopes defended by the Casselman Formation of the Conemaugh Group (see Figures 43-47).

During the geomorphology field-testing, only a single, low lying T0 flood plain zone was encountered along the valley bottom zone. The T0 flood plain is situated less than 1.0 meter (3.3 feet) above the active stream channel. A large wetland area with standing water is situated on both sides of the active stream channel. The hydric soils encountered on the poorly drained flood plain zone consisted of an 11- to 40-centimeter thick black (10YR 3/1) organic-rich granular silt loam A horizon, which was underlain by a variably thick gray to grayish brown (10YR 6/1 to 10YR 6/2) clay loam Cg horizon. The Cg horizon documents slackwater deposition on the flood plain during historic times and is underlain by relict, lateral accretion deposits of historic age.

Auger probes and shovel tests placed on the valley bottom zone encountered strongly hydric soils of recent/historic age. The profiles consisted of a variably-thick, organic-rich dark brown (10YR 3/2) silt loam A horizon that contained both shale and coal rock fragments. The A horizon was underlain by a gleyed, gray (10YR 2/1) Cg horizon, which in turn was underlain by historic lateral accretion deposits. The lateral accretion deposits contained abundant coal, shale and sandstone rock fragments. While the low bottom zone has no potential to contain *in situ* prehistoric cultural resources, the proposed pipeline corridor will employ an HDD to limit impact to the flood plain zone. The HDD on the north side of the stream will lie within the strip mined area, while to the south the HDD will lie on a high hill at a nominal elevation of 1,200 feet above sea level.

Based upon the above, no additional archaeological investigations are warranted or recommended on the strip mined portion of the HDD or on the valley bottom zone of Robinson Run.

3.9 WESTLAND RUN (MP 1.0)

Westland Run and Robinson Run are the only two tributaries of Chartiers Creek along the pipeline corridor. From the study area, Westland Run flows south to its confluence with Chartiers Creek just west of Export, Pennsylvania. Chartiers Creek then flows due east to its confluence with the Ohio River at McKees Rocks, Pennsylvania. Westland Run is a second-order tributary of the Ohio River. During the field-testing, only a single, narrow, flood-scoured T0 flood plain zone was present along the open-cut pipeline corridor. The T0 landform lies at a nominal interpolated elevation of 1,030 feet above sea level and is situated less than 1.0 meter (3.3 feet) above the active stream channel. Westland Run exhibits a gradient of 68 feet per mile and can be considered in the initial stage of drainage development based upon its low discharge, moderately steep gradient, weak meandering channel habit and absence of higher terraces (Figures 48-52).

In the immediate study area, a deep mine shaft (horizontal shaft) is situated at less than 300 meters (984 feet) to the north of the pipeline corridor at an elevation of 1,038 feet above sea

level. The bedrock units are mapped to the Casselman Formation of the Conemaugh Group. To the south and east of the pipeline corridor is a now-abandoned strip mine. The soils in the study area are mapped as Mine Dump. Field-testing in the project area corridor supports the soil survey mapping as Mine Dump Land. Most of the proposed right-of-way (ROW) is situated along a ground transmission line with deep disturbance to the soils. In the wooded area lying nearer to the active stream channel, the soils consisted of a 20- to 40-centimeter thick dark brown (10YR 3/3) silt loam A-horizon that contained more than 40% matrix-supported coal, slag and rounded rock fragments. The A horizon was underlain by coarse grained lateral accretion deposits consisting of coal rock fragments, slag, shale and sandstone. The valley bottom zone in the immediate study area has no potential to contain *in situ* prehistoric cultural resources due to flood scouring during historic times, as well as impact from utility line construction (see Figures 47-52).

4. REFERENCES

Adovasio, J. M., J. D. Gunn, J. Donahue and R. Stuckenrath
1977 Meadowcroft Rockshelter: Retrospect 1976. *Pennsylvania Archaeologist* 42(2-3):1-93.

Adovasio, J. M., R. C. Carlisle, K. A. Cushman, J. Donahue, J. E. Guilday, W. C. Johnson, K. Lord, P. W. Parmalee, R. Stuckenrath and P. W. Wiegman
1985 Paleoenvironmental Reconstruction at the Meadowcroft Rockshelter, Washington County, Pennsylvania, in *Environments and Extinctions: Man in the Late Glacial North America*, J. I. Mead and D. J. Meltzer (eds.), Center for the Study of Man, University of Maine, Orono, Maine. pp. 73-110.

Allison, I., and P. Kruss
1977 Estimation of recent climate change in Irian Jaya by numerical modeling of its tropical glaciers, *Arctic, Antarctic, and Alpine Research*, 9:49-60.

Barnola, J.M., D. Raynaud, U.Y.S. Korotkevich and C. Lorius
1987 Vostok ice core provides 16,000-year record of atmospheric CO_2, *Natur*e, 329:408-414.

Barry, R.G.
1983 Late-Pleistocene climatology, In: *Late-Quaternary Environments of the United States, The Late Pleistocene*, v.1., H.E. Wright, and S.C. Porter (Eds.), Univ. Minn. Press, Minneapolis, pp 390-407.

Bartlein, P.J., T. Webb III and E. Fleri
1984 Holocene climatic change in the northern Midwest: Pollen-derived estimates, *Quaternary Research* 22:361-374.

Beckerman, I. C.
1986 *Prehistoric Settlement and Subsistence in Piedmont, North Carolina*. Ph.D. dissertation, Department of Anthropology, Pennsylvania State University, University Park, Pennsylvania.

Beer, J., M. André, H. Oeschger, B. Stauffer, R. Balzer, G. Bonani, C. Stoller, M. Suter, W. Wolfli and R.C. Finkel
1985 Be variation in polar ice cores. In: *Greenland Ice Core: Geophysics, Geochemistry, and the Environment*, CC Langway, H. Oeschger, and W. Dansgaard (Eds), Geophys.Mono., 33. Am. Geophys. Union, Washington, D.C., pp 66-70.

Benson, L. and R.S. Thompson
1987 The physical record of lakes in the Great Basin, In: *North America and Adjacent Oceans During the Last Deglaciation*, W.F. Ruddiman, and H.E. Wright, Jr. (Eds.), The Geology of North America, c.K-3, Geological Society of America, Boulder, Colorado, pp 241-260.

Beynon, D. E. and J. Donahue
1982 The Geology and Geomorphology of Meadowcroft Rockshelter and the Cross Creek Drainage. In *Meadowcroft: Collected Papers on the Archaeology of Meadowcroft Rockshelter and the Cross Creek Drainage*, edited by R. C. Carlisle and J. M. Adovasio, pp. 31-52. University of Pittsburgh, Pittsburgh, Pennsylvania.

Bhiry, N. and L. Filion
1996 Mid-Holocene Hemlock Decline in Eastern North America Linked with Phytophagous Insect Activity. *Quaternary Research* 45:312-320.

Bonnefille, R. and G. Riollet
1988 The Kashiru pollen sequence (Burundi) palaeoclimatic implications for the last 40,000 yr.BP in tropical Africa, *Quaternary Research*, 30:19-35.

Bradstreet, T.E. and R.B. Davis
1975 Mid-Postglacial Environments with Emphasis on Maine. *Arctic Anthropology* 12(2):7-22.

Brakenridge, G.R.
1978 Evidence for a cold, dry full-glacial climate in the American Southwest, *Quaternary Research*, 9:22- 40.

Braun, E.L.
1950 *Deciduous Forests of Eastern North America*. McGraw-Hill Book Company, Inc., New York, New York.

Briggs, R.P.
1999 Appalachian Plateaus Province and the Eastern Lake Section of the Central Lowland Province. In *The Geology of Pennsylvania*, edited by Charles H. Shultz, pp. 362-377. Pennsylvania Geological Society, Harrisburg, and Pittsburgh Geological Society, Pittsburgh, Pennsylvania.

Broecker, W.S.
1975 Floating glacial ice caps in the Arctic Ocean, *Science,* 188:1116-1118.
1989 The salinity contrast between the Atlantic and Pacific Oceans during glacial time, *Paleoceanography*, 4:207-212.

Broecker, W.S., J.P. Kennett, BP Flower, J.T. Teller, S. Trumbore, G. Bonani and W. Wolfli
1988 Routing of Meltwater from the Laurentide Ice Sheet during the Younger Dryas Cold Episode. *Nature* 341:318-321

Bryson, R.A., W.M. Wendland, J.D. Ives and J.T. Andrews
1969 Radiocarbon isochrones on the disintegration of the Laurentide ice sheet, *Arctic, Antarctic, and Alpine Research,* 1:1-14.

Buetz, J.H.
1923 The channeled scablands of the Columbia Plateau, *Journal of Geology*, 31:617-649.

Busch, R.M. and H.B. Rollins
1984 Correlation of Carboniferous Strata using a Hierarchy of Transgressive-Regressive Units. *Geology* 12: 471-47.

Carbone, V.A.
1976 Environment and Prehistory in the Shenandoah Valley. Unpublished Ph.D. dissertation, The Catholic University of America, Washington D.C. University Microfilms, Ann Arbor, Michigan.

Cleland, C.E.
1966 *The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region.* University of Michigan, Ann Arbor, Michigan.

Climate/Long Range Investigation, Mapping, and Prediction project members (CLIMAP)
1976 The Surface of the Ice-Age Earth. *Science* 191: 1,131-1,137.

1981 Seasonal Reconstruction of the Earth's Surface at the Last Glacial Maximum. *Geological Society of America Map and Chart Series MC-36,* Boulder, Colorado.

Cooke, D.W. and J.D. Hays
1982 Estimates of Antarctic Ocean seasonal sea-ice cover during glacial intervals, In: *Antarctic Geoscience*, C. Craddock et al., (Eds.), Univ. Wisconsin Press, Madison, pp 1017-1025.

Cotter, J. F.
1983 *The Minimum Age of the Woodfordian Deglaciation of Northeastern Pennsylvania and Northwestern New Jersey.* Unpublished Ph.D. dissertation, Department of Anthropology, Lehigh University, Bethlehem.

Cotter, J. F. and G. H. Crowl
1984 The Paleolimnology of Rose Lake, Potter Co., Pennsylvania: A Comparison of Palynologic and Paleo-pigment Studies. In *Geobotany II*, edited by R. C. Romans, pp. 91-122. Plenum, New York.

Crowley, T.J. and C.L. Parkinson
1988 Late Pleistocene variation in Antarctic sea ice II: Effect of interhemispheric deep ocean heat exchange, *Climate Dynamics* 3:93-105.

Crowley, T.J. and G.R. North
1991 *Paleoclimatology*, Oxford Monographs on Geology and Geophysics #18, Oxford University Press, NY.

Curry, D.C. and J.F. Custer
1982 Holocene Climatic Change in the Middle Atlantic Area: Preliminary Observations from Archaeological Sites. *North American Archaeologist* 3:275-285.

Custer, J.F.
1984 *Delaware Prehistoric Archaeology*. University of Delaware Press, Newark

1988 Late Archaic Cultural Dynamics in the Central Middle Atlantic Region. *Journal of Middle Atlantic Archaeology* 4:39-59.

1969 Palynology and Environment History During the Quaternary Period. *American Scientist* 57:317-332.

1976 Pleistocene Biogeography of Temperate Deciduous Forests. *Geoscience and Man* 18:13- 26.

Davis, M.B., R.W. Spear and L.C.K. Shane
1980 Holocene Climate of New England. *Quaternary Research* 14:240-250.

Davis, R.E, BP Hayden, D.A. Gay, W.L. Phillips and G.V. Jones
1997 The North Atlantic subtropical anticyclon. *Journal of Climate* 10:728-744.

Davis, R.B., T.E. Bradstreet, R. Stuckenrath, Jr. and H.W. Borns, Jr.
1975 Vegetation and Associated Environments During the Past 14,000 Years Near Moulton Pond, Maine. *Quaternary Research* 5:435-465.

Davis, M. D.
1983 Holocene Vegetational History of the Eastern United States. In *Late-Quaternary Environments of the United States, Volume 2, The Holocene* edited by H. E. Wright, pp. 166-181. University of Minnesota Press, Minneapolis.

Delcourt, H.R.
1979 Late-Quaternary vegetation history of the eastern Highland Rim and adjacent Cumberland Plateau of Tennessee, *Ecological Monographs*, 49:255-280.

Delcourt, H.R. and P. A. Delcourt
1980 Vegetation Maps for Eastern North America: 40,000 Years BP to the Present. In *Geobotany II*, edited by Robert C. Romans, Plenum Press, New York.

1983 Late-Quaternary vegetational dynamics and community stability reconsidered, *Quaternary Research*, 19:265-271.

1985 Quaternary palynology and vegetational history of the southeastern United States, In: *Pollen Records of Late-Quaternary North American Sediments*, V.M. Bryant and R.G. Holloway (Eds.), Am. Assoc. Strat. Palynol. Found., pp. 1-37.

Dent, R. J. and B. E. Kauffamn

1985 Aboriginal Subsistence and Site Ecology as Interpreted from Microfloral and Faunal Remains. In *Shawnee Minisink: A Stratified Paleoindian-Archaic Site in the Upper Delaware Valley of Pennsylvania.* edited by Charles W. McNett, Jr., pp 55-79. Academic Press, New York.

Denton, G.H. and T.J. Hughes
1981 The Arctic ice sheet: An outrageous hypothesis, In: *The Last Great Ice Sheets*, G.H. Denton and T.J. Hughes (Eds.), John Whiley and Sons, New York, pp. 440-467.

Dincauze, D.F. and M.T. Mulholland
1977 Early and Middle Archaic Site Distributions in Southern New England. In *Amerinds and Their Paleoenvironments in Northeastern North America*, Walter S. Newman and Bert Salwen (Eds.), pp. 439-456. Annals of the New York Academy of Sciences, Volume 288, New York.

Donahue, J. and H.B. Rollins
1974 Paleoecological Anatomy of a Conemaugh (Pennsylvanian) Marine Event. In *Carboniferous of the Southeastern United States*, edited by G. Briggs, pp. 152-170. Geological Society of America Special Paper 148, Denver.

Donahue, J. and H.B. Rollins
1979 Geology of the North Appalachian Coal Fields. *Guidebook for the 13th International Conference for Carboniferous Stratigraphers*. University of Pittsburgh Press, Pittsburgh, Pennsylvania.

Eisenberg, L.
1978 *Paleo-Indian Settlement Pattern in the Hudson and Delaware River Drainages*. Occasional Publications in Northeastern Anthropology, No. 4, Rindge, New Hampshire.

Edmunds, W.E., V.W. Skema and N.K. Flint
1999 Pennsylvanian. In *The Geology of Pennsylvania*, edited by Charles H. Shultz, pp. 148-170. Pennsylvania Geological Society, Harrisburg, and Pittsburgh Geological Society, Pittsburgh.

Fairbanks, R.G.
1989 A 17,000-year glacio-eustatic sea level record: Influence of glacial melting rates on Younger Dryas event and deep-ocean circulation, *Nature*, 342:637-642.

Fiedel, S. J.
1999 Older Than We Thought: Implications of Corrected Dates for Paleoindian. *American Antiquity* 64(1):95-115.

Fitting, J. E.
1968 Environmental Potential and the Post-glacial Readaptation in Eastern North America. *American Antiquity* 33(4):442-445.

Flint, R.F.
1971 *Glacial and Quaternary Geology*, John Wiley and Sons, New York.

Folland, C.K., T.N. Palmer and D.E. Parker
1986 Sahel rainfall and worldwide sea temperatures, 1901-85, *Nature*, 320:602-607.

Graetzer, M. A.
1986 *Settlement Patterns and Paleoclimatic Modeling: A Preliminary Study of Data from the Bald Eagle Watershed of Central Pennsylvania*. Masters paper, Department of Anthropology, Pennsylvania State University, University Park.

Graham, R. W.
1976 Late Wisconsin Mammalian Faunas and Environmental Gradients of the Eastern United States. *Paleobiology* 2:343-350.

1979 Paleoclimates and Late Pleistocene Faunal Provinces in North America. In *Pre-Llano Cultures of the Americas: Paradoxes and Possibilities*, edited by R. L. Humphrey and D. Stanford, pp. 49-69. The Anthropological Society of Washington, Washington, D. C.

Grosswald, M.G.
1980 Late Weichselian ice sheet of northern Eurasia, *Quaternary Research*, 13:1-32.

Guilday, J. E.
1965 Quaternary Mammals of North America. In *The Quaternary of the United States*, edited by H. E. Wright Jr. and D. Frey, pp. 509-525. Princeton University Press, Princeton.

1967 The Climatic Significance of the Hosterman's Pit Local Fauna, Centre County, Pennsylvania. *American Antiquity* 32:231-232.

1971 The Pleistocene History of the Appalachian Mammal Fauna. In *The Distributional History of the Biota of the Southern Appalachians, Part III, Vertebrates*, edited by P. C. Holt. Research Monograph 4. Virginia Polytechnic Institute, Blacksburg.

1982 Appalachia 11,000-12,000 Years Ago: A Biological Review. *Archaeology of Eastern North America* 10:22-26.

Guilday, J. E., P. S. Martin and A. D. McCrady
1964 New Paris No. 4: A Pleistocene Cave Deposit in Bedford County, Pennsylvania, *Bulletin of the National Speleological Society, 26*, pp. 121-194.

Guilday, J. E. and P. W. Parmalee

1965 Animal Remains from the Sheep Rock Shelter (36HU1), Huntington County, Pennsylvania. *Pennsylvania Archaeologist* 35:34-49.

Guilday, J. E., P. W. Parmalee and H.W. Hamilton
1977 The Clark's Cave Bone Deposit and the Late Pleistocene of the Central Appalachian Mountains of Virginia. *Bulletin of Carnegie Museum of Natural History* 2:1-87.

Guilday, J. E., H. W. Hamilton and A. D. McGrady
1966 The Bone Breccia of Bootlegger Sink, York County, Pennsylvania. *Annals of the Carnegie Museum* 38:145-163.

Hamel, J. V.
1987 *Geological, Geomorphological and Geotechnical Investigation, Right Bank Terrace, Grays Landing Lock and Dam Project, Monongahela River, Pennsylvania*. Submitted to Planning Division, U.S. Army Corps of Engineers, Pittsburgh District.

Hays, J.D., J.A. Lozano, N. Shackleton and G. Irving
1976 Reconstruction of the Atlantic and Western Indian Ocean Sectors of the 18,000 B.P. Antarctic Ocean, *Memoir of the Geological Society of America*, 145:337-372.

Joyce, Arthur
1988 Early/Middle Holocene Environments in the Middle Atlantic Region: A Revised Reconstruction. In *Holocene Human Ecology in Northeastern North America*, edited by George P. Nicholas, pp. 185-214. Plenum Press, New York.

Kaktins, U. and H.L. Delano
1999 Chapter 31: Drainage Basins. In *The Geology of Pennsylvania*, edited by C.H. Shultz, pp.378-390. Pennsylvania Geological Survey, Harrisburg, and the Pittsburgh Geological Survey, Pittsburgh.

Karrow, P. F., B. G. Warner and P. Fritz
1984 Corry Bog Pennsylvania: A Case Study of the Radiocarbon Dating of Marl. *Quaternary Research* 21:326-336.

Kennett, J.P. and N.J. Shackleton
1975 Laurentide Ice Sheet Meltwater Recorded in Gulf of Mexico Deep-Sea Cores, *Science*, 188:147-150.

King, J. E.
1980 Post-Pleistocene Vegetational Changes in the Midwestern United States. In: *Archaic Prehistory of the Prairie-Plains Border*, edited by A. E. Johnson, pp. 3-11. Publications in Anthropology No. 12, University of Kansas, Lawrence.

Kneller, M. and D. Peteet

1999 Late-Glacial to Early Holocene Climate Changes from a Central Appalachian Pollen and Macrofossil Record· *Quaternary Research* 51: 133-147.

Knox, J. C.
1972 Valley alluviation in southwestern Wisconsin. *Annals of the Association of American Geographers* 62, 401-410.

1983 Responses of river systems to Holocene climates. In: Wright Jr, H.E. (Ed.), *Late-Quaternary Environments of the United States, Vol. 2, The Holocene*. University of Minnesota Press, Minneapolis, pp. 26-41.

Kordeck, W. S.
1973 *An Investigation of the Structure, Stability, and Movements of Pennsylvania Black Bear with Particular Emphasis on Pike County*. M.A. Thesis, Department of Wildlife Management, Pennsylvania State University, University Park, Pennsylvania.

Kovar, A.J.
1965 Pollen Analysis of the Bear Meadows Bog of Central Pennsylvania. *Pennsylvania Academy of Science* 38:16-24.

Lamb, H.H.
1977 *Climate, Present, Past and Future*, v. 2., Barnes and Noble, NY.

Langbein, W. B. and S. A. Schumm
1958 Yield of Sediment in Relation to Mean Annual Precipitation. *Transactions of the American Geophysical Union* 39:1,076-1,084.

Leathers, D.J. and M.A. Palecki
1992 The Pacific/North American teleconnection pattern and United States climate. Part II: Temporal characteristics and index specification. *Journal of Climate* 5:707-716.

Martin, P. S.
1967 Prehistoric Overkill. In *Pleistocene Extinctions: The Search for a Cause*, edited by P. S. Martin and H. E. Wright, pp. 75-120. Yale University, New Haven, Connecticut.

Martin, R. A. and S. D. Webb
1974 Late Pleistocene Mammals from the Devil's Denn Fauna, Levy County. In *Pleistocene Mammals of Florida*, edited by S. D. Webb, pp. 114-145. University Presses of Florida, Gainesville.

Miller, P.E., F. Vento, J.T. Marine, and E.A. Pollack
2004 *Phase III Archaeological Data Recovery, Route 11/15 Improvements (SR 0011, Section 008), Juniata and Perry Counties, Pennsylvania. Volume III: 36Pe60.* Submitted to the Pennsylvania Department of Transportation, Engineering District 8-0, Harrisburg.

Mix, A.C. and W.F. Ruddiman
1985 Structure and timing of the last deglaciation: Oxygen-isotope evidence, *Quaternary Science Reviews*, 4:59-108. W.S.B. Paterson and C.U. Hammer (Eds.)

Peteet, D.M., J.S. Vogel, D.E. Nelson, J.R. Southon, R.J. Nikkman and L.E. Heusser
1990 Younger Dryas Climatic Reversal in Northeastern USA? AMS Ages for an Old Problem. *Quaternary Research* 33 (2): 219-230.

Pewe, T.L.
1983 The periglacial environment in North America during Wisconsin time, In: *Late-Quaternary Environments of the United States*, H.E. Wright, Jr. (Ed.), Univ. of Minn. Press, Minneapolis, pp. 157-189.

Prufer, Olaf H. and R.S. Baby
1963 *Paleo-Indians of Ohio*. Ohio Historical Society, Columbus.

Rayburn, J.B. and W.L. Braker
1981 *Soil Survey of Tioga County, Pennsylvania*. United States Department of Agriculture.Soil Conservation Service.

Ray, L. L.
1965 Geomorphology and Quaternary Geology of the Owensboro Quadrangle, Indiana and Kentucky. *U.S. Geological Survey Professional Papers* 488.

Redmond, Brian G. and Kenneth B. Tankersley
2005 Evidence of Early Paleoindian Bone Modification and Use at the Sheridan Cave Site (33WY252), Wyandot County, Ohio. *American Antiquity* 70(3): 503-526.

Ritchie, W. A.
1979 Some Ecological Factors in the Prehistory of Man. *Bulletin of the New York State Archaeological Association* 75:23-37

Ritchie, W. A. and R. E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast*. Memoir 20 New York State Museum and Science Service. University of the State of New York: Albany.

Ruddiman, W.F.
1968 Historical stability of the Gulf Stream meander belt: Foraminiferal evidence, *Deep-Sea Res*., 15:137-148.

Ruddiman, W.F. and A. McIntyre
1981 The mode and mechanism of the last deglaciation: Ocean evidence, *Quaternary Research*, 16:125- 134.

Sarnthein, M., G. Tetzlaff, B. Koopman, K. Wolter and U. Pflaumann
1981 Glacial and interglacial wind regimes over the eastern subtropical Atlantic and north-

west Africa, *Nature*, 293:193-196.

Scheirer, R.S.
1969 *The Productivity of the Eastern Wild Turkey*. M.A. Thesis, Department of Wildlife Management, The Pennsylvania State University, University Park, Pennsylvania.

Semken, H.A.
1974 Micromammal distribution and migration during the Holocene. *American Quaternary Association Abstracts* 3:25.

1983 Holocene mammalian biogeography and climatic change in the eastern and central United States. In *Late Quaternary Environments of the United States, Volume II, The Holocene*, edited by H. E. Wright Jr., pp. 166-181. University of Minnesota Press, Minneapolis.

Shepps, V.C., G.W. White, J.B. Droste and R.F. Sitler
1959 *Glacial Geology of Northwestern Pennsylvania*. Topographic and Geologic Survey, Commonwealth of Pennsylvania, Pennsylvania Geological Survey.

Skema, V.W., M.A. Sholes and W.E. Edmunds
1982 *The Economic Geology of the Upper Freeport Coal in Northeastern Greene County, Pennsylvania*. Pennsylvania Geological Survey Mineral Resources Report 76, Harrisburg.

Stauffer, B., E. Lochbronner, H. Oeschger and J. Schwander
1988 Methane concentration in the glacial atmosphere was only half that of the pre-industrial Holocene, *Nature*, 332:812-814.

Taylor, W.P.
1956 *The Deer of North America*. Stackpole Books, Harrisburg, Pennsylvania.

Thornbury, W.
1965 *Regional Geomorphology of the United States*. John Wiley & Sons, New York.

Vega, A.J., K.G. Henderson and R.V. Rohli
1995 Comparison of monthly and intramonthly indices for the Pacific/North American teleconnection pattern. *Journal of Climate*, 8:8:2097-2103.

Vento, F.J. and H.B. Rollins
1989 *Genetic Stratigraphy, Climate Change and Fluvial Response of the Susquehanna River*. Submitted to Bureau for Historic Preservation and the National Park Service, BHP Planning Grant.

Vento, F.J. and J. Adovasio
1980 Excavations at Dameron Rockshelter (15Jo23A) Johnson County, Kentucky. *Ethnology*

Monographs 4, University of Pittsburgh.

Vento, F.J., H.B. Rollins, A. Vega, J.M. Adovasio, P. Stahlman, D.B. Madsen and J.S. Illingworth
2008 Development of a Late Pleistocene – Holocene Genetic Stratigraphy Framework for the Mid-Atlantic Region: Implications in Archaeology. A paper presented at the 73rd Annual Meeting of the Society of American Archaeology, Vancouver, British Columbia, March 26-30 2008. Copies on file at Clarion University and Mercyhurst Archaeological Institute, Mercyhurst College.

Wagner, W.R., L. Hegman, R.E. Gray, D.J. Belz, R. Lund, A.S. Cote and C.D. Edgerton
1970 Geology of the Pittsburgh Area. *Pennsylvania Geological Survey General Report*, G-59.

Watts, W.A.
1973 Rates of Change and Stability of Vegetation in the Perspective of Long Periods of Time. In *Quaternary Plant Ecology*, edited by H. J. B. Birks and R. G. West, pp. 195-206. Blackwell Scientific Publications, Oxford.

1979 Late Quaternary Vegetation of Central Appalachia and the New Jersey Coastal Plain. *Ecological Monographs* 49:427-469.

1980 The Late-Quaternary Vegetation History of the Southeastern United States. *Annual Review of Ecology and Systematics* 11:387-409.

1983 Vegetational History of the Eastern United States - 25,000 to 10,000 Years Ago. In *Late Quaternary Environments of the United States, Volume I, The Late Pleistocene*, edited by H. E. Wright Jr. and S. C. Porter, pp. 294-310. University of Minnesota Press, Minneapolis.

Webb, T.
1985 Holocene palynology and climate, In: *Paleoclimate Analysis and Modeling*, A.D. Hecht (Ed.), Wiley-Interscience, NY, pp.163-196.

Webb, T., III and P.J. Bartlein
1988 Quaternary Climate Change in Eastern North America: The Role of Modeling Experiments and Empirical Studies. In *Late Pleistocene and Early Holocene Paleoecology and Archaeology of the Eastern Great Lakes Region*, edited by R.S. Laub, N.G. Miller, and D.W. Steadman, pp. 3-13. *Bulletin of the Buffalo Society of Natural Sciences*, Volume 33. Buffalo, New York.

Webb, T. III and R.A. Bryson
1972 Late- and Postglacial Climatic Change in the Northern Midwest, USA: Quantitative Estimates Derived from Fossil Pollen Spectra by Multivariate Statistical Analysis. *Quaternary Research* 2:70-115.

Wells, G.L.

1983 Late-glacial circulation over central North America revealed by aeolian features, In: *Variation in the Global Water Budget*, A. Street-Perrott et al. (Eds.), D. Reidel, Dordrecht, Netherlands, pp. 317-330.

Wright, H.E.
1987 Synthesis: The land south of the ice sheets, In: *North American and Adjacent Oceans During the Last Deglaciation*, W.F. Ruddiman and H.E. Wright, Jr. (Eds.), The Geology of North America, v. K-3. Geol. Soc. Am., Boulder, Col., pp. 479-488.

Zeuner, F.E.
1952 *Dating the Past*. Methuen and Company Limited, London.

Zhang, J. and T.J. Crowley
1989 Historical climate records in China and reconstruction of past climates, *Journal of Climate*, 2:833- 849.

List of Figures

Figure 1. Stream crossing overview map for the Shell Pipeline Company LP Falcon Ethane project corridor in Pennsylvania. Note that location of the eight stream crossings discussed in this report. 6
Figure 2. USGS peak discharges for the Sewickley, Pennsylvania gage along the Ohio River. Note that the flood of record prior to flood controls occurred in March 1936. Other more recent high discharge's over the last 0 years occurred in 1972, 1996, and 2004. The 1936 and 1996 floods were not hurricane induced, like 1972 and 2004 but were upstream floods associated with intensive rainfall events in some cases (1936) associated with rapid snowmelt. 7
Figure 3. Gaging station peak discharge data for the Moffatts Mill station along Raccoon Creek, Pennsylvania. Note that the flood of record was the 2004 event with a discharge of more than 22,000 cfs. The stream rose more than 14 ft. above the gage datum in 2004. This event as well as numerous other peak discharges over the last 100 years would have flooded and scoured the low lying flood plain zone along all of the studied streams along the pipeline corridor. 8
Figure 4. Topographic map of the Raccoon Creek #1 crossing. Note that the valley bottom zone will be crossed by horizontal directional drilling (HDD). A large wetland area lies along the HDD on the north side of the stream along the distal margin of the flood plain. On the south side of the stream the HDD lies on a high, Pleistocene terrace..... 9
Figure 5. Contours over aerial photograph of the Raccoon Creek #1 crossing. Note large wetland areas bordering the active stream channel. Raccoon Creek is a major tributary of the Ohio River. The stream exhibits a meandering channel habit and broad terraced valley bottom zone. The principal fluvial landforms along Raccoon Creek include a low flood plain zone situated less than 2 m (6.6 ft.) above the active stream channel as well as much higher older terraces of Wisconsin and Illinoian age..... 10
Figure 6. Soil and bedrock map of the proposed Raccoon Creek #1 crossing. The soils mapped on the north side of the stream at the location of the proposed HDD is the Ernest silt loam. The Ernest series is often mapped to wetland areas that are frequently flooded. The mapped soils on the south side are ascribable to the Monongahela series. Monongahela soils are generally mapped to old, high terraces along major drainage lines within the Ohio River drainage basin..... 11
Figure 7. General view of wetland area at HDD on north side of Raccoon Creek. The soils in this area are strongly hydric (A-Bg-Cg-C)..... 12
Figure 8. General view facing south of broad flood plain bordering Raccoon Creek. Note small, first order tributary which cut across the flood plain zone just south of the proposed HDD..... 12
Figure 9. Broad wetland area along the distal margin of the flood plain along Raccoon Creek. Note high upland areas bordering the valley bottom zone to the north. 13
Figure 10. General view of high, terrace on south side of Raccoon Creek. The soils on the high terraces in the project area typically consisted of an A/Ap fine sandy loam horizon underlain by a variably thick (<1 m) fine sandy loam Bw horizon that was underlain by relict, Wisconsin or Illinoian age lateral accretion deposits..... 13
Figure 11. Topographic map showing the proposed open cut pipeline corridor at Fishpot Run. Note that the pipeline corridor crosses Fishpot Run just upstream from its confluence with Raccoon Creek. Note that the stream channel in the project area corridor is bound by steep, bedrock defended valley slopes ... 14
Figure 12. Contours over aerial photograph of the proposed open-cut crossing at Fishpot Run. Fishpot Run is a steep, gradient, second order tributary of the Ohio River. At the proposed stream crossing the alley bottom zone is narrow and flood scoured. The soils can best be classified as Fluvaquent (Entisols). Fluvaquents are associated with periodic deposition of new sediment often due to deforestation and urbanization which allows for the deposition of numerous stratified layers of mineral and organic matter.

This up building process limits expression of the soil-forming processes seen in other soil orders (e.g., Inceptisols). Fluvaquents and Udifluvents occur on small flood plains and alluvial fans that are constantly receiving cobbles, gravel, sand and other sediment from overbanking events as well as colluvial processes. These soils are still of historic age to very late Holocene age and reflect active vertical accretion of the flood plain zone under moderately high to high flow velocities concomitant with active lateral channel migration (https://soilseries.sc.egov.usda.gov). Most of the soils encountered along the smaller streams examined along the pipeline corridor can be mapped to the Entisol order. 15
Figure 13. Soil and bedrock map of project area corridor. The sols mapped to the low bottom zone are the Tilsit series. This is inaccurate in that the Tilsit soils are associated with residual rather than transported alluvial soils. The soils as was noted in Figure 12 would be best mapped to the Fluvaquent series. 16
Figure 14. General view of Fishpot Run facing west (upstream), Note steep, bedrock defended slopes and large mass wasting transported sandstone rocks present in stream channel. 17
Figure 15. General view of Fishpot Run. Note narrow valley bottom zone bound by steep, bedrock defended valley slopes. 17
Figure 16. Topographic map of Raccoon Creek Crossing #2. Note the location of the HDD pads on the northeast and southwest sides of the active stream channel. On the northeast the proposed HDD lies on a high terrace (probable Parker Strath) of the probable Illinoian Stage. This same terrace is well expressed along the main stem of the Ohio River. The soils on the northeast HDD are mapped to the Allegheny silt loam. On the southeast the HDD lies at a lower topographic position on a lower, probable late Wisconsin age terrace which is capped by a variably thick package of strongly hydric Holocene soils. The soils mapped on the southeast HDD are ascribable to the Monongahela series..... 18
Figure 17. Topographic map showing large wetland area lying south of the proposed pipeline corridor. The large wetland area lies in an old, relict, now abandoned meander bend of Raccoon Creek. The stream channel has over time laterally migrated in this area to the east..... 19
Figure 18. Contours over aerial photograph showing the downstream segment of Raccoon Creek. Note location of the proposed pipeline corridor. The bedrock units in this area are a mapped to the Glenshaw Formation of the Conemaugh Group (Pennsylvanian Period). 20
Figure 19. Soil and bedrock map of the Raccoon Creek #2 crossing. The soils along the south bank of the stream at the proposed HDD location are mapped to the Philo (levee zone) and to the Allegheny series along the mid flood chute and distal margin of the flood plain. The flood plain zone lies within the mapped boundary of the 100-year flood way zone. On the northeast side of the active channel the HDD lies on a high, terrace of probable Illinoian age. 21
Figure 20. General view of Raccoon Creek. Note that the T0 flood plain zone lies approximately 1.5 m to 2 m (5 ft. to 6 ft.) above the active stream channel. The soils along the levee zone of Raccoon Creek are mapped to the Philo sires. During field testing the soil profile encountered along the levee zone consisted of an A-Bw-C sequence with basal channel lag deposits occurring within 1 m to 1.2 m of the ground surface. The levee zone soils will not be impacted due to the horizontal directional drilling program along Raccoon Creek. 22
Figure 21. General view of HDD location on the high, probable Illinoian State terrace on the northeast uplands bordering Raccoon Creek. The soils on the high terrace consisted of a Ap/A-well developed cambic Bw-C (lateral accretion). 22
Figure 22. General view of bedrock defended valley slopes bordering Raccoon Creek. The large rocks are float blocks of sandstone most of which were released during more intensive frost wedging associated with periglacial climatic conditions during the Wisconsin Stage. 23
Figure 23. Large rock fall event which crashed into an old building situated along the lower valley slopes of Raccoon Creek..... 23

Figure 24. Topographic map of the open cut pipeline corridor at Mill Creek. Note broad, gently sloping alluvial fans to the east and west of the flood plain of Mill Creek. Note strong meandering channel habit along Mill Creek as well as wetland areas on valley bottom at proposed pipeline crossing. 24
Figure 25. Contours over aerial photograph of Mill Creek pipeline corridor. Mill Creek flows north to its direct confluence with the Ohio River at Georgetown, Pennsylvania. 25
Figure 26. Soil and bedrock map of the pipeline corridor at Mill Creek. The hydric soils encountered on the low lying valley bottom zone are ascribable to the Atkins series. The channery silt loam soils on the valley slopes/alluvial fan are ascribable to the Gilpin-Upshur Complex. On the east side of the stream situated above the low lying flood plain zone is a high, Pleistocene age terrace (Monongahela series soils). The bedrock which underlies the fan deposits and alluvium is mapped to the Glenshaw Formation of the Conemaugh Group. 26
Figure 27. General view of T0 flood plain zone facing east of the low lying T0 flood plain bordering the active channel of Mill Creek. The soils are strongly hydric (A-Cg-C) with both obligate and facultative wetland vegetation present along the proposed pipeline corridor. Note restored historic farm complex on west bank of the active stream channel. 27
Figure 28. Photograph facing west of the alluvial/colluvial fan present on the lower valley slopes. The soils on the fan consist of a channery silt loam A horizon underlain by a channery silt loam Bt horizon. The B horizon grades downward into weathered sandstone bedrock of the Glenshaw Formation. 27
Figure 29. Topographic map of the upper reach of Peggs Run. Peggs Run is bound by steep, bedrock defended valley slopes and exhibits a low lying, flood scoured T0 landform along the narrow valley bottom zone. The soils can best be classified as Fluvaquents (Entisols) and are of recent/historic age. Peggs Run flows north to its confluence with the Ohio River at Shippingport, Pennsylvania. 28
Figure 30. Contours over aerial photograph of the open cut pipeline corridor at Peggs Run. The active stream channel and low lying narrow valley bottom zone is bound by steep, bedrock defended valley slopes. 29
Figure 31. Soil and bedrock map of the open cut pipeline crossing at Peggs Run. The soils on the valley bottom are inaccurately mapped to the Gilpin0Weikert association. The soils should be mapped at Fluvaquents or Udifluvents (Entisols). The bedrock at the proposed crossing is mapped to the Glenshaw Formation of the Conemaugh Group. 30
Figure 32. General view of Peggs Run acing east. Note small channel and low lying T0 flood plain zone bordering the active stream channel 31
Figure 33. General view of Peggs Run facing southeast. The narrow valley bottom zone is comprised of recent alluvial deposits. Like many streams in the region historic deforestation caused increased surface runoff, higher sediment yields and increased stream discharges. 31
Figure 34. Topographic map of Potato Garden Run. Note extensive strip mines bordering the valley bottom of Potato Garden Run. Strip mining and earlier deep mining caused extensive sediment input into the stream. Today, numerous rills and seeps laden with mine acid drainage enters the stream channel. Potato Garden Run flows north to its confluence with Raccoon Creek at Murdocksville, Pennsylvania. . 32
Figure 35. Contours over aerial photograph of Potato Garden Run. Note large tipple piles and abandoned strip mining areas adjacent to the valley bottom zone. During the field study numerous anastomosing channels were present on the valley bottom of Potato Garden Run. The low lying flood plain bordering the active stream channel is comprised entirely of recent alluvium much of it shed from the strip mined areas bordering the stream channel. 33
Figure 36. Soil and bedrock map of the pipeline corridor at Potato Garden Run. Horizontal directional drilling will be employed to span the valley bottom. The soils are mapped to the Atkins soil series and the bedrock is ascribable to the Upper Pennsylvanian Monongahela Group. Given the clear evidence of recent flood scouring, soils are of recent age (Entisols). 34

Figure 37. General view of Potato Garden Run valley facing west. The photo was taken from a high T1 terrace situated well above the active stream channel. The low lying flood plain is frequently flooded and consists of recent alluvium. While it will not be impacted by the proposed corridor the soils on the higher T1 terrace consisted of the following profile: A-Bw1-Bw2-C. The C horizon (lateral accretion) was encountered within 1 m (3.3 ft.) of the ground surface..... 35
Figure 38. Topographic map of Millers Run. HDDs will be employed along the pipeline corridor. The HDD to the south of the stream channel lies on a high, hill at an interpolated elevation of 1270 ft. The soils on the HDD are residual having formed form the in situ weathering of the Washington and Waynesburg Formations of the Monongahela Group. The valley bottom and lower valley slopes of Millers Run have been impacted by urbanization, past mining activities and railway line construction. Millers Run flows eastward to its confluence with Chartiers Creek at Bridgeville, Pennsylvania..... 36
Figure 39. Contours over aerial photograph of the proposed pipeline crossing at Millers Run. The pipeline will employ HDD's to limit impact and span the valley bottom zone of Millers Run. The soils on the valley bottom zone has been significantly impacted by prior land use..... 37
Figure 40. Soil and bedrock geology map of the proposed pipeline crossing at Millers Run. Note that both HDD pads will lie on upland, residual soils (Gilpin and Culleoka series). 38
Figure 41. General view of the narrow, flood scoured valley bottom zone at Millers Run. Note that the channel is bound by steep, bedrock defended valley slopes. Note mine acid drainage seeps entering into the stream channel from mine dumps and tipple piles situated on the valley bottom and lower valley slopes. 39
Figure 42. General view of steep valley slopes bordering the narrow, flood scoured low bottom zone of Millers Run. 39
Figure 43. Topographic map of Robinson Run. Like Millers Run Robinson Run has been significantly impacted from past deep as well as surface coal mining. Note large rounded tipple piles and mine waste on the valley bottom zone just to the east of the proposed pipeline corridor. Horizontal directional drilling will be employed along the Robinson Run crossing. 40
Figure 44. Contours over aerial photograph of the pipeline crossing at Robinson Run. Note that the HDD on the north side of the stream lies in a now abandoned, unreclaimed strip mine area while on the south side the HDD lies on a high hilltop at an interpolated elevation of 1200 ft. 41
Figure 45. Soil and bedrock map of the Robinson Run pipeline crossing. Note that on the valley bottom zone the soils are classified as Mine Dump. At the HDD on the north side of the stream the sols are mapped as Mine Land while on the south side the residual soils at the location of the HDD pad is mapped to the Culleoka channery silt loam. The bedrock units in the study area are mapped to the Casselman Formation. 42
Figure 46. Mine Dump soils present along the flood scoured valley bottom zone along Robinson Run. The soils are comprised of coal, ash, slag, and rock fragments.. 43
Figure 47. General view of Robinson Run along project area corridor. It appears that this reach of Robinson Run has been channelized. The soils are strongly hydric with large wetlands on both sides of the stream channel. The profile consists of an organic rich A horizon which is underlain by a massive, structureless, plastic gray (10YR6/1) clay Cg/Bg horizon. The gray clay is then underlain by relict, lateral accretion deposits of very late Holocene age. 43
Figure 48. Topographic map showing the open cut pipeline corridor at Westland Run. The stream channel is bound to the east and west by strip mined areas. Along the valley bottom/flood plain zone is an abandoned railway line, a recent large utility line as well as a paved cartway. The valley bottom zone is extensively flood scoured and impacted by urbanization. Westland Run is a tributary of Chartiers Creek. 44

Figure 49. Contours over aerial photograph of open cut pipeline corridor at Westland Run. Note that the valley bottom zone is bound to the east and west by strip mined areas and moderately steep valley slopes. 45
Figure 50. Soil and bedrock map of study area. The soils along the valley bottom zone are mapped to the Dormont silt loam series. The field testing however would argue for the soils being mapped to either the Mine Dump or as Fluvaquents (Entisols). The bedrock units which underlie the alluvium on the valley bottom are mapped to the Casselman Formation of the Conemaugh Group while the upland are underlain by the Washington Formation of the Monongahela Group. 46
Figure 51. General view of existing pipeline corridor paralleling the main stem of Westland Run. The soils in this area have been disturbed by construction for the existing pipeline. 47
Figure 52. Bank cut along Westland Run showing stratified coal sands emplaced under high flow velocities during historic times. 47
Figure 53. Coarse alluvium and historic flood debris filling the channel of Westland Run. 48

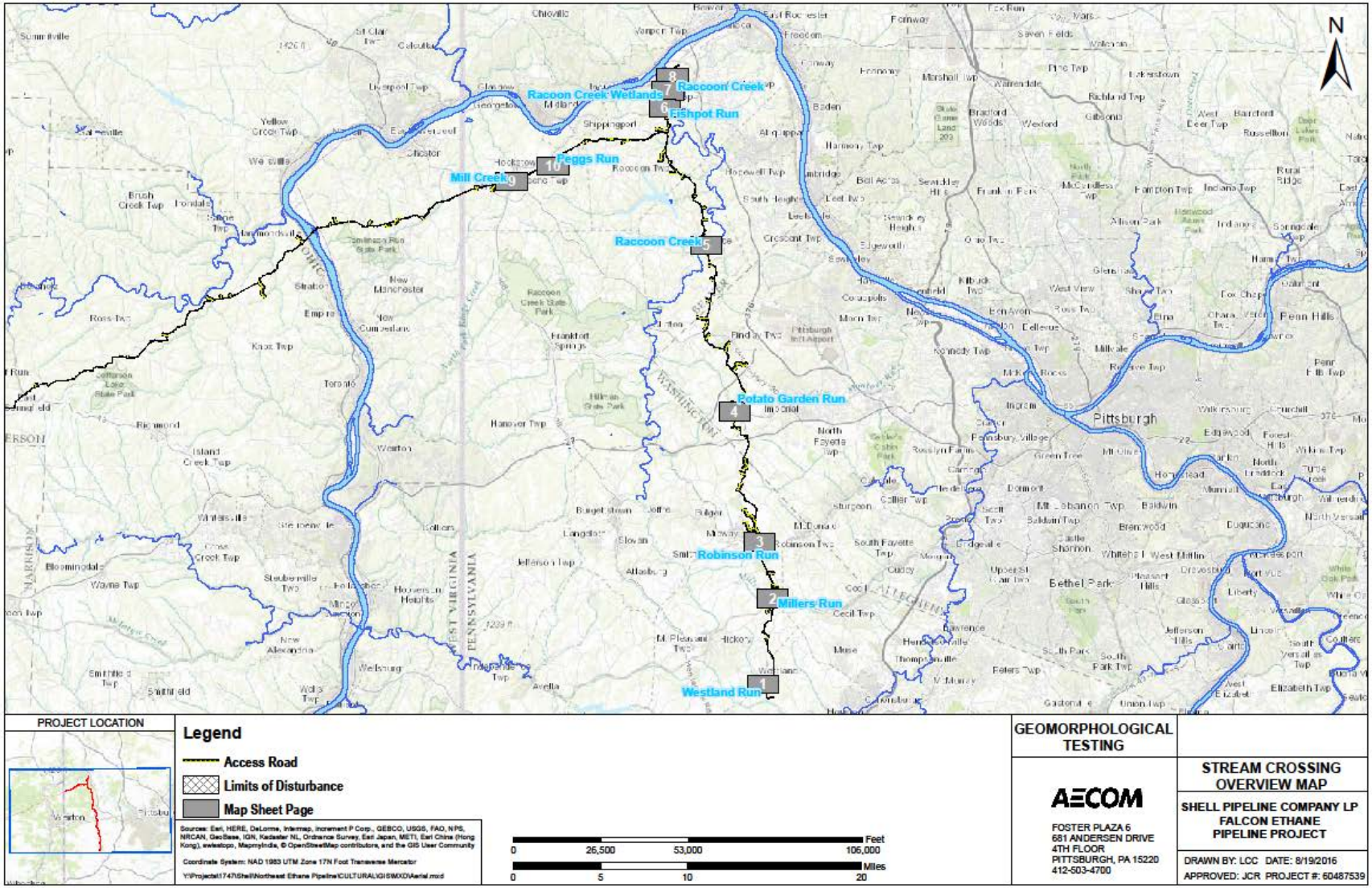


Figure 1. Stream crossing overview map for the Shell Pipeline Company LP Falcon Ethane project corridor in Pennsylvania. Note that location of the eight stream crossings discussed in this report.

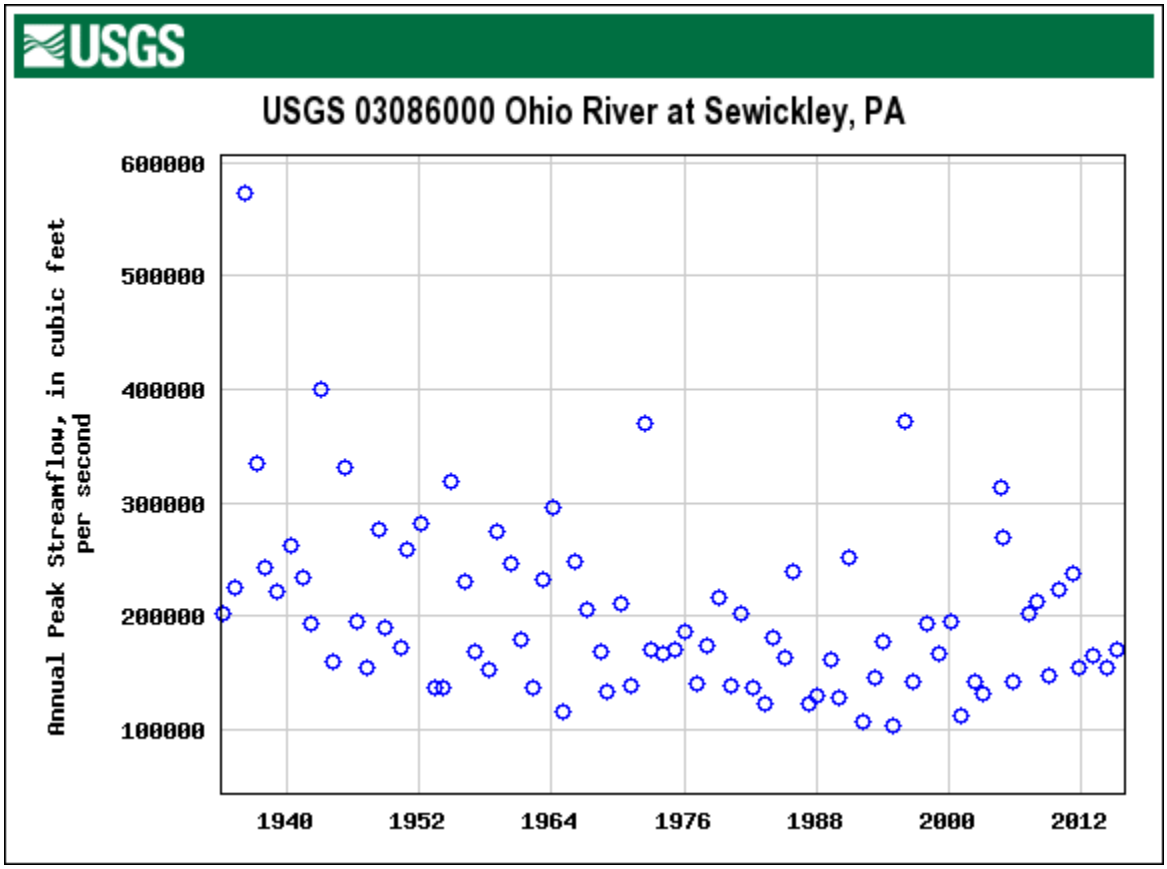


Figure 2. USGS peak discharges for the Sewickley, Pennsylvania gage along the Ohio River. Note that the flood of record prior to flood controls occurred in March 1936. Other more recent high discharges over the last 0 years occurred in 1972, 1996, and 2004. The 1936 and 1996 floods were not hurricane induced, like 1972 and 2004 but were upstream floods associated with intensive rainfall events in some cases (1936) associated with rapid snowmelt.

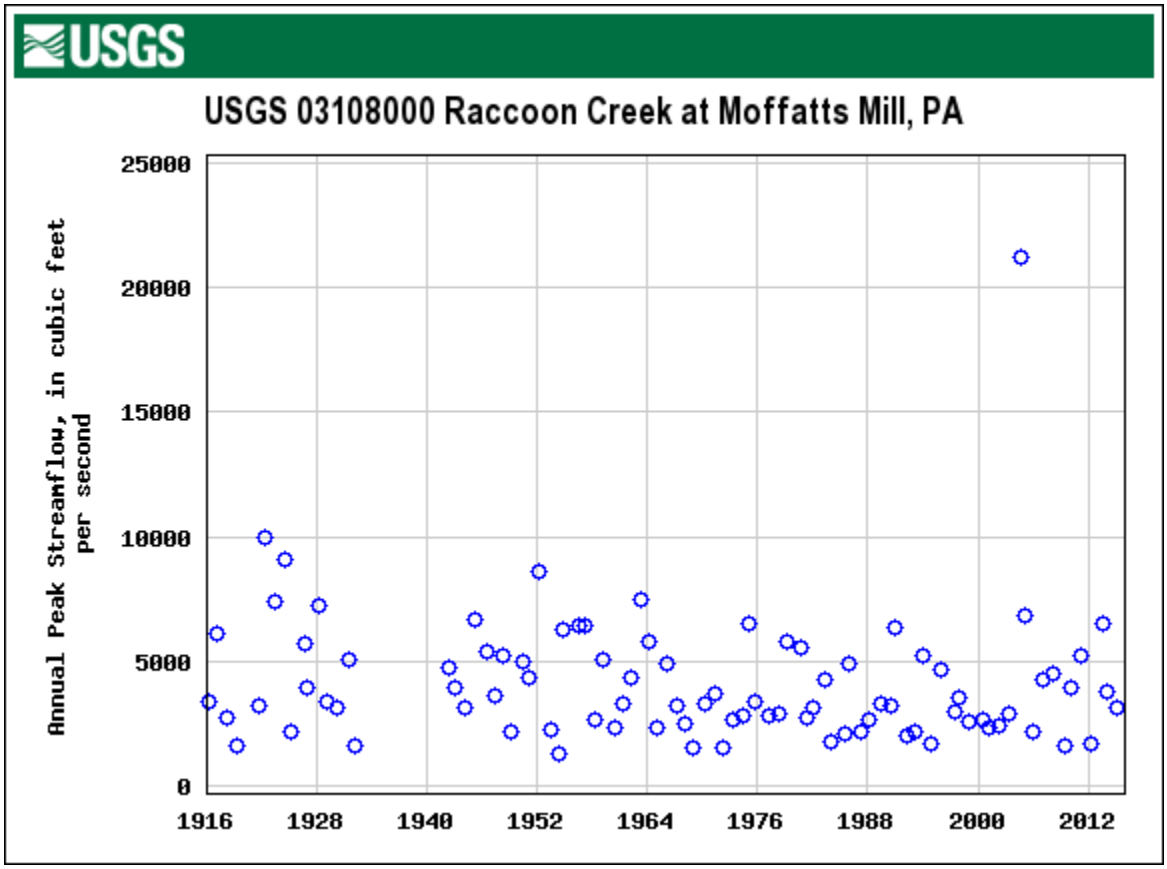


Figure 3. Gaging station peak discharge data for the Moffatts Mill station along Raccoon Creek, Pennsylvania. Note that the flood of record was the 2004 event with a discharge of more than 22,000 cfs. The stream rose more than 14 ft. above the gage datum in 2004. This event as well as numerous other peak discharges over the last 100 years would have flooded and scoured the low lying flood plain zone along all of the studied streams along the pipeline corridor.

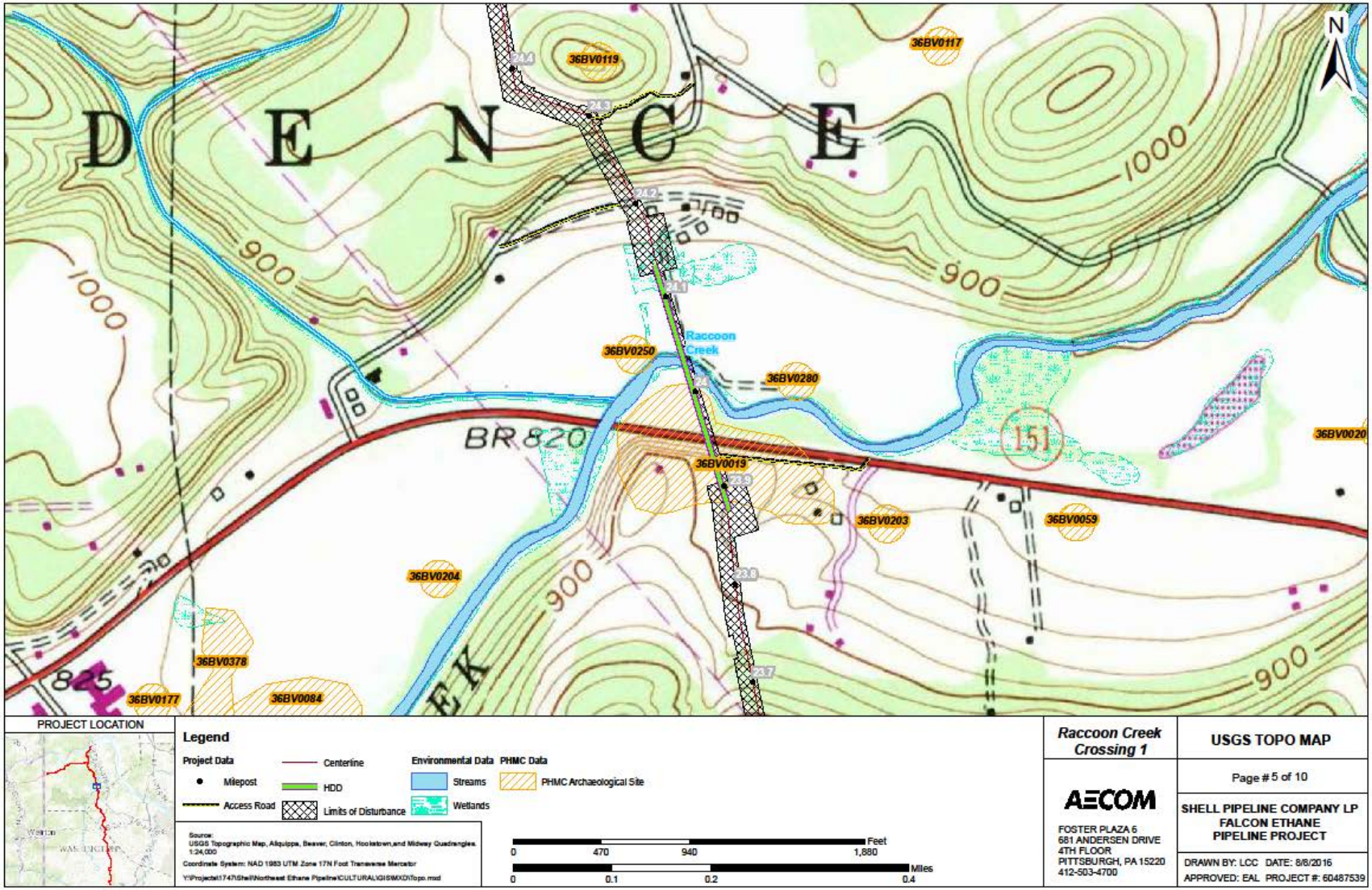


Figure 4. Topographic map of the Raccoon Creek #1 crossing. Note that the valley bottom zone will be crossed by horizontal directional drilling (HDD). A large wetland area lies along the HDD on the north side of the stream along the distal margin of the flood plain. On the south side of the stream the HDD lies on a high, Pleistocene terrace.

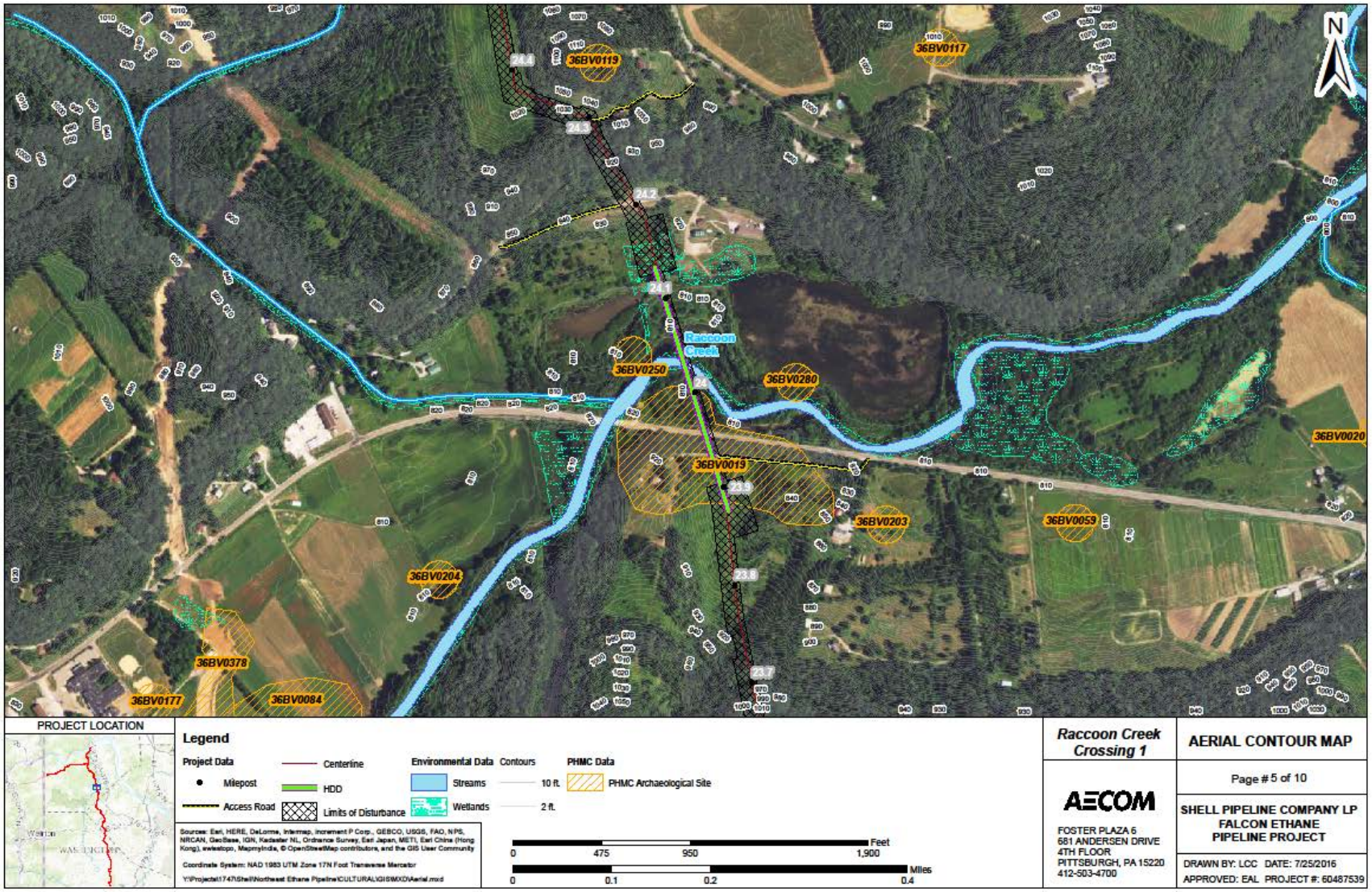


Figure 5. Contours over aerial photograph of the Raccoon Creek #1 crossing. Note large wetland areas bordering the active stream channel. Raccoon Creek is a major tributary of the Ohio River. The stream exhibits a meandering channel habit and broad terraced valley bottom zone. The principal fluvial landforms along Raccoon Creek include a low flood plain zone situated less than 2 m (6.6 ft.) above the active stream channel as well as much higher older terraces of Wisconsin and Illinoian age.

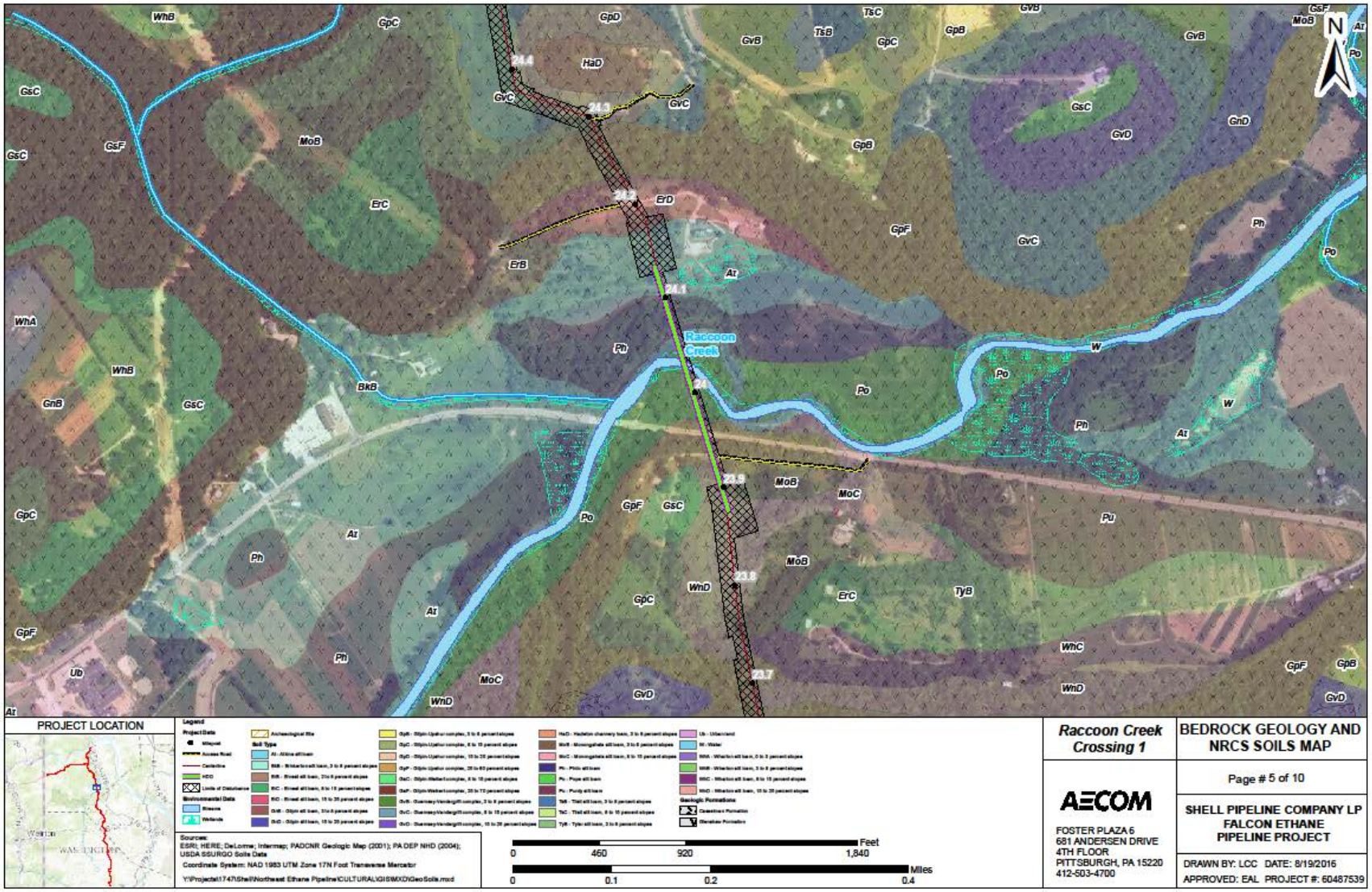


Figure 6. Soil and bedrock map of the proposed Raccoon Creek #1 crossing. The soils mapped on the north side of the stream at the location of the proposed HDD are the Ernest silt loam. The Ernest series is often mapped to wetland areas that are frequently flooded. The mapped soils on the south side are ascribable to the Monongahela series. Monongahela soils are generally mapped to old, high terraces along major drainage lines within the Ohio River drainage basin.

Figure 7. General view of wetland area at HDD on north side of Raccoon Creek. The soils in this area are strongly hydric (A-Bg-Cg-C).

Figure 8. General view facing south of broad flood plain bordering Raccoon Creek. Note small, first order tributary which cut across the flood plain zone just south of the proposed HDD.

Figure 9. Broad wetland area along the distal margin of the flood plain along Raccoon Creek. Note high upland areas bordering the valley bottom zone to the north.

Figure 10. General view of high, terrace on south side of Raccoon Creek. The soils on the high terraces in the project area typically consisted of an A/Ap fine sandy loam horizon underlain by a variably thick (<1 m) fine sandy loam Bw horizon that was underlain by relict, Wisconsin or Illinoian age lateral accretion deposits.

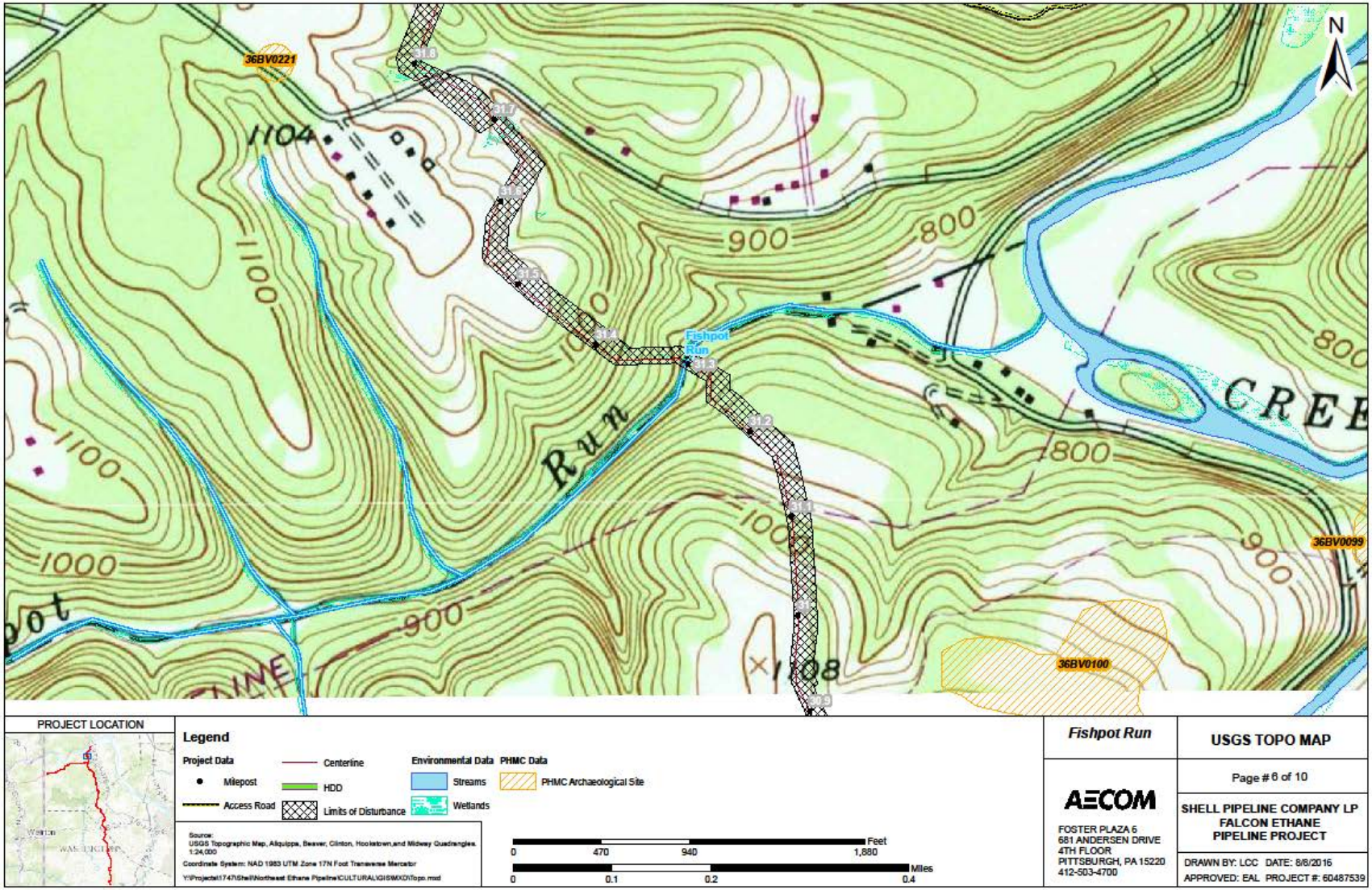


Figure 11. Topographic map showing the proposed open cut pipeline corridor at Fishpot Run. Note that the pipeline corridor crosses Fishpot Run just upstream from its confluence with Raccoon Creek. Note that the stream channel in the project area corridor is bound by steep, bedrock defended valley slopes.

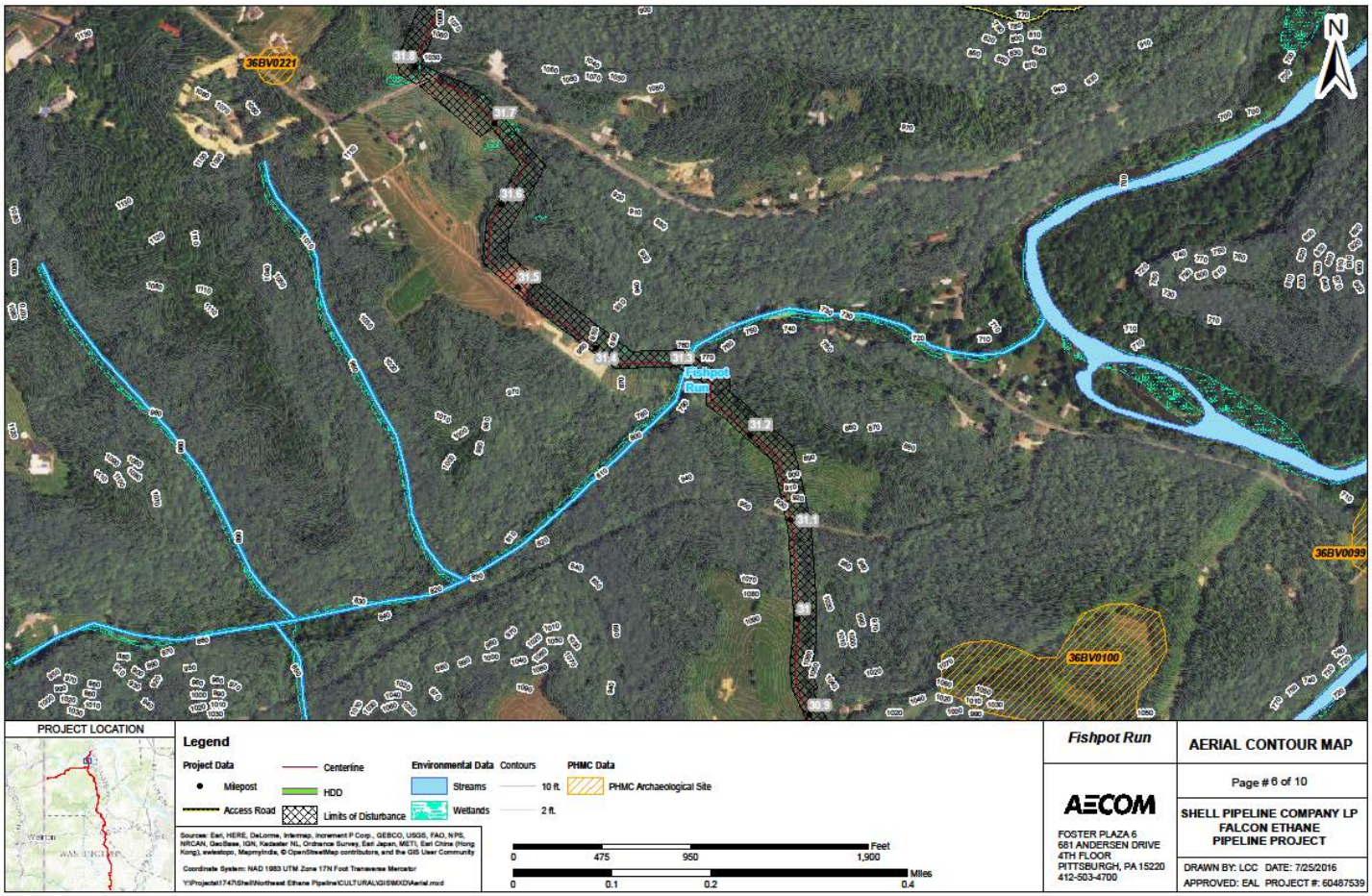


Figure 12. Contours over aerial photograph of the proposed open-cut crossing at Fishpot Run. Fishpot Run is a steep, gradient, second order tributary of the Ohio River. At the proposed stream crossing the alley bottom zone is narrow and flood scoured. The soils can best be classified as Fluvaquent (Entisols). Fluvaquents are associated with periodic deposition of new sediment often due to deforestation and urbanization which allows for the deposition of numerous stratified layers of mineral and organic matter. This up building process limits expression of the soil-forming processes seen in other soil orders (e.g., Inceptisols). Fluvaquents and Udifluvents occur on small flood plains and alluvial fans that are constantly receiving cobbles, gravel, sand and other sediment from overbanking events as well as colluvial processes. These soils are still of historic age to very late Holocene age and reflect active vertical accretion of the flood plain zone under moderately high to high flow velocities concomitant with active lateral channel migration (https://soilseries.sc.egov.usda.gov). Most of the soils encountered along the smaller streams examined along the pipeline corridor can be mapped to the Entisol order.

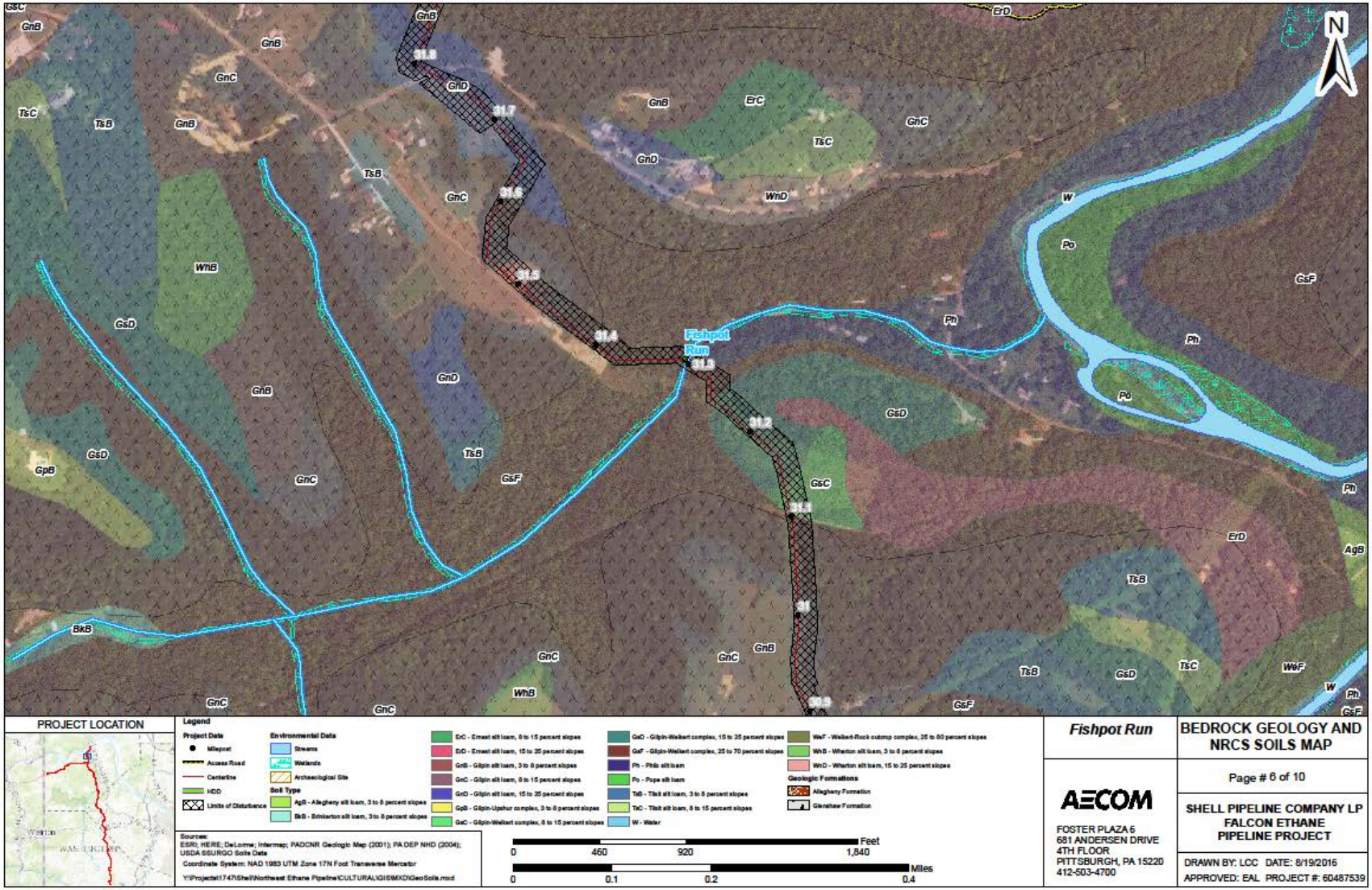


Figure 13. Soil and bedrock map of project area corridor. The sols mapped to the low bottom zone are the Tilsit series. This is inaccurate in that the Tilsit soils are associated with residual rather than transported alluvial soils. The soils as was noted in Figure 12 would be best mapped to the Fluvaquent series.

Figure 14. General view of Fishpot Run facing west (upstream), Note steep, bedrock defended slopes and large mass wasting transported sandstone rocks present in stream channel.

Figure 15. General view of Fishpot Run. Note narrow valley bottom zone bound by steep, bedrock defended valley slopes.

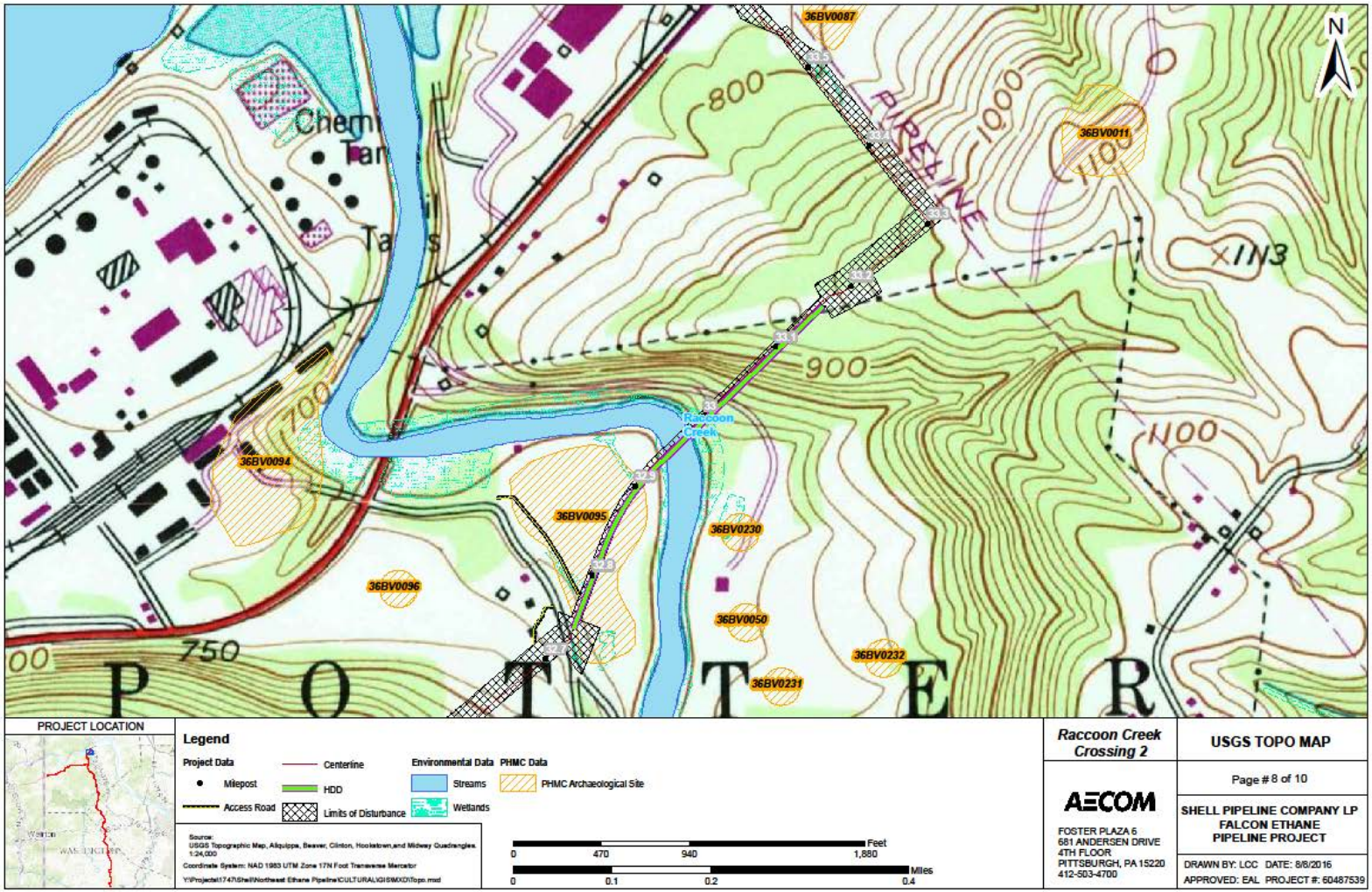


Figure 16. Topographic map of Raccoon Creek Crossing #2. Note the location of the HDD pads on the northeast and southwest sides of the active stream channel. On the northeast the proposed HDD lies on a high terrace (probable Parker Strath) of the probable Illinoian Stage. This same terrace is well expressed along the main stem of the Ohio River. The soils on the northeast HDD are mapped to the Allegheny silt loam. On the southeast the HDD lies at a lower topographic position on a lower, probable late Wisconsin age terrace which is capped by a variably thick package of strongly hydric Holocene soils. The soils mapped on the southeast HDD are ascribable to the Monongahela series.

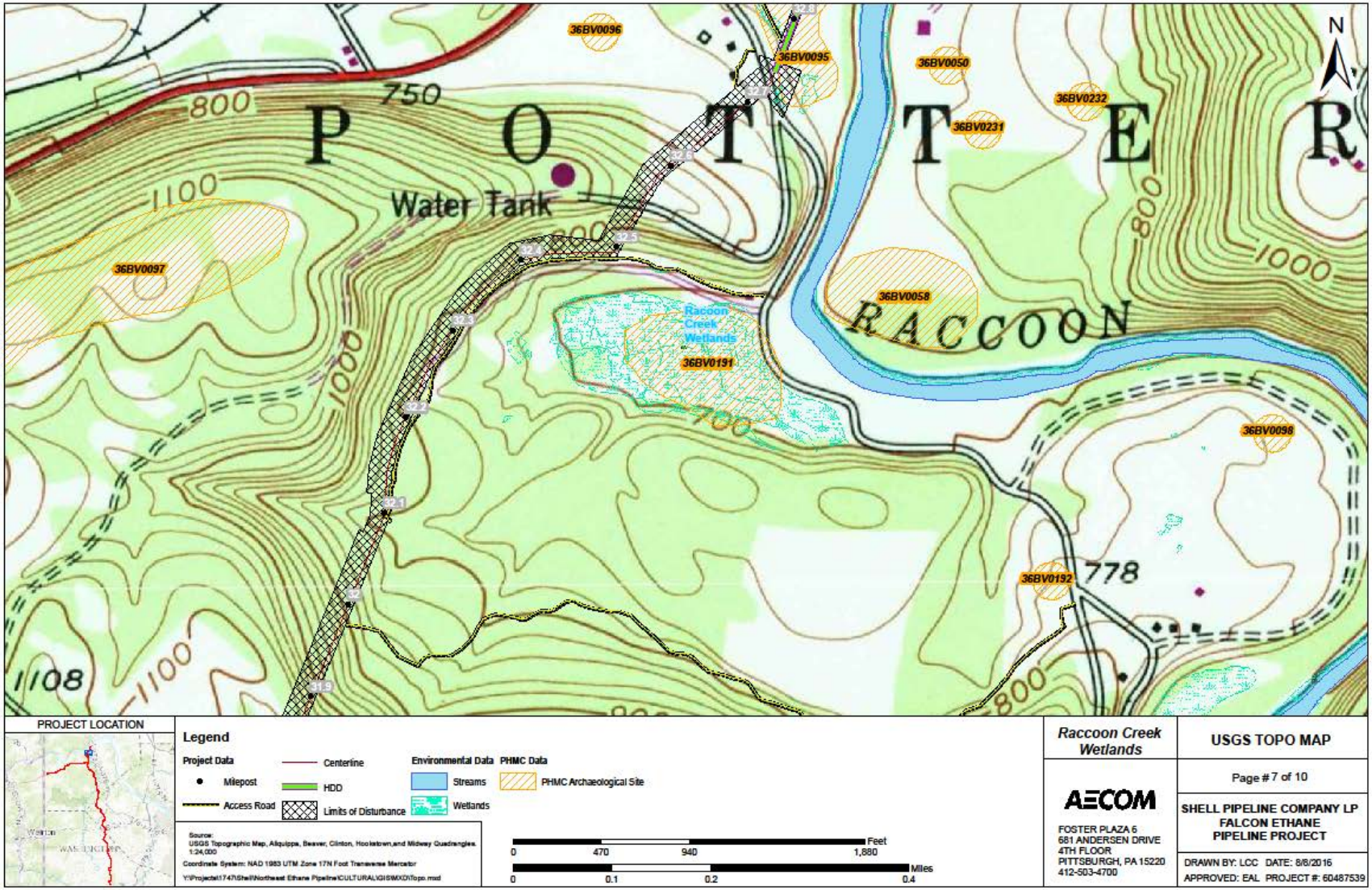


Figure 17. Topographic map showing large wetland area lying south of the proposed pipeline corridor. The large wetland area lies in an old, relict, now abandoned meander bend of Raccoon Creek. The stream channel has over time laterally migrated in this area to the east.

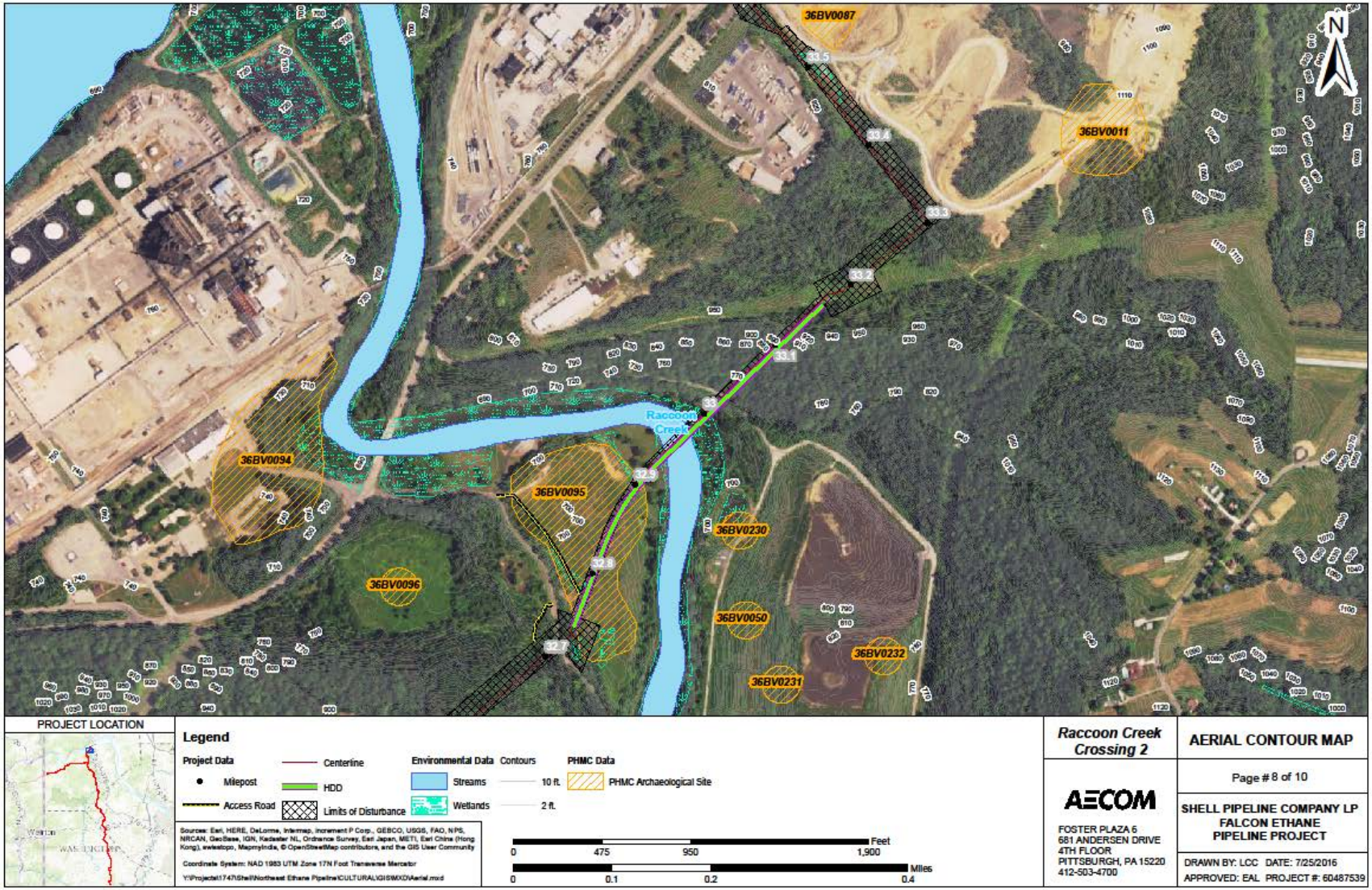


Figure 18. Contours over aerial photograph showing the downstream segment of Raccoon Creek. Note location of the proposed pipeline corridor. The bedrock units in this area are a mapped to the Glenshaw Formation of the Conemaugh Group (Pennsylvanian Period).

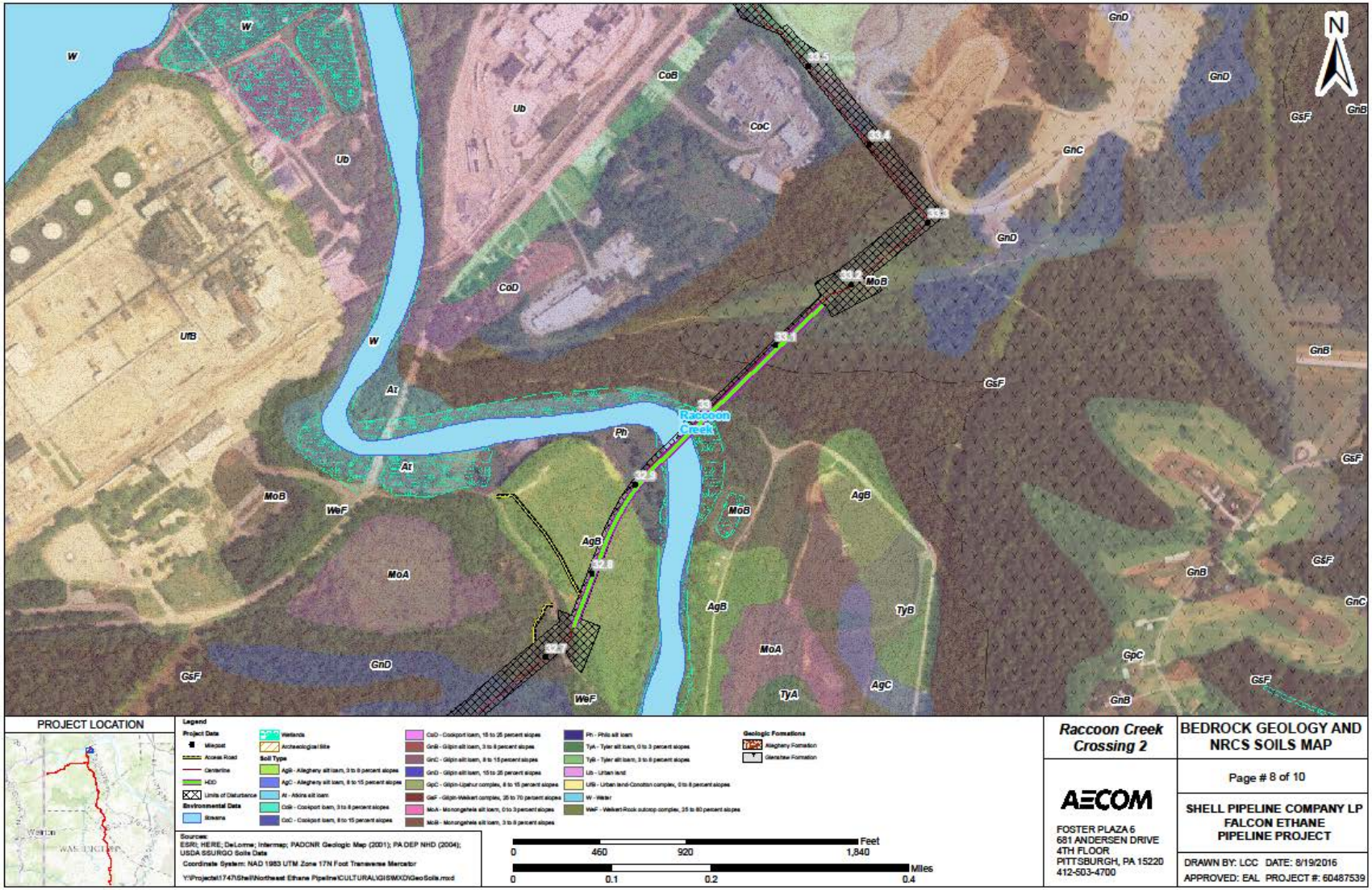


Figure 19. Soil and bedrock map of the Raccoon Creek #2 crossing. The soils along the south bank of the stream at the proposed HDD location are mapped to the Philo (levee zone) and to the Allegheny series along the mid flood chute and distal margin of the flood plain. The flood plain zone lies within the mapped boundary of the 100-year flood way zone. On the northeast side of the active channel the HDD lies on a high, terrace of probable Illinoian age.

Figure 20. General view of Raccoon Creek. Note that the T0 flood plain zone lies approximately 1.5 m to 2 m (5 ft. to 6 ft.) above the active stream channel. The soils along the levee zone of Raccoon Creek are mapped to the Philo sires. During field testing the soil profile encountered along the levee zone consisted of an A-Bw-C sequence with basal channel lag deposits occurring within 1 m to 1.2 m of the ground surface. The levee zone soils will not be impacted due to the horizontal directional drilling program along Raccoon Creek.

Figure 21. General view of HDD location on the high, probable Illinoian State terrace on the northeast uplands bordering Raccoon Creek. The soils on the high terrace consisted of an Ap/A-well developed cambic Bw-C (lateral accretion).

Figure 22. General view of bedrock defended valley slopes bordering Raccoon Creek. The large rocks are float blocks of sandstone most of which were released during more intensive frost wedging associated with periglacial climatic conditions during the Wisconsin Stage.

Figure 23. Large rock fall event which crashed into an old building situated along the lower valley slopes of Raccoon Creek.

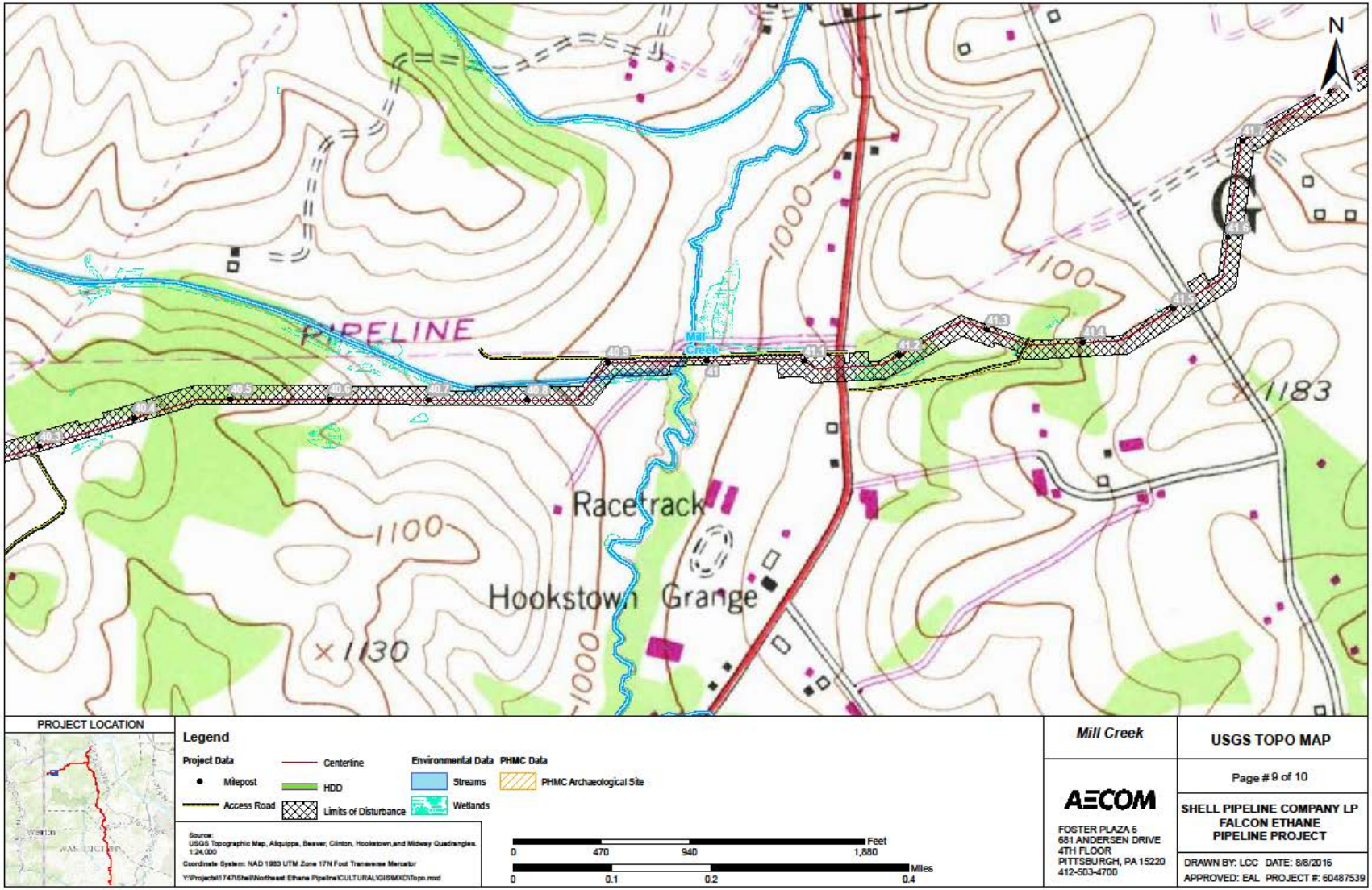


Figure 24. Topographic map of the open cut pipeline corridor at Mill Creek. Note broad, gently sloping alluvial fans to the east and west of the flood plain of Mill Creek. Note strong meandering channel habit along Mill Creek as well as wetland areas on valley bottom at proposed pipeline crossing.

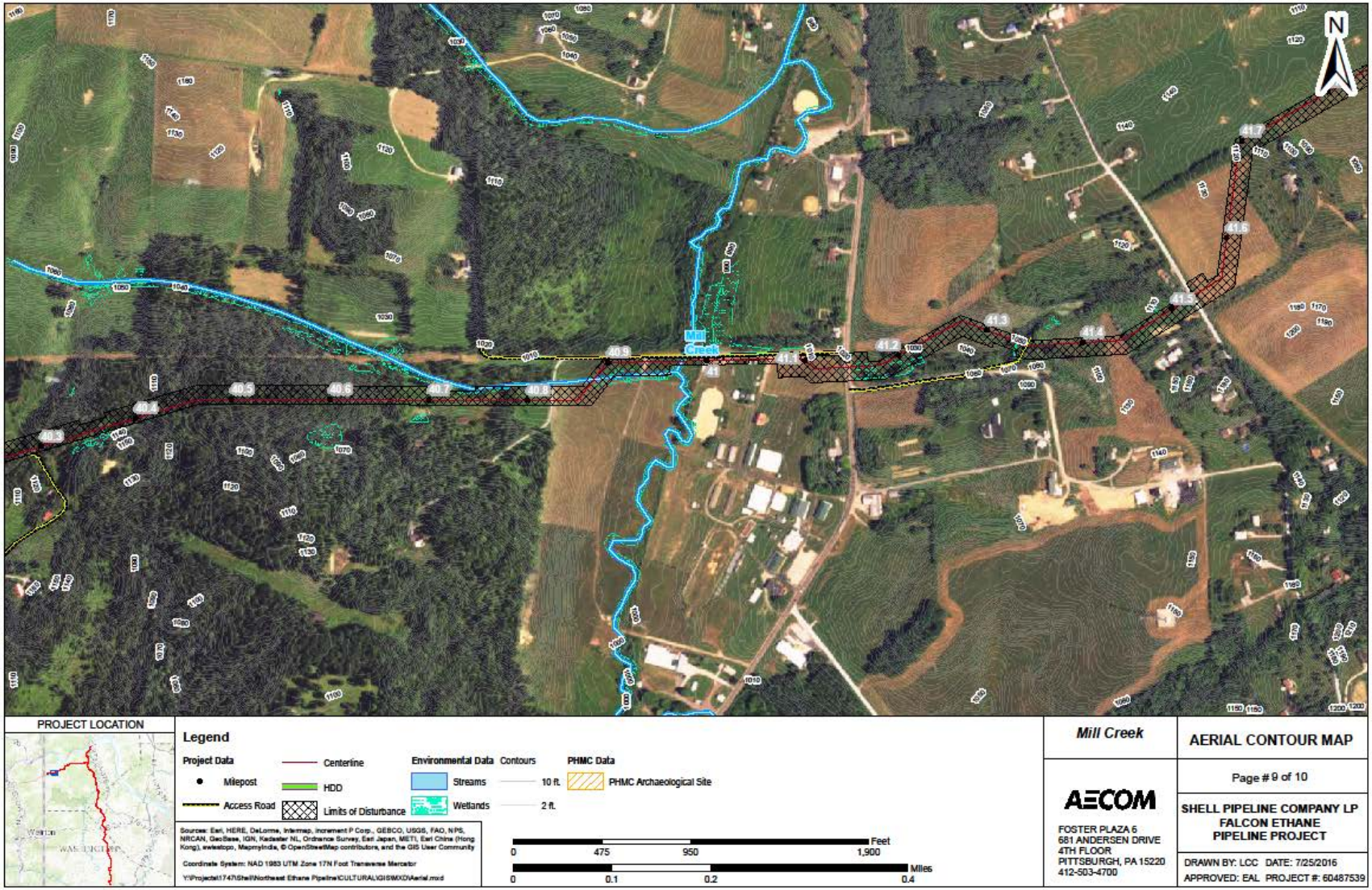


Figure 25. Contours over aerial photograph of Mill Creek pipeline corridor. Mill Creek flows north to its direct confluence with the Ohio River at Georgetown, Pennsylvania.

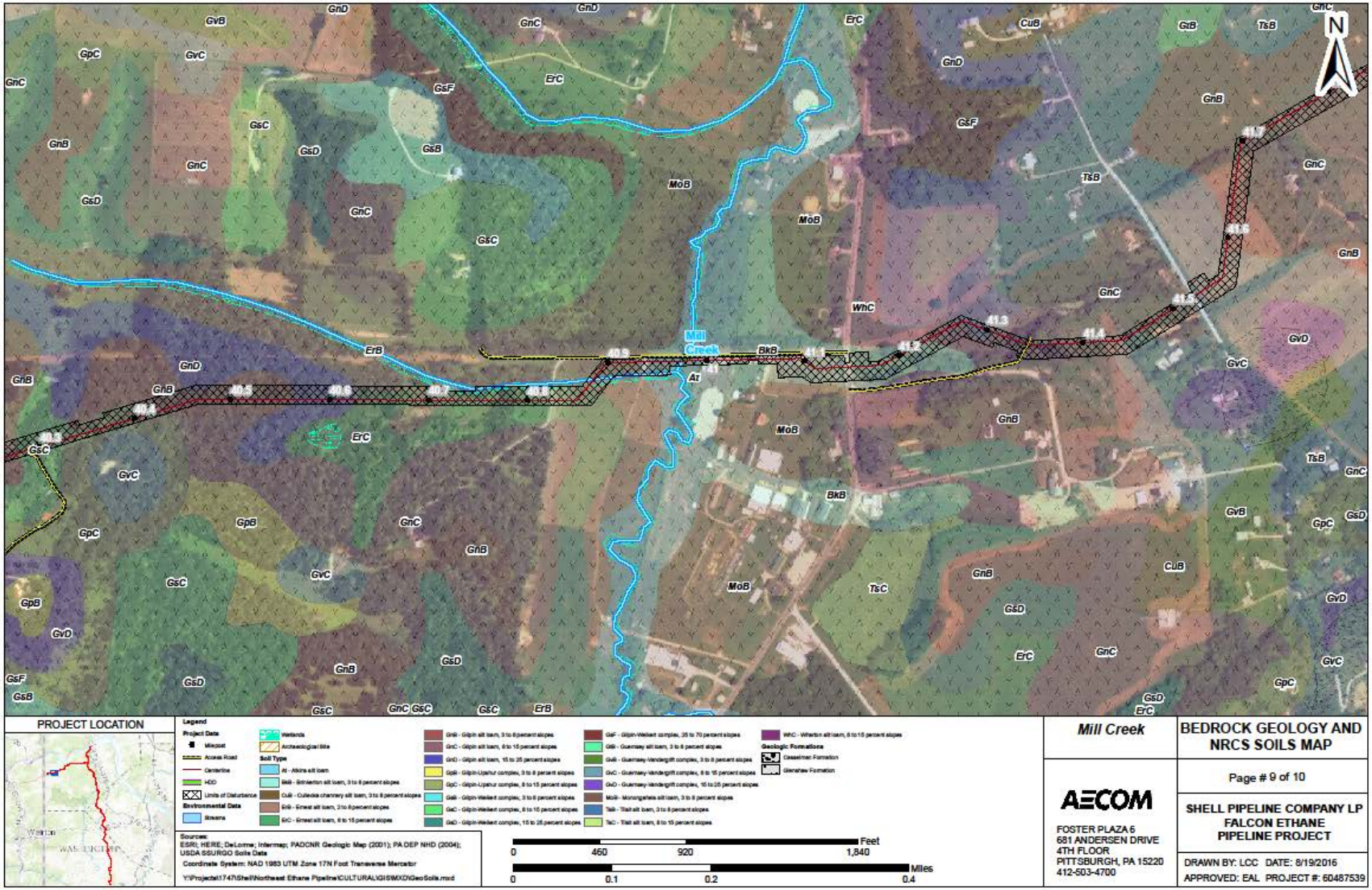


Figure 26. Soil and bedrock map of the pipeline corridor at Mill Creek. The hydric soils encountered on the low lying valley bottom zone are ascribable to the Atkins series. The channery silt loam soils on the valley slopes/alluvial fan are ascribable to the Gilpin-Upshur Complex. On the east side of the stream situated above the low lying flood plain zone is a high, Pleistocene age terrace (Monongahela series soils). The bedrock which underlies the fan deposits and alluvium is mapped to the Glenshaw Formation of the Conemaugh Group.

Figure 27. General view of T0 flood plain zone facing east of the low lying T0 flood plain bordering the active channel of Mill Creek. The soils are strongly hydric (A-Cg-C) with both obligate and facultative wetland vegetation present along the proposed pipeline corridor. Note restored historic farm complex on west bank of the active stream channel.

Figure 28. Photograph facing west of the alluvial/colluvial fan present on the lower valley slopes. The soils on the fan consist of a channery silt loam A horizon underlain by a channery silt loam Bt horizon. The B horizon grades downward into weathered sandstone bedrock of the Glenshaw Formation.

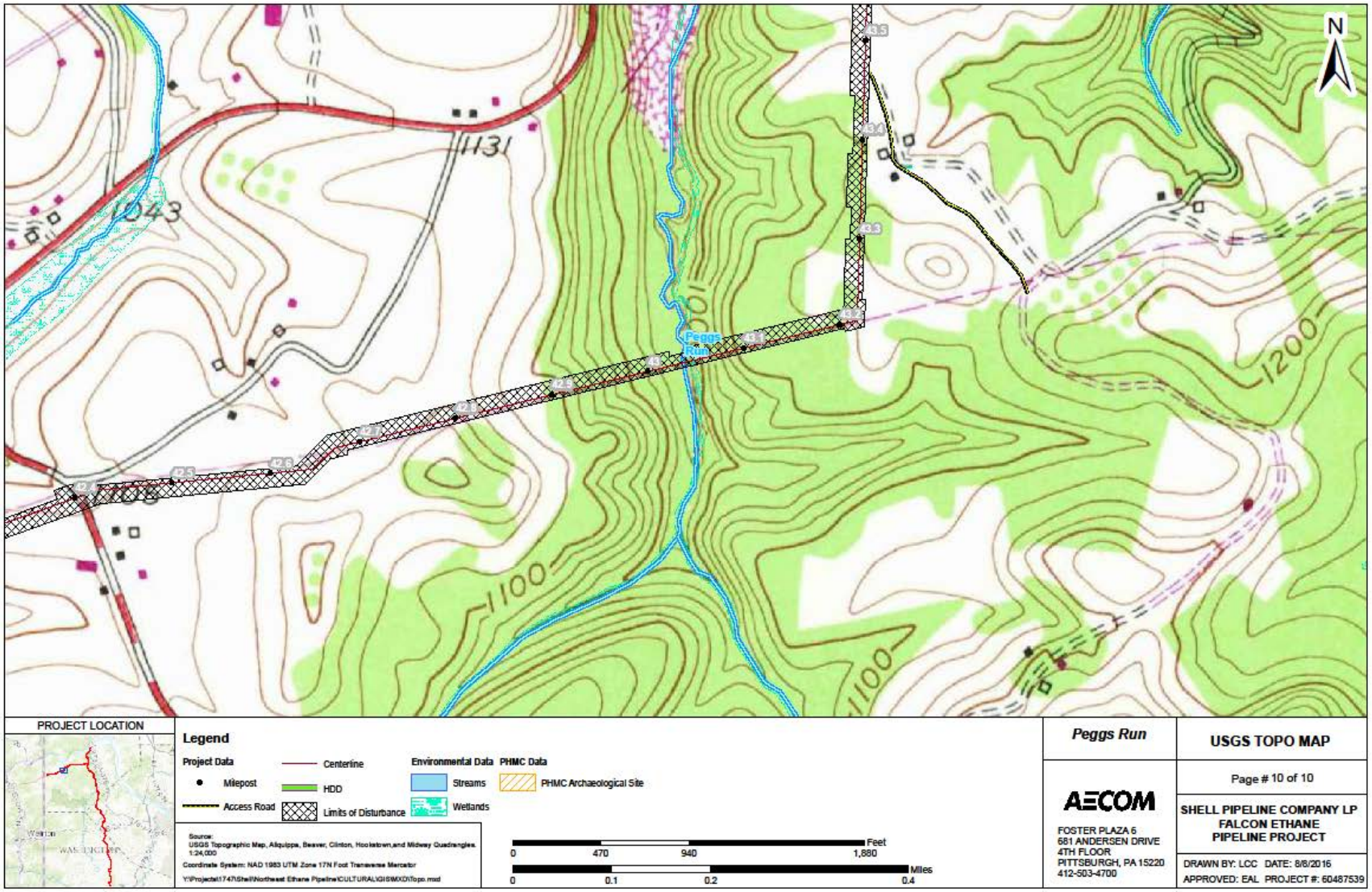


Figure 29. Topographic map of the upper reach of Peggs Run. Peggs Run is bound by steep, bedrock defended valley slopes and exhibits a low lying, flood scoured T0 landform along the narrow valley bottom zone. The soils can best be classified as Fluvaquents (Entisols) and are of recent/historic age. Peggs Run flows north to its confluence with the Ohio River at Shippingport, Pennsylvania.

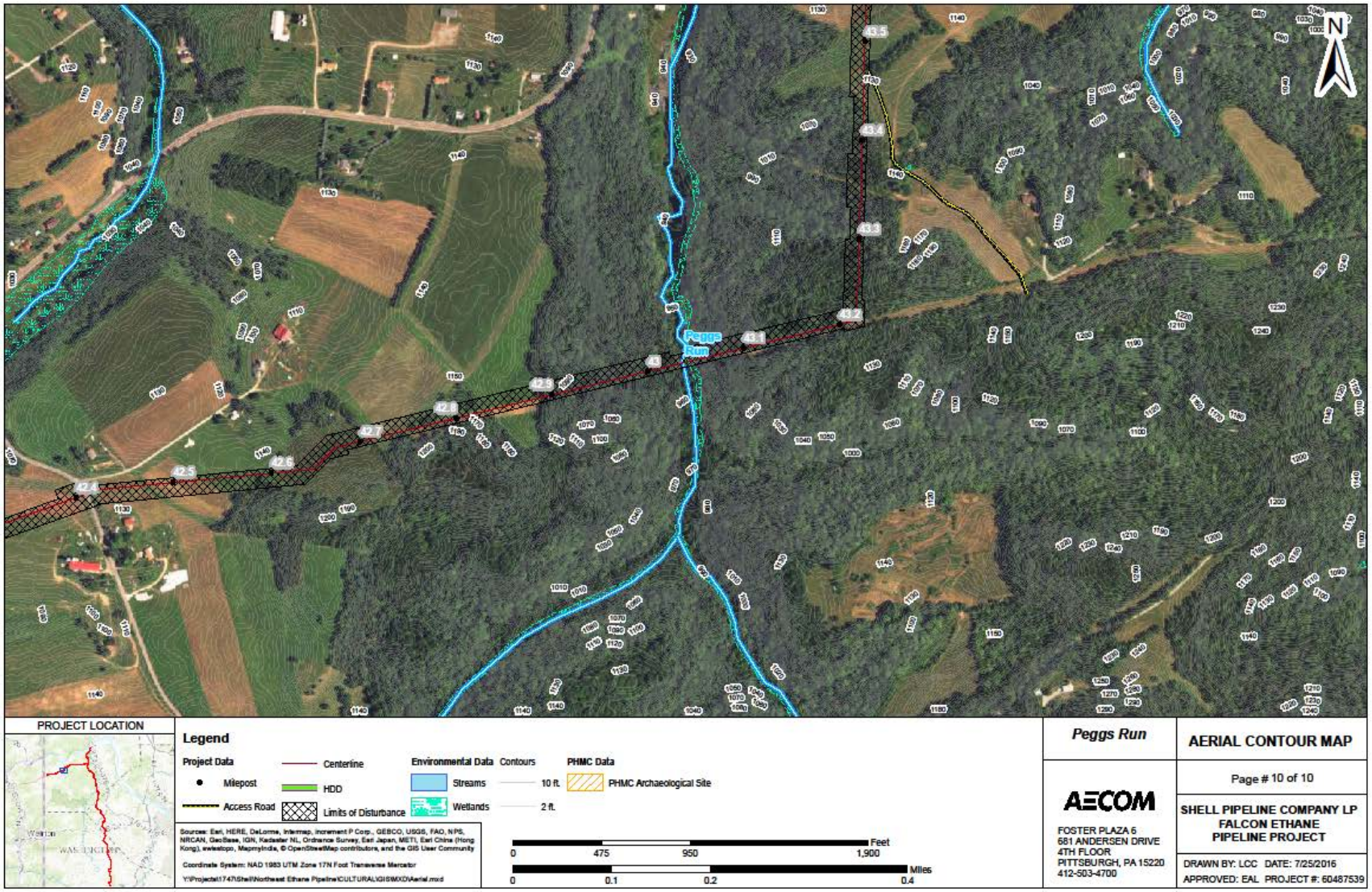


Figure 30. Contour over aerial photograph of the open cut pipeline corridor at Peggs Run. The active stream channel and low lying narrow valley bottom zone is bound by steep, bedrock defended valley slopes.

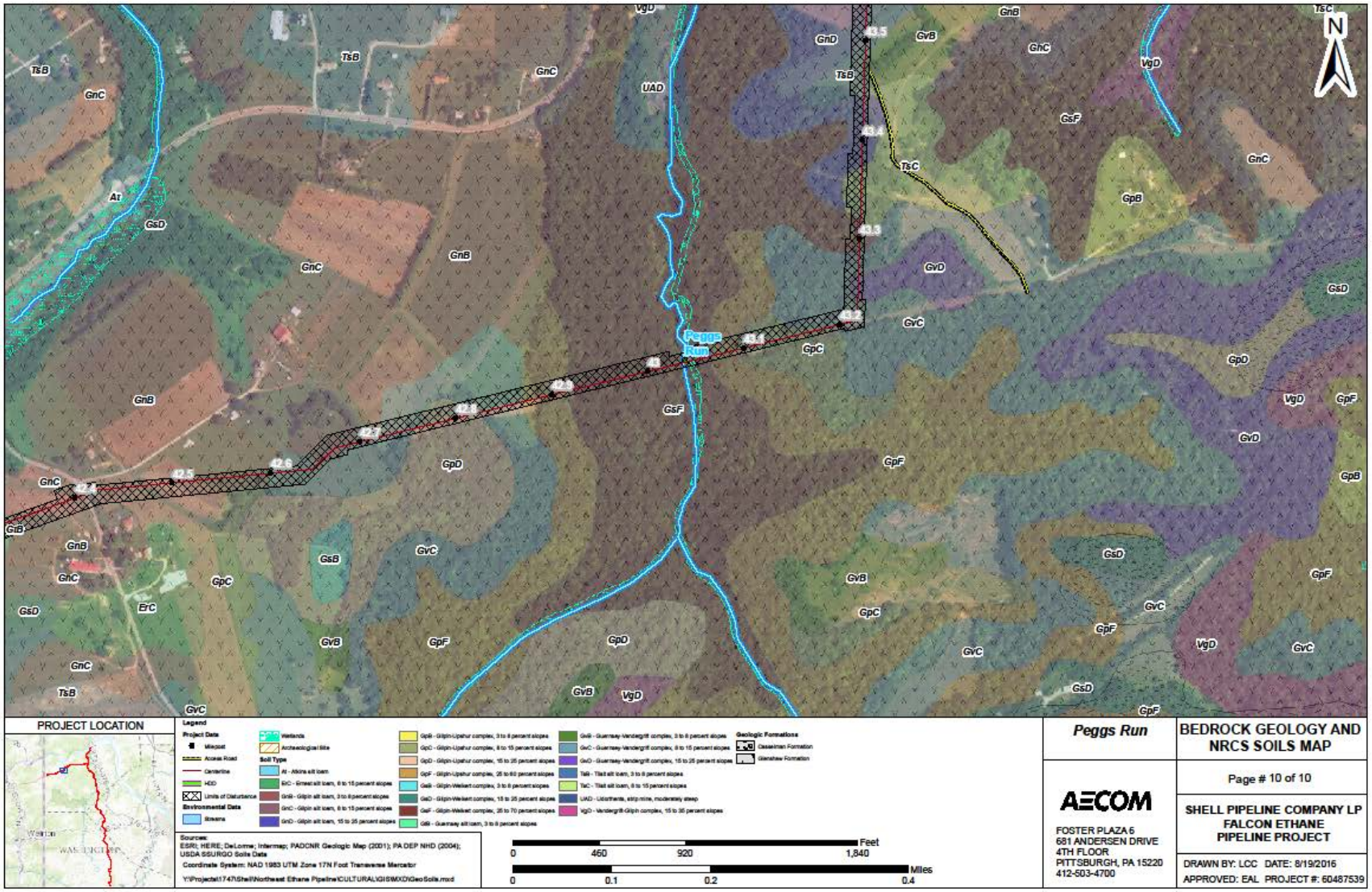


Figure 31. Soil and bedrock map of the open cut pipeline crossing at Peggs Run. The soils on the valley bottom are inaccurately mapped to the Gilpin-Weikert association. The soils should be mapped at Fluvaquents or Udifluvents (Entisols). The bedrock at the proposed crossing is mapped to the Glenshaw Formation of the Conemaugh Group.

Figure 32. General view of Peggs Run facing east. Note small channel and low lying T0 flood plain zone bordering the active stream channel.

Figure 33. General view of Peggs Run facing southeast. The narrow valley bottom zone is comprised of recent alluvial deposits. Like many streams in the region, historic deforestation has caused increased surface runoff, higher sediment yields and increased stream discharges.

Figure 34. Topographic map of Potato Garden Run. Note extensive strip mines bordering the valley bottom of Potato Garden Run. Strip mining and earlier deep mining have caused extensive sediment input into the stream. Today, numerous rills and seeps laden with mine acid drainage enter the stream channel. Potato Garden Run flows north to its confluence with Raccoon Creek at Murdocksville, Pennsylvania.

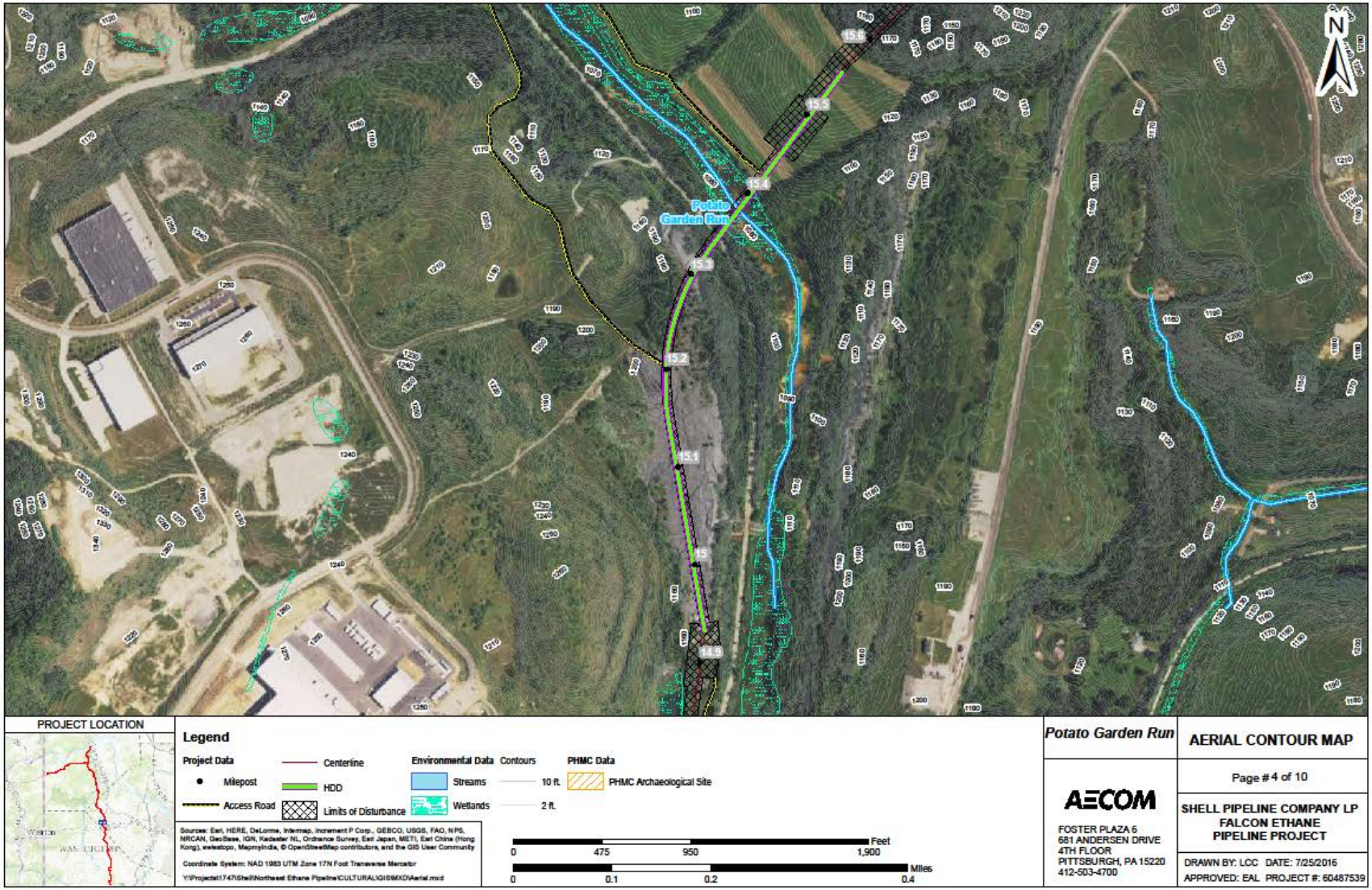


Figure 35. Contours over aerial photograph of Potato Garden Run. Note large tipple piles and abandoned strip mining areas adjacent to the valley bottom zone. During the field study numerous anastomosing channels were present on the valley bottom of Potato Garden Run. The low lying flood plain bordering the active stream channel is comprised entirely of recent alluvium, much of it shed from the strip mined areas bordering the stream channel.

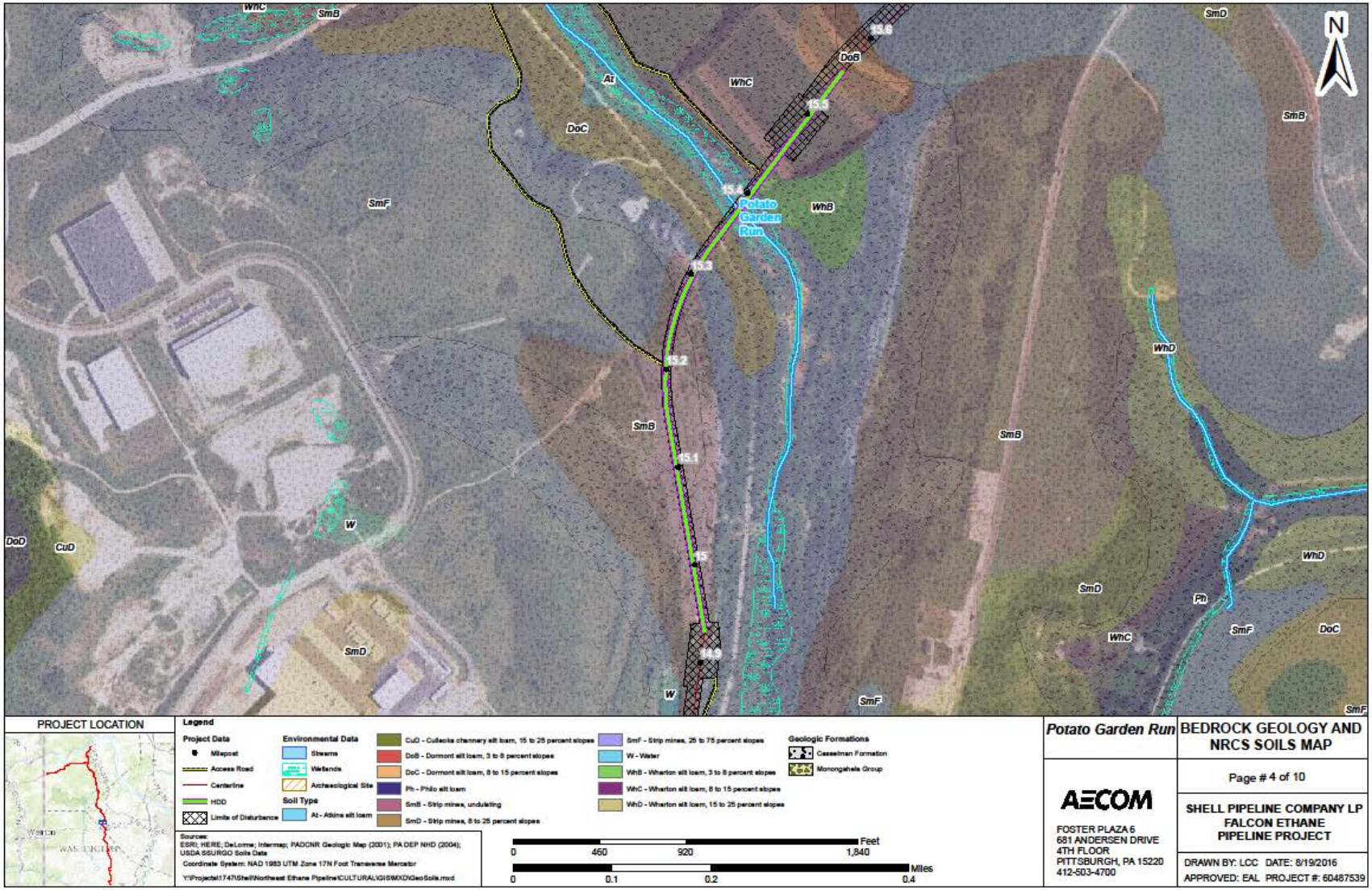


Figure 36. Soil and bedrock map of the pipeline corridor at Potato Garden Run. Horizontal directional drilling will be employed to span the valley bottom. The soils are mapped to the Atkins soil series and the bedrock is ascribable to the Upper Pennsylvanian Monongahela Group. Given the clear evidence of recent flood scouring, soils are of recent age (Entisols).

Figure 37. General view of Potato Garden Run valley facing west. The photo was taken from a high T1 terrace situated well above the active stream channel. The low lying flood plain is frequently flooded and consists of recent alluvium. While it will not be impacted by the proposed corridor the soils on the higher T1 terrace consisted of the following profile: A-Bw1-Bw2-C. The C horizon (lateral accretion) was encountered within 1 m (3.3 ft.) of the ground surface.

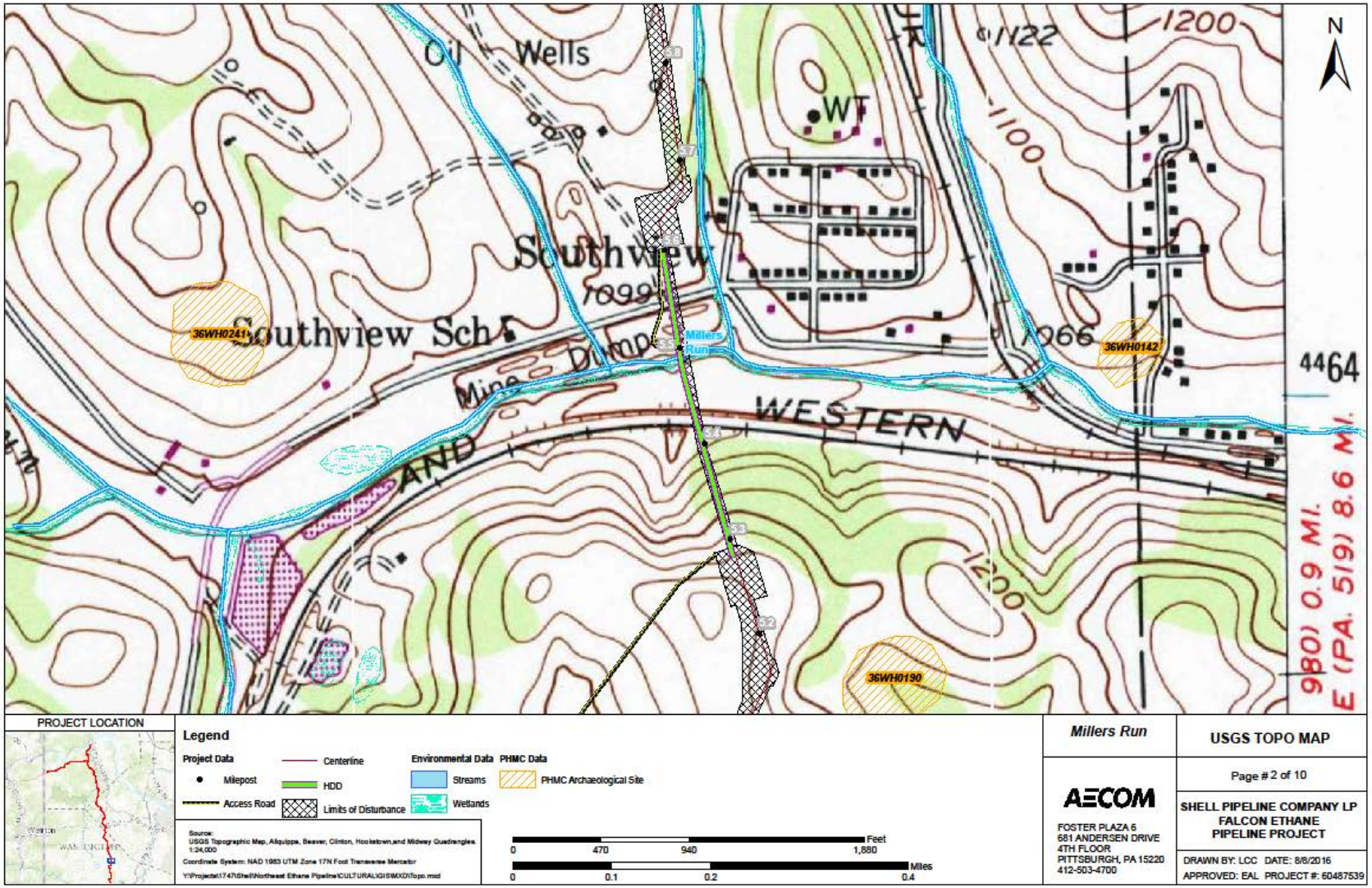


Figure 38. Topographic map of Millers Run. HDDs will be employed along the pipeline corridor. The HDD to the south of the stream channel lies on a high hill at an interpolated elevation of 1270 ft. The soils on the HDD are residual, having formed from the in situ weathering of the Washington and Waynesburg Formations of the Monongahela Group. The valley bottom and lower valley slopes of Millers Run have been impacted by urbanization, past mining activities and railway line construction. Millers Run flows eastward to its confluence with Chartiers Creek at Bridgeville, Pennsylvania.

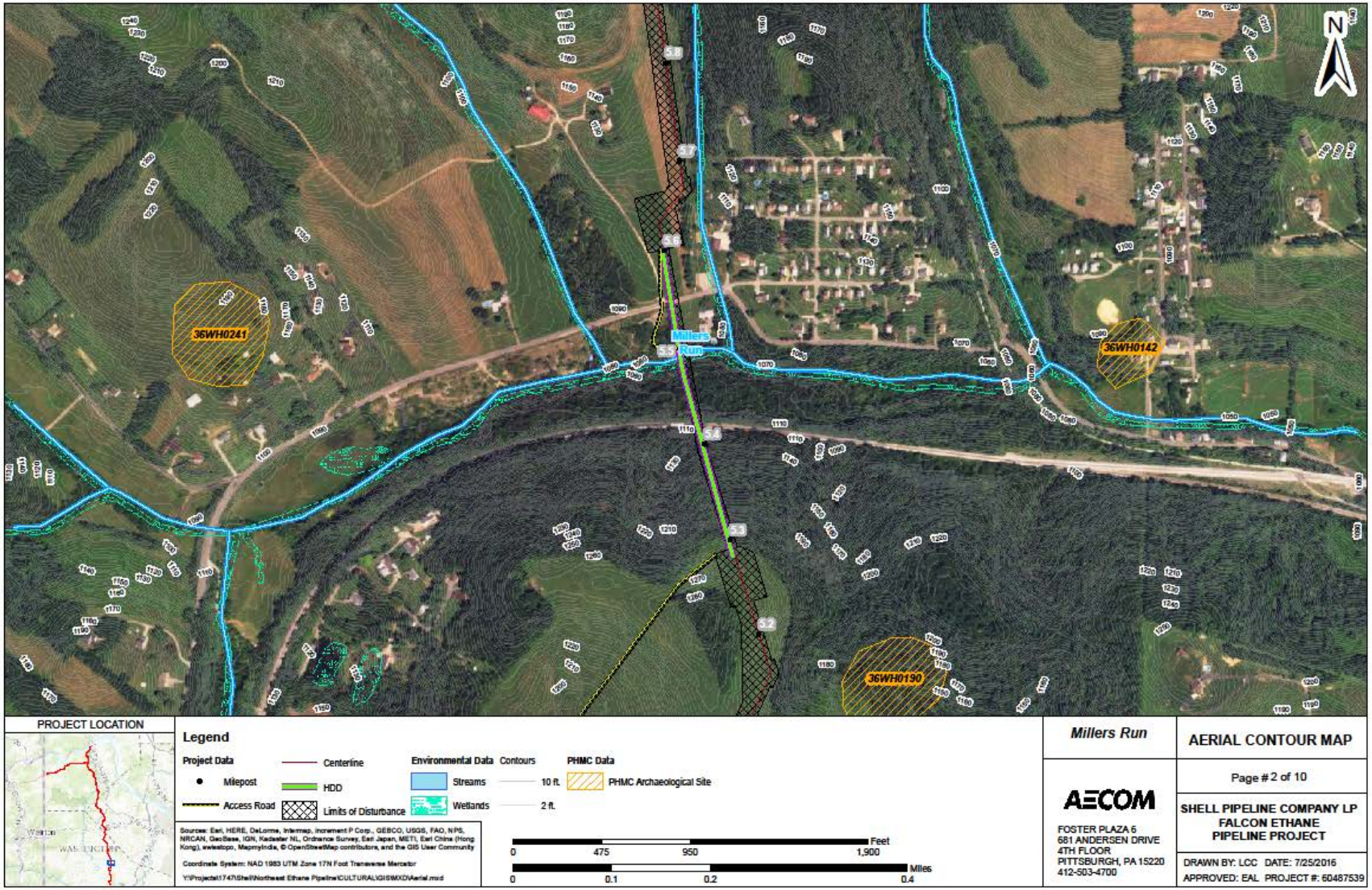


Figure 39. Contours over aerial photograph of the proposed pipeline crossing at Millers Run. The pipeline will employ HDDs to limit impact and span the valley bottom zone of Millers Run. The soils on the valley bottom zone have been significantly impacted by prior land use.

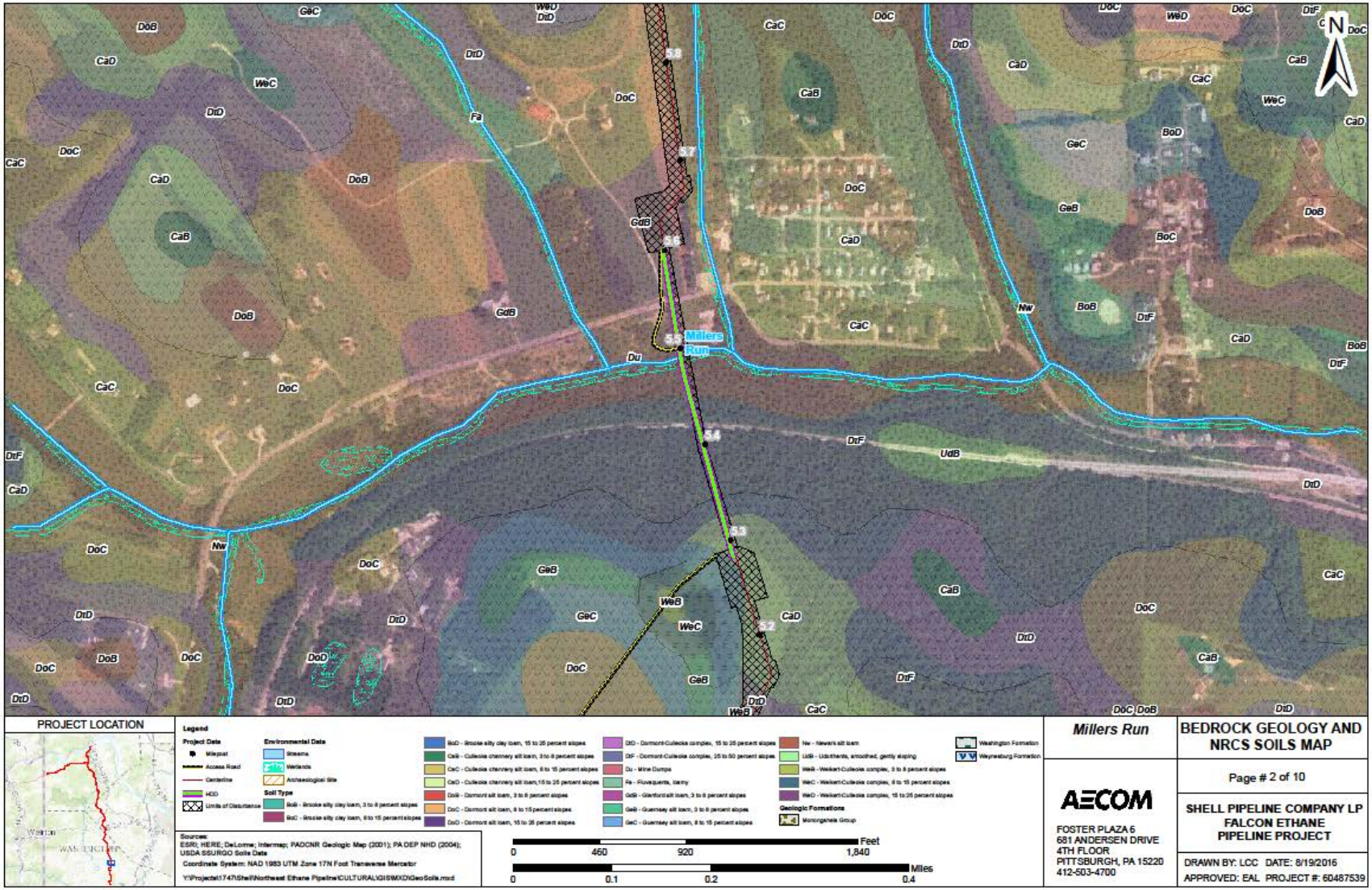


Figure 40. Soil and bedrock geology map of the proposed pipeline crossing at Millers Run. Note that both HDD pads will lie on upland, residual soils (Gilpin and Culleoka series).

Figure 41. General view of the narrow, flood scoured valley bottom zone at Millers Run. Note that the channel is bound by steep, bedrock defended valley slopes. Note mine acid drainage seeps entering into the stream channel from mine dumps and tipple piles situated on the valley bottom and lower valley slopes.

Figure 42. General view of steep valley slopes bordering the narrow, flood scoured low bottom zone of Millers Run.

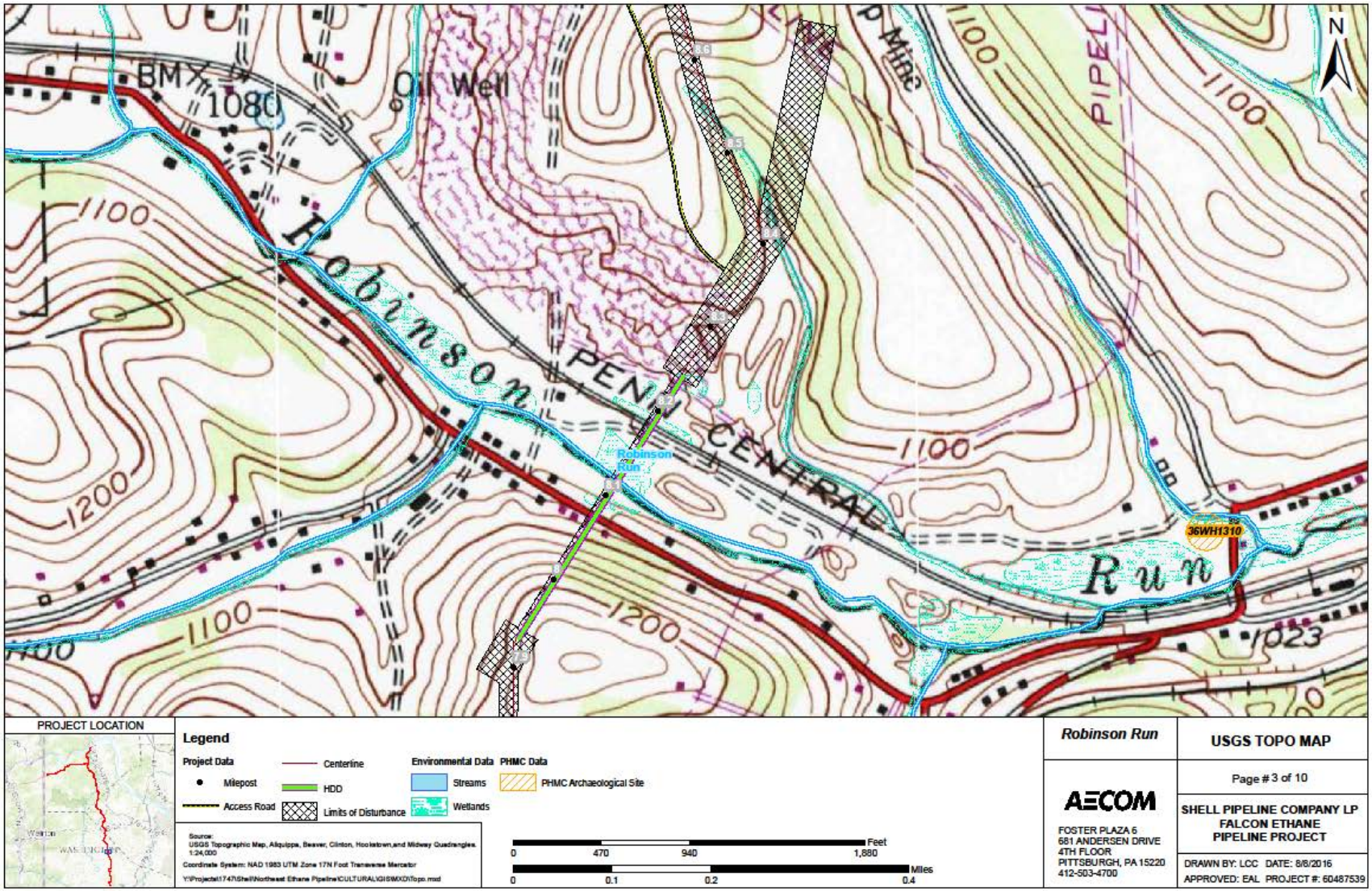


Figure 43. Topographic map of Robinson Run. Like Millers Run, Robinson Run has been significantly impacted from past deep *and* surface coal mining. Note large rounded tipple piles and mine waste on the valley bottom zone just to the east of the proposed pipeline corridor. Horizontal directional drilling will be employed along the Robinson Run crossing.

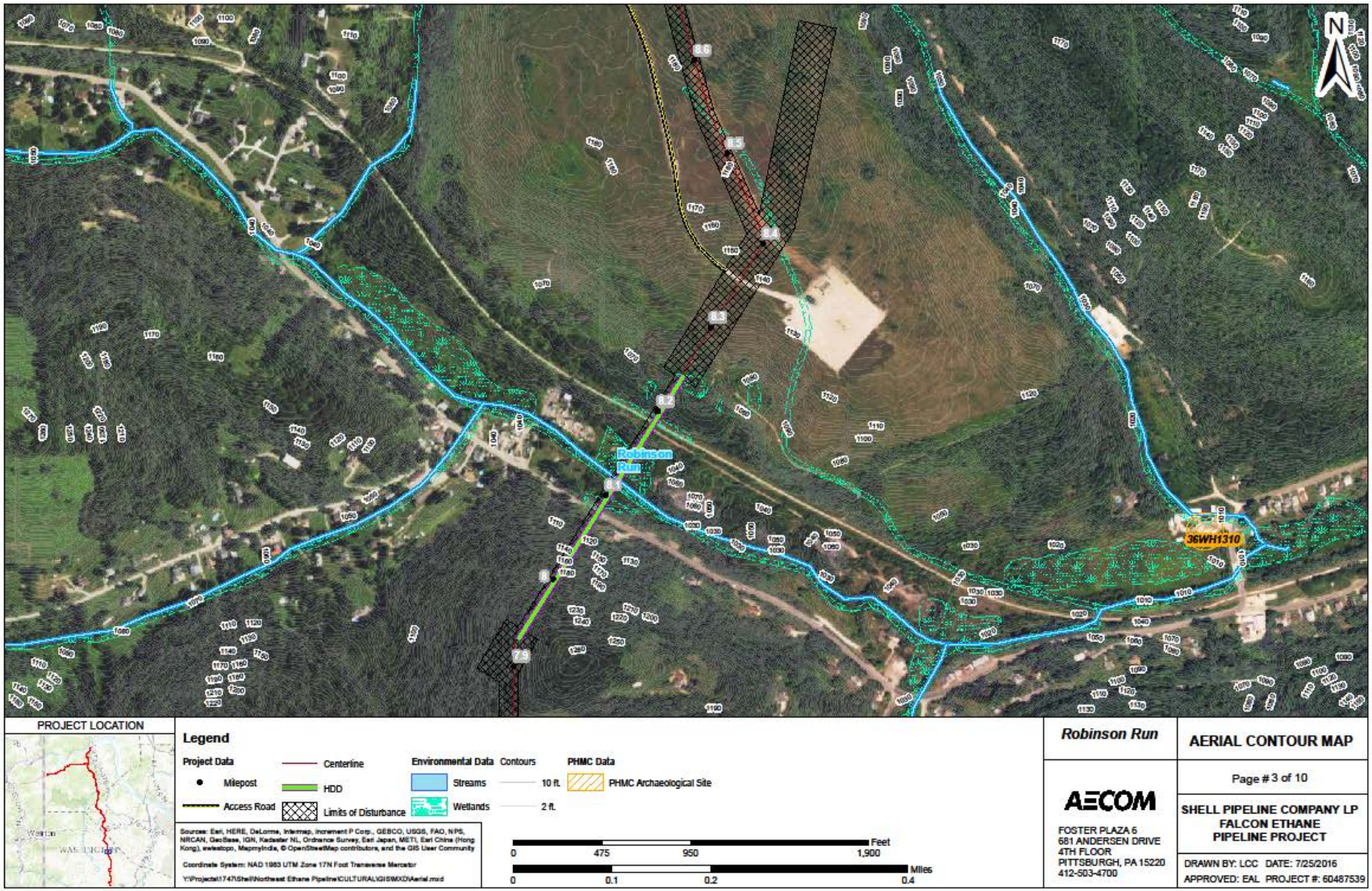


Figure 44. Contours over aerial photograph of the pipeline crossing at Robinson Run. Note that the HDD on the north side of the stream lies in a now abandoned, unreclaimed strip mine area while on the south side the HDD lies on a high hilltop at an interpolated elevation of 1200 ft.

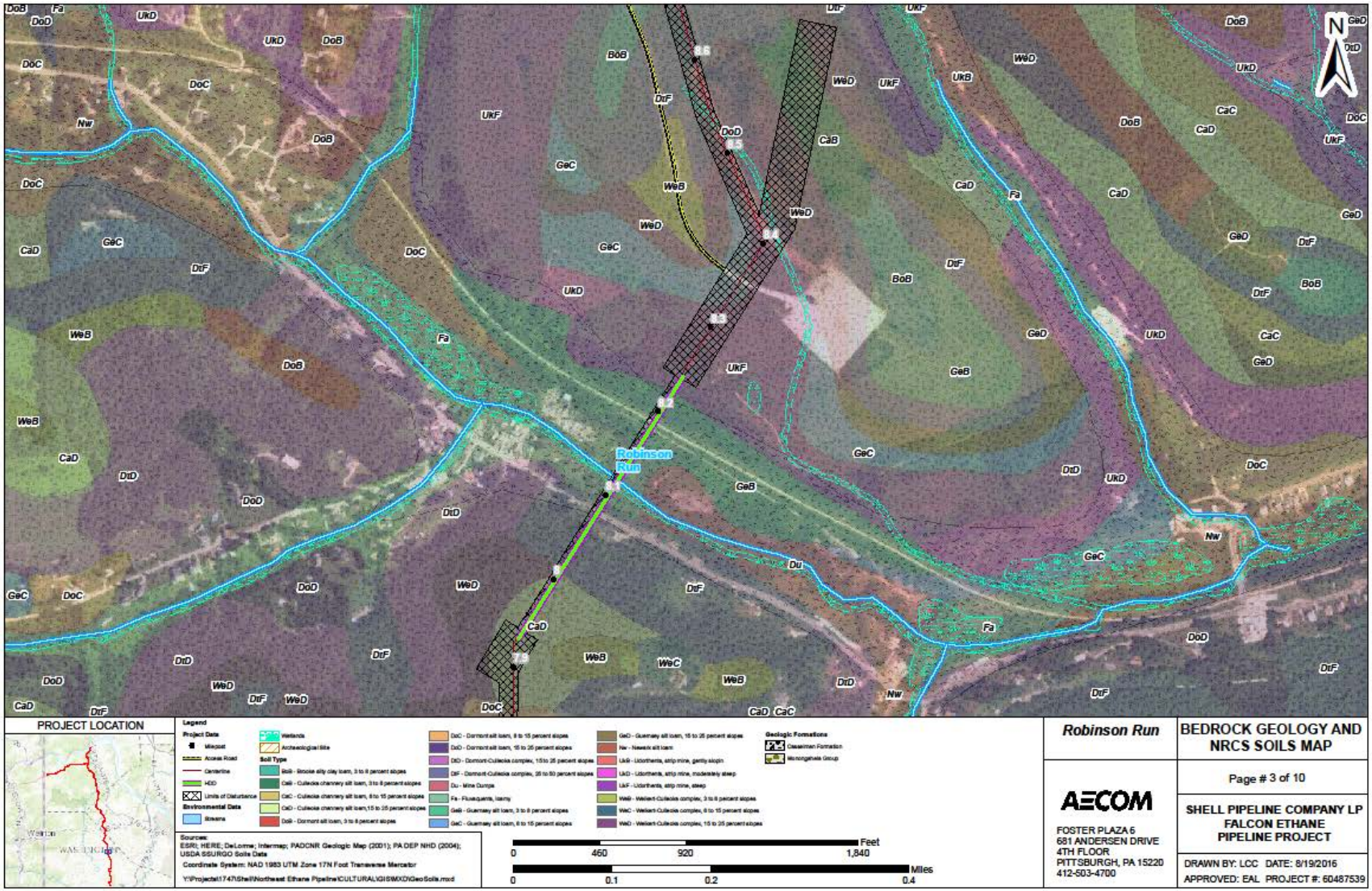


Figure 45. Soil and bedrock map of the Robinson Run pipeline crossing. Note that on the valley bottom zone the soils are classified as Mine Dump. At the HDD on the north side of the stream the sols are mapped as Mine Land while on the south side the residual soils at the location of the HDD pad is mapped to the Culleoka channery silt loam. The bedrock units in the study area are mapped to the Casselman Formation.

Figure 46. Mine Dump soils present along the flood scoured valley bottom zone along Robinson Run. The soils are comprised of coal, ash, slag, and rock fragments.

Figure 47. General view of Robinson Run along project area corridor. It appears that this reach of Robinson Run has been channelized. The soils are strongly hydric with large wetlands on both sides of the stream channel. The profile consists of an organic rich A horizon which is underlain by a massive, structureless, plastic gray (10YR6/1) clay Cg/Bg horizon. The gray clay is then underlain by relict, lateral accretion deposits of very late Holocene age.

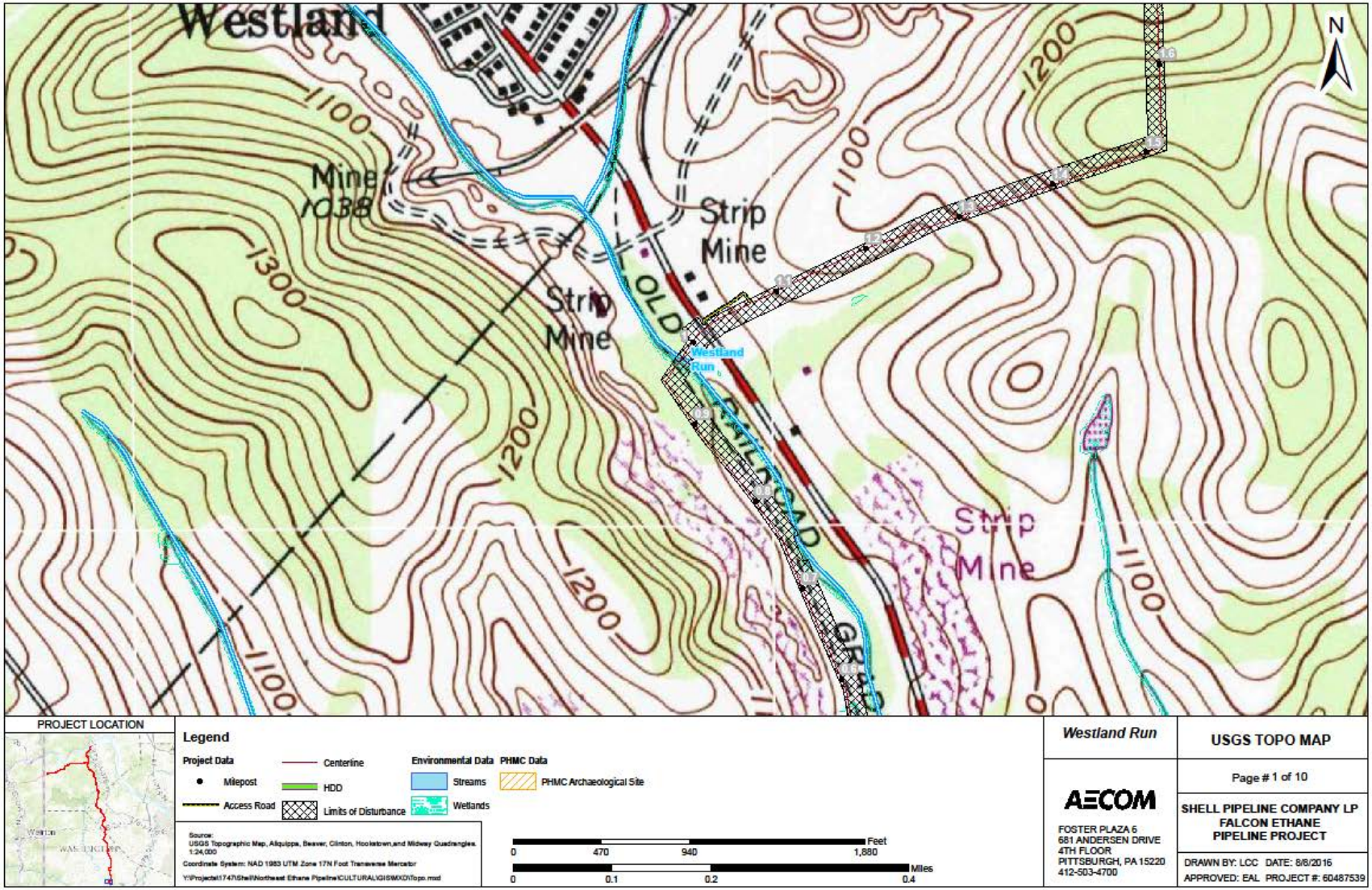


Figure 48. Topographic map showing the open cut pipeline corridor at Westland Run. The stream channel is bound to the east and west by strip mined areas. Along the valley bottom/flood plain zone is an abandoned railway line, a recent large utility line, and a paved cartway. The valley bottom zone is extensively flood scoured and impacted by urbanization. Westland Run is a tributary of Chartiers Creek.

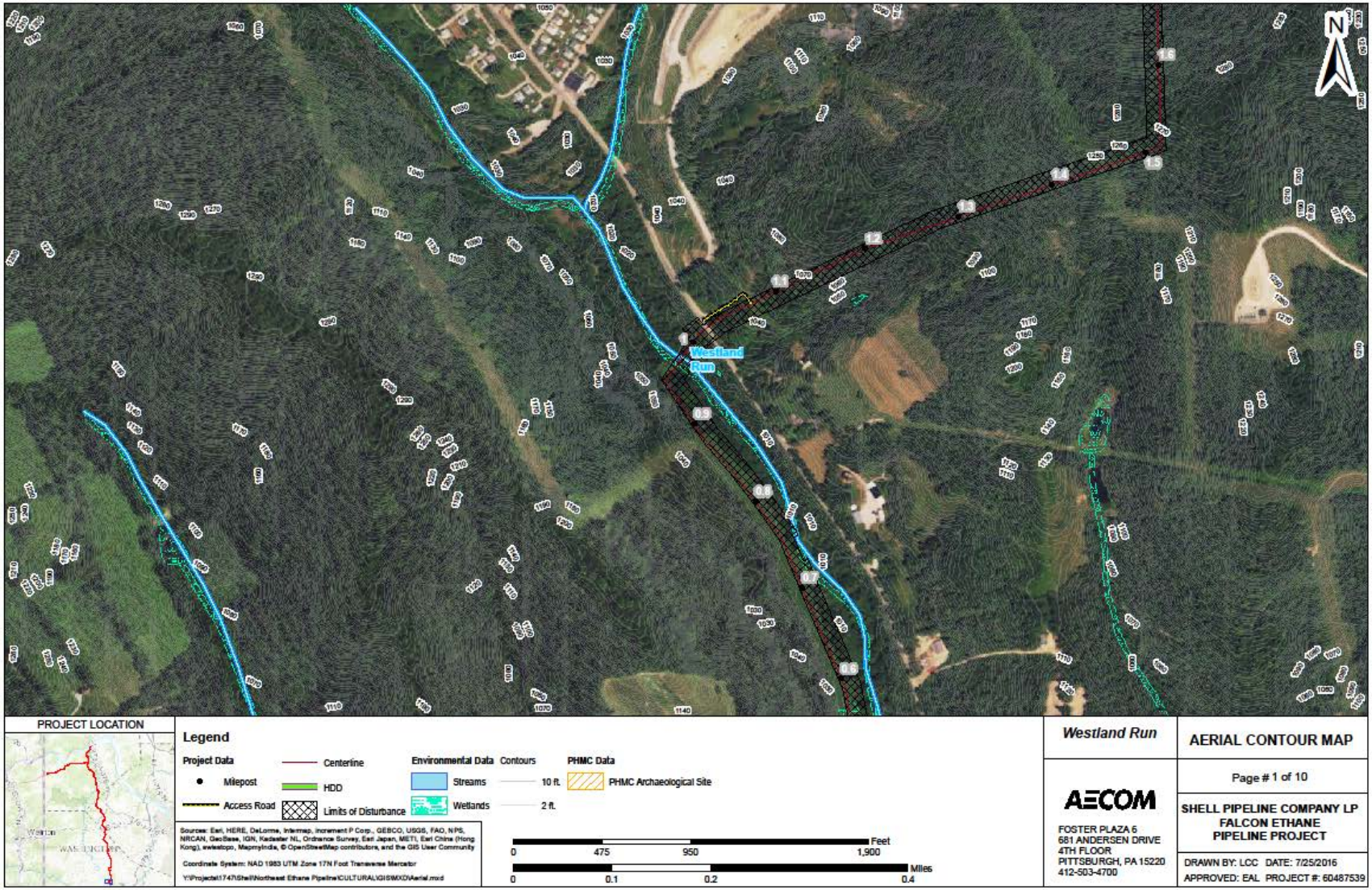


Figure 49. Contours over aerial photograph of open cut pipeline corridor at Westland Run. Note that the valley bottom zone is bound to the east and west by strip mined areas and moderately steep valley slopes.

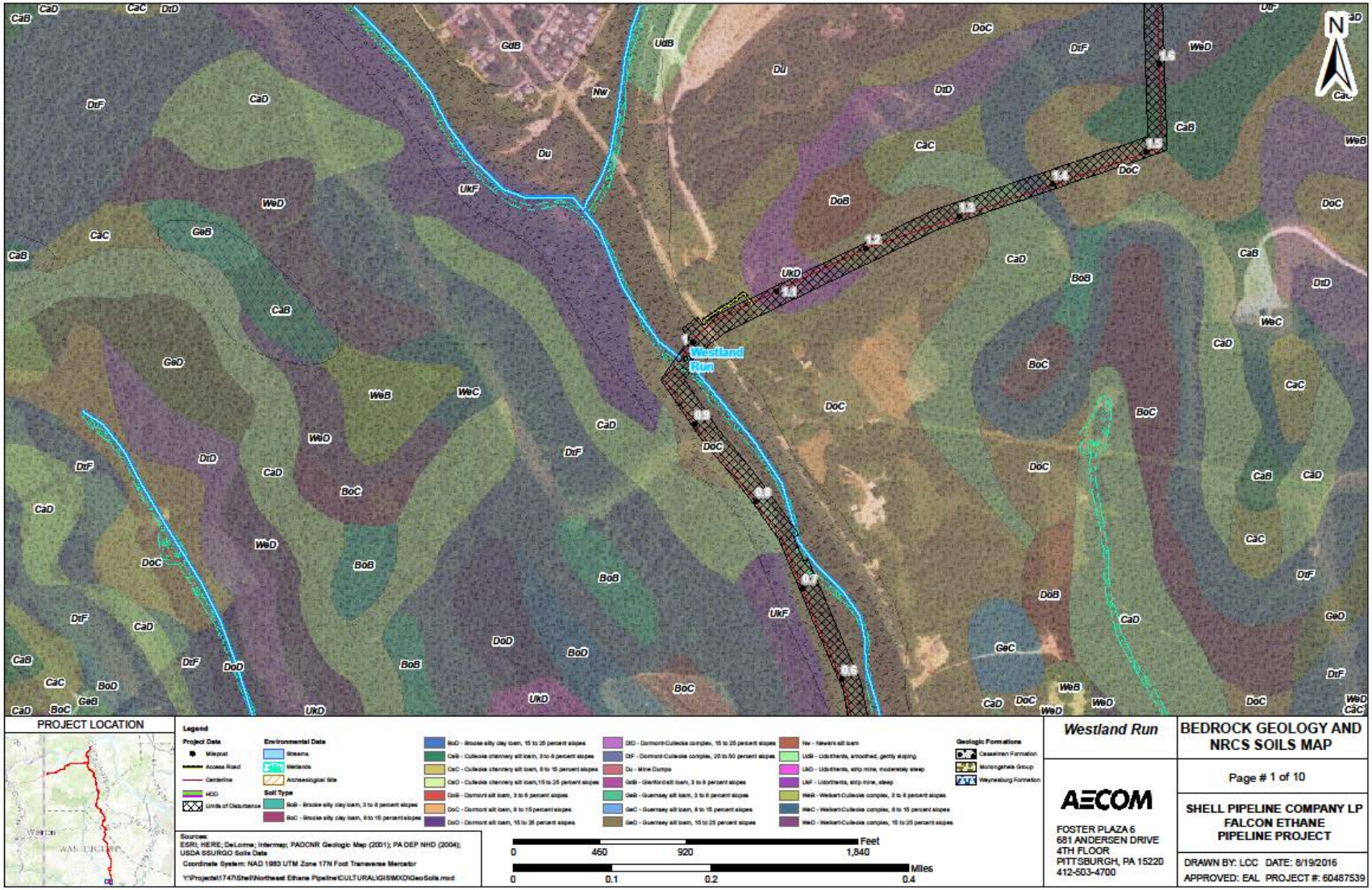


Figure 50. Soil and bedrock map of study area. The soils along the valley bottom zone are mapped to the Dormont silt loam series. The field testing however would argue for the soils being mapped to either the Mine Dump or as Fluvaquents (Entisols). The bedrock units which underlie the alluvium on the valley bottom are mapped to the Casselman Formation of the Conemaugh Group, while the uplands are underlain by the Washington Formation of the Monongahela Group.

Figure 51. General view of existing pipeline corridor paralleling the main stem of Westland Run. The soils in this area have been disturbed by construction for the existing pipeline.

Figure 52. Bank cut along Westland Run showing stratified coal sands emplaced under high flow velocities during historic times.

Figure 53. Coarse alluvium and historic flood debris filling the channel of Westland Run.

APPENDIX C
Chance Finds Plan and Procedures

ER No. 2015-1839-042

Chance Finds Plan and Procedures for the Proposed Falcon Ethane Pipeline Project

Washington, Allegheny, and Beaver Counties, Pennsylvania

Prepared for

Shell Pipeline Company, LP

Prepared by

AECOM
681 Andersen Drive, Suite 400
Pittsburgh, Pennsylvania 15220

January 2017

On behalf of Shell Pipeline Company, LP (Shell), AECOM completed a Phase I archaeological survey for the proposed Falcon Ethane Pipeline System (Project). This investigation was conducted in support of a Joint Permit Application (JPA) for a Pennsylvania Department of Environmental Protection (PADEP) Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers (USACE) Section 404 and Section 10 Permits. The Project is an approximately 95-mile-long pipeline located within Ohio, West Virginia, and Pennsylvania. It is comprised of three pipeline sections: Cadiz to Scio (Ohio), Scio to Monaca (Ohio, West Virginia, and Pennsylvania), and Houston to Monaca (Pennsylvania).

The Project in Pennsylvania consists of the installation of approximately 68.9 kilometers (42.8 miles) of new liquid ethane pipeline within new and existing right-of-way (ROW) in Washington, Allegheny, and Beaver Counties. The Project includes a 15 meter (50-foot) permanent right-of-way and a 15-meter (50-foot) temporary construction workspace for a nominal 30-meter- (100-foot-) wide construction corridor. Some areas will require an additional 7.6 meters (25 feet) of temporary workspace totaling to a 38-meter- (125-foot-) wide construction corridor. The Project also consists of approximately 29.8 kilometers (18.5 miles) of access roads, a 4-hectare (10-acre) compressor station. A total area of temporary and permanent ground disturbance is approximately 895 hectares (~2,435 acres). The area of potential effects (APE) includes all areas of project-related ground disturbance (i.e., workspace and access roads) within the study corridor, or limits of disturbance (LOD).

To ensure the protection of the archaeological resources and in compliance with Section 106 (36 CRF § 800) of the National Historic Preservation Act (NHPA) of 1966 (16 USC § 470), as amended, the Advisory Council on Historic Preservation's *Protection of Historic Properties*, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC § 3001 *et seq.*), and the Pennsylvania History Code (37 Pa. Cons. § 500 *et seq.*), AECOM recommends implementing the following *Chance Finds* plan during the construction period of the project and includes any changes or revisions to the design plans.

The *Chance Finds* plan is designed to document and assess archaeological resources and paleontological resources within the planned LOD by training machine operators and construction personnel to recognize previously unidentified archaeological features, archaeological sites, and fossilized plant and animal remains that may be potentially significant during ground disturbing activities. The *Chance Finds* plan is designed to be used throughout the construction process by providing the construction team and construction managers with a framework of procedures to follow in the event that archaeological resources or human remains are discovered. This plan is designed specifically for the Proposed Falcon Ethane Pipeline. As such, the procedures outlined in this plan will not apply to other construction sites. The following plans add the final layer of protection that fosters the preservation of archaeological resources along the Proposed Falcon Ethane Pipeline.

I. CONSTRUCTION MONITORING PLAN

Several archaeological sites are located within the proposed LOD and construction monitoring by construction personnel is recommended to document and aid in assessing possible significant

chance finds (Attachment A: Archaeological Site Locations Map). Construction monitoring for chance finds will be performed by heavy machine operators and construction personnel as they monitor ground disturbing activities. If a potentially significant chance find is identified, an on-call archaeologist will be available to assess the find. The objectives of this are to 1) temporarily preserve the archaeological site areas from impacts and 2) identify and document any archaeological materials uncovered during construction.

In the event that archaeological artifacts (concentration of artifacts) or features are uncovered during or construction-related activities near within the LOD, construction in the immediate area will be halted and the construction monitor will:

- Advise the Project Manager to direct the contractor to stop the excavation;
- Evaluate safety hazards present or unsafe conditions that could be a significant danger to entering the excavation area or trench and consult with contractor and HSSE representatives;

If safety hazards or unsafe conditions **ARE NOT** present, the on-call archaeologist will:

- Inspect the find by entering the excavation area;
- Clear away any loose soil (with hand tools) to fully expose the find;
- Delineate by scraping the soil profile closest to the find;
- Collect any archaeological material associated with the find; and
- Draw and photograph the find.

If hazards or unsafe conditions **ARE** present, the archaeologist will:

- Inspect the find from a designated safe area;
- Collect any archaeological material associated with the find with the assistance of machine operators and construction personnel; and
- Sketch and photograph the find.

Inspection and initial evaluation of the find will require a minimum of five (5) minutes and a maximum of four (4) hours. During this period, the contractor may excavate in other portions of the site. At the completion of the inspection, if it is determined that the find requires consultation with the USACE Cultural Resource Specialist/Tribal Liaison and the Pennsylvania State Historic Preservation Office (PA SHPO) to determine if it is eligible for listing on the NRHP (Phase II Evaluation and/or Phase III mitigation), the contractor must work in a different portion of the project area. The AECOM archaeologist and project manager will consult with Shell, the USACE, and PA SHPO.

DEFINING ARCHAEOLOGICAL AND PALEONTOLOGICAL FINDS AND BASIC PROCEDURES

There are four different types of "finds" that may be encountered during the construction monitoring and construction activities within the proposed LOD: *Individual Artifact finds*, *Feature finds, Unidentifiable bone/Human Remains, and Paleontological finds*.

Individual Artifact finds.
An artifact is a portable object made by people. Common prehistoric artifacts were made from a variety of materials including, stone, clay, and bone. Historic artifacts include manufactured from glass, ceramic, wood, and metal. This category would include smaller finds not eligible for the NRHP. It is anticipated that individual artifact finds, such as pieces of pottery and lithic flakes may be encountered during the construction phase. However, it is expected that these finds will not represent significant archaeological resources. Additionally, individual artifact find will be difficult to identify during construction. It is likely that the construction monitor will not see these small items. However, if the monitor does identify an individual artifacts (5 arrowheads or more within a 3 foot square area), please follow the below procedures.

- In the case of discovering individual artifact finds (5 arrowheads or more within a 3 foot square area), the contractor shall note the location of the finds and retrieve the artifacts from the construction area.
- If the monitoring archaeologist is on site, the contractor shall provide him/her with the artifact and the location it was found.
- If the monitoring archaeologist is not on site, the contractor shall provide the artifact and the location it was found to the Project Manager, who will temporarily hold until the monitoring archaeologist is available.

Feature finds.
An archaeological feature is similar to an artifact in that it provides evidence of people's past activities. However, a feature is distinct from an artifact because it is not portable. A feature is an element of a site that cannot be removed from the site without losing its physical integrity. Privy pits, historic building foundations, concentrations of individual artifacts, stone hearths, and historic walls are good examples. An archaeological feature contains information important to an area's history or prehistory and there is a greater likelihood that an archaeological feature, as opposed to an individual find, may be considered eligible for listing on the NRHP.

If a *Feature find* is identified during construction activities, the contractor will:

- Cease work in the immediate area and contact the on-call AECOM archaeologist. Once one site, the archaeologist will do the following.
- Advise the Project Manager to direct the contractor to stop the excavation;
- Inspect the *Feature find* by entering the excavation area;
- Clear away any loose soil (with hand tools) to fully expose the find;
- Delineate by scraping the profile closest to the find;
- Collect any archaeological material associated with the find; and

- Draw and photograph the find.

Inspection and initial evaluation of the *Feature find* will require a minimum of 15 minutes and a maximum of four (4) hours. During this period, the contractor may excavate in other portions of the LOD. At the completion of the inspection, if it is determined that the *Feature find* requires consultation with the PA SHPO to determine if it is eligible for listing on the NRHP (Phase II Evaluation), the contractor must work in a different portion of the project area and the archaeologist will consult with the USACE and the PA SHPO.

If the evaluation results in the finding that the *Feature find* meets the criteria for listing on the NRHP and Phase III mitigation (full-scale data recovery of the archaeological feature) is required, the AECOM Team will develop a data recovery plan specific to the *Feature find*, which will include the following information:

- A description of the *Feature find* determined eligible for listing on the NRHP by the Phase II Evaluation, including the feature's composition (stone, wood, metal, etc.), location within the area of excavation, and known extent (both vertical and horizontal);
- Photographs and profile drawings of the *Feature find*;
- A description of the research questions that mitigation of the *Feature find* can address; and
- Proposed data recovery methods.

This data recovery plan will then be submitted to the USACE Cultural Resource Specialist/ Tribal Liaison, in consultation with the PA SHPO for their review and comments regarding the identified archaeological feature's eligibility for inclusion on the NRHP and the agencies' approval of the data recovery plan. Upon receipt of USACE and PA SHPO approval, Phase III mitigation of the Feature find will commence. The duration of the Phase III mitigation will depend on the nature of the find and dimensions.

Unidentifiable bone/Human Remains.

The Contractor shall adhere to the following requirements in the event that *Unidentifiable bone/Human Remains* are encountered during construction of the Project. These steps include the protocols for the notification of appropriate parties and the proper treatment of human remains. The discovery of human remains and items of cultural patrimony, as defined by Section 3001 of the Native American Graves Protection and Repatriation Act (NAGPRA), require special consideration and care. As such, in the event that *Human Remains* are discovered during construction, they must at all-times be treated with dignity and respect.

- If *Unidentifiable bone/Human Remains* are identified, work in the vicinity must stop immediately, a perimeter (100-foot buffer, or greater if needed) around the discovery must be secured, and the finding must be reported to the Project Manager and the on-call archeologist.

- The on-call archaeologist will confirm the nature of the bone (non-human or human).
- If the bones are *Human Remains*, the AECOM archaeologist will immediately notify the AECOM project manager. The project manager will notify Shell by telephone and e-mail the same day.
- The Shell construction manager will immediately notify the local Police and the Coroner's Office, and cooperate with the coroner's office to notify, as required, the appropriate city law enforcement agencies.
- If it is determined that interments are not related to a crime or other jurisdiction of the local police, then:
    - The Shell will notify USACE (within 24 hours) and the PA SHPO (within 48 hours) and advise them of the situation.
    - The USACE will contact the Tribes.
    - The AECOM team will work in consultation with the USACE, PA SHPO, the Tribes and Shell to develop appropriate measures for the treatment of the remains. These measures will be highly dependent upon the situation, but may include:
        - Tribal Treatment Plan developed in consultation with the Federally Recognized Tribes with ancestral ties to the project area.
        - Formal archaeological evaluation of the site;
        - Preparation of a data recovery plan by the AECOM Team;
        - Procedures for avoidance or disinterment and re-interment, to be approved by The Tribes, the USACE, the PA SHPO, and Shell and others as appropriate;
        - Implementation of the mitigation plan;
        - Approval to resume construction following completion of the fieldwork component of the mitigation plan.

Paleontological finds.
Fossilized plant and animal remains (paleontological resources) may be encountered as an Unanticipated Discovery during ground disturbing activities. If fossilized remains are discovered, a paleontologist will evaluate the find and determine appropriately procedures for the treatment of the fossil. The plan detailed here will be implemented by the Project if previously undiscovered fossilized remains are identified by an inspector, a contractor, or subcontractor during the proposed undertaking.

The AECOM project manager will be appointed to oversee this plan. The project manager will be supported by a team of AECOM geologists. In the event of an unanticipated paleontological discovery, the project manager will contact the Pennsylvania State Geologist.

The construction monitor will receive basic training to identify paleontological resources during construction activities. The construction monitor will be responsible for guiding heavy

equipment excavation, suspending construction activities in the event of a discovery, establishing a no work zone, securing the discovery area, notifying the project manager, and coordinating with the construction manager.

Procedures outlined below will be applied to address identification and treatment of unexpected Paleontological resources, such as plant and animal fossils.

- Suspend Project Activities in Immediate Area:
  - construction monitor will immediately suspend earth disturbing activities within a 50 foot buffer zone around the discovery (buffer can be extended, if needed); protect the discovery from disturbance; coordinate with the on-site construction manager to redirected project activities to other portions of the property; secure the buffer zone by installing construction fencing around the perimeter; and limited project personnel entering the area.

- Notification System:
  - Construction monitor will immediately notify Shell by telephone about the discovery.
  - Shell will notify their consultant (AECOM) by telephone.
  - The AECOM project manager will notify the Pennsylvania State Geologist by telephone and email within 24 hours of discovery.

- Discovery Status Determination:
  - Specific instructions concerning an unanticipated discovery resulting from the notification as described above will be followed; although at a minimum sufficient paleontological work will be performed on the unanticipated discovery location to stabilize deposits, and to collect readily available samples.
  - Shell and AECOM will consult with the PA DCNR to follow through on the course of action. This may involve further paleontological study and reporting. Construction activities will remain halted in the area of the discovery until the PA DCNR indicates that work may proceed in the area of a specific unanticipated discovery.

EXAMPLE SCENARIOS AND PROCEDURES FOR CONSTRUCTION MONITORING

Below are sample scenarios and procedures for construction monitoring:

- Not important; keep working:
  - Single non-diagnostic artifact
  - Artifacts in fill
  - Modern foundations and walls
  - Modern rubbish
- Potentially important; stop and take a brief look:
  - Concentration of prehistoric or historic artifacts in undisturbed soil
  - Diagnostic artifacts (e.g. arrowhead) in undisturbed soil
  - Cluster of fire-cracked rock (FCR) in undisturbed soil

    - Historic stone building foundation
- Most likely important; stop, take a look, follow plan for work stoppage:
    - Intact FCR hearth or storage pit
    - Concentration of diagnostic prehistoric or historic artifacts
    - Intact historic stone foundation of unknown building
    - Brick or stone line historic shaft feature (e.g. well or privy)
    - Fossils
- Definitely important: stop work in immediate area and follow chain of contact
    - Unidentifiable bones (i.e., equal in size to a mid- to large-sized dog, or deer)
    - Burials, caskets
    - Human bones

II. CHANCE FINDS ACTION AND NOTIFICATION PLAN

There is the potential for the identification of chance finds (unanticipated discovery) during any construction activity. While the proposed LOD has been subject to a Phase I archaeological survey, the potential still exists for archaeological resources to be located within the project's LOD.

Given the long history of use in this region artifact-bearing cultural soil likely still exists. However, the discovery of *Individual Artifact finds* (i.e., projectile point, pottery sherd, bottle, furniture hardware) is somewhat unexpected considering the nature and scale of the construction activates taking place.. If individual artifact finds occur, they are unlikely to impact construction activities.

The discovery of archaeological *Feature finds* is not expected based on previous surveys and extensive disturbance to the area. If in the event that unanticipated archaeological features are discovered, construction work in the immediate area of the find may be briefly impacted to allow time for documentation of the find.

Although important fossilized plant and animal remains have been found in nearby areas, the identification of a *Paleontological find* is not expected within the project LOD. The discovery of fossilized remains will require the halting of work in the immediate area of the find and consultation with AECOM geologists and regulatory agencies.

Finally, the discovery of *Human Remains* is not expected, but in the unlikely event of such a find and given the sensitivity of such finds, a plan is presented below. The discovery of human remains will require the halting of work in the immediate area of the find and consultation with appropriate agencies.

The following procedures apply to the entire proposed LOD for the duration of the construction activities. While archaeological monitors will be onsite while construction activates are focused in previously recorded archaeological sites, they will not be onsite to directly monitor outside of these areas. These procedures assume that an AECOM archaeologist will not be onsite at the

time of the unanticipated find. The following immediate actions and notification system will be implemented in the event that archaeological chance finds are encountered:

Immediate Action:

- Halt earth disturbing activities with the specified buffer zone around the unanticipated find;
- Protect the discovery from disturbance;
- Redirect project activities to other portions of the property;
- Secure the buffer zone by installing construction fencing around the perimeter; and
- Limit project personnel entering the buffer zone.

Notification System:

- The AECOM archaeologist will immediately notify the AECOM project manager. The project manager will notify Shell by telephone and e-mail the same day.
- Shell will notify the USACE within 24 hours of the unanticipated find per 36 CFR § 800.13(b) (3).
- Shell, after consultation with the project manager will notify the PHMC-BHP within 48 hours of the unanticipated find per 36 CFR § 800.13(b) (3).
- If the AECOM archaeological principal investigator confirms grave shaft features or human remains, Shell will be notified immediately.
    - Shell will immediately notify local police, Coroner, and the USACE.
    - If warranted, a USACE representative will notify any federally recognized Native American Tribe within 48 hours per 36 CFR § 800.13(b) (3).

Chance Find Status Determination:

- The AECOM archaeologist will document the following information:
    - Date when the archaeological find was first encountered;
    - Observer (name of the person recording the information on the site or artifact);
    - Site location (detailed enough so that it can be relocated, GPS if possible);
    - Type of site (e.g., archaeological site, burial site, or artifact);
    - Any obvious disturbance to the site (by equipment, animals, etc.); and
    - Photographs.

- The AECOM archaeologist will investigate the area to determine the nature of the find and evaluate the potential for additional archaeological resources in the area.
- The AECOM archaeologist will recommend if further archaeological investigation is needed. If so, the contractor project manager will immediately

notify Shell. With client approval, the archaeology team will be deployed to the project area.

NOTIFICATION LIST

The following notification list will be modified as needed as the project progresses from field studies to transition activities (i.e., demolition, remediation, and construction).

Mr. Brandon Walker
Project Manager/Pipeline engineering
AECOM
681 Andersen Drive, Suite 400
Pittsburgh, PA 15220
Office: (412) 503-4554
Cell: (412) 522-9566
Brandon.Walker@aecom.com

Ms. Jennifer Rankin
Archaeological Principal Investigator
AECOM
681 Andersen Drive, Suite 400
Pittsburgh, PA 15220
Office: (412) 503-4608
Cell: (609) 694-1933
Jennifer.Rankin@aecom.com

Mr. Kyle Webster
Land and Permitting Manager
Shell Pipeline Company, LP
P.O. Box 2648
Houston, TX 77252
Office: (713) 241-5147
Cell: (832) 704-4750
Kyle.Webster@shell.com

Ms. Virginia Sanchez
CX DS Business Advisor
Shell Pipeline Company, LP
Office: (713) 459-9878
Virginia.Q.Sanchez@shell.com

Ms. Kira Heinrich
Archaeology Reviewer - Western Region
Pennsylvania Historical and Museum Commission – Bureau for Historic Preservation
400 North Street
Harrisburg, PA 17120-0093

Office: (717) 705-0700
kiheinrich@pa.gov

Mr. Doug McLearen
Archaeology Division Chief
Pennsylvania Historical and Museum Commission – Bureau for Historic Preservation
400 North Street
Harrisburg, PA 17120-0093
Office: (717) 772-0925
dmclearen@state.pa.us

Mr. Josh Shaffer
Senior Regulatory Specialist, Regulatory Branch
U.S. Army Corps of Engineers - Pittsburgh District
1000 Liberty Avenue
Pittsburgh, PA 15222
Office: (412) 395-7121
Joshua.D.Shaffer@usace.army.mil

Mr. Ron Schwartz
Assistant Regional Director
PA Department of Environmental Protection - Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222
Office: (412) 442-4181
roschwartz@pa.gov

CHANCE FINDS – HUMAN REMAINS

Washington County –

Sheriff Samuel Romano
Washington County Sheriff's Office
100 W Beau Street #303
Washington, PA 15301
Office: (724) 228-6840

Mr. S. Timothy Warco
Washington County Coroner
100 W Beau Street #203
Washington, PA 15301
Office: (724) 228-6785
coronermac@co.washington.pa.us

Allegheny County –

Sheriff William P. Mullen
Allegheny County Sheriff's Office
436 Grant Street - Courthouse, Room 111
Pittsburgh, PA 15219
Office: (412) 350-4700

Dr. Karl Williams
Allegheny County - Chief Medical Examiner
1520 Penn Avenue
Pittsburgh, PA 15222
Office: (412) 350-4800

Beaver County –

Chief Barry Kramer (specific to Shell properties)
Center Township Police Department
224 Center Grange Rd
Aliquippa, PA 15001
Office: (724) 774-0272
Non-Emergency: (724) 775-0880

Sheriff Tony Guy
Beaver County Sheriff's Office
Office: (724) 770-4600

Mr. David J. Gabauer
Beaver County Coroner
351 14th Street
Ambridge, PA 15003
Office: (724) 770-4618
dgabauer@beavercountypa.gov

APPENDIX D
Isolated Finds Forms

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/059 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington Allegheny, and Beaver Counties, Pennsylvania.

COUNTY Beaver TWP. Beaver NEAREST TOWN Hookstown

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☒ Isolated find (diagnostic artifact)
☐ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1060 ft SLOPE PERCENTAGE 7.5 SLOPE DIRECTION South

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Lower Slope

IMMEDIATE VEGETATION Short grasses within pastural fields

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION None, site is now off alignment.

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Mill Creek

NEAREST WATER: Distance 60 meters Elevation 1060ft Direction South Order 1 Type Perennial Stream

NON-SITE JUSTIFICATION Site BVGr003-IF1 is an isolated find consisting of three historic artifacts. It was identified during systematic shovel testing. Much of this segment was along a powerline corridor. The site is located north of a small perennial stream within a cow pasture (Photograph 1). The pasture is clear and grass covered with some bushes dotting the landscape. A number of car tires litter the landscape near the site, as well. A total of three historic artifacts were recovered from a single STP including two fragments of historic ceramic and a single brick fragment. Of the three artifacts recovered only one ceramic fragment is diagnostic (Ironestone ware), but dates for use begin in the 1840s and extend to present day. Further, according to the PASS Files Site Identification Criteria these artifacts do not constitute a historic debris scatter. For these reasons these artifacts are considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
2	Household	Ceramic
1	Architectural	Brick

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact
1	Ironstone, thin bodied

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☒ Specific Time Period ca. 1880-present

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

N
36BV/060
36BV0360
BM
1149
Hookstown
36BV/059
36BV/061
PIPELINE
36BV/062
Racetrack
36BV0394
Hookstown Grange
Creek
Legend
Archaeological Data
36BV/059
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/059
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. Overview of BVGr003-IF1 site area from STP D55, facing northeast.

Photo 2. Household group, (left to right) coarse earthenware and ironstone, recovered from BVGr003-IF1.

Table 1. BVGr003-IF1 Historic Artifact Assemblage

H/P	Group	Ceramic	Total
Historic	Architectural	1	1
	Household	2	2

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4493568.27 m N EASTING 543289.80 m E

OWNER Kenneth E. Soisson ADDRESS _____

TAX PARCEL ID 66-190-0122.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.Rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/060 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Shell Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Greene NEAREST TOWN Hookstown

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☒ Isolated find (diagnostic artifact)
☐ Non-diagnostic material found within an area of _45_SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1140 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION N/A

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Lower Slope

IMMEDIATE VEGETATION Short grasses and shrubs within pastural field

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION No, site is now off of alignment

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 145 meters Elevation 1020ft Direction East Order 1 Type Intermittant Stream

NON-SITE JUSTIFICATION Site BVGr004-IF1 is an isolated find consisting of two historic artifacts. It was identified during systematic shovel testing, west of Hill Road. The site is located on a hilltop within a cow pasture less than 20-meters (65.6-feet) from Hill Road. The pasture is clear and grass covered with some bushes dotting the landscape. Two diagnostic historic artifacts were recovered from a single STP and include one cut iron nail (ca. 1805-1900) and one fragment of a possible pipe bowl (ca. 1700-1900). According to the PASS Files Site Identification Criteria three diagnostic artifacts of two different artifact types found within adjacent units at 15-meter intervals constitute a site. Therefore these artifacts are considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
1	Personal	Ceramic
1	Architectural	Metal

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact
1	Cut nail

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☒ Specific Time Period 1805-1900

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

N
36BV0042
Free Methodist Ch
Tipple
Strip Mine
36BV0249
Creek
Strip Mine
36BV/060
Hookstown Cem
Hookstown
168
36BV/059
G R
Legend
Archaeological Data
36BV/060
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/060
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. Personal group, kaolin pipe fragment, recovered from BVGr004-IF1.

Photo 2. Cut nail recovered from BVGr004-IF1.

Table 1. BVGr004-IF1 Historic artifact assemblage

H/P	Group	Ceramic	Metal	Total
Historic	**Architecture**	0	1	1
	Personal	1	0	1

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4495092.00 m EASTING 544394.00 m

OWNER Robert J. Balderson ADDRESS _____

TAX PARCEL ID 62-191-0125.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/061 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Greene NEAREST TOWN Hookstown

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1080 ft SLOPE PERCENTAGE 2 SLOPE DIRECTION Southwest
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Lower slopes
IMMEDIATE VEGETATION low cut grass
PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 10 meters Elevation 1080ft Direction East Order 1 Type Intermittant stream

NON-SITE JUSTIFICATION: One flake of chert debitage was recovered from a single STP. According to the PASS Files Site Identification Criteria, two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart is considered a site. Due to the lack of additional material this artifact is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Flake debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

N
Hookstown
Hookstown Cem
168
36BV/059
36BV/062
36BV/061
36BV0394
PIPELINE
G R E
Racetrack
Hookstown Grange
Trailer Park
Creek
1183
1199
1052
Legend
Archaeological Data
36BV/061
AECOM Archaeological Resource
PHMC Archaeological Site
0 0.1 0.2 Miles
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/061
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4493466.70m N EASTING 544758.35m E

OWNER Greene Township C/O Sandra J. Wrigth, Secretary ADDRESS _____

TAX PARCEL ID FEPS-PA-SM-024.000 TAX MAP DATE _____

☐ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☒ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/062 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Greene NEAREST TOWN Hookstown

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1070 ft SLOPE PERCENTAGE 3-8% SLOPE DIRECTION East

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Hill Ridge/ Toe

IMMEDIATE VEGETATION Upland woodlands, young trees, dense undergrowth

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Mill Creek

NEAREST WATER: Distance 755 meters Elevation 1100ft Direction East Order 2 Type Perennial

NON-SITE JUSTIFICATION One flake of chert debitage was recovered from a single STP. According to the PASS Files Site Identification Criteria, two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart is considered a site. Due to the lack of additional material this artifact is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Flake debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

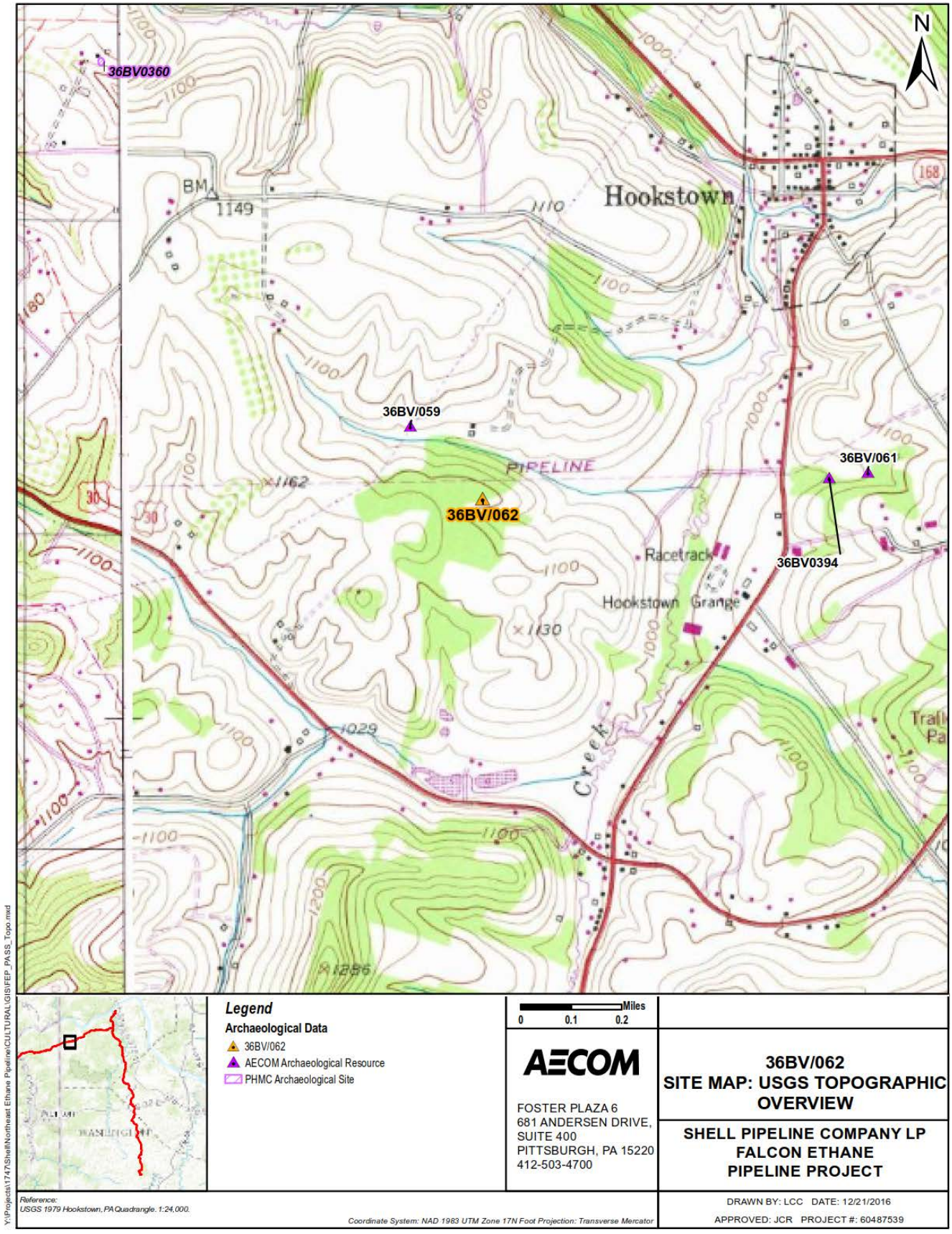
Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.


N
36BV0360
BM
1149
Hookstown
168
36BV/059
PIPELINE
36BV/062
36BV/061
36BV0394
Racetrack
Hookstown Grange
Creek
1162
1130
1029
1286
Legend
Archaeological Data
36BV/062
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/062
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

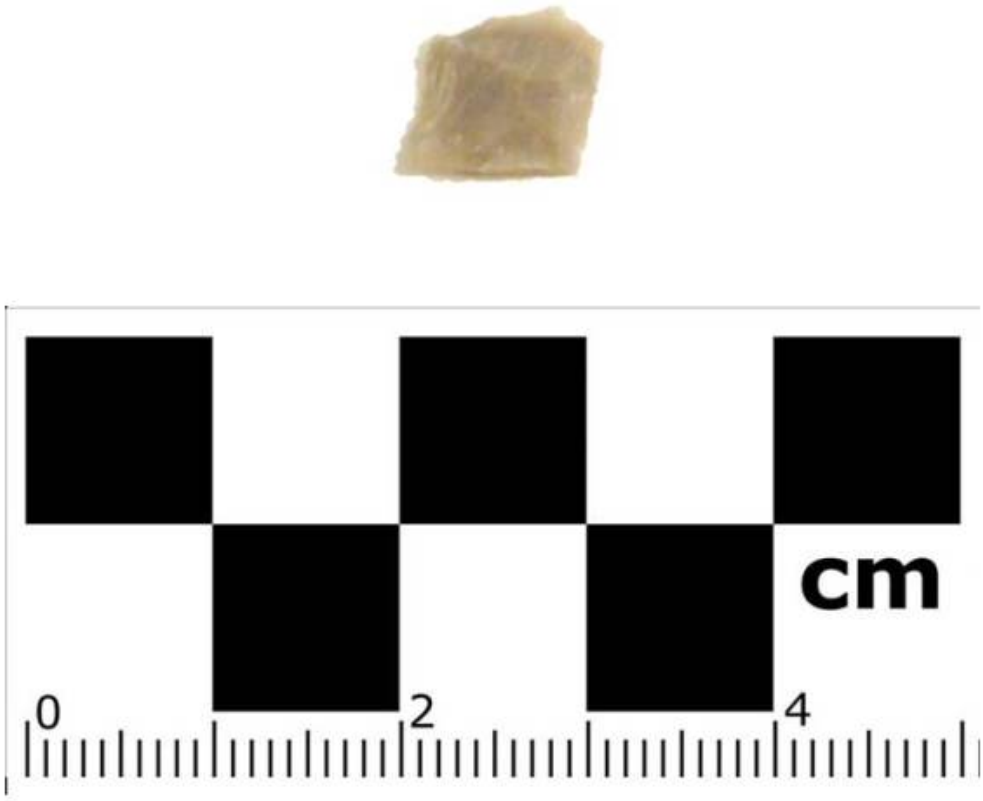


Photo 1. Chert debitage flake recovered from shovel test D13 within site BVGr015-IF1.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4493420.00 EASTING 543455.00

OWNER John Hobbs and Judeth Hobbs ADDRESS _____

TAX PARCEL ID 62-191-0141.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/063 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Independence NEAREST TOWN Independence

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES:

Physical Data and Field Condition

MAP ELEVATION 800 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION N/A

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Terrace

IMMEDIATE VEGETATION light vegetation on creek bank

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 14.48 meters Elevation 800 ft Direction North Order 2 Type Perennial Stream

NON-SITE JUSTIFICATION A single flake of chert debitage was recovered from one STP. According to the PASS File Site Identification Criteria a site consists of two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart. For this reason this artifact is considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

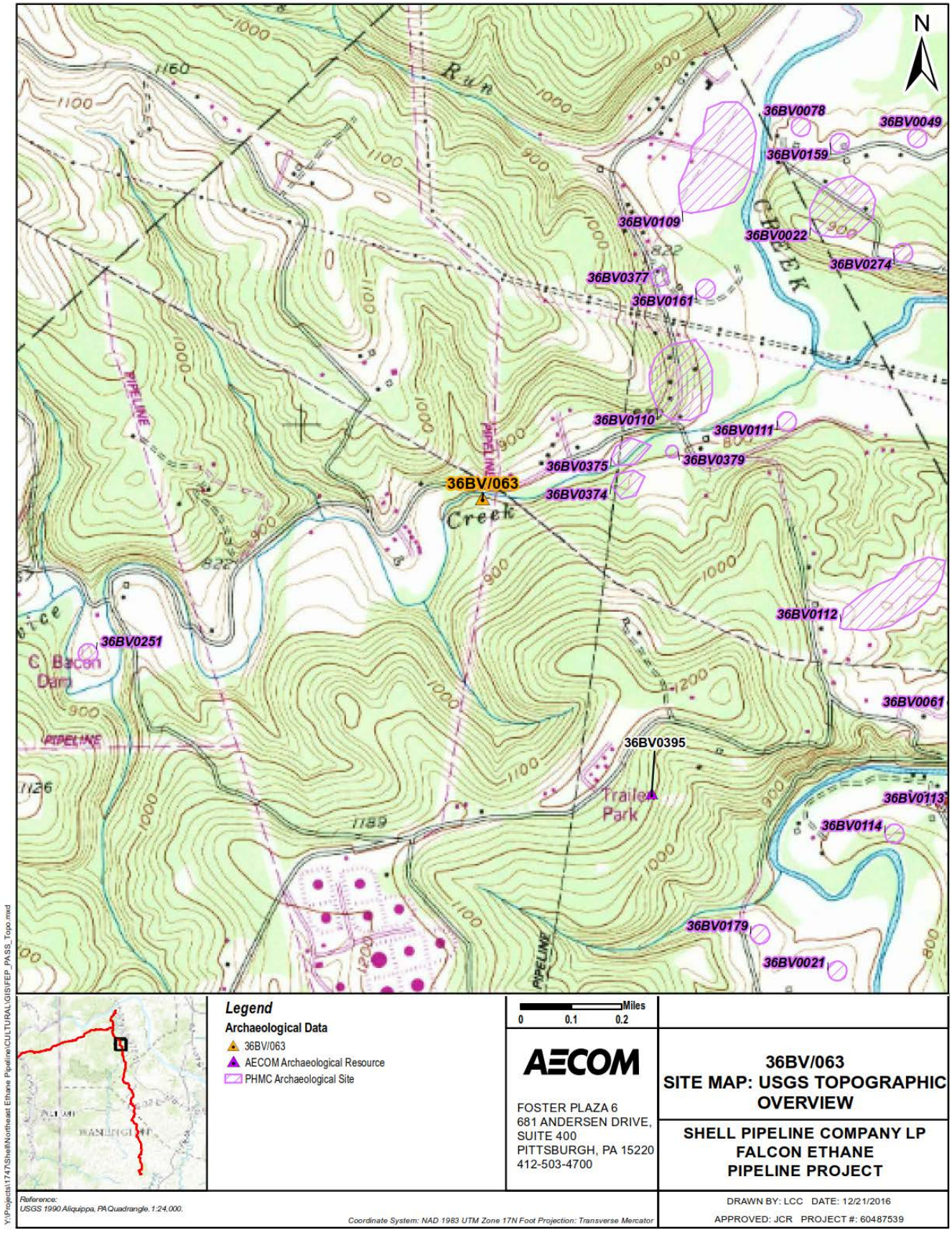

N
36BV0078
36BV0049
36BV0159
36BV0109
36BV0022
36BV0274
36BV0377
36BV0161
36BV0110
36BV0111
36BV0379
36BV0375
36BV0374
36BV/063
Creek
36BV0112
36BV0251
C Bacon Dam
36BV0061
36BV0395
Trailer Park
36BV0113
36BV0114
36BV0179
36BV0021
PIPELINE
Run
CREEK
Legend
Archaeological Data
36BV/063
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/063
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of BVIn002-IF1 site area from STP C3, facing north.

Photo 2. General view of creek located north of site BVIn002-IF1, facing east.

Photo 3. General view of private driveway located south of site BVIn002-IF1, facing north.

Photo 4. Chert early reduction flake recovered from BVIn002-IF1.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4492495 m EASTING 557006 m

OWNER Douglas J. Fisher & Amy E. Fisher ADDRESS _____

TAX PARCEL ID 66-193-0195.002 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/064 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Independence NEAREST TOWN Independence

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☒ Isolated find (diagnostic artifact)
☐ Non-diagnostic material found within an area of 84 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 862 ft SLOPE PERCENTAGE 8% SLOPE DIRECTION North
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Ridge top
IMMEDIATE VEGETATION Open field, tall grasss
PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 178.05 meters Elevation 806ft Direction North Order 1 Type Perennial

NON-SITE JUSTIFICATION Three artifacts were recovered from two STPs within 10 m of each other. This included one STP and a surrounding radial (10 m west). Artifacts included a refined earthenware sherd and two cut nails. While the cut nails are diagnostic and date to 1805 to 1900, according to the Identification Criteria, a debris scatter consists of three diagnostic artifacts of two different artifact types in adjacent units at 15-meter intervals. Because there is only one diagnostic artifact type in the assemblage, these artifacts are considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
2	Architecture	Metal
1	Household	Ceramic

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact
2	Cut nail

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☒ Specific Time Period 1805-1900

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible

36BV0036
36BV0037
36BV0116
36BV0202
36BV/065
36BV0119
36BV0117
36BV0118
36BV0176
36BV0175
36BV0174
36BV0250
36BV0280
36BV0020
36BV0019
36BV0203
36BV0059
36BV0204
36BV0019
36BV0378
36BV0177
36BV0084
36BV/064
36BV0372
36BV0372
36BV0052
36BV0124
36BV0205
36BV0017
36BV0206
36BV0396
36BV0207
36BV0376
36BV0125
36BV0018
N
BR 820
CREEK
PIPELINE
Legend
Archaeological Data
36BV/064
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/064
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of BVIn004-IF1 site area, facing west.

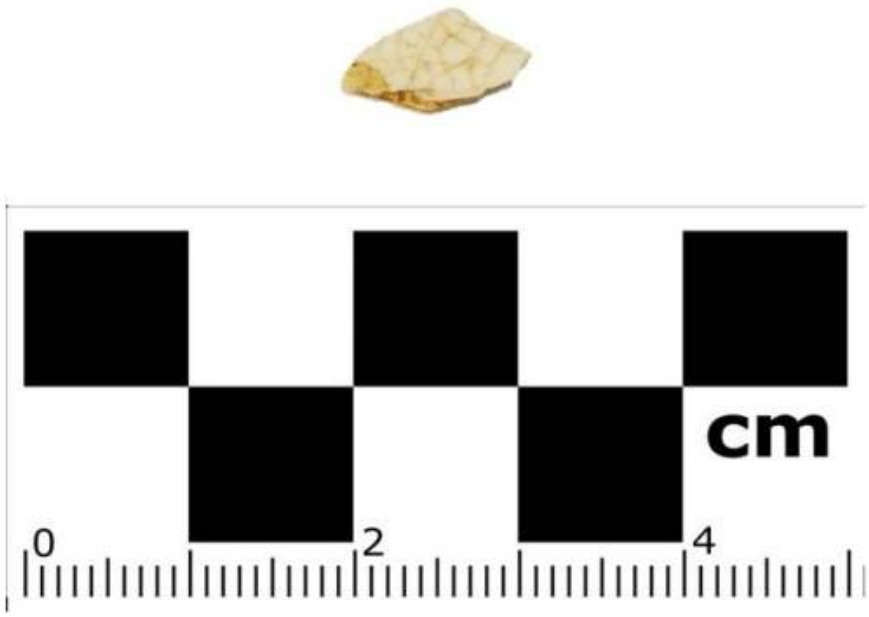


Photo 2. Refined earthenware sherd recovered from BVIn004-IF1.

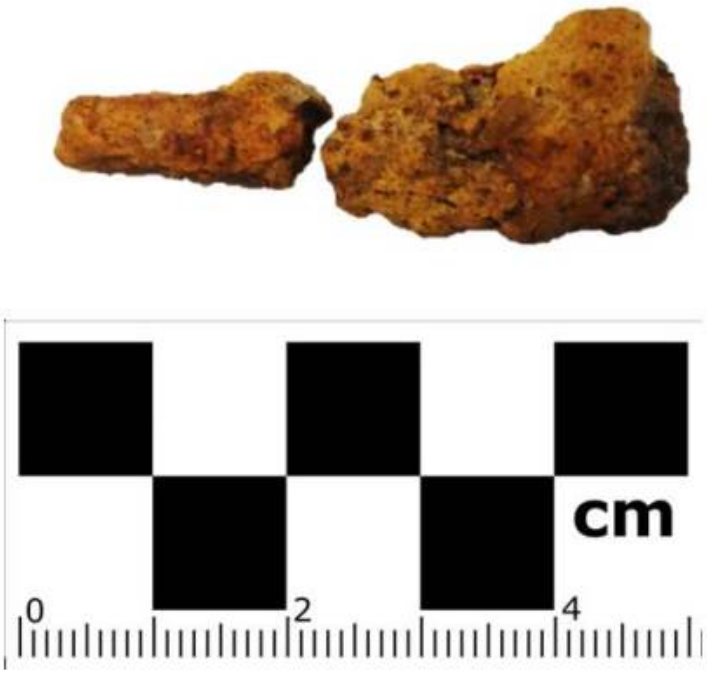


Photo 3. Unidentified square nails recovered from BVIn004-IF1.

Table 1. BVIn004-IF1 Historic Artifact Assemblage

H/P	Group	Ceramic	Metal	Total
Historic	**Architectural**	0	2	2
	Household	1	0	1

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Aliquippa EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4488724.39 m EASTING 558024.96 m

OWNER William R. Hoover ADDRESS _____

TAX PARCEL ID 66-213-0162.003 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/065 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Independence NEAREST TOWN Independence

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1,020 meters SLOPE PERCENTAGE 0-1 % SLOPE DIRECTION North
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Upland flat
IMMEDIATE VEGETATION Open agricultural field, surrounded by woodlands
PRIMARY DISTURBANCE Pipeline construction
POSSIBILITY OF DESTRUCTION No. Pipeline rerouted. Site is now off alignment by 3 meters.

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 225.18 meters Elevation 935ft Direction West Order 1 Type Perennial

NON-SITE JUSTIFICATION One flake of chert debitage was recovered from a single STP. According to the PASS Files Site Identification Criteria, two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart is considered a site. Due to the lack of additional material this artifact is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

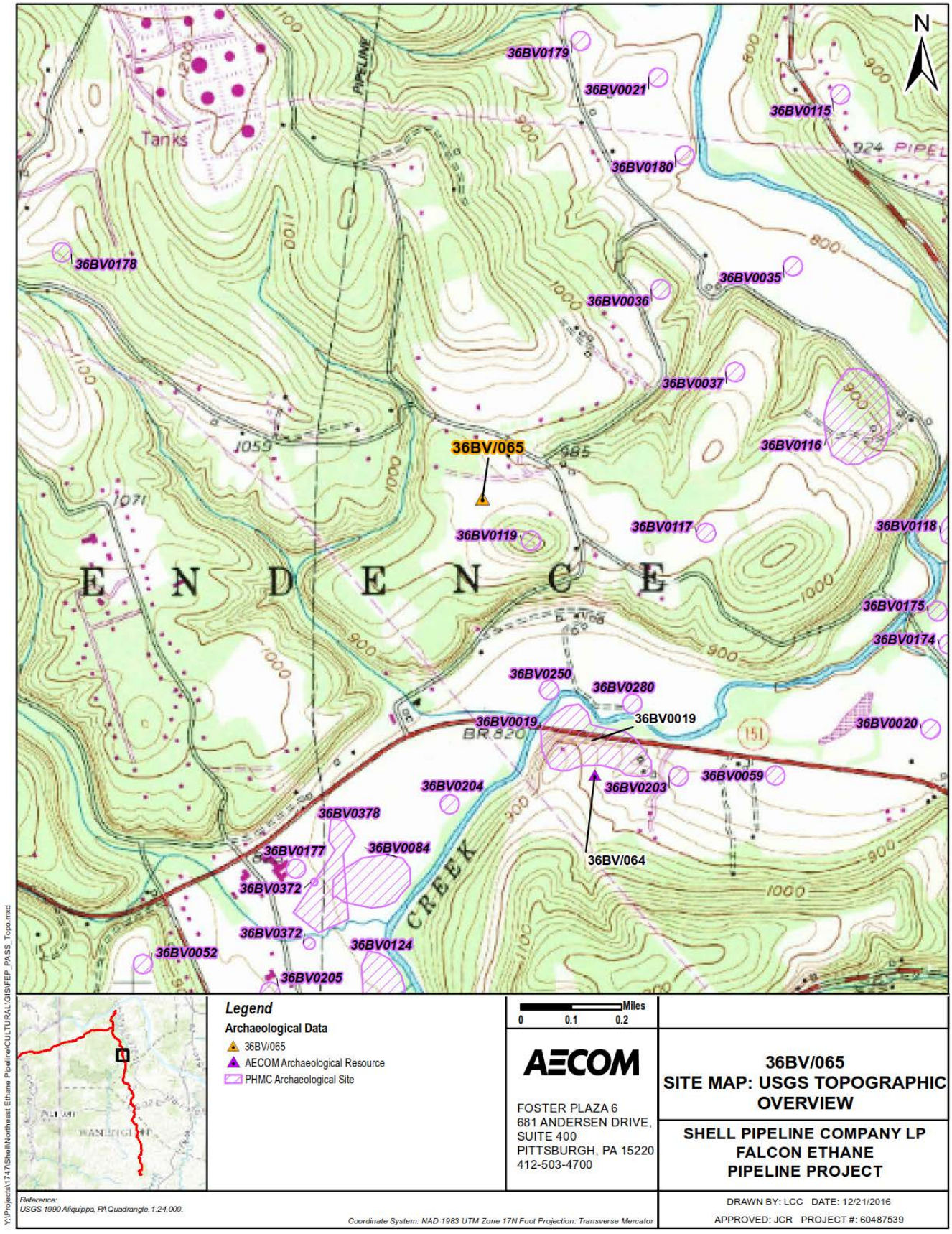

N
36BV0179
36BV0021
36BV0115
36BV0180
36BV0178
36BV0035
36BV0036
36BV0037
36BV0116
36BV/065
36BV0119
36BV0117
36BV0118
E N D E N C E
36BV0175
36BV0174
36BV0250
36BV0280
36BV0019
36BV0019
36BV0020
36BV0059
36BV0204
36BV0203
36BV0378
36BV0177
36BV0084
36BV/064
36BV0372
36BV0372
36BV0124
36BV0052
36BV0205
CREEK
Tanks
PIPELINE
BR 820
151
Legend
Archaeological Data
36BV/065
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/065
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of BVIn004-IF2 site area, facing north.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Aliquippa EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4489649.00 EASTING 557571.00

OWNER Matthew D. Brunton and Sadie M. Brunton ADDRESS _____

TAX PARCEL ID 66-203-0235.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/066 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania.

COUNTY Beaver TWP. Potter NEAREST TOWN Monaca

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES:

Physical Data and Field Condition

MAP ELEVATION 760 ft SLOPE PERCENTAGE 5 SLOPE DIRECTION Southeast

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Terrace

IMMEDIATE VEGETATION Briars, shrubs, open field

PRIMARY DISTURBANCE Proposed pipeline construction. POSSIBILITY OF DESTRUCTION No, site is now off of alignment

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 563.27 meters Elevation 690ft Direction East Order 4 Type Perennial Stream

NON-SITE JUSTIFICATION One flake of chert debitage was recovered from a single STP. According to the PASS Files Site Identification Criteria, two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart is considered a site. Due to the lack of additional material this artifact is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

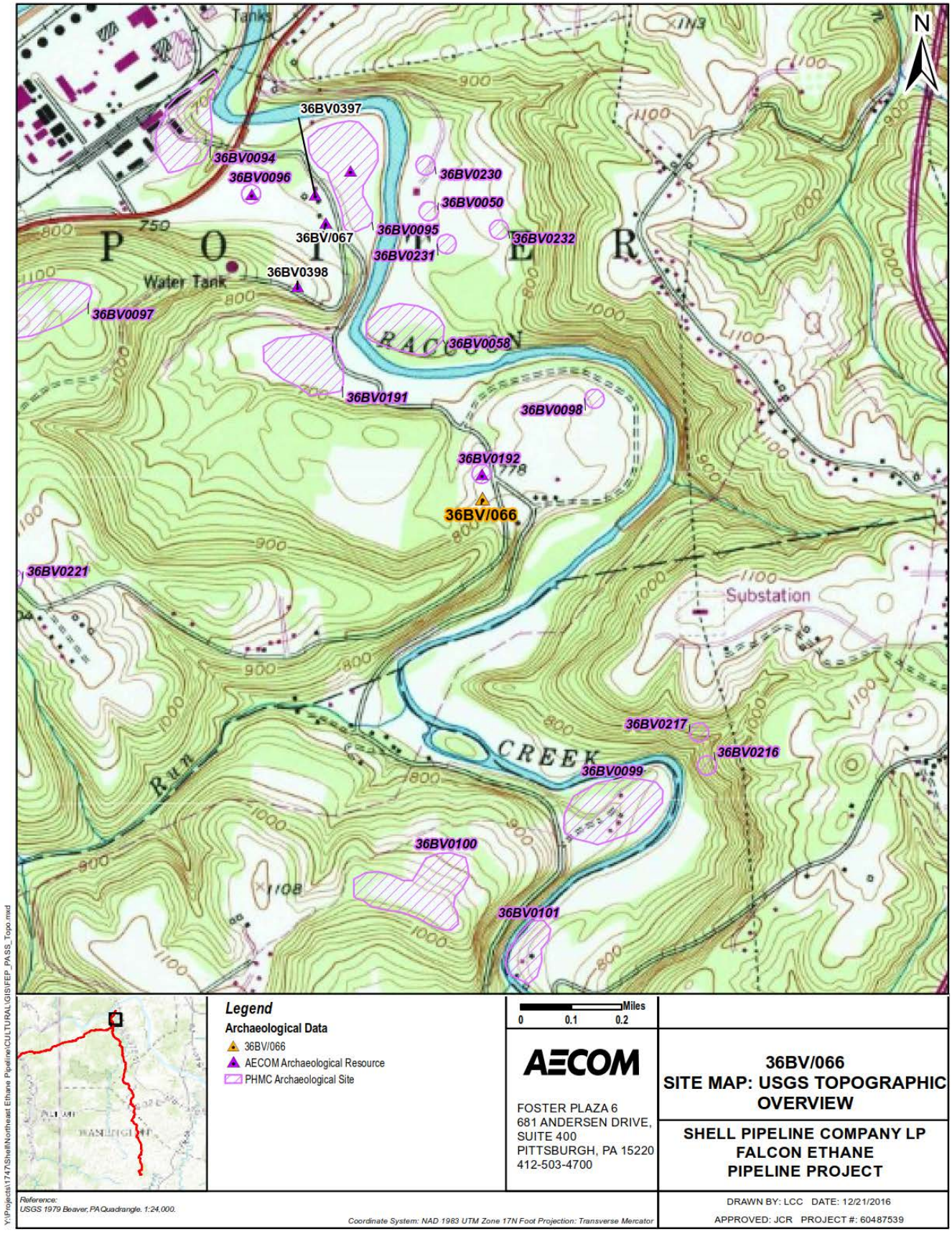
Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.


Tanks
36BV0397
36BV0094
36BV0096
36BV0230
36BV0050
36BV/067
36BV0095
36BV0231
36BV0232
P O I N T E R
Water Tank
36BV0398
36BV0097
RACCOON
36BV0058
36BV0191
36BV0098
36BV0192
36BV/066
36BV0221
Substation
36BV0217
36BV0216
CREEK
36BV0099
36BV0100
36BV0101
N
Legend
Archaeological Data
36BV/066
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/066
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Beaver, PA EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4499382.60 m EASTING 555670.16 m

OWNER Shell Chemical Appalachia ADDRESS _____

TAX PARCEL ID 73-172-0203.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/067 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Potter NEAREST TOWN Monaca

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 64 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 740 ft SLOPE PERCENTAGE 9 SLOPE DIRECTION Northeast
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Lower Slopes
IMMEDIATE VEGETATION Woodlands, young trees, thick understory
PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION _____

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 160 meters Elevation 700ft Direction East Order 4 Type Perennial Stream

NON-SITE JUSTIFICATION: Two fragments of window glass were recovered from adjacent STPs at a 5-meter interval. Due to the limited quantity of window glass these artifacts are non-diagnostic and do not constitute a debris scatter as described in the PASS Files Site Identification Criteria, and therefore is considered and Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
2	Architectural	Glass

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

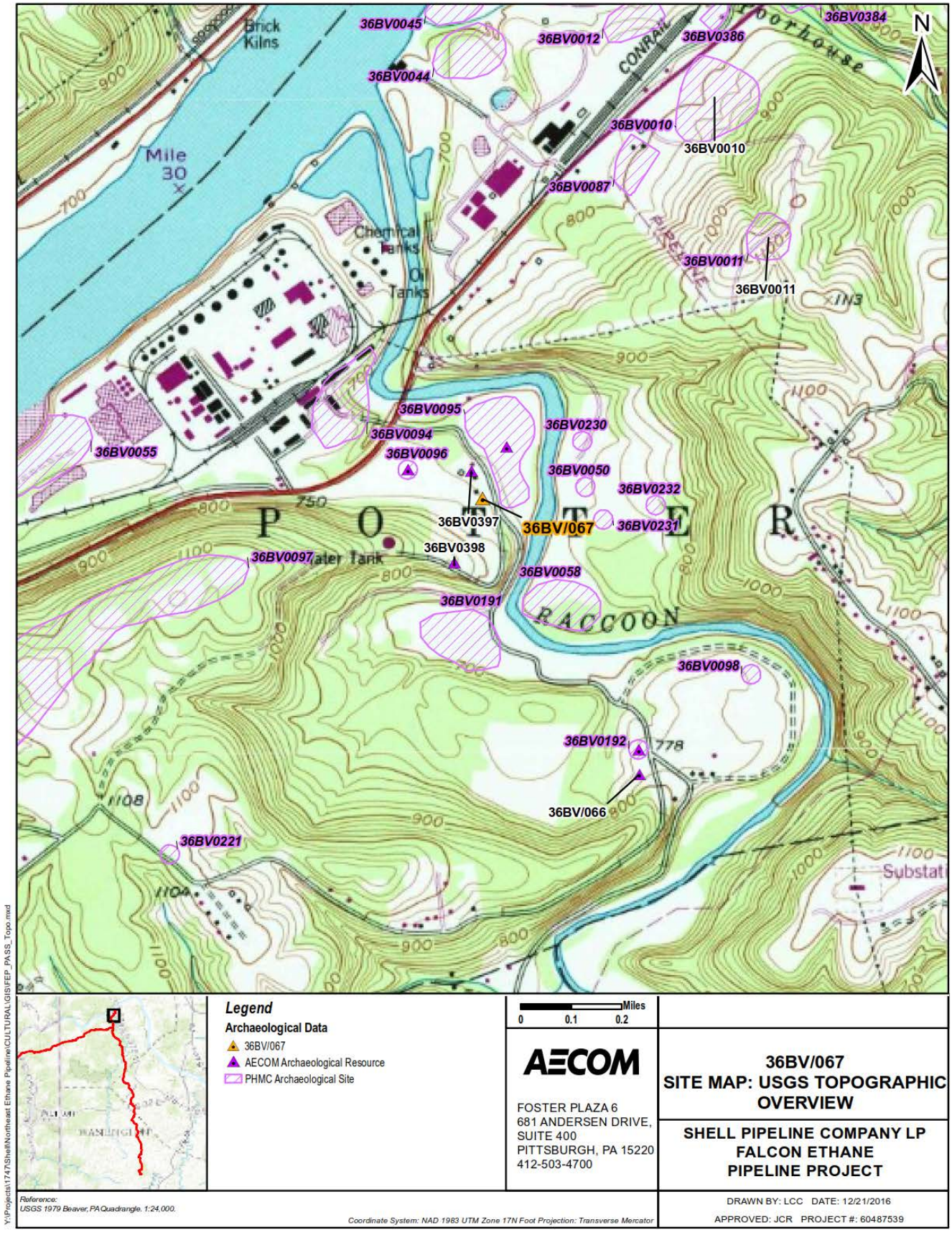
Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☒ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.


N
Brick Kilns
Mile 30
Chemical Tanks
Oil Tanks
Water Tank
CONRAIL
PIPELINE
RACCOON
Substat
36BV0045
36BV0044
36BV0012
36BV0386
36BV0384
36BV0010
36BV0087
36BV0011
36BV0095
36BV0094
36BV0096
36BV0055
36BV0230
36BV0050
36BV0232
36BV0231
36BV0397
36BV/067
36BV0398
36BV0097
36BV0058
36BV0191
36BV0098
36BV0192
36BV/066
36BV0221
Legend
Archaeological Data
36BV/067
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/067
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Beaver EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4500237.85 m N EASTING 555221.71m E

OWNER Shell Chemical Appalachia ADDRESS _____

TAX PARCEL ID 73-173-0308.003 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/068 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Shippingport NEAREST TOWN Shippingport

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1100 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION _____
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Ridge Top
IMMEDIATE VEGETATION short grasses, planted trees
PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION _____

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 400 meters Elevation 900ft Direction west Order 1 Type Perennial Stream

NON-SITE JUSTIFICATION One prehistoric artifact consisting of chert debitage was recovered from one STP. According to the PASS Files Site Identification Criteria two or more flakes and/or other culturally modified material located in shovel tests no more than 15-meters apart constitute a site. For this reason this is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Stone debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

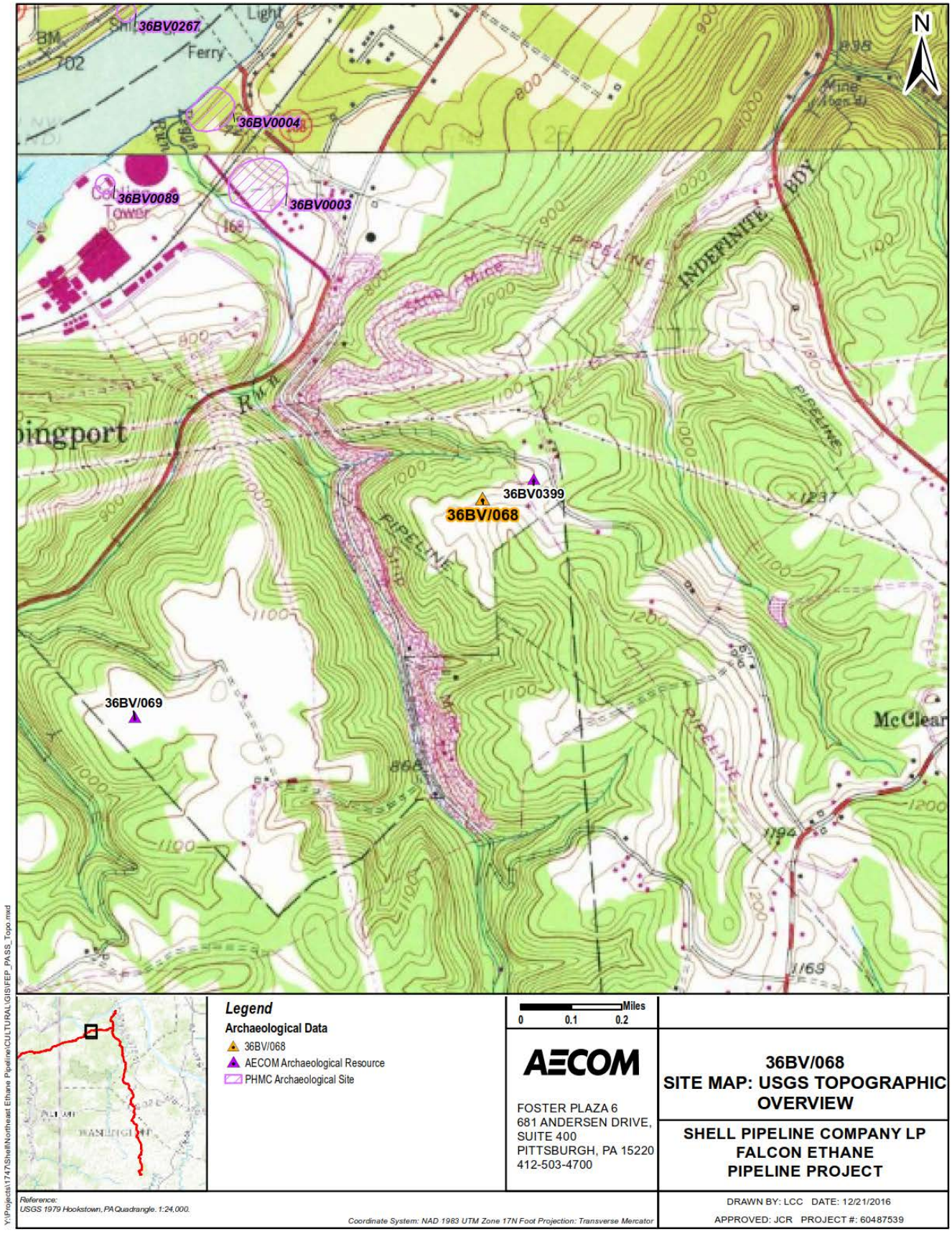
Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.


36BV0267
36BV0004
36BV0089
36BV0003
36BV0399
36BV/068
36BV/069
N
Legend
Archaeological Data
36BV/068
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/068
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4495507.00 m EASTING 54811.000 m

OWNER The Lois N. Davie Revocable Living Trust ADDRESS _____

TAX PARCEL ID 55-181-0150.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36BV/069 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Beaver TWP. Shippingport NEAREST TOWN Shippingport

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1100 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION N/A
PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau TOPOGRAPHIC SETTI NG Ridge Top
IMMEDIATE VEGETATION short grasses, planted trees
PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 400 meters Elevation 900ft Direction west Order 1 Type Perennial Stream

NON-SITE JUSTIFICATION One prehistoric artifact consisting of chert debitage was recovered from one STP. According to the PASS Files Site Identification Criteria two or more flakes and/or other culturally modified material located in shovel tests no more than 15-meters apart constitute a site. For this reason this is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Stone debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

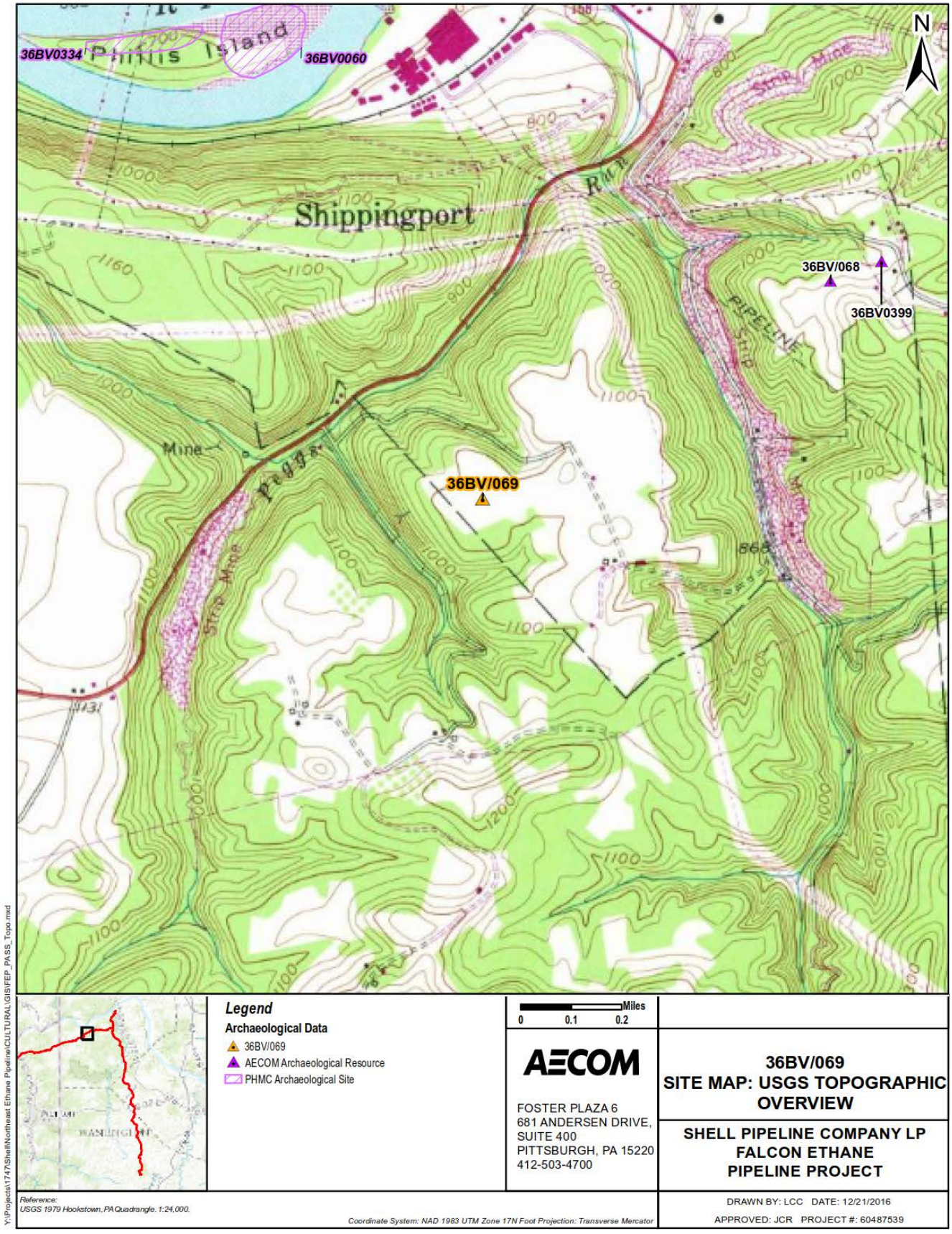

36BV0334
Phillis Island
36BV0060
N
Shippingport
36BV/068
36BV0399
PIPELINE
Strip
Mine
Riggs
36BV/069
Strip Mine
Legend
Archaeological Data
36BV/069
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV/069
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 3. Debitage flake recovered from BVSh001-IF1.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4495507.00 m EASTING 54811.000 m

OWNER The Lois N. Davie Revocable Living Trust ADDRESS _____

TAX PARCEL ID 55-181-0150.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/074 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegeheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Chartiers NEAREST TOWN Westland

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☒ Isolated find (diagnostic artifact)
☐ Non-diagnostic material found within an area of 64 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: Key Number 155445

Physical Data and Field Condition

MAP ELEVATION 1020 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION
PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section TOPOGRAPHIC SETTI NG Terrace
IMMEDIATE VEGETATION Young trees, medium understory
PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION No.
Pipeline rerouted. Site is now off alignment.

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartiers Creek

NEAREST WATER: Distance 45 meters Elevation 1010ft Direction East Order 2 Type Perennial Stream

NON-SITE JUSTIFICATION Two iron railroad spikes were found in adjacent STPs at an interval of 5-meters and can be dated to ca. 1850. These artifacts are most likely associated with the Chartiers Railroad (Key # 155445). However, according to the PASS Files Site Identification Criteria, a historic site consist of a debris scatter, an aboveground historic structure and related debris scatter, and a debris scatter within 100 feet of a foundation or a ruin site. According to the Identification Criteria a debris scatter consists of three diagnostic artifacts of two different artifact types in adjacent units at 15-meter intervals. For this reason these artifacts are considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
2	Industrial	Metal

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact
2	Iron Railroad Spike

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☒ Specific Time Period ca 1850

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

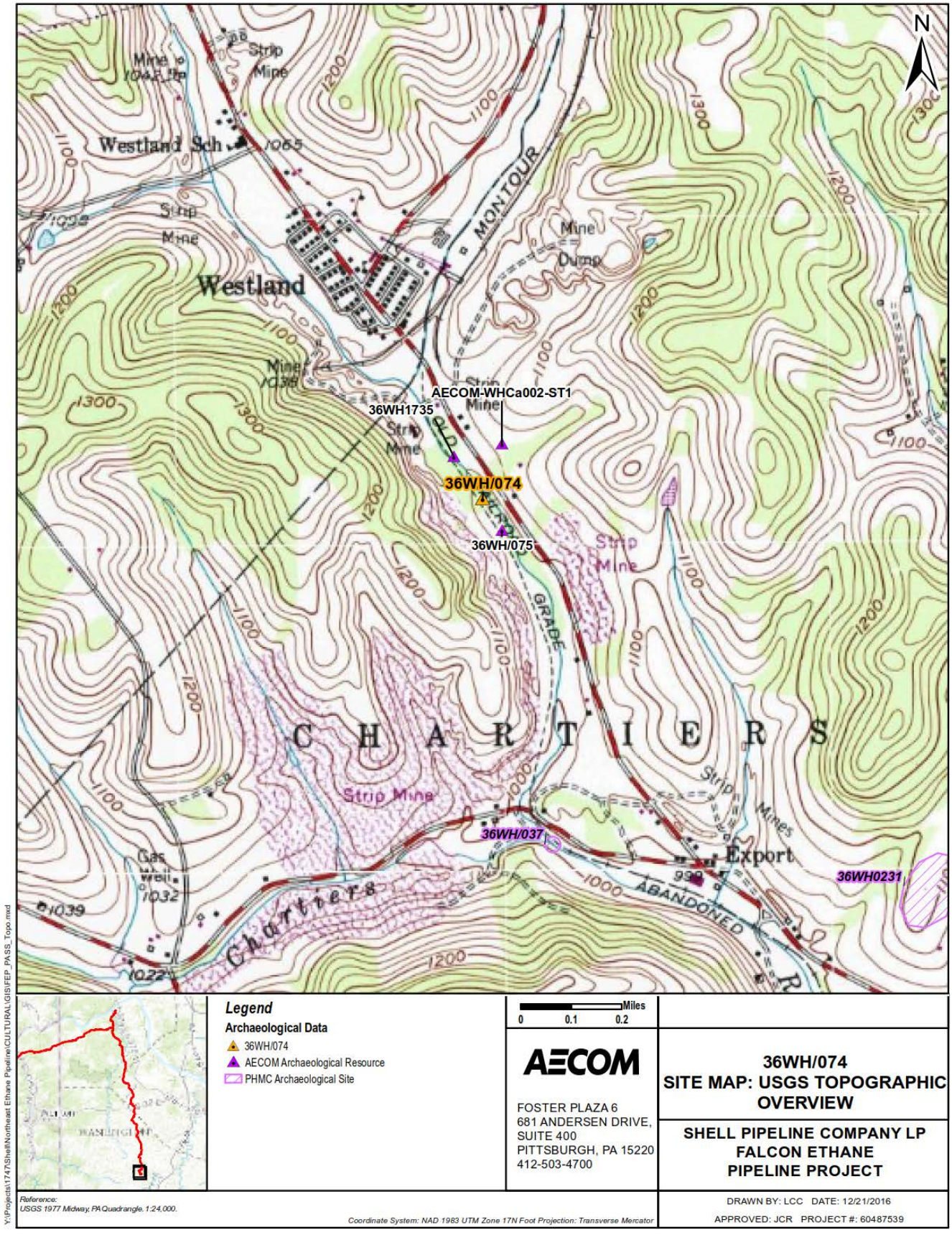

N
Westland
Westland Sch
Strip Mine
MONTOUR
Mine Dump
AECOM-WHCa002-ST1
36WH1735
36WH/074
36WH/075
Strip Mine
GRADE
C H A R T I E R S
Strip Mine
36WH/037
Export
36WH0231
ABANDONED
Chartiers
Gas well
Strip Mines
Legend
Archaeological Data
36WH/074
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/074
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of WHCa003-IF2 site area, facing southwest. Note utility corridor.

Photo 2. Iron rail spikes recovered from WHCa003-IF1.

Table 1. WHCa003-IF1 Historic artifact assemblage

H/P	Group	Metal	Total
Historic	**Industrial**	2	2

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4458099.88m N EASTING 562208.06m E

OWNER Consol Mining Company ADDRESS _____

TAX PARCEL ID 170-007-00-00-0026-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/075 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Chartiers NEAREST TOWN Westland

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: Key Number 155445

Physical Data and Field Condition

MAP ELEVATION 1020 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION N/A
PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section TOPOGRAPHIC SETTI NG Terrace
IMMEDIATE VEGETATION Young trees, medium understory
PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartiers Creek

NEAREST WATER: Distance 45 meters Elevation 1010ft Direction East Order 1 Type Perennial Stream

NON-SITE JUSTIFICATION One undiagnostic brick fragment was recovered from a single STP. All subsequent radial STPs (n=5) failed to produce additional cultural material. This artifact is possibly associated with the Chartiers Railroad (Key # 155445) but according to the PASS Files Site Identification Criteria, a historic site consist of a debris scatter, an aboveground historic structure and related debris scatter, and a debris scatter within 100 feet of a foundation or a ruin site. According to the Identification Criteria a debris scatter consists of three diagnostic artifacts of two different artifact types in adjacent units at 15-meter intervals. For this reason these artifacts are considered and isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
1	Architectural	Brick

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☒ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

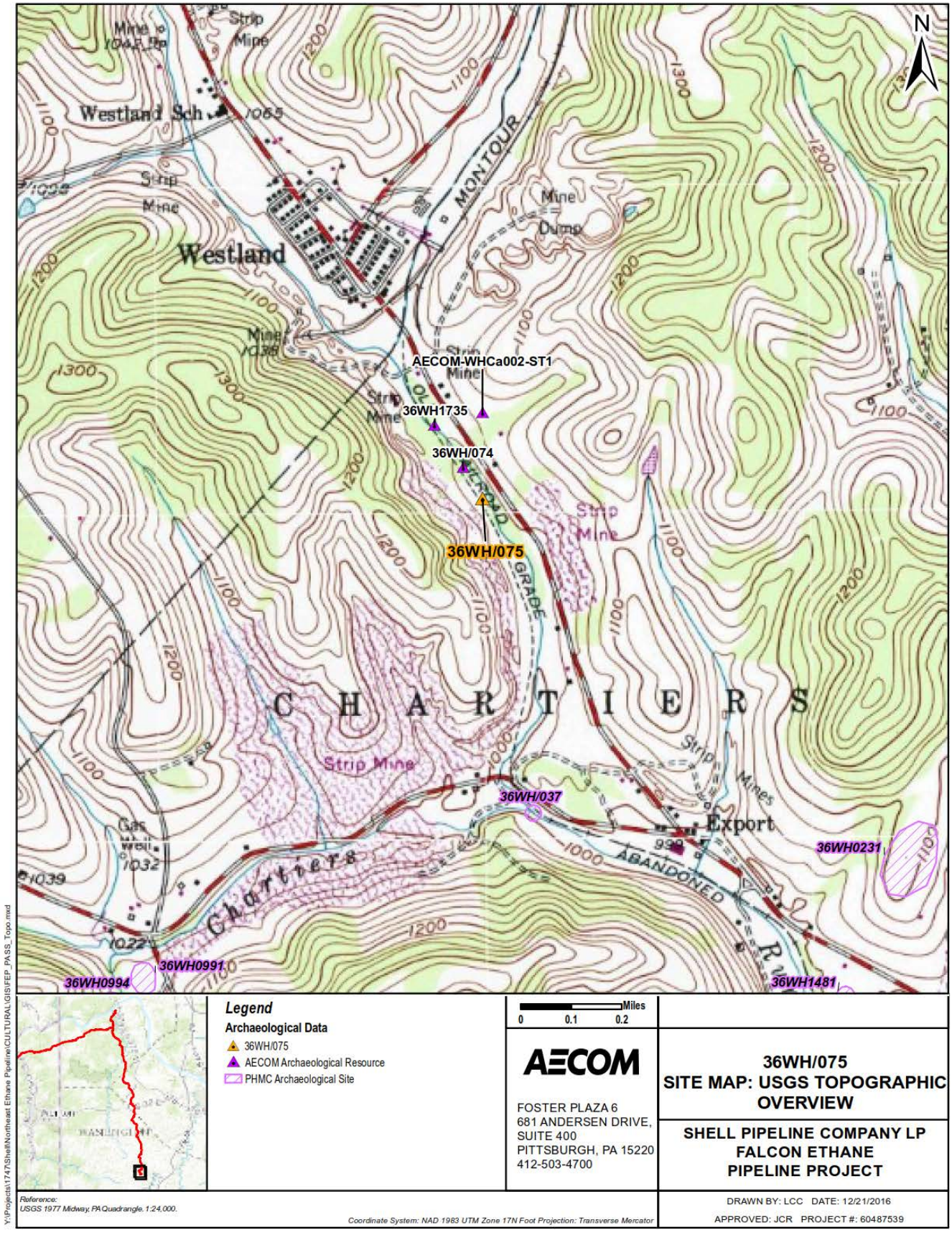

N
Westland
Westland Sch
MONTOUR
Strip Mine
Mine Dump
AECOM-WHCa002-ST1
36WH1735
36WH/074
36WH/075
C H A R T I E R S
Strip Mine
36WH/037
Export
36WH0231
ABANDONED
Chartiers
36WH0991
36WH0994
36WH1481
Legend
Archaeological Data
36WH/075
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/075
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of WHCa003-IF2 site area, facing west. Note utility corridor.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4458009.78m N EASTING 562253.97m E

OWNER Thomas C. Kotyk, Todd J. Kotyk, Gregory A. Kotyk & Tammy L. Kotyk ADDRESS _____

TAX PARCEL ID 170-009-00-00-0005-02 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/076 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Southview

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: 36WH0156 and 36WH0157

Physical Data and Field Condition

MAP ELEVATION 1200 ft SLOPE PERCENTAGE 7 SLOPE DIRECTION North West

PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section TOPOGRAPHIC SETTI NG Hill Top

IMMEDIATE VEGETATION short grasses

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartiers Creek

NEAREST WATER: Distance 30 meters Elevation 1200 ft Direction south Order 1 Type intermittent stream

NON-SITE JUSTIFICATION A single flake of chert debitage was recovered from one STP. Subsequent radial STPs (n=8) failed to produce additional culturally modified objects. According to the PASS Files Site Identification Criteria a site consists of two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart. For this reason this artifact is considered an Isolated Find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
1	Stone debitage	chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

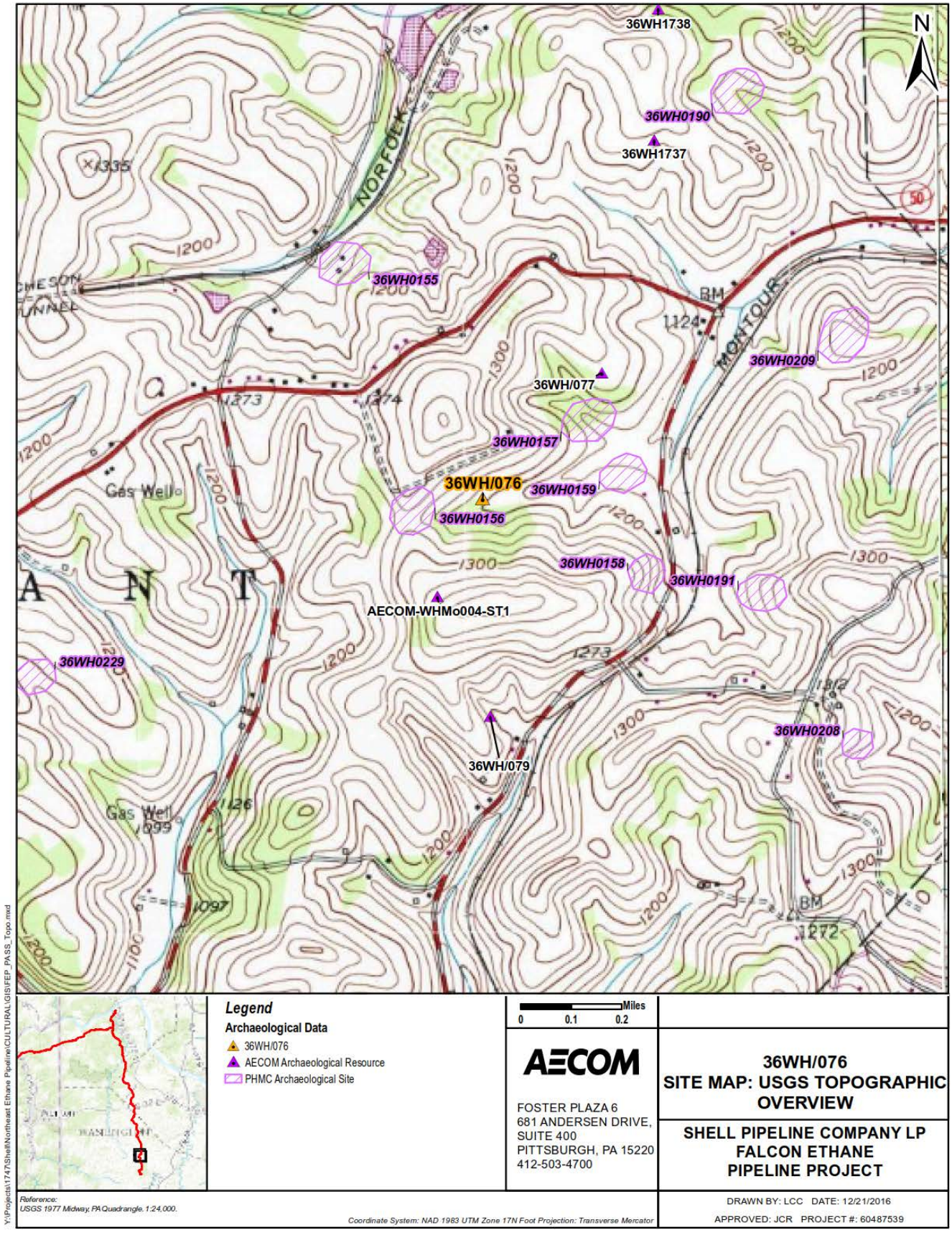

36WH1738
36WH0190
36WH1737
36WH0155
36WH0209
36WH/077
36WH0157
36WH/076
36WH0159
36WH0156
36WH0158
36WH0191
AECOM-WHMo004-ST1
36WH0229
36WH0208
36WH/079
N
NORFOLK
MONTOUR
Gas Well
Gas Well
Legend
Archaeological Data
36WH/076
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/076
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General overview of centerline from STP B120, near WHMo003-IF2.

Table 1. Prehistoric artifact assemblage at WHMo003-IF1

H/P	Group	Lithic	Total
Prehistoric	**Debitage**	1	**1**

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4462460.00 m EASTING 542278.00 m

OWNER David Herriott & Sarah M. Herriott ADDRESS _____

TAX PARCEL ID 460-013-00-00-0031-00-L TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/077 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Southview

TYPE: Prehistoric ☒ Historic ☐
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 140 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☒ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1,236 ft SLOPE PERCENTAGE 11% SLOPE DIRECTION Southeast
PHYSIOGRAPHIC PROVINCE Waynesburg Hills TOPOGRAPHIC SETTI NG Middle Hillslope
IMMEDIATE VEGETATION Open agricultural field, sparse woodlands adjacent to the south (deciduous trees)
PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Miller's Run

NEAREST WATER: Distance 381.72M Elevation 1,130ft Direction Northeast Order 1 Type Perennial

NON-SITE JUSTIFICATION Two flakes of chert debitage were recovered from two STPs located more than 15-meters apart. One flake was recovered via excavation while the other was recovered from the surface. Additional radial STPs (n=21) excavated at 5 meter, 7.5 meter, and 10-meter intervals failed to produce additional culturally modified objects. According to the PASS File Site Identification Criteria, a site consists of two or more flakes and/or other culturally modified objects found in adjacent shovel tests no more than 15-meters apart. Because these flakes were excavated more than 15-meters apart, these artifacts are considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type
2	Debitage	Chert

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☒ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☐ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

36WH1718
36WH0241
36WH1718
36WH0142
36WH1738
36WH0190
36WH1737
36WH0155
36WH/077
36WH0209
36WH0157
36WH0159
36WH/076
36WH0156
36WH0158
36WH0191
AECOM-WHMo004-ST1
36WH/079
36WH0208
Southview Sch
WESTERN
AND
NORFOLK
MONTOUR
Legend
Archaeological Data
36WH/077
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/077
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General overview of centerline from STP C87, near WHMo003-IF2.

Photo 2. General overview of centerline from STP C87, near WHMo003-IF2.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION ____ UP ____ ACROSS ____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4462857 m EASTING 562668 m

OWNER Albert Leon Cowden, Jo Ann B. and Edward Cowden ADDRESS ____

TAX PARCEL ID 460-012-00-00-0020-00 TAX MAP DATE ____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS ____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS ____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/078 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Westland

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☐ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 45 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)
☐ Non-systematic surface survey
☐ Systematic surface survey
☒ Systematic shovel testing
☐ Remote sensing
☐ Auger probing
☐ Shovel testing
☐ Systematic test units
☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1,203 ft SLOPE PERCENTAGE 15% SLOPE DIRECTION South

PHYSIOGRAPHIC PROVINCE Waynesburg Hills TOPOGRAPHIC SETTI NG Hilltop

IMMEDIATE VEGETATION Open field/ pasture, short grass, surrounded by sparse woodlands

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Westland Run

NEAREST WATER: Distance 162.52M Elevation 1,083ft Direction West Order 1 Type Perennial

NON-SITE JUSTIFICATION One artifact, a snap from a horse halter, was recovered from WHMo004-IF1. All excavated radials (n=8) were negative. The artifact is most likely modern. However, the item is too rusted to determine an accurate date. According to the Identification Criteria, a debris scatter consists of three diagnostic artifacts of two different artifact types in adjacent units at 15-meter intervals. Because only one artifact was recovered from this site within a 15-meter interval, this artifact is considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
1	Tack	Metal

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☒ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☐ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

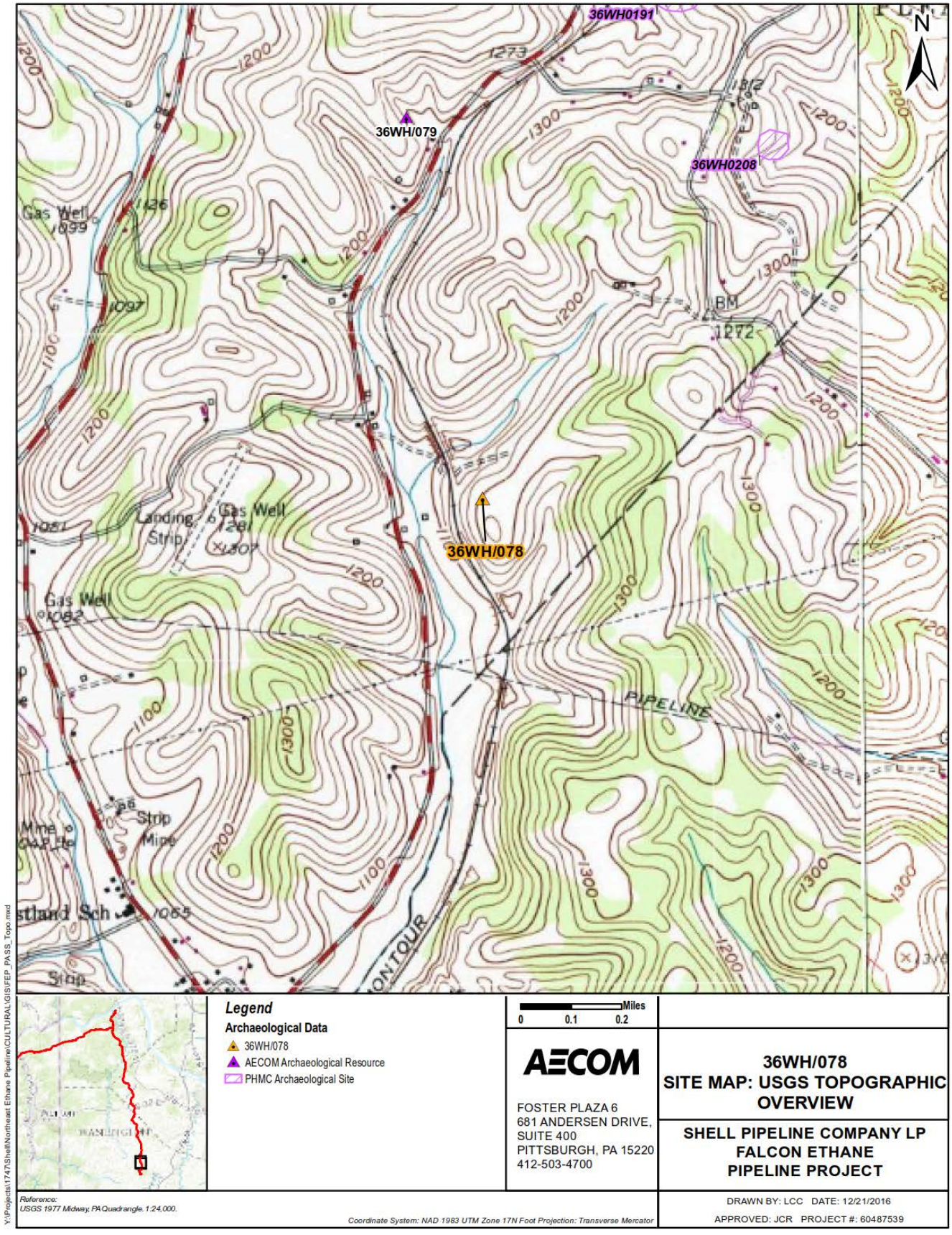

36WH0191
36WH/079
36WH0208
36WH/078
N
Gas Well
Landing Strip
Gas Well
Gas Well
PIPELINE
Strip
Mine
Strip
Pipe
1273
1272
BM
1200
1300
1100
Legend
Archaeological Data
36WH/078
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/078
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of WHMo004-IF1 site area, facing southwest.

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4460508 m EASTING 562530 m

OWNER Robert M. Cowden ADDRESS _____

TAX PARCEL ID 460-009-00-00-0028-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Isolated Find / Non-Site Documentation

Identification and Location

NON-SITE NUMBER 36WH/079 ER# 2015-1839-042

REPORT TITLE or PROJECT NAME Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Southview

TYPE: Prehistoric ☐ Historic ☒
☐ Isolated fluted point locus ☒ Isolated find (diagnostic artifact)
☒ Non-diagnostic material found within an area of 130 SQUARE METERS

ARTIFACT DISCOVERY METHOD: (check primary one only)

☐ Non-systematic surface survey	☐ Auger probing
☐ Systematic surface survey	☐ Shovel testing
☒ Systematic shovel testing	☐ Systematic test units
☐ Remote sensing	☐ Geomorphological test units

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

Physical Data and Field Condition

MAP ELEVATION 1,200 ft SLOPE PERCENTAGE 14 SLOPE DIRECTION Southeast
PHYSIOGRAPHIC PROVINCE Waynesburg Hills TOPOGRAPHIC SETTI NG Upper Hillslope
IMMEDIATE VEGETATION Low cut grass
PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartiers Creek

NEAREST WATER: Distance 20meters Elevation 1,240ft Direction Northwest Order 1 Type Perennial stream

NON-SITE JUSTIFICATION Artifacts recovered include one whiteware fragment, three unidentified bottle glass sherds, and one window glass sherd. Artifacts were recovered from three STPs, one of which was a radial. The whiteware sherd produces a date range of 1820 to the present. This site is considered an isolated find for two reasons: 1) The bottle glass sherds and window glass sherd do not have reliable diagnostic features to produce an accurate date range, and 2) According to the Identification Criteria a debris scatter consists of three diagnostic artifacts of two different artifact types in adjacent units at 15-meter intervals. For these reason these artifacts are considered an isolated find.

Artifacts (All tables can expand as needed. See full Pennsylvania Archaeological Site Survey form for definitions.)

PREHISTORIC NON-DIAGNOSTIC ARTIFACT CATAGORIES (Include quantity by material type if appropriate)

Quantity	Prehistoric Artifact Types	Material Type

PREHISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Prehistoric Point Types	Material

Quantity	Prehistoric Ceramics	Temper

HISTORIC ARTIFACT CATAGORIES (INCLUDE QUANTITIES BY GROUP):

Quantity	Functional Class	Material Class
1	Household	Ceramic
3	Household	Glass
1	Architectural	Glass

HISTORIC DIAGNOSTIC ARTIFACTS

Quantity	Historic Artifact
1	Whiteware

Chronology

Prehistoric ☐ Unknown Prehistoric ☐ Specific Time Period _____

Historic ☒ Unknown Historic ☐ Specific Time Period _____

ATTACHMENTS:

☒ 7.5 MIN USGS map with specific isolated find location or **non-site collection area boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale.

We encourage the inclusion of as many illustrations as possible.

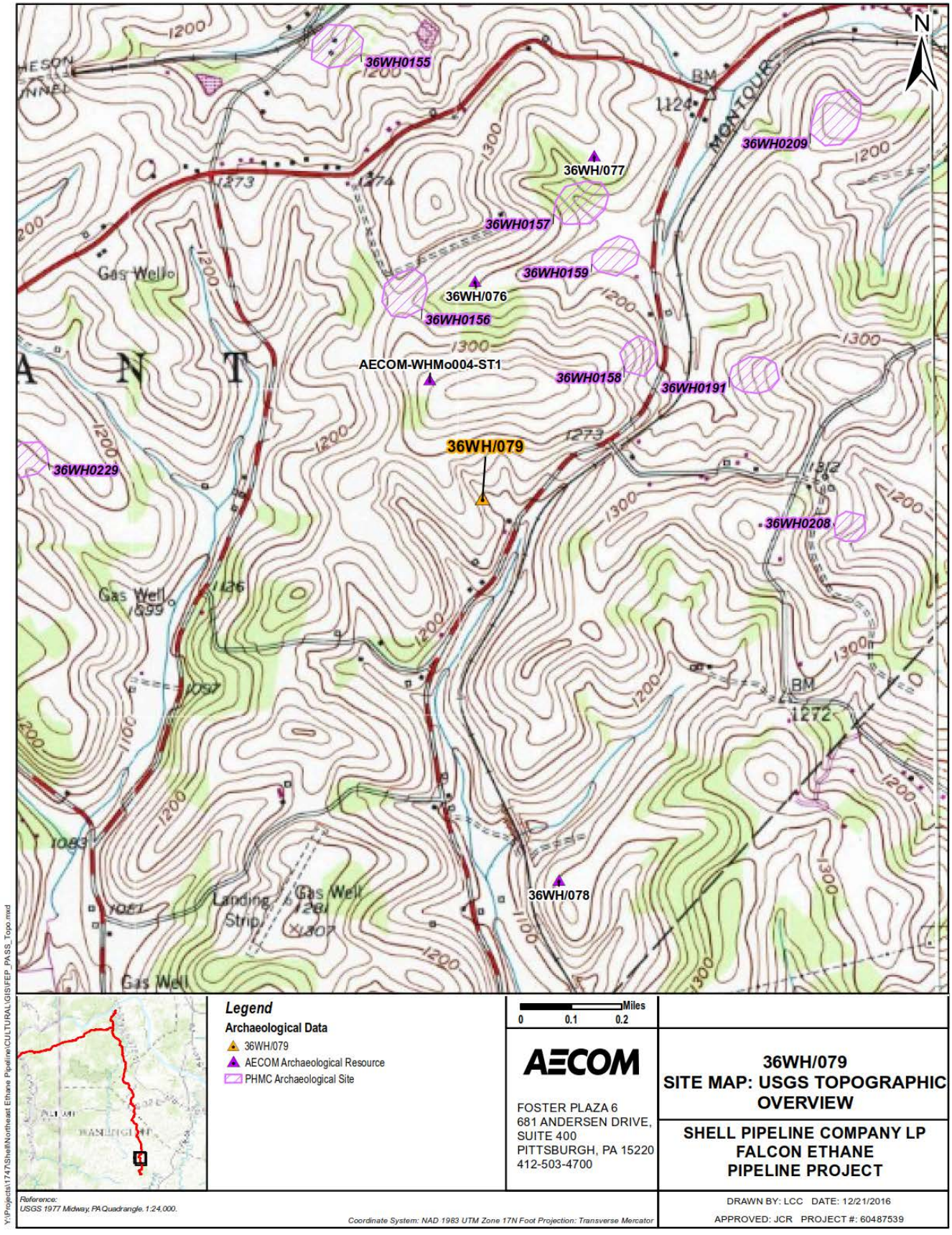

36WH0155
36WH0209
36WH/077
36WH0157
36WH0159
36WH/076
36WH0156
AECOM-WHMo004-ST1
36WH0158
36WH0191
36WH/079
36WH0229
36WH0208
36WH/078
Gas Well
Landing Strip
BM
1124
1272
N
Legend
Archaeological Data
36WH/079
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH/079
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Photo 1. General view of WHMo004-IF1 site area, facing northwest.

Photo 2. Household ceramics, whiteware (exterior), recovered from WHMo005-IF1.

Photo 3. Household ceramics, whiteware (interior), recovered from WHMo005-IF1.

Table 1. WHMo005-IF1 Historic artifact assemblage

H/P	Group	Ceramic	Glass	Total
Historic	**Household**	1	3	4
	Architectural	0	1	1

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4461776.37 m EASTING 562299.09 m

OWNER Brian and Amy Comali ADDRESS _____

TAX PARCEL ID 460-010-00-00-0031-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

APPENDIX E
PASS Forms

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-ALFi002-NA1 SITE NUMBER 36AL0715 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Allegheny TWP. Findlay NEAREST TOWN Clinton

Site Characteristics

SITE AREA 44 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☒ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☐ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☒ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
3	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
3	Stone Debitage	Chert
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Wharton silt loam, 15-25 percent slopes SOIL MAPPING UNIT WhD

Most common other mapped SOIL UNIT(S) within 500 meters WhC, At (may list two)

MAP ELEVATION 1060 ft SLOPE PERCENTAGE 15 SLOPE DIRECTION East

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcc-Pennsylvanian Casselman Most predominant other BEDROCK(S) within 5 km Pm-Pennsylvanian Monongahela Group

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE Waynesburg Hills)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☒ Stream Bench (along low order stream)	☐ Ridge Top
☐ Terrace (Pleistocene along river)		☐ Saddle

IMMEDIATE VEGETATION Open field with short to medium grasses PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Potato Garden Run

NEAREST WATER: Distance 27 meters Elevation 1050ft Direction East Order 1 Type Perennial Stream

2ND NEAREST WATER: Distance 142 meters Elevation 1060ft Direction Southwest Order 1 Type Extinct Stream Channel

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,028 meters Elevation 1000ft Direction Southwest Order below confluence 3

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

- ☐ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☒ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

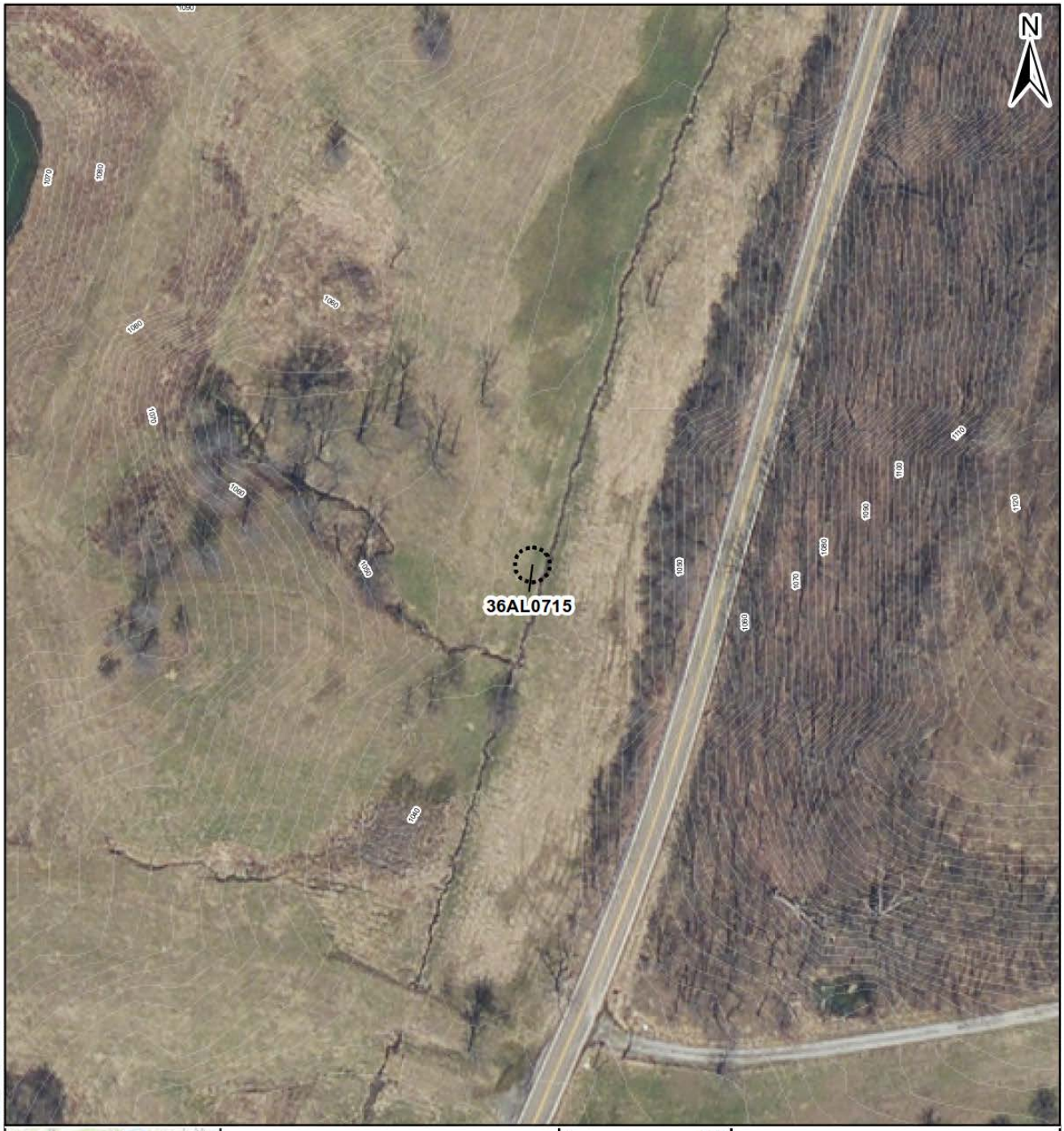
COMMENTS Site ALFi002-NA1 is a low density prehistoric site. The site area is situated in a wetland from an upland drainage that formed an unnamed tributary of Potato Garden Run (Photo 1).. The site is located within the wetlands west of Washington Road. The uplands northwest of the wetland area were artificially leveled to create a sports park and fields. The site consists of three non-diagnostic prehistoric artifacts recovered from one shovel test (Table 1 and Photo 2). Radials were excavated at 5.00- and 10.00-meter (16.40- and 32.81-feet) intervals, but no additional artifacts were recovered. The flakes were recovered from the A-horizon from 0.00 to 0.19 meters (0.00 to 0.62 feet) below ground surface.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.

Trailer Park
BM 1249
36AL0382
Cem
Strip Mine
Strip Mine
36AL0715
36AL0716
Strip Mines
imed Strip Mine
F I N D L A
N
1100
1160
1000
1025
1027
1041
1161
1229
1207
Legend
Archaeological Data
36AL0715
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36AL0715
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd



Legend

Archaeological Data

Site Boundary

Environmental Data

Topographic contour (10 ft)

Topographic contour (2 ft)

Feet
0 45 90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0715
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Figure 1. General view of ALFi002-NA1 site area, facing north.

Table 1. Prehistoric artifact assemblage at ALFi002-NA1

H/P	Group	Lithic	Total
Prehistoric	**Debitage**	3	**3**

Figure 2. Chert debitage flakes (n=3) recovered from sub-surface testing within site ALFi002-NA1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Clinton EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4480949m N EASTING 559415.01m E

OWNER The Maronda Foundation ADDRESS _____

TAX PARCEL ID 1178-A-00029-0000-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Insufficient data

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-ALFi003-HS1 SITE NUMBER 36AL0716 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Allegheny TWP. Findlay NEAREST TOWN Clinton

Site Characteristics

SITE AREA 4870 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☒ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☒ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☒ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES ____ _____ ± ____ _____

____ _____ ± ____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric ____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar

Quantity	Historic Features
	Cemetery
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed

Quantity	Historic Features
	Fortification
	Foundation
	Ice House
	Iron Furnace
	Kiln
	Midden

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Millrace
	Monument/Boundary Marker
	Oil Well
1	Other, Historic Brick floor
	Oven
	Pipeline
	Pit
	Posthole/Postmold

Quantity	Historic Features
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
3	Standing Building or Structure

Quantity	Historic Features
	Still
	Vat
	Walk/Path
4	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural		28	30				
	Personal	1						
	Kitchen	8	2					
	Arms/Weapons							
	Activities							
	Industrial (Tools)			2				
	Electrical							
	Furniture							
	Unidentified		4	2				

SITE NAME _____ SITE NUMBER 36- - DATE .

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	

Quantity	Prehistoric Ceramics	Temper
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	
	Overpeck	

Quantity	Prehistoric Ceramics	Temper
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
1	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
9	Cut Nails
12	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
1	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Atkins silt loam, 0 to 3 percent slopes SOIL MAPPING UNIT At

Most common other mapped SOIL UNIT(S) within 500 meters GsF, WhD (may list two)

MAP ELEVATION 1120 ft SLOPE PERCENTAGE 14 SLOPE DIRECTION Southeast

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcc Most predominant other BEDROCK(S) within 5 km Pm (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE Waynesburg Hills)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☒ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Thick understory with heavy leafelitter PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Potato Garden Run

NEAREST WATER: Distance 121 meters Elevation 1100 ft Direction Southeast Order 1 Type Perennial Stream

2ND NEAREST WATER: Distance 1,239 meters Elevation 1020ft Direction Southwest Order 2 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,239 meters Elevation 1020 ft Direction Southwest Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

☐ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☒ Site is located upstream from the confluence, but not between the 2 water sources.
☐ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS Site ALFi003-ST1 consists of a multi-structure complex and a historic artifact scatter (Photographs 1-20). The multi-structure complex is comprised of one stone structure, one cement structure, two concrete structures, and two stone walls. It was identified during systematic pedestrian survey and shovel testing. The site is located northeast from and adjacent to Point Park Road. The surrounding area consists of a deciduous forest with a sparse canopy. The scarcity of trees within the site is most likely a result of previous strip mining in the area. The understory is a mixture of leaf litter, vines, briars, ferns, and grasses. Modern debris was scattered throughout the surface of the site, no doubt due to the site's close proximity to the road. Archaeological investigations yielded a total of eighty-three historic artifacts. These artifacts have dates that primarily span from the late/mid nineteenth century to the present. The assemblage is characterized by window glass, wire and cut nails, porcelain, a porcelain button, ironstone, clinker/slag, and miscellaneous ferrous metal fragments. The material was recovered from six shovel test pits. In addition to these artifacts, brick flooring was uncovered at 0.11 meters (0.36 feet) below ground surface during the excavation of one shovel test pit. The floor may be a brick patio extending from the main building. The artifacts and brick flooring were uncovered in association with a multi-structure complex comprised of the remains of three structures/foundations and four walls.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.

N
36AL0715
36AL0716
36AL0582
F I N D L A Y
Reclaimed Strip Mine
Strip Mine
North
Legend
Archaeological Data
36AL0716
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36AL0716
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

N
36AL0716
Legend
Archaeological Data
Site Boundary
Structure
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
0 45 90 Feet
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36AL0716
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. Stone Structure 1 east wall, facing west.

Photo 2. Stone Structure 1 southeast corner, facing northwest.

Photo 3. Stone Structure 1 west wall, exterior, facing west.

Photo 4. Stone Structure 1 south wall, exterior, facing south.

Photo 5. Stone Structure 1 southeast corner, interior, facing southeast.

Photo 6. Stone Structure 1 north window, facing south.

Photo 7. Stone Structure 1 east window, facing west.

Photo 8. Stone Structure 1 north door/ entryway, facing south/ southwest.

Photo 9. Stone Structure 1 south wall chimney, facing south.

Photo 10. Brick flooring identified within JUD008, facing northwest.

Photo 11. Stone Wall 1, facing northwest.

Photo 12. Stone Wall 2, facing west.

Photo 13. Close-up of Stone Wall 2, facing west.

Photo 14. Cement Block 1, facing northwest.

Photo 15. Cement Block 1, facing north.

Photo 16. Concrete Structure 1, facing west.

Photo 17. Concrete Structure 1, facing north.

Photo 18. Concrete Structure 2 north wall, facing south.

Photo 19. Concrete Structure 2 east wall with window, facing west.

Photo 20. Concrete Structure 2 opening, facing north.

Table 1. ALFi003-ST1 Historical artifact assemblage

H/P	Group	Ceramic	Glass	Metal	Other	Total
Historic	**Architectural**	0	28	30	0	58
	Household	8	2	0	0	10
	Hardware	0	0	2	0	2
	Personal	1	0	0	1	2
	Indeterminate	0	4	2	5	11

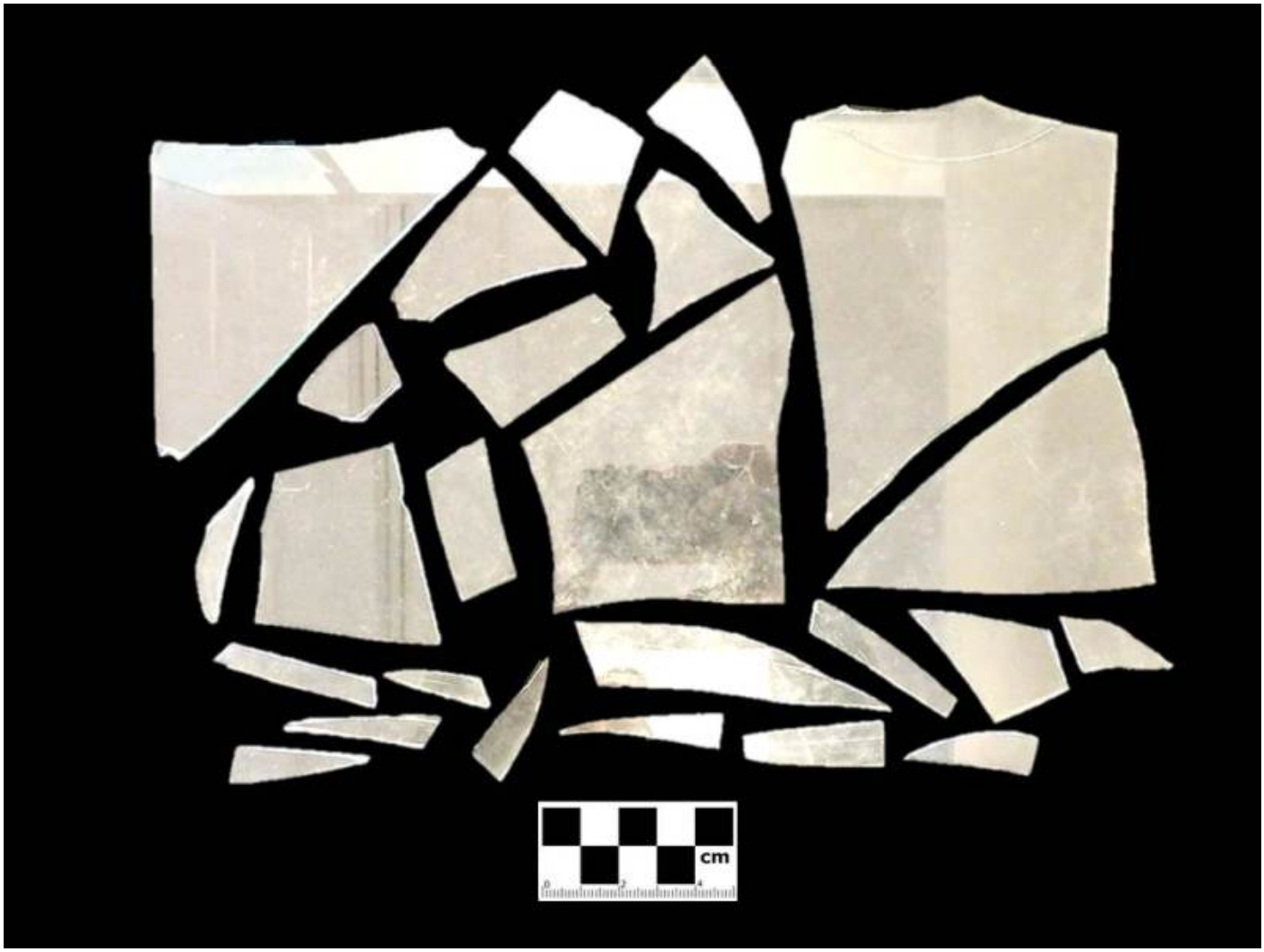


Photo 21. Window glass recovered from ALFi003-ST1.

Photo 22. Cut and wire nail assemblage recovered from ALFi003-ST1.

Photo 23. Cut nails recovered from ALFi003-ST1.

Photo 24. Cut nails recovered from ALFi003-ST1.

Photo 25. Ironstone recovered from ALFi003-ST1.

Photo 26. Household group (ironstone, porcelain, and bottle glass) recovered from ALFi003-ST1.

Photo 27. Porcelain ceramic sherd recovered from ALFi003-ST1. Note floral design.

Photo 28. Possible hinge recovered from ALFi003-ST1.

Photo 29. Personal artifact group recovered from ALFi003-ST1.

Photo 30. Indeterminate metal artifact recovered from ALFi003-ST1.

Photo 31. Clinker recovered from ALFi003-ST1.

Photo 32. Possible tin can fragment recovered from ALFi003-ST1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Clinton EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4479939.39m N EASTING 560103.40m E

OWNER Guy E. Hennemuth & Yvonne Hennemuth ADDRESS _____

TAX PARCEL ID 1177-G-00325-0000-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Potentially eligible, criteria D

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Hookstown Grange Fair Grounds SITE NUMBER 36BV0394 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____ ER# 2015-1839-042

COUNTY Beaver TWP. Green Township NEAREST TOWN Hookstown

Site Characteristics

SITE AREA 13 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☒ 1875-1900
- ☒ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
1	Other, Historic Fire feature
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or Structure

Quantity	Historic Features
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons			**1**				
	Activities							
	Industrial (Tools)			**1**				
	Electrical							
	Furniture							
	Unidentified		**1**					

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)
	Basalt

Quantity	Historic Artifact
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails
	Cut Nails

Quantity	Historic Artifact
	Wire Nails
1	Barbed wire
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
1	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Brinkerton silt loam, 3-8% slope SOIL MAPPING UNIT BkB

Most common other mapped SOIL UNIT(S) within 500 meters WhC, GnB (may list two)

MAP ELEVATION 1,037 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION West

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcg, Pennsylvanian Glenshaw Formation Most predominant other BEDROCK(S) within 5 km PA, Pennsylvanian Allegheny Formation (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☒ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Tall wetland grasses with decidous trees to the south of the site PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Mill Creek

NEAREST WATER: Distance 405 meters Elevation 991ft Direction Northwest Order 2 Type Perennial

2ND NEAREST WATER: Distance 691 meters Elevation 1,012ft Direction Southwest Order 1 Type Perennial

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 833 meters Elevation 1,009ft Direction Southwest Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

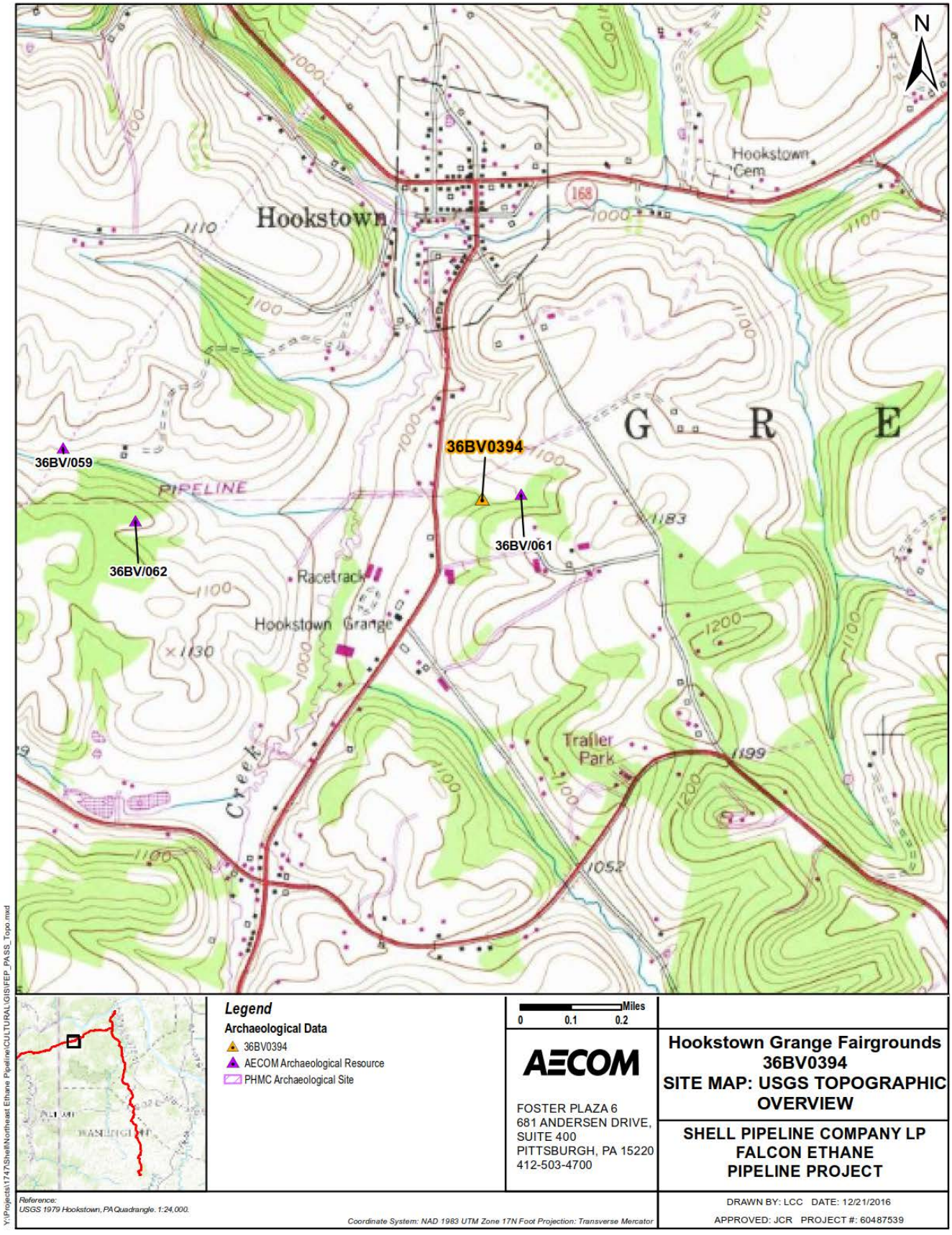
- ☐ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☒ None of the above apply.

COMMENTS Three artifacts and a feature were recovered from BVGr015-HS1. The artifacts included a barbed wire fragment (1874-present), one NITRO EXPRESS shotgun shell (1898-present), and one unidentified glass sherd. The feature uncovered is a fire feature. The feature consisted of a thin ash layer with a layer of charcoal. All artifacts were recovered from this feature. The remaining radials (n=8), excavated at 5 meter (16.4feet) and 2.5 meter (8.2 feet) intervals, were all negative and did not uncover more of the feature. The feature was located in a wetland within an agricultural field.

ATTACHMENTS:

- ☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
- ☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
- ☐ Site plans.
- ☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
Hookstown
Hookstown Cem
168
1000
1100
1110
1183
1200
1199
1052
1130
G R E
36BV0394
36BV/059
36BV/061
36BV/062
PIPELINE
Racetrack
Hookstown Grange
Trailer Park
Creek
Legend
Archaeological Data
36BV0394
AECOM Archaeological Resource
PHMC Archaeological Site
0 0.1 0.2 Miles
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
Hookstown Grange Fairgrounds
36BV0394
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

SITE NAME _____ SITE NUMBER 36- - DATE .

Legend

Archaeological Data

Site Boundary

Environmental Data

Topographic contour (10 ft)

Topographic contour (2 ft)

Feet
0 45 90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Hookstown Grange Fairgrounds
36BV0394
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of BVGr015-HS1 site area.

Photo 2. Fire feature exposed in sub-surface testing within BVGr015-HS1.

Table 1. BVGr015-HS1 Historic artifact assemblage

H/P	Group	Metal	Glass	Total
Historic	**Arms**	1	0	1
	Hardware	2	0	2
	Indeterminate	0	1	1

Photo 3. Barbed wire recovered from BVGr015-HS1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4493397 m N EASTING 544592 m E

OWNER Greene Township, C/O Sandra J. Wright, Secrtary ADDRESS _____

TAX PARCEL ID 62-003-0103.000 TAX MAP DATE _____

☐ PRIVATE LANDOWNER ☒ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☒ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Most likely modern - ineligible

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME: AECOM-BVIn003-ST1 SITE NUMBER 36BV0395 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____ ER# 2015-1839-042

COUNTY Beaver TWP. Independence NEAREST TOWN Independence

Site Characteristics

SITE AREA : 64 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: ___

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☒ Systematic surface survey
- ☐ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

CHRONOLOGY (check all that apply)

Prehistoric

☐ Unknown Prehistoric
☐ Paleoindian
☐ Early ☐ Middle ☐ Late
☐ Archaic
☐ Early ☐ Middle ☐ Late
☐ Transitional Tradition
☐ Woodland
☐ Early ☐ Middle ☐ Late
☐ Proto Historic

Historic

☐ Unknown Historic
☐ Contact-Historic
☐ 1550-1600
☐ 1600-1650
☐ 1650-1700
☐ 1700-1800
☐ 1700-1725 ☐ 1725-1750
☐ 1750-1775 ☐ 1775-1800
☒ 1800-1900
☐ 1800-1825 ☐ 1825-1850
☐ 1850-1875 ☐ 1875-1900
☐ 1900-
☐ 1900-1925 ☐ 1925-1950
☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

☐ Diagnostic lithic artifacts
☐ Ceramic types
☐ Historical Documentation (attach bibliography)
☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery
	Cistern

Quantity	Historic Features
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
1	Foundation
	Ice House
	Iron Furnace

Quantity	Historic Features
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker
	Oil Well
1	Other, Historic
	Oven

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Pipeline
	Pit
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad

Quantity	Historic Features
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or Structure

Quantity	Historic Features
	Still
	Vat
	Walk/Path
4	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural			**1**				
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified			**1**				

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
1	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Gurensey-Vandergrift complex, 8 to 15 percent slopes SOIL MAPPING UNIT GvB

Most common other mapped SOIL UNIT(S) within 500 meters GpD, GsF (may list two)

MAP ELEVATION 1100ft SLOPE PERCENTAGE 18% SLOPE DIRECTION Southeast

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcg-Pennsylvanian Glenshaw Most predominant other BEDROCK(S) within 5 km Pcc-Pennsylvanian Casselman

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☒ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Oak tree with sparse understory PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Proposed Pipeline Construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 67 meters Elevation 1,100ft Direction North Order 1 Type Ephemeral stream

2ND NEAREST WATER: Distance 378 meters Elevation 800ft Direction East Order 4 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 482 meters Elevation 800ft Direction East Order below confluence 4

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

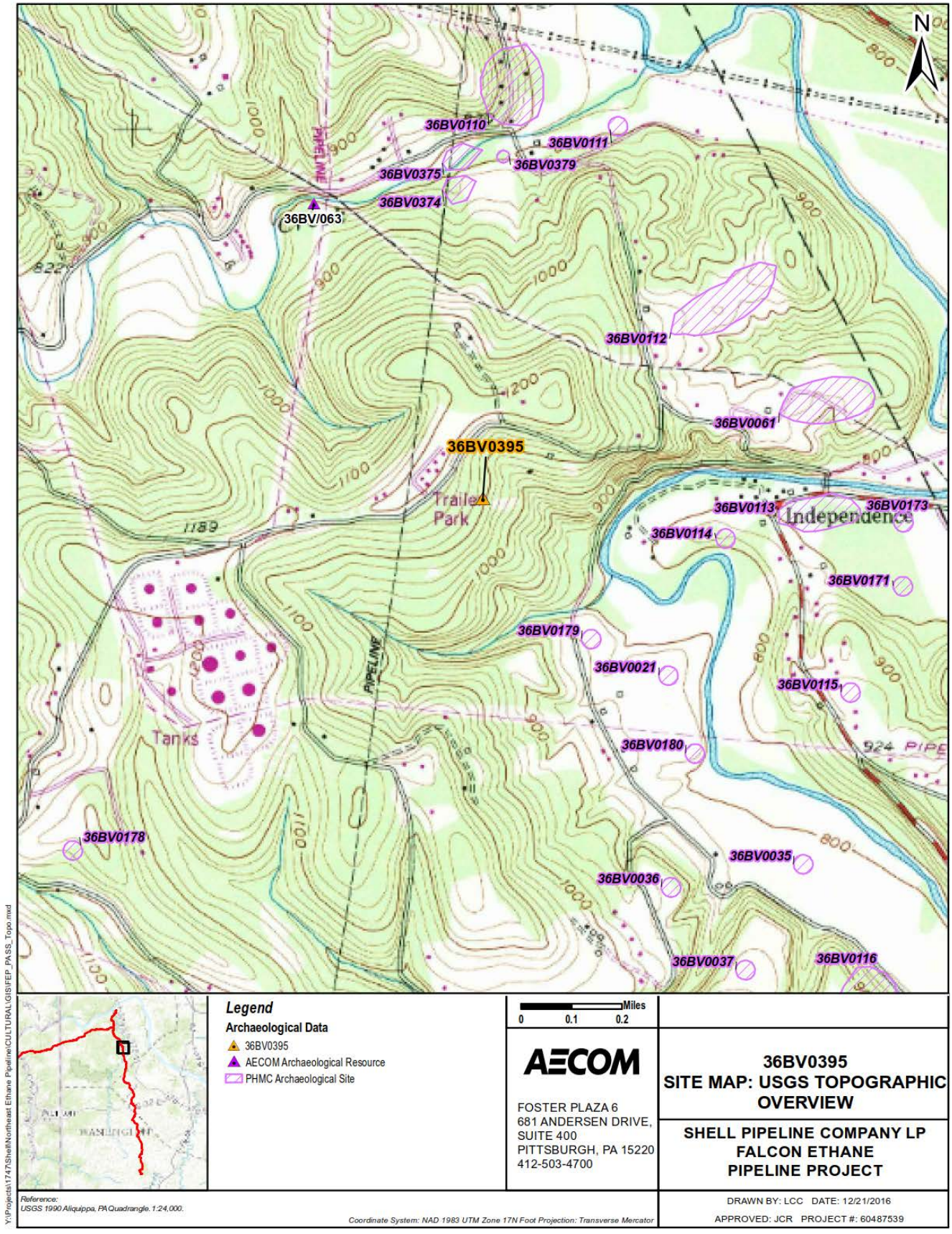
- ☐ Do not represent a stream confluence.
- ☒ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS Archaeological investigations recovered two historic artifacts and identified one structure. The main structure of the stone foundation is composed of dry laid field stone, and measures 8-meters by 4.2-meters (26.25-feet by 13.75-feet) (Photographs 1-12). Collapsed stone walls extend from the southeast and southwest corners, as well as from the central north wall (Photographs 13-16). A fourth collapsed wall is located northwest of the main structure and measures 4.6-meters in length (15-feet). A gap measuring approximately 0.45-meters (1.5-feet) is present in the south wall, indicating a possible entranceway (Photographs 11-12). An apparent circular hearth was present in the northwest corner of the main structure, and was surrounded by moss-covered angular cobbles (Photograph 17). Evidence of recent activity was present, and included a grilling grate, a wooden ladder, and a hunter's tree stand adjacent to the structure's southern wall (Photograph 18). Large boulders and possible rubble were located west and northwest of the main structure (Photographs 19-22).The artifact assemblage is comprised of one cut nail (1805-1900) and an unidentified ferrous metal fragment. The materials were recovered solely from one shovel test pit located within the NW interior corner of the central dry laid stone wall outbuilding and/or room.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
36BV0110
36BV0111
36BV0379
36BV0375
36BV0374
36BV/063
PIPELINE
36BV0112
36BV0061
36BV0395
Trailer Park
36BV0113
36BV0173
Independence
36BV0114
36BV0171
36BV0179
36BV0021
36BV0115
PIPELINE
Tanks
36BV0180
924 PIPE
36BV0178
36BV0035
36BV0036
36BV0037
36BV0116
Legend
Archaeological Data
36BV0395
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV0395
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

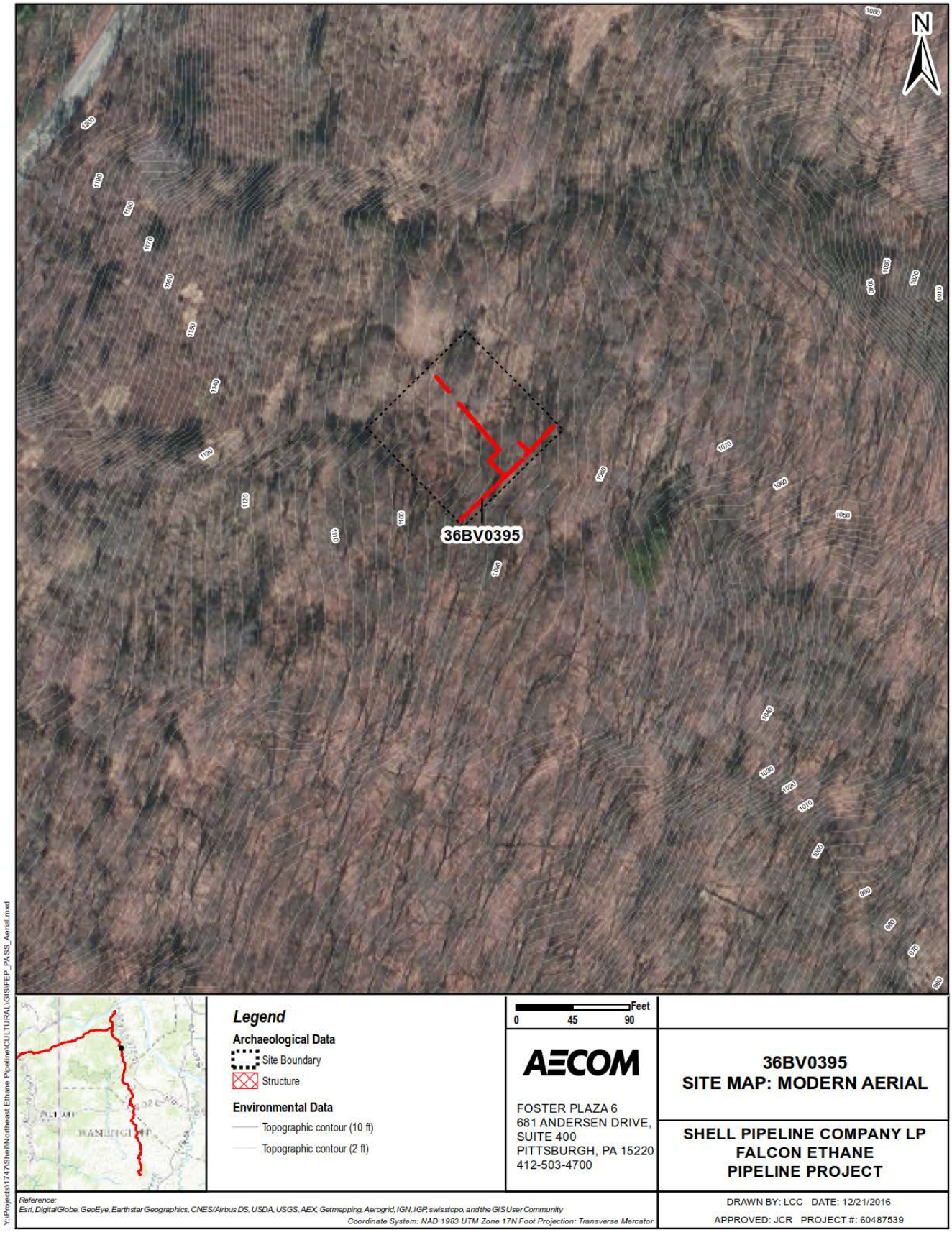

N
36BV0395
Legend
Archaeological Data
Site Boundary
Structure
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
Feet
0 45 90
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV0395
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of BVIn003-ST1 main structure, facing north.

Photo 2. General view of BVIn003-ST1 main structure, facing northeast.

Photo 3. General view of BVIn003-ST1 main structure, facing southwest.

Photo 4. General view of BVIn003-ST1 main structure, facing northwest.

Photo 5. South wall exterior of BVIn003-ST1 main structure, facing north.

Photo 6. West wall exterior of BVIn003-ST1 main structure, facing east.

Photo 7. West wall exterior of BVIn003-ST1 main structure, facing east.

Photo 8. North wall exterior of BVIn003-ST1 main structure, facing south.

Photo 9. East wall exterior of BVIn003-ST1 main structure, facing west.

Photo 10. South wall interior of BVIn003-ST1 main structure, facing south. Note grill grate.

Photo 11. Possible entrance, south wall exterior of BVIn003-ST1 main structure, facing north.

Photo 12. Possible entrance, south wall interior of BVIn003-ST1 main structure, facing south.

Photo 13. Stone wall extending from northwest corner of main structure, facing north.

Photo 14. Stone wall extending from southeast corner of main structure, east boundary of BVIn003-ST1, facing northwest

Photo 15. Stone wall extending from southeast corner of main structure, east boundary of BVIn003-ST1, facing north

Photo 16. Stone rubble pile extending from southwest corner of main structure, facing northwest.

Photo 17. Possible interior hearth within the main structure of BVIn003-ST1, facing north.

Photo 18. Wooden ladder along south wall of main structure, interior, facing south.

Photo 19. Rocks/boulders southwest of main structure, facing northwest.

Photo 20. Large rock pile northwest of main structure, facing northwest.

Photo 21. Large boulder west of main structure, facing northwest.

Photo 22. Boulder field west of main structure, facing west.

Table 1. BVIn003-ST1 Historic Artifact Assemblage

H/P	Group	Metal	Total
Historic	Architectural	1	1
	Indeterminate	1	1

Photo 23. Cut nail recovered from BVIn003-ST1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Alliquippa EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T____ NORTHING 4491550m N EASTING 557559m E____

OWNER Richard G. Liptak and Kathleen K. Liptak ADDRESS _____

TAX PARCEL ID 66-203-0241.P00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Ineligible

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/16/2017

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-BVIn005-ST1 SITE NUMBER 36BV0396 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Beaver TWP. Independence NEAREST TOWN Independence

Site Characteristics

SITE AREA 72 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☒ Systematic surface survey
- ☐ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☒ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES ____ _____ ± ____ _____

____ _____ ± ____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric ____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar

Quantity	Historic Features
	Cemetery
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed

Quantity	Historic Features
	Fortification
1	Foundation
	Ice House
	Iron Furnace
	Kiln
	Midden

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Millrace
	Monument/Boundary Marker
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
2	Pit

Quantity	Historic Features
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox

Quantity	Historic Features
	Standing Building or Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.
Examples:

SITE NAME _____ SITE NUMBER 36- - DATE .

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Ernest silt loam, 8 to 15 percent slopes SOIL MAPPING UNIT ErC

Most common other mapped SOIL UNIT(S) within 500 meters GnC, CmD (may list two)

MAP ELEVATION 1120 ft SLOPE PERCENTAGE 16% SLOPE DIRECTION South

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pennsylvanian Casselman, Pcc Most predominant other BEDROCK(S) within 5 km Pcg-Pennsylvanian Glenshaw (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☒ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Woodlands, Oak trees (sparse), briars, thin understory PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction

POSSIBILITY OF DESTRUCTION None, site is now off alignment.

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 263 meters Elevation 1,040 ft Direction East Order 1 Type Perennial Stream

2ND NEAREST WATER: Distance 507 meters Elevation 1,080 ft Direction South Order 1 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,059 meters Elevation 840 ft Direction East Order below confluence 3

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

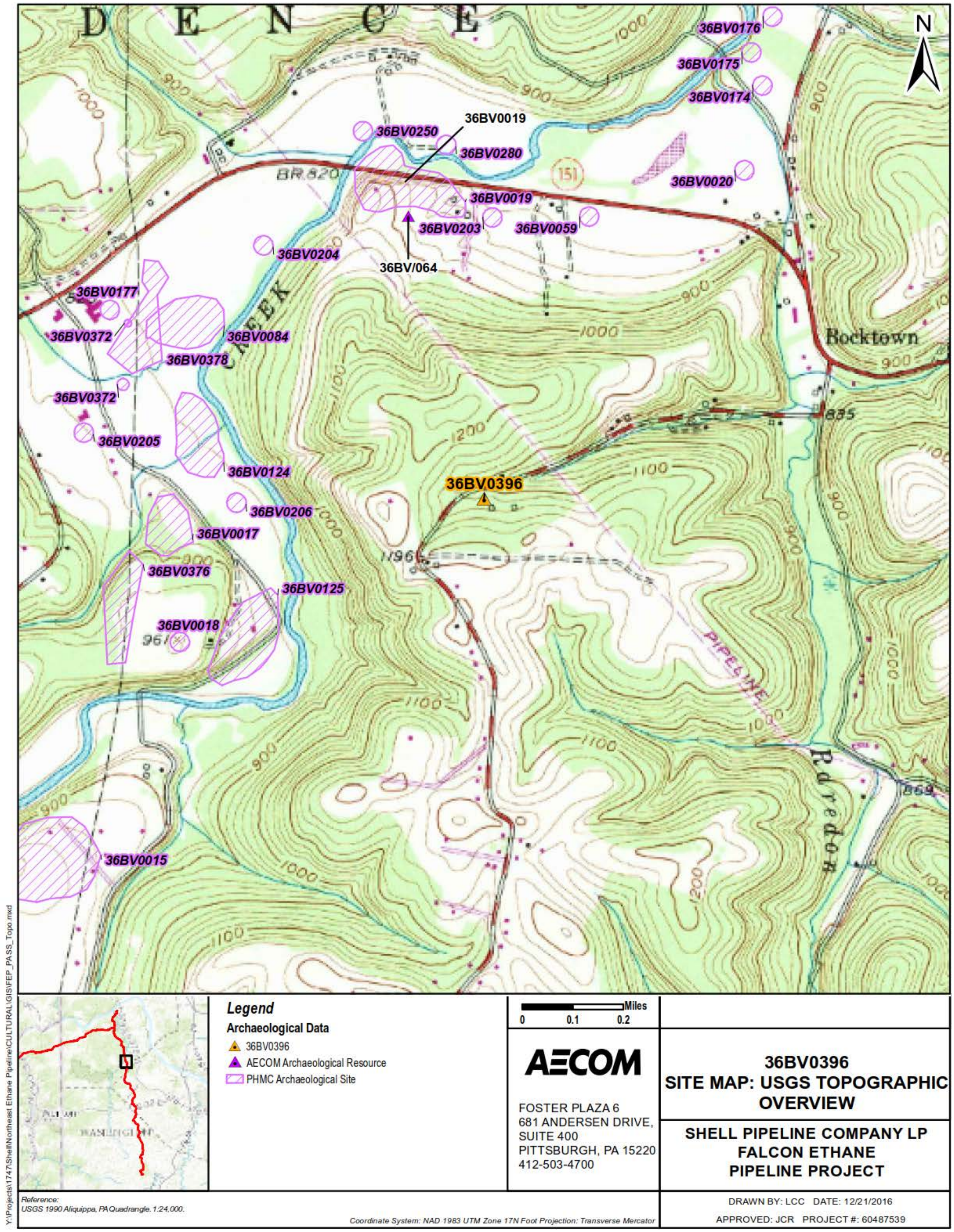
- ☒ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS One structural complex was recovered from BVIn005-ST1. The structural complex included two mortared stone walls and two adjacent pits or ground indentations. No artifacts were recovered in association with this feature. No dates are associated with the feature. The site is uphill from Bocktown Cork Road. The function of the structure and depressions are unknown at this time and no definitive date range can be listed here. However, a multi-structure complex within the site area appears on aerials from 1939 and 1958 (Photographs 7-8). Therefore, it existed at least as far back as 1939. The structure was torn down between 1958 and 1967, as it is absent from the 1967 aerial (Photograph 9). In addition, construction of the Five Points Hunting Club is present on the 1967 aerials. Demolition of the site may therefore have coincided with the purchase of land by the Club.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.



D E N C E
N
36BV0176
36BV0175
36BV0174
36BV0019
36BV0250
36BV0280
36BV0020
36BV0019
36BV0203
36BV0059
36BV0204
36BV/064
36BV0177
36BV0372
36BV0084
36BV0378
36BV0372
36BV0205
36BV0124
36BV0396
36BV0206
36BV0017
36BV0376
36BV0125
36BV0018
36BV0015
BR 820
151
Bocktown
835
1196
961
PIPELINE
869
Legend
Archaeological Data
36BV0396
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV0396
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

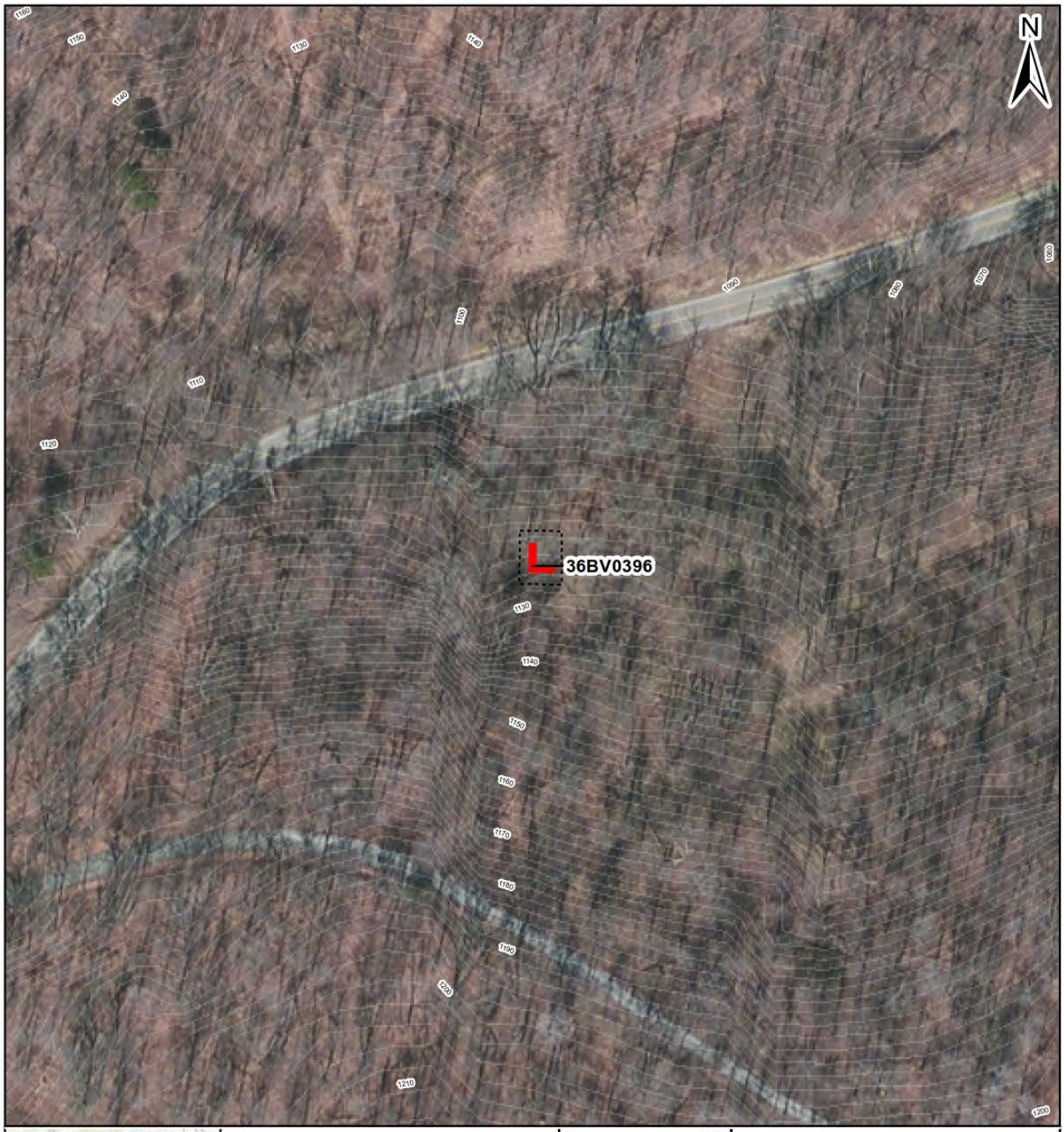

N
36BV0396
1190
1150
1130
1140
1110
1120
1100
1160
1180
1170
1200
1210
Legend
Archaeological Data
Site Boundary
Structure
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
Feet
0 45 90
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV0396
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of stone structure within BVIn005-ST1, facing southwest.

Photo 2. General view of stone structure within BVIn005-ST1, west wall, facing west.

Photo 3. General view of stone structure within BVIn005-ST1, south wall, facing south.

Photo 4. Slate shingles located south of stone structure within BVIn005-ST1, facing west.

Photo 5. Small depression adjacent to BVIn005-ST1 stone walls, facing south.

Photo 6. Large depression located 13.4-meters (44-feet) west of BVIn005-ST1 stone wall structure, facing south.

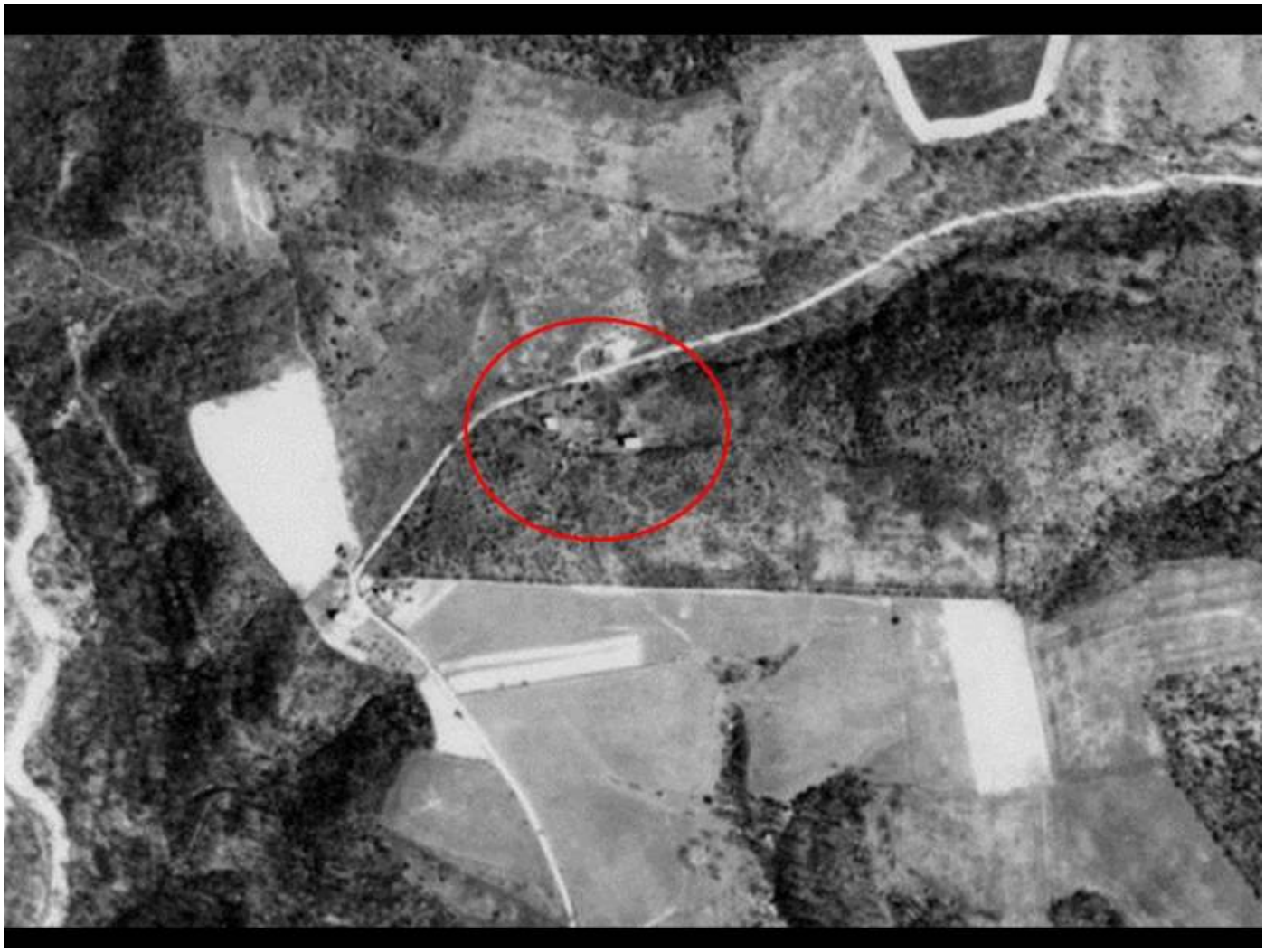


Photo 7. 1939 aerial of area surrounding BVIn005-ST1. Note structures within the site area (USDA Farm Service Agency 1939).

Photo 8. 1958 aerial of area surrounding BVIn005-ST1. Note structures within the site area (USDA Farm Service Agency 1958).

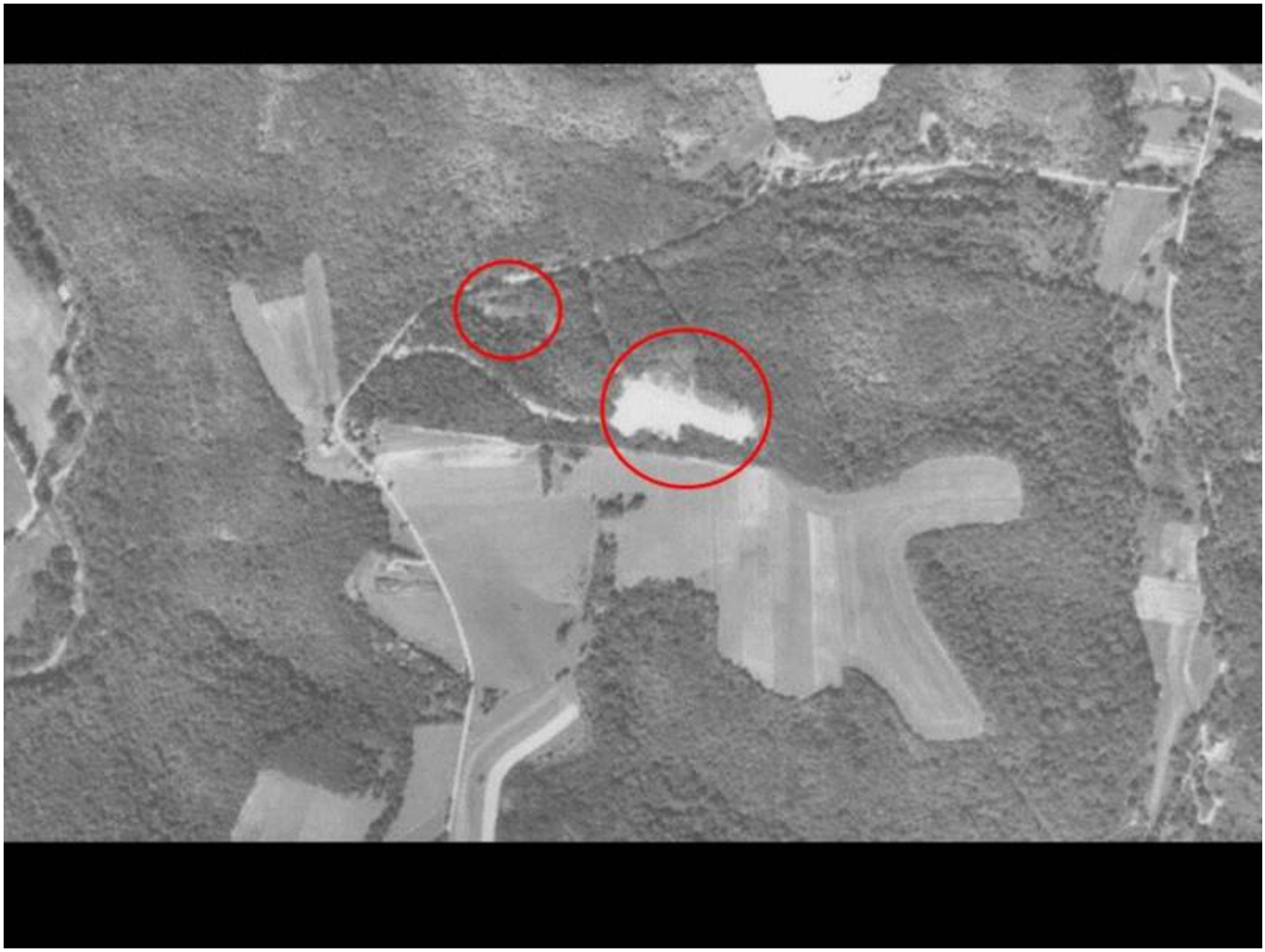


Photo 9. 1967 aerial of area surrounding BVIn005-ST1. Note construction and absence of structures from BVIn005-ST1 (USDA Farm Service Agency 1967).

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Aliquippa EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4487765 m N EASTING 558139 m E

OWNER Five Points Hunting Club ADDRESS _____

TAX PARCEL ID 66-213-0193.000 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Insufficient data

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME St. Joseph Experimental Farm Complex SITE NUMBER 36BV0397 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) ____ ER# 2015-1839-042

COUNTY Beaver TWP. Potter NEAREST TOWN Monaca

Site Characteristics

SITE AREA 8436 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition:

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☐ Unknown/other/multiple types
- ☒ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☒ 1875-1900
- ☒ 1900-
  - ☒ 1900-1925 ☒ 1925-1950
  - ☒ 1950-1975 ☒ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☒ Ceramic types
- ☒ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
4	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural		2	1				
	Personal							
	Kitchen	2	3					
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
2	American Stoneware (Albany slip)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Monongahela silt loam, 3 to 8 percent slopes SOIL MAPPING UNIT MoB

Most common other mapped SOIL UNIT(S) within 500 meters MoA, AgB, GnD (may list two)

MAP ELEVATION 720 ft SLOPE PERCENTAGE 4 SLOPE DIRECTION Northeast

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pa-Pennsylvanian Allegheny Group Most predominant other BEDROCK(S) within 5 km Pcc- Pennsylvanian Casselman Formation, Pcg-Pennsylvanian Glenshaw Formation (may list two)

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☒ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Sparse deciduous trees with thin understory PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION None, site is now off alignment.

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 227 meters Elevation 680 ft Direction East Order 4 Type Perennial Stream

2ND NEAREST WATER: Distance 1,247 meters Elevation 680ft Direction Northwest Order 9 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,247 meters Elevation 680ft Direction Northwest Order below confluence 9

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

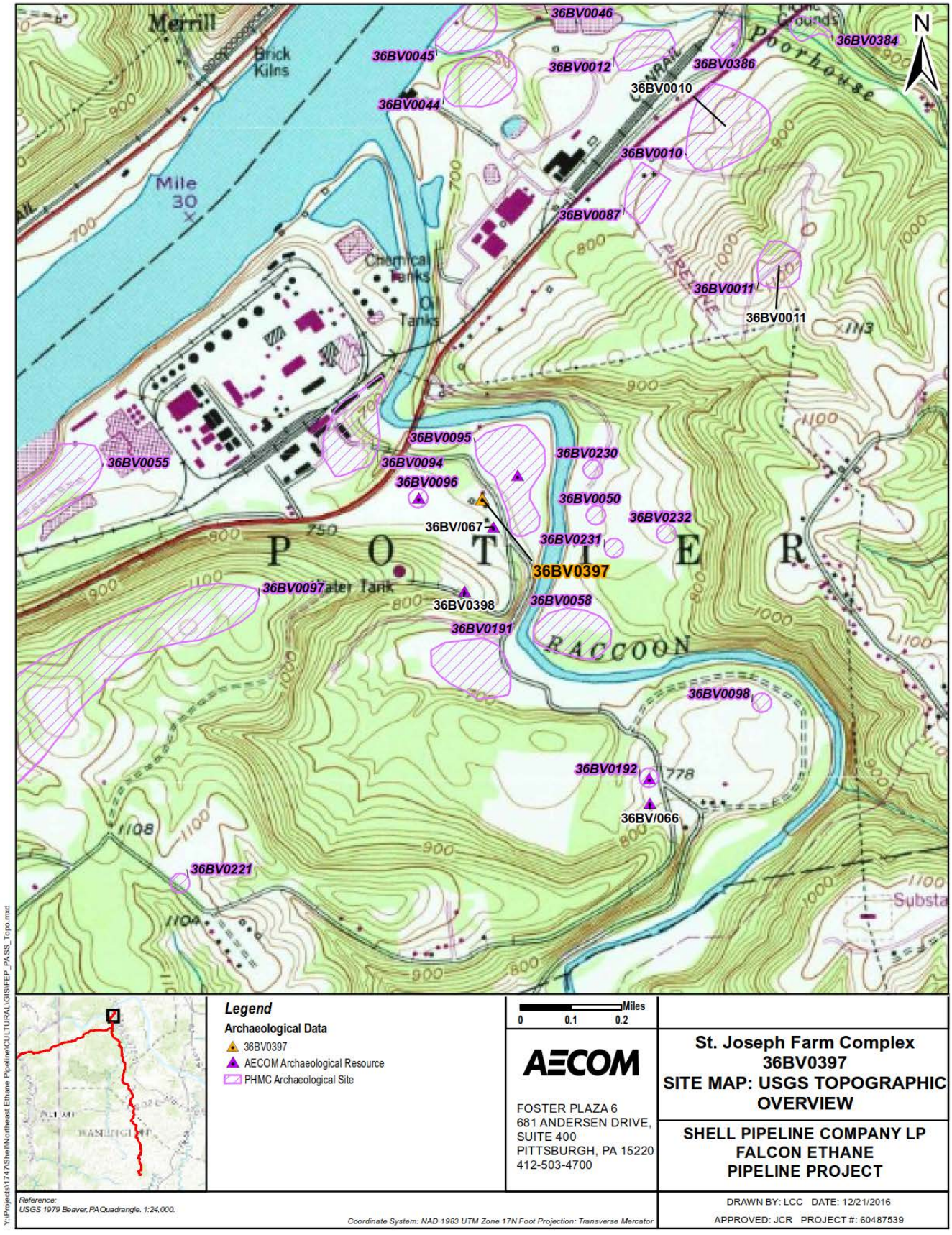
- ☐ Do not represent a stream confluence.
- ☒ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS The farmstead complex dates back to the nineteenth century (Ames and Barker 1860) and continued to be in use throughout the twentieth century. Aerial photography of the area from 1939, 1958, and 1967 confirms the presence of the farm during this time. The twentieth century farmstead complex is likely associated with the St. Joseph Lead Company Experimental Farm. The St. Joseph Lead Company constructed a zinc smelter within Monaca, PA in 1931 (St. John Lead Co. 1964) and operated it until it was bought out by Horsehead Corporation sometime after 1987 (McKee 1992). Only a few miles away, the St. Joseph Lead Co. operated a 470-acre experimental farm in an attempt to prove that, "you could have productive farming in the shadow of a major manufacturing plant." The livestock raised at the farm was then butchered and served in the company cafeteria every month (Tronzo 1987). The removal of this farmstead complex occurred sometime between 1969 and 1993, as is evidenced by further aerial photography. Archaeological investigations in Beaver County, Pennsylvania, Site BVPo004-FC1, yielded a total of eight historical artifacts. These artifacts have dates that primarily span from the late nineteenth century to the present. The assemblage consists of stoneware, window glass, bottle glass, and a nail. The material was recovered from two shovel test pits. All radials were negative (n=16).

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


Merrill
Brick Kilns
Mile 30
Chemical Tanks
Oil Tanks
Poorhouse
Ground
Water Tank
RACCOON
Substa
36BV0046
36BV0045
36BV0012
36BV0384
36BV0386
36BV0044
36BV0010
36BV0087
36BV0011
36BV0095
36BV0230
36BV0055
36BV0094
36BV0096
36BV0050
36BV0232
36BV/067
36BV0231
36BV0397
36BV0398
36BV0058
36BV0191
36BV0098
36BV0192
36BV/066
36BV0221
N
Legend
Archaeological Data
36BV0397
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
St. Joseph Farm Complex
36BV0397
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

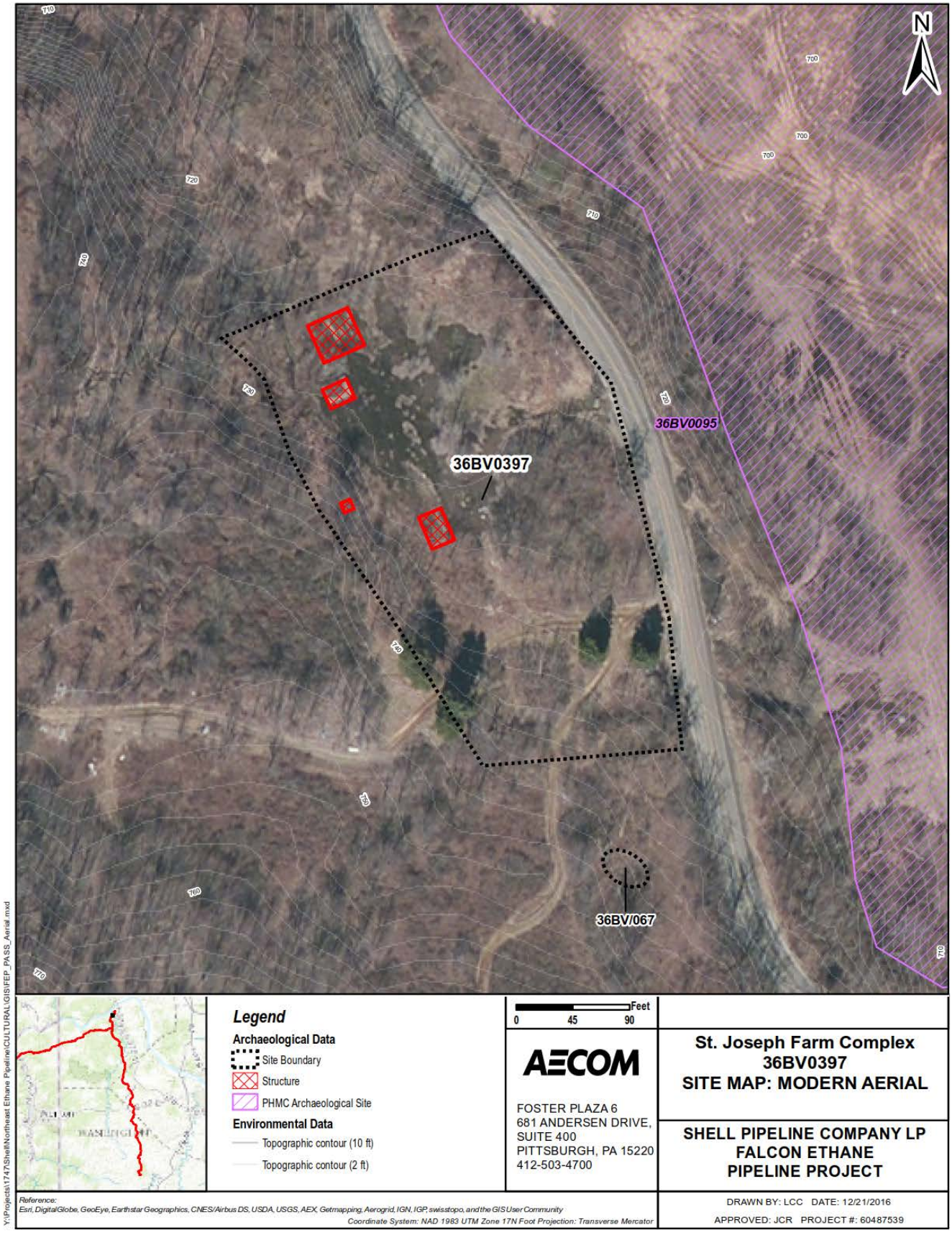

N
36BV0095
36BV0397
36BV/067
Legend
Archaeological Data
Site Boundary
Structure
PHMC Archaeological Site
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
0 45 90 Feet
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
St. Joseph Farm Complex
36BV0397
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of BVPo004-FC1 site area from STP B18, facing west. Note concrete foundation (center left).

Photo 2. General view of BVPo004-FC1 site area from B15, facing west.

Photo 3. General view of environment surrounding BVPo004-FC1 site area, from B11, facing east.

Table 1. BVPo004-FC1 Historic artifact assemblage

H/P	Group	Ceramic	Glass	Metal	Total
Historic	Household	2	3	0	5
	Architectural	0	2	1	3

Photo 4. Stoneware sherds with Albany-type slip (exterior) recovered from BVPo004-FC1.

Photo 5. Stoneware sherds with Albany-type slip (interior) recovered from BVPo004-FC1.

Photo 6. Household glass, machine-made, recovered from BVPo004-FC1.

Photo 7. Unidentified nail recovered from BVPo004-FC1.

Bibliography

Ames, N.S. and William J. Barker
1860 *Map of Lawrence and Beaver Counties*. Philadelphia, PA. Electronic document, https://www.loc.gov/item/2006626004.

McKee, Katharine
1992 "Monaca Smelter ranks high as polluter third of four parts zinc operations face challenges." *The Morning Call*, August 11, 1992.

St. John Lead Co.
1964 "Hail, to the fourth estate," *Beaver County Times*, November 7, 1964.

Tronzo, Joe
1987 "Farming experiment proved worthwhile," *Beaver County Times*, August 12, 1987.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Beaver EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4500369.30m N EASTING 555157.21m E

OWNER Shell Chemical Appalachia ADDRESS _____

TAX PARCEL ID 73-173-0308.003 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME Raccoon Ridge SITE NUMBER 36BV0398 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Beaver TWP. Potter NEAREST TOWN Monaca

Site Characteristics

SITE AREA 4143 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition:

STRATIFIED? ☐ UNKNOWN ☐ NO
☒ YES : ☒ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☒ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☐ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☒ Woodland
  - ☒ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☒ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
1	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar

Quantity	Historic Features
	Cemetery
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed

Quantity	Historic Features
	Fortification
	Foundation
	Ice House
	Iron Furnace
	Kiln
	Midden

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Millrace
	Monument/Boundary Marker
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit

Quantity	Historic Features
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox

Quantity	Historic Features
	Standing Building or Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
49	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
23	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
1	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
2	Chipped Stone Tools	Chert
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
22	Fire Cracked Rock	Sandstone
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
1	Hammerstones	Sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
2	Non-Artifactual Bone or Antler	Bone
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
49	Stone Debitage	Chert
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
1	Early Woodland Points	chert
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Gilpin silt loam, 15 to 25 percent slopes SOIL MAPPING UNIT GnD

Most common other mapped SOIL UNIT(S) within 500 meters MoB, WeF (may list two)

MAP ELEVATION 840 ft SLOPE PERCENTAGE 22 SLOPE DIRECTION North

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pa-Pennsylvanian Allegheny Group Most predominant other BEDROCK(S) within 5 km Pcc-Pennsylvanian Casselman Formation, Pcg-Pennsylvanian Glenshaw Formation

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☒ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Open field consisting of cut grass and dense poison ivy, sourounded by deciduous trees PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION None, site is now off of alignment

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Raccoon Creek

NEAREST WATER: Distance 140 meters Elevation 700ft Direction South Order 1 Type Ephemeral Stream

2ND NEAREST WATER: Distance 220 meters Elevation 680ft Direction East Order 4 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,515 meters Elevation 680ft Direction Northwest Order below confluence 9

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

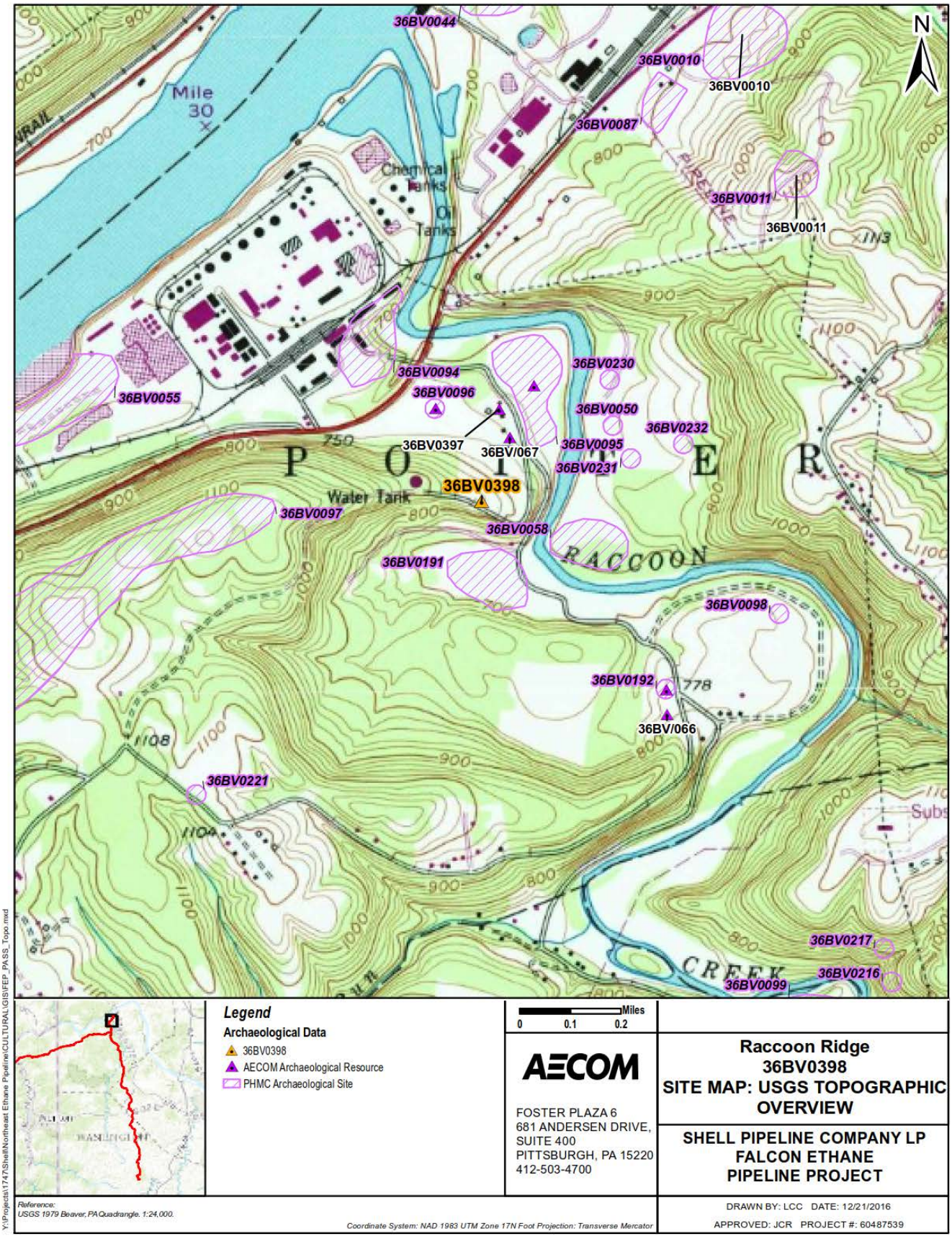
- ☐ Do not represent a stream confluence.
- ☒ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS Initial archaeological investigations in Beaver County, Pennsylvania identified the location of a prehistoric Native American site on a ridge top above Raccoon Creek. The Raccoon Ridge site yielded a total of 75 artifacts, two organic specimens, and a thermal pit feature. The artifacts include two bone fragment, one diagnostic projectile point, sandstone hammer stone and anvil, and a sidescraper. The projectile point was a Rossville projectile point that typically dates within the Early Woodland Period (ca. 2,800 – 1,000 B.P.), but have been associated to the Late Archaic/Transitional Archaic Period (4,850 – 2,800 B.P.) as well. Some sources push the date of the Rossville points to the Late Archaic. The assemblage also FCR and debitage. The artifacts were recovered on the ridge overlooking a slight bend in Raccoon Creek. No archaeological sites were previously documented at this location. Artifacts were recovered from a total of 20 shovel tests.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


36BV0044
36BV0010
36BV0010
36BV0087
Mile 30
Chemical Tanks
Oil Tanks
36BV0011
36BV0011
36BV0230
36BV0094
36BV0096
36BV0055
36BV0050
36BV0232
36BV0397
36BV/067
36BV0095
36BV0231
36BV0398
Water Tank
36BV0097
36BV0058
36BV0191
RACCOON
36BV0098
36BV0192
778
36BV/066
36BV0221
36BV0217
36BV0216
36BV0099
CREEK
N
Legend
Archaeological Data
36BV0398
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
Raccoon Ridge
36BV0398
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

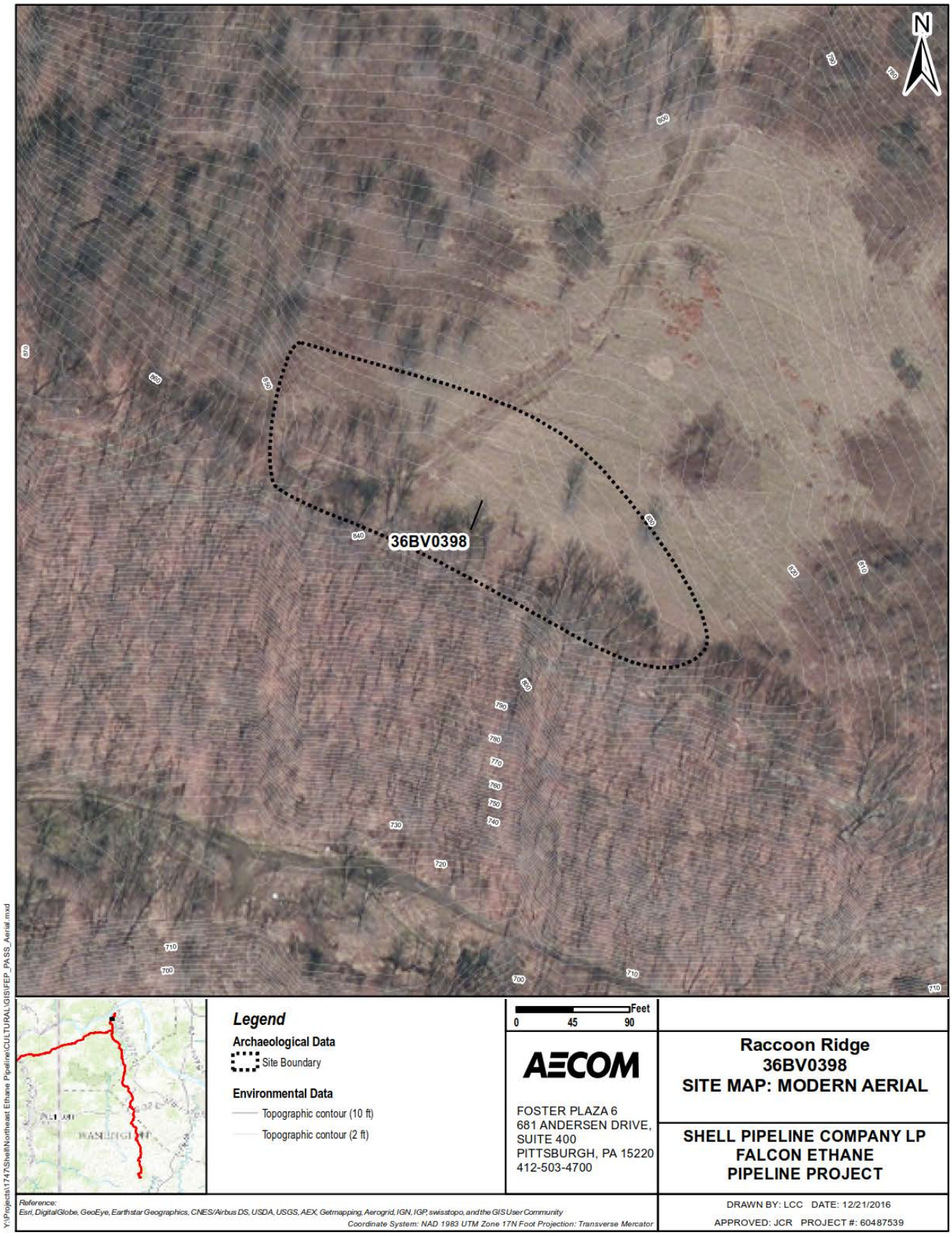

N
36BV0398
Legend
Archaeological Data
Site Boundary
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
0 45 90 Feet
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
Raccoon Ridge
36BV0398
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of BVPo011-NA1 near E10, facing south.

Photo 2. General view of BVPo011-NA1 near D8, facing northeast.

Photo 3. General view of BVPo011-NA1 near D8, facing east.

Photo 4. General view of BVPo011-NA1 near C8, facing northeast.

Photo 5. Hearth feature (STP E7 + 5meters west) with scale, facing south.

Photo 6. Hearth feature (STP E7 + 5meters west), facing south.

Photo 7. Hearth feature (STP E7 + 5meters west) plan view, facing south.

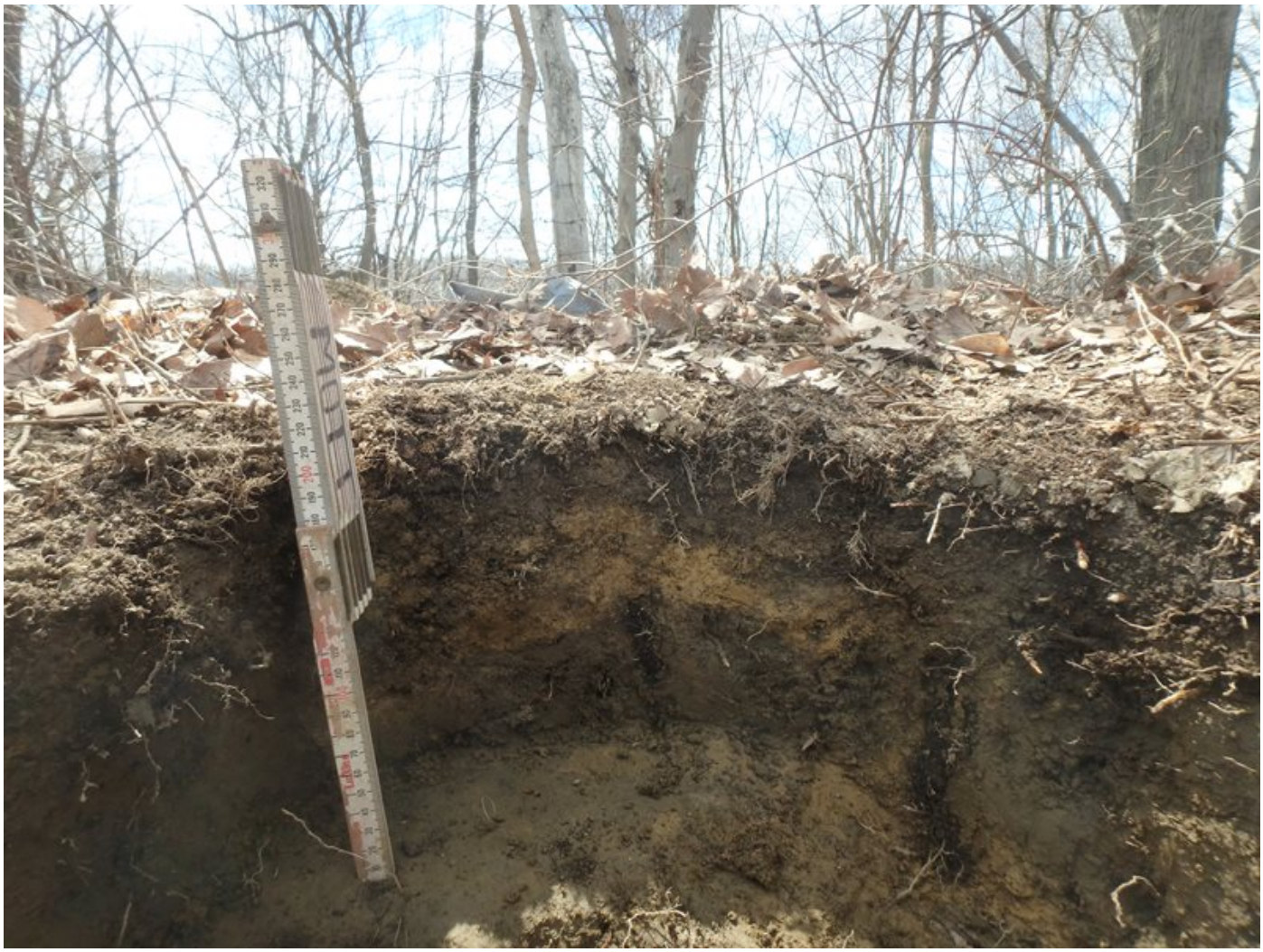


Photo 8. Hearth feature (STP E7 + 5meters west) profile with scale, facing south.

Photo 9. Hearth feature (STP E7 + 5meters west) profile, facing south.

Photo 10. Road bisecting site BVPo011-NA1 from C2, facing southwest.

Photo 11. Road bisecting BVPo011-NA1, facing southeast.

Table 1. Prehistoric artifact assemblage at BVPo004-NA1

H/P	Group	Chert	Chalcedony	Total
Prehistoric	**Debitage**	14	1	**15**
	Tool	1	0	**1**

Table 2. BVPo004-NA1 Historic artifact assemblage

H/P	Group	Ceramic	Total
Historic	**Household**	1	1

Photo 12. Sample of debitage flakes recovered from site BVPo011-NA1.

Photo 13. Rossville Projectile Point recovered from site BVPo011-NA1.

Photo 14. Sidescraper recovered from site BVPo011-NA1.

Photo 15. Stone anvil recovered from hearth feature within site BVPo011-NA1. Note indentation.

Photo 16. Hammerstone recovered from hearth feature within site BVPo011-NA1.

Photo 17. Fire cracked rock (FCR) recovered from hearth feature within site BVPo011-NA1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Beaver EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4500068.71m N EASTING 555110.29m E

OWNER Shell Chemical Appalachia ADDRESS _____

TAX PARCEL ID 73-173-0308.003 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Potentially eligible - Criteria D

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-BVSh001-HS1 SITE NUMBER 36BV0399 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Beaver TWP. Shippingport NEAREST TOWN Shippingport

Site Characteristics

SITE AREA 254 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☐ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☒ 1800-1900
  - ☐ 1800-1825 ☒ 1825-1850
  - ☒ 1850-1875 ☒ 1875-1900
- ☒ 1900-
  - ☒ 1900-1925 ☒ 1925-1950
  - ☒ 1950-1975 ☒ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☒ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES ____ _____ ± ____ _____

____ _____ ± ____ _____

FEATURES? ☐ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric ____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel

Quantity	Historic Features
	Cellar
	Cemetery
	Cistern
	Dam
	Ditch

Quantity	Historic Features
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation
	Ice House

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker
	Oil Well
	Other, Historic _____
	Oven

Quantity	Historic Features
	Pipeline
	Pit
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck

Quantity	Historic Features
	Springhouse/Springbox
	Standing Building or Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts **(Complete inventories may be attached, but please complete the summaries below)**

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural		2	1				
	Personal							
	Kitchen	**3**						
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	

Quantity	Prehistoric Ceramics	Temper
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset	

Quantity	Prehistoric Ceramics	Temper
	Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
2	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Gilpin-Upshur, 3 to 8 percent slopes SOIL MAPPING UNIT GpB

Most common other mapped SOIL UNIT(S) within 500 meters GnC, GvC (may list two)

MAP ELEVATION 1,100 ft SLOPE PERCENTAGE 0 SLOPE DIRECTION _____

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pcg: Pennsylvanian Glenshaw Formation Most predominant other BEDROCK(S) within 5 km Pa: Pennsylvanian Allegheny F

PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☒ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order stream)	☐ Ridge Top
☐ Terrace (Pleistocene along river)		☐ Saddle

IMMEDIATE VEGETATION Short grass PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION None, site is now off of alignment

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED D MAJOR STREAM Ohio River MINOR STREAM Mill Creek

NEAREST WATER: Distance 250 meters Elevation 1100ft Direction West Order 1 Type Perennial Stream

2ND NEAREST WATER: Distance 480 meters Elevation 980ft Direction East Order 1 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 673 meters Elevation 900ft Direction West Order below confluence 1

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

☒ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☐ Site is located upstream from the confluence, but not between the 2 water sources.
☐ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS - A total of six historic artifacts were recovered from five STPs situated on a hilltop. The hill top consists of short cut grasses (Photo 1 and Photo 2). Three of these artifacts are diagnostic and include one fragment of Bristol-slipped stoneware (ca. 1880-1925) and two fragments of Ironstone ware (ca. 1840-2016) (Table 1).

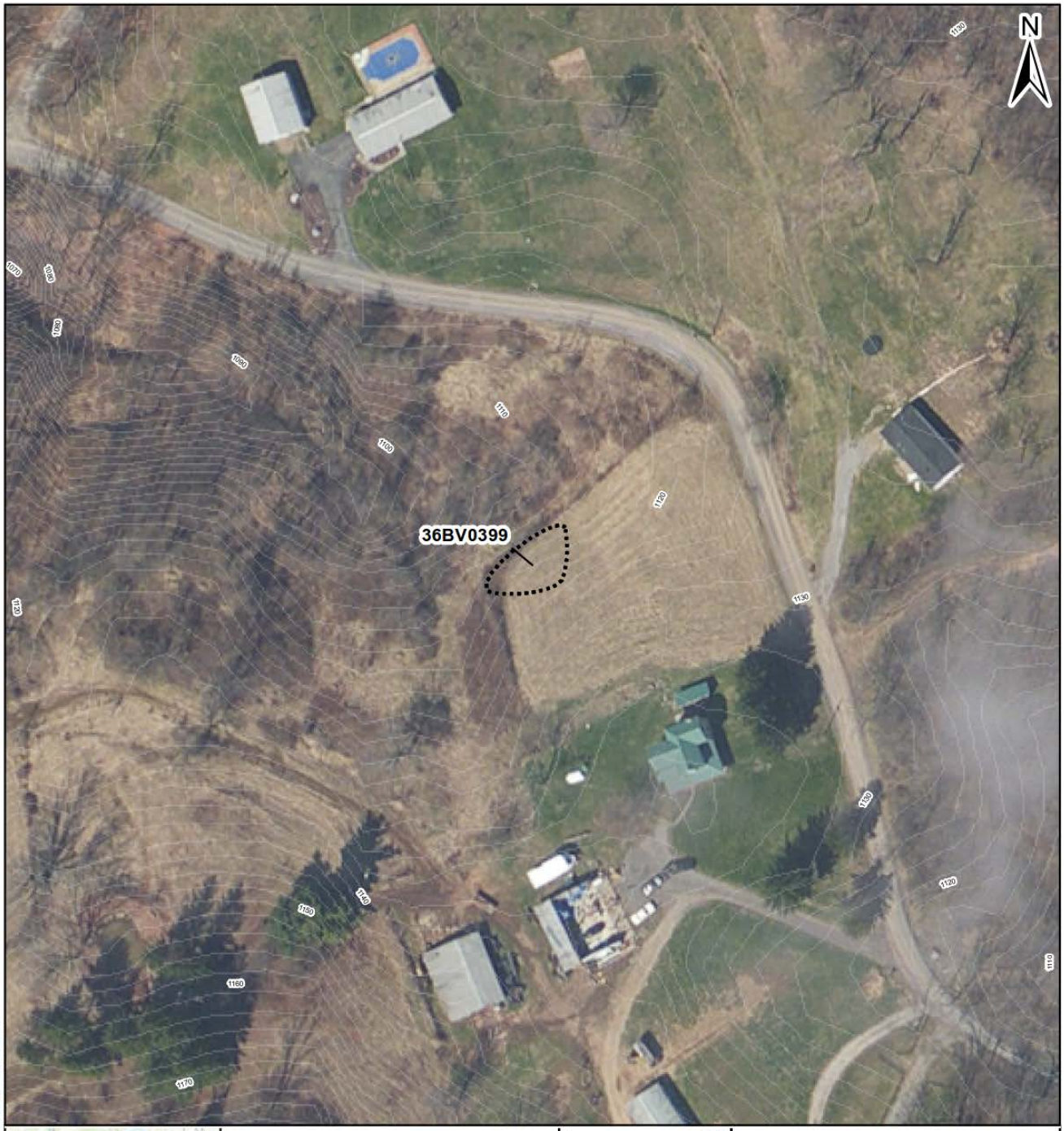
ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified

☐ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.

36BV0267
36BV0004
36BV0089
36BV0003
36BV0399
36BV/068
36BV/069
INDEFINITE BDY
PIPELINE
McCleary
N
Legend
Archaeological Data
36BV0399
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36BV0399
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd



Legend

Archaeological Data

Site Boundary

Environmental Data

Topographic contour (10 ft)

Topographic contour (2 ft)

Feet
0 45 90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of BVSh001-HS1 site area, facing east.

Photo 2. General view of BVSh001-HS1 site area, facing west.

Table 1. BVSh001-HS1 Historic artifact assemblage

H/P	Group	Ceramic	Glass	Metal	Total
Historic	Household	3	2	0	5
	Hardware	0	0	1	1

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Hookstown EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4496260.00 m N EASTING 549268.00 m N

OWNER Michael L. Clancy ADDRESS _____

TAX PARCEL ID 50-003-0100.00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS _____

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION _____

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-WHCa003-ST1 SITE NUMBER 36WH1735 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____ ER# 2015-1839-042

COUNTY Washington TWP. Chartiers NEAREST TOWN Westland

Site Characteristics

SITE AREA 142 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: Extent of bridge beams and foundation

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☒ Systematic surface survey
- ☐ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☒ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery
	Cistern

Quantity	Historic Features
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation
	Ice House
	Iron Furnace

Quantity	Historic Features
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker
	Oil Well
1	Other, Historic Bridge footers and steel beams

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy
	Quarry/Mine
	Railroad

Quantity	Historic Features
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or Structure
	Still

Quantity	Historic Features
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Newark silt loam SOIL MAPPING UNIT Nw

Most common other mapped SOIL UNIT(S) within 500 meters DoC, UkF (may list two)

MAP ELEVATION 1020 ft SLOPE PERCENTAGE 2% SLOPE DIRECTION Southeast

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK PCC Pennsylvanian Casselman Most predominant other BEDROCK(S) within 5 km PM (may list two)

PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☒ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Deciduous trees with thick to medium understory PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION None, site is now off alignment.

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Westland Run

NEAREST WATER: Distance 0meters Elevation 1,020ft Direction N/A Order 2nd Type Perennial

2ND NEAREST WATER: Distance 280 meters Elevation 1,027ft Direction Northwest Order 1st Type Perennial

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 258 meters Elevation 1,026ft Direction Northwest Order below confluence 2nd

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

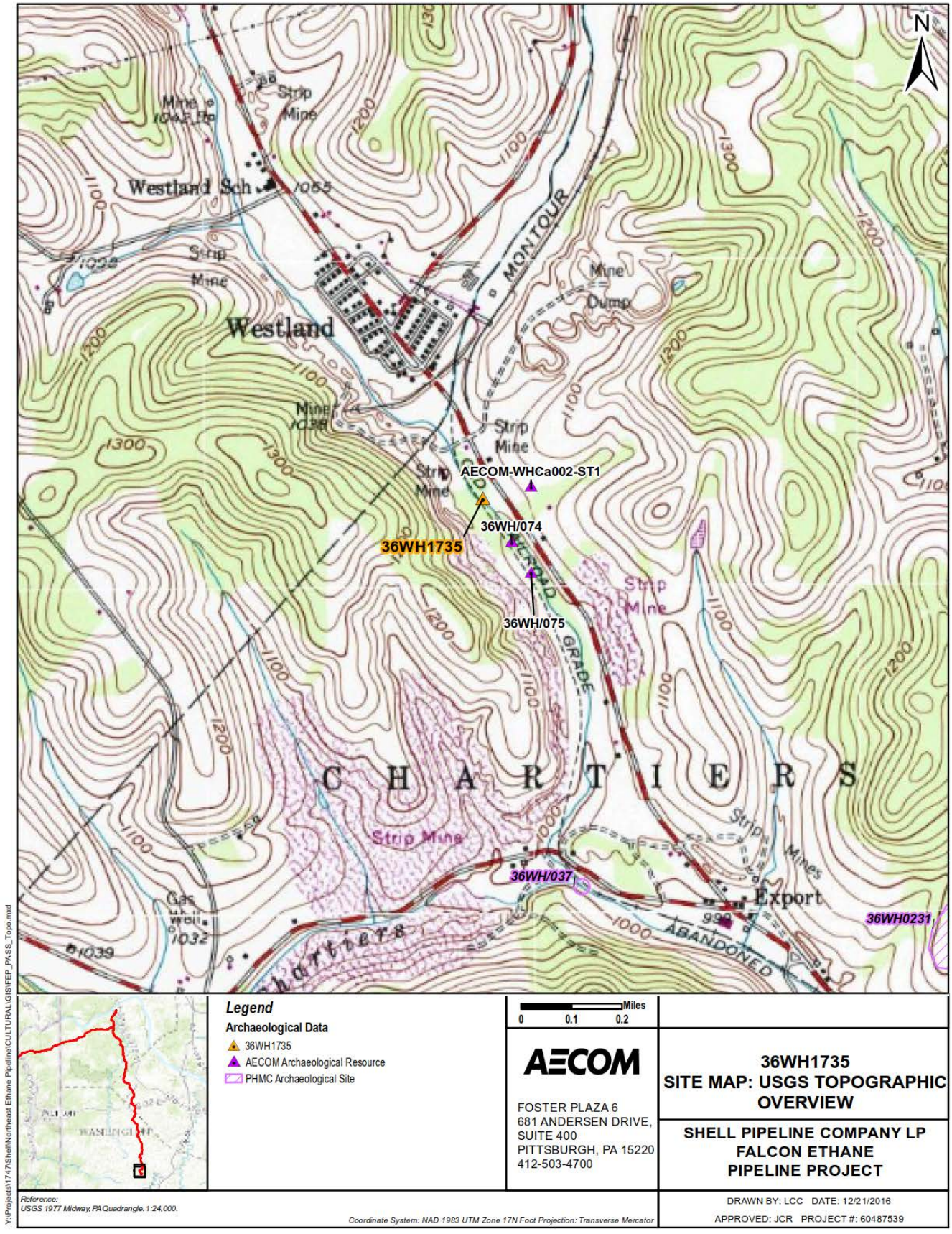
- ☐ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☒ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS Four concrete bridge footers and rusted steel beams were identified in WHCa003-ST1. These structural items are lying across Westland Run and stretch twelve feet. The concrete footers appear to be in their original location. However, the steel beams do not, as they are laying diagonal across the footers and appear very precarious. No artifacts were recovered within 15 meters (49.21 feet) of the structure. The bridge remains are located in an area that had previously been heavily mined, and are located to the east of a utility corridor.

ATTACHMENTS:

- ☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
- ☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
- ☐ Site plans.
- ☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
Westland
Westland Sch
Strip Mine
Mine Dump
MONTOUR
AECOM-WHCa002-ST1
36WH/074
36WH1735
36WH/075
GRADE
C H A R T I E R S
Strip Mine
36WH/037
Export
ABANDONED
36WH0231
Gas Well
1039
1032
Legend
Archaeological Data
36WH1735
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1735
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

N
36WH1735
1040
1030
1020
1050
1060
1070
1080
1090
1100
Legend
Archaeological Data
Site Boundary
Structure
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
Feet
0 45 90
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1735
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of WHCa003-ST1, facing southeast.

Photo 2. Close-up of WhCa003-ST1, facing northwest. Note debris.

Photo 3. General view of WHCa003-ST1, facing northeast. Note steel beams and concrete footers.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4458208 m N EASTING 562140 m E

OWNER Thomas C. Kotyk, Todd J. Kotyk, Gregory A. Kotyk & Tammy L. Kotyk ADDRESS _____

TAX PARCEL ID 170-009-00-00-0005-02 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION _____

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-WHMo002-HS1 SITE NUMBER 36WH1736 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____ ER# 2015-1839-042

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Southview

Site Characteristics

SITE AREA 127 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☒ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural		**3**	**10**				
	Personal							
	Kitchen		**1**					
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified		**4**					

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
2	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Glenford silt loam, 3-8% slopes SOIL MAPPING UNIT GdB

Most common other mapped SOIL UNIT(S) within 500 meters DoC, CaB (may list two)

MAP ELEVATION 1,121 ft SLOPE PERCENTAGE 3% SLOPE DIRECTION South

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pm, Pennsylvanian Monongahela Most predominant other BEDROCK(S) within 5 km PPw, Pcc (may list two)

PHYSIOGRAPHIC PROVINCE Waynesburg Hills (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☒ Saddle

IMMEDIATE VEGETATION Agricultural field (hay) with sparse deciduous trees east of the site

PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Millers Run

NEAREST WATER: Distance 264meters Elevation 1,098ft Direction West Order 1 Type Perennial

2ND NEAREST WATER: Distance 355meters Elevation 1,075ft Direction South Order 2 Type Perennial

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 396meters Elevation 1,080ft Direction Southwest Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

☐ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☒ Site is located upstream from the confluence, but not between the 2 water sources.
☐ Site is located downstream from the confluence.
☐ None of the above apply.

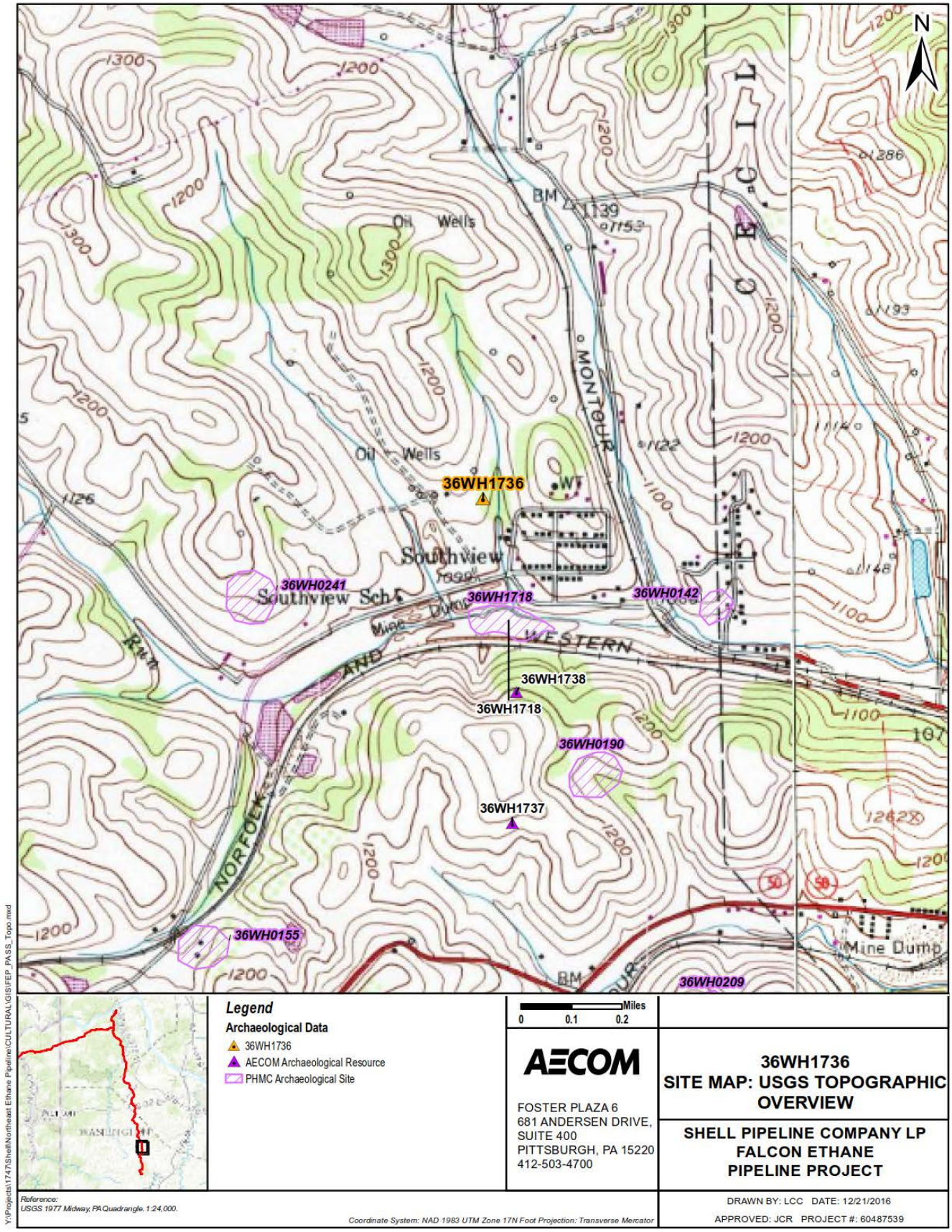
COMMENTS Site WHMo002-HS1 is located in an agricultural field west of Southview, the company town associated with Montour Mine No. 1. A total of eighteen artifacts were recovered from WHMo002-HS1. Artifacts recovered include one bottle glass sherd, three window glass sherds, two cut nails (1805-1900), eight unidentified nails, and four unidentified glass sherds. Artifacts were recovered from four shovel test pits, three of which were radials at 5-meter (16.40- feet) and 10-meter (32.80 feet) intervals. The remaining radials (n=5) were negative. The artifact scatter is most likely a disturbed context, as it was recovered in close proximity to a power line. However, the site is also located less than half a mile away from Montour Mine #1.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.

SITE NAME _____ SITE NUMBER 36- - DATE .



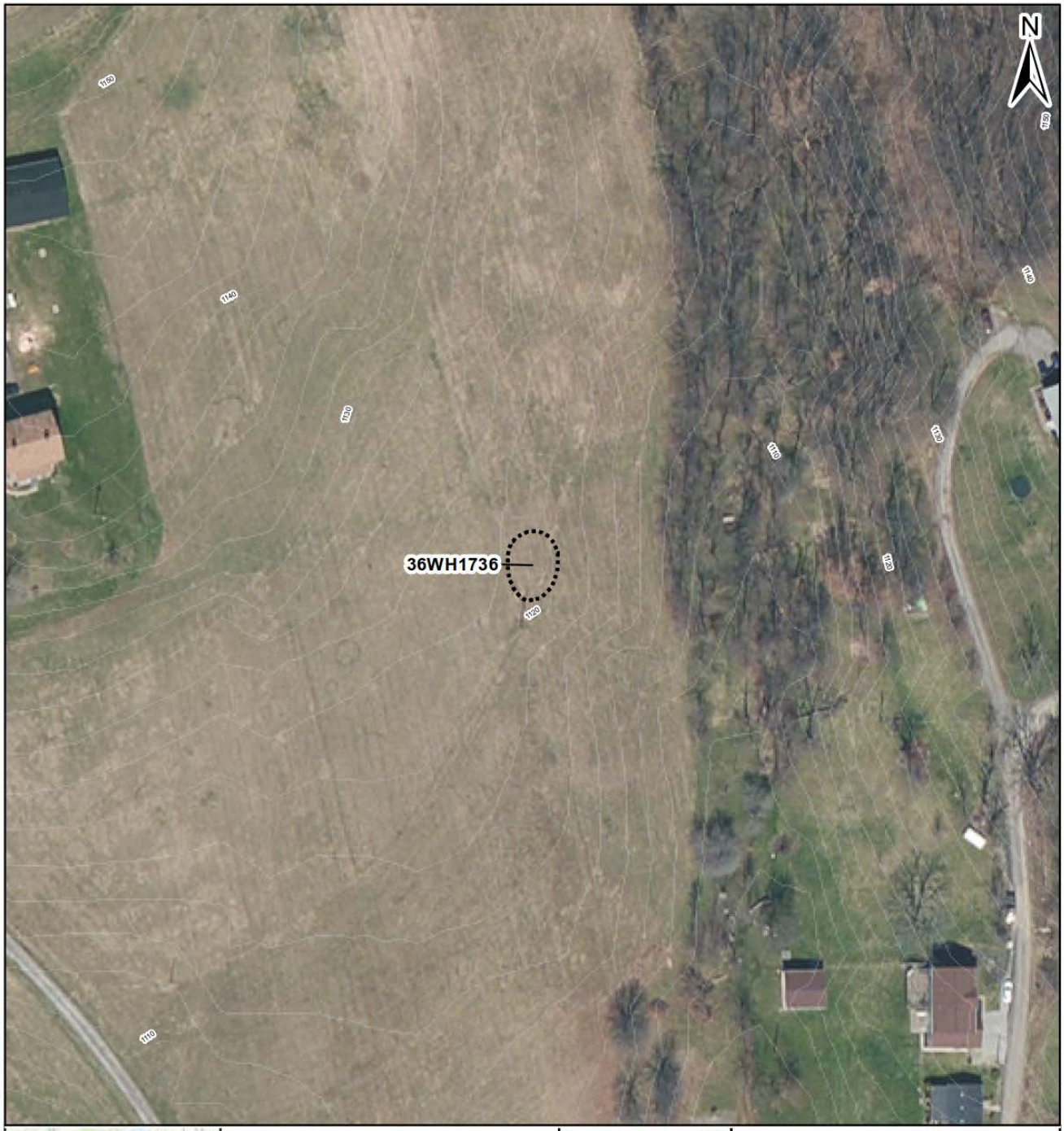

N
36WH1736
150
140
130
120
110
Legend
Archaeological Data
Site Boundary
Environmental Data
Topographic contour (10 ft)
Topographic contour (2 ft)
Feet
0 45 90
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1736
SITE MAP: MODERN AERIAL
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of agricultural field near WHMo002-HS1, facing north.

Table 1. WHMo002-HS1 Historic artifact assemblage

H/P	Group	Glass	Metal	Total
Historic	**Architectural**	3	10	13
	Household	1	0	1
	Indeterminate	4	0	4

Photo 2. Cut nail recovered from WHMo002-HS1.

Photo 3. Unidentified nails recovered from WHMo002-HS1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION ____ UP ____ ACROSS ____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4464639 m N EASTING 562742 m E

OWNER Turk Family, Inc. ADDRESS _____

TAX PARCEL ID 460-012-00-0040-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Ineligible

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-WHMo003-ST1 SITE NUMBER 36WH1737 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

_____ ER# 2015-1839-042

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Hickory

Site Characteristics

SITE AREA 84.87 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☒ Systematic surface survey
- ☐ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☒ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
8	Other, Historic Cut Stone Support Blocks
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or Structure

Quantity	Historic Features
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☐ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified							

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Dormont-Culleoka complex, 15 to 25 percent slopes SOIL MAPPING UNIT DtF

Most common other mapped SOIL UNIT(S) within 500 meters WeD, DoC (may list two)

MAP ELEVATION 1230 ft SLOPE PERCENTAGE 10% SLOPE DIRECTION South

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK PPw-Permian and Pennsylvanian Waynesburg Formation

Most predominant other BEDROCK(S) within 5 km Pm-Pennsylvanian Monongahela Group (may list two)

PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☒ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Deciduous trees with medium understory

PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartier Creek

NEAREST WATER: Distance 10 meters Elevation 1230ft Direction East Order 1 Type Ephemeral stream

2ND NEAREST WATER: Distance 277 meters Elevation 1120ft Direction South Order 2 Type Perennial Stream

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 616 meters Elevation 1120ft Direction South Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

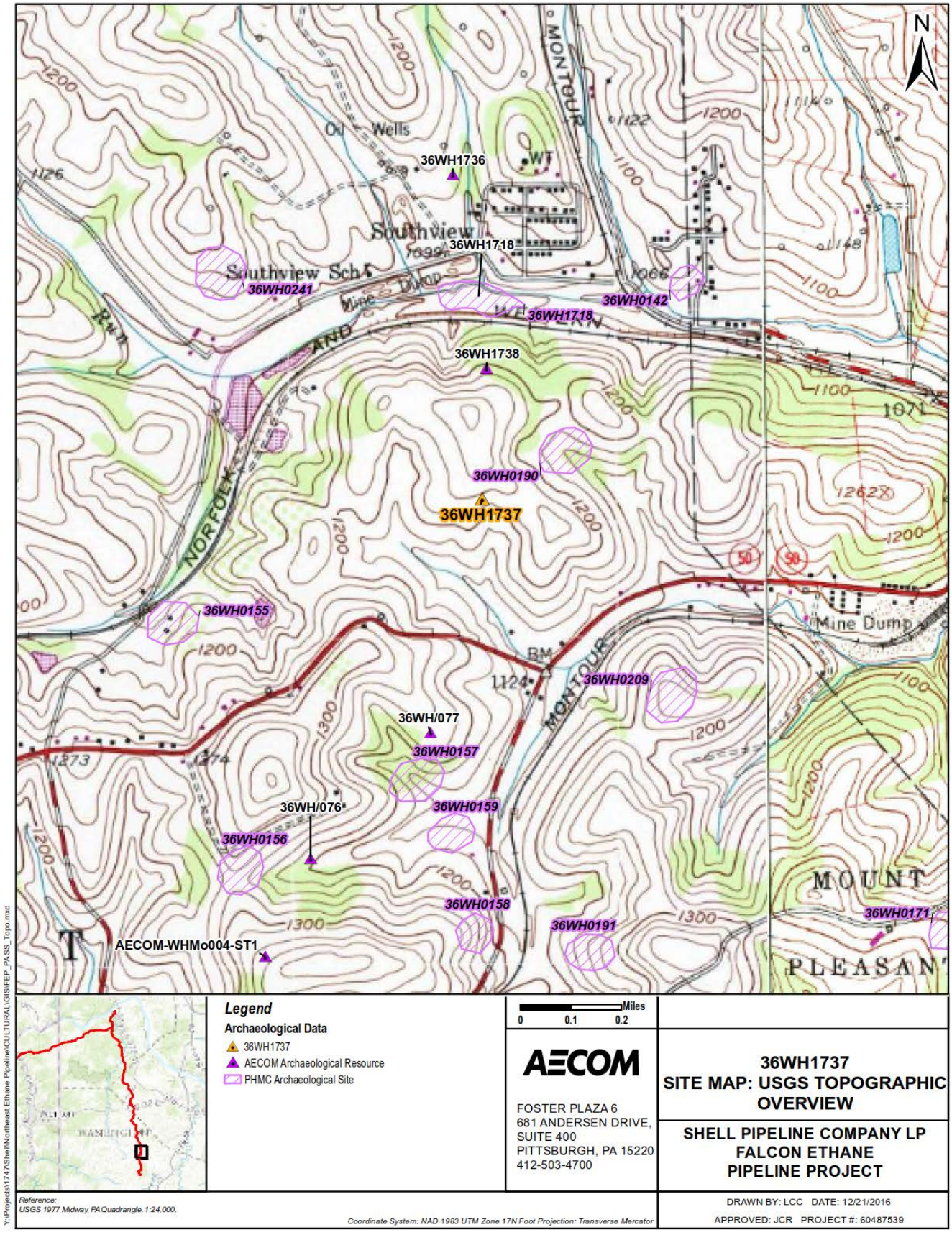
- ☒ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☐ None of the above apply.

COMMENTS No artifacts were recovered in association with these pillars. Site WHMo003-ST1 consists of eight cut stone risers and two piles of tabular stones (Photographs 1-10). There were a total of eight cut stone risers that formed the south and east walls of a previous barn structure (Photographs 4-10). Two diffuse piles of tabular stone were identified within the structural boundaries. The area of the stone risers and stone piles measures approximately 17-meters by 10.5-meters (55.8-feet by 34.2-feet). Site WHMo003-ST1 is possibly connected to Montour Mine No. 1, as it is located south and uphill of the mine. A planned HDD will avoid the site. Therefore, the site will not be affected by construction.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
Oil Wells
36WH1736
WT
Southview
36WH1718
Southview Sch
36WH0241
36WH0142
36WH1718
36WH1738
36WH0190
36WH1737
36WH0155
36WH0209
36WH/077
36WH0157
36WH0159
36WH/076
36WH0156
36WH0158
36WH0191
AECOM-WHMo004-ST1
36WH0171
Mine Dump
MONTOUR
NORFOLK AND
MOUNT
PLEASAN
Legend
Archaeological Data
36WH1737
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1737
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle, 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

SITE NAME _____ SITE NUMBER 36- - DATE .

Photo 1. General view of WHMo003-ST1 site area, facing southwest.

Photo 2. General view of WHMo003-ST1 site area, facing southeast.

Photo 3. General view of WHMo003-ST1 site area, facing northeast.

Photo 4. Cut stone pier 1, facing northwest.

Photo 5. Cut stone pier 2, facing southwest.

Photo 6. Cut stone pier 3, facing northeast.

Photo 7. Cut stone pier 4, facing northeast.

Photo 8. Cut stone pier 5, facing northeast.

Photo 9. Cut stone pier 6, facing northeast.

Photo 10. Cut stone pier 7, facing southwest.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4463602.00 m EASTING 562828.00 m

OWNER Philip J. Falconi ADDRESS _____

TAX PARCEL ID 460-012-00-00-0021-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Eligible - Criteria A and D

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-WHMo003-ST2 SITE NUMBER 36WH1738 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) _____

ER# 2015-1839-042

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Hickory

Site Characteristics

SITE AREA 62.54 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: Extent of structural remnants

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☒ Systematic surface survey
- ☐ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☐ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☒ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☐ 1825-1850
  - ☐ 1850-1875 ☐ 1875-1900
- ☐ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☐ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES ____ _____ ± ____ _____

____ _____ ± ____ _____

FEATURES? ☐ NONE FOUND ☒ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric ____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar

Quantity	Historic Features
	Cemetery
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed

Quantity	Historic Features
	Fortification
	Foundation
	Ice House
	Iron Furnace
	Kiln
	Midden

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Millrace
	Monument/Boundary Marker
	Oil Well
11	Other, Historic Brick Pedestals
	Oven
	Pipeline
1	Pit
	Posthole/Postmold

Quantity	Historic Features
	Privy
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or Structure

Quantity	Historic Features
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

SITE NAME _____ SITE NUMBER 36- - DATE .

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
	Stone Debitage	
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural							
	Personal							
	Kitchen							
	Arms/Weapons							
	Activities							
	Industrial (Tools)							
	Electrical							
	Furniture							
	Unidentified		**1**					

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	

Quantity	Prehistoric Ceramics	Temper
	Vinette I (Interior-Exterior Cordmarked Large Temper-Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset	

Quantity	Prehistoric Ceramics	Temper
	Phase	
	Oak Hill Series	
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Culleoka channery silt loam, 15 to 25 percent slopes SOIL MAPPING UNIT CaD

Most common other mapped SOIL UNIT(S) within 500 meters WeC, DtF (may list two)

MAP ELEVATION 1230 ft SLOPE PERCENTAGE 6.8 SLOPE DIRECTION North

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK PPw-Permenian/Pennsylvanian Waynesburg Formation

Most predominant other BEDROCK(S) within 5 km Pm-Pennsylvanian Monongahela Group (may list two)

PHYSIOGRAPHIC PROVINCE Waynesburg Hills Section (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE N/A)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☐ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☒ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order	☐ Ridge Top
☐ Terrace (Pleistocene along river)	stream)	☐ Saddle

IMMEDIATE VEGETATION Sparse deciduous tree cover PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Proposed pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Chartier Creek
NEAREST WATER: Distance 276 meters Elevation 1100 ft Direction North Order 3 Type Perennial Stream
2ND NEAREST WATER: Distance 317 meters Elevation 1120ft Direction South Order 1 Type Perennial Stream
NEAREST PERENNIAL STREAM CONFLUENCE:
Distance 293 meters Elevation 1120ft Direction North Order below confluence 2
RELATIONSHIP OF FIRST AND SECOND WATER (check one)

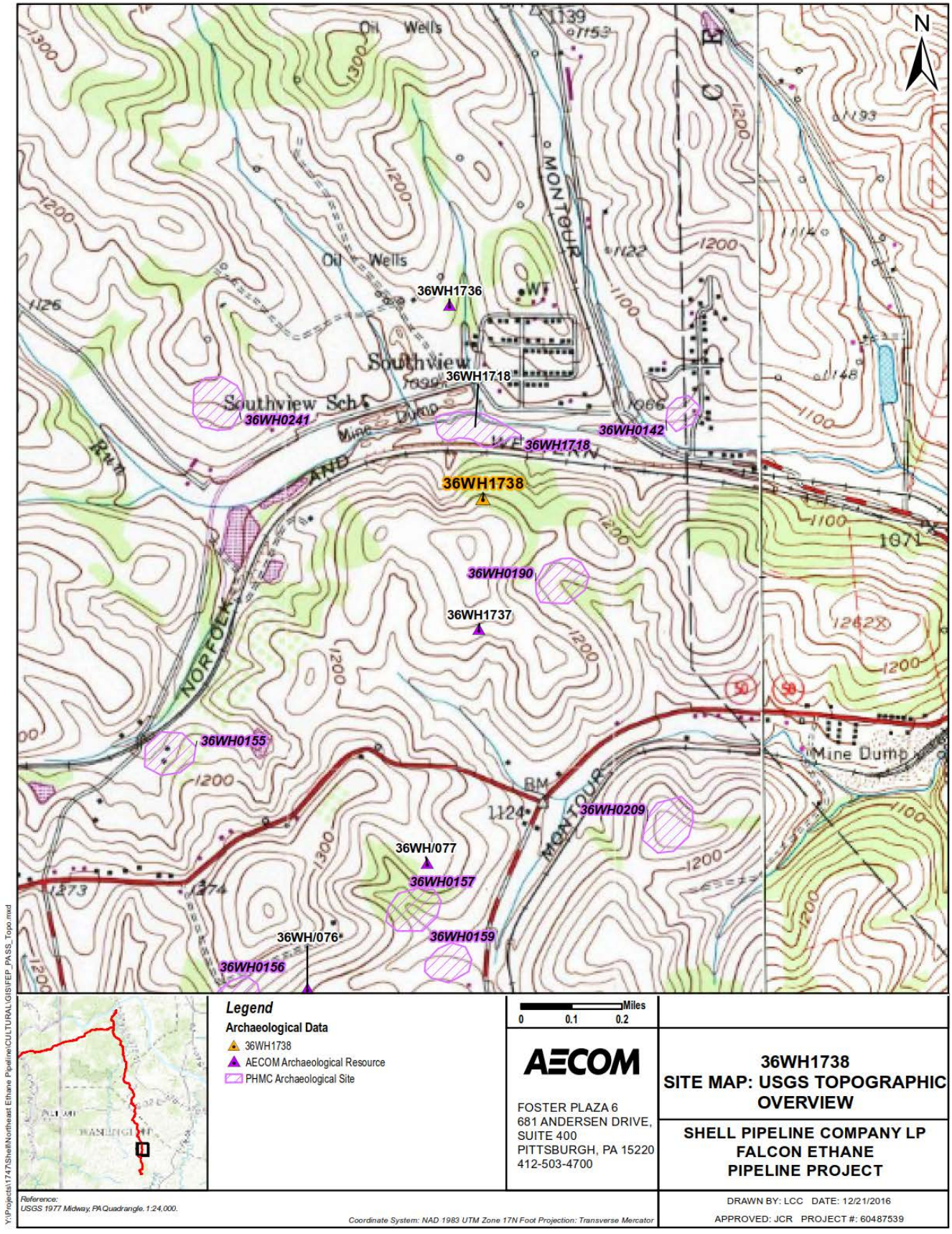
- ☐ Do not represent a stream confluence.
- ☐ Site is located upstream from the confluence and between the 2 water sources.
- ☐ Site is located upstream from the confluence, but not between the 2 water sources.
- ☐ Site is located downstream from the confluence.
- ☒ None of the above apply.

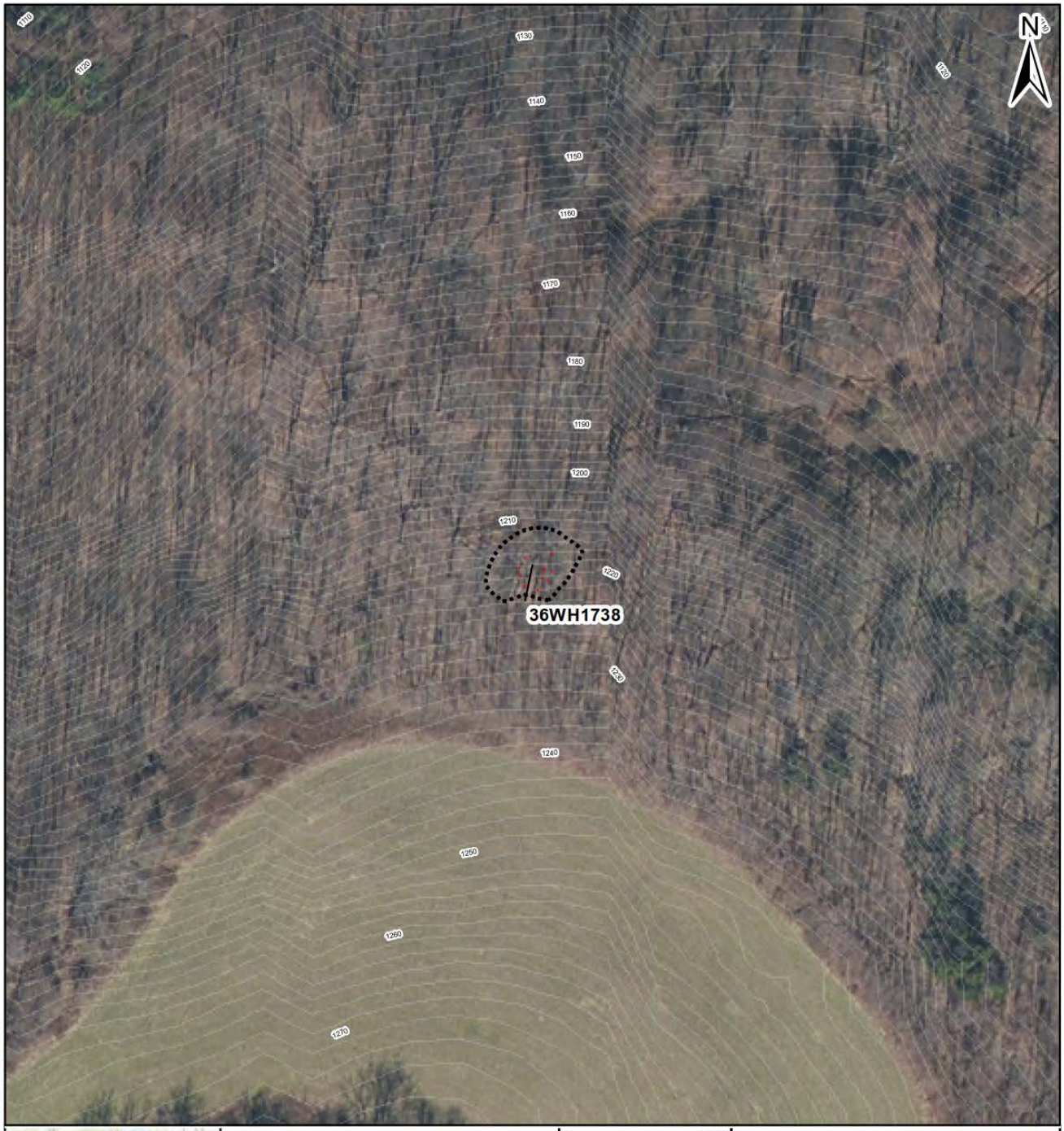
COMMENTS Initial archaeological investigations at WHMo003-ST2, Washington County, Pennsylvania yielded one historical artifact. The artifact provides no accurate date range. The assemblage consists of one cobalt blue vessel glass fragment. It was recovered from one shovel test pit. Archaeological investigations also identified eleven brick pillars and a fire pit. These pillars are possibly associated with Montour Mine No. 1, as this site is located on a hilltop southeast of the complex.

ATTACHMENTS:

- ☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
- ☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
- ☐ Site plans.
- ☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
Oil Wells
Oil Wells
Southview
Southview Sch
Mine Dump
Mine Dump
MONTOUR
MONTOUR
NORFOLK AND
36WH1736
36WH1718
36WH0241
36WH1718
36WH0142
36WH1738
36WH0190
36WH1737
36WH0155
36WH0209
36WH/077
36WH0157
36WH/076*
36WH0159
36WH0156
1300
1200
1100
1000
1126
1139
1153
1122
1114
1193
1148
1066
1071
1273
1274
1124
BM
Legend
Archaeological Data
36WH1738
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1738
SITE MAP: USGS TOPOGRAPHIC OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd



Legend

Archaeological Data
- Site Boundary
- Structure

Environmental Data
- Topographic contour (10 ft)
- Topographic contour (2 ft)

Feet
0 45 90

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1738
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of WHMo003-ST2 site area, facing northwest.

Photo 2. General view of WHMo003-ST2 site area, facing southwest.

Photo 3. General view of WHMo003-ST2 site area, facing southeast.

Photo 4. Close-up of hearth within WHMo003-ST2, facing north.

Photo 5. Brick pedestal 1, facing southeast.

Photo 6. Brick pedestal 2, facing southwest.

Photo 7. Brick pedestal 3, facing northeast.

Photo 8. Brick pedestal 4, facing southwest.

Photo 9. Brick pedestal 5, facing northwest.

Photo 10. Brick pedestal 6, facing southwest.

Photo 11. Brick pedestals 7 and 9, facing south.

Photo 12. Brick pedestal 8, facing northeast.

Photo 13. Brick pedestal 10, facing southwest.

Photo 14. Brick pedestal 11, facing southwest.

Photo 15. Small brick pedestals, facing north.

Table 1. WHMo003-ST2 Historic artifact assemblage

H/P	Group	Glass	Total
Historic	**Household**	1	1

Photo 16. Household glass recovered from WHMo003-ST2.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1954 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17 T NORTHING 4463990.00 m EASTING 562850.00 m

OWNER Markwest Liberty Midstream & Resources, LLC ADDRESS _____

TAX PARCEL ID 460-012-00-00-0014-00 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Eligible - Criteria A and D

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/17/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

PENNSYLVANIA ARCHAEOLOGICAL SITE SURVEY

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Identification and Location

SITE NAME AECOM-WHMo006-HS1 SITE NUMBER 36WH1739 UPDATE? Y☐ / N☒

PUBLISHED REFERENCES (Including compliance reports.) ER# 2015-1839-042

COUNTY Washington TWP. Mount Pleasant NEAREST TOWN Midway

Site Characteristics

SITE AREA 940 SQUARE METERS BASIS: ☐ COMPUTED ON THE GROUND OR ☒ COMPUTED ON MAP

Basis for site boundary definition: _____

STRATIFIED? ☐ UNKNOWN ☒ NO
☐ YES : ☐ TOP STRATUM VISIBLE OR ☐ BURIED UNDER STERILE

SITE DISCOVERY METHOD: (check primary one only) ☐ Previously Recorded (update)

- ☐ Unknown
- ☐ Collector interview
- ☐ Collector interview with field check
- ☐ Non-systematic surface survey
- ☐ Systematic surface survey
- ☒ Systematic shovel testing
- ☐ Remote sensing
- ☐ Auger probing
- ☐ Shovel testing
- ☐ Systematic test units
- ☐ Extensive excavation

POTENTIAL FOR ORGANIC PRESERVATION: (check one)

- ☒ Unknown
- ☐ None
- ☐ Low potential for organic preservation
- ☐ Conditions favorable for organic preservation, none documented
- ☐ Organic material recovered, unknown quality of preservation
- ☐ Organic material recovered, poor quality of preservation
- ☐ Organic material recovered, good quality of preservation

SITE TYPE:

Prehistoric

- ☐ Unknown function surface scatter less than 20m radius
- ☐ Open habitation, prehistoric
- ☐ Rockshelter/Cave
- ☐ Quarry
- ☐ Lithic Reduction
- ☐ Village (including historic Indian)
- ☐ Shell Midden
- ☐ Earthwork
- ☐ Petroglyph/Pictograph
- ☐ Burial Mound
- ☐ Cemetery
- ☐ Other specialized aboriginal site
- ☐ Isolated fluted point locus
- ☐ Isolated find (diagnostic artifact)
- ☐ Paleontological site
- ☐ Path

Historic

- ☐ Historic and Prehistoric
- ☐ Domestic Site
- ☐ Military Site
- ☐ Industrial Site
- ☐ Shipwreck Site
- ☐ Commercial Site
- ☐ Religious Site
- ☒ Unknown/other/multiple types
- ☐ Farmstead

SITE NUMBER OR KEY NUMBER OF ANY ASSOCIATED RESOURCES: _____

SITE NAME _____ SITE NUMBER 36- - DATE .

CHRONOLOGY (check all that apply)

Prehistoric

- ☒ Unknown Prehistoric
- ☐ Paleoindian
  - ☐ Early ☐ Middle ☐ Late
- ☐ Archaic
  - ☐ Early ☐ Middle ☐ Late
- ☐ Transitional Tradition
- ☐ Woodland
  - ☐ Early ☐ Middle ☐ Late
- ☐ Proto Historic

Historic

- ☐ Unknown Historic
- ☐ Contact-Historic
- ☐ 1550-1600
- ☐ 1600-1650
- ☐ 1650-1700
- ☐ 1700-1800
  - ☐ 1700-1725 ☐ 1725-1750
  - ☐ 1750-1775 ☐ 1775-1800
- ☐ 1800-1900
  - ☐ 1800-1825 ☒ 1825-1850
  - ☒ 1850-1875 ☒ 1875-1900
- ☒ 1900-
  - ☐ 1900-1925 ☐ 1925-1950
  - ☐ 1950-1975 ☐ 1975+

BASIS FOR CHRONOLOGICAL INTERPRETATION (check all that apply):

- ☐ Diagnostic lithic artifacts
- ☒ Ceramic types
- ☐ Historical Documentation (attach bibliography)
- ☐ Radiocarbon Dates (list below)

RADIOCARBON DATES _____ _____ ± _____ _____

_____ _____ ± _____ _____

FEATURES? ☒ NONE FOUND ☐ YES (identify below) If count is not known, use a "P" for present.

Prehistoric

Quantity	Prehistoric Features
	Present, Prehistoric
	Bundle Burials
	Burial Mound
	Burials
	Burned Areas
	Cache Pits
	Circular Houses
	Cremation Burials
	Earthworks

Quantity	Prehistoric Features
	Extended Burials
	Fish Weir
	Flexed Burials
	Hearth/Thermal Feature
	House Pattern
	Longhouses
	Midden Areas
	Ossuary
	Other, Prehistoric _____

Quantity	Prehistoric Features
	Path
	Petroglyph/Pictograph
	Postmolds
	Quarry Pit
	Semi-Subterranean Structures (e.g. Keyhole Structures)
	Shell Heap
	Stockade
	Storage Pits/Trash Pits

Historic (Please include any **associated** features or buildings visible outside of the site areas)

Quantity	Historic Features
	Present, Historic
	Burial
	Canal Bed
	Canal Lock
	Canal Tunnel
	Cellar
	Cemetery

Quantity	Historic Features
	Cistern
	Dam
	Ditch
	Fenceline
	Flower Garden/Bed
	Fortification
	Foundation

Quantity	Historic Features
	Ice House
	Iron Furnace
	Kiln
	Midden
	Millrace
	Monument/Boundary Marker

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Historic Features
	Oil Well
	Other, Historic _____
	Oven
	Pipeline
	Pit
	Posthole/Postmold
	Privy

Quantity	Historic Features
	Quarry/Mine
	Railroad
	Road
	Root Cellar
	Shipwreck
	Springhouse/Springbox
	Standing Building or

Quantity	Historic Features
	Structure
	Still
	Vat
	Walk/Path
	Wall
	Water Well
	Wharf

Artifacts (Complete inventories may be attached, but please complete the summaries below)

ARTIFACT DATA RECOVERY METHOD:

- ☐ Non-provenienced
- ☐ Surface collection not representative of all artifacts
- ☐ Non-controlled excavation (i.e. artifact location not mapped and/or not all artifacts collected)
- ☐ Controlled surface collection
- ☒ Controlled excavation
- ☐ Representative sample of all artifacts (tools and/or debitage, etc.)
- ☐ Representative sample of tools only
- ☐ Estimate based on surface collections and/or excavation
- ☐ Estimate based on informant interview

LITHIC MATERIALS FOUND ON SITE:

Quantity	Material
	Argillite
	Chalcedony
1	Chert/Flint
	Crystal Quartz
	Diabase
	Diorite
	English Flint
	French Flint
	Granite

Quantity	Material
	Hematite
	Hornfels
	Ironstone
	Jasper
	Limestone/Dolomite
	Metabasalt/Greenstone
	Metasandstone
	Onondaga Chert
	Quartz

Quantity	Material
	Quartzite
	Rhyolite (Metarhyolite)
	Sandstone
	Shale
	Siltstone
	Slate
	Steatite
	Vanport Chert (Flint Ridge)
	Unidentified

ARTIFACT CATEGORIES (Use the comments section to list any artifacts not categorize in these tables. Include either exact quantities or relative as follows:

B	Less than 25
C	25 - 50
D	51 - 100

E	101 - 200
F	201 - 400
G	401 - 800

H	801 or More
I	Present, Quantity Unknown

J	Present, Common

Prehistoric (Include quantity by material type if appropriate, using the LITHIC list above.

Examples:

D	Stone Debitage	52 rhyolite / 26 chert
2	Grooved Axes	sandstone

Quantity	Prehistoric Artifact Types	Material Type
	Adzes	
	Antler & Bone Artifacts	
	Bannerstones	
	Celts	
	Ceramics (Prehistoric)	
	Chipped Stone Tools	
	Clay Pipes (Prehistoric)	
	Cordage	
	Core	
	Fire Cracked Rock	
	Gorgets/Pendants/Non-Utilitarian Lithics	
	Grooved Axes	
	Ground & Polished Stone Tools	
	Hammerstones	

Quantity	Prehistoric Artifact Types	Material Type
	Hoes	
	Human Bone	
	Netsinkers	
	Non-Artifactual Bone or Antler	
	Non-Artifactual Floral Remains	
	Non-Artifactual Shell	
	Pestles/Grinding/Pitted Stones	
	Shell Artifacts	
	Steatite Bowls/Fragments	
1	Stone Debitage	Chert
	Stone Pipes	
	Wooden Artifacts	

Historic (Include Quantities by Group as appropriate from table below):

		Material Class						
		Ceramic	Glass	Metal	Geological	Plastic	Biological	Composite
Functional Class	Architectural			**5**				
	Personal							
	Kitchen	**11**	**12**					
	Arms/Weapons							
	Activities							
	Industrial (Tools)	**1**						
	Electrical							
	Furniture							
	Unidentified		**1**					

SITE NAME _____ SITE NUMBER 36- - DATE .

DIAGNOSTIC ARTIFACTS

Prehistoric Projectile Points (Include counts by material types, using the LITHIC list above.

Examples:

7	Broadspears	5 rhyolite / 2argillite
2	Lehigh/Snook Kill	chert

Quantity	Prehistoric Point Types	Material
----------	Paleoindian Points	----------
	Pre-Clovis	
	Clovis	
	Mid-Paleo (Folsom)	
	Late Paleo (Plano)	
	Hardaway-Dalton	
	Fluted Point	
----------	Early Archaic Points	----------
	Palmer	
	Kirk Corner-notched	
	St. Charles	
	Thebes	
	Charleston	
----------	Middle Archaic Points	----------
	Bifurcate Points	
	Middle Archaic Notched/Stemmed Points	
	MacCorkle	
	Saint Albans	
	LeCroy	
	Otter Creek	
	Kanawha	
	Kirk Stemmed	
----------	Late Archaic Points	----------
	Piedmont Tradition	

Quantity	Prehistoric Point Types	Material
	Laurentian Tradition	
	Steubenville	
----------	Transitional Tradition	----------
	Koens Crispin/Savannah River	
	Broadspears	
	Lehigh/Snook Kill	
	Perkiomen	
	Susquehanna	
----------	Early Woodland Points	----------
	Adena (Stemmed)	
	Meadowood	
	Helgramite	
	Orient	
----------	Middle Woodland Points	----------
	Raccoon Notched	
	Snyders	
	Basal Notched	
	Jacks Reef	
	Fox Creek	
----------	Late Woodland Points	----------
	Triangles (Late Woodland)	
----------	Proto Historic Points	----------
	Triangles (Proto Historic)	

Prehistoric Ceramic Types (Include counts by temper types - if not implied in name - using the LITHIC list above. Additional options include “grit” , “grog” or “shell.”.)

Quantity	Prehistoric Ceramics	Temper
----------	Early Woodland Ceramics	----------
	Accokeek Ware	
	Adena Plain	
	Grit Tempered Flat Bottom	
	Half-Moon Cordmarked	
	Interior-Exterior Cordmarked Small Temper-Conical/Globular	
	Marcy Creek	
	Steatite Tempered	
	Vinette I (Interior-Exterior Cordmarked Large Temper-	

Quantity	Prehistoric Ceramics	Temper
	Conical/Globular)	
----------	Middle Woodland/Middle to Late Woodland Ohio Valley Ceramics	----------
	Abbott Zoned	
	Grit Tempered Exterior Cordmarked-Conical/Globular	
	Grit Tempered Net Impressed-Conical/Globular	
	Point Peninsula Series	
	Shell Tempered Net Impressed-Conical/Globular	

SITE NAME _____ SITE NUMBER 36- - DATE .

Quantity	Prehistoric Ceramics	Temper
	Watson Cord Marked	
----------	Late Woodland Ceramics	----------
	Blue Rock Valanced	
	Chance Series	
	Chautauqua Cordmarked	
	Clemson Island/Princess Point Series	
	Early Ontario Iroquois	
	Erie Series	
	Funk Incised	
	Keyser Cordmarked	
	Lancaster Incised	
	Mahoning Cord Marked	
	McFate Incised	
	McFate/Quiggle Undifferentiated	
	Meade Island Series	
	Minguannan Series	
	Monongahela (Undifferentiated)	
	Monongahela Cordmarked-Late Woodland	
	Monongahela Incised	
	Monongahela Plain	
	Monongahela Somerset Phase	
	Oak Hill Series	

Quantity	Prehistoric Ceramics	Temper
	Overpeck	
	Owasco Series	
	Page Cordmarked	
	Potomac Creek Cord Impressed	
	Proto-Susquehannock	
	Quiggle Incised	
	Richmond Incised	
	Schultz Incised	
	Shenks Ferry (Undifferentiated)	
	Shenks Ferry Cordmarked	
	Shenks Ferry Incised (Blue Rock Phase)	
	Shenks Ferry Incised (Stewart Phase)	
	Shepard Cordmarked	
	Strickler Cordmarked	
	Susquehannock (Undifferentiated)	
	Townsend	
	Tribal Series	
	Washington Boro Incised	
	Whittlesey	
	Wyoming Valley Series	

Historic Diagnostics (For comparable site data, using general diagnostic categories. **More specific identification related to decoration, form, or markings should be included in the comments or site inventory**).

Quantity	Historic Artifact
Ceramics	
	Whieldon
	Creamware
	Pearlware (All Decoration Types)
	Transitional Whiteware
7	Ironstone
	Chinese Porcelain
	English Porcelain
	American Stoneware (Blue and Gray)
	European Stoneware (white salt-glazed, English Brown, Rhenish, Fulham, Nottingham)
	Redware (All types)

Quantity	Historic Artifact
	Basalt
	European Redware (Jackfield, dry-bodied)
	Tin-Glazed Earthenware
	Yellowware (Rockingham)
	Clay pipes
Glass	
	Blown Bottle Base
	Machine-Made Bottle Base (Owen's Scar)
	Snapcase Bottle
	Pressed Glass
Metal	
	Wrought Nails

Quantity	Historic Artifact
	Cut Nails
	Wire Nails
Arms & Weapons	
	French Gunflint
	English Gunflint
	Gun parts
	Ammunition
Miscellaneous	
	Coin
	Button
	Bead
	Toy

SITE NAME _____ SITE NUMBER 36- - DATE .

Physical Data and Site Condition

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site.

On site SOIL ASSOCIATION Dormont silt loam, 15-25% slopes SOIL MAPPING UNIT DoD

Most common other mapped SOIL UNIT(S) within 500 meters CaD, DtD (may list two)

MAP ELEVATION 1,114 ft SLOPE PERCENTAGE 6% SLOPE DIRECTION East

SLOPE BASIS ☐ MEASURED ON SITE ☒ ESTIMATED FROM SOIL SURVEY OR MAP

BEDROCK Pm, Pennsylvanian Monongahela Most predominant other BEDROCK(S) within 5 km PPw, Pcc (may list two)

PHYSIOGRAPHIC PROVINCE Waynesburg Hills (If within 10 km of a Physiographic Province boundary, name the neighboring PHYSIOGRAPHIC PROVINCE Pittsburgh Low Plateau)

TOPOGRAPHIC SETTI NG (check the one that best describes the setting):

☐ Island	☒ Lower Hillslope	☐ Hill/Ridge Toe
☐ Beach	☐ Middle Hillslope	☐ Upland Flat
☐ Floodplain	☐ Upper Hillslope	☐ Hilltop
☐ Rise in Floodplain	☐ Stream Bench (along low order stream)	☐ Ridge Top
☐ Terrace (Pleistocene along river)		☐ Saddle

IMMEDIATE VEGETATION Low cut grasses within a pastural field PERCENTAGE OF SITE STILL INTACT Unknown

PRIMARY DISTURBANCE Pipeline construction POSSIBILITY OF DESTRUCTION Yes

Water Drainage Area Information

Instructions available. Please fill out as much as is known, especially those items that are measured or observed on site. Distance to water is particularly critical.

SUBBASIN Ohio River WATERSHED F MAJOR STREAM Ohio River MINOR STREAM Robinson Run

NEAREST WATER: Distance 641 meters Elevation 1,044ft Direction Northeast Order 2 Type Perennial

2ND NEAREST WATER: Distance 966 meters Elevation 1,217ft Direction South Order 1 Type Perennial

NEAREST PERENNIAL STREAM CONFLUENCE:

Distance 1,457 meters Elevation 1,055ft Direction Northwest Order below confluence 2

RELATIONSHIP OF FIRST AND SECOND WATER (check one)

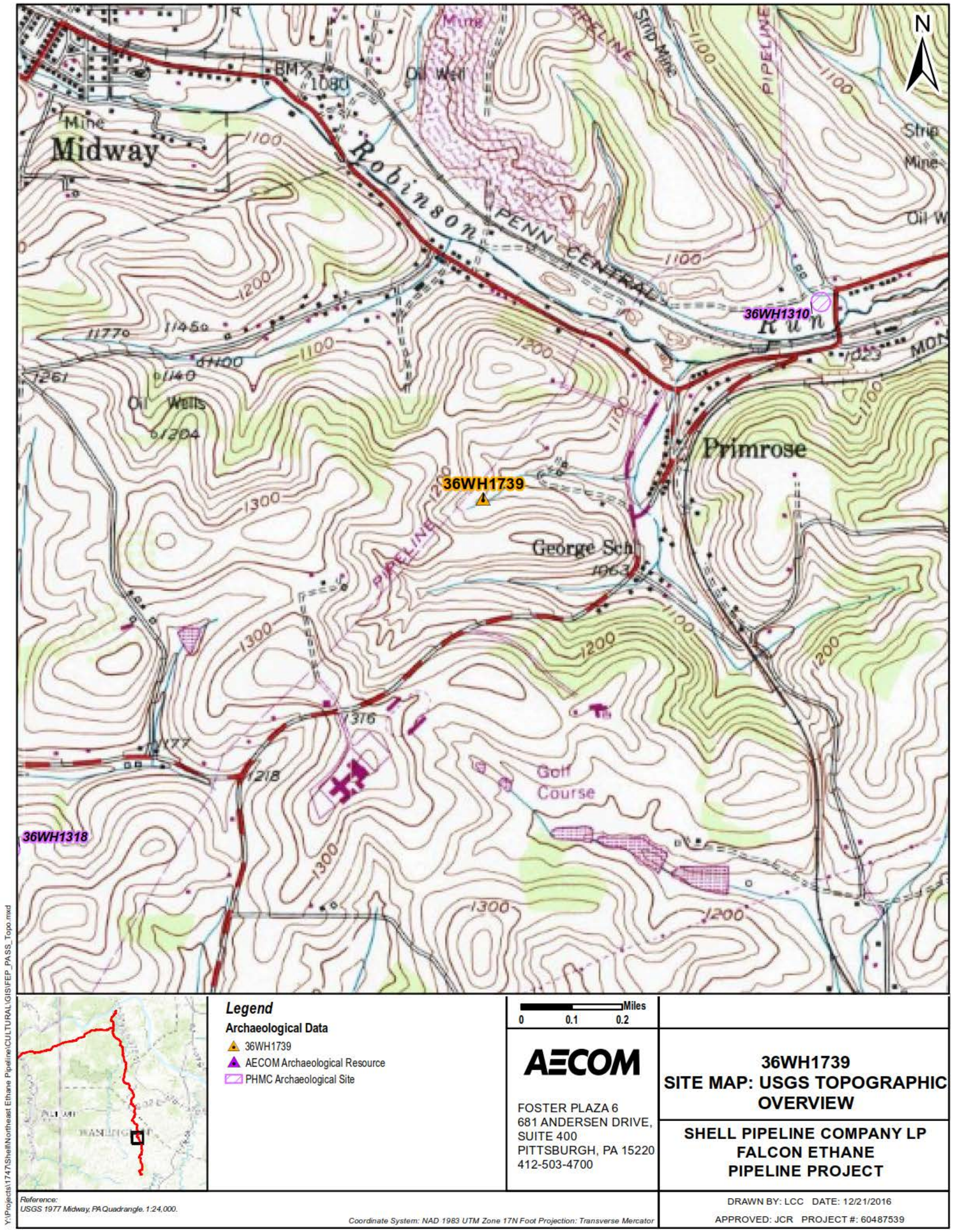
☒ Do not represent a stream confluence.
☐ Site is located upstream from the confluence and between the 2 water sources.
☐ Site is located upstream from the confluence, but not between the 2 water sources.
☐ Site is located downstream from the confluence.
☐ None of the above apply.

COMMENTS Site WHMo006-HS1 consists of a historic artifact scatter. The site is located in an agricultural field and pasture at the base of a hill. A wooden fence line and farm road runs through the middle of the site. A total of thirty historic artifacts were recovered from ten STPs in WHMo006-HS1, six of which were radials. Twenty-four radials were also excavated within the site in order to identify a site boundary. However, these were negative. Artifacts recovered included seven ironstone sherds (1840-present), three whiteware fragments (1820-present), one coarse earthenware sherd, two machine made bottle fragments (1890-present), one solarized amethyst glass sherd (?-1920), eight bottle glass fragments, one lamp glass fragment, five unidentified nails, one ceramic sewage pipe fragment, and one unidentified glass sherd. These artifacts date the site from the mid-nineteenth century to the present. One prehistoric flake was recovered from WHMo006-HS1. The flake could not be dated. The site is most likely redeposited historic fill from a pond or drainage.

ATTACHMENTS:

☒ 7.5 MIN USGS map with **site boundaries** indicated and quad name identified
☒ Photographs or drawings of diagnostic artifacts with scale. Identify lithic material per artifact using description or key.
☐ Site plans.
☒ General site photographs or excavation photographs or drawings may also be included.

We encourage the inclusion of as many illustrations as possible.


N
Midway
Mine
BM×
1080
Oil Well
Mine
PIPELINE
Strip Mine
1100
PIPELINE
Strip
Mine
Oil W
Robinson
PENN CENTRAL
Run
36WH1310
1200
1177
1145
1100
1261
1140
Oil Wells
1204
1023
MON
Primrose
36WH1739
1300
George Sch
1063
PIPELINE
1316
1177
1218
Golf
Course
36WH1318
1300
1200
Legend
Archaeological Data
36WH1739
AECOM Archaeological Resource
PHMC Archaeological Site
Miles
0 0.1 0.2
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700
36WH1739
SITE MAP: USGS TOPOGRAPHIC
OVERVIEW
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT
Reference:
USGS 1977 Midway, PA Quadrangle, 1:24,000.
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator
DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Topo.mxd

Legend

Archaeological Data

Site Boundary

Environmental Data

Topographic contour (10 ft)

Topographic contour (2 ft)

Feet
0 45 90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\FEP_PASS_Aerial.mxd

Photo 1. General view of WHMo006-HS1 site area, facing south.

Photo 2. General view of WHMo006-HS1 site area, facing west.

Photo 3. General view of WHMo006-HS1 site area, facing north.

Photo 4. General view of WHMo006-HS1 site area, facing east.

Table 1. WHMo006-HS1 Historic artifact assemblage

H/P	Group	Ceramic	Glass	Metal	Total
Historic	**Architectural**	0	0	5	5
	Household	11	12	0	23
	Hardware	1	0	0	1
	Indeterminate	0	1	0	1

Table 2. Prehistoric artifact assemblage at WHMo006-HS1

H/P	Group	Lithic	Total
Prehistoric	**Debitage**	1	**1**

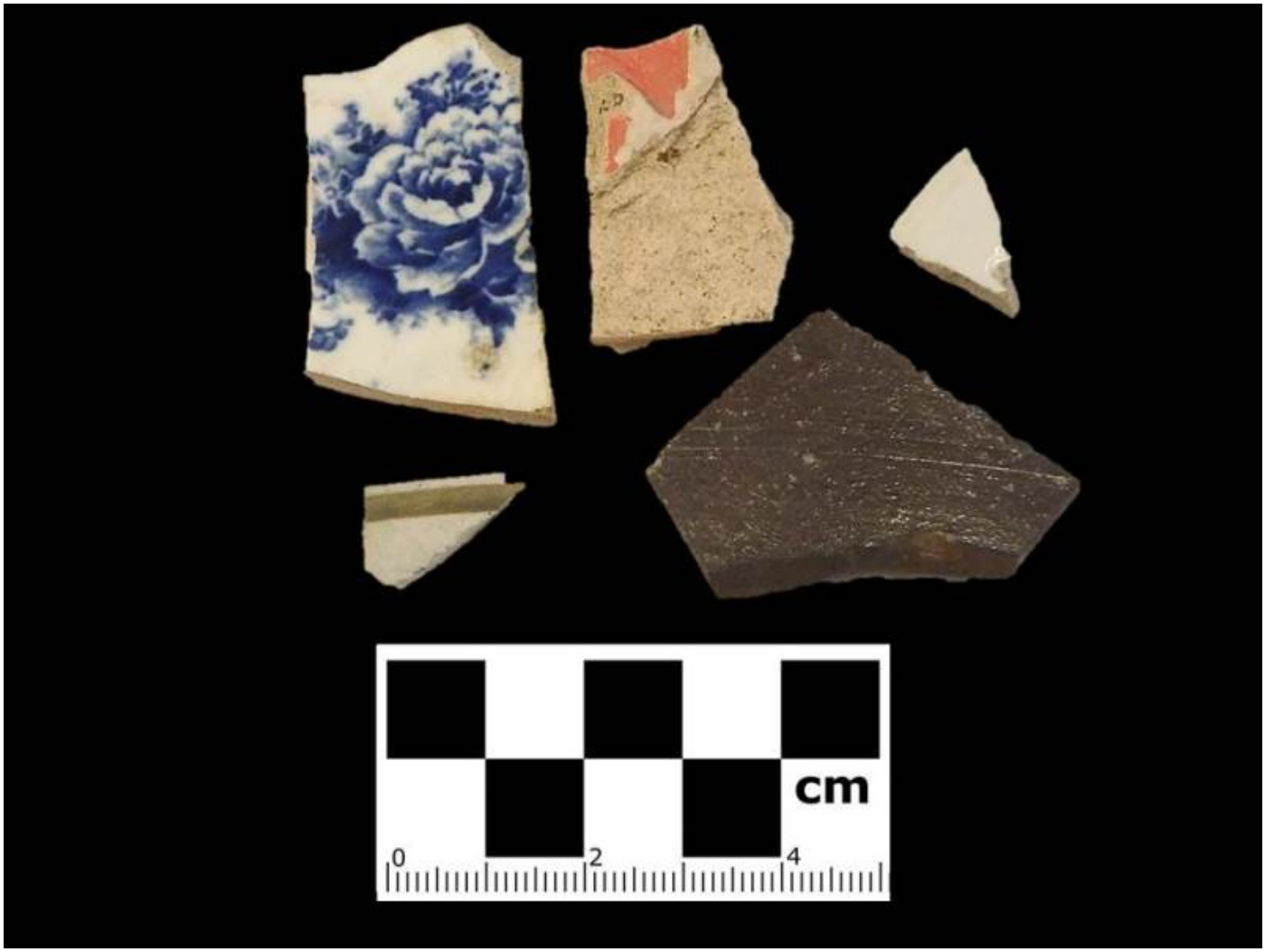


Photo 5. Household ceramics recovered from WHMo006-HS1.

Photo 6. Household glass recovered from WHMo006-HS1.

Photo 7. Unidentified nail recovered from WHMo006-HS1.

SITE NAME _____ SITE NUMBER 36- - DATE .

ADMINISTRATIVE INFORMATION (CONFIDENTIAL ITEMS HIGHLIGHTED)

7.5 QUAD NAME Midway EDITION 1953 UP _____ ACROSS _____

(Measure in centimeters from the bottom printed edge upward, and the right printed edge across)

-OR-

U.T.M. COORDINATES: ZONE 17T NORTHING 4467344 m N EASTING 561601 m E

OWNER Robert L. Fedinetz ADDRESS _____

TAX PARCEL ID 460-020-00-00-0057 TAX MAP DATE _____

☒ PRIVATE LANDOWNER ☐ PUBLIC LANDOWNER - ☐ FEDERAL ☐ STATE ☐ LOCAL

COLLECTION LOCATIONS _____

INFORMANTS N/A

RECORDING REASON

- ☐ Informant Interview/Amateur Survey
- ☒ State or Federal Compliance Survey
- ☐ PHMC Grant
- ☐ Non-PHMC institution affiliated research
- ☐ PHMC Research
- ☐ Other (Explain in 'Comments' section at end of form)

CRITERIA FOR NATIONAL REGISTER INCLUSION Ineligible

SUBMITTED BY Jennifer Rankin ADDRESS 681 Andersen Drive Suite 400

CITY Pittsburgh STATE PA DATE 6/20/2016

PHONE NUMBER 412-503-4608 EMAIL ADDRESS Jennifer.rankin@aecom.com

S.P.A. CHAPTER AFFILIATION _____

INSTITUTIONAL AFFILIATION AECOM

ADMINISTRATIVE COMMENTS _____

Remember! Ask the landowner's permission before you collect artifacts on private property. It is a violation of state law to collect artifacts on state lands and a violation of federal law to collect artifacts on federal lands.

Completed forms should be sent to:

Bureau for Historic Preservation
Commonwealth Keystone Bldg, 2nd Floor
400 North Street
Harrisburg. PA 17120-0093

APPENDIX F
Probability Model Testing Methodology Form

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Statewide Pre-Contact Probability Model Testing Methodology Form

(This form should be used for consultation with the Regional Review Archaeologist on testing methodology prior to commencement of archaeological field work.)

1. Project Identification:

ER Number 2015-1839-042

Project Name &/or Agency Tracking #: Falcon Ethane Pipeline Project

Agency: USACE **Applicant:** Shell Pipeline Company, LP

Preparers Name and affiliation: Jennifer C. Rankin, AECOM

Date Prepared: December 21, 2016

Project Area County/Municipality (list all)

County	Municipality
Washington	Chartiers
Washington	Mount Pleasant
Washington	Robinson
Allegheny	North Fayette
Allegheny	Findlay
Beaver	Independence
Beaver	Raccoon
Beaver	Potter
Beaver	Greene
Beaver	Shippingport

2. Previously Recorded Archaeological Sites within APE / Project Area:

PASS Site Number	Reason not re-located
36WH0157	Conflicting Data
36WH1718	Identified/Proposed HDD Location
36BV0019	Proposed HDD Location
36BV0095	Identified/Lack Depostional Integrity; Proposed HDD Location
36BV0010	Demolished/Previously Permitted (ER #: 2013-2037-007)

3. Statewide Pre-Contact Probability Model Comparison:

Model Region(s): 1

Total Project Area 215.98 hectares (current alignment, exclusive of access roads); 361.61 hectares (total surveyed area as of 8/15/2016, exclusive of access roads)

Sensitivity Tier	Percent of Total Project Area
High	16.78 % (on-alignment only)
Moderate	37.56 % (on-alignment only)
Low	45.66 % (on-alignment only)

4. Proposed Testing Methodology: (Text field will expand as needed. Please be complete)

Methods for the identification of archaeological sites were consistent with the PHMC's guidelines: Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations (2008, 2016). The 100-foot (122-meter) study corridor was visually inspected via pedestrian survey to identify rockshelters, foundations, or other surface indications of archaeological sites regardless of field conditions (i.e. in areas of excessive slope, standing water). A GIS-based predictive model was used to identify areas of high, medium, and low sensitivity for Native American sites, and nineteenth century historic maps were used to identify areas of high sensitivity for historic sites. Based on the archaeological sensitivity model, previous archaeological surveys, and accepted practice, relatively level landforms within approximately 300 feet of perennial water sources and similar settings adjacent to previously-recorded archaeological sites were categorized as having a high probability for the presence of archaeological sites. In addition, areas in proximity to historic roads and structure locations indicated on historic maps were also categorized as high probability areas. Areas of moderate probability encompassed level to gently sloping landforms between approximately 300 and 600 feet from a perennial water source. Areas with a low probability to contain archaeological sites include areas of steeper slope (≥ 15 percent) and areas at more than 600 feet distant from perennial water sources.

Geomorphological investigations were conducted at stream crossings with the potential to contain buried archaeological sites for which survey permission was available. These investigations were undertaken at two separate locations of Raccoon Creek, Peggs Run, Fishpot Run, Mill Creek, Robinson Run, Millers Run, Potato Garden Run and Westland Run.

The survey was limited to a 100-foot (122-meter) study corridor. Subsurface testing in high probability areas was accomplished by shovel test pits (STPs) excavated at 15-meter (~50-foot) intervals on landforms where archaeological sites could be expected within one meter (~3.3 feet) of the surface. In high probability areas where archaeological sites may be present below one meter, test units (TUs) measuring one-meter-square or larger were excavated at 30-meter intervals. Subsurface testing in medium probability areas were conducted by STPs at 30-meter (~98 feet) intervals, with closer-interval STPs excavated on a judgmental basis. STPs in low sensitivity areas were excavated on a judgmental based (i.e. near locally prominent landforms).

In portions of the study corridor where soil visibility was greater than 70 percent (except in areas of no-till agriculture), systematic surface survey for artifacts was conducted along transects spaced at 3.0-meter (9.8-foot) intervals in high probability areas. Surface survey transects in areas of medium and low probability were spaced at 6.0-meter (19.6-foot) intervals. In general, subsurface testing was not conducted on excessive slopes (≥ 15 percent slope) or in areas of standing water. As noted above, these settings were visually inspected for the presence of rockshelters, lithic sources, and structural remnants. If evidence of these features was identified in areas of excessive slope or standing water, subsurface testing was be conducted on a judgmental basis.

All soils from STPs and TUs were excavated by natural horizons. Soils from each horizon were screened separately through one-quarter-inch wire mesh. Data from STPs and TUs was recorded on standardized forms. Soil profiles were recorded using the Munsell color system and standard texture classifications. Excavations were completely backfilled, compacted, and the sod replaced. The location of survey transect beginning and end points, STPs, TUs, surface artifacts, and features were mapped with a hand-held Global Positioning System (GPS) unit with sub- meter accuracy. Digital photography was used to record surface conditions, select excavation profiles, cultural features, and identified archaeological sites.

In order to facilitate the field study, a grid of potential test locations at 15-meter (49.2-foot) intervals was established in the project GIS across the study corridor and loaded into a GPS unit for navigation in the field. The study corridor contained eight STP transects that were aligned parallel to the centerline. The transects were assigned letters A through G from east to west, pre-plotting a 300-foot corridor in preparation for routing changes. Typically Transects C through E represented the 100-foot (122-meter) study corridor based on the original design. The corridor was then divided into survey segments from north to south with respect to landmarks such as roads and streams by county. STP numbering ran from north to south within each survey segment.

Field maps showing the GIS model-based archaeological sensitivity ranking of each potential test location were used to guide the in-field assessment of archaeological sensitivity and testing interval. Accurate navigation to pre-plotted test locations in the field was accomplished using sub-meter-accurate handheld GPS equipment.

5. Approval:

Reviewer: _____ **Date:** _____

APPENDIX G
Report Summary Form

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Archaeological Report Summary Form

PROJECT CHECKLIST: Please fill out a copy of this checklist and include it with your initial report submission,(including with management summaries or draft reports). This form may be downloaded and expanded as needed, but please do not eliminate any fields.

1. Project Identification:

ER Number: 2015-1839-042

Report Title: Phase I Archaeological Survey Report, Falcon Ethane Pipeline Project, Washington, Allegheny, and Beaver Counties, Pennsylvania

Preparers Name and affiliation: Jennifer C. Rankin, MA. AECOM

Report Date: January 2017 **Number of Pages:** Volumes I and II

Agency: USACE **Applicant:** Shell Pipeline Company, LP

2. Report Information:

Report Type (some reports are combinations, check as many as apply to this report.)

- ☐ Pre-Phase I/Sensitivity Study
- ☒ Phase I
- ☐ Phase II
- ☐ Phase III
- ☐ Historic Structures
- ☒ Geomorphology
- ☐ Determination of Effects
- ☐ Other _____

Total Project Area 216 hectares

Phase I Methods used for total project (check as many as apply)

- ☒ shovel tests,
- ☒ controlled test units/deep tests,
- ☒ surface survey,
- ☐ informant interview,
- ☐ other: _____

Total Number of Sites Encountered/Phase I 20

Total Sites Tested/Phase II _____ **Total Sites Excavated/Phase III** _____

3. Location (list all in each category):

Project Area County/Municipality

County	Municipality
Allegheny	North Fayette, Findlay
Beaver	Independence, Raccoon, Greene, Potter, Shippingport
Washington	Chartiers, Mount Pleasant, Robinson

7.5" USGS Quadrangle(s)

Name	Date
Midway	
Clinton	
Aliquipa	
Beaver	

East Liverpool South	
Hookstown	

Project Area Drainage(s) (Sub-basin and Watershed can be obtained from CRGIS):

Sub-basin	Watershed	Major Stream	Minor Stream
(20) Ohio River	D	Ohio River	Raccoon Creek
(20) Ohio River	F	Ohio River	Chartiers Creek
(20) Ohio River	G	Ohio River	Sewickley Creek

Physiographic Zone(s) (Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.):

Physiographic Zone
Pittsburgh Low Plateau
Waynesburg Hills

4. Archaeological Sites within APE / Project Area (Site numbers must be obtained from SHPO prior to Report submission. Include Isolated find/Non-Site Numbers)**:**

PASS Site Number	Newly or Previously Recorded
36AL0715	Newly Recorded
36AL0716	Newly Recorded
36BV0394	Newly Recorded
36BV0395	Newly Recorded
36BV0396	Newly Recorded
36BV0397	Newly Recorded
36BV0398	Newly Recorded
36BV0399	Newly Recorded
36WH1735	Newly Recorded
36WH1736	Newly Recorded
36WH1737	Newly Recorded
36WH1738	Newly Recorded
36WH1739	Newly Recorded
36BV/059	Newly Recorded
36BV/060	Newly Recorded
36BV/061	Newly Recorded
36BV/062	Newly Recorded
36BV/063	Newly Recorded
36BV/064	Newly Recorded
36BV/065	Newly Recorded
36BV/066	Newly Recorded
36BV/067	Newly Recorded
36BV/068	Newly Recorded
36BV/069	Newly Recorded
36WH/074	Newly Recorded
36WH/075	Newly Recorded
36WH/076	Newly Recorded
36WH/077	Newly Recorded
36WH/078	Newly Recorded
36WH/079	Newly Recorded
36BV0010	Previously Recorded
36BV0019	Previously Recorded

36BV0095	Previously Recorded
36BV0192	Previously Recorded
36BV0096	Previously Recorded
36WH0157	Previously Recorded
36WH1718	Previously Recorded

Please complete an updated PASS form for each site reported by this report. Updated forms need only include the new information and the site number and name.

In addition, the following pages must also be completed **for each site**. Complete only the portions that pertain to the current report. If the report is a stand-alone Phase II, you do not need to fill in the Phase I methods, since they should have been included in the summary form for the previous report.

5. Associated Above Ground Resources (If any)**:**

SHPO Key Number	Resource Name

6. PASS Site Specific Information (Please complete the following for each site reported by this report.)

PASS NUMBER 36AL0715

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____

☐ eligible: Criterion D:

- ☐ settlement patterning (intersite patterning)
- ☐ intrasite artifact patterning
- ☐ features
- ☐ radiocarbon dating
- ☐ organic preservation
- ☐ evidence of culture change through time
- ☐ stratified
- ☐ temporally discrete clusters
- ☐ burials/human remains
- ☐ technological
- ☐ economics
- ☐ ethnicity
- ☐ dietary
- ☐ other(specify): _____

☐ ineligible

- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36AL0716

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0394

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0395

A. Methods:

Phase I (how the site was located - check as many as apply)

☐ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0396

A. Methods:

Phase I (how the site was located - check as many as apply)

☐ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0397

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☒ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0398

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36BV0399

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36WH1735

A. Methods:

Phase I (how the site was located - check as many as apply)

☐ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36WH1736

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36WH1737

A. Methods:

Phase I (how the site was located - check as many as apply)

☐ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36WH1738

A. Methods:

Phase I (how the site was located - check as many as apply)

☐ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

PASS NUMBER 36WH1739

A. Methods:

Phase I (how the site was located - check as many as apply)

☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

Phase II

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

Phase III

☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m % of site area tested: _____ %

B. **Recommendations** (normally completed only after Phase II):

-- NR Eligibility recommendation
☐ eligible, ☐ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:

☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time

☐ stratified
☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____

☐ ineligible
- ☐ disturbed
- ☐ ephemeral occupation
- ☐ redundant information
- ☐ un-datable
- ☐ other (specify): _____

C. Artifacts/Collections

☐ will be donated to the **State Museum of Pennsylvania** (SMPA)
-- collection will be submitted by _____(date)

☐ will be donated to other approved repository (this option must be negotiated with the SHPO and SMPA or stated as stipulation in MOA) **Repository Name:** _____
-- collection will be submitted by _____(date)

☐ will be **retained by land owner** (☐ whole or ☐ partial collection)
☐ expanded documentation enclosed for items retained

APPENDIX H
Resumes

Jennifer C. Rankin, MA, RPA

Cultural Resources – Senior Archaeologist (Pittsburgh, PA)

EDUCATION

Ph.D. Candidate, Anthropology, Temple University, ongoing (*expected* 2017)
M.A., Anthropology, Temple University, 2014
B.S., Anthropology/Archaeology, Mercyhurst College, 2005

YEARS OF EXPERIENCE

12

PROFESSIONAL AFFILIATIONS

Society for American Archaeology

Jennifer Rankin is a Senior Archaeologist and leads the AECOM Pittsburgh Cultural Resource Group in Western Pennsylvania. She has over has over ten years of field and laboratory experience in all phases of cultural resource management, specializing primarily in prehistoric archaeology and geomorphology with experience in historic archaeology and forensic anthropology. With a combination of a diverse academic and applied archaeological experience, Ms. Rankin has worked on a variety of projects in the eastern United States (Mid-Atlantic and Northeast), Midwest, and eastern Great Lakes. Ms. Rankin possesses a strong background in technical specializations within archaeology and geomorphology, SHPO/THPO and other agency consultations, and technical/analytical report writing. She offers a unique personal background in construction and construction management that allows for effective collaboration in project design and innovative excavation techniques while maintaining the highest degree of integrity and upholding the superior levels in safety standards/protocols.

PROJECT EXPERIENCE

WV DOH US 35 Improvement Project, Phase IB Archaeological Survey, Putnam and Mason Counties, West Virginia. Principal Investigator. Phase IB survey in support of realignment and workspace additions to the proposed construction plan of an approximately 16 mile section of US 35.

PennDOT I-70 Yukon/Madison Interchange & Bridge Project, Phase I-II Archaeological Survey and Evaluation, Westmoreland County, Pennsylvania. Principal Investigator. Ongoing Phase I and II geomorphological assessments and archaeological investigations along a three-mile long portion of the Interstate 70 highway corridor.

SWN Production Company, LLC Hickman – McCulley and Burge – Liberty Pipelines, Phase I

PROFESSIONAL AFFILIATIONS (CON'T)

Geological Society of America
Middle Atlantic Archaeological Conference
Pennsylvania Archaeological Council
Society of Pennsylvania Archaeology, Board Member

AREAS OF EXPERTISE

Section 106 NHPA / Section 404 CWA Compliance
Environmental Planning / NEPA Compliance
Archaeological Survey and Excavation
Geomorphological Assessments/Geoarchaeology

Archaeological Surveys, Ohio and Marshall Counties, West Virginia and Washington County, Pennsylvania. Principal Investigator for the Phase IA/B archaeological assessment/survey and architectural survey of an approximately 9-mile and 5-mile natural gas gathering lines in West Virginia and Pennsylvania.

Shell Pipeline Company, LP - Falcon Ethane Pipeline; Phase IA/B Archaeological Survey, Pennsylvania, West Virginia, and Ohio. Principal Investigator. Phase IA/B archaeological assessment/survey and architectural survey of an approximately 50 mile pipeline project in western Pennsylvania.

Chemours Company FC, LLC (DuPont) - Washington Works Island Cable Project, Blennerhassett Island, Phase IA/B and II Archaeological Survey and Evaluation, Wood County, West Virginia. Principal Investigator. Phase I and II archaeological survey/evaluation and construction monitoring of an approximately 2.5 mile access road modification and cable installation project to support existing water wells along a NRHP-listed island on the Ohio River.

Shell Chemical Appalachia, LLC - Proposed Petrochemicals Plant, Phase IA/B and II Archaeological Survey and Evaluation, Beaver County, Pennsylvania. Co-Principal Investigator/Site Manager for the Phase I and II archaeological survey/evaluation and construction monitoring of a 665 acre proposed Petrochemical Plant along the Ohio River. Additional tasks included cemetery relocation, the development of a programmatic agreement, alternative mitigation, avoidance plans, and Chance Finds plan/supervisor training.

PennDOT I-95/Girard Avenue Highway Improvement Project, Phase I-III Archaeological Investigations, Philadelphia County, Pennsylvania. Field Director/Lithic Analyst directing Phase I through III archaeological investigations along a three-mile long portion of the Interstate 95 highway corridor.

Nicholas Arnhold, MA, RPA

Cultural Resources – Archaeological Field Director (Pittsburgh, PA)

EDUCATION
M.A., Anthropology, University of Kansas, 2014
B.A., Anthropology West Chester University, 2011

PROFESSIONAL REGISTRATION
Register of Professional Archaeologists

YEARS OF EXPERIENCE
4

PROFESSIONAL AFFILIATIONS
Society for American Archaeology
Middle Atlantic Archaeology Conference
Council of Virginia Archaeologists
Archaeological Society of Virginia

AREAS OF EXPERTISE
Section 106 of the National Historic Preservation Act
Archaeological Survey and Excavation
Archaeology of Prehistoric Native Americans
Lithic Analysis
Technical Report Production

Mr. Arnhold has over 4 years of field and laboratory experience in all phases of cultural resource management, including prehistoric, historic, and urban investigations. With a combination of a diverse academic and applied archaeological experience, Mr. Arnhold's has worked on a variety of projects in eastern United States, Midwest, Plains, Great Basin, and Rocky Mountains. Mr. Arnhold's work entails the identification, excavation and supervision of archaeological sites, identification and analysis of artifacts, data management and analysis, specialized artifact studies, and analytical report writing. His primary specializations include lithic analysis, traditional archaeological methods, archaeological theory, primitive technologies, riparian archaeology, faunal analysis, and behavioral archaeology. Mr. Arnhold's combination of academic and applied archaeological experience allows the flexibility to effectively apply all aspects of archaeology to cultural resource management.

PROJECT EXPERIENCE

Shell Pipeline Company, LP Northeast Ethane Pipeline, Pennsylvania, Ohio, and West Virigina: Field Director for the Phase I archaeological survey of the Shell Falcon Pipeline within western Pennsylvania. The archaeological survey included the investigation of jurisdictional areas, defined as the 100-foot buffer around all wetlands and stream crossings and Historic and Prehistoric site identification. Fieldwork involved shovel testing, pedestrian survey, and structure documentation.

US 35 Improvement Project, WV 869 to Mason Co 40, Putnam and Mason Counties, West Virginia: Field Director for a secondary survey of the Phase I archaeological survey of the WVDOH highway improvement, west of Charleston, WV. Fieldwork involved shovel testing and pedestrian survey.

IndyGo Downtown Transportation Center Phase II/III Archaeological Investigations, Indianapolis, Indiana: Field Director, Site Safety Officer, Archaeological Monitor, and report preparation for the Phase II/III archaeological investigations of a city block in Indianapolis, IN. Investigations of the block for the installation of a new transportation center uncovered a series of structural remains and a large number of artifacts dating from the inception of Indianapolis in the early 19th century through the mid-20th century. Fieldwork involves feature documentation and excavation and foundation documentation.

DuPont Washington Works Island Cable Project, Blennerhassett Island, Phase I A/B and II Archaeological Evaluation and Investigations, Wood County, West Virginia: Field Director and report preparation for a Phase I/II archaeological evaluation and investigation of an approximately 2.5 mile access road modification and cable installation project to support existing water wells. Fieldwork tasks included surface survey, shovel testing, and the excavation of shovel tests across three identified sites.

Shell Appalachia, LLC proposed Petrochemicals Plant, Phase IA/B and II Archaeological Evaluation and Investigations, Beaver County, Pennsylvania: Field Director and report preparation for the Phase I archaeological evaluation and Phase II excavation of 9 archaeological sites. The newly discovered sites include 18-20th century home- and farmsteads, 19th century Almshouse, and several Native American habitation sites along the Ohio River.

AECOM

Michael Way
Archaeologist/Crew Chief

Education
BS / 2013 / Mercyhurst University/ Archaeology

Training
40-Hour HAZWOPER (Professional Safety Training Services, Inc. 2014)
8-Hour HAZWOPER Refresher
SafeLand USA (2016)

Years of Experience
3

Summary
Mr. Way is an Archaeological Crew Chief with the Pittsburgh Cultural Resource Group in Western Pennsylvania. Mr. Way has three years of both field and laboratory experience which includes all three phases of archaeological survey. Specialty areas include prehistoric archaeology with a focus in ceramic technology and non-destructive material sourcing, as well as protocols and methods of Phase III data recovery excavation. Experience also includes historic archaeology and basic principles of geoarchaeology and site formation. Mr. Way has worked on a number of projects in the Eastern United States including Pennsylvania, New Jersey, and West Virginia and also on projects in New Mexico and Florida.

Relevant Project Experience

Shell Pipeline Company, LP-Falcon Ethane Pipeline: Phase IB Archaeological Survey, Allegheny, Beaver, and Washington Counties.
Crew Chief for Phase IB archaeological survey and field assistant for historical architecture survey of an approximately 50 mile pipeline in western Pennsylvania.

AGC-SWN Hickman to McCully Pipeline: Phase IB Archaeological Survey, Ohio County, West Virginia, and Washington County, Pennsylvania.
Field Technician for Phase IB archaeological survey of an approximately 5 mile natural gas gathering line in southwestern Pennsylvania and the West Virginia panhandle.

AGC-SWN Burge to Liberty Pipeline Phase IB Archaeological Survey, Marshall County, West Virginia. Field Technician for Phase IB archaeological survey of an approximately 9 mile natural gas gathering line in West Virginia.

Rex Energy Corporation, Mackrell Well Pad Project: Phase IB Archaeological Survey, Butler County, Pennsylvania.
Crew Chief for Phase IB archaeological survey of proposed access road associated with Well Pad Construction.

Williams Companies, Atlantic Sunrise Pipeline Project: Phase IB Archaeological Survey Eastern Pennsylvania. Field Technician for Phase IB archaeological survey of proposed natural gas pipeline route.

UGI Sunbury Pipeline: Phase IB Archaeological Survey, Lycoming, Montour, Union, Northumberland, and Snyder Counties, Pennsylvania. Field Technician for Phase IB archaeological survey of an approximately 35 mile natural gas pipeline.

UGI PennEast Pipeline Project: Phase IB and Phase II Archaeological Survey, Luzerne, Carbon, Northhampton, and Bucks Counties, Pennsylvania, and Hunterdon and Mercer Counties, New Jersey. Field Technician for Phase IB and Phase II archaeological survey of an approximately 118 mile natural gas pipeline.

Shell Appalachia, LLC proposed Petrochemicals Plant: Phase IB and Phase II Archaeological Survey, Beaver County, Pennsylvania.
Field Technician for Phase IB and Phase II archaeological survey of a proposed 665 acre petrochemicals plant along the Ohio River.

Chemours Company, DuPont Washington Works Island Cable Project: Phase II Archaeological Survey, Blennerhassett Island, Woods County, West Virginia.
Field Technician for Phase II archaeological survey for an approximately 2.5 mile access road modification.

NYSEG Auburn Transmission Project: Phase IB Archaeological Survey, Cayuga County, New York.
Field Technician for Phase IB archaeological survey for proposed powerline replacement.

Meadowcroft Rockshelter (36WH0297), Avella, Pennsylvania Field Technician for Phase III excavations of damaged portions of the National Historic Landmark archaeological site.

The Clements Site (TA-6 Area C), Taos, New Mexico. Field Technician for Phase III excavation of a Pre-Puebloan pithouse.

Old Vero Man Site (8IR009), Vero Beach, Florida
Field Technician for the initial Phase III excavation of possible Paleo-Indian and Pre-Clovis landforms.

AECOM

Janna Napoli
Laboratory Supervisor

Education
BA/ 2013/ Mercyhurst University/ Anthropology-Archaeology
MAA/ 2015/ University of Maryland/ Applied Anthropology

Training
8-hour Safeland

Years of Experience
2

Summary

Ms. Napoli has over two years of archaeological field and laboratory experience, including prehistoric and historic. This experience includes supervising three archaeological laboratories, working on archaeological excavations and surveys within PA, WV, MD, VA, NY, and NM, and assisting with public archaeology programs. Primary specializations include public archaeology, historical archaeology, and historical research and analysis. Specific interests within historical archaeology include urban archaeology and African American archaeology of the Chesapeake region.

Relevant Project Experience

NYSEG Auburn Transmission Line. Field technician for the Phase I archaeological survey of the NYSEG Auburn Transmission line. Fieldwork involved shovel testing and pedestrian survey.

Shell Pipeline Company, LP Northeast Ethane Pipeline. Field Technician for the Phase I archaeological survey of the Shell NEP Pipeline within western Pennsylvania. Fieldwork involved shovel testing, pedestrian survey, and structure documentation.

Klejka Farm Stream Mitigation, Phase II data recovery, Somerset, PA. Field Technician for the Phase II archaeological survey of the Klejka Farm Stream Mitigation within Somerset County, PA. The survey included the further investigation of a potential prehistoric site uncovered in Fall 2014 (36So0396).Tasks included excavating and documenting shovel test pits and four 1mx1m units. 2016.

Rex Energy Corporation, Mackrell Well Pad Project, Pittsburgh, PA. Field Technician for Phase I archaeological survey of proposed access road associated with Well Pad construction. Responsibilities included shovel test excavation, site identification, and documentation of project area. Project contracted through AECOM.

AGC-SWN Hickman to McCully, WV-PA Pipeline, Phase I Archaeological Investigations. Field Technician for the archaeological survey of the AGC-SWN Hickman to McCully Pipeline project. Tasks included documentation of the project area and archaeological testing along jurisdictional areas. Project contracted through AECOM.

UGI PennEast Pipeline, Phase I Archaeological Investigations, Luzerne County, Pennsylvania to Mercer County, New Jersey. Field Technician for the Phase I archaeological survey along proposed pipeline route. Tasks included excavation and documentation of shovel test pits and 1mx1m units. 2015.

Scotts Plantation – Slave Quarter, Phase III Data Recovery, Crownsville, MD. Conducted by the Maryland State Highway Administration for Rockbridge Academy. Investigated structural remains of slave quarter built by Upton Scott. Slave quarter was in use from the late-eighteenth century until the mid-nineteenth century on Scotts Plantation. Excavations uncovered one of the largest known slave quarters within Maryland.

Public Excavations on the Hill- Bethel AME Church, Phase II data recovery, Easton, MD. Conducted for the University of Maryland. Field and Laboratory Supervisor. Excavations investigated land owned by Bethel AME Church in order to identify original place of worship from the nineteenth century. Responsible for instructing students in basic field methodology, running a field laboratory, and teaching the public about archaeology.

Excavations at James Madison's Montpelier, Phase II data recovery, Orange, VA. Conducted for the University of Maryland. Field Supervisor for field school. Excavation identified structural remains of a slave quarter, occupied from late Antebellum to Post Emancipation. Responsible for instructing students in basic field methodology.

AECOM

Phase I Archaeological Survey Report
Falcon Ethane Pipeline Project

Washington, Allegheny, and Beaver Counties, Pennsylvania

Volume II: Figures
E.R. # 2015-1839-042

Prepared for
Shell Pipeline Company, LP

January 2017

Phase I Archaeological Survey Report
Falcon Ethane Pipeline Project

Washington, Allegheny, and Beaver Counties, Pennsylvania

Volume II: Figures

E.R. # 2015-1839-042

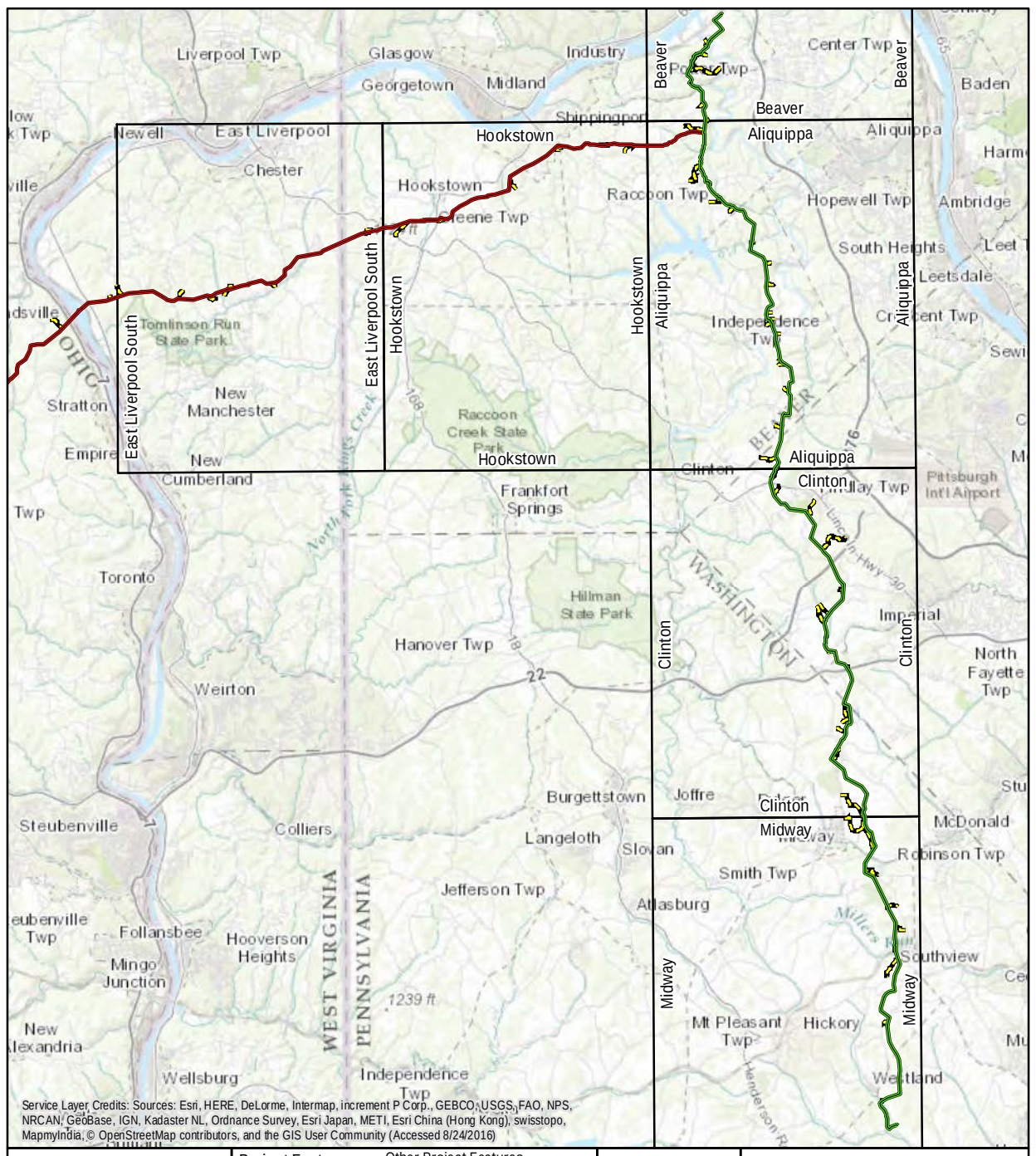
Prepared for:
Shell Pipeline Company, LP

Prepared by:

Jennifer C. Rankin, M.A.
Nick Arnhold, M.A.
Michael Way
Janna Napoli, M.A.
and
Frank J. Vento, Ph.D., P.G.

AECOM
681 Andersen Drive, Suite 400
Pittsburgh, Pennsylvania 15220

January 2017



AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

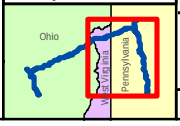
SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features

Proposed Centerline
- Cadiz to Scio
- Houston to Monaca
- Scio to Monaca

Other Project Features
- Proposed Access Road

Project Location



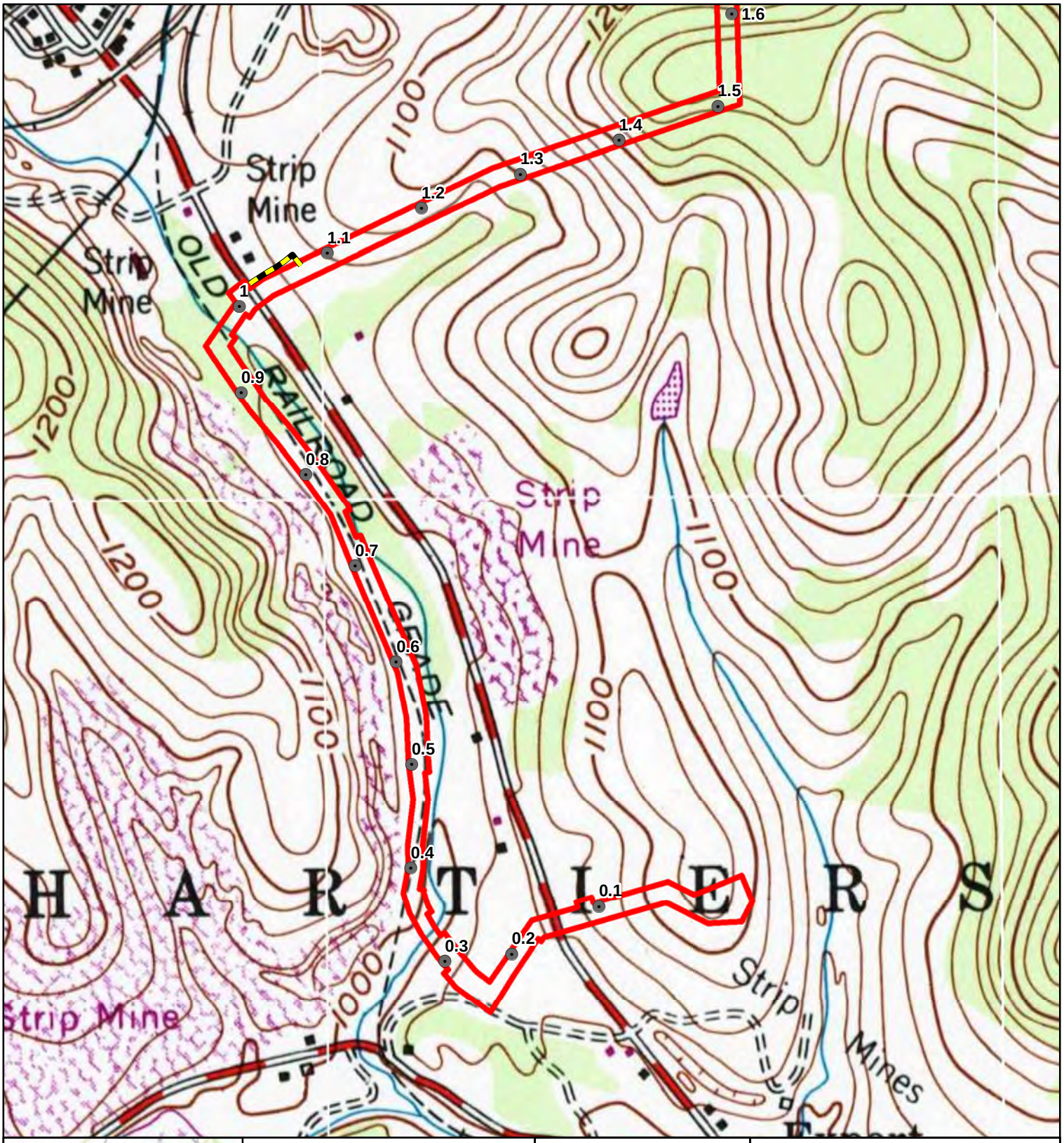
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT

Figure 1.1

0 1 2 mi
0 2 4 km

N
1 in = 4 mi

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.2

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

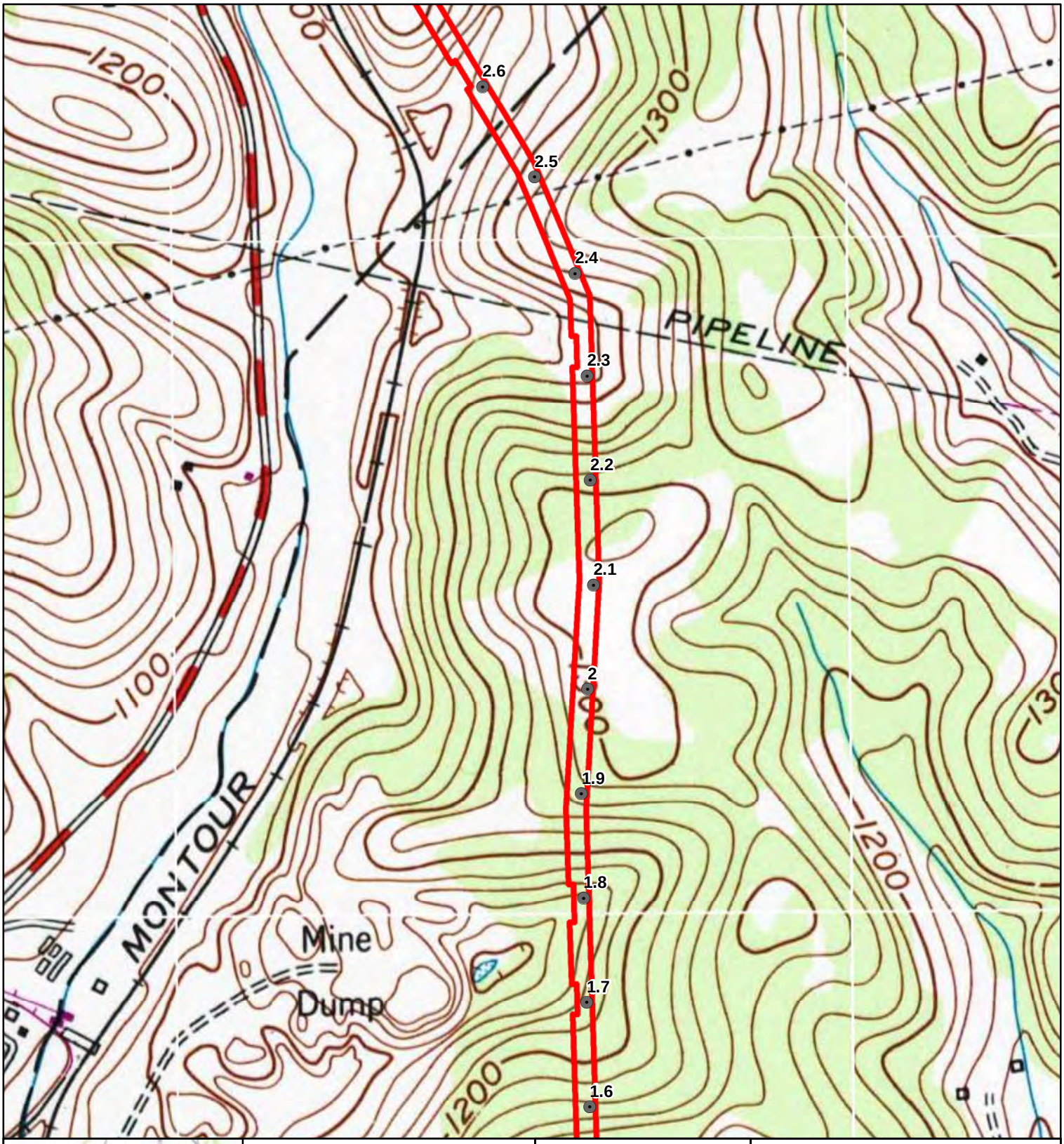
Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.3

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

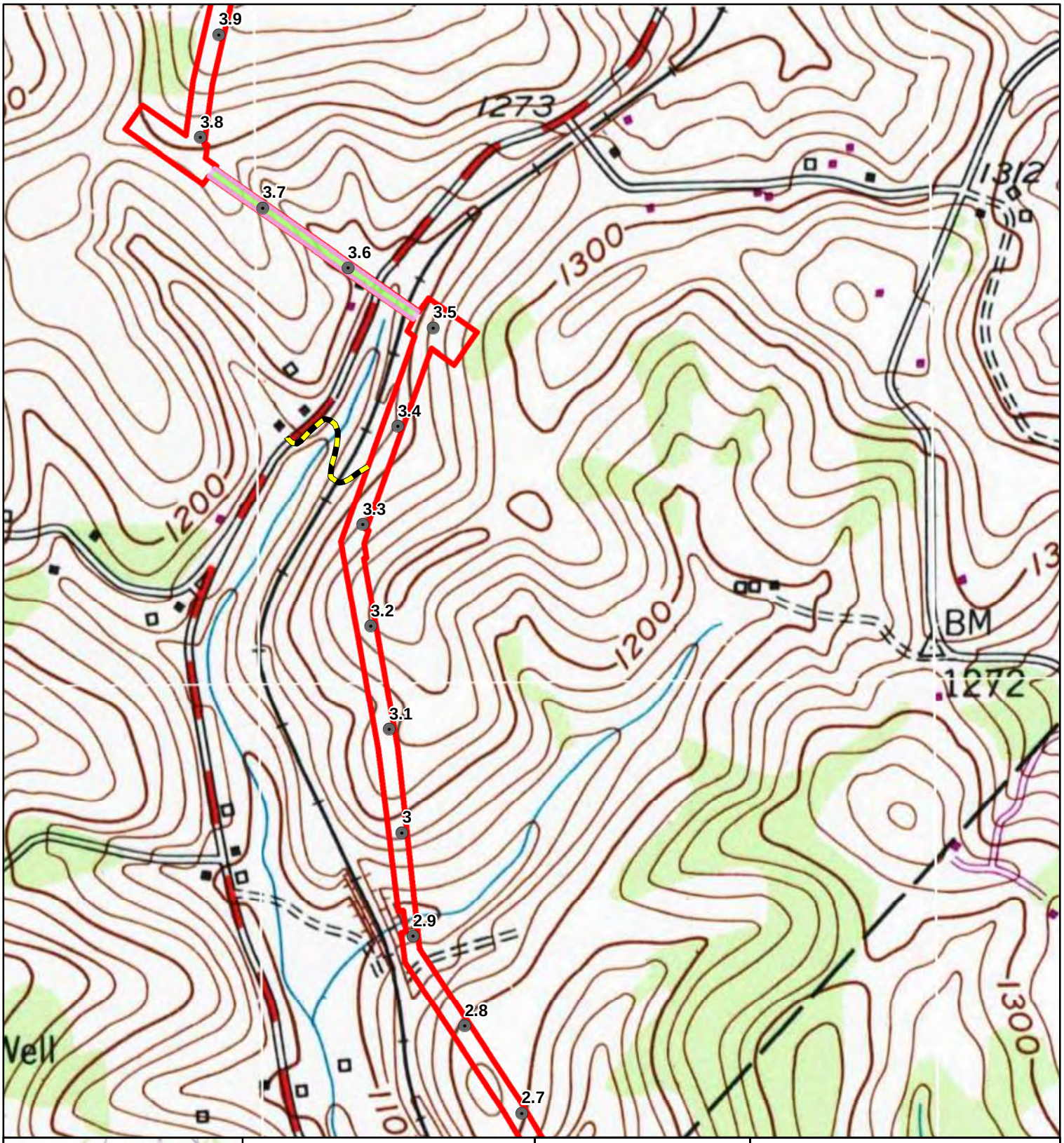
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.4

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

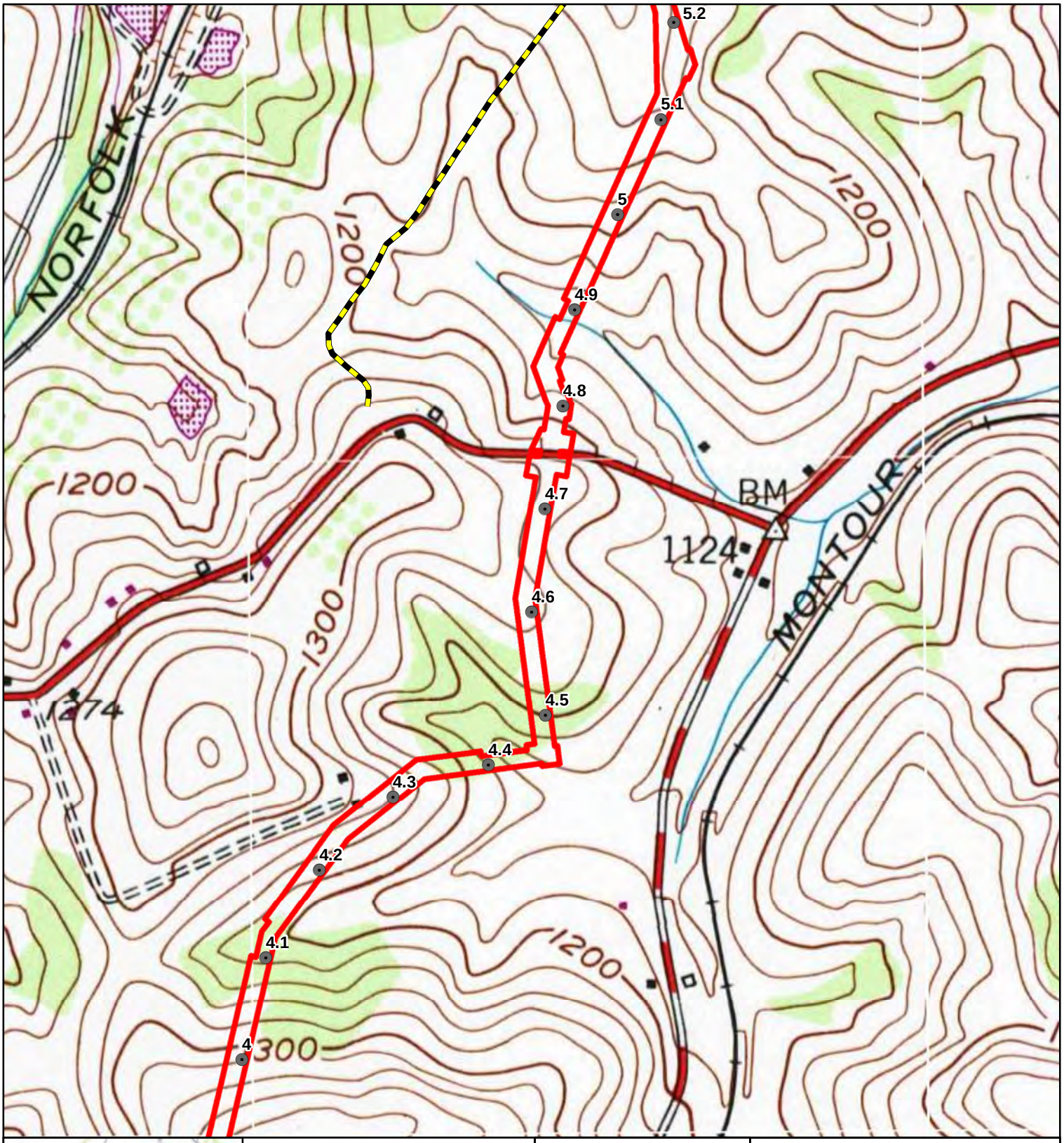
Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.1 0.2 0.4

Figure 1.5

Project Location on USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

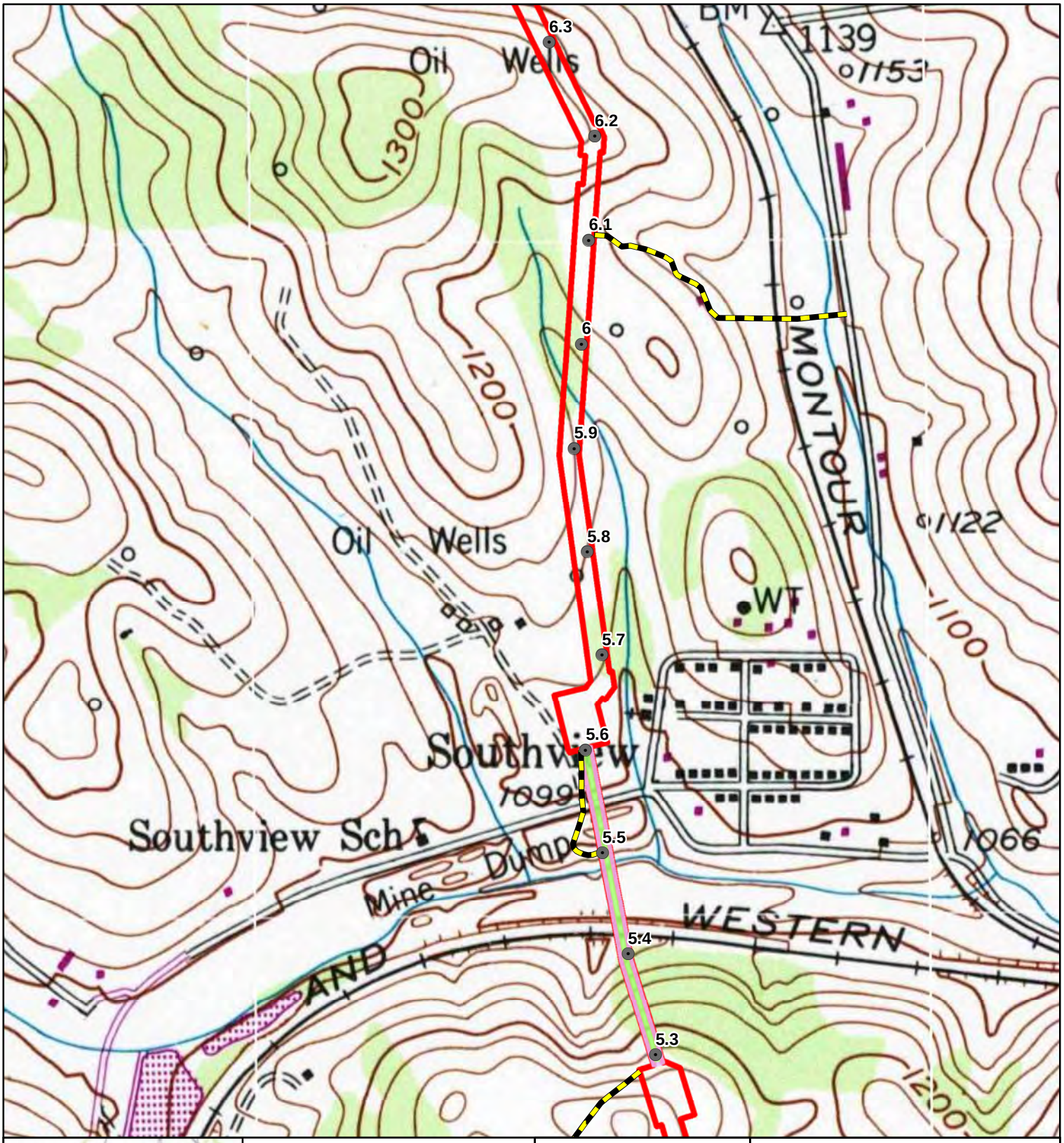
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.6

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

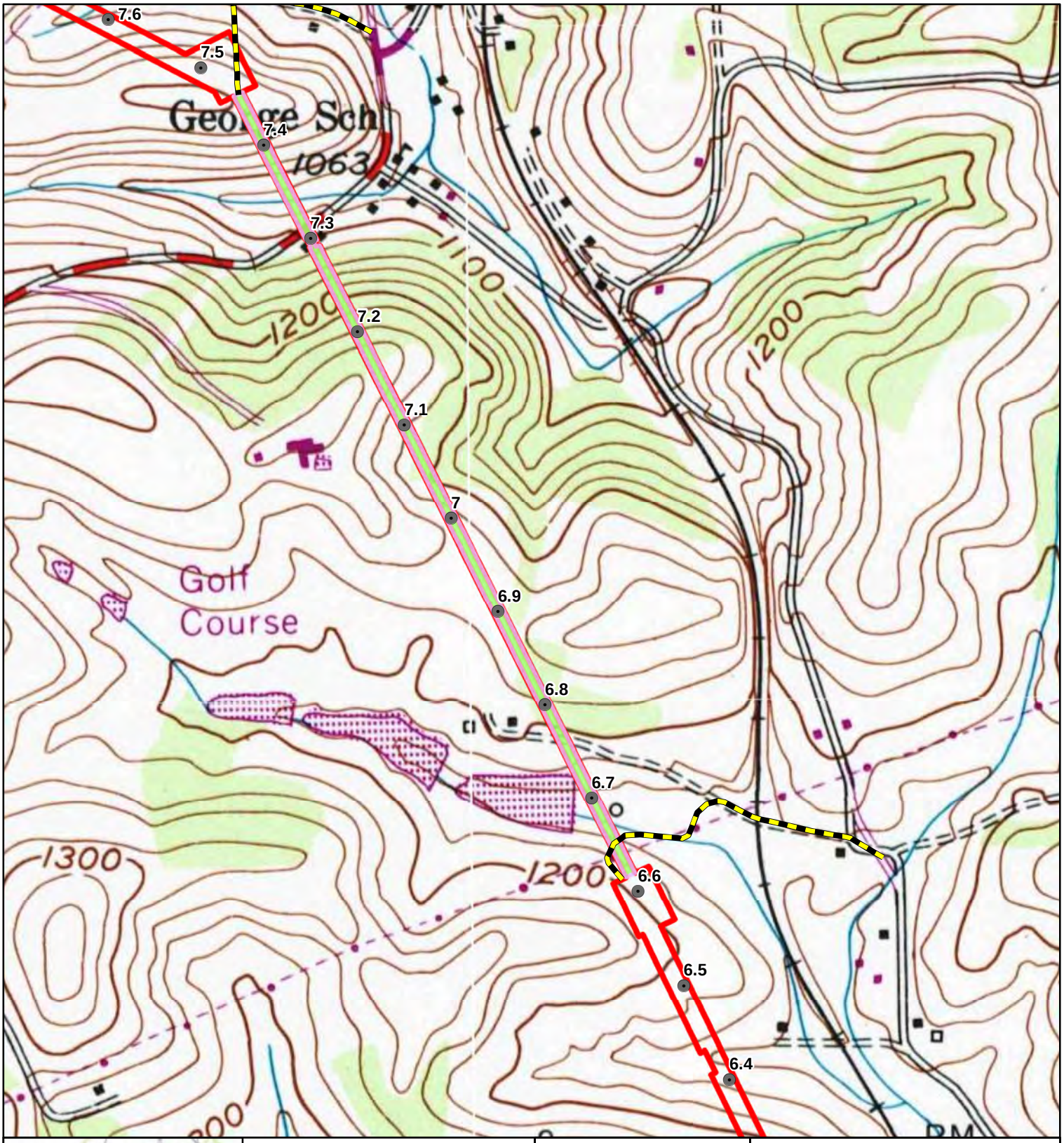
Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.7

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

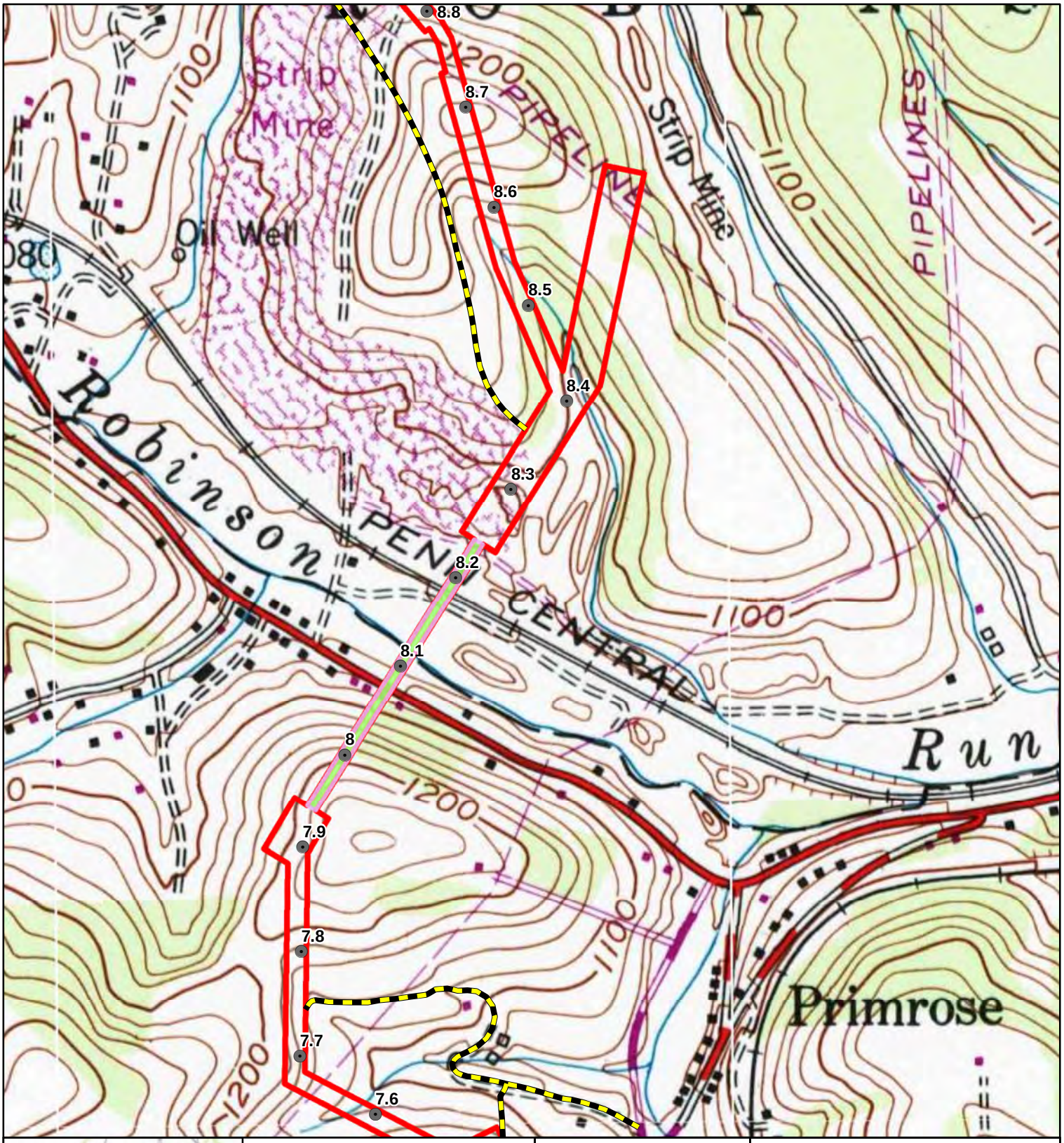
Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.1 0.2 0.4

Figure 1.8

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

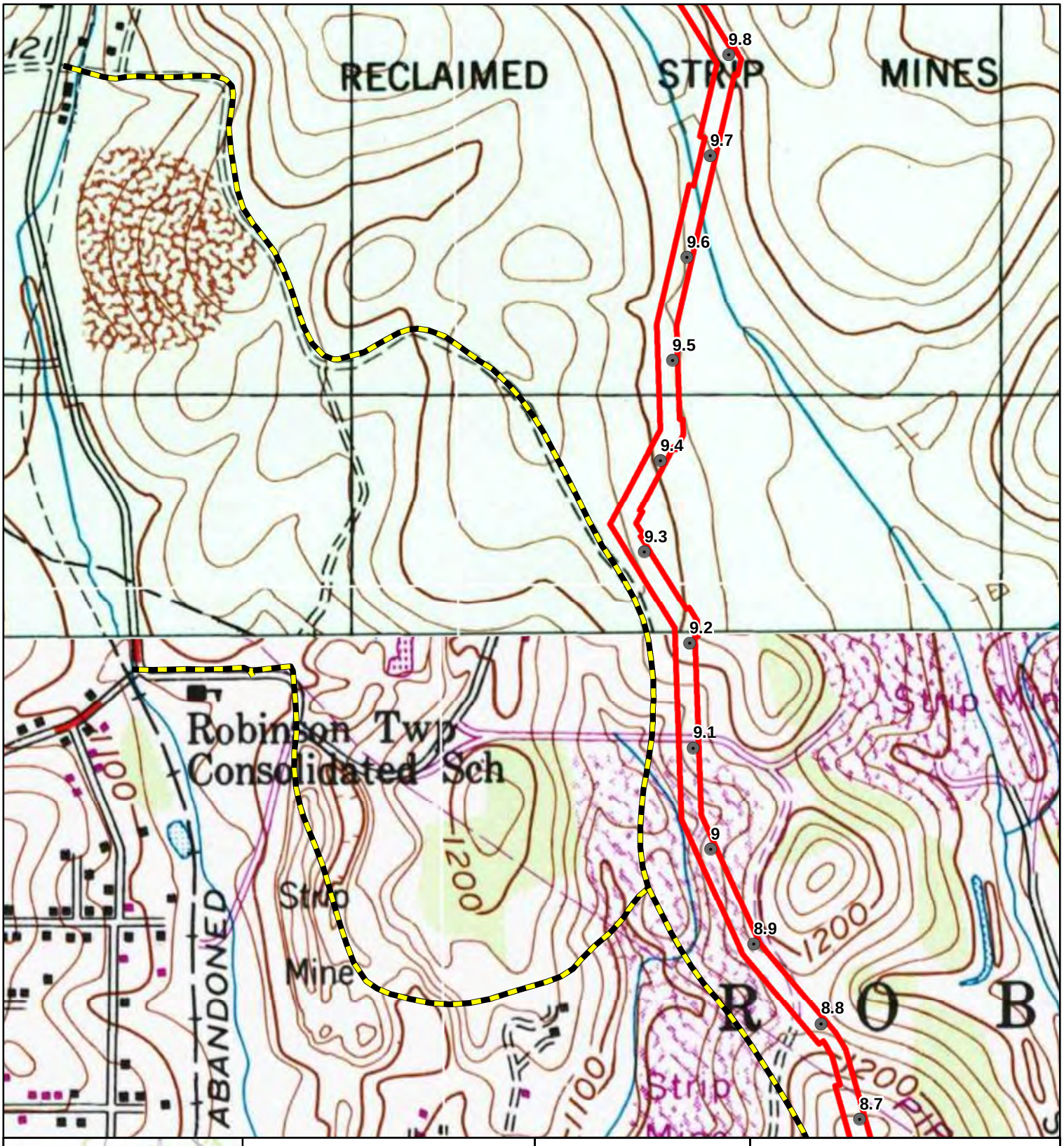
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.9

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

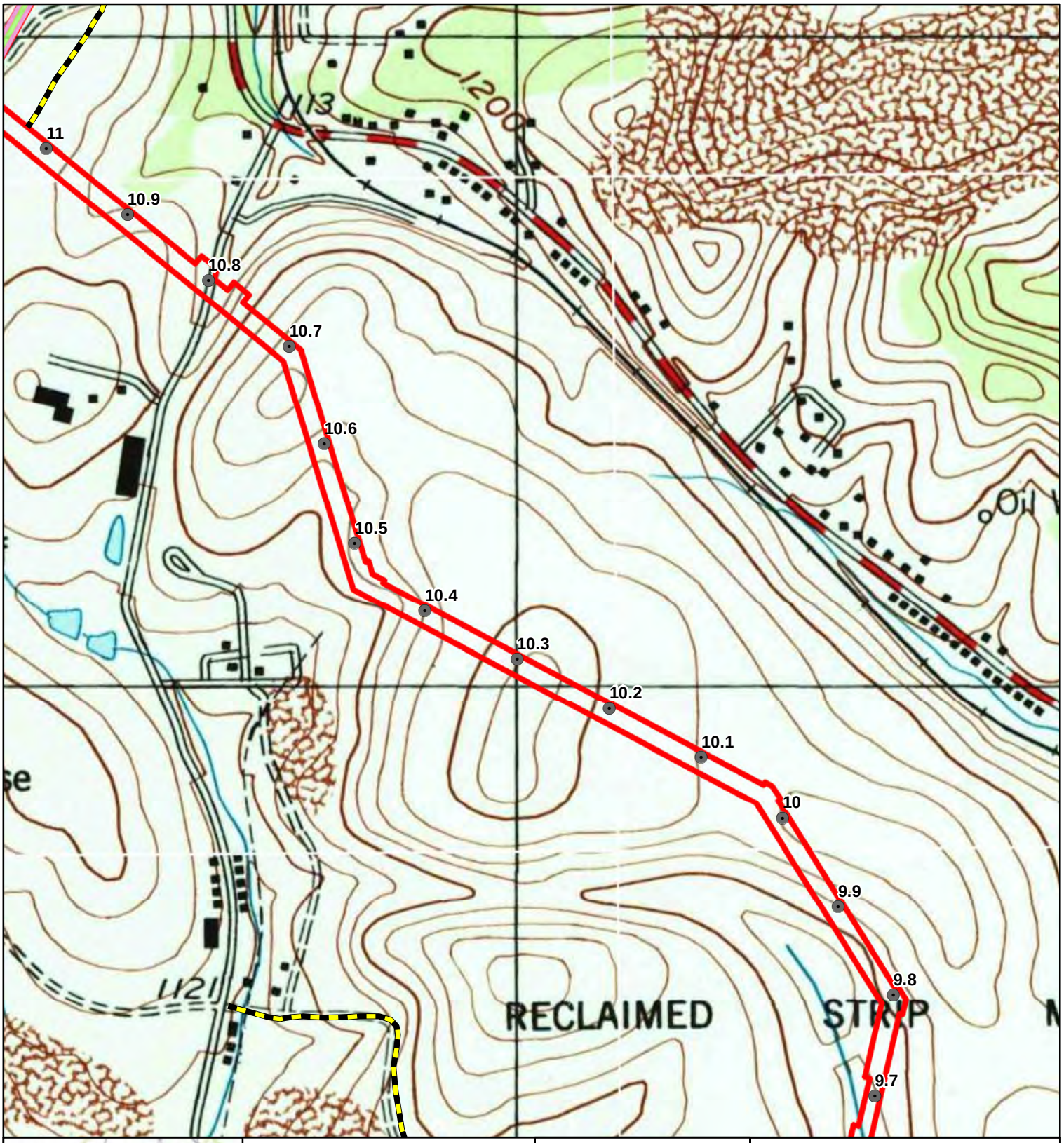
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Midway PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.10

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

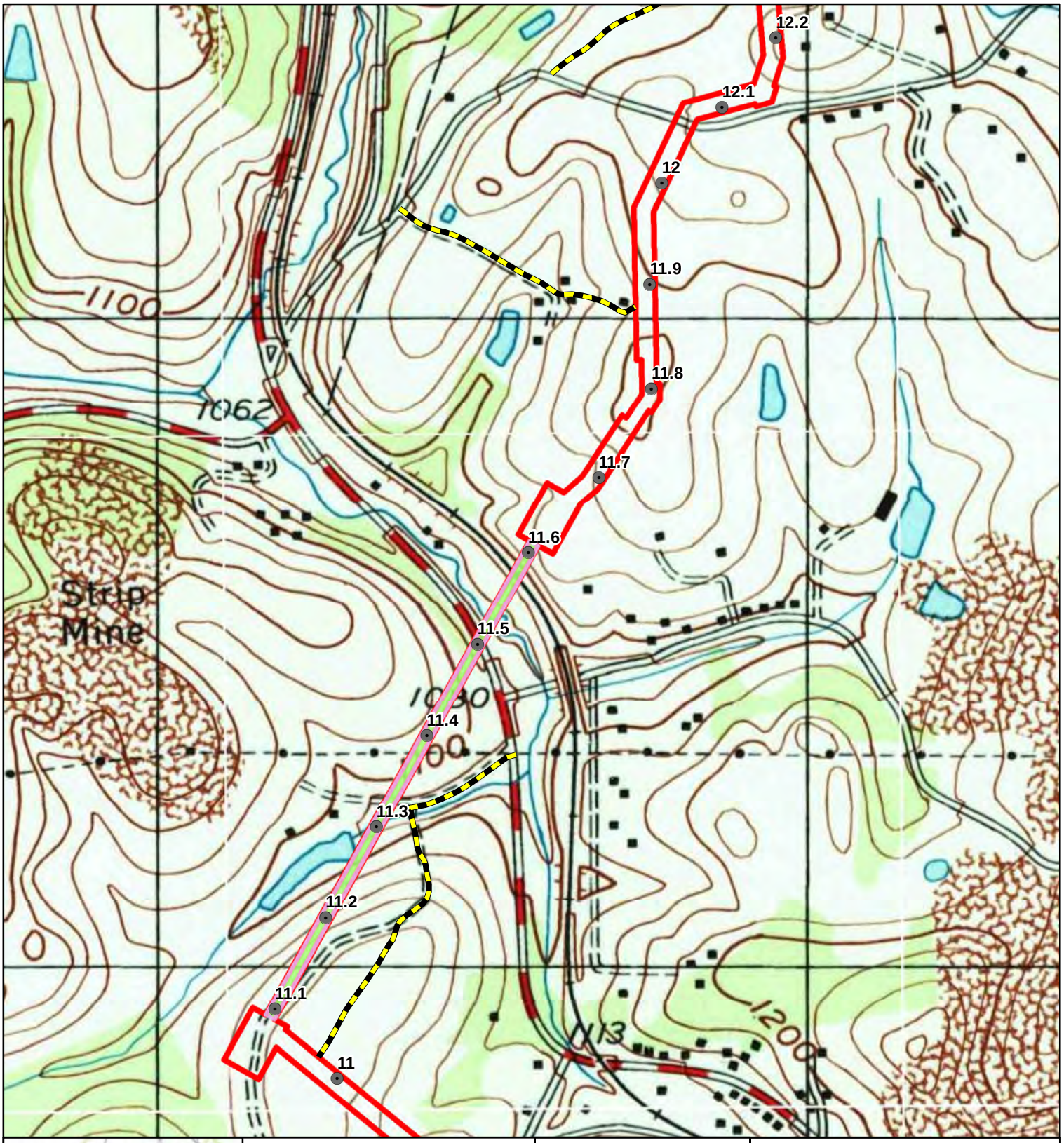
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.11

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

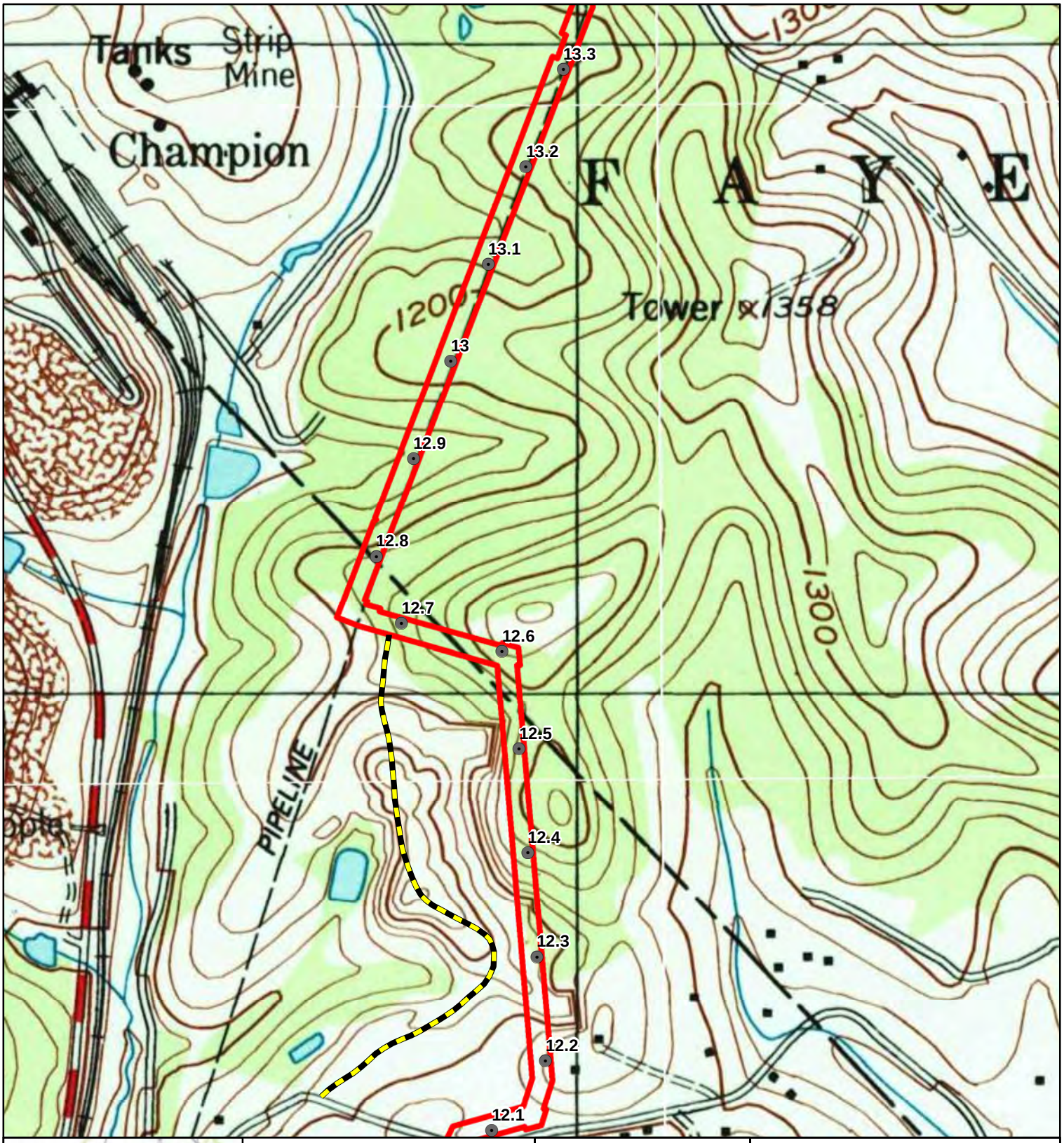
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.12

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

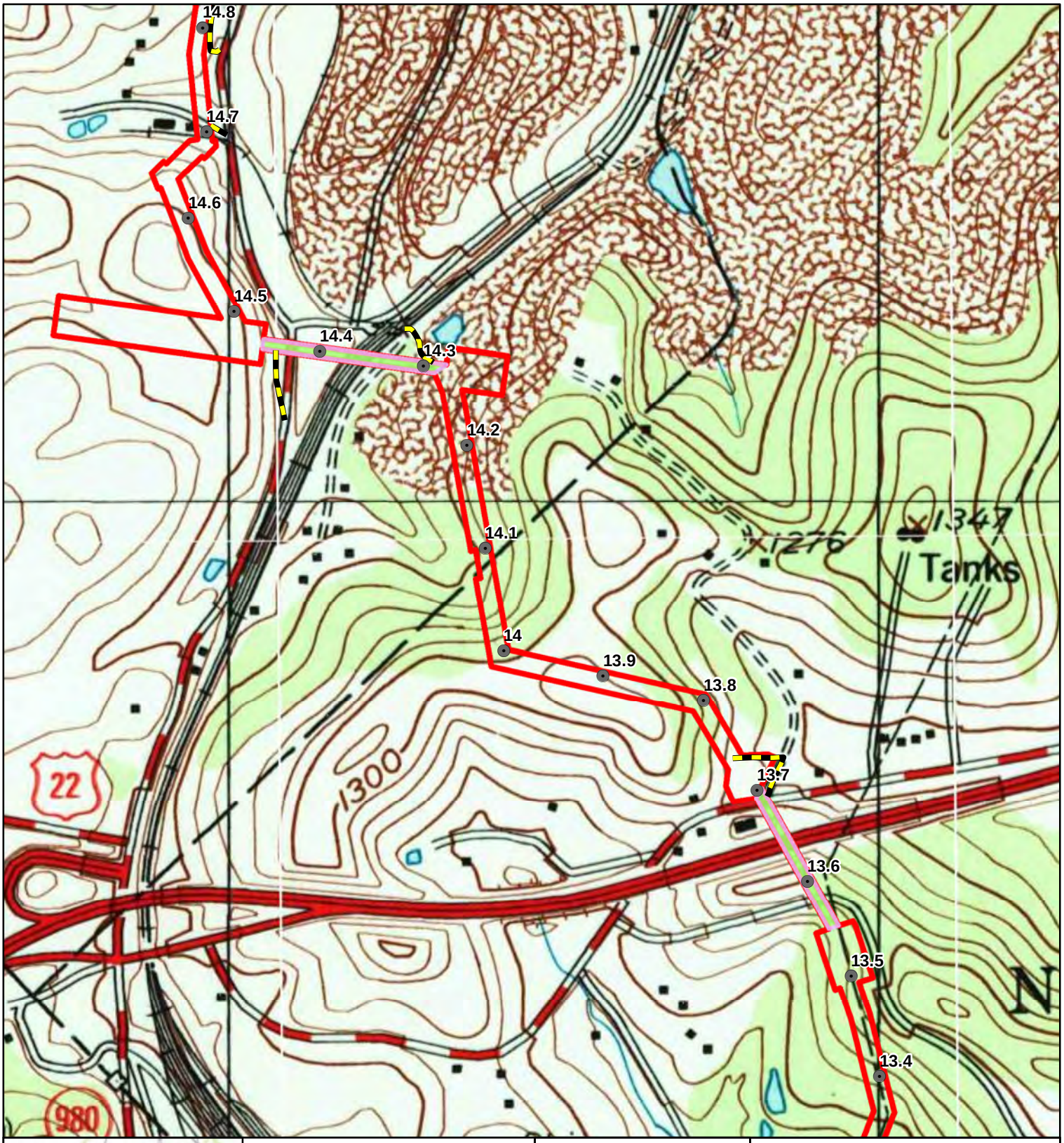
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.13

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

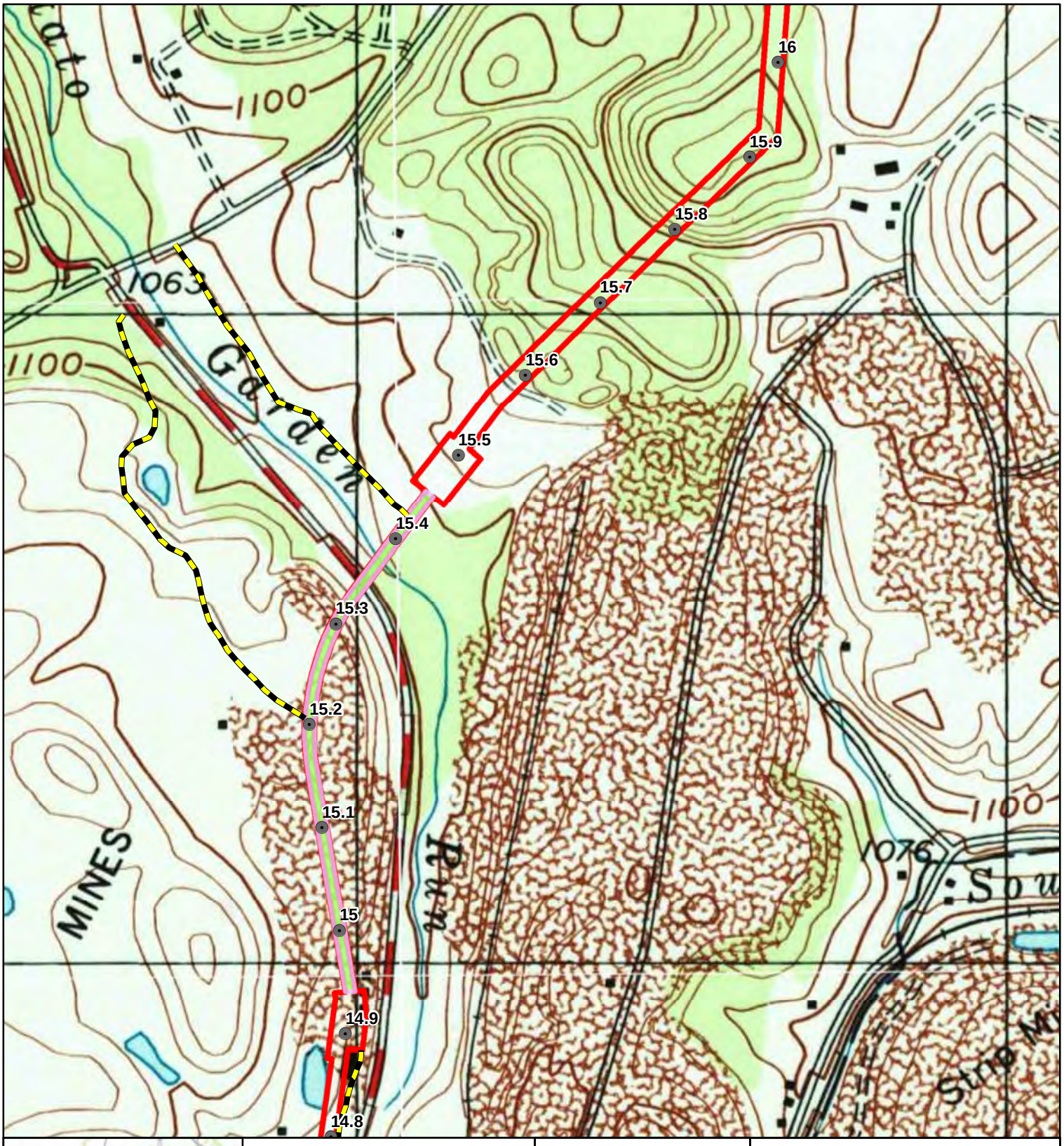
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.14

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

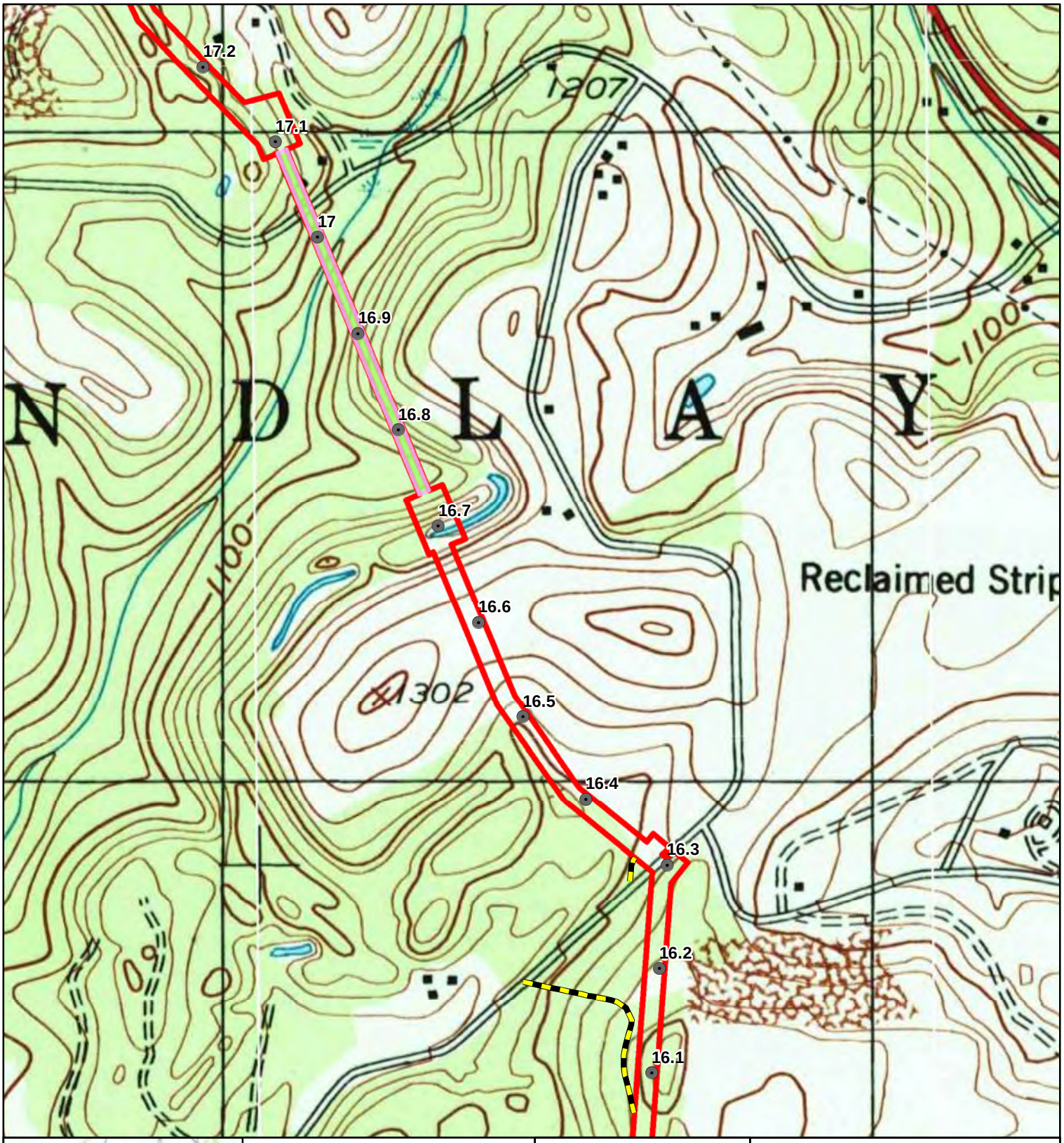
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.15

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

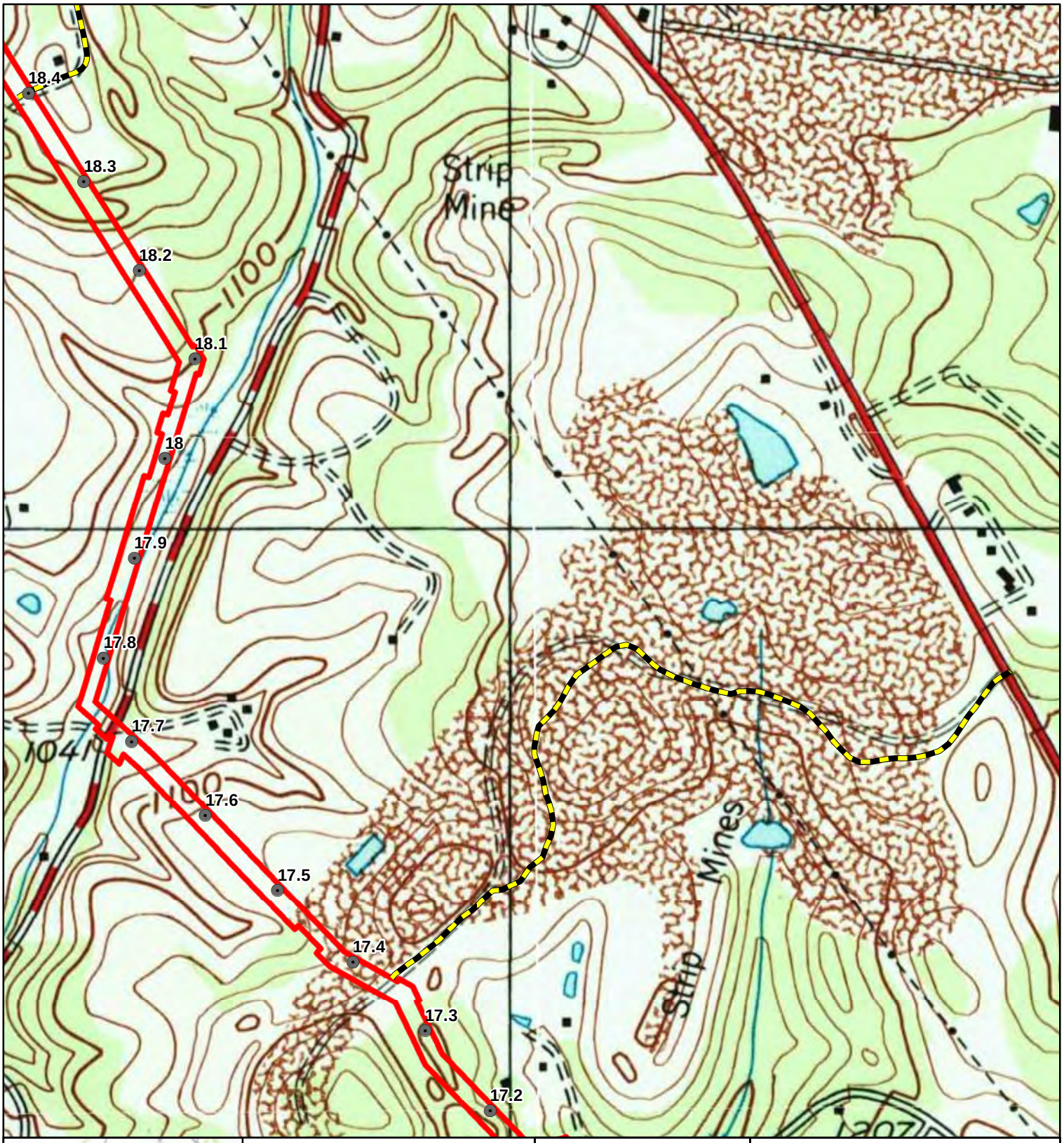
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

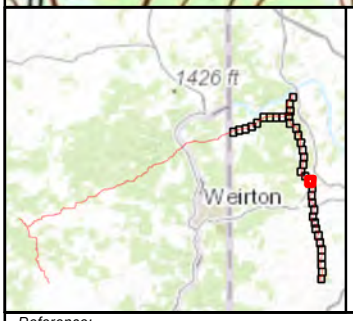
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.1 0.2 0.4

Figure 1.16

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

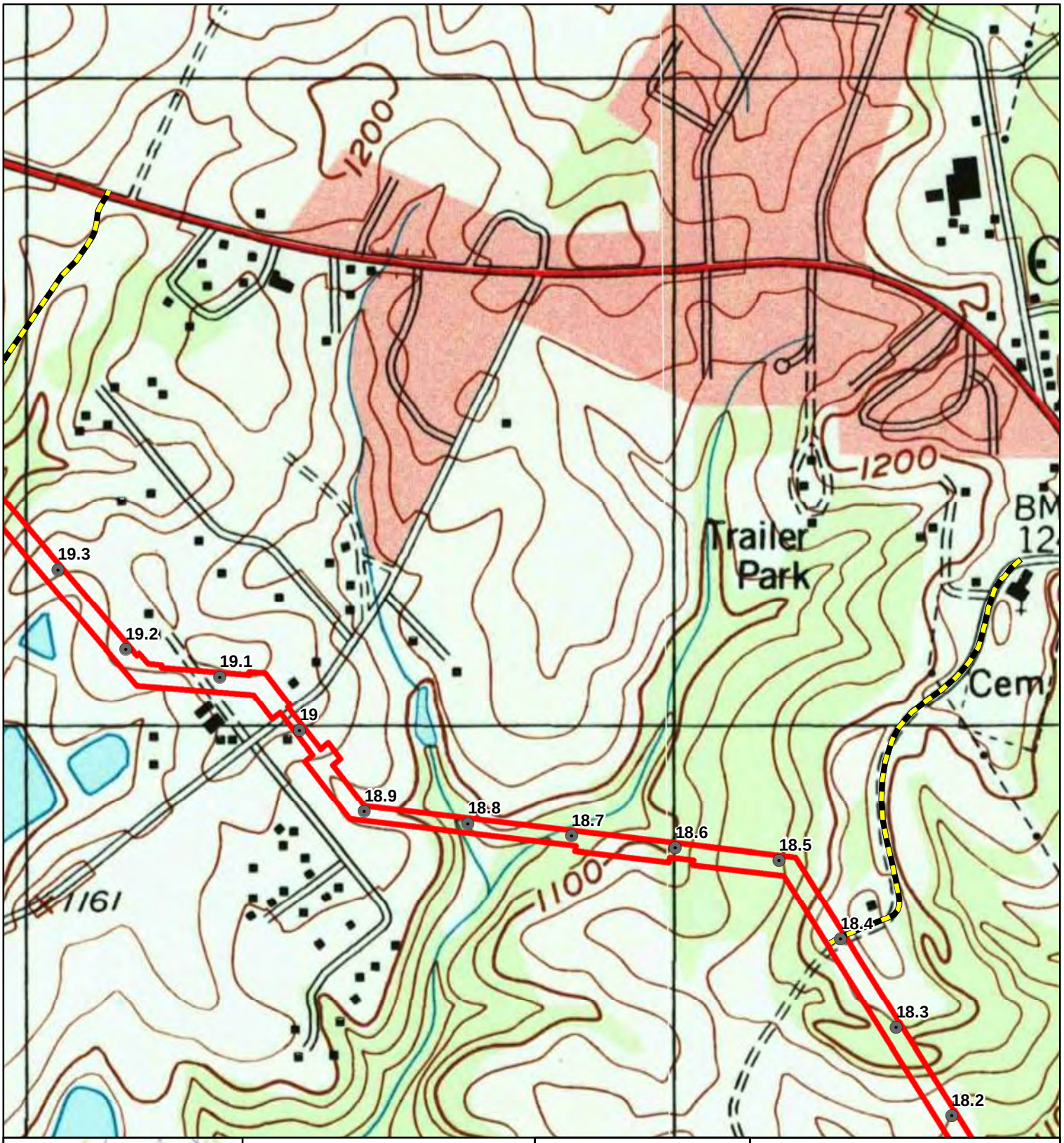
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.17

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

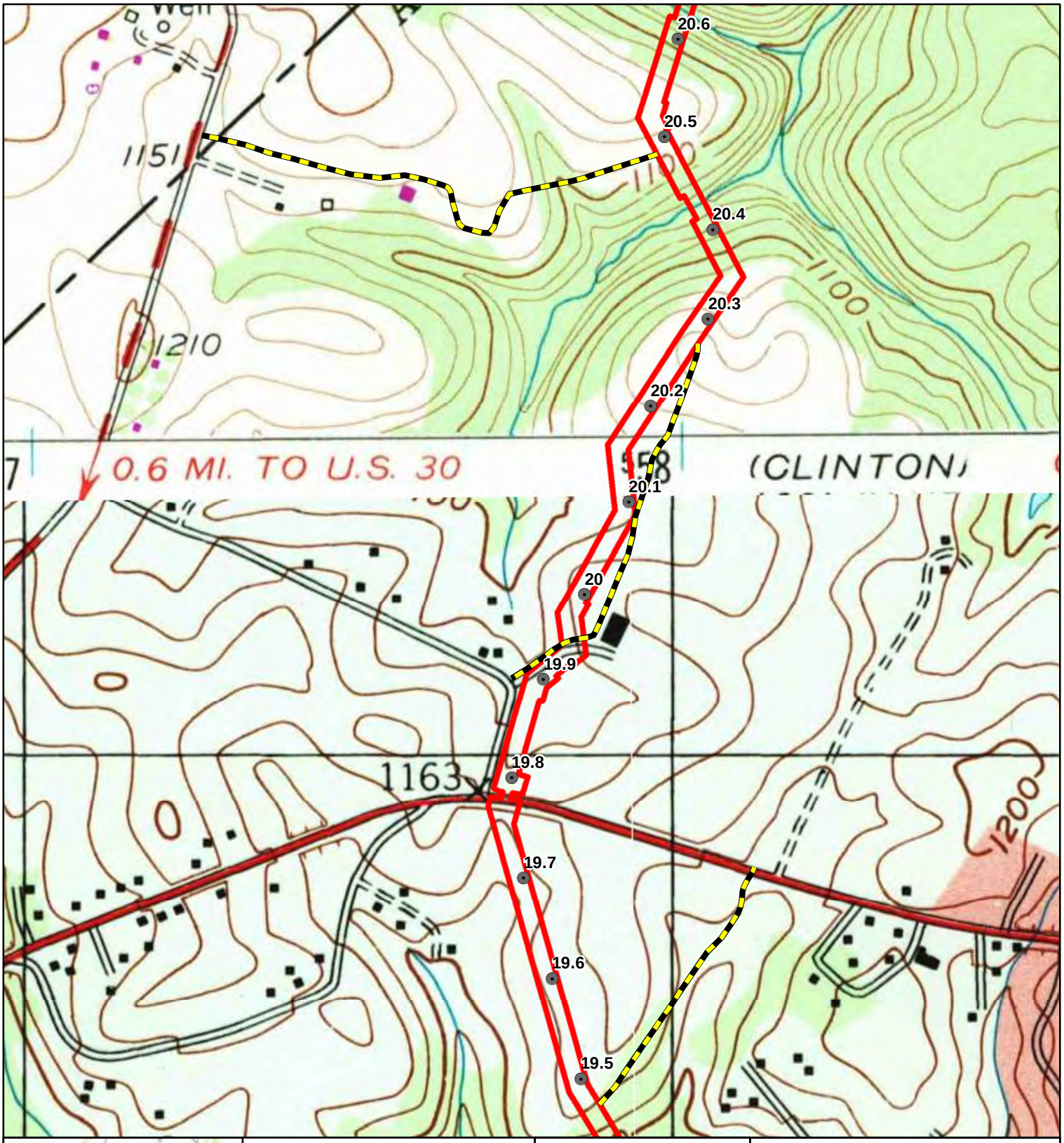
Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.18

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

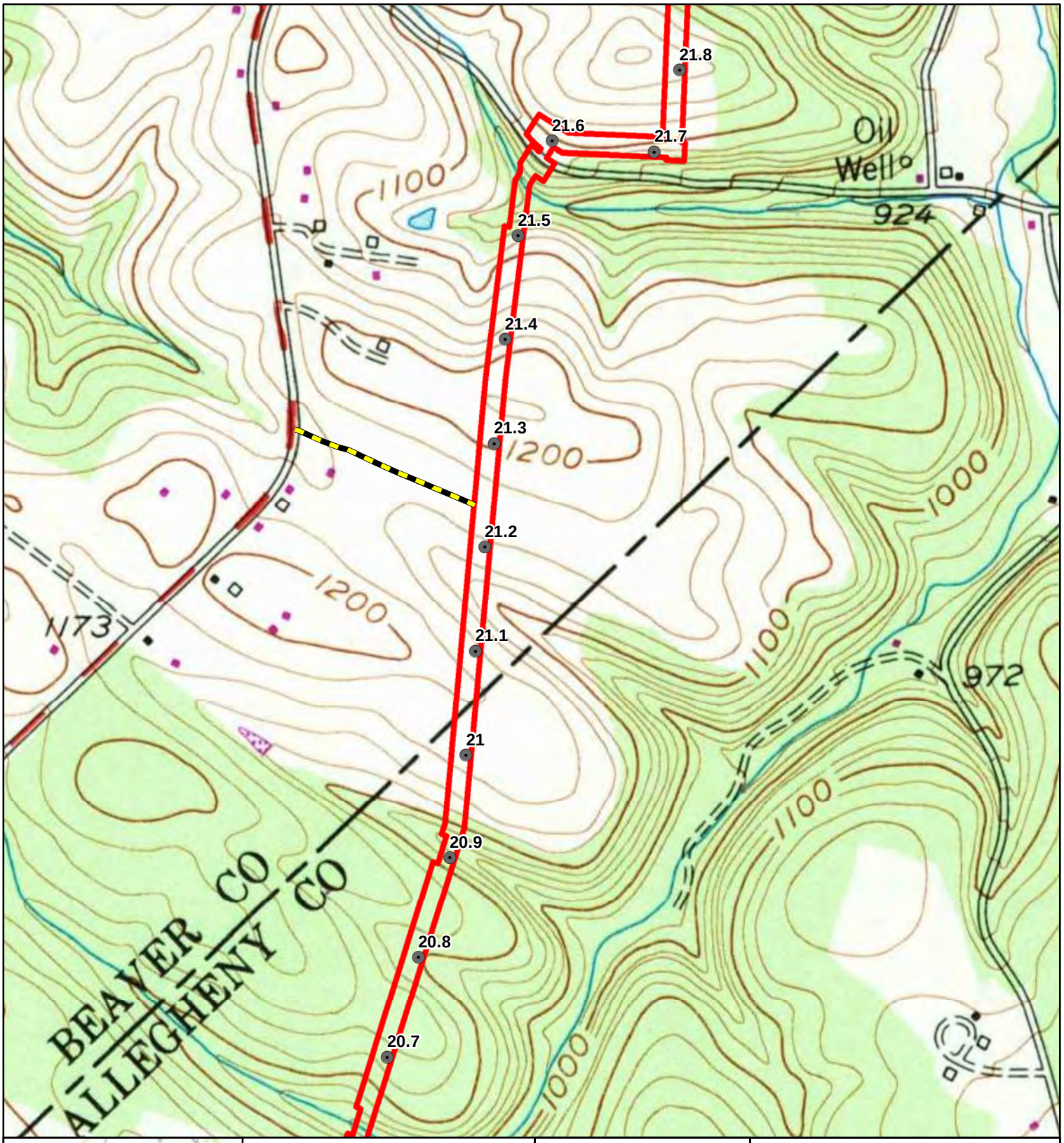
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.19

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

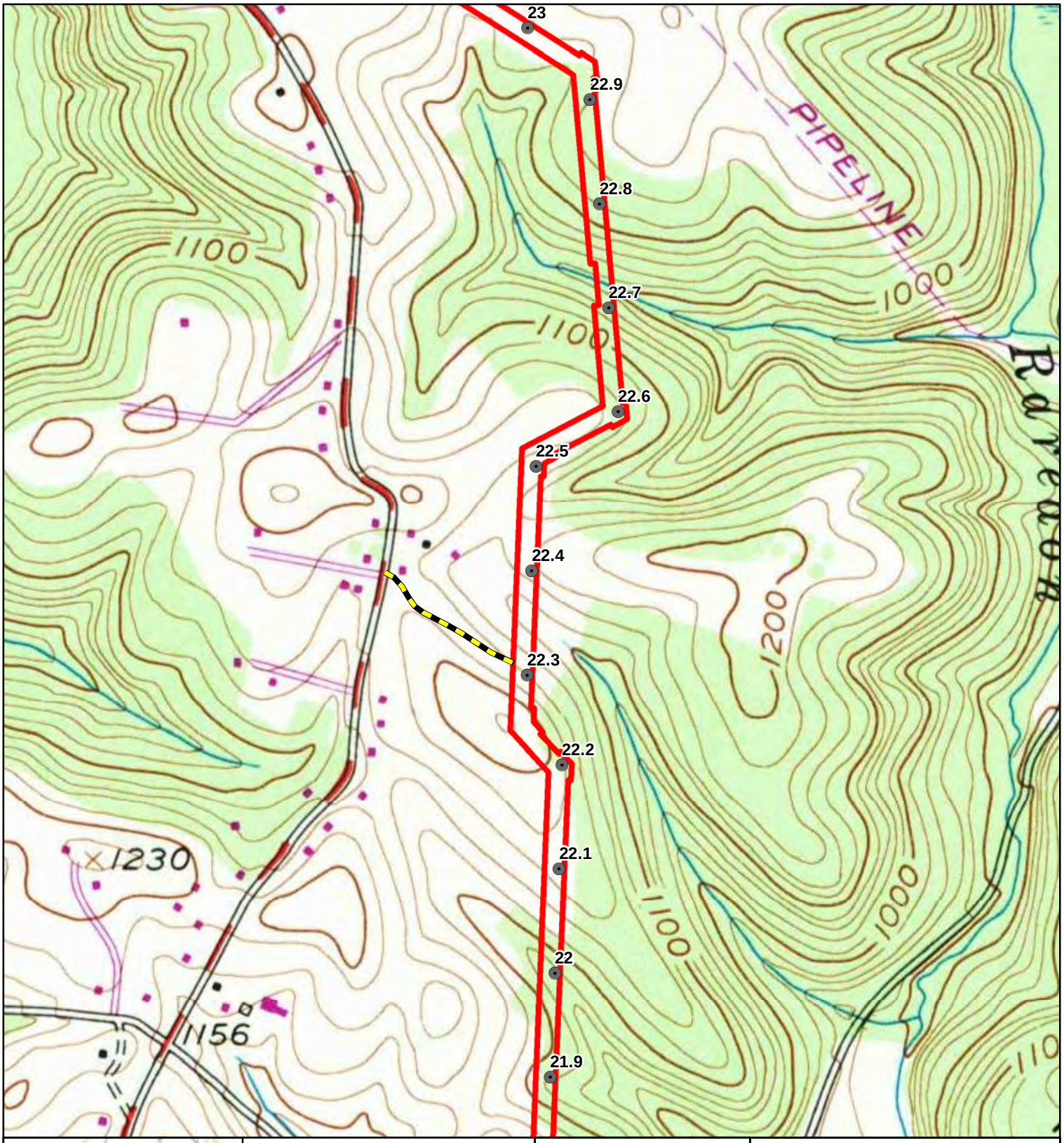
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.1 0.2 0.4

Figure 1.20

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

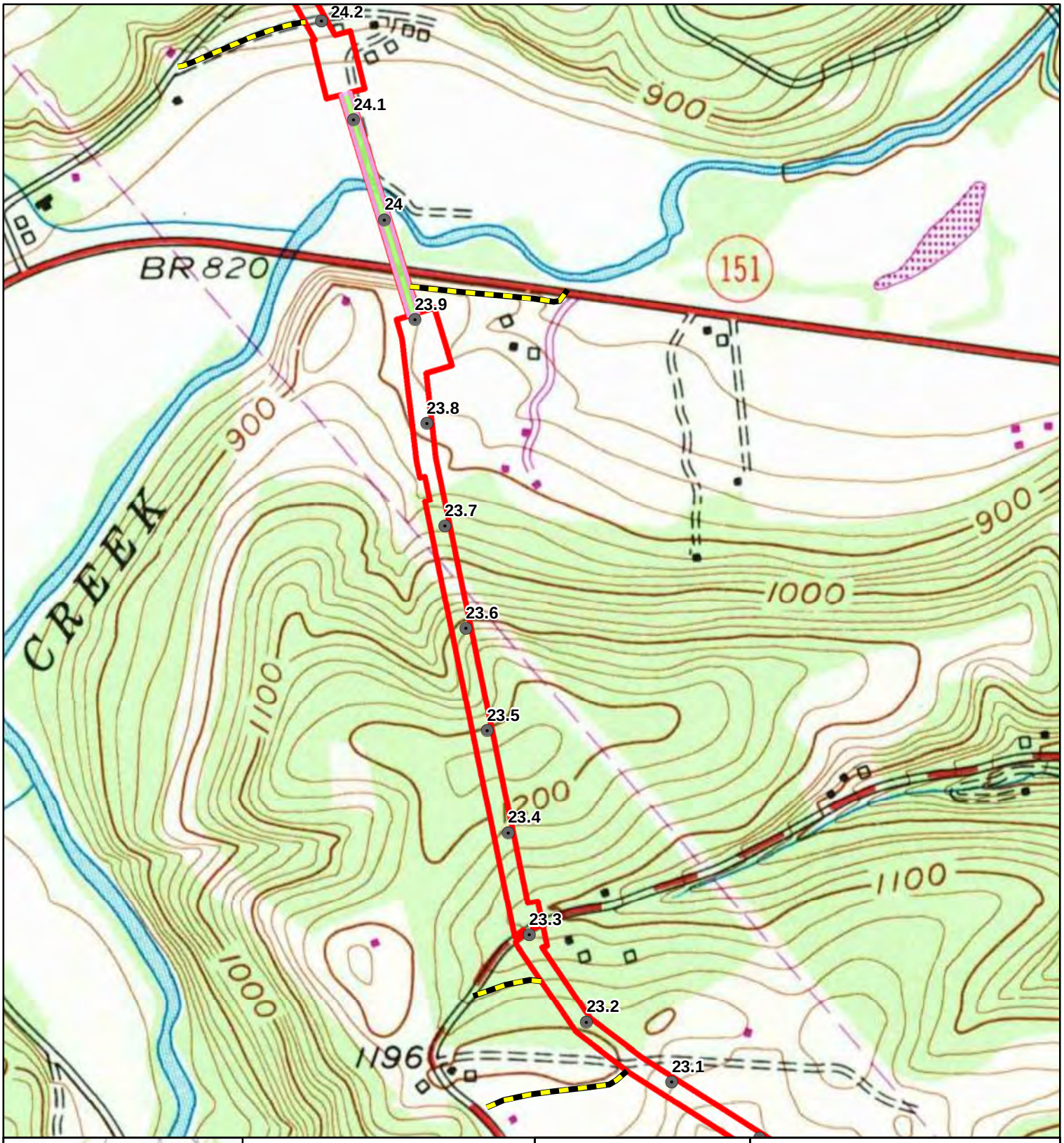
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.21

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

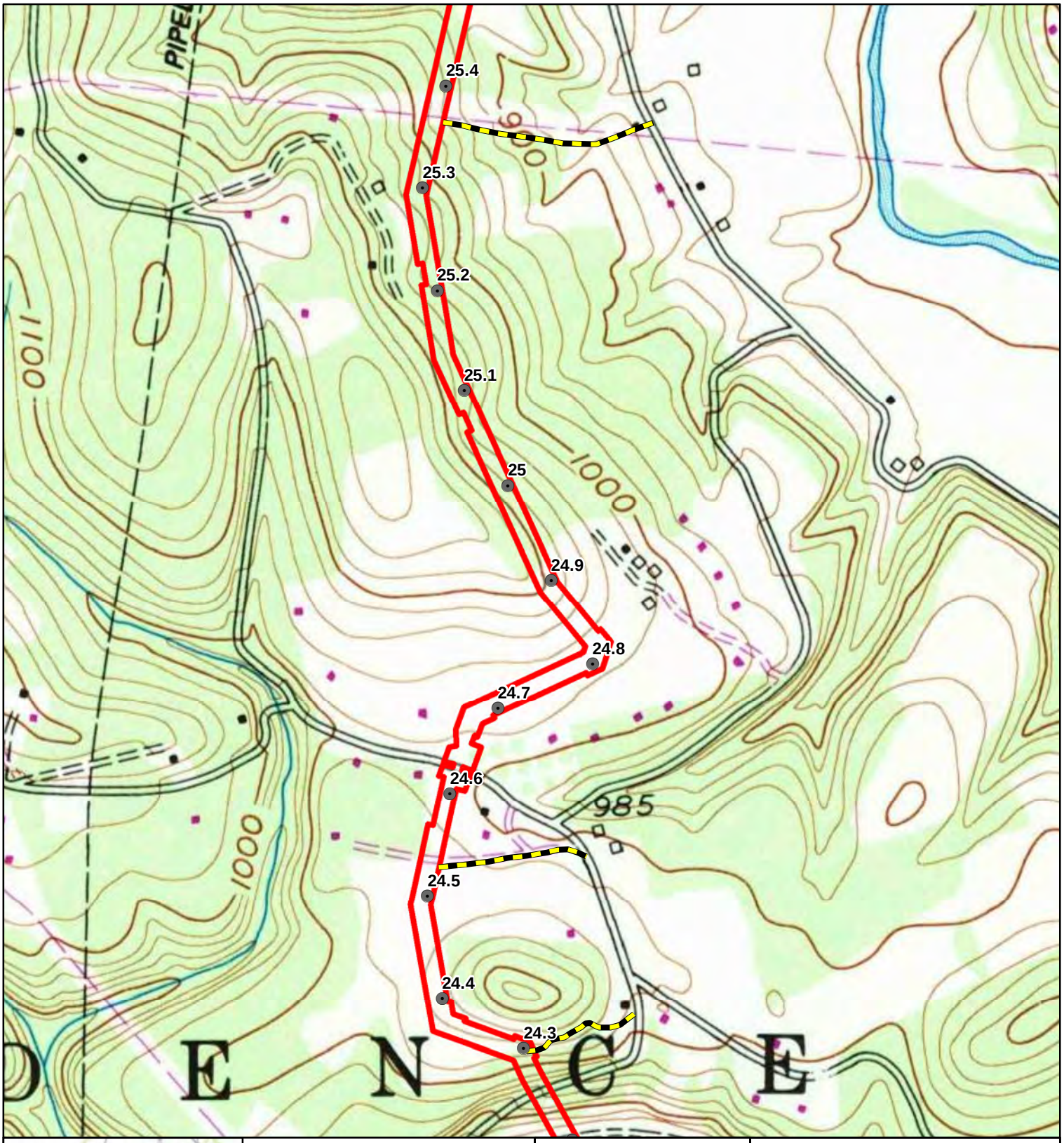
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.22

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

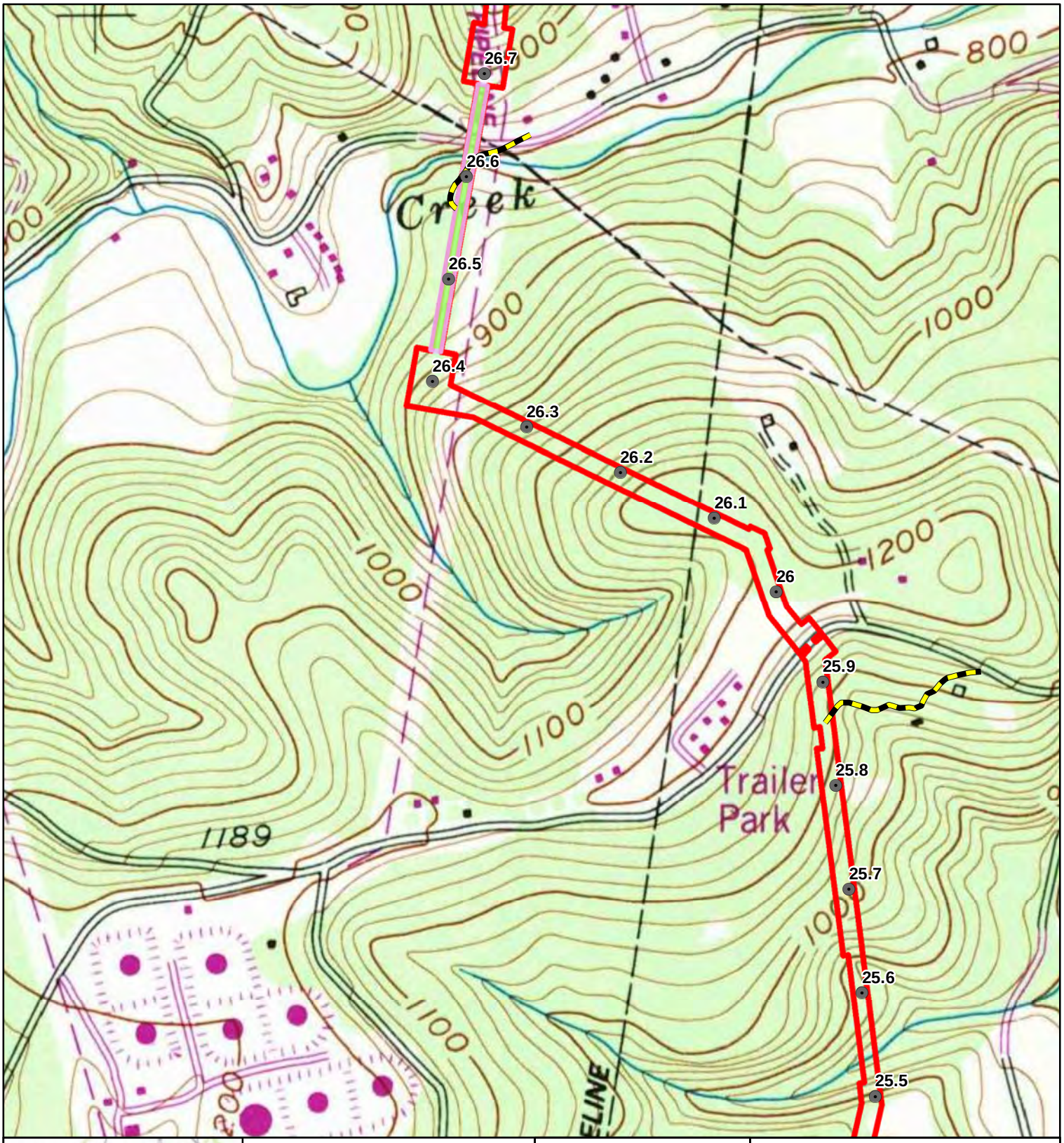
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.23

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

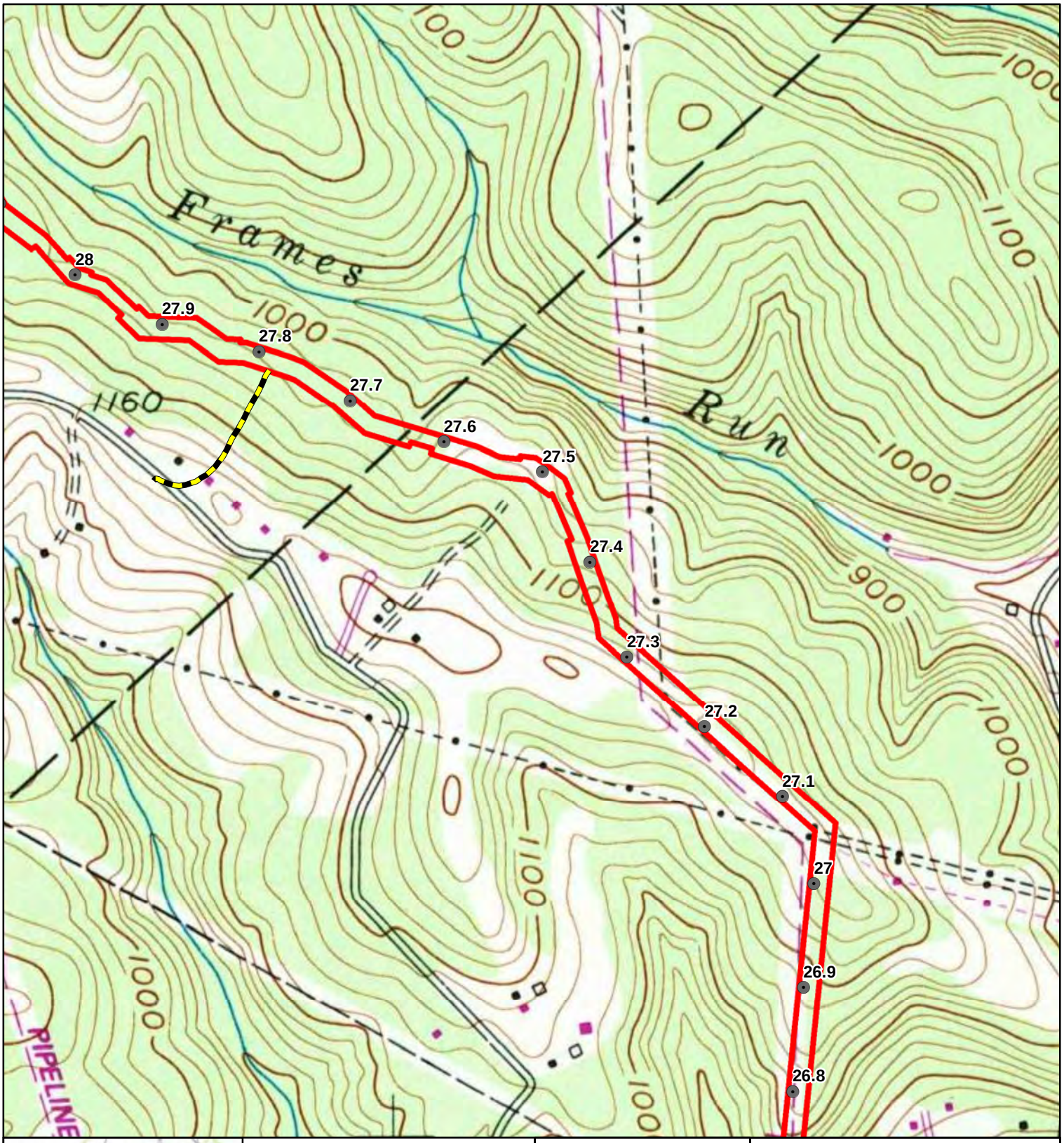
Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.24

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

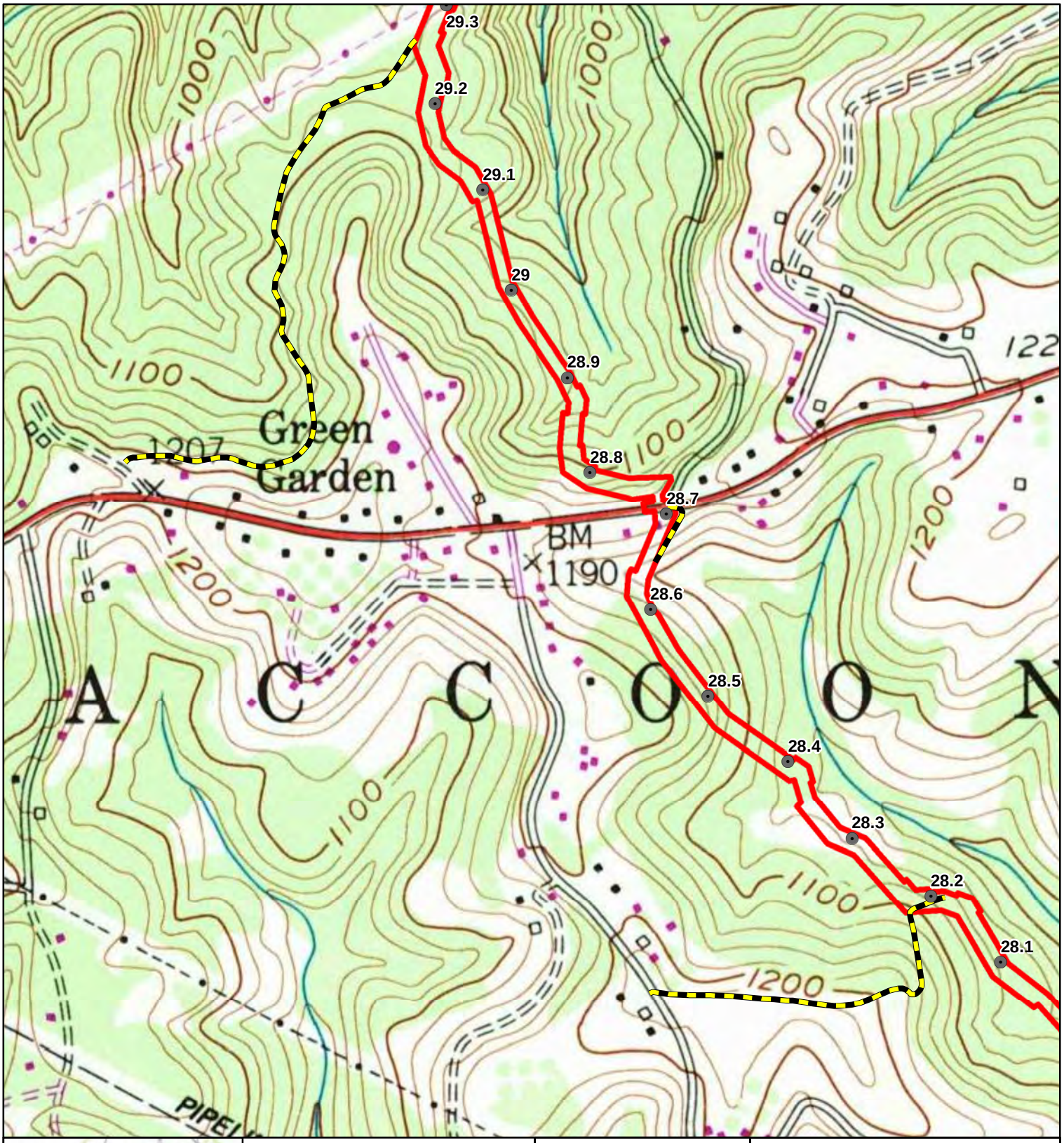
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

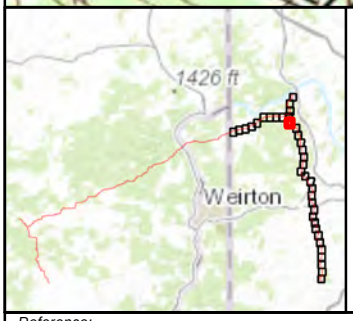
Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.25

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

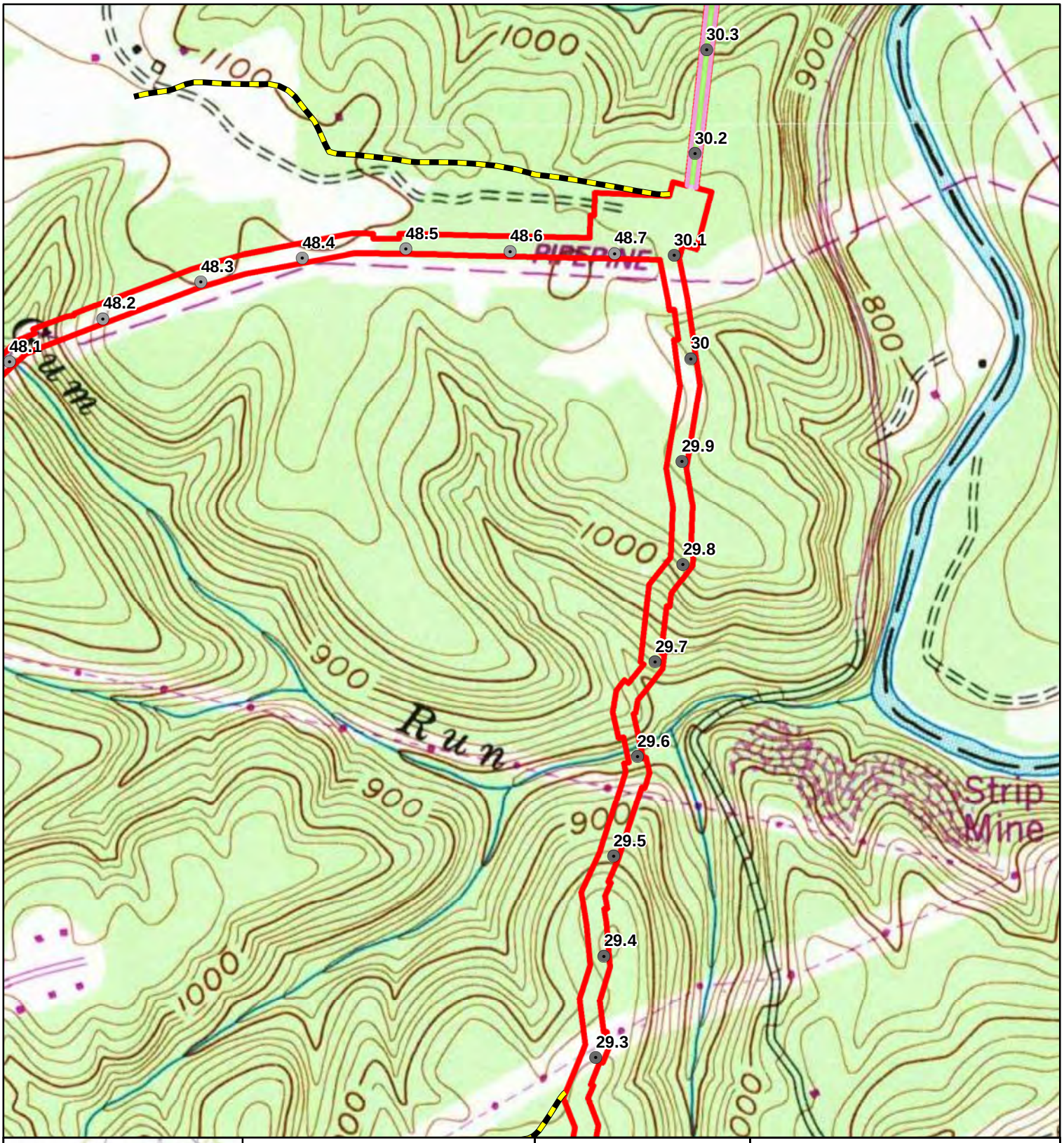
Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.26

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

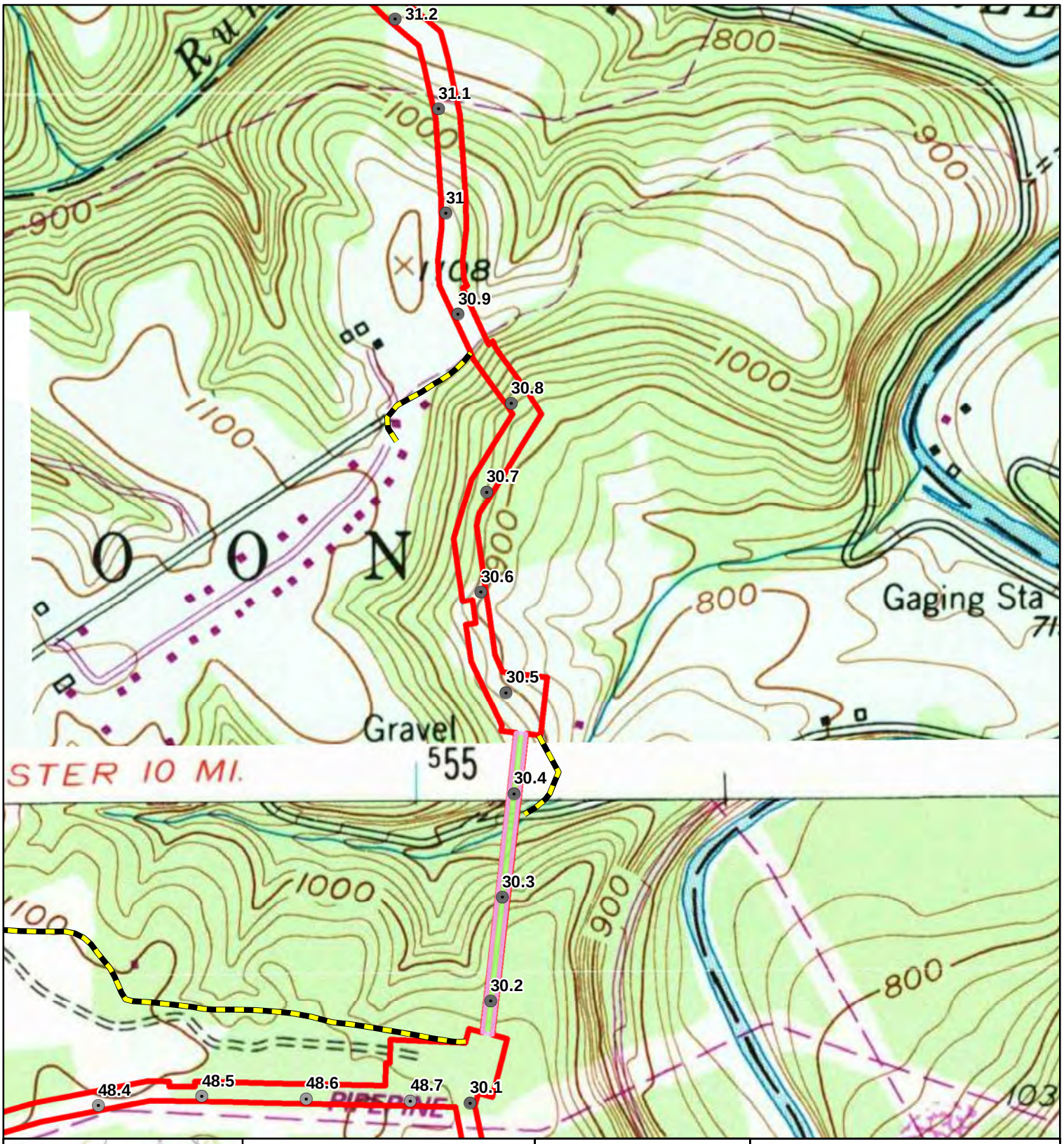
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Aliquippa PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.1 0.2 0.4

Figure 1.27

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

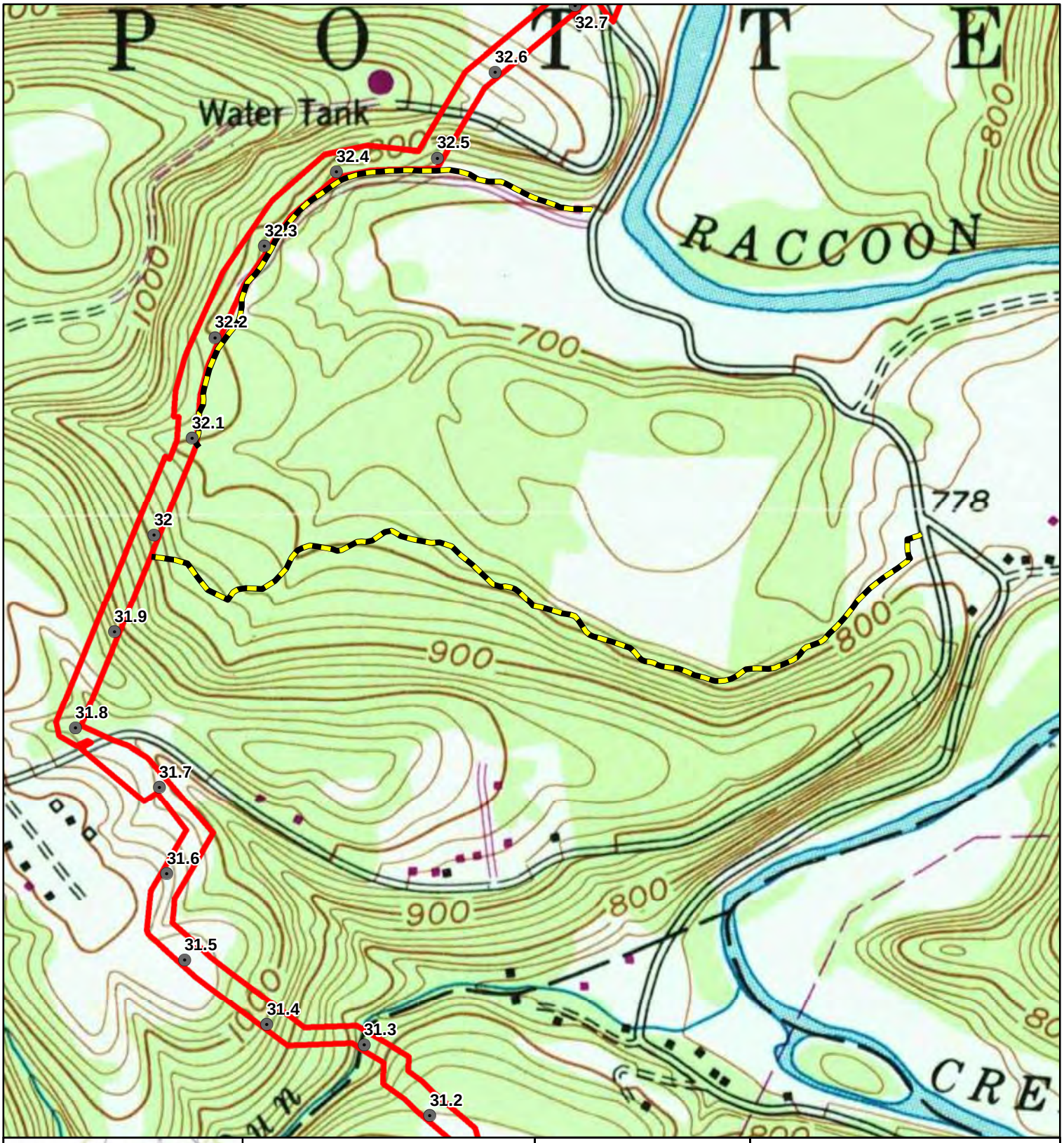
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1953 Beaver PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.28

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

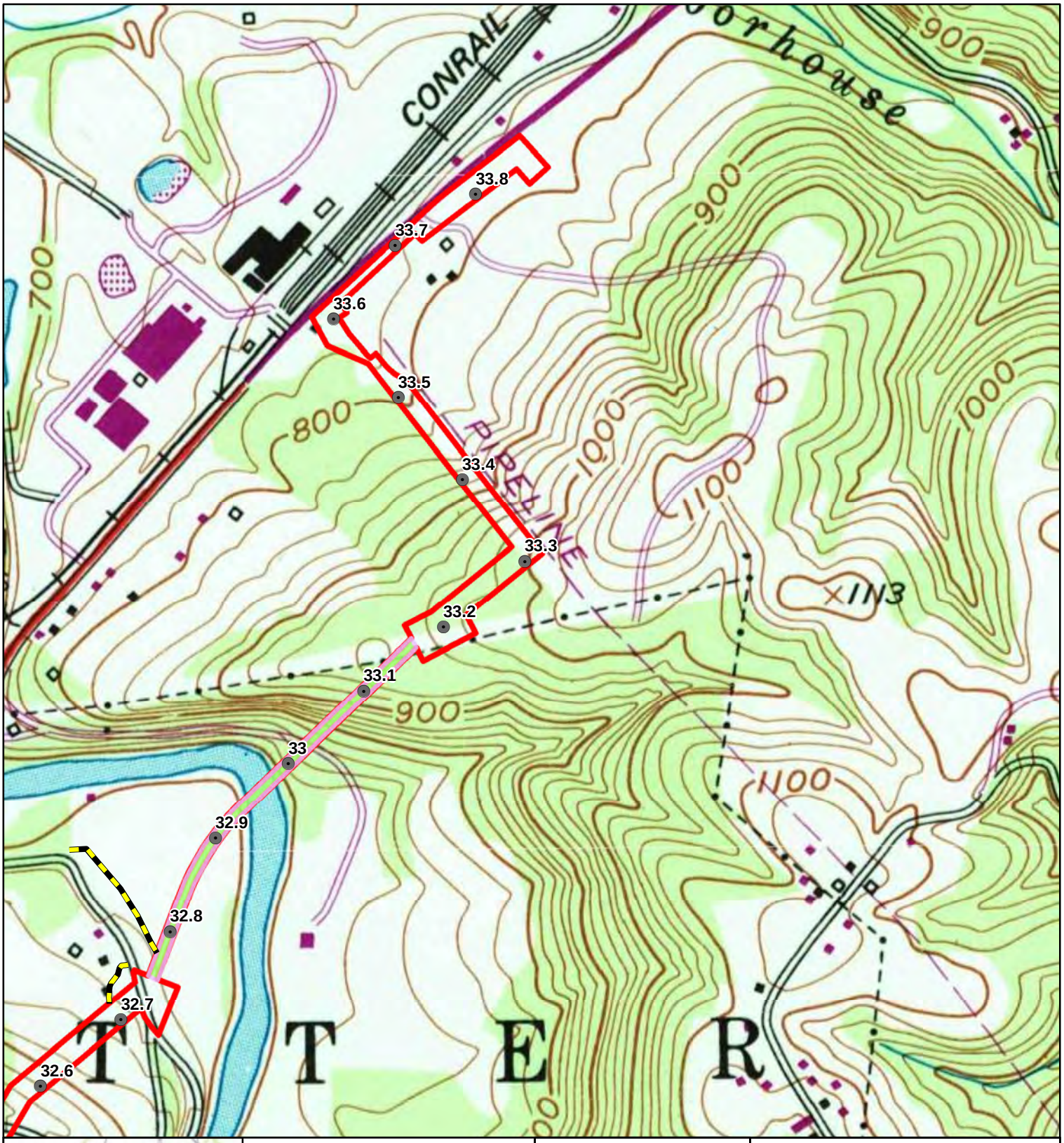
Reference:
USGS 1953 Beaver PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.29

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

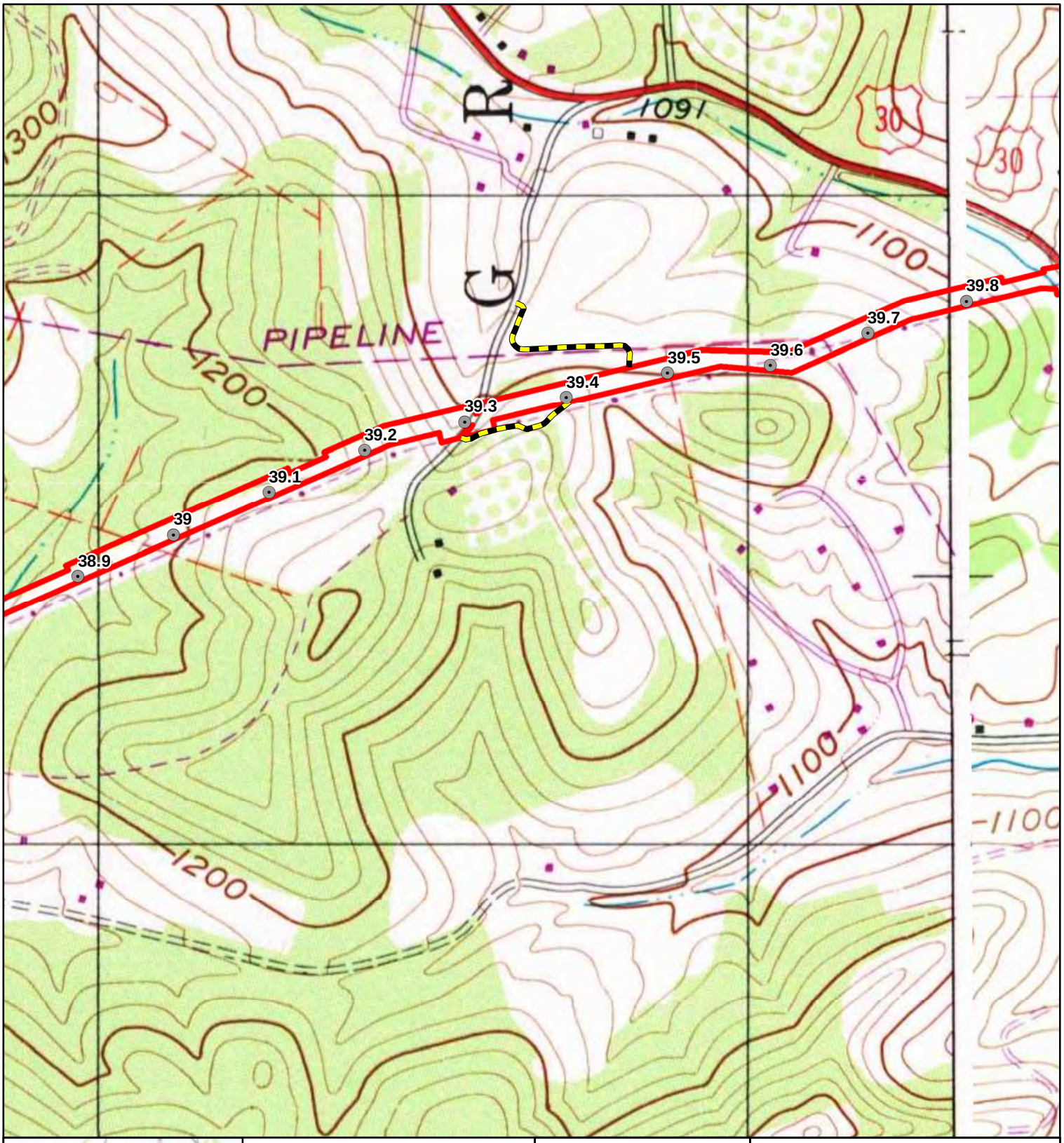
Reference:
USGS 1953 Beaver PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.30

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

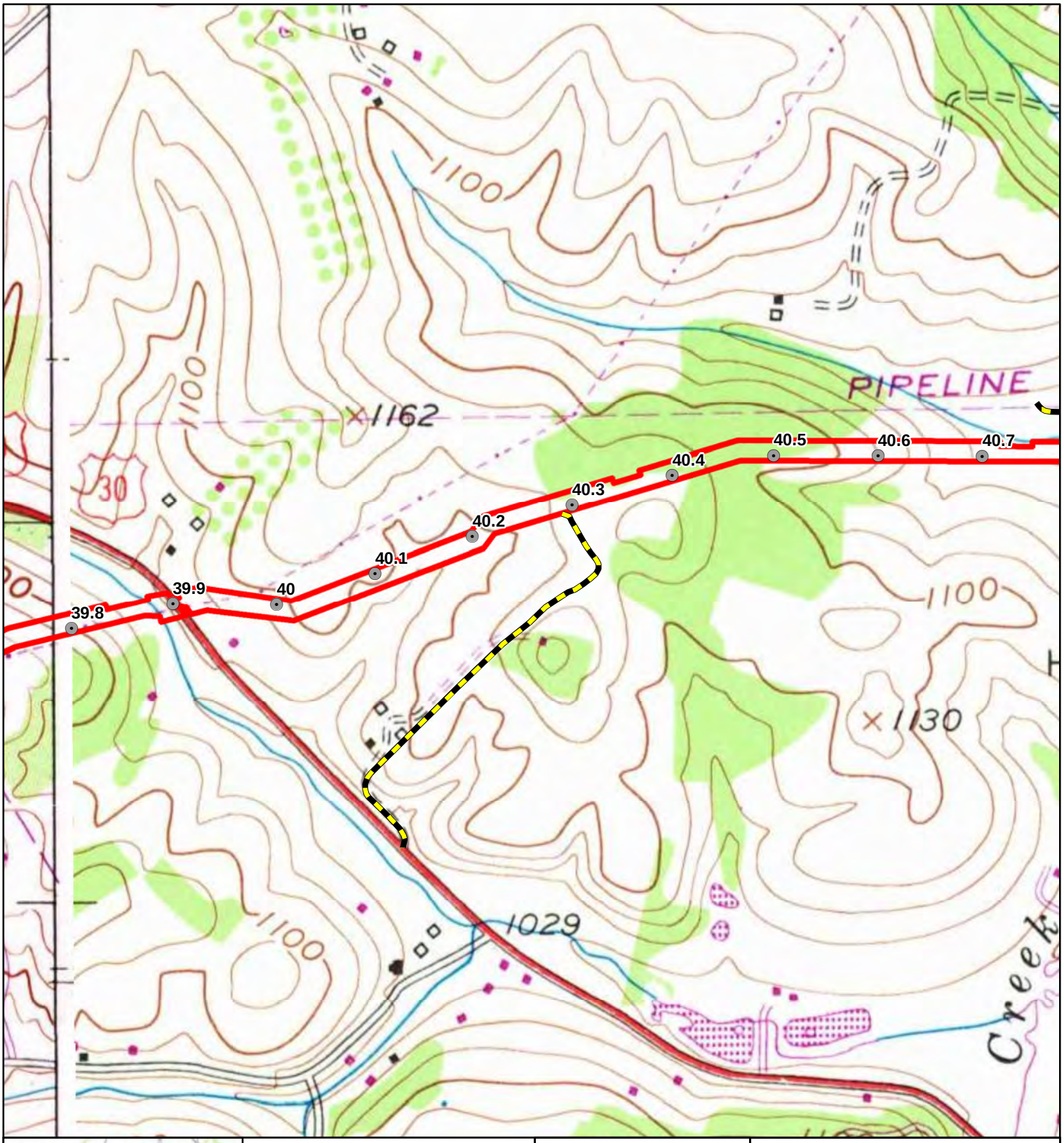
Reference:
USGS 1999 E Liverpool 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.31

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

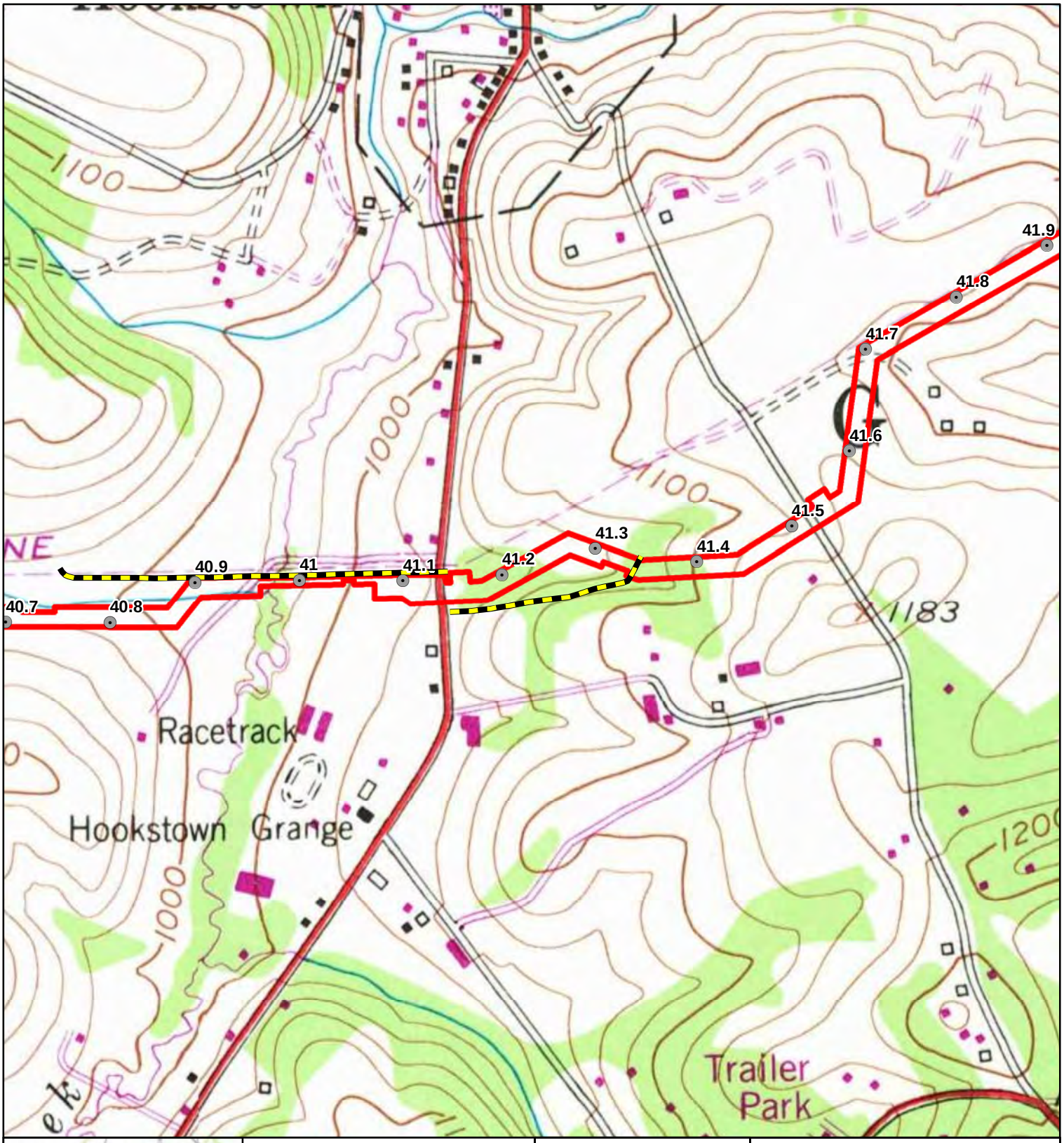
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.32

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

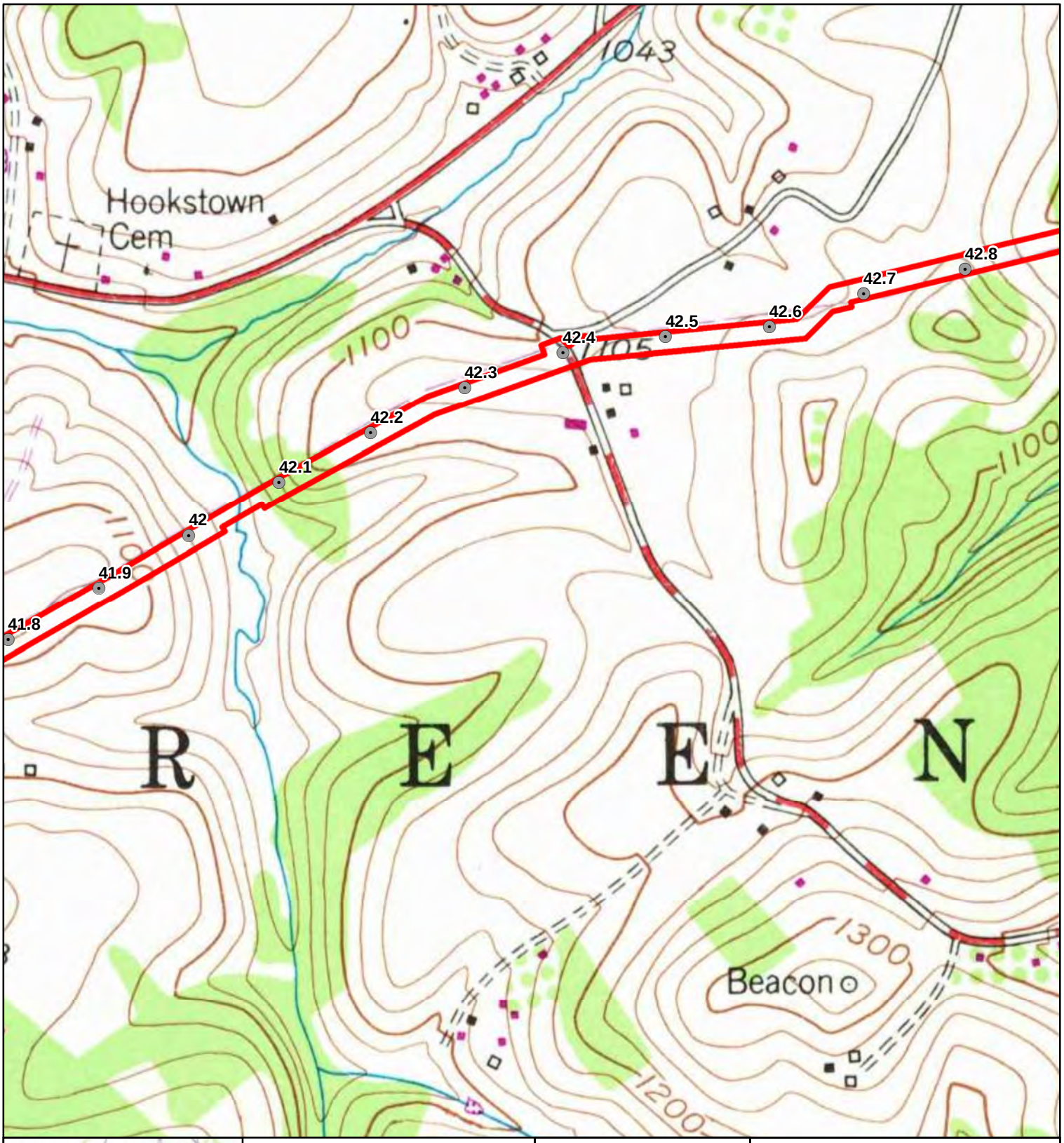
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.33

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

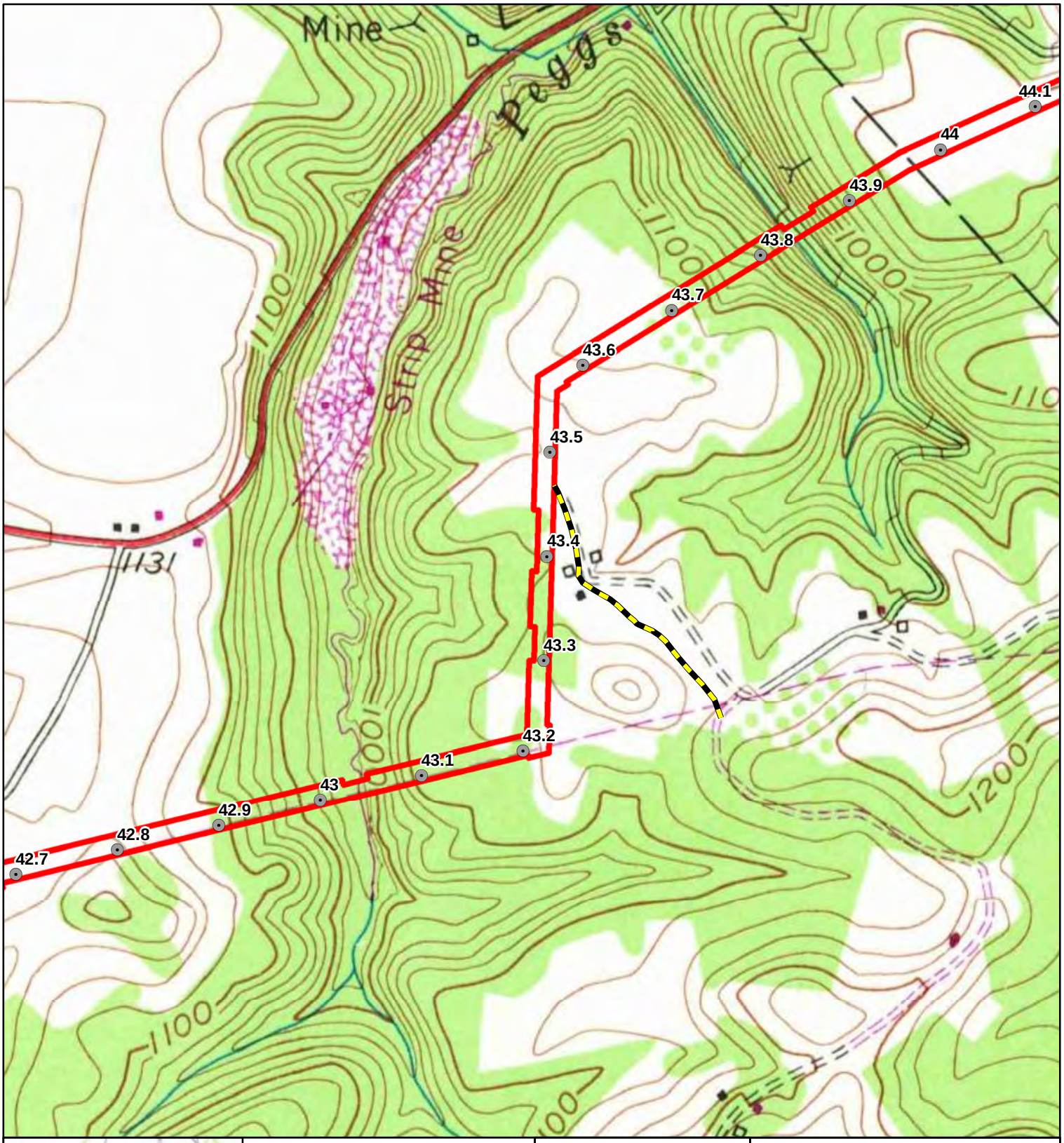
Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 1.34

Project Location on USGS Topographic Map

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

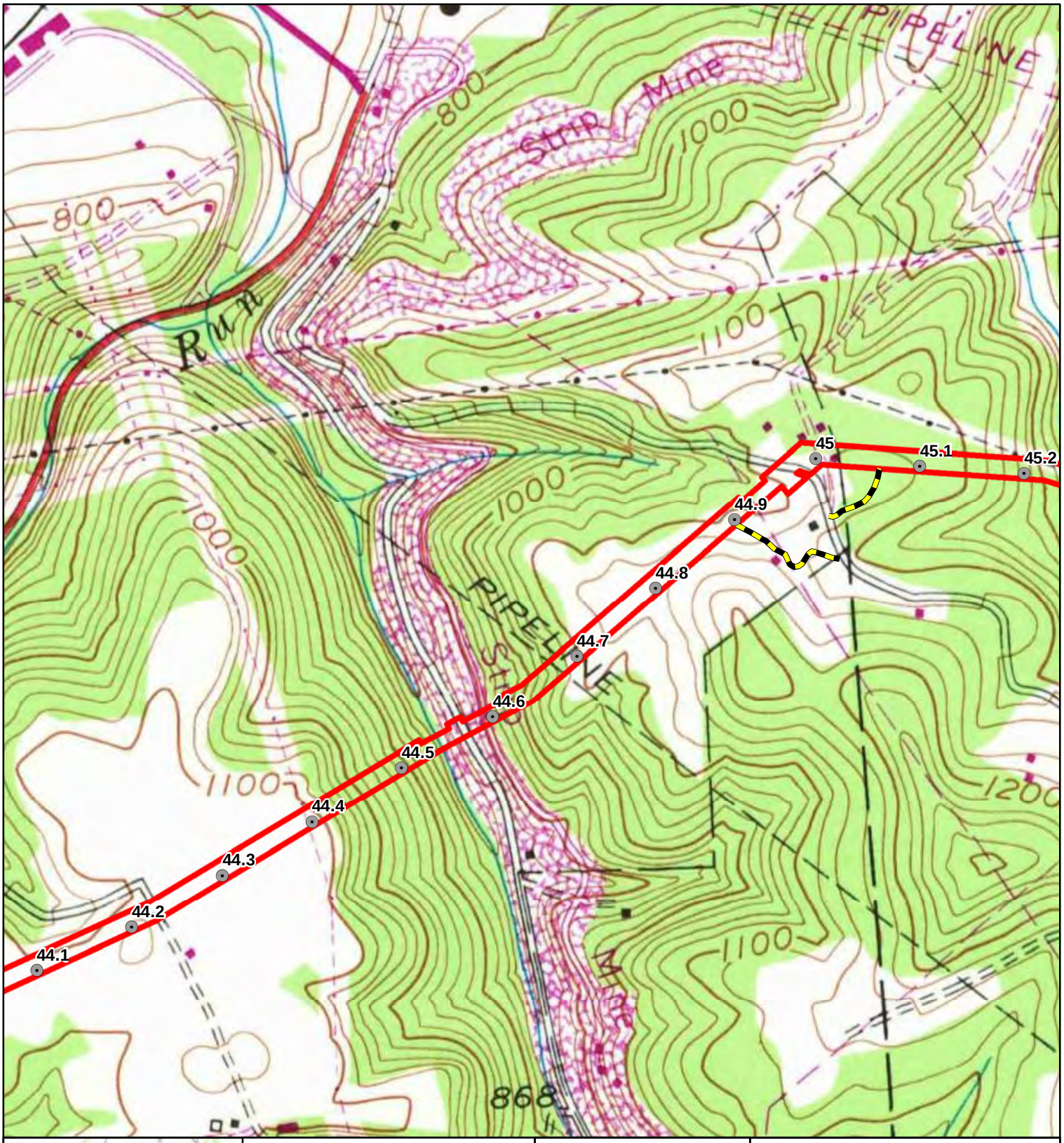
Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.35

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

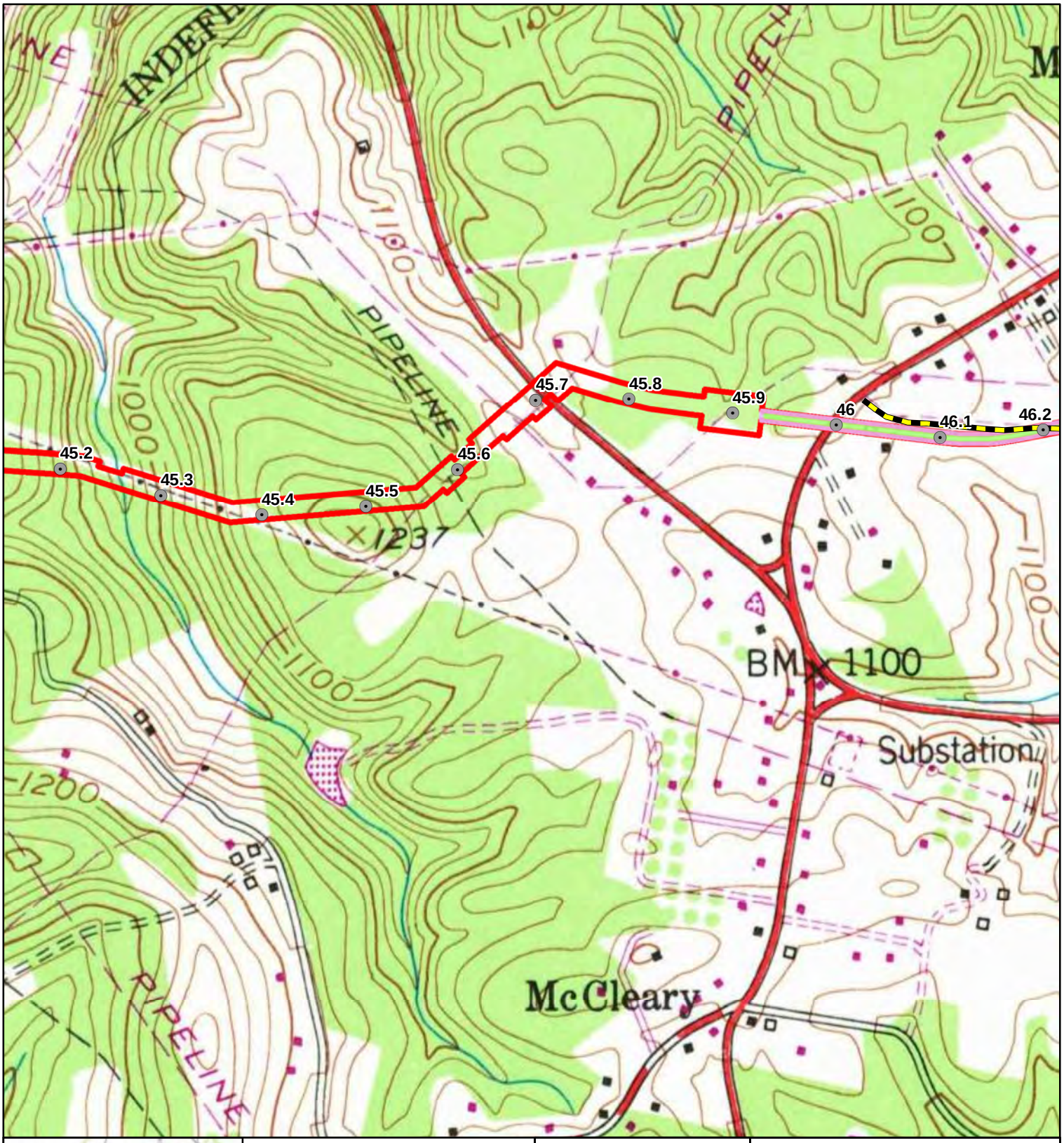
Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.36

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

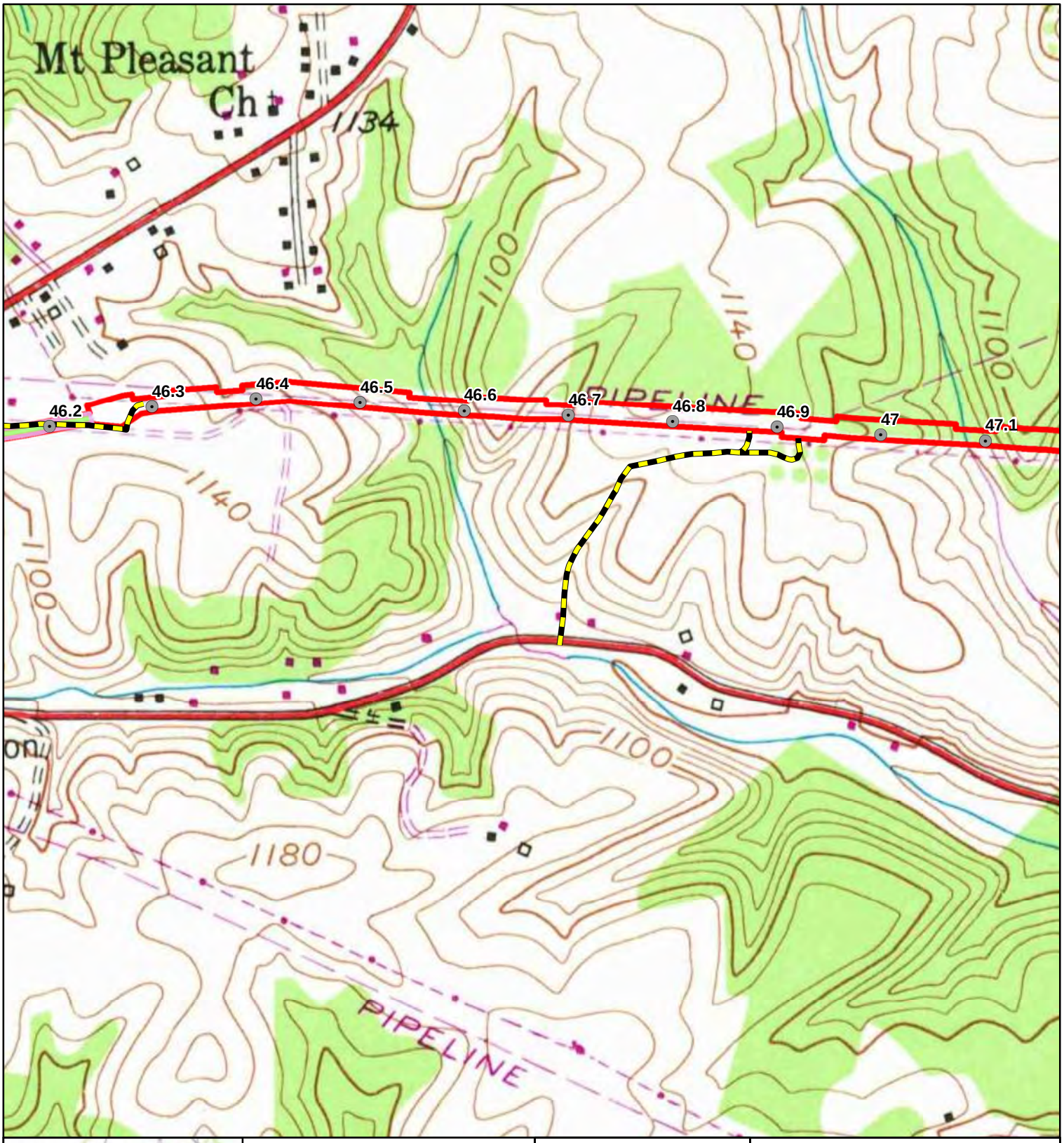
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.37

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

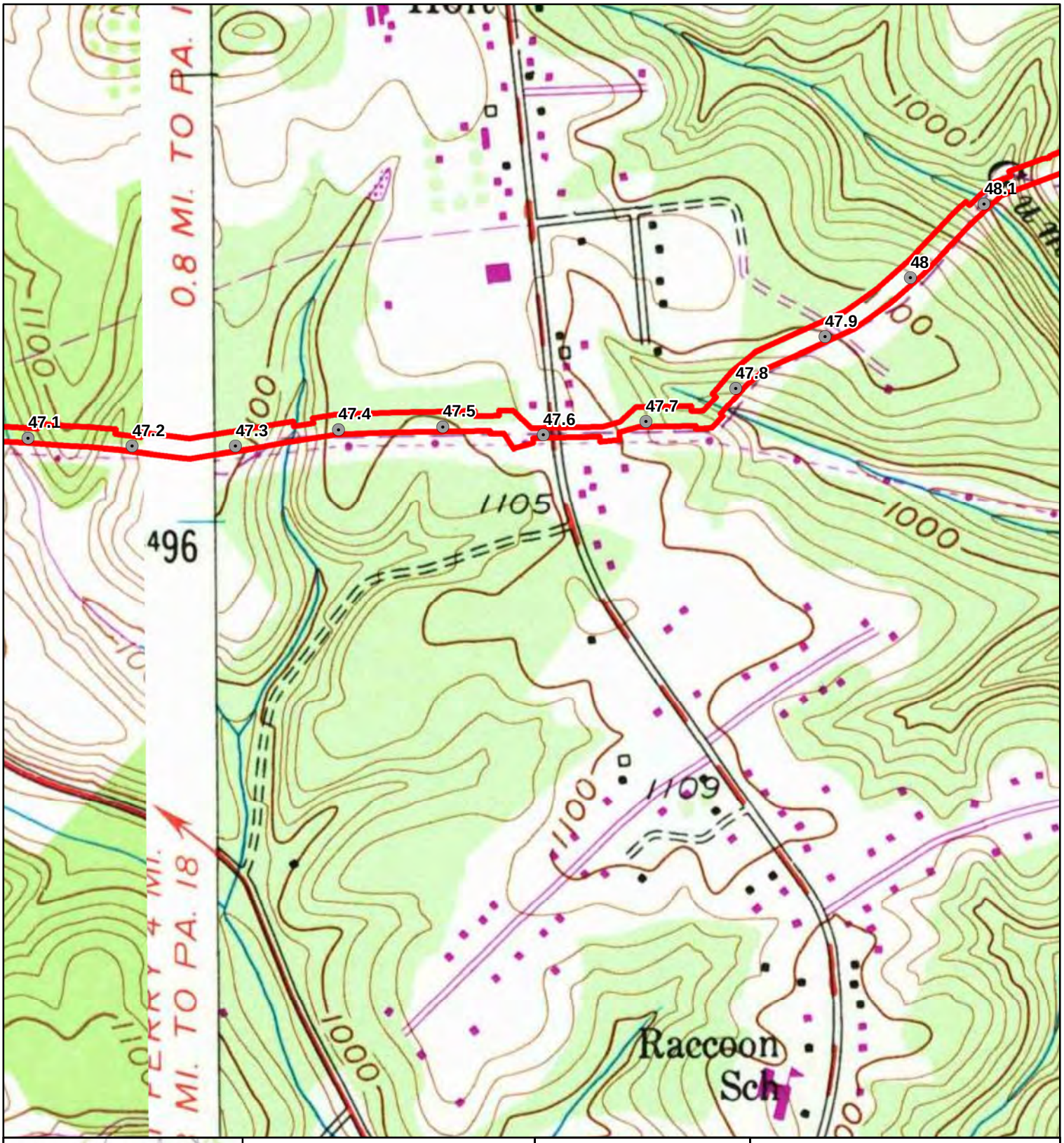
Reference:
USGS 1954 Hookstown PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 0.1 0.2 0.4 Miles

Figure 1.38

Project Location on USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1953 Beaver PA 7.5-Minute Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Modern_Topo.mxd

Legend

Project Features

- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 3.1

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

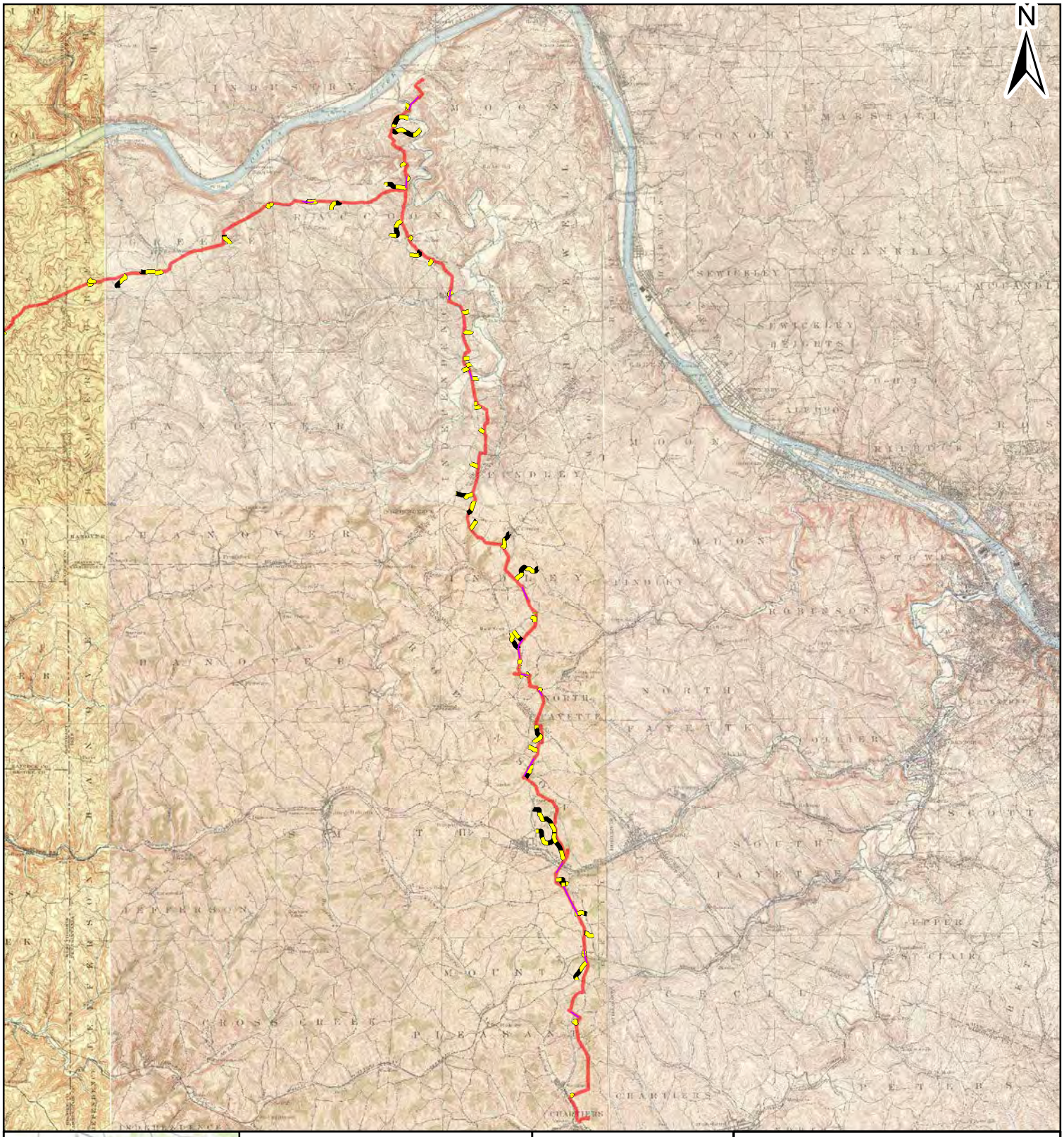
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

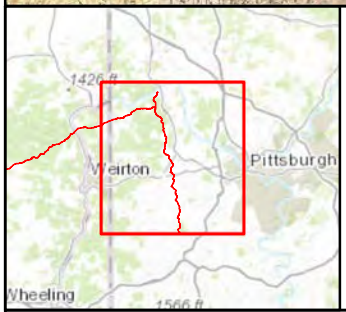
References:
Melish, John
1817 Melish-Whiteside Maps of Allegheny, Beaver, and Washington Counties

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\3.1Melish.mxd





Legend

Project Features

- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 3.2

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

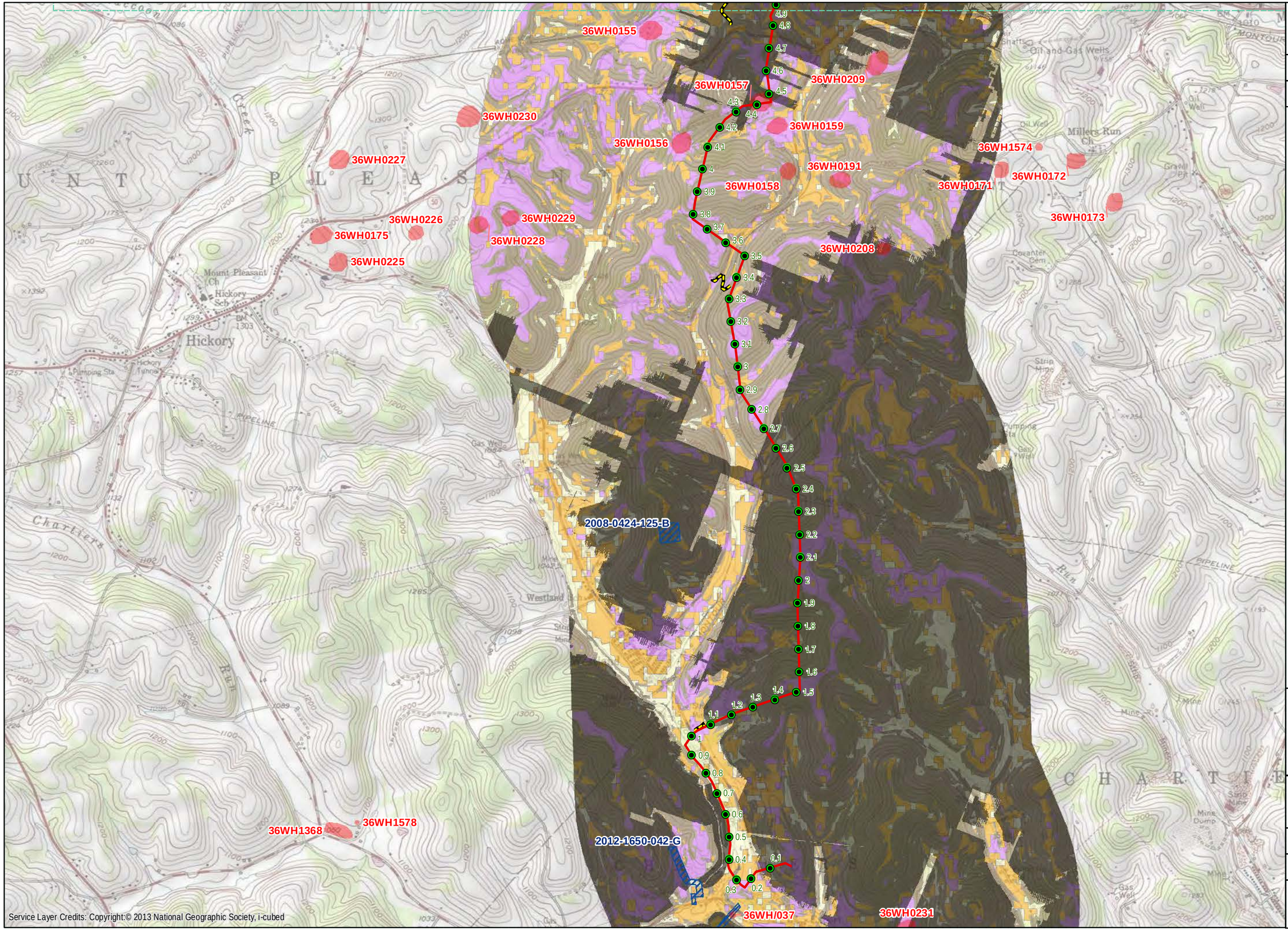
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USGS, 1904 Map of the Beaver, PA Quadrangle. 1:62,500; 1904 Map of the Steubenville, WV Quadrangle. 1:62,500;
1904 Map of the Wellsville, WV Quadrangle. 1:62,500; 1906 Map of the Burgettstown, PA Quadrangle. 1:62,500;
1906 Map of the Carnegie, PA Quadrangle. 1:62,500; 1908 Map of the Sewickley, PA Quadrangle. 1:62,500

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\3.2_1906_USGS.mxd



Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.1

Project Location:

County: Washington
USGS Quad: Midway

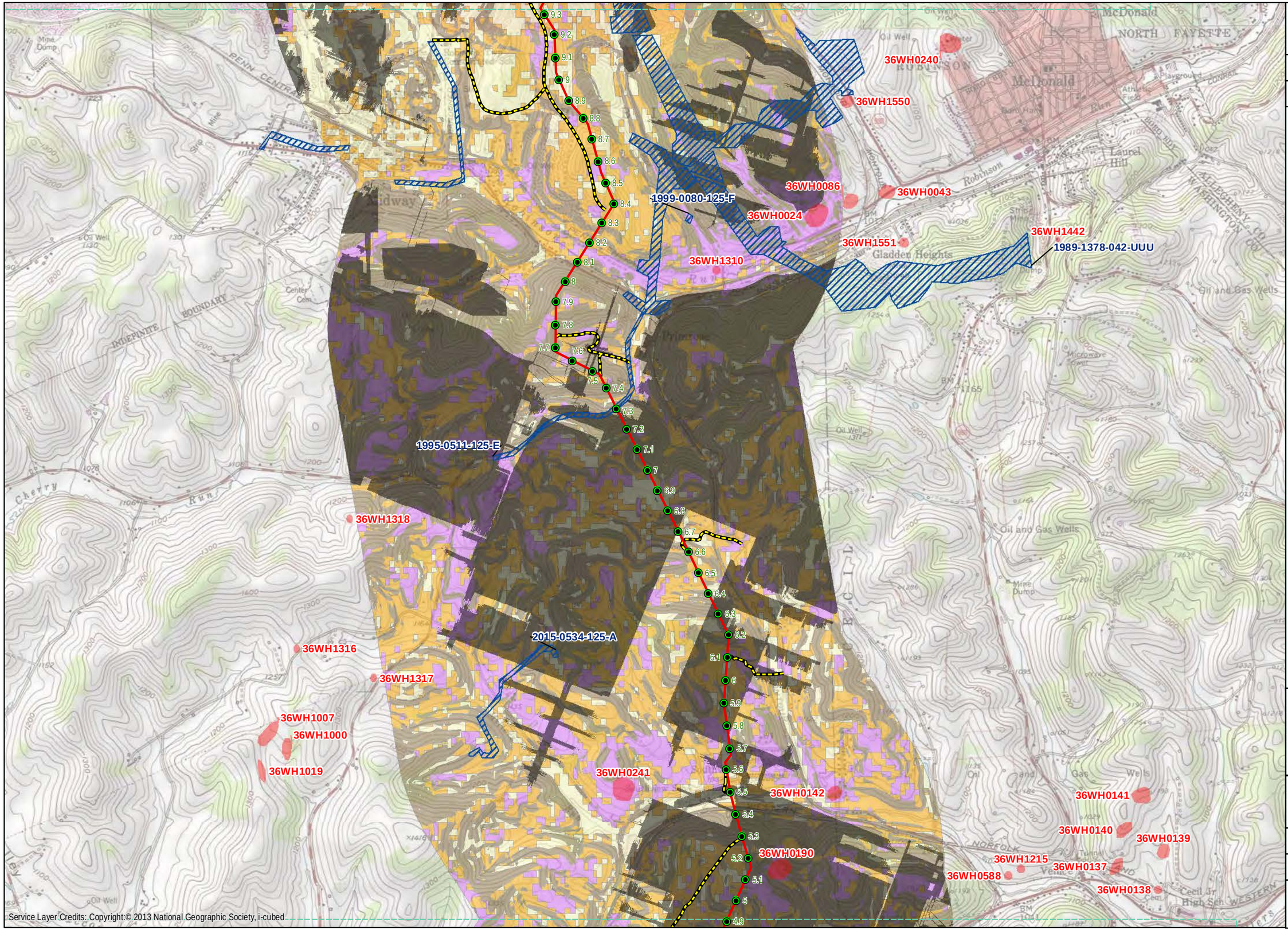
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR DATE: 8/24/2016
APPROVED BY: --- PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km

N

1 in = 2,000 ft



AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.2

Project Location:

County: Washington
USGS Quad: Midway/Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km

N

1 in = 2,000 ft

AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.3

Project Location:

County: Washington/Allegheny
USGS Quad: Clinton

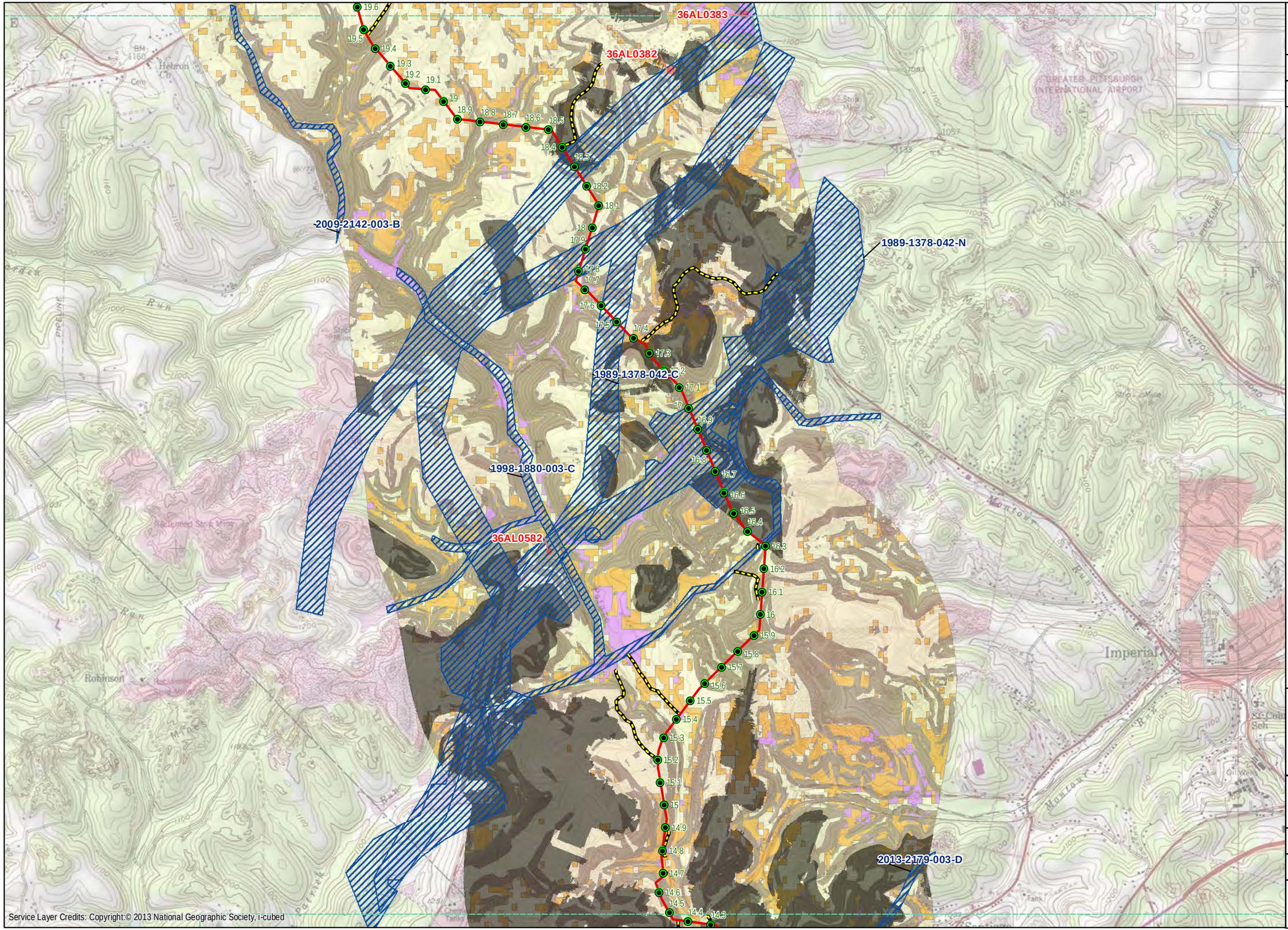
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km

N

1 in = 2,000 ft



AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.4

Project Location:

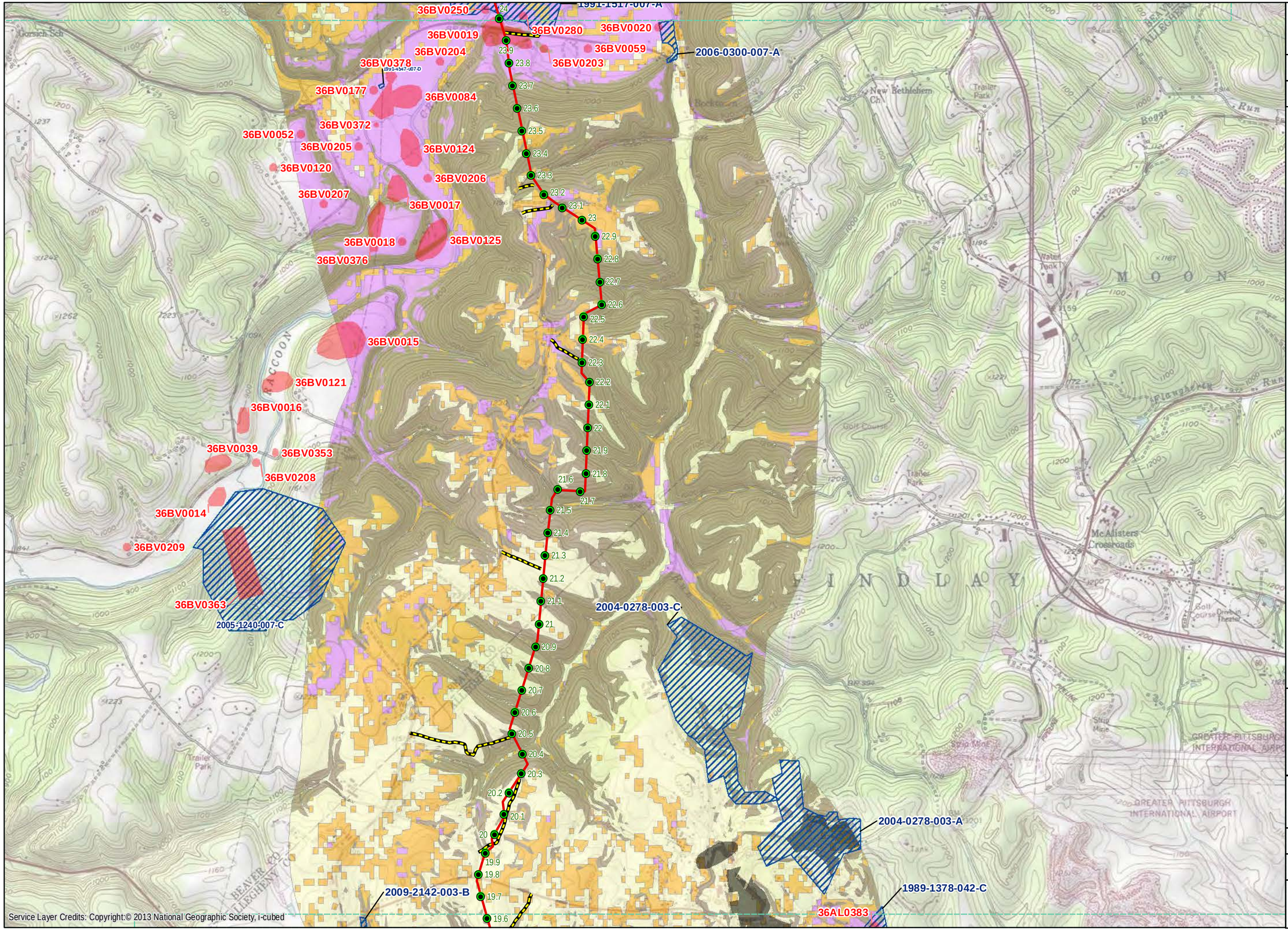
County: Washington/Allegheny
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR DATE: 8/24/2016
APPROVED BY: --- PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km
1 in = 2,000 ft

N



AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.5

Project Location:

County: Beaver/Allegheny
USGS Quad: Clinton/Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km
1 in = 2,000 ft

N

AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.6

Project Location:

County: Beaver/Allegheny
USGS Quad: Aliquippa

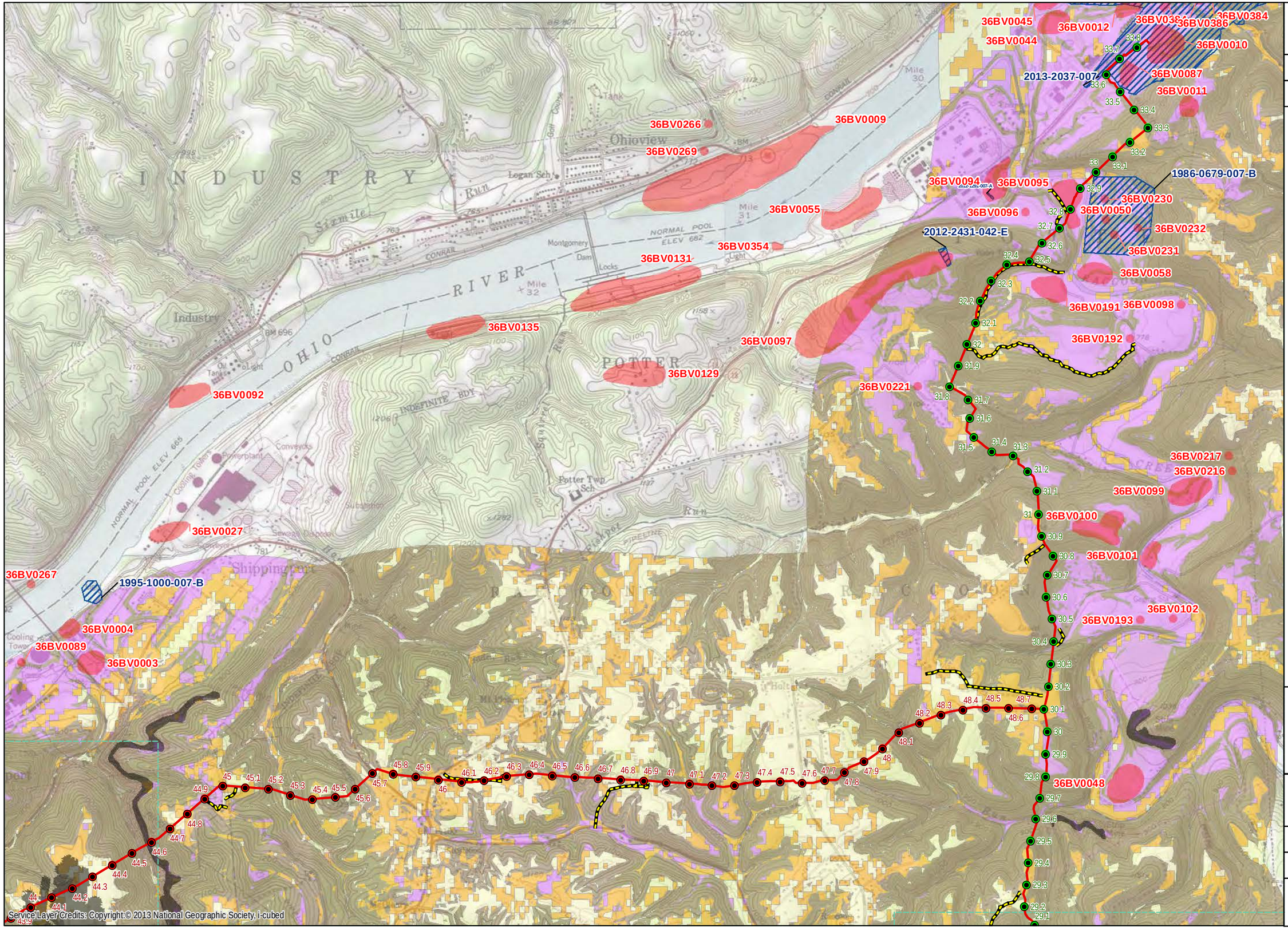
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR DATE: 8/24/2016
APPROVED BY: --- PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km
1 in = 2,000 ft

N

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed



AECOM
DRAFT

FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.7

Project Location:

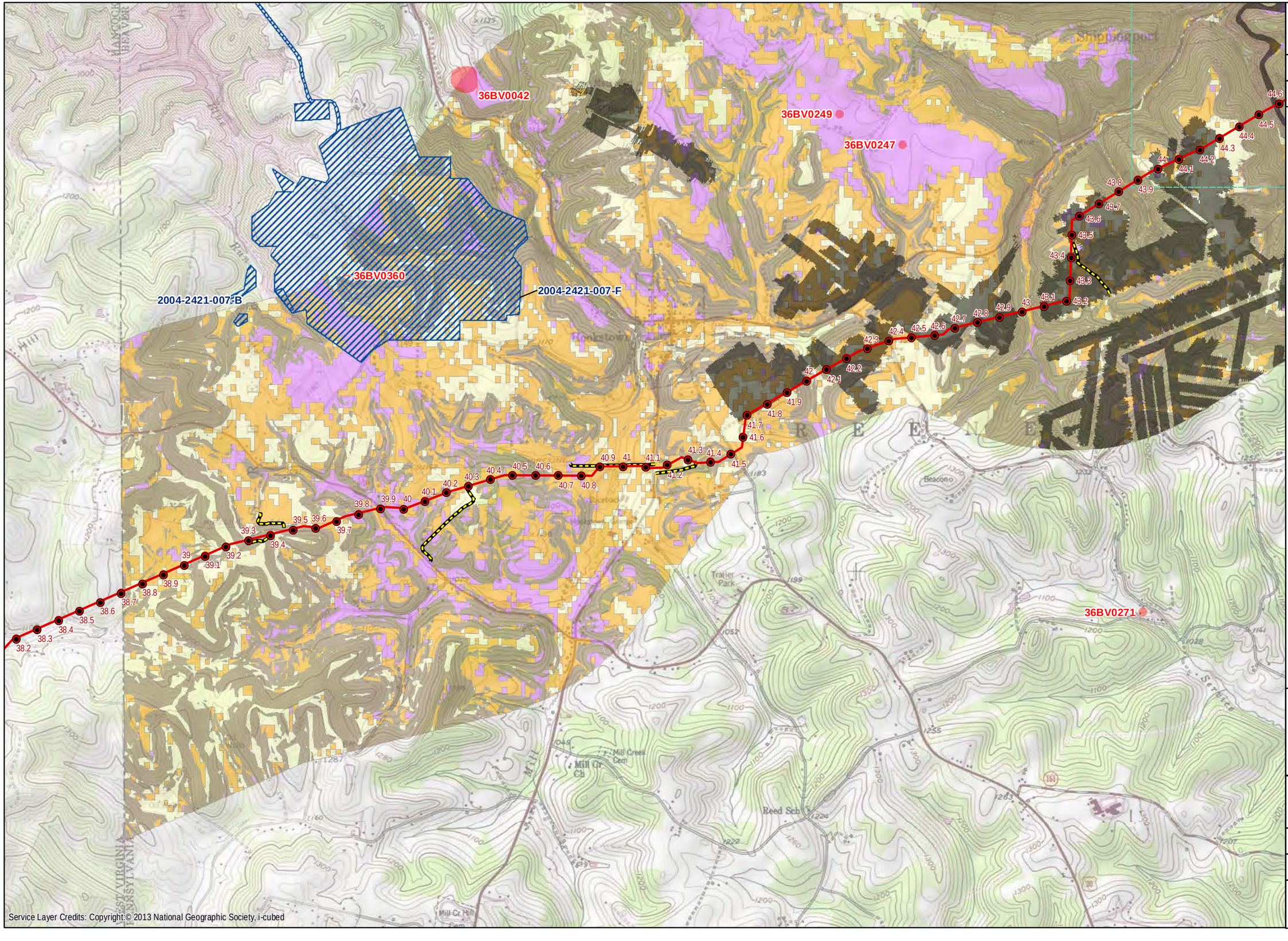
County: Beaver
USGS Quad:
Beaver/Hookstown/Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data
current to 08/08/2016 alignment.

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km
1 in = 2,000 ft

N



AECOM
DRAFT
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

NATIVE AMERICAN SITE SENSITIVITY

LEGEND

Project Features
- Proposed Centerline
- Proposed Access Road
- Houston to Monaca Milepost
- Scio to Monaca Milepost

Original PHMC Data
- Archaeological Site
- Archaeological Survey

Strip-Mined Area
- Previously Identified

Sensitivity Model
- Low
- Moderate
- High
- Steep

Map Feature
- Map Figure Overlap

Figure 4.8

Project Location:

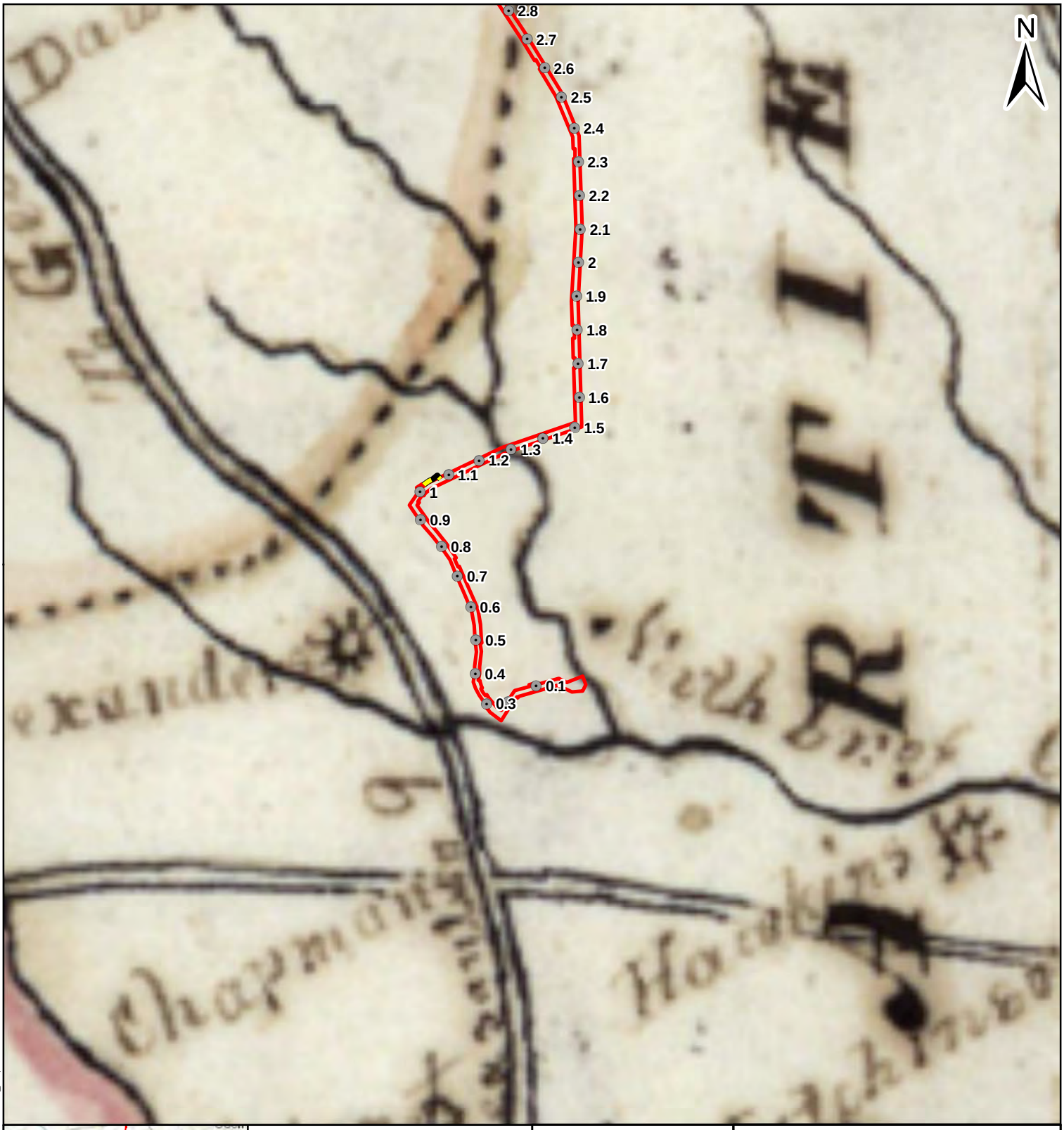
County: Beaver
USGS Quad: Hookstown/East Liverpool South

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 08/08/2016 alignment.

DRAWN BY: MMR
APPROVED BY: ---
DATE: 8/24/2016
PROJECT #: 60487539

0 0.15 0.3 mi
0 0.25 0.5 km
1 in = 2,000 ft

N



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.9

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

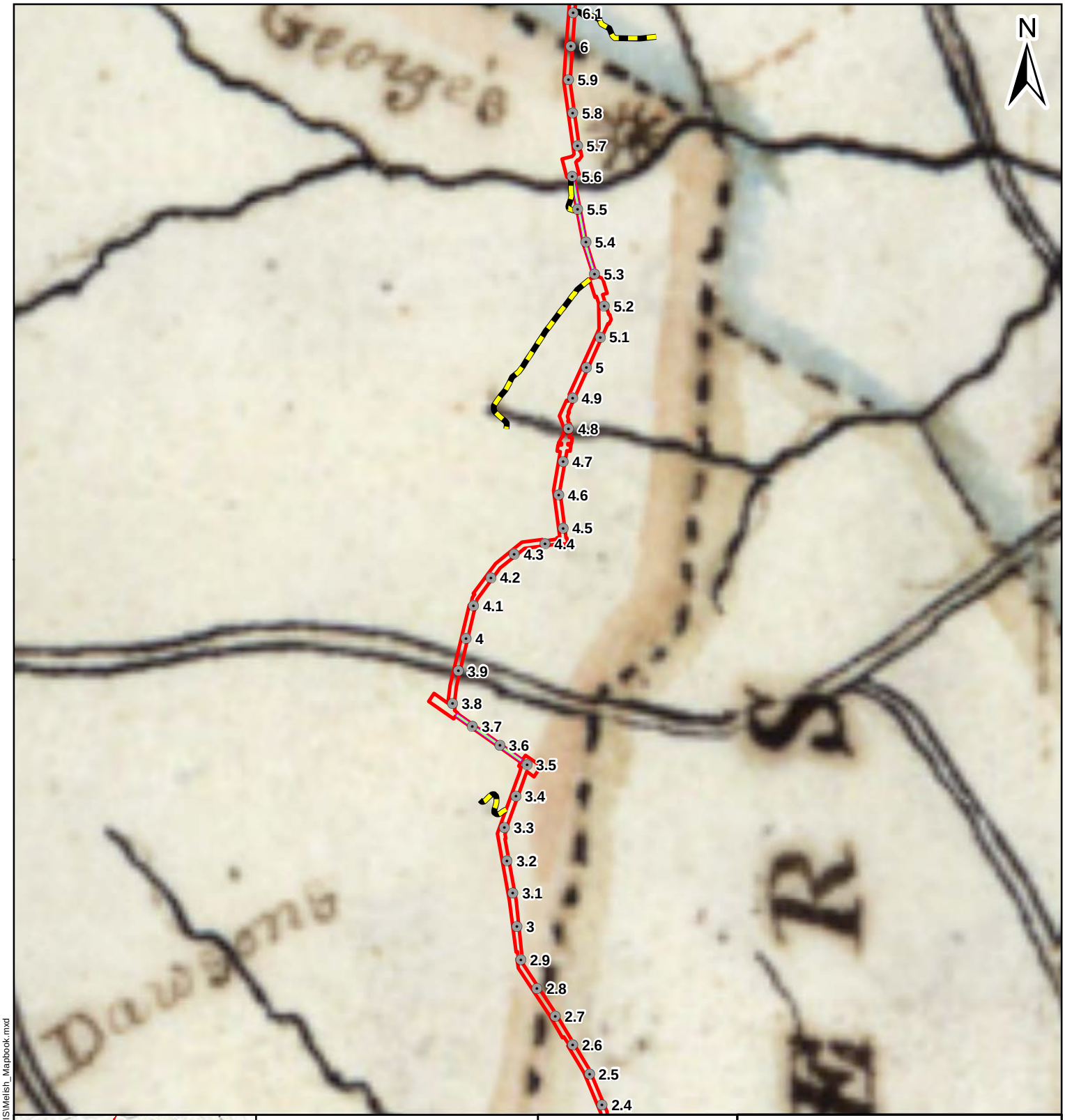
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

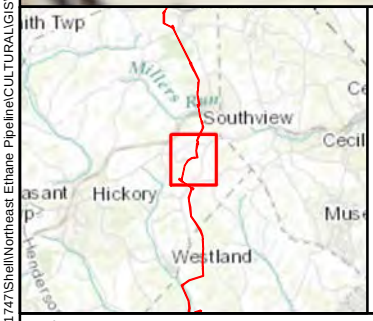
References:
Melish, John
1817 Atlas of Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.10

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

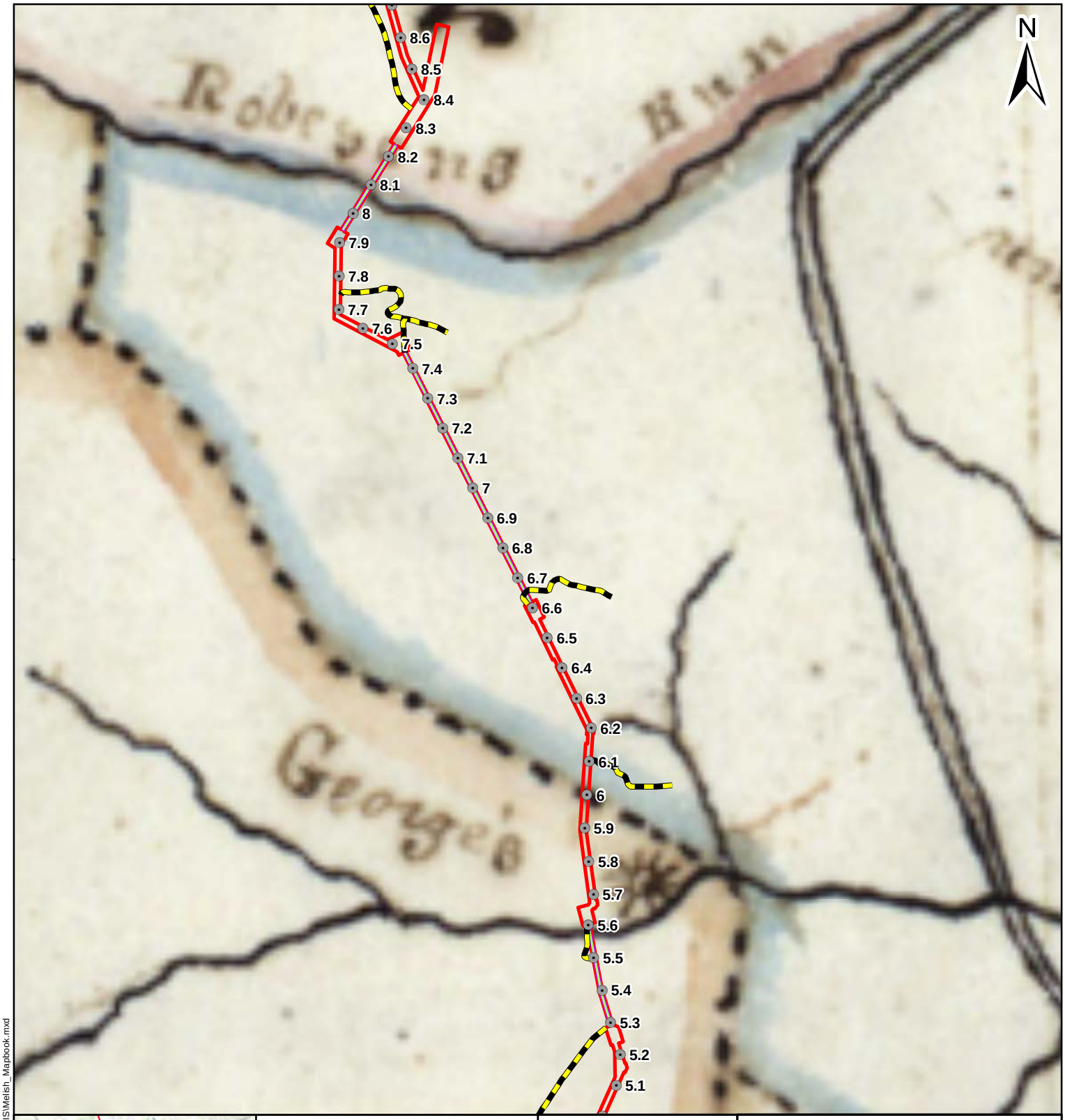
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.11

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

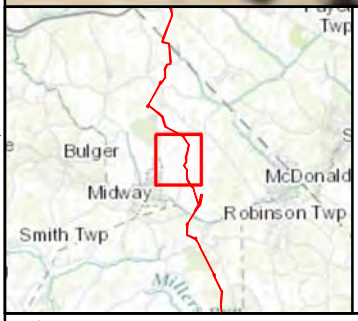
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

0 1 2 4 Miles

Figure 4.12

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

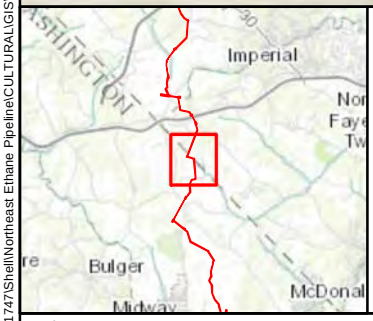
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.13

1817 Melish-Whiteside Maps

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

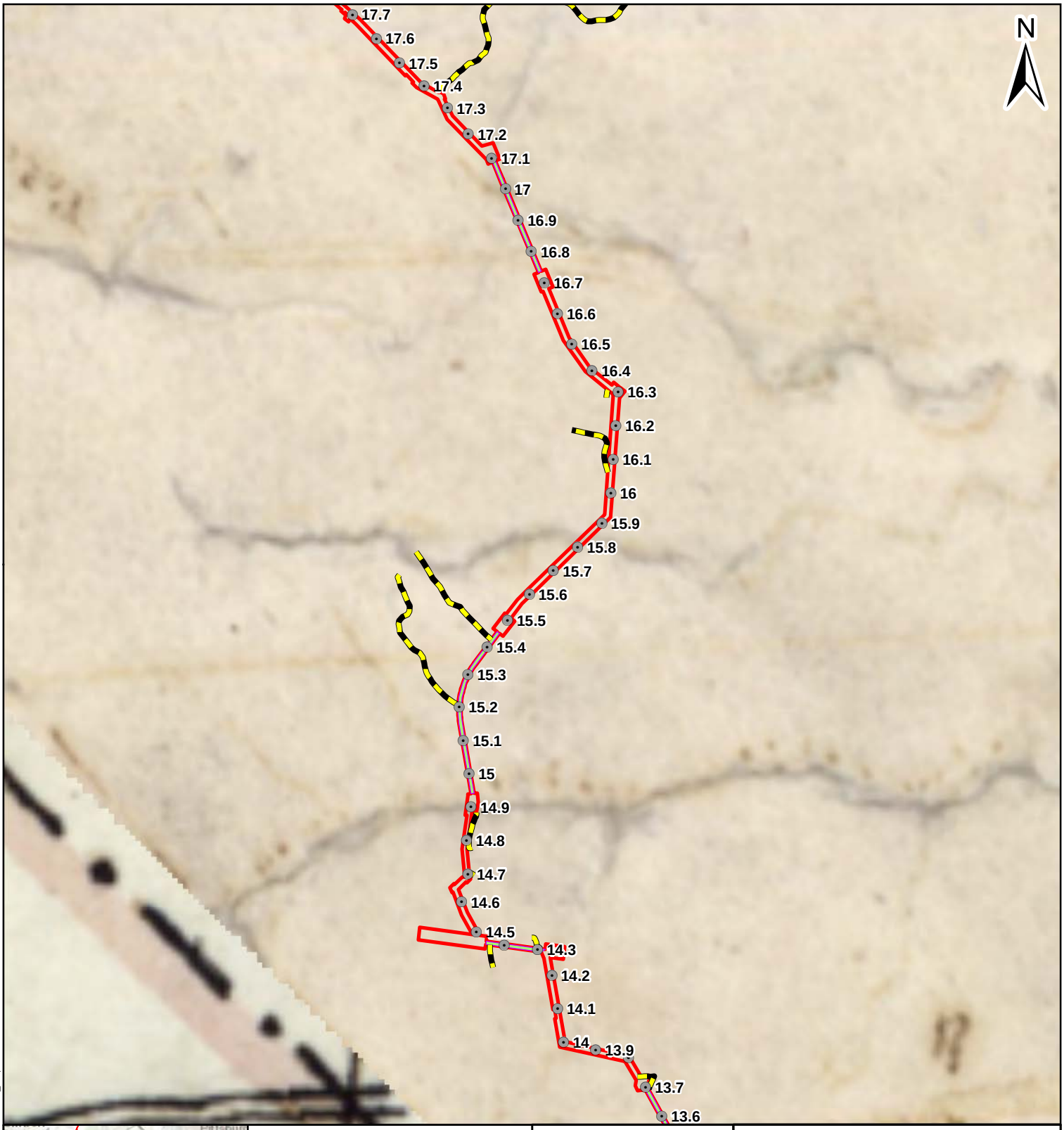
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

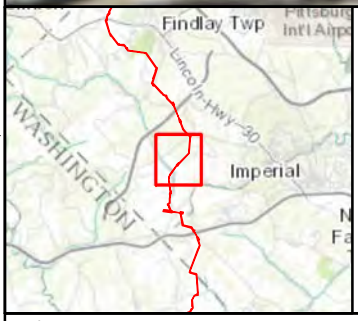
References:
Melish, John
1817 Atlas of Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.14

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

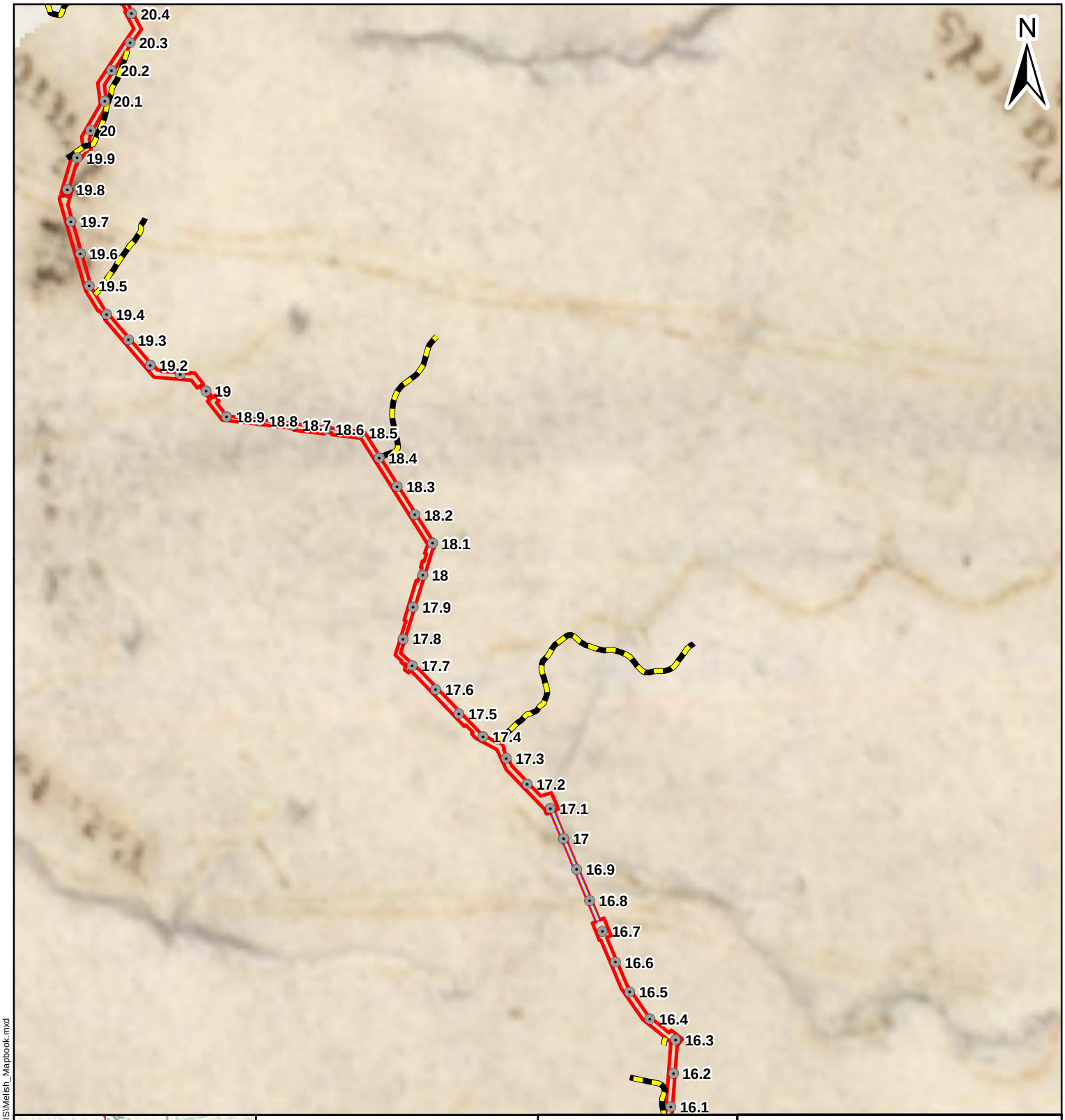
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

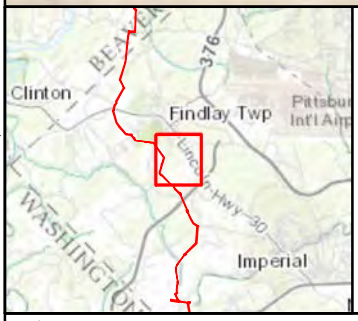
References:
Melish, John
1817 Atlas of Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.15

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

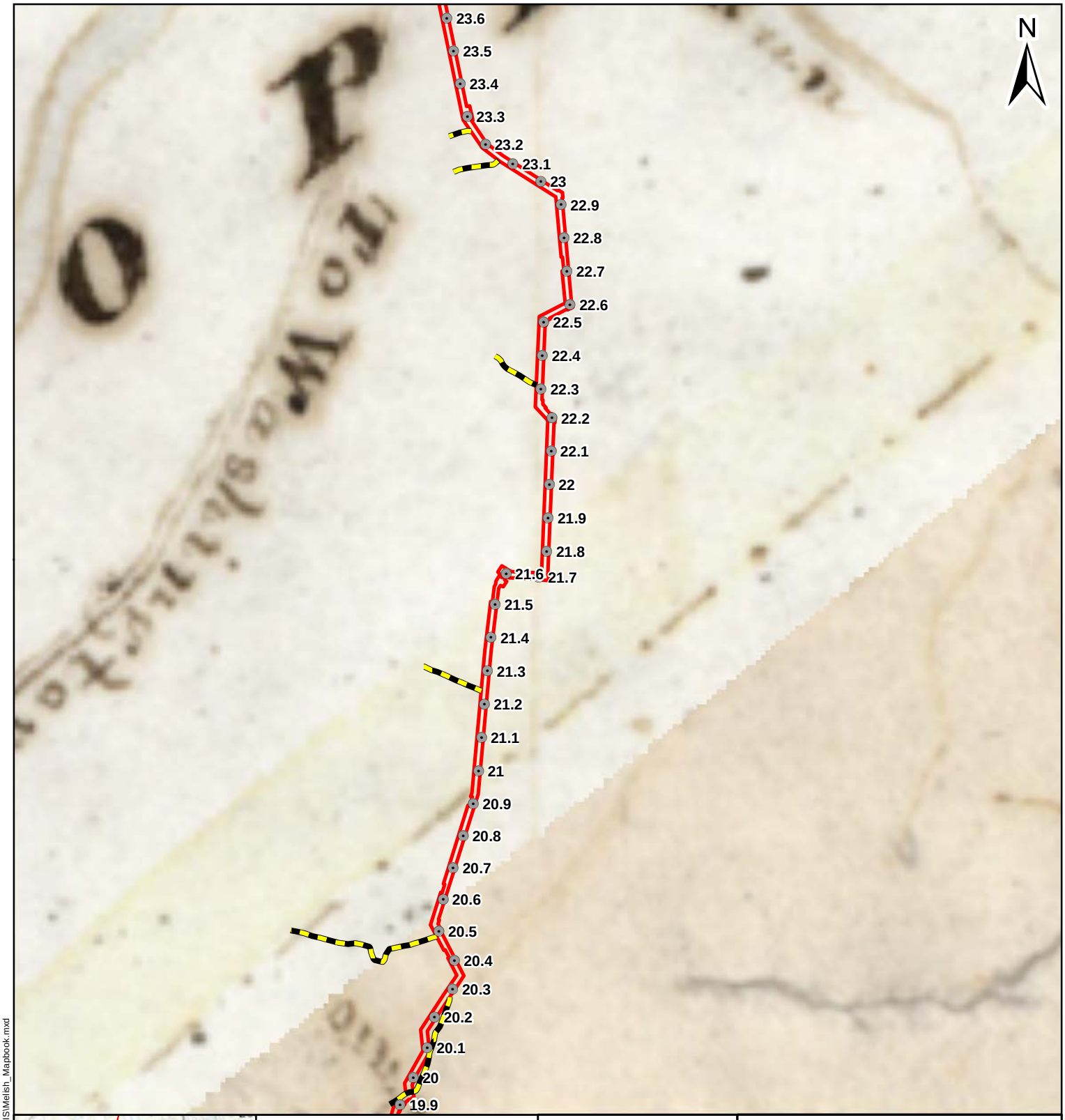
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.16

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

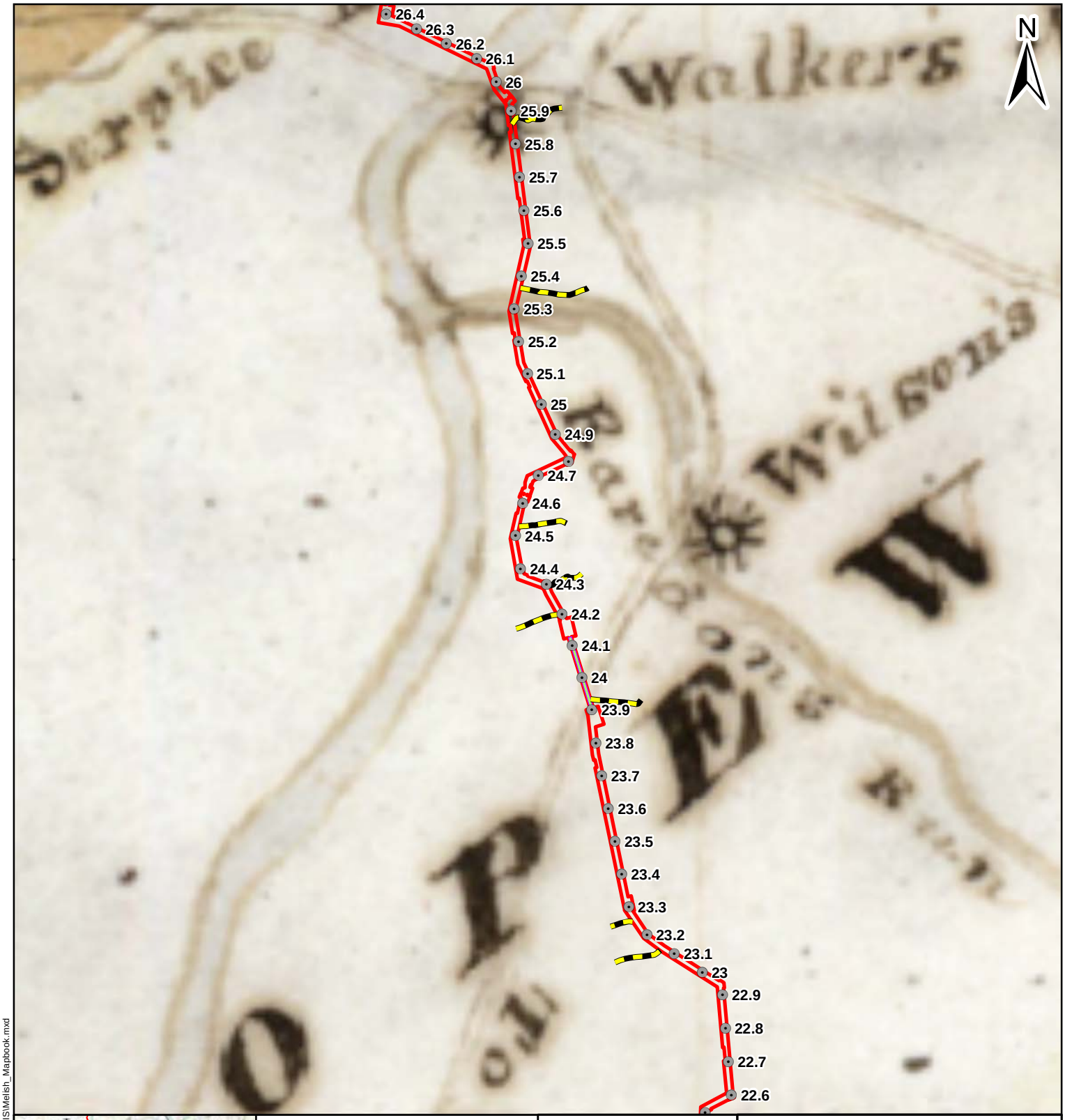
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

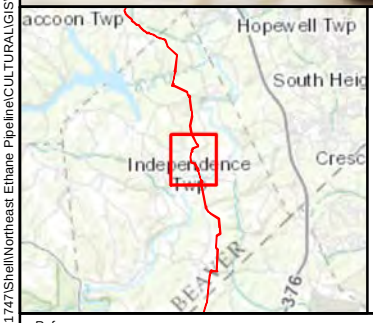
References:
Melish, John
1817 Atlas of Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.17

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

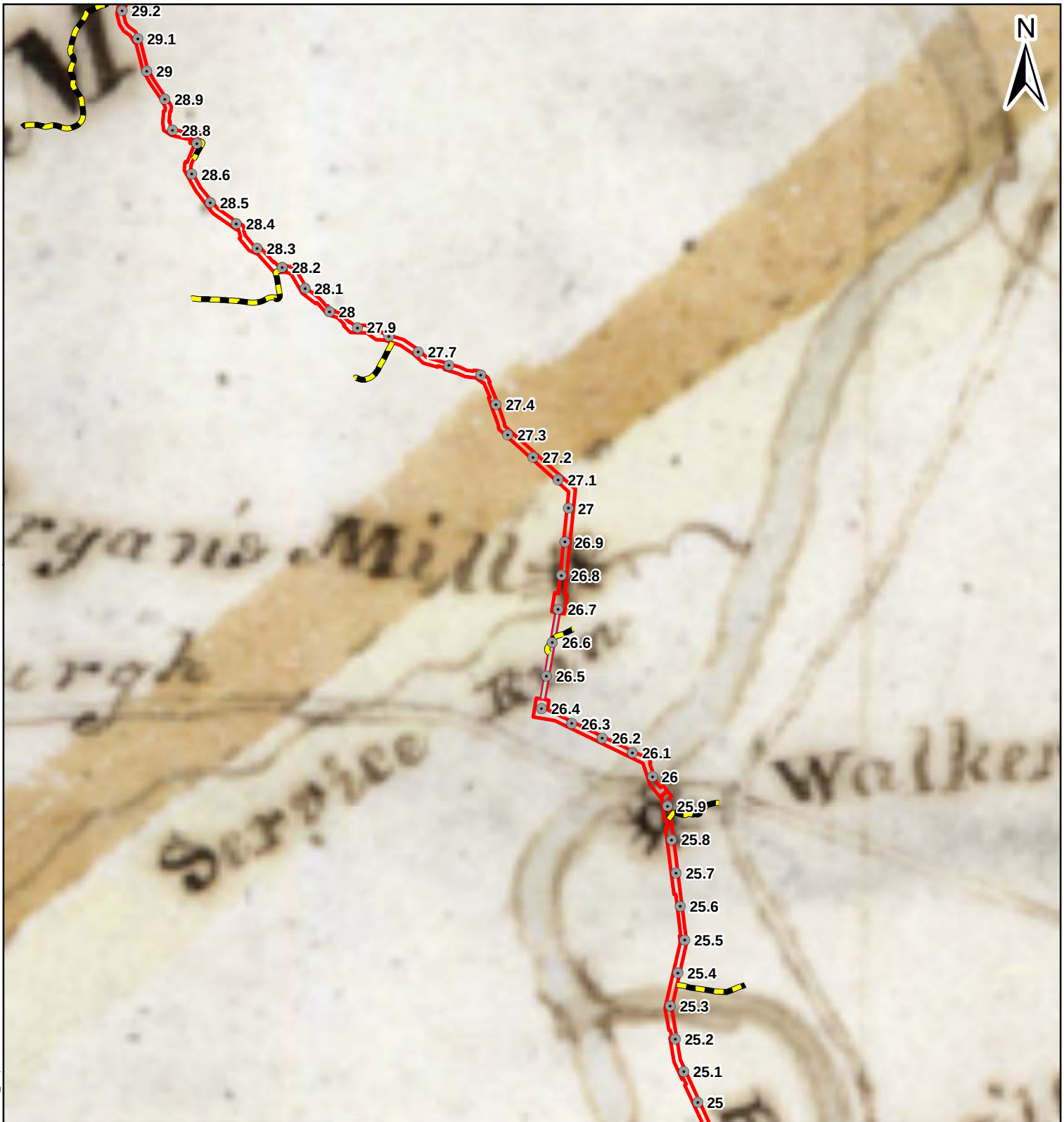
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

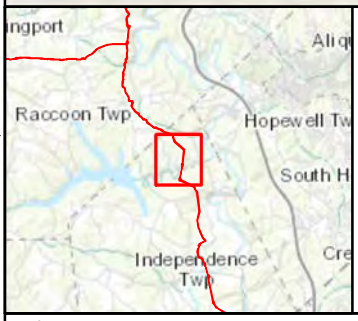
References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.18

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

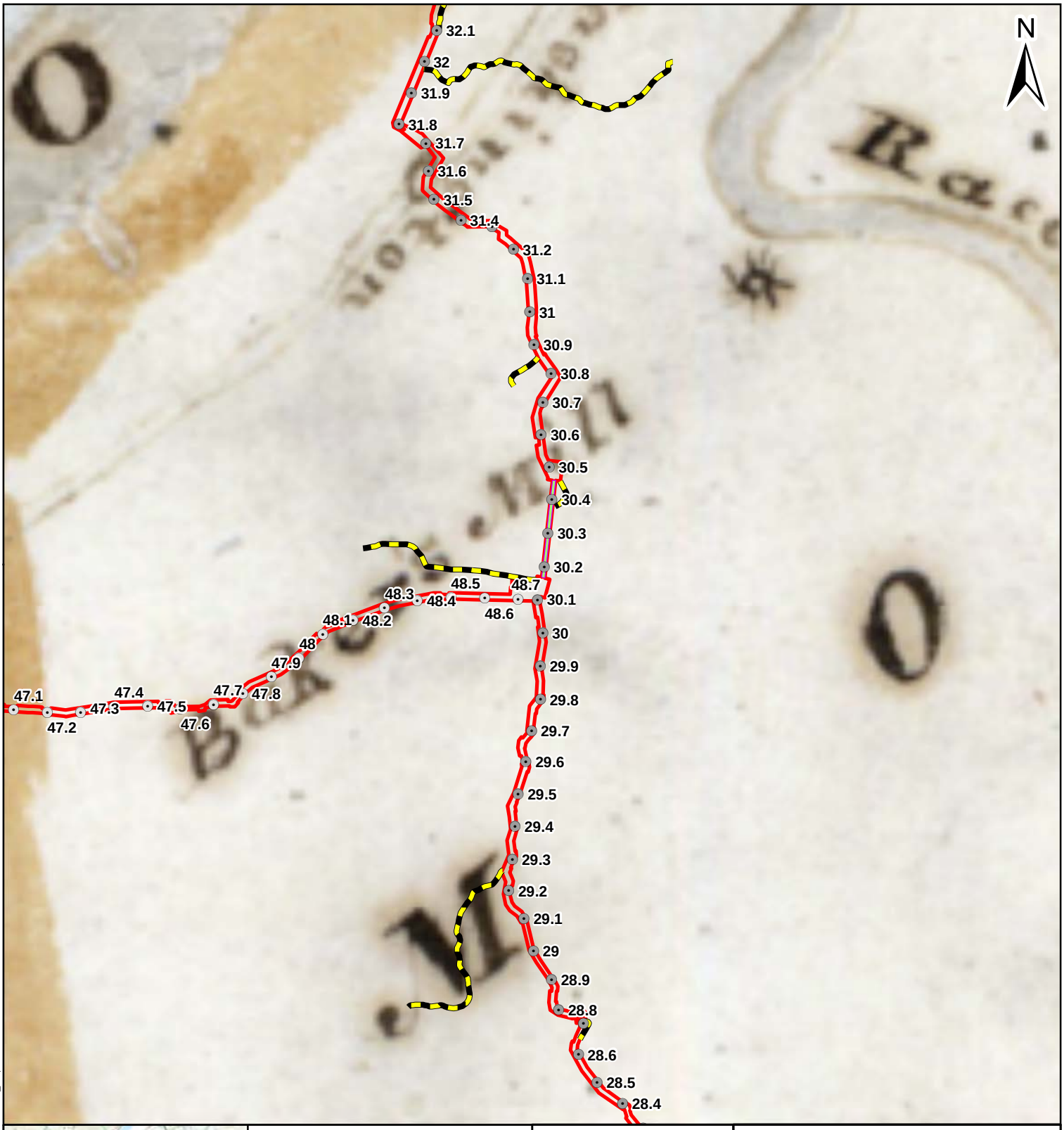
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

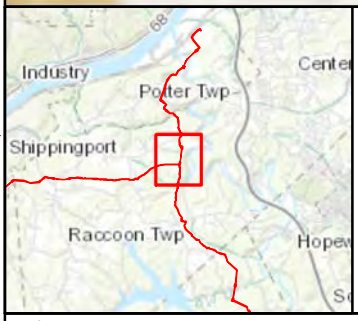
References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.19

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

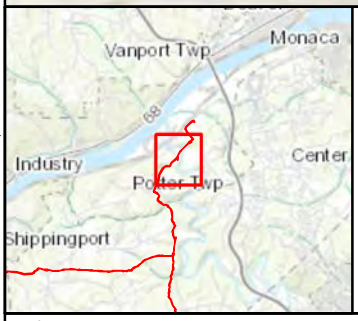
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.20

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

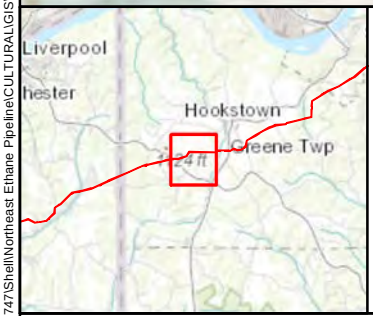
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.21

1817 Melish-Whiteside Maps

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

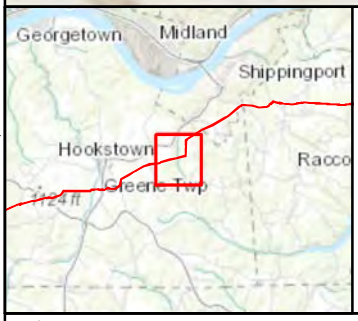
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.22

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

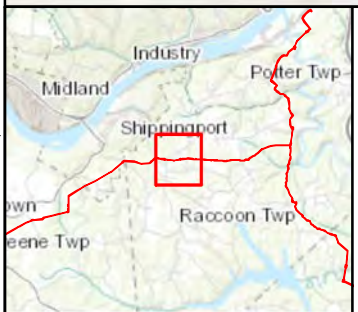
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 1 2 4

Figure 4.23

1817 Melish-Whiteside Maps

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

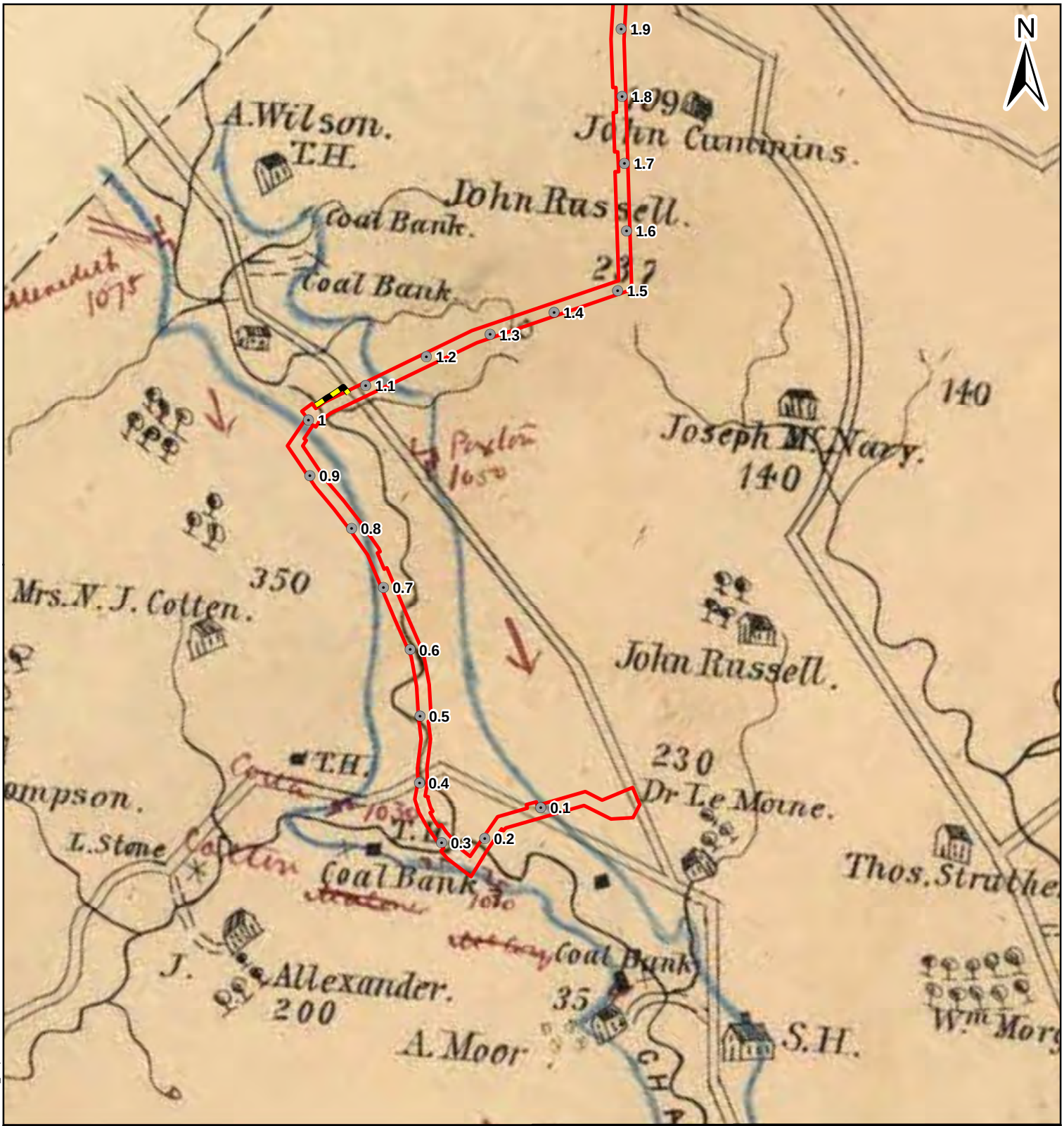
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

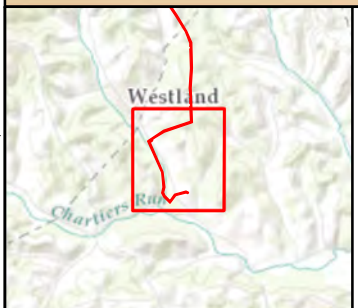
References:
Melish, John
1817 Atlas of Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/7/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Melish_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.24

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

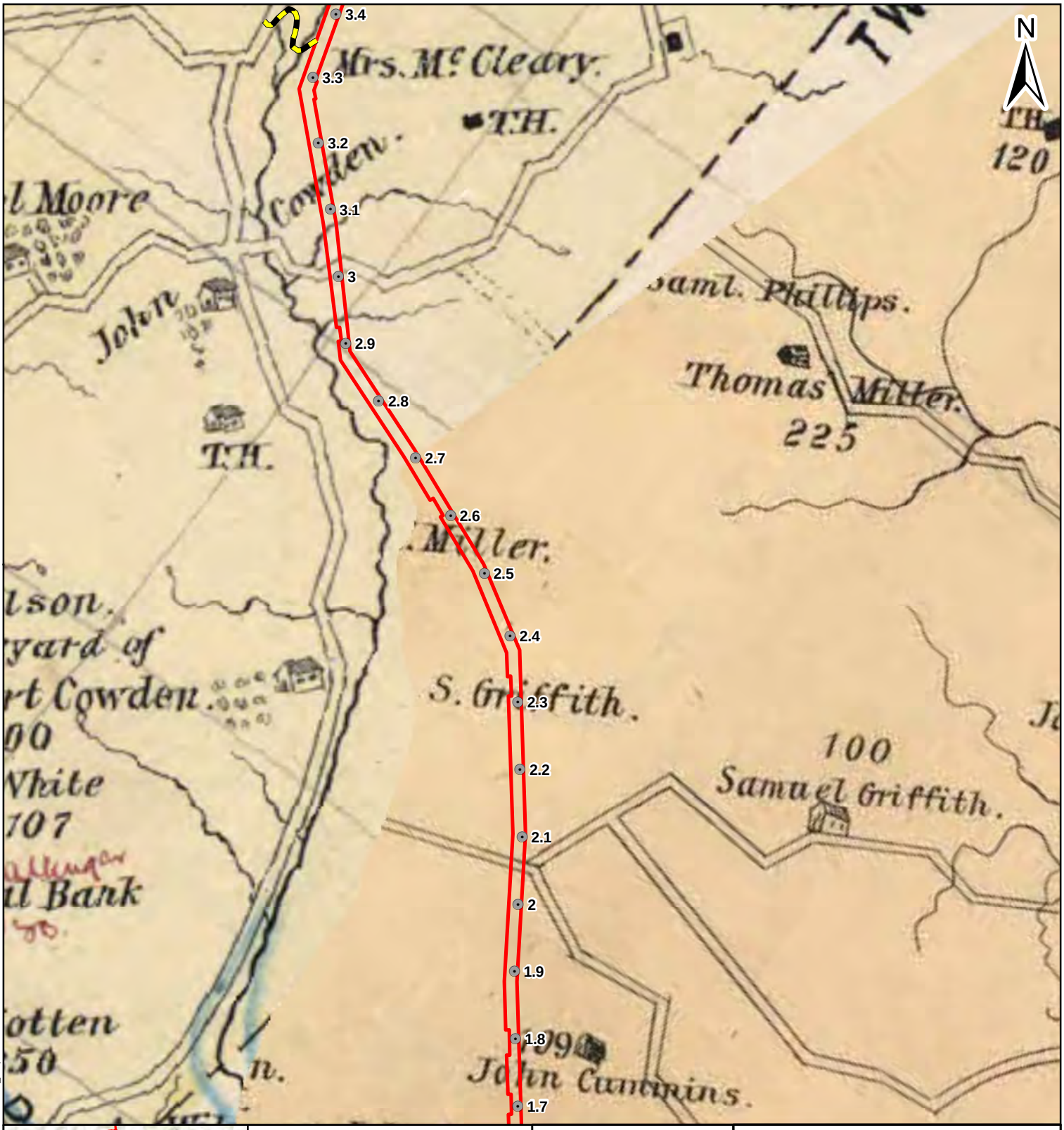
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

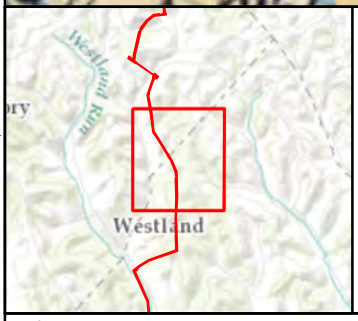
References:
Caldwell, J.A.
1876 Atlas of Chartiers Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.25

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

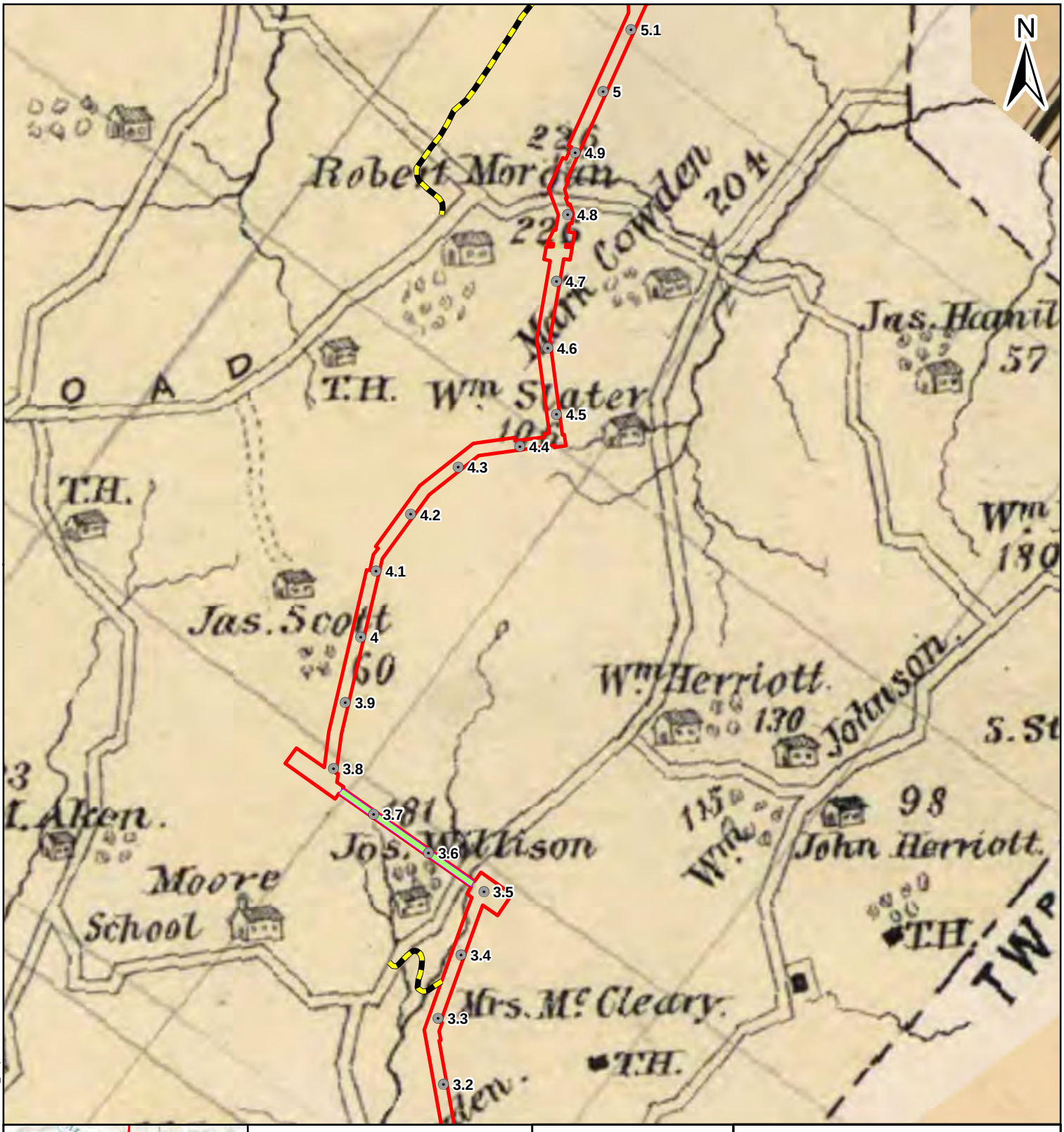
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

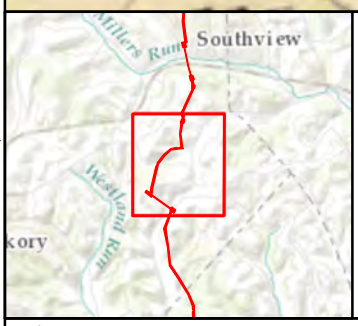
References:
Caldwell, J.A.
1876 Atlas of Chartiers Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.26

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

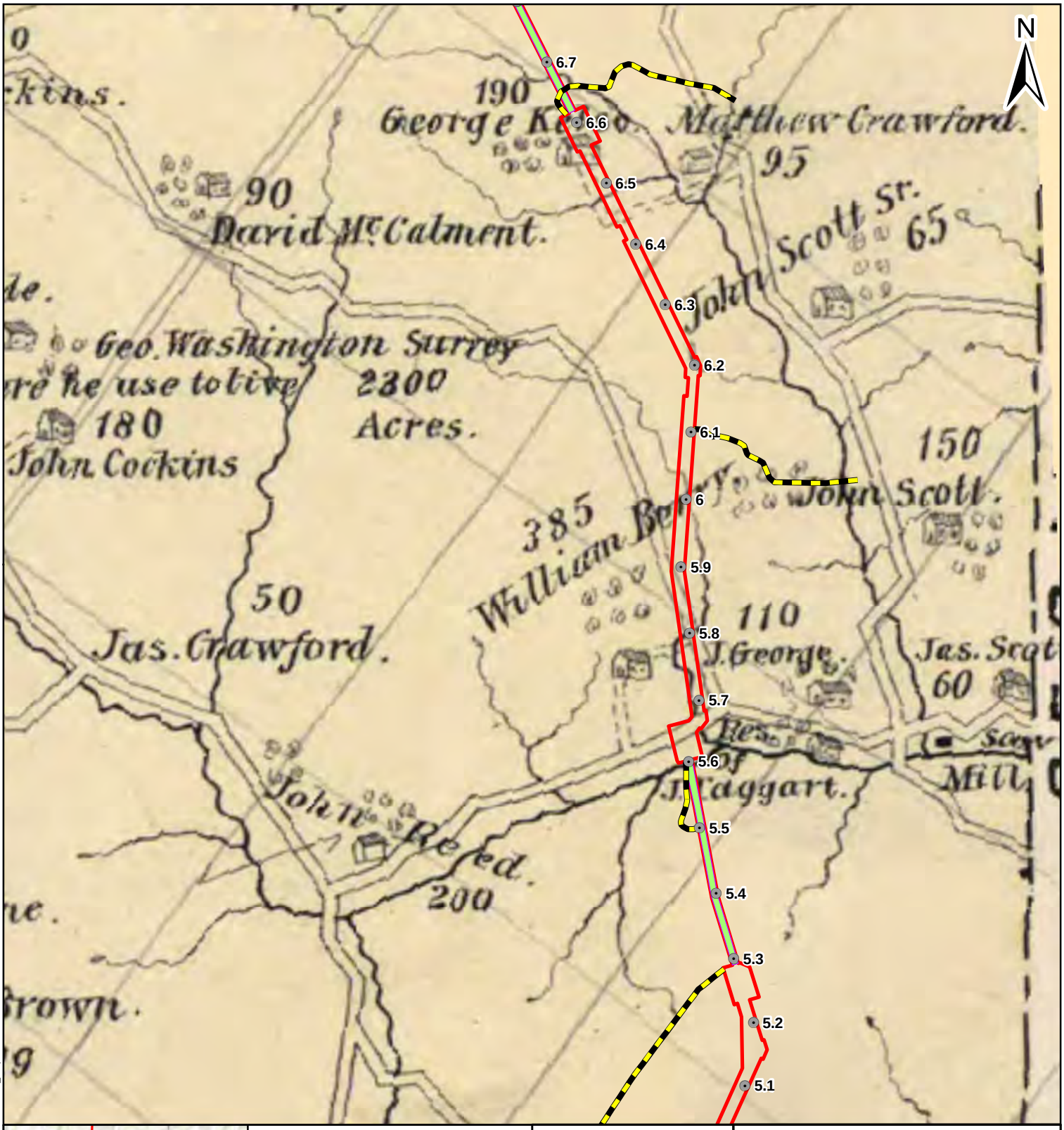
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

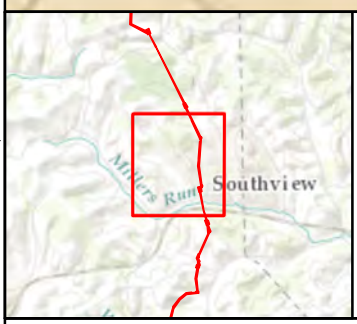
References:
Caldwell, J.A.
1876 Atlas of Mount Pleasant Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.27

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

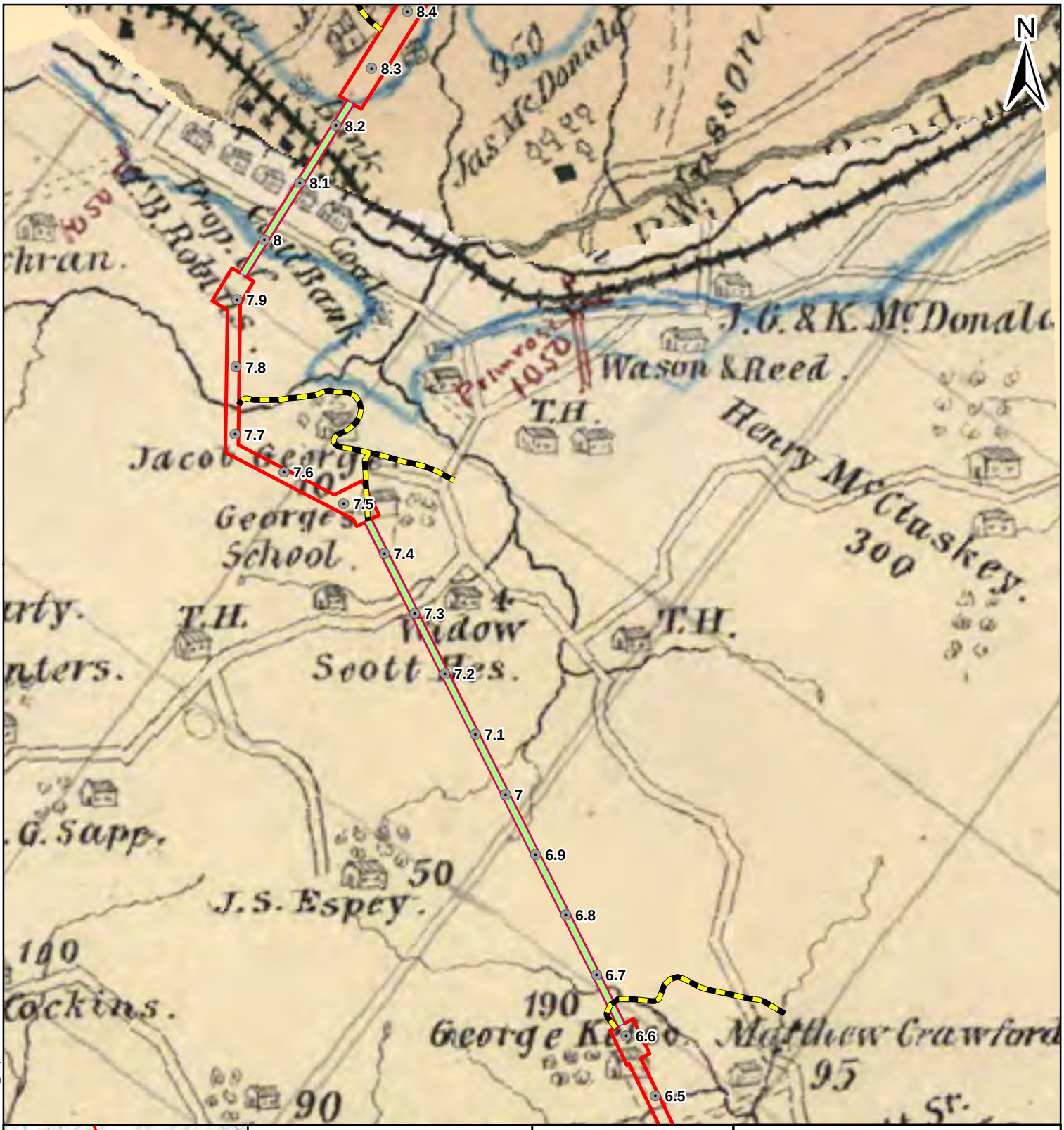
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Mount Pleasant Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.28

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

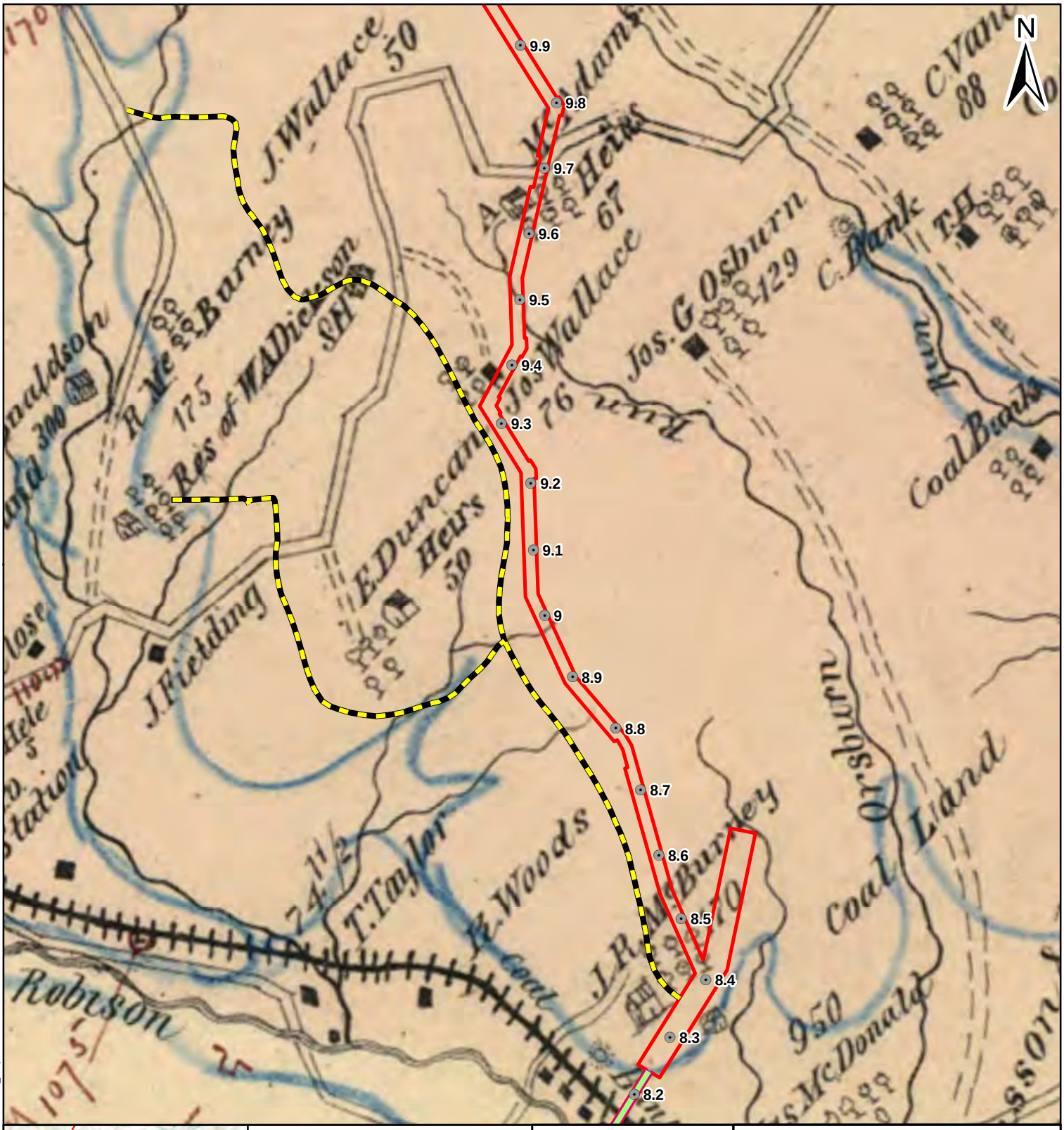
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Robeson Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.29

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

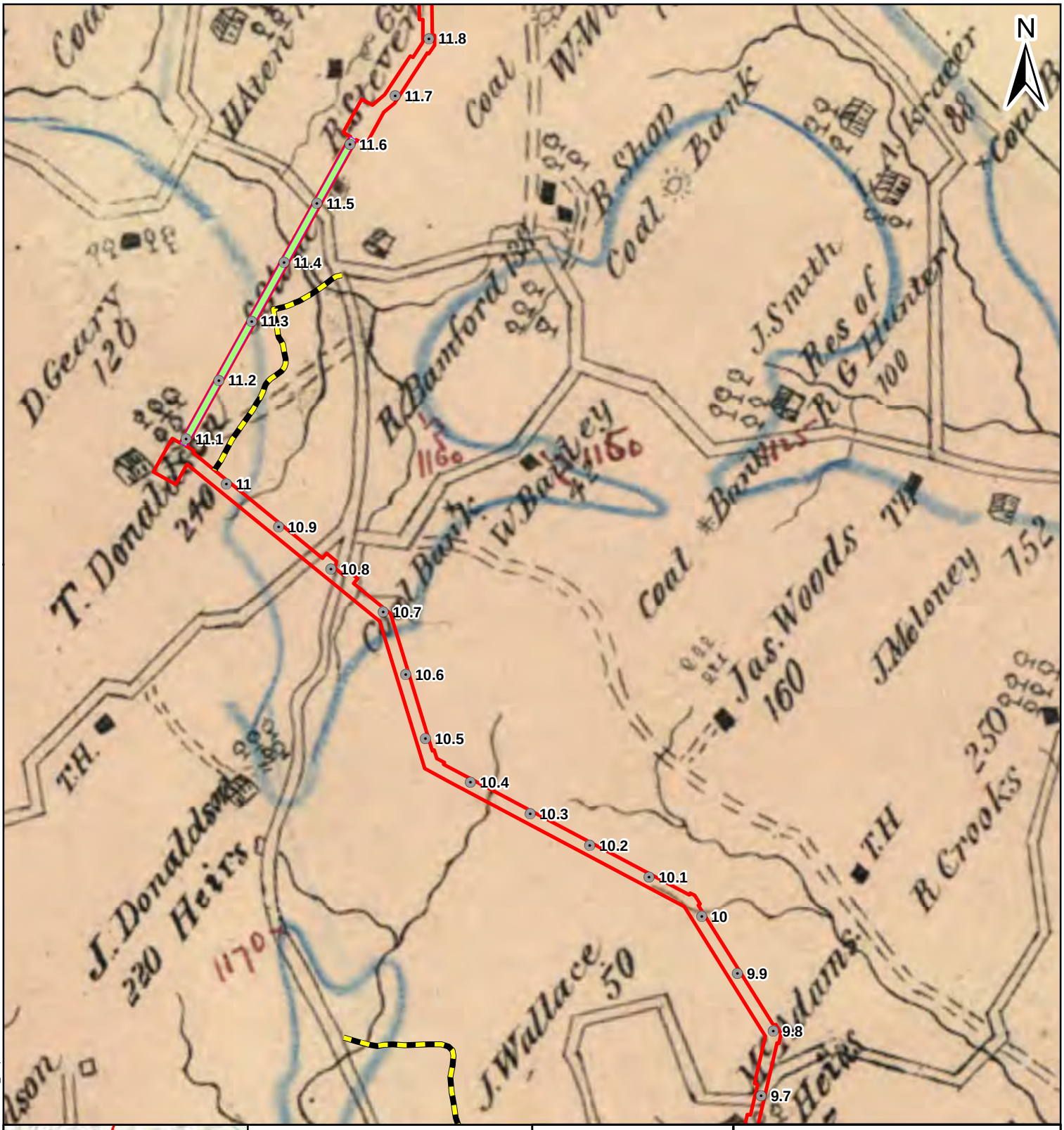
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

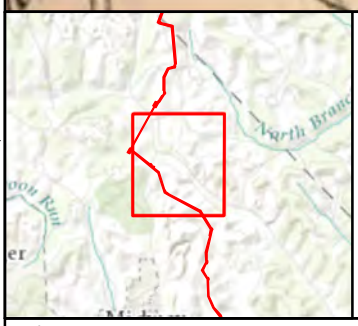
References:
Caldwell, J.A.
1876 Atlas of Robeson Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.30

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Robeson Township Washington County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd

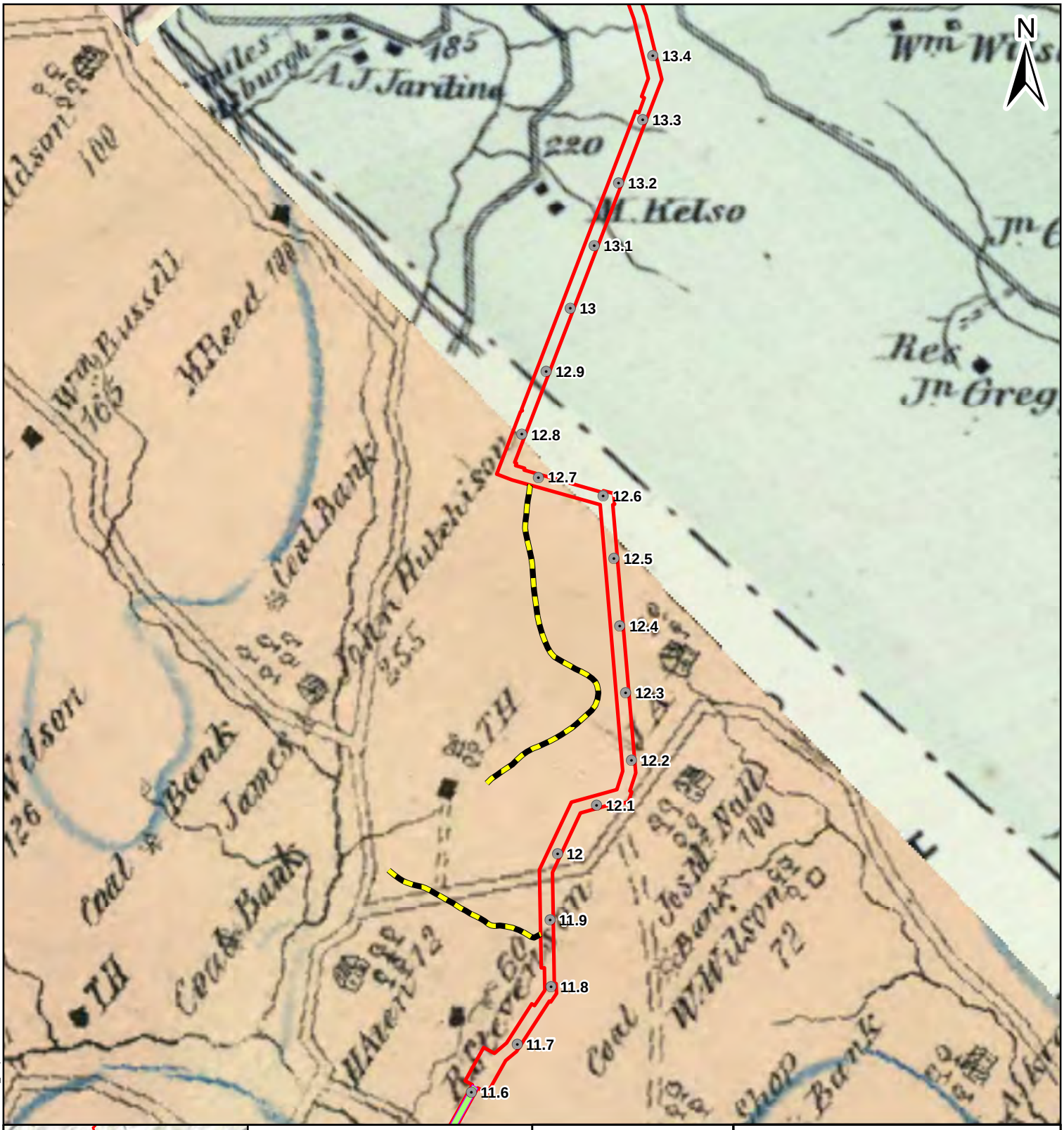


Figure 4.31

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

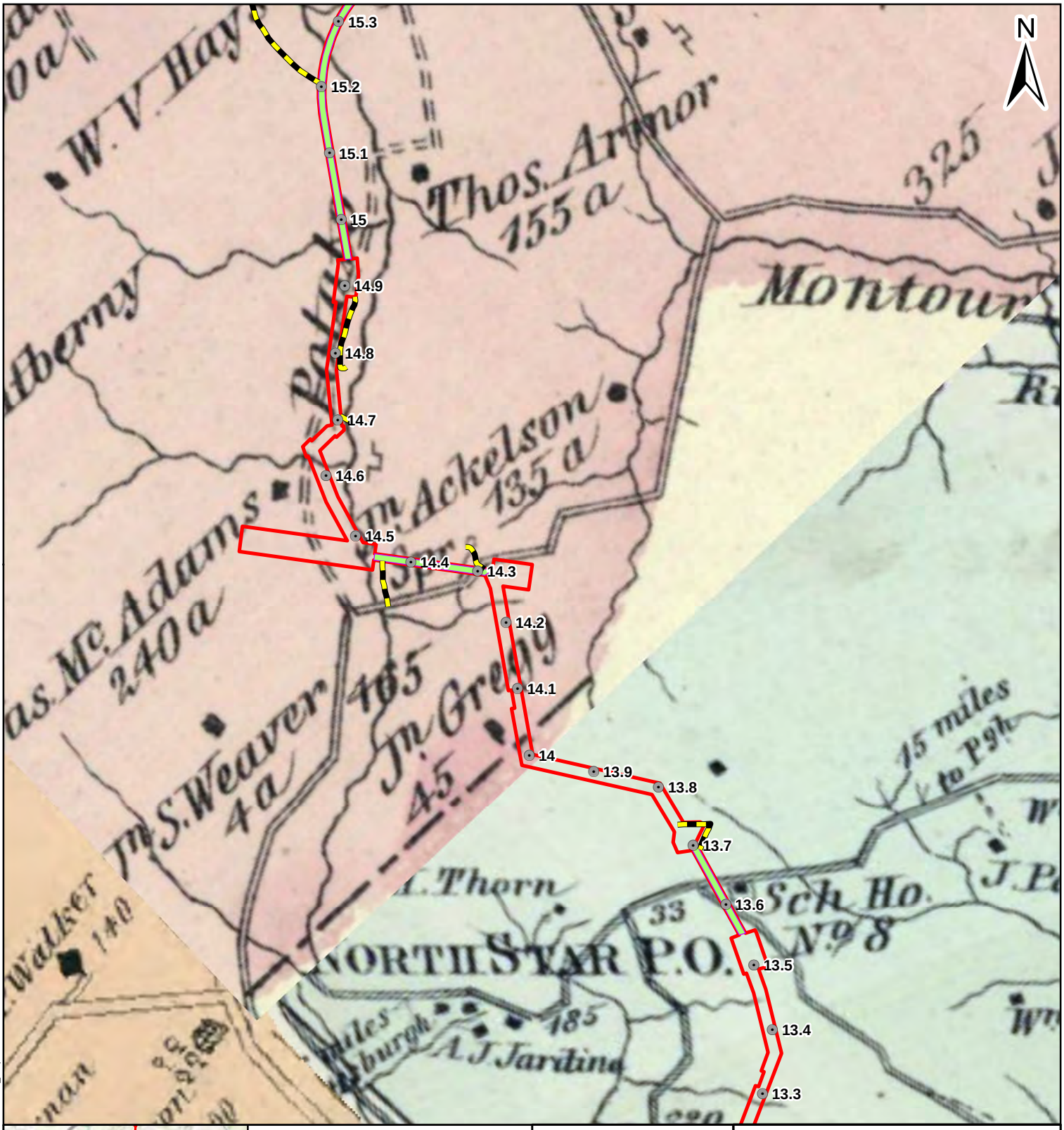
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

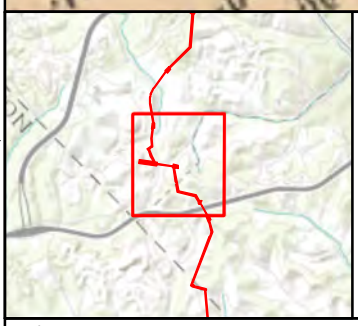
References:
Caldwell, J.A.
1876 Atlas of North Fayette Township Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.32

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

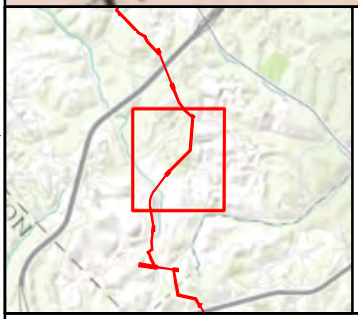
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Findlay Township Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.33

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

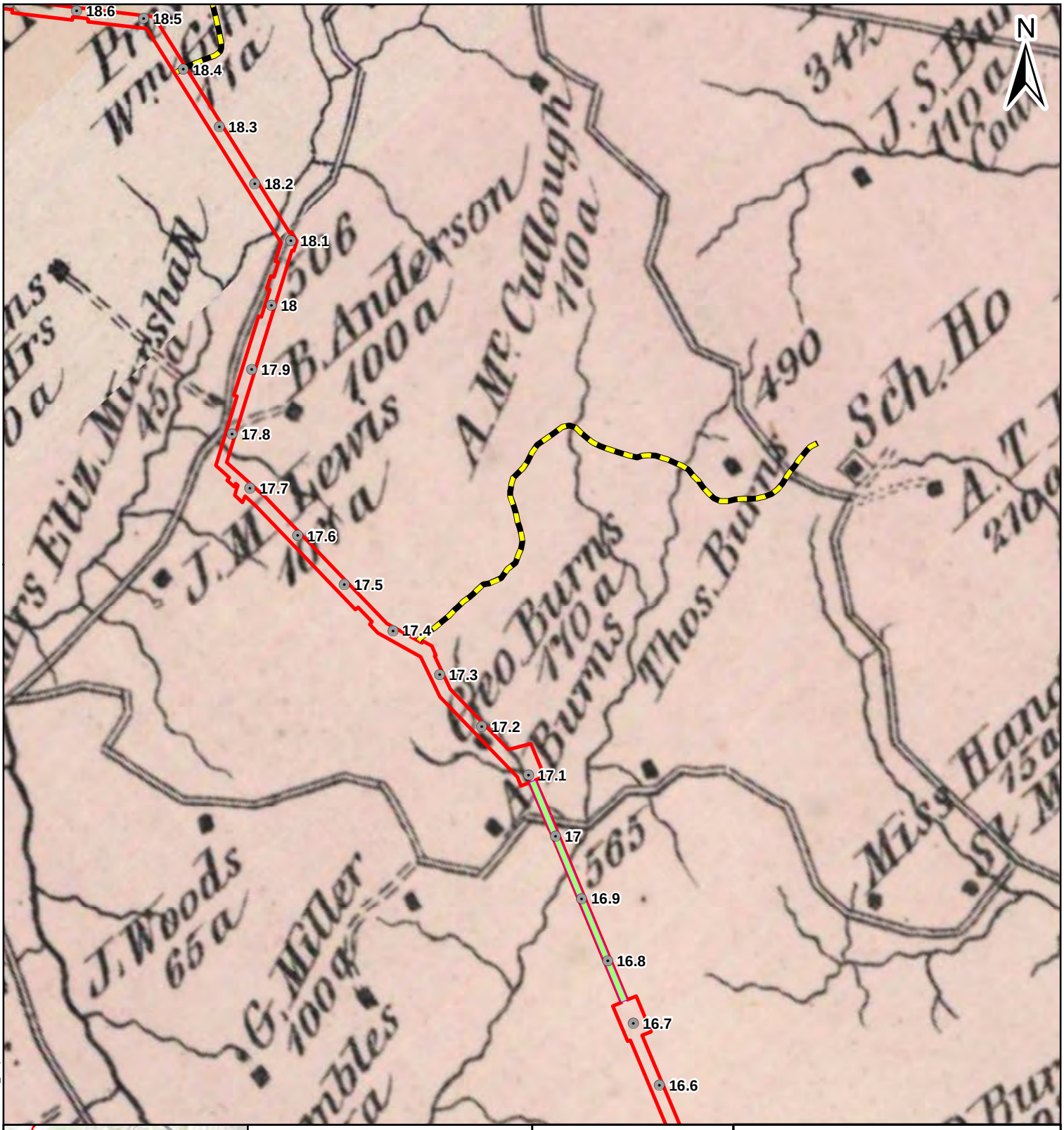
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

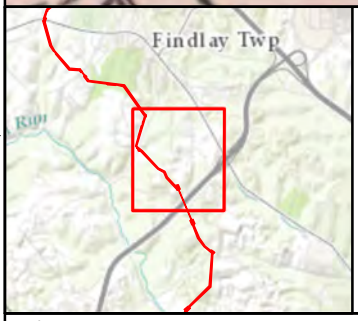
References:
Caldwell, J.A.
1876 Atlas of Findlay Township Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.34

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

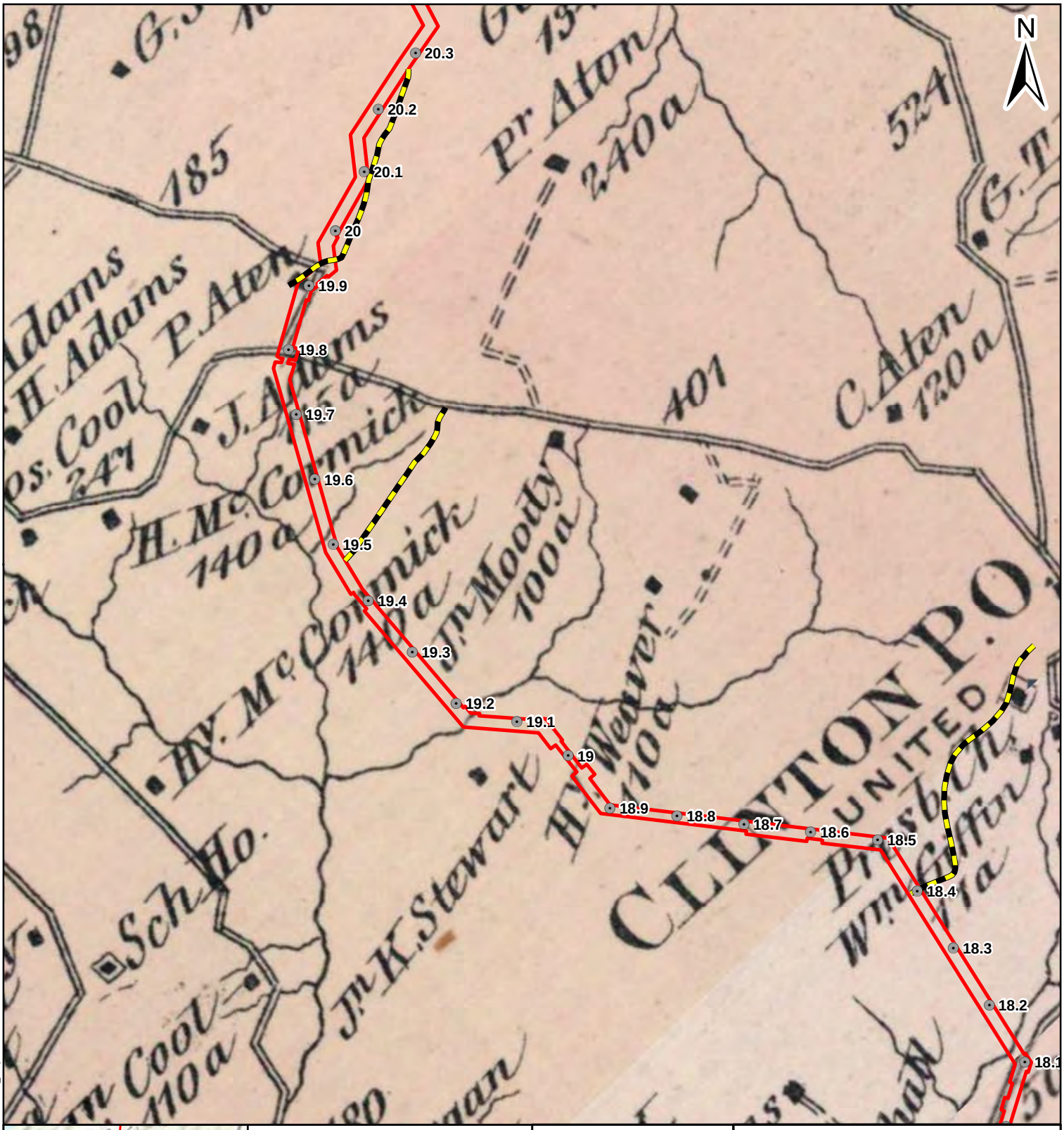
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

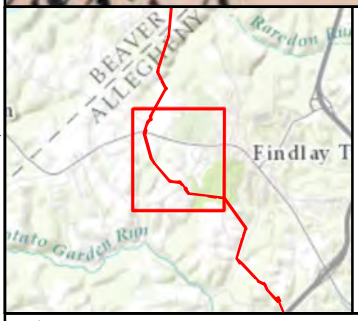
References:
Caldwell, J.A.
1876 Atlas of Findlay Township Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.35

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

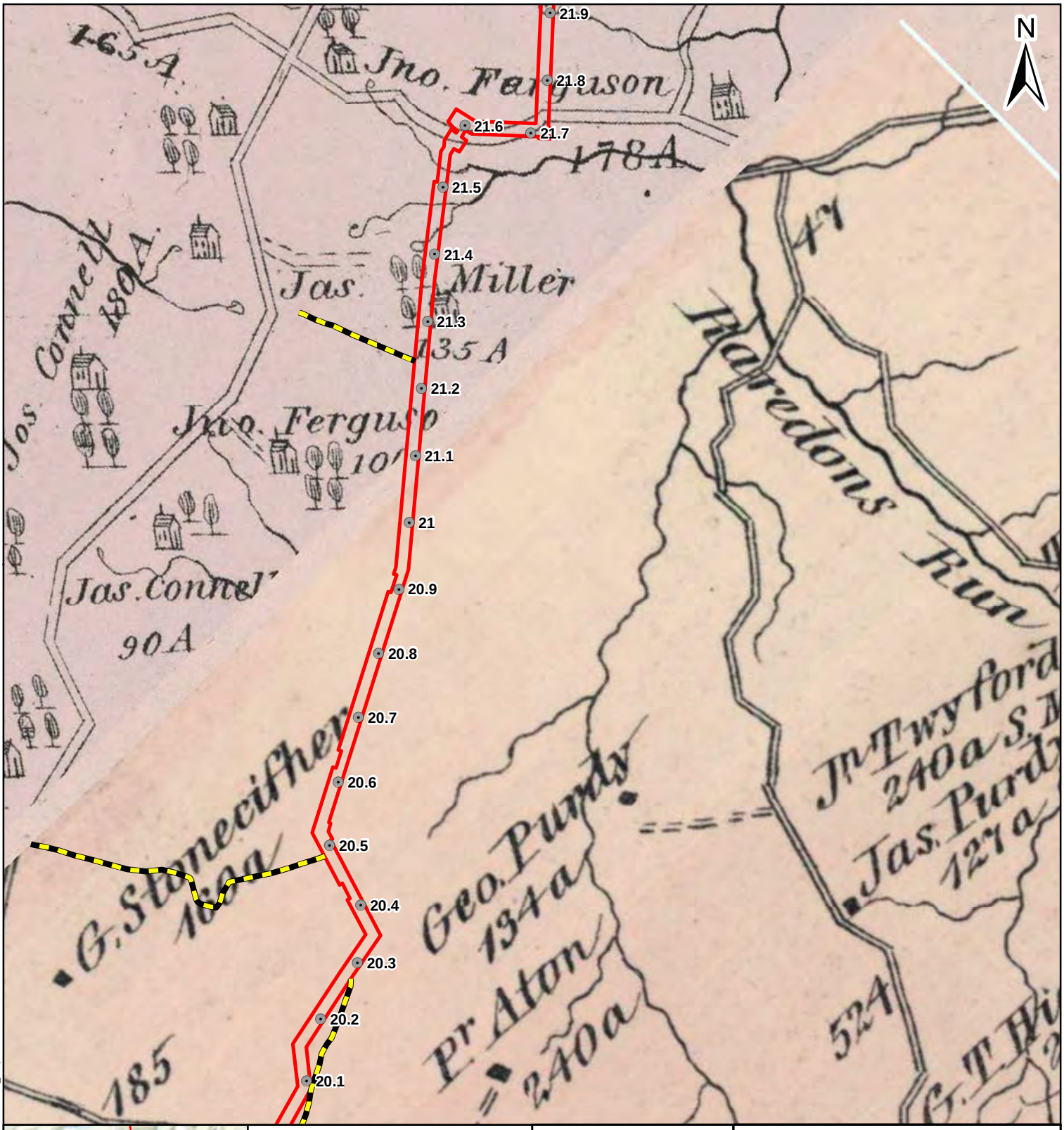
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

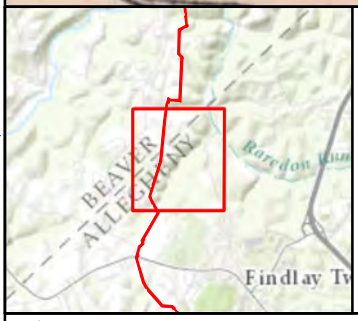
References:
Caldwell, J.A.
1876 Atlas of Findlay Township Allegheny County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.36

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

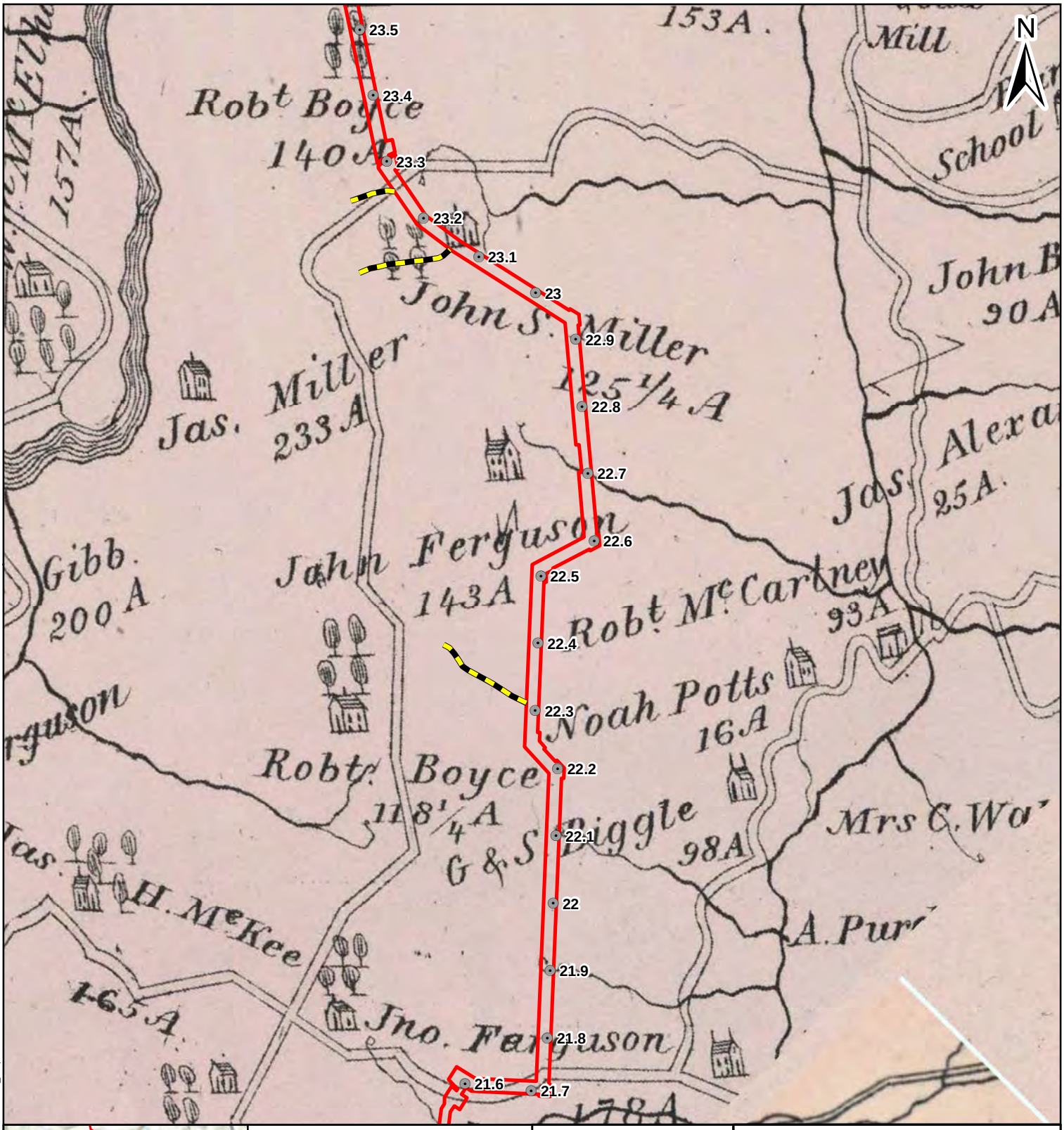
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

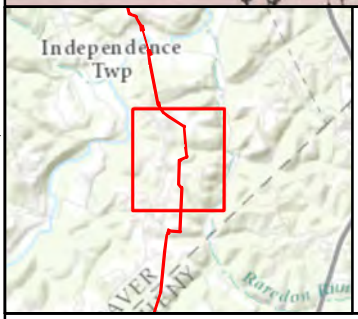
References:
Caldwell, J.A.
1876 Atlas of Independence Township/Findlay Township Beaver/Allegheny Counties, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.37

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Independence Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd

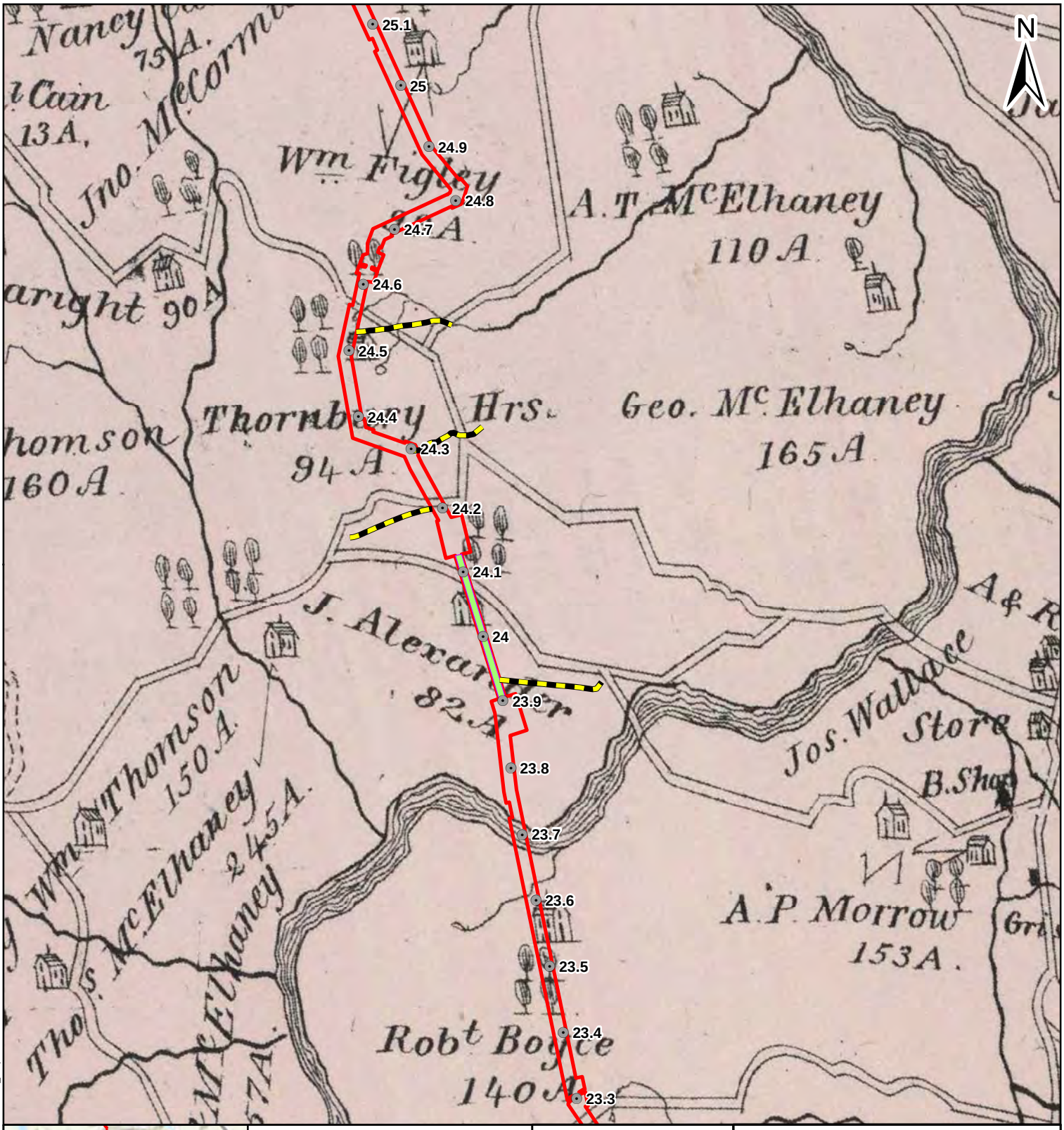


Figure 4.38

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

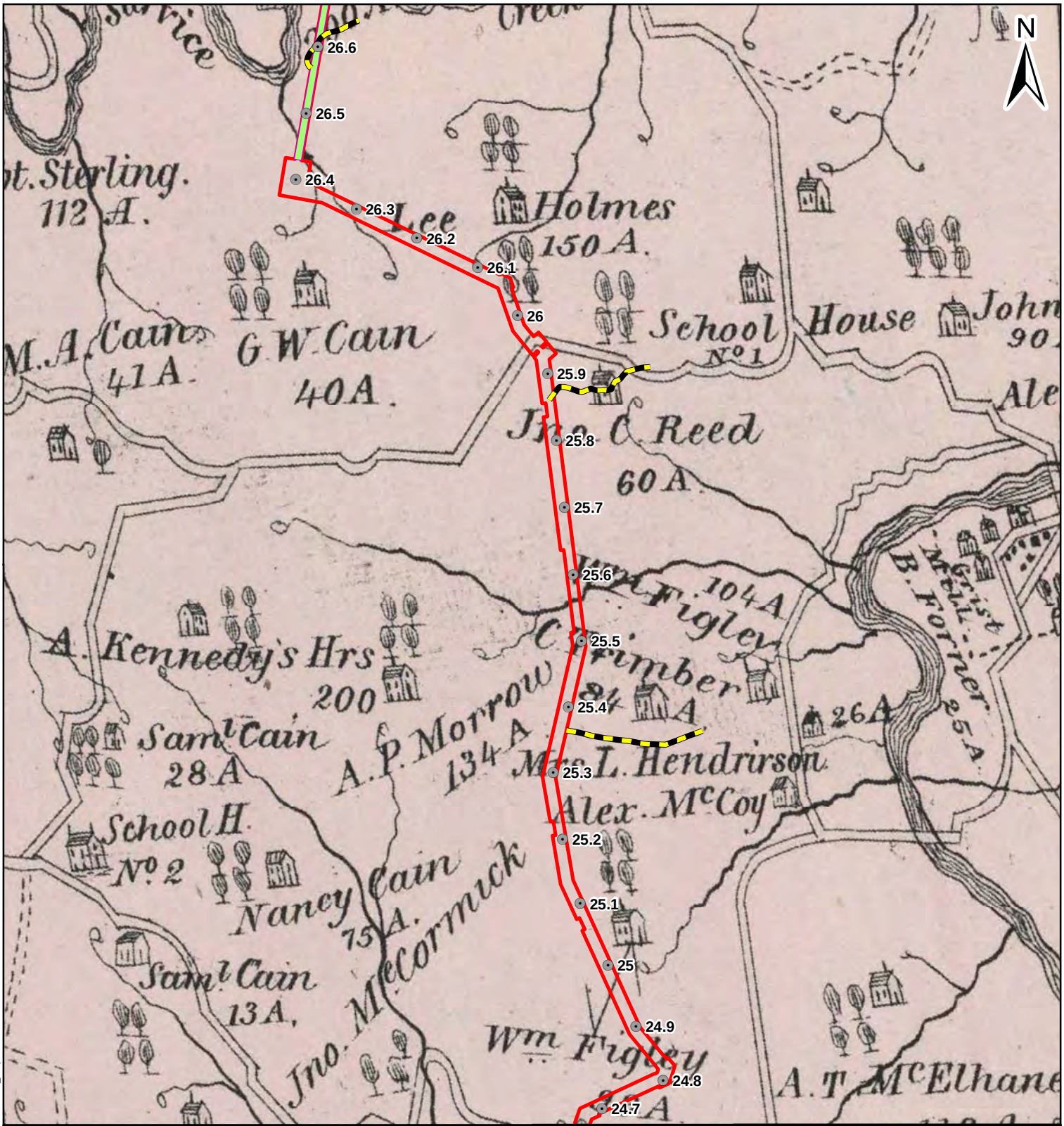
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Independence Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.39

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Independence Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd

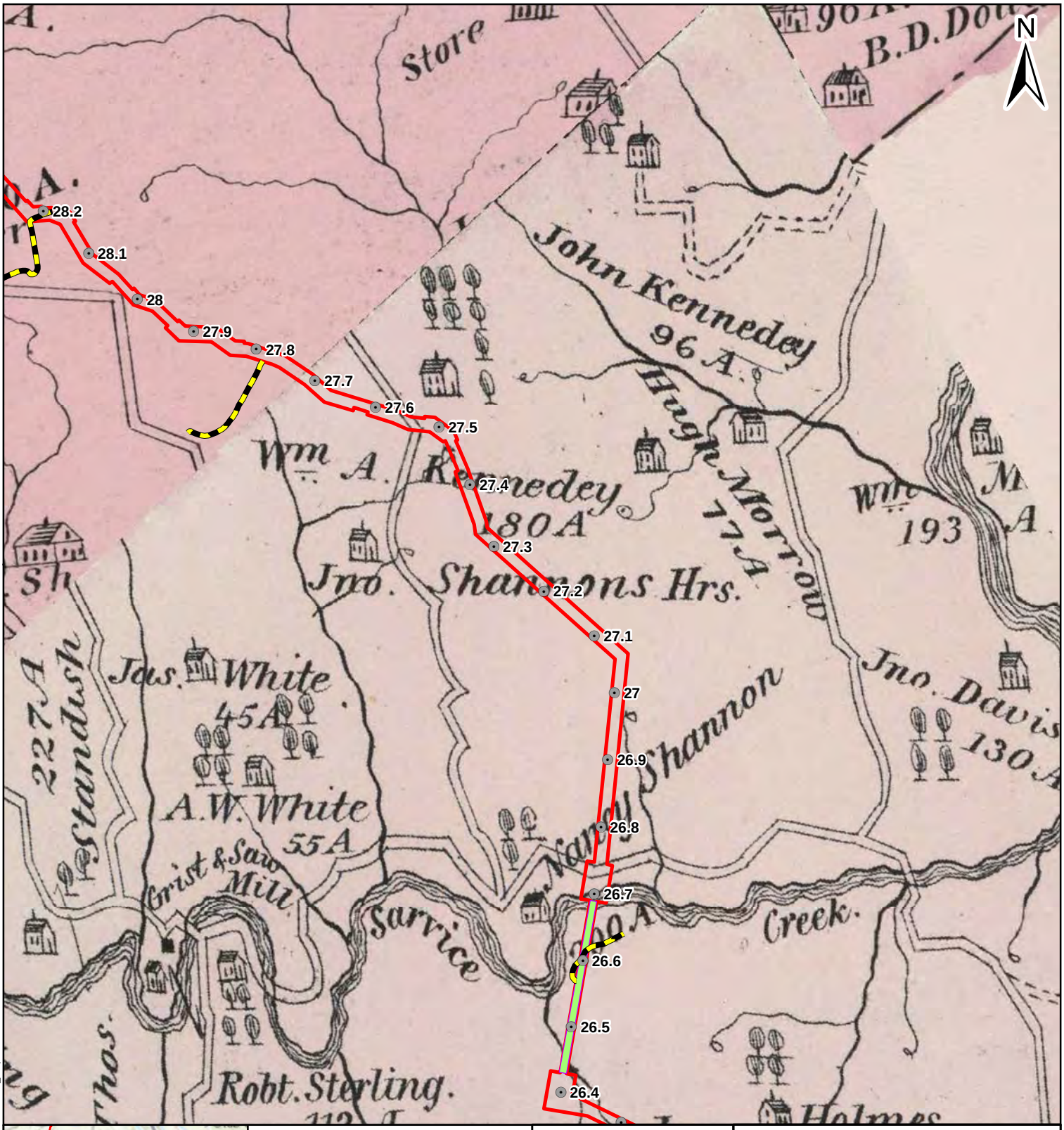


Figure 4.40

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

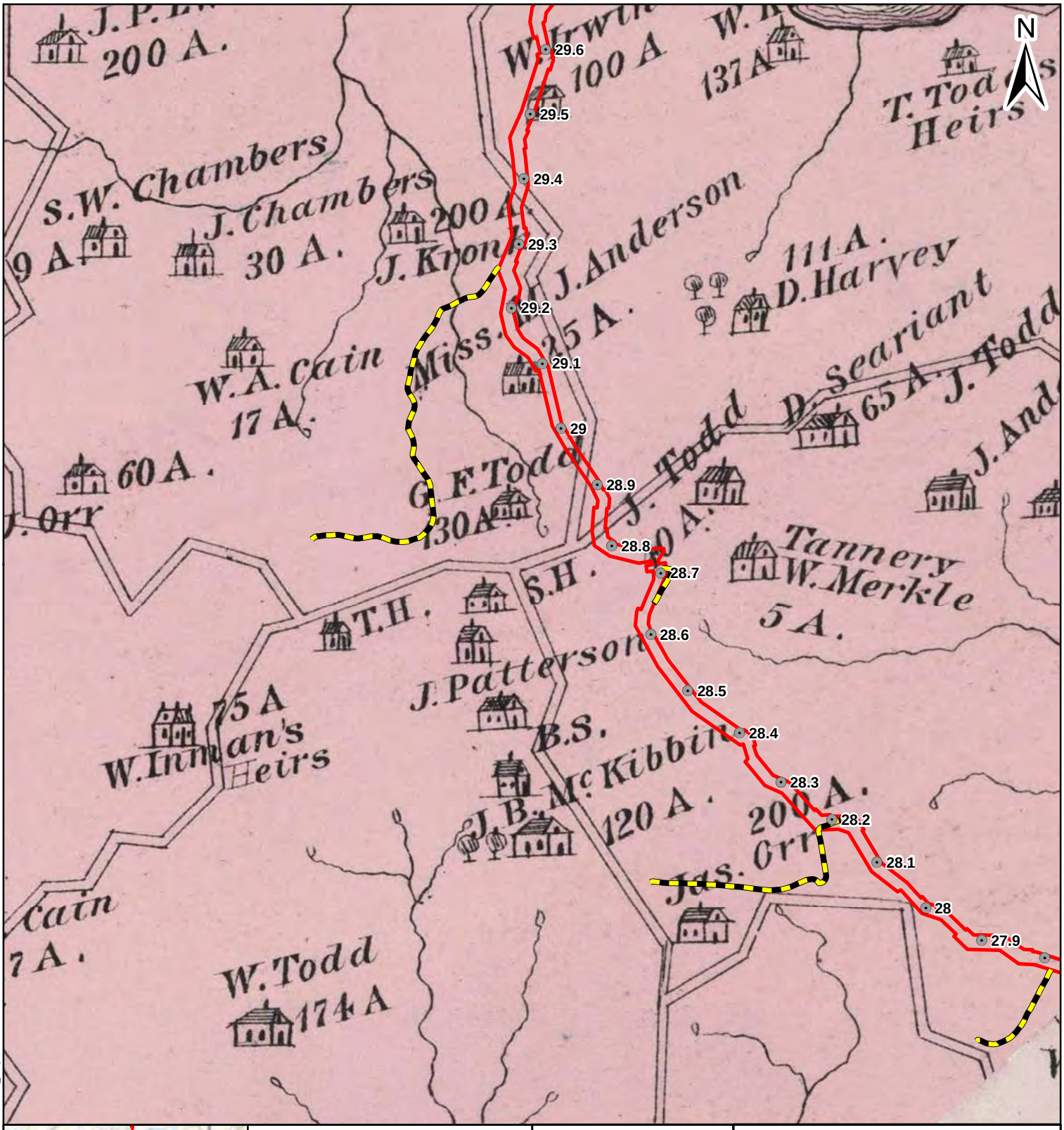
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

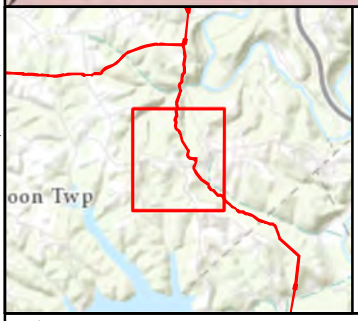
References:
Caldwell, J.A.
1876 Atlas of Independence Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.41

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

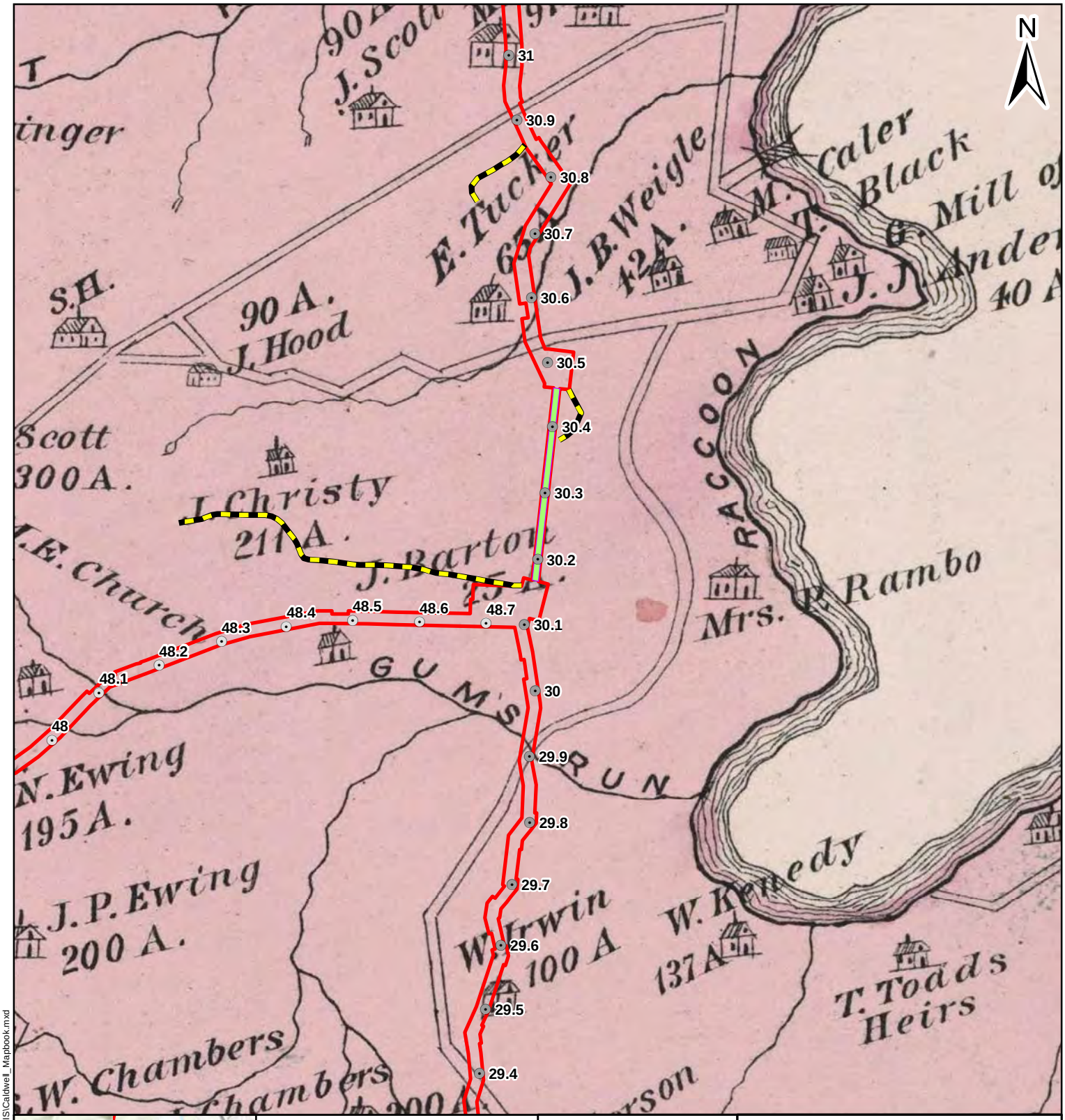
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

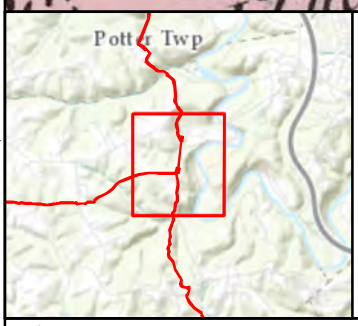
References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.42

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

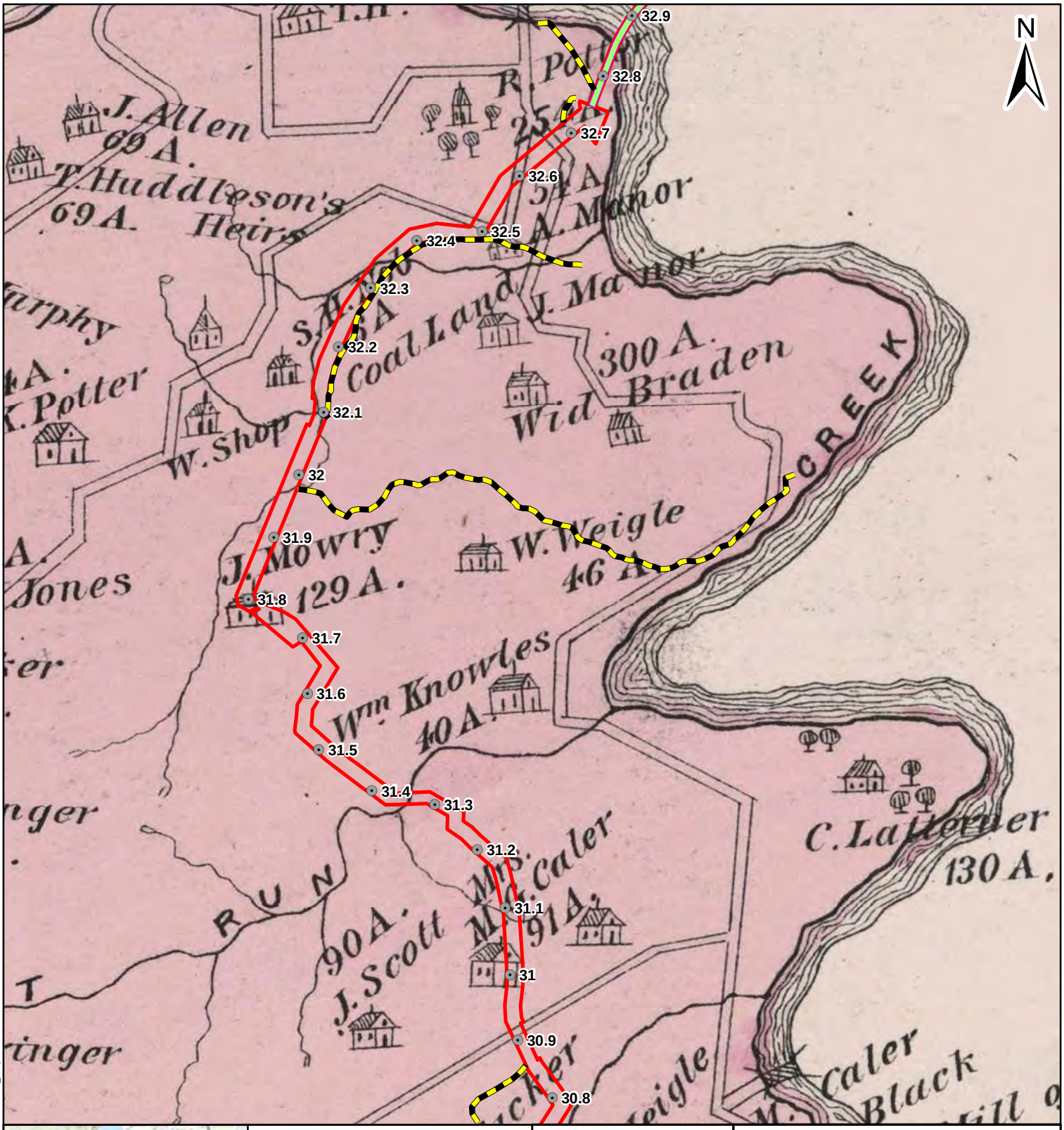
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

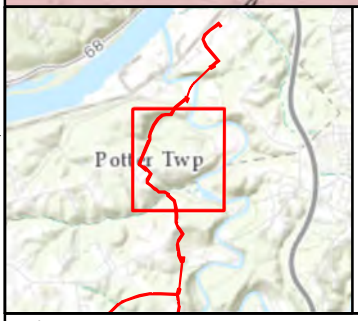
References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.43

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

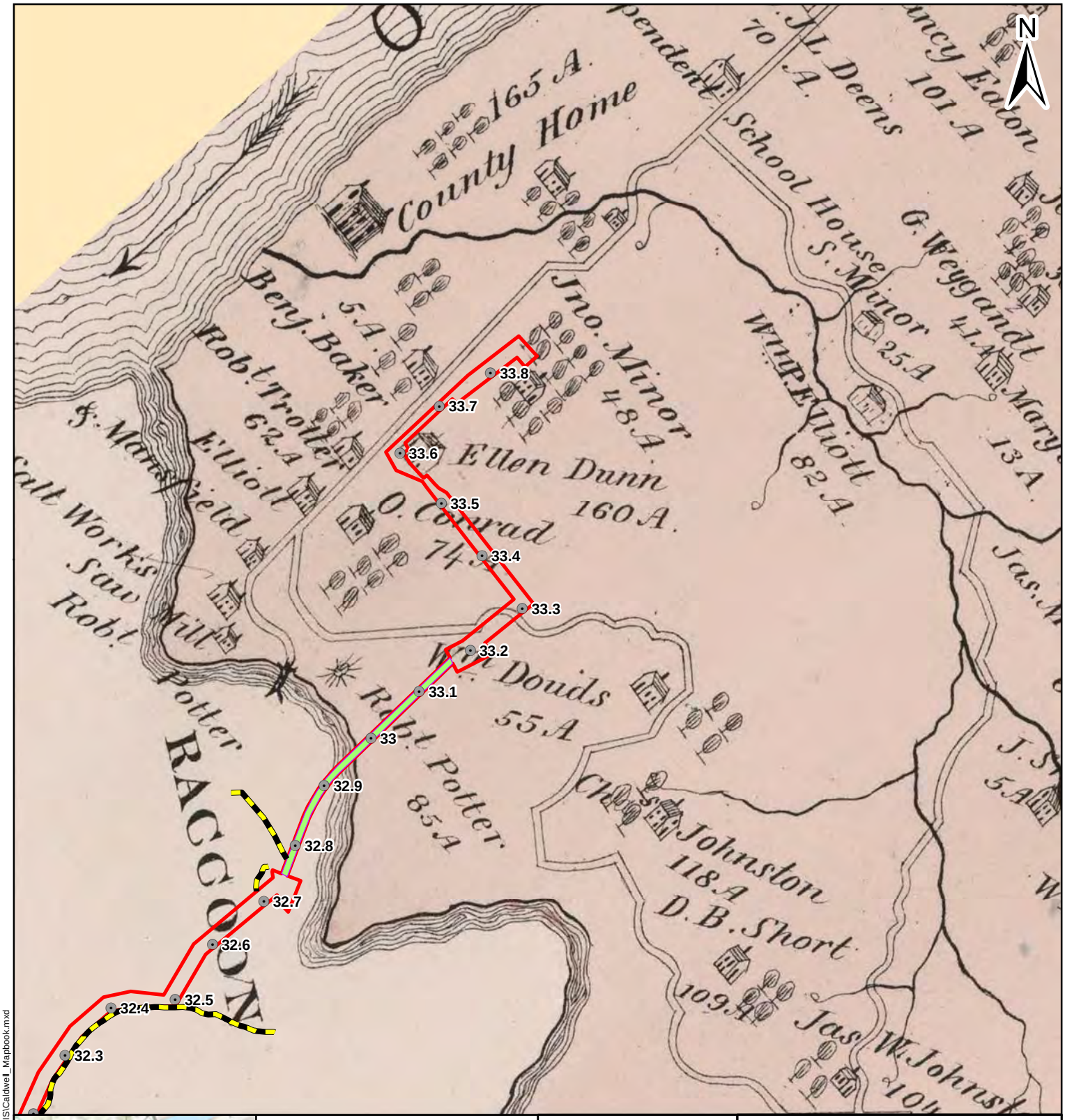
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

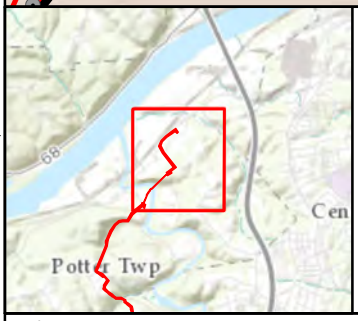
References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.44

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

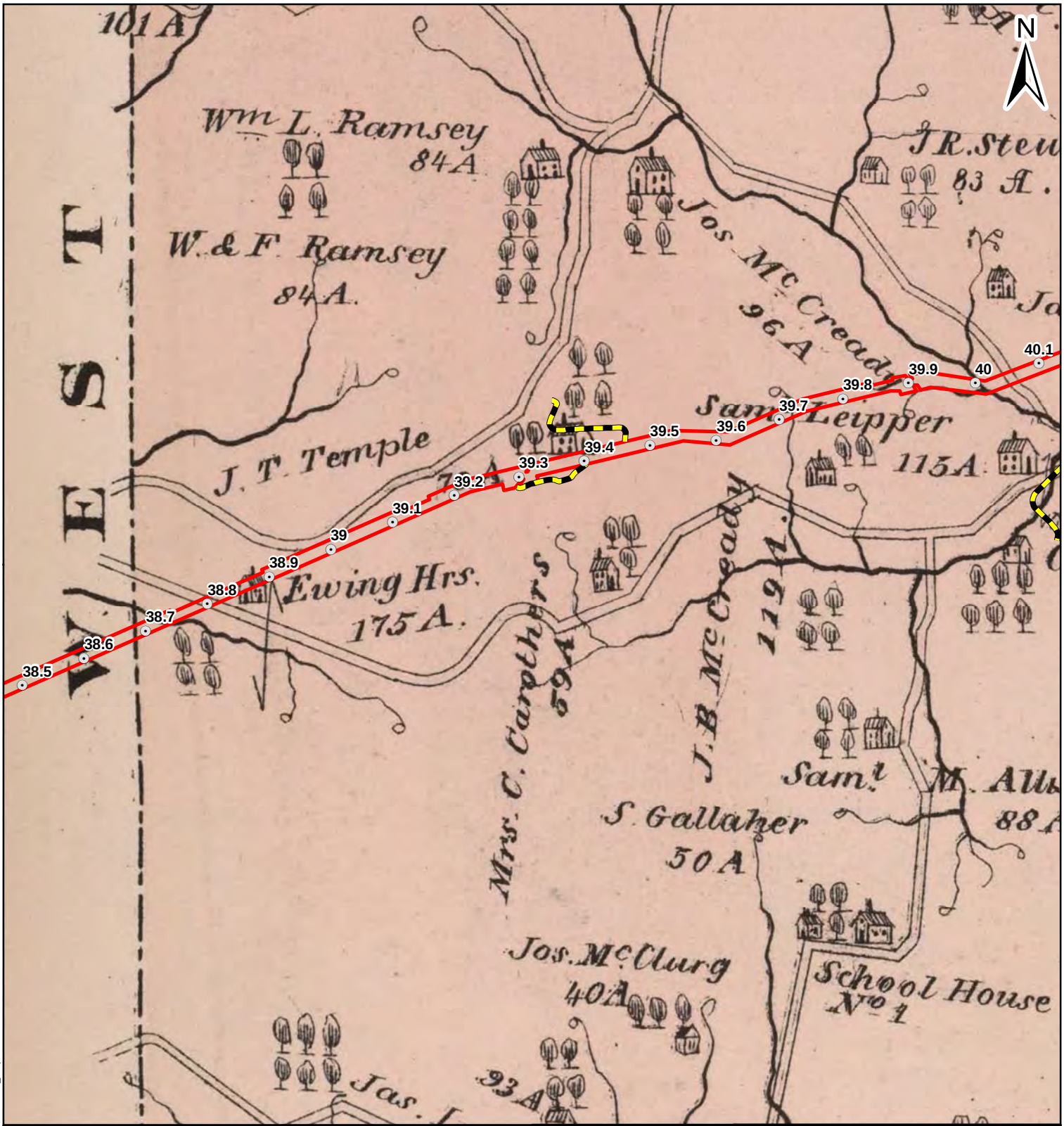
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

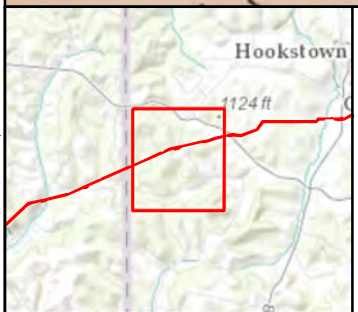
References:
Caldwell, J.A.
1876 Atlas of Moon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.45

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

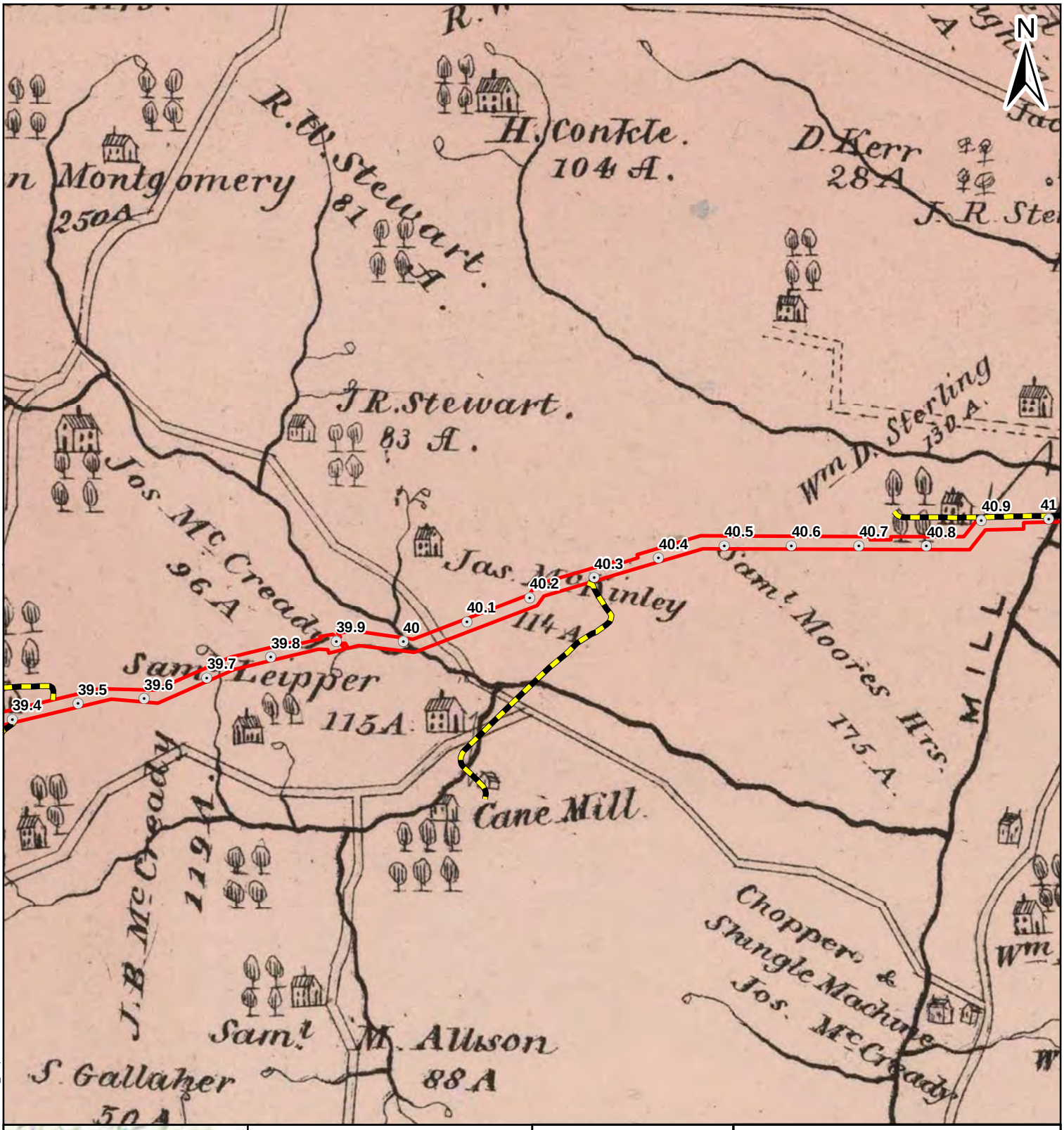
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

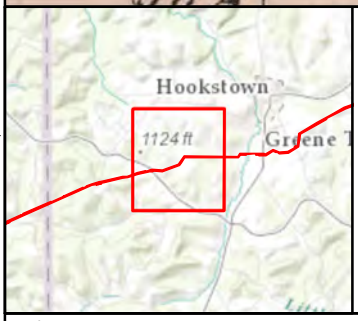
References:
Caldwell, J.A.
1876 Atlas of Greene Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.46

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

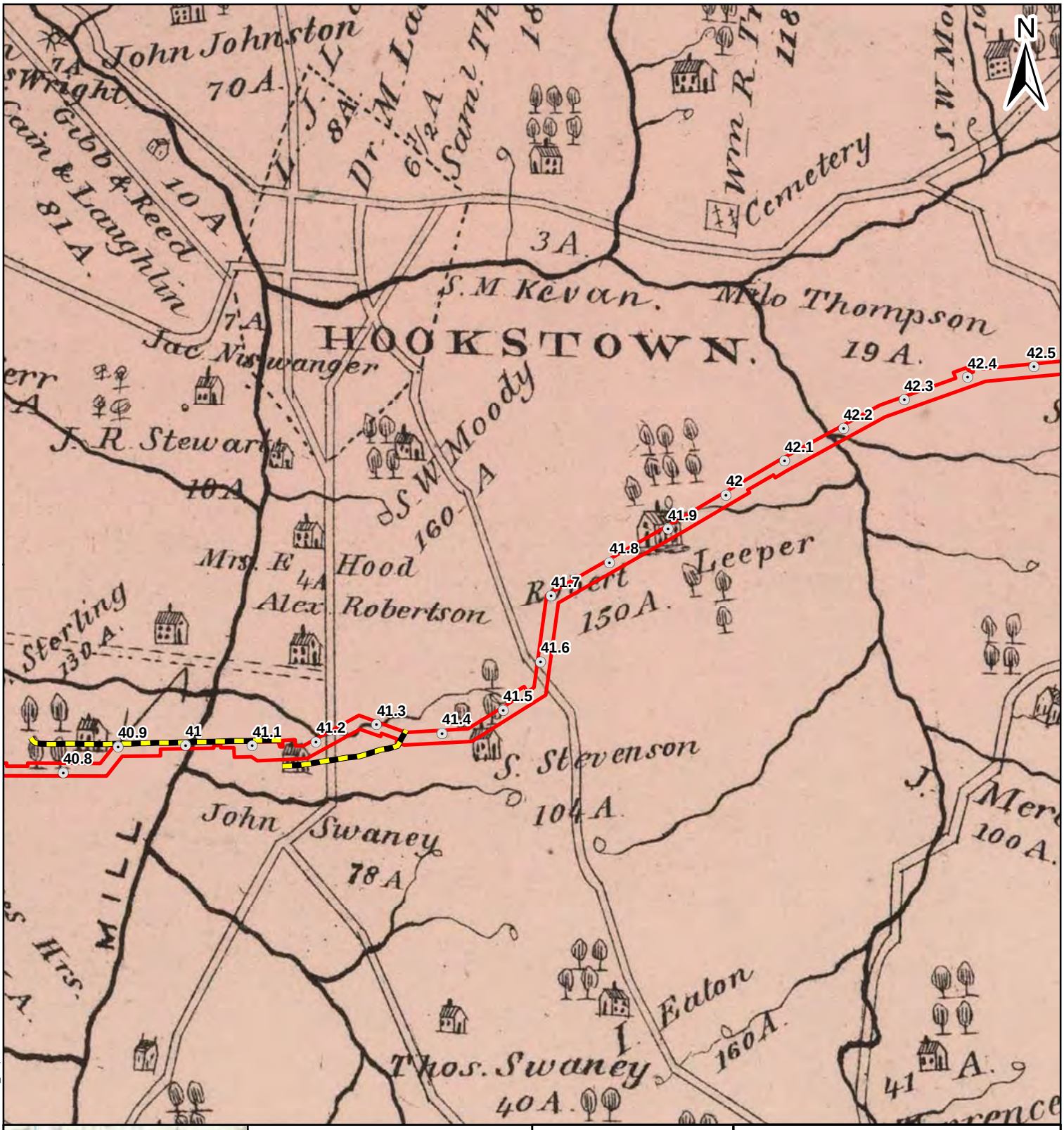
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

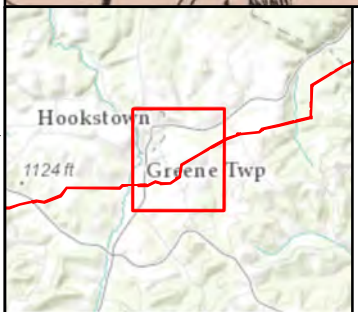
References:
Caldwell, J.A.
1876 Atlas of Greene Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.47

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

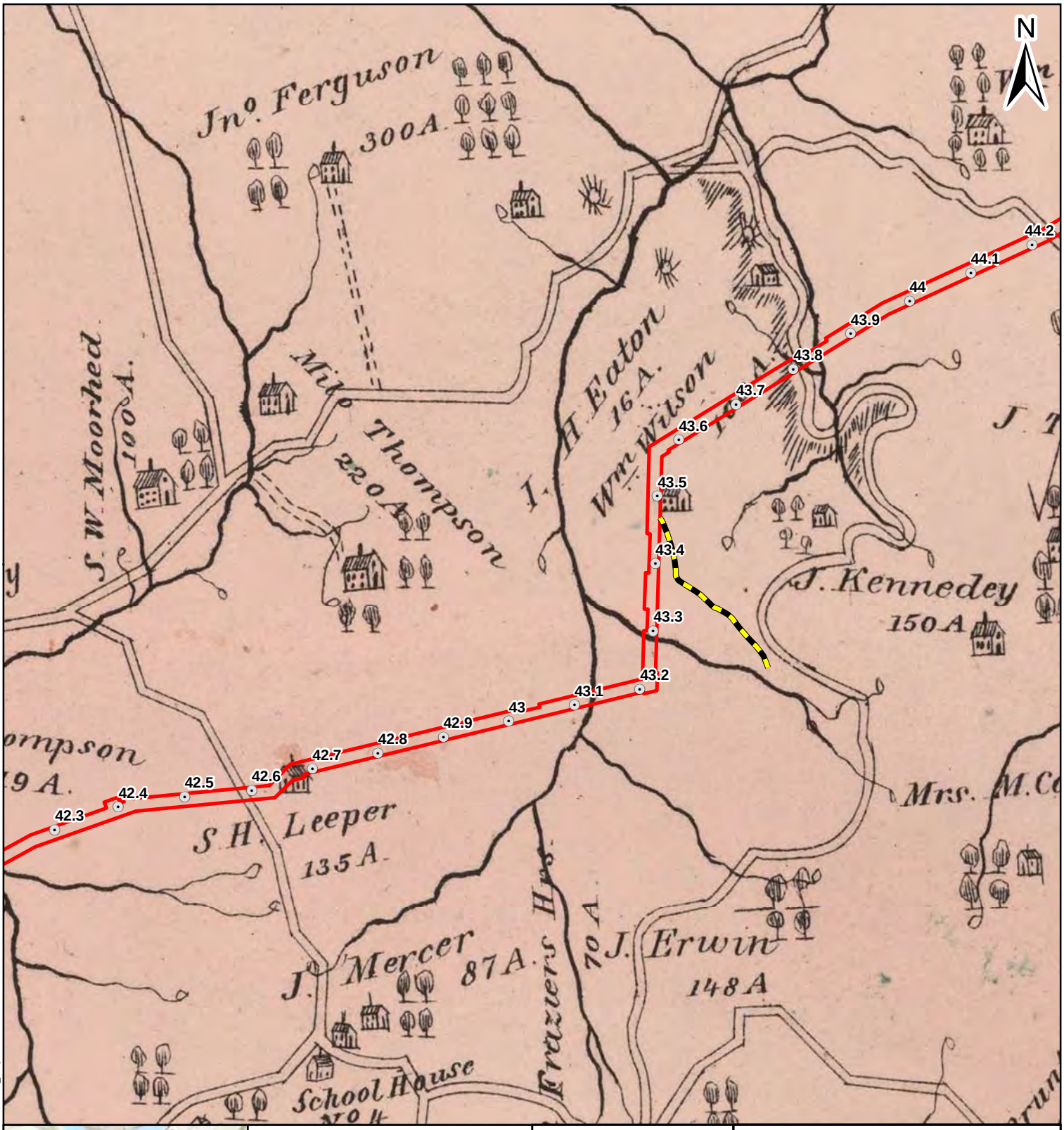
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

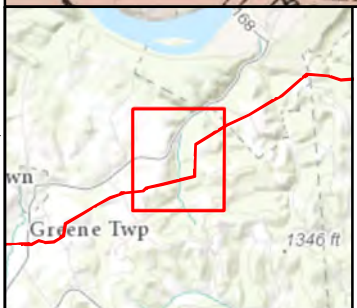
References:
Caldwell, J.A.
1876 Atlas of Greene Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.48

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

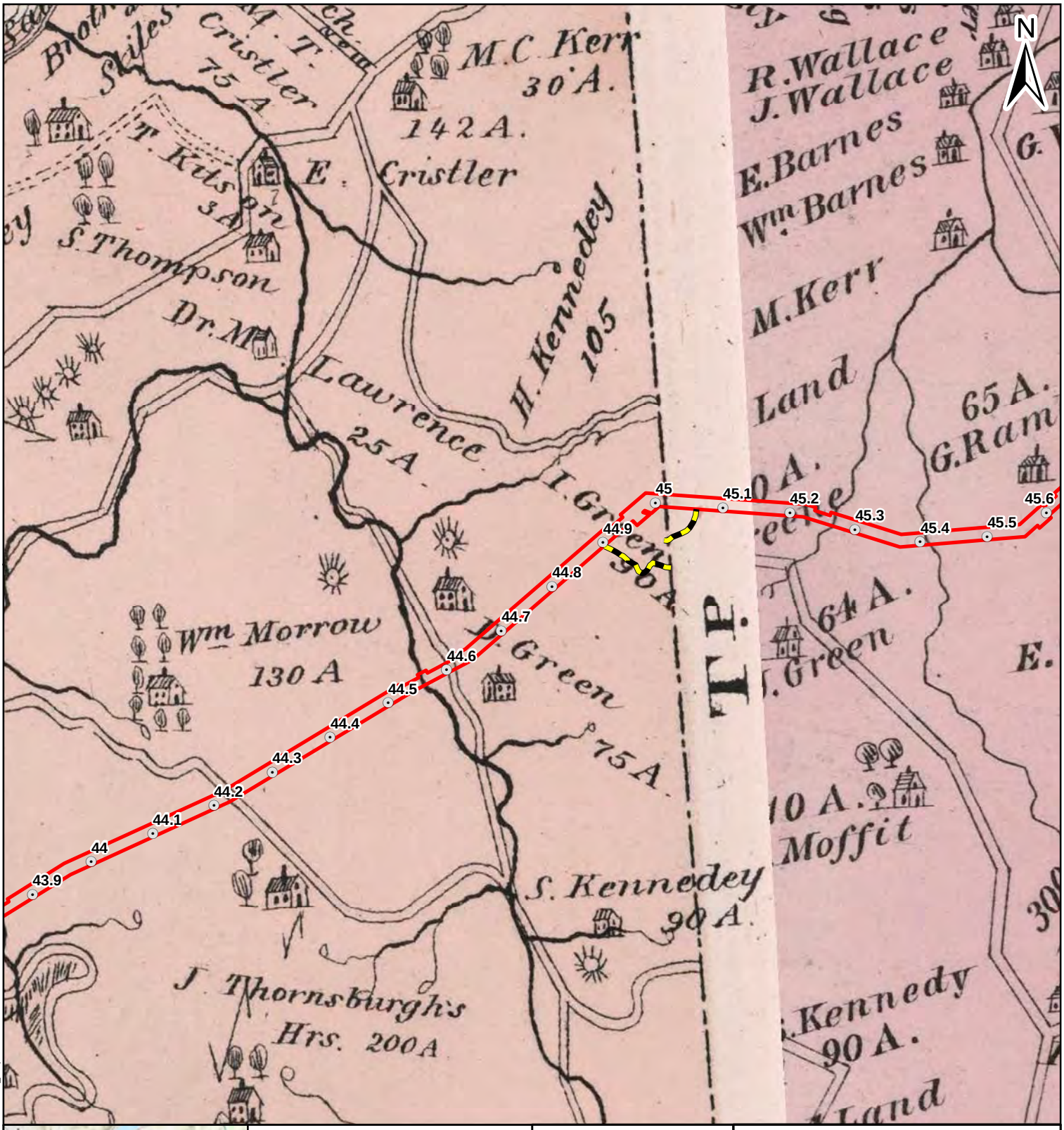
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Greene Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.49

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

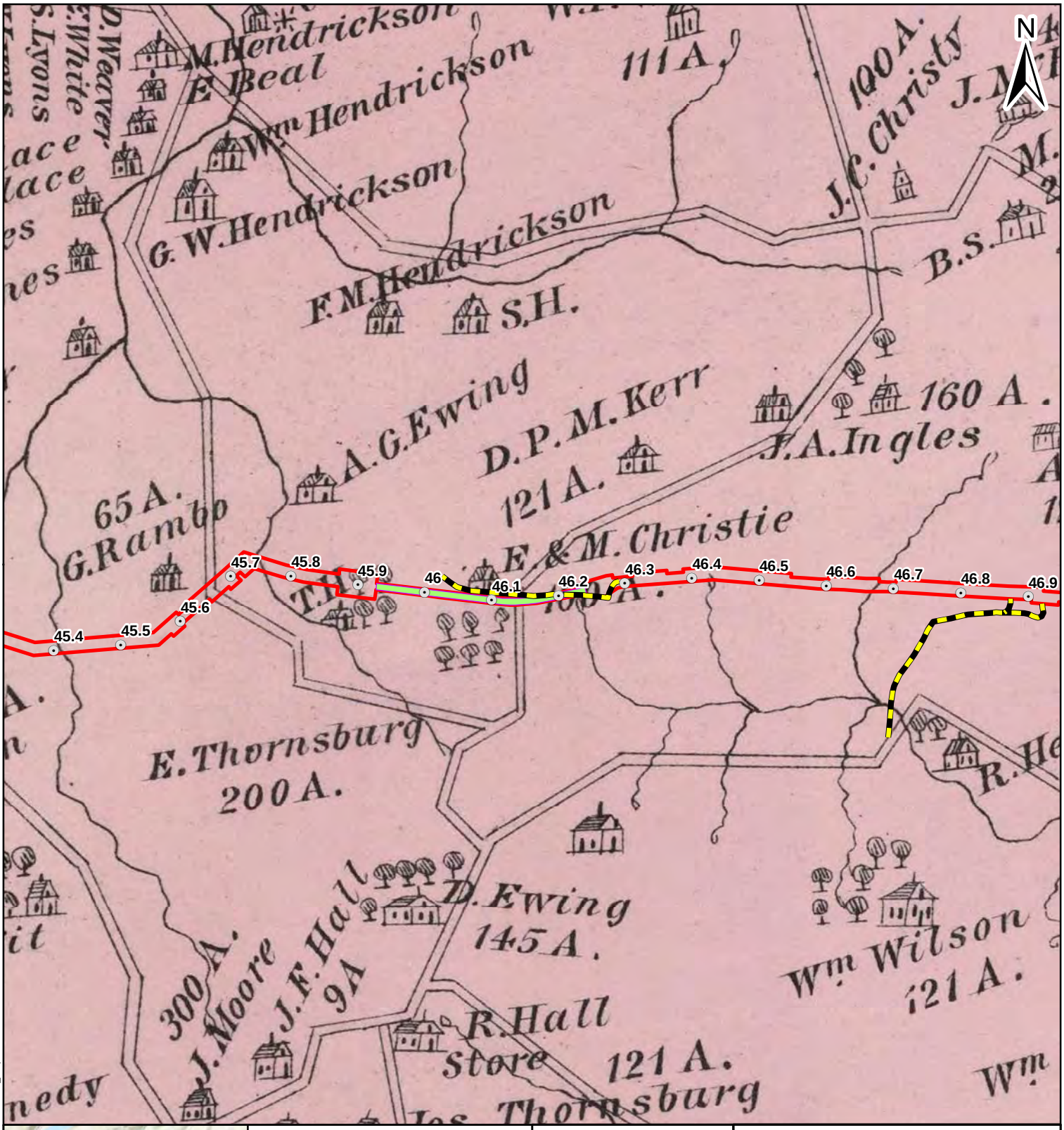
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

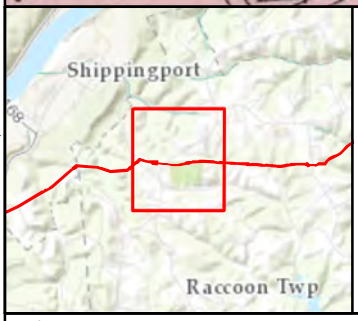
References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.50

1876 Caldwell Atlas

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd

Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.51

1876 Caldwell Atlas

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

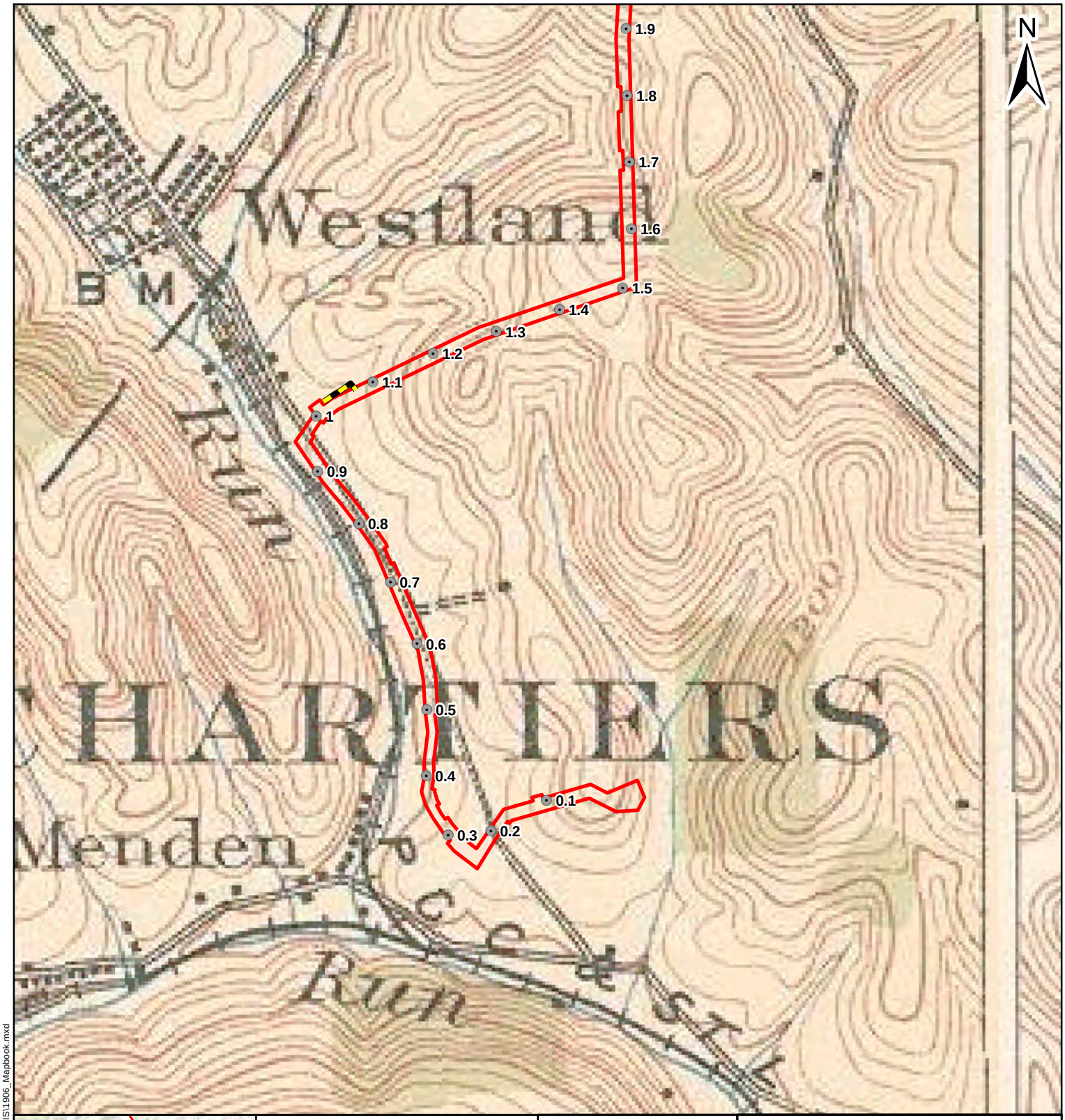
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

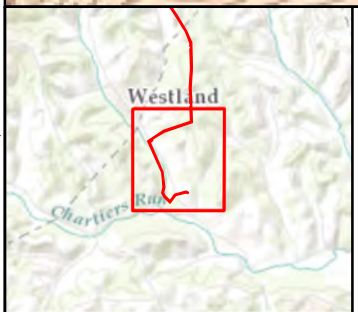
References:
Caldwell, J.A.
1876 Atlas of Raccoon Township Beaver County, Pennsylvania

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Caldwell_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.52

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

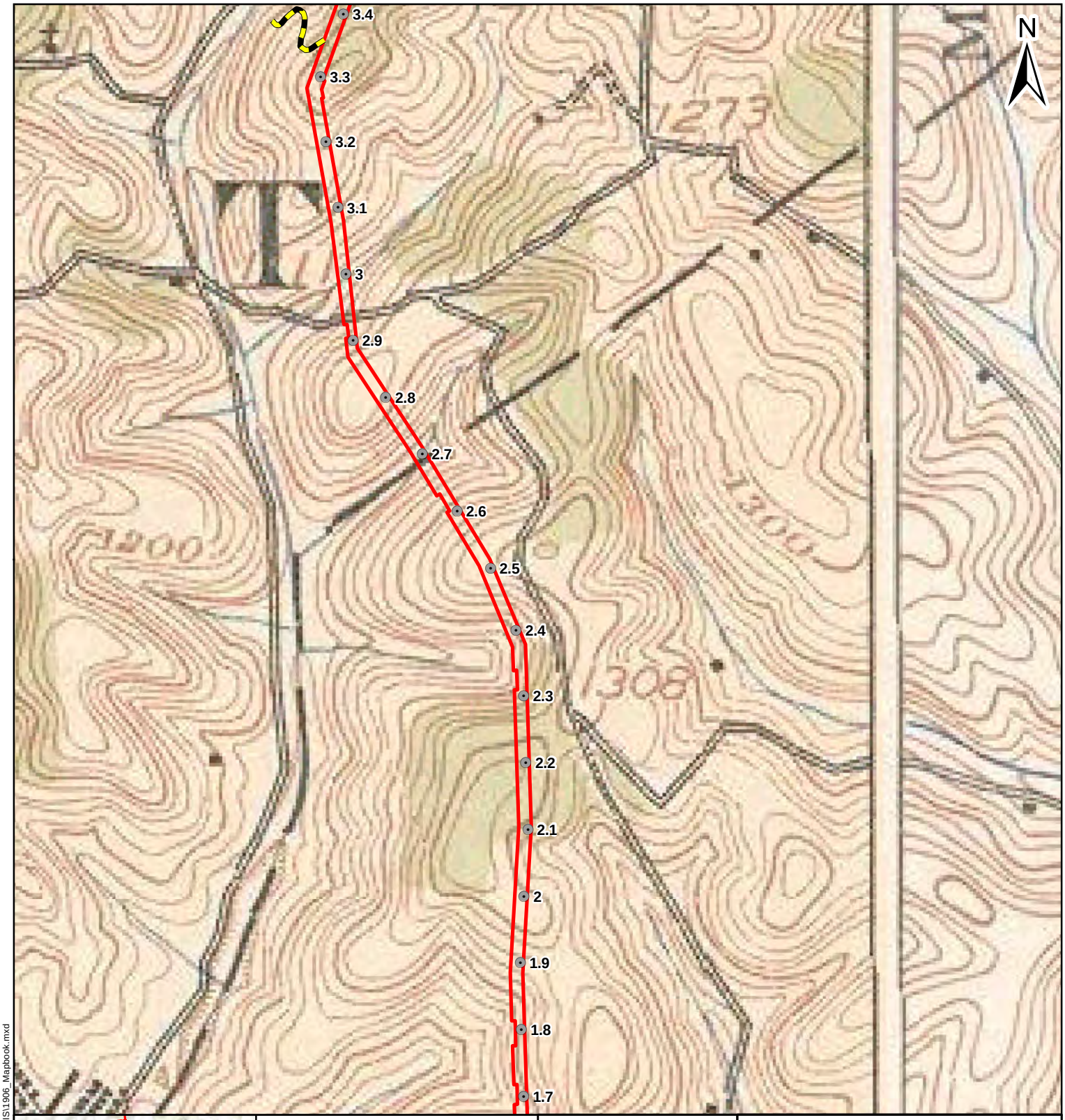
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.53

1906 USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

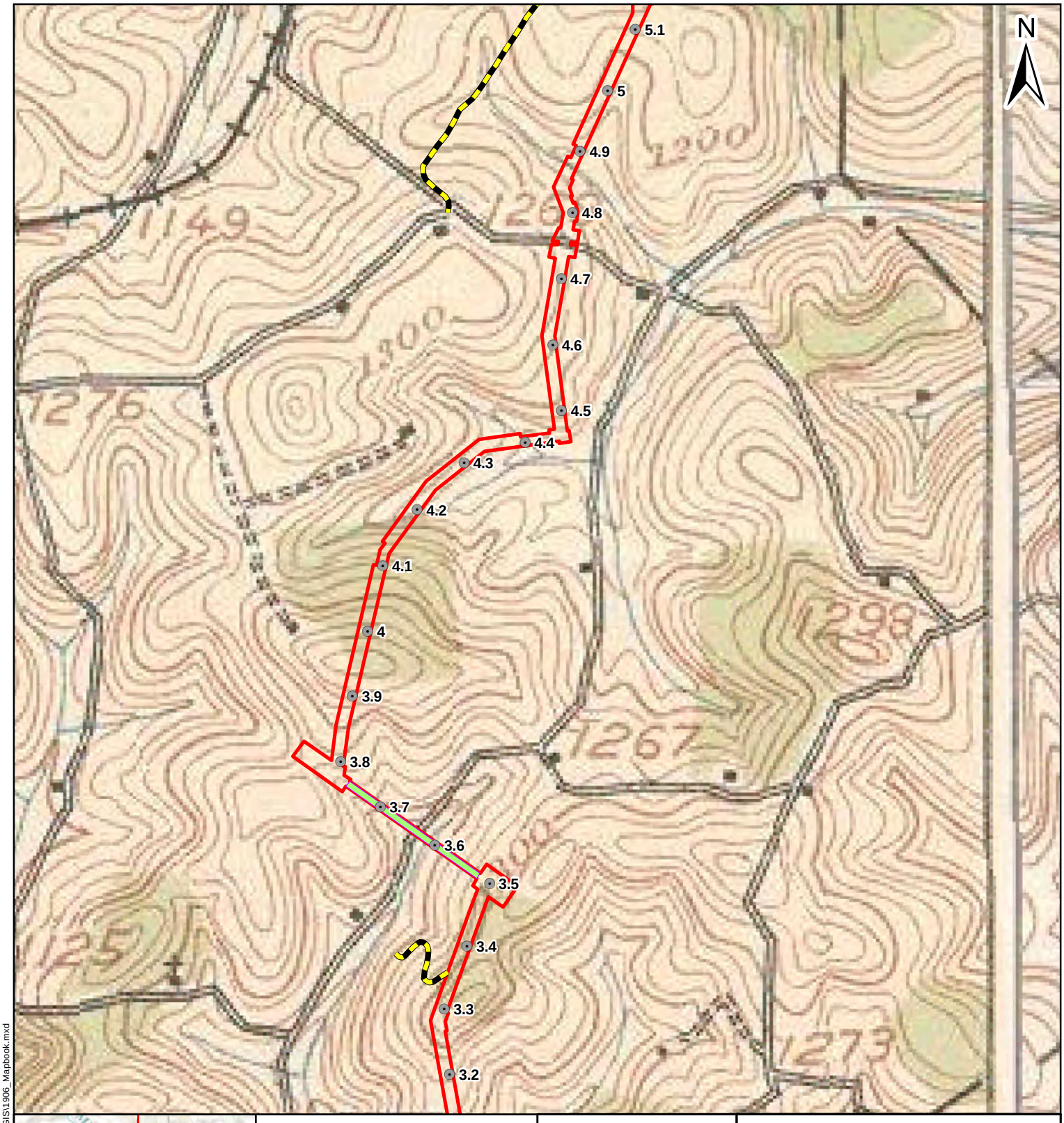
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

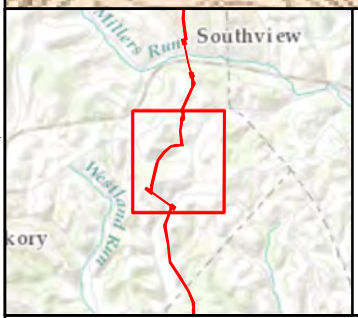
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.54

1906 USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

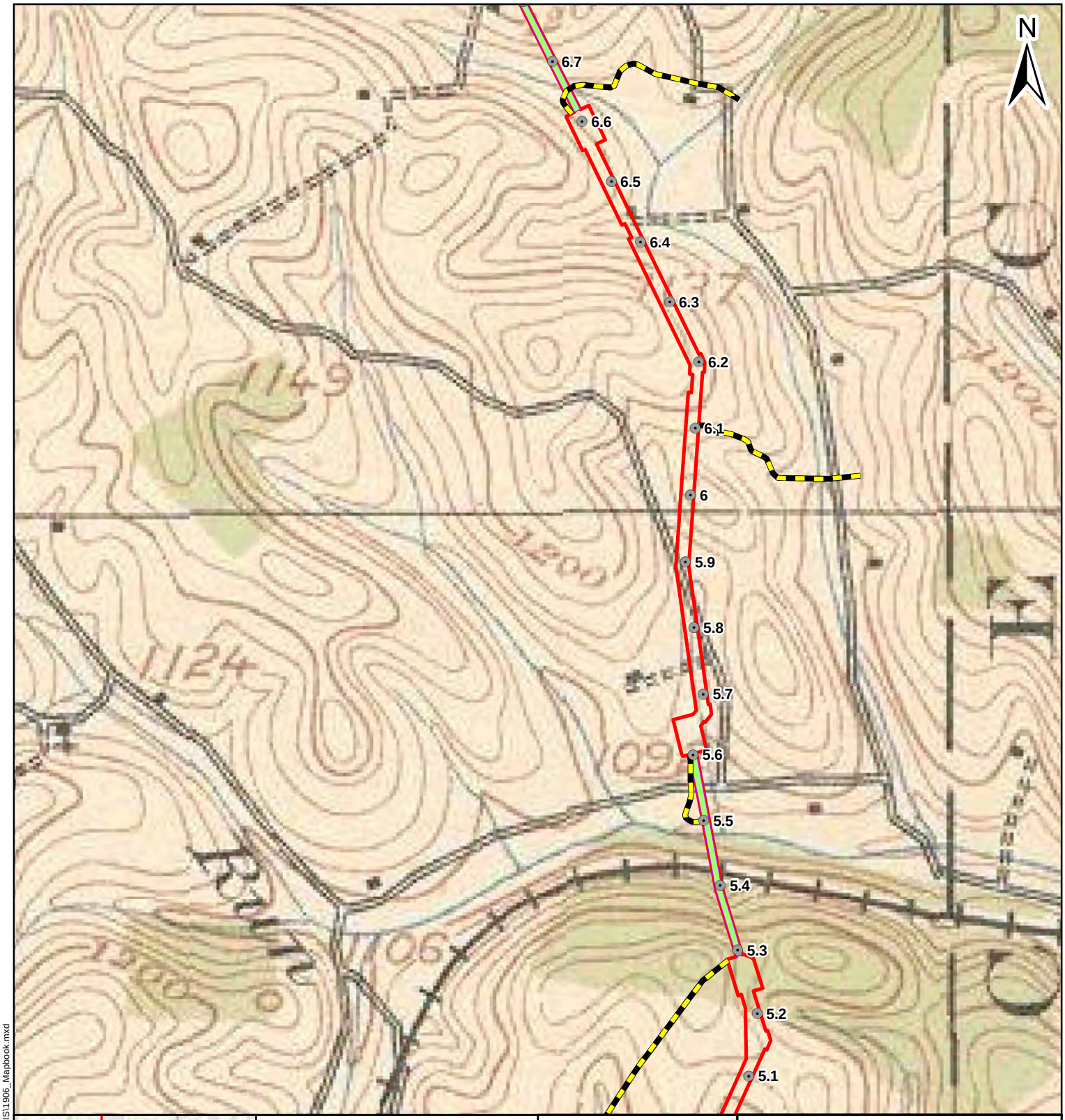
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.55

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

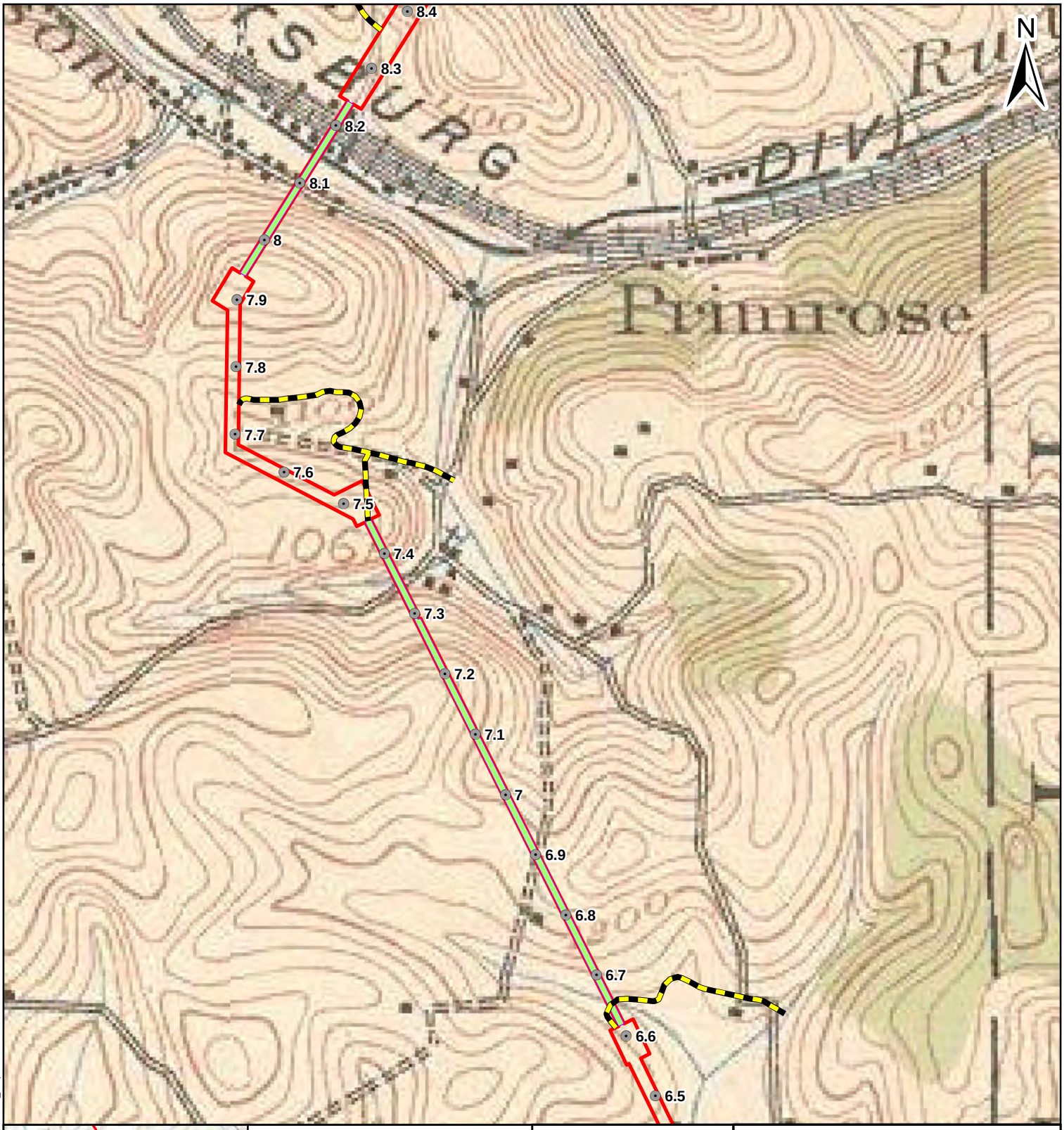
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

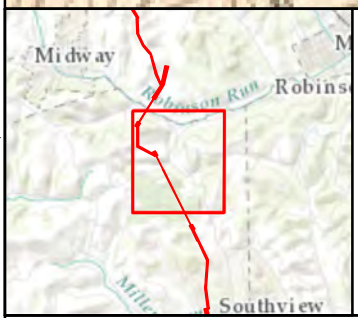
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.56

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

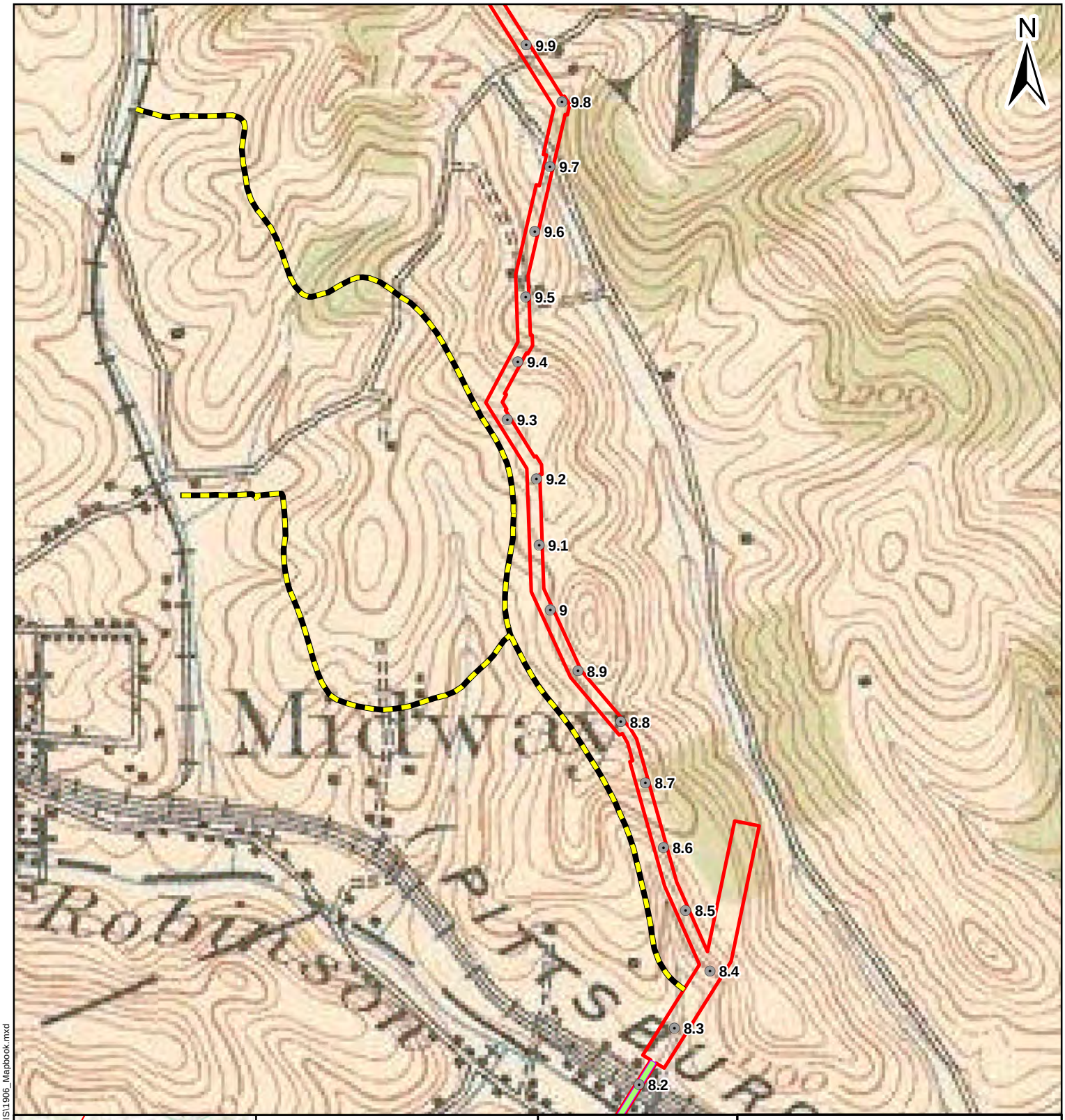
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

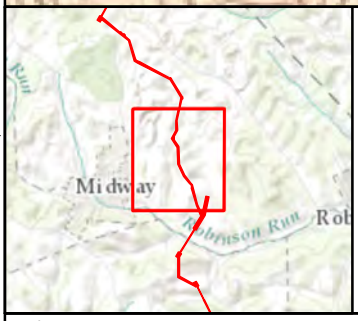
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.57

1906 USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

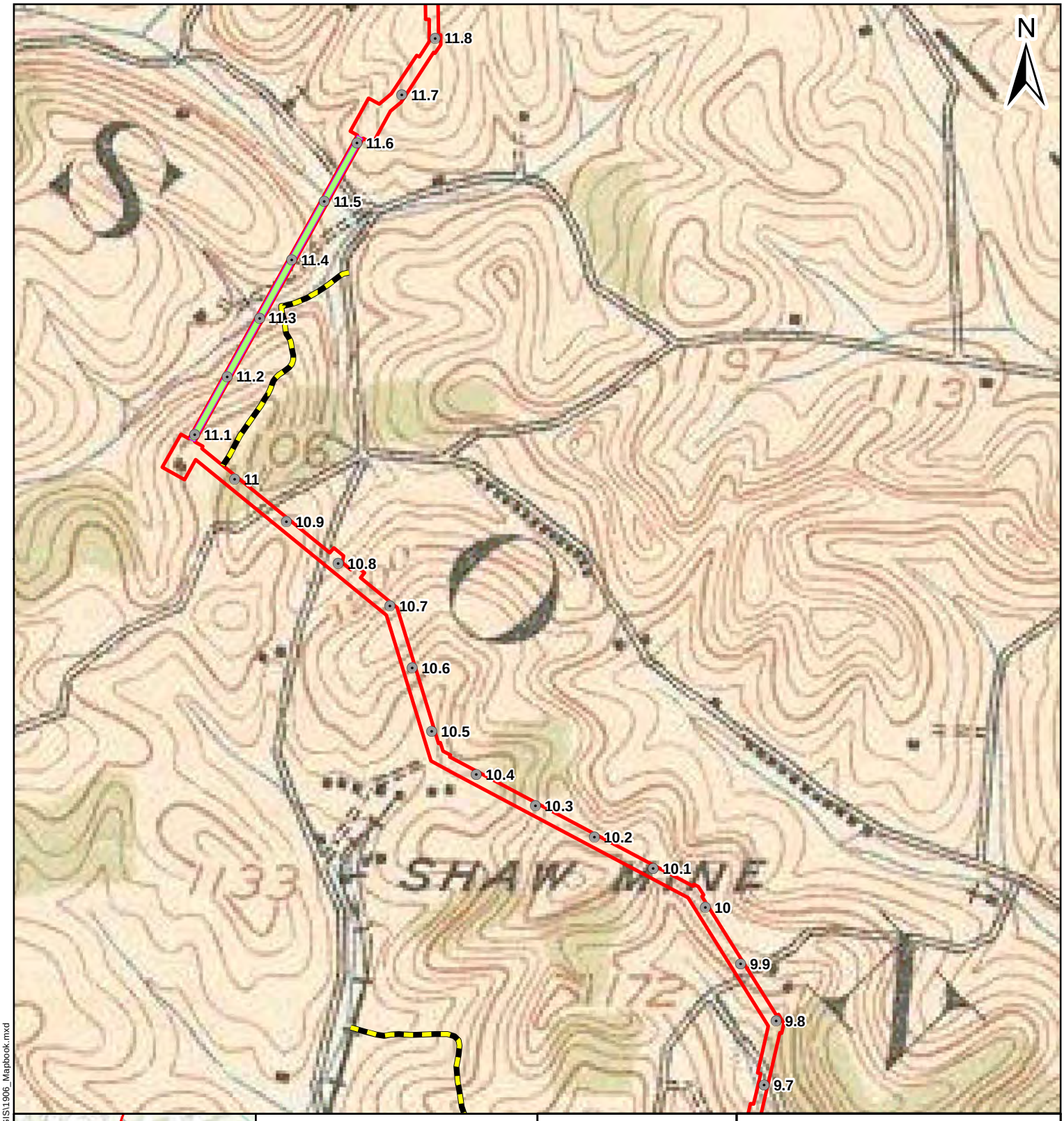
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

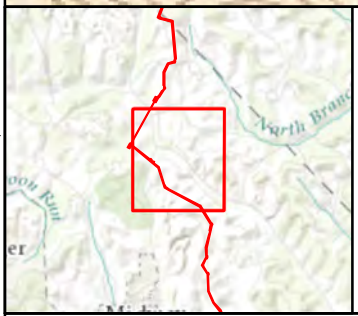
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.58

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

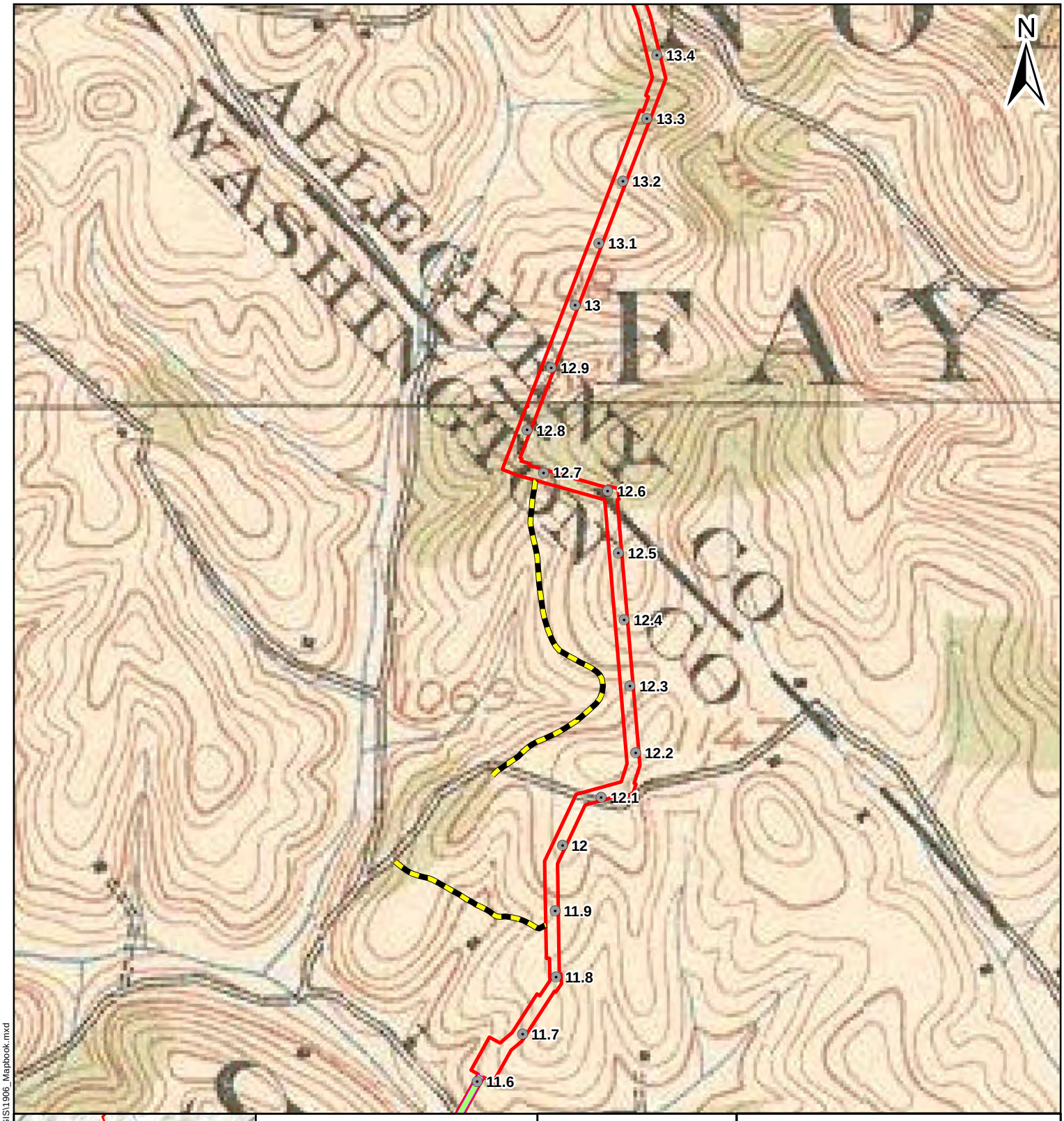
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

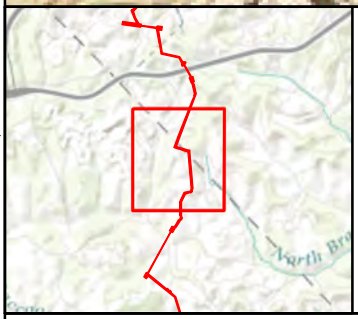
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.59

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

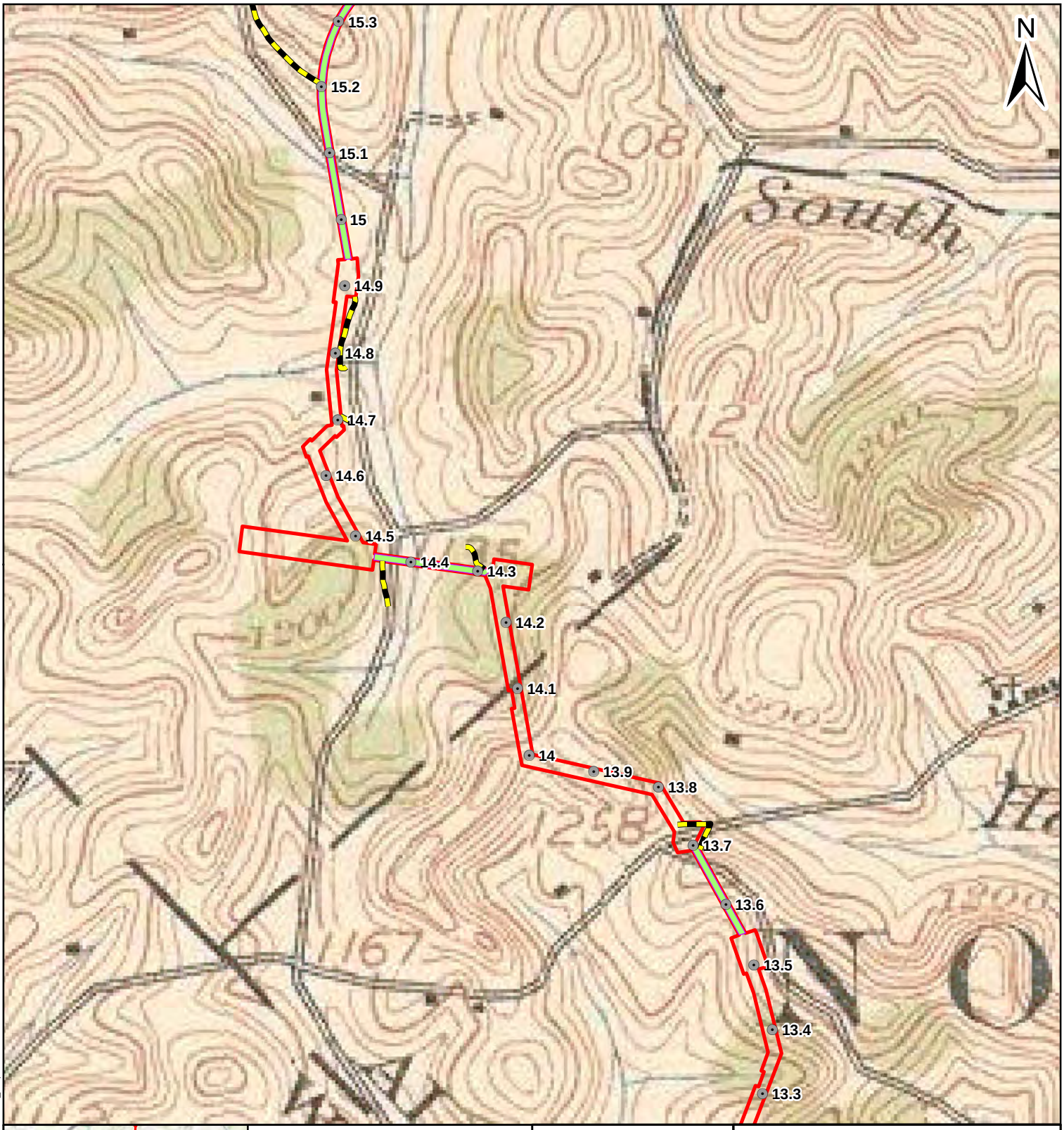
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

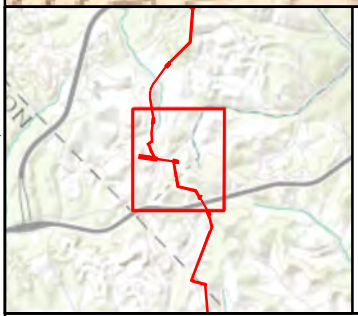
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.60

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

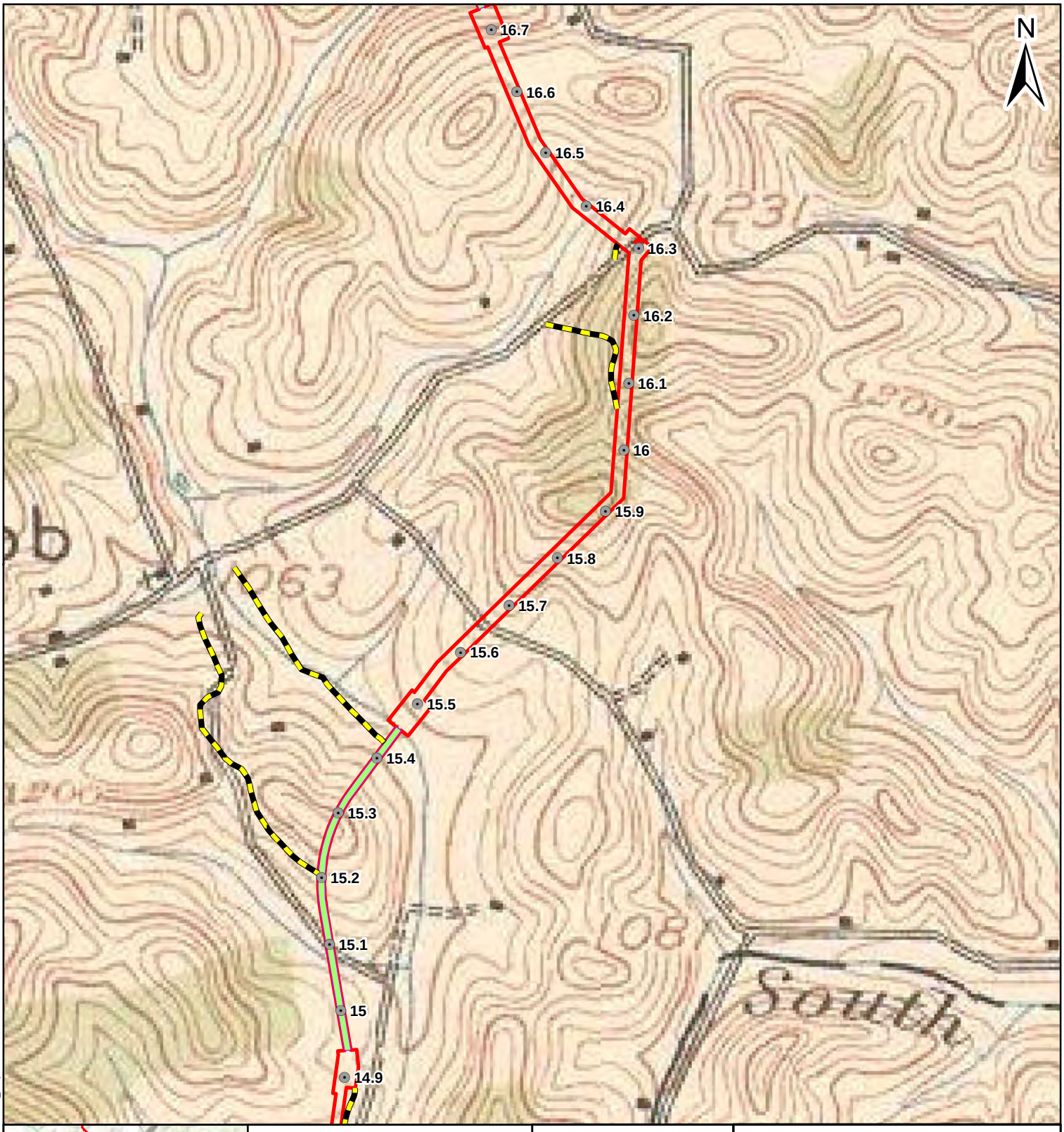
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

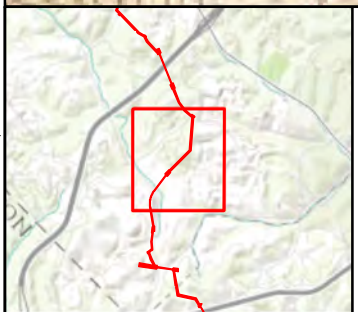
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.61

1906 USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

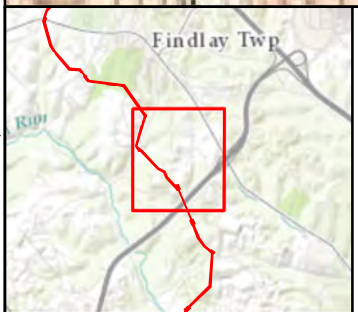
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.62

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

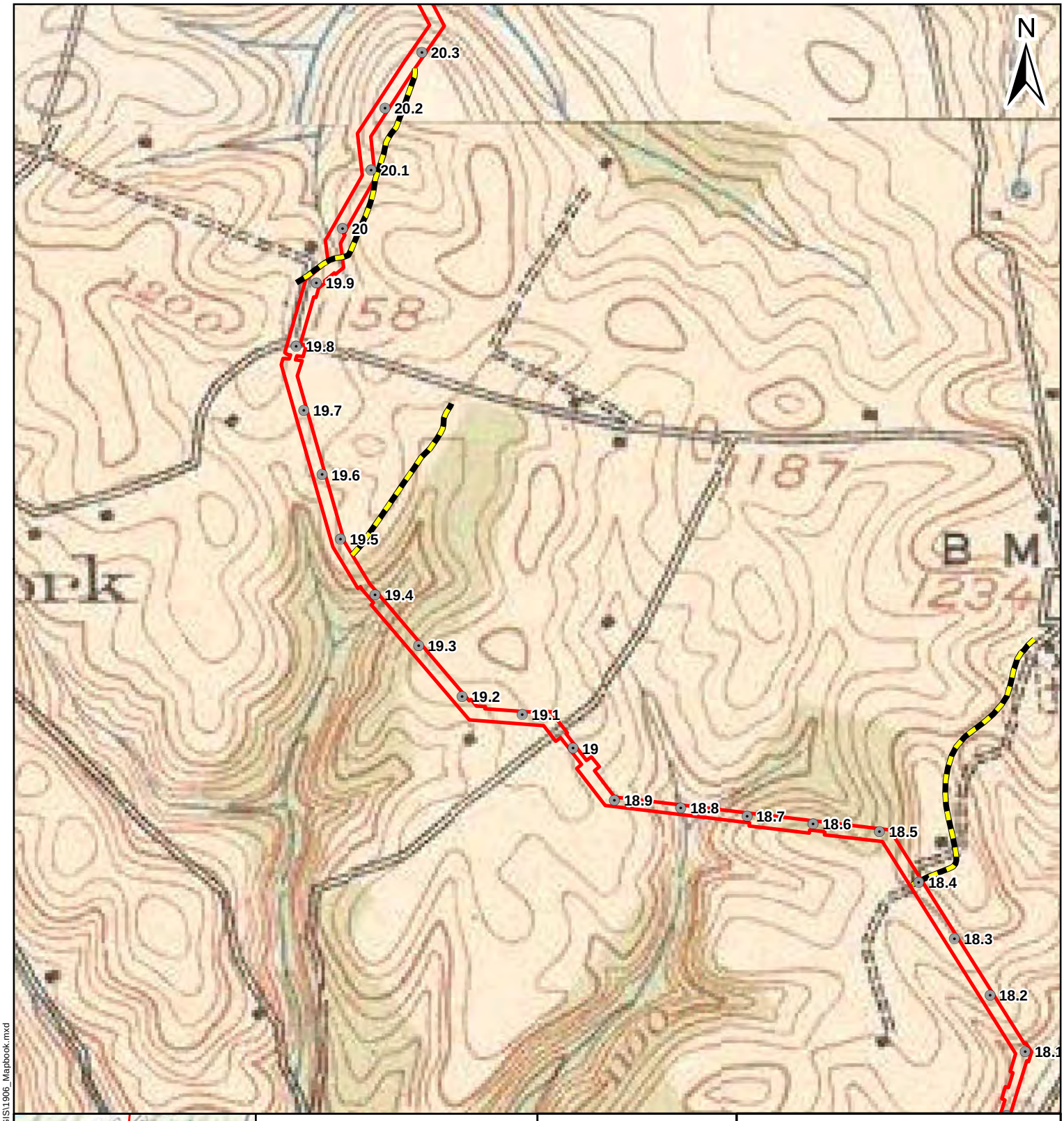
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

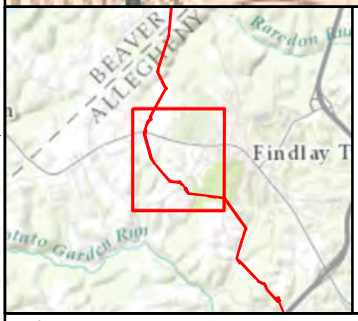
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.63

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

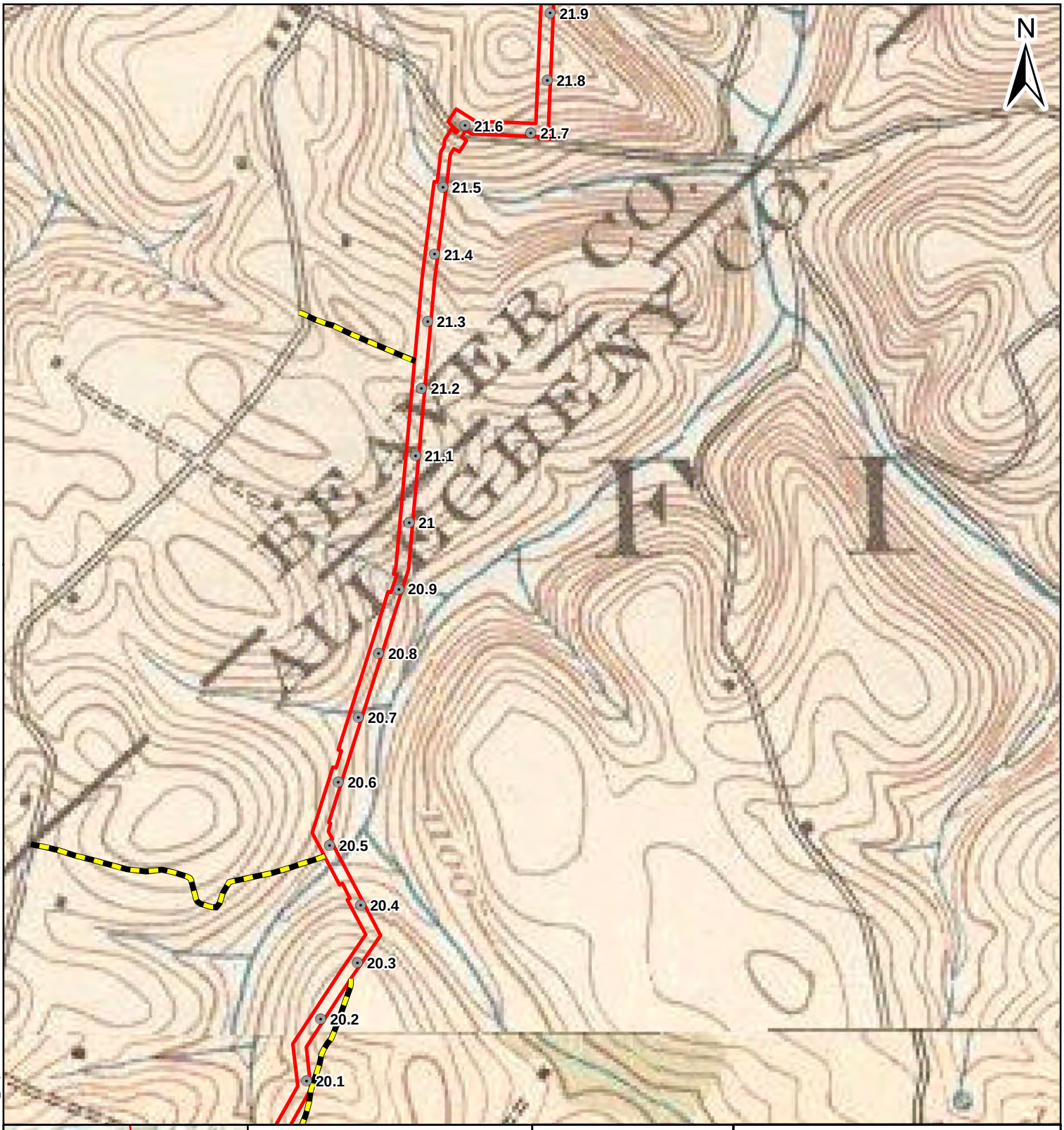
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

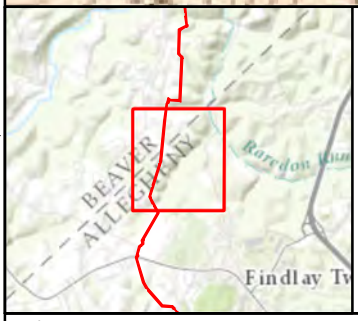
References:
USGS 1906 Burgettstown PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.64

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

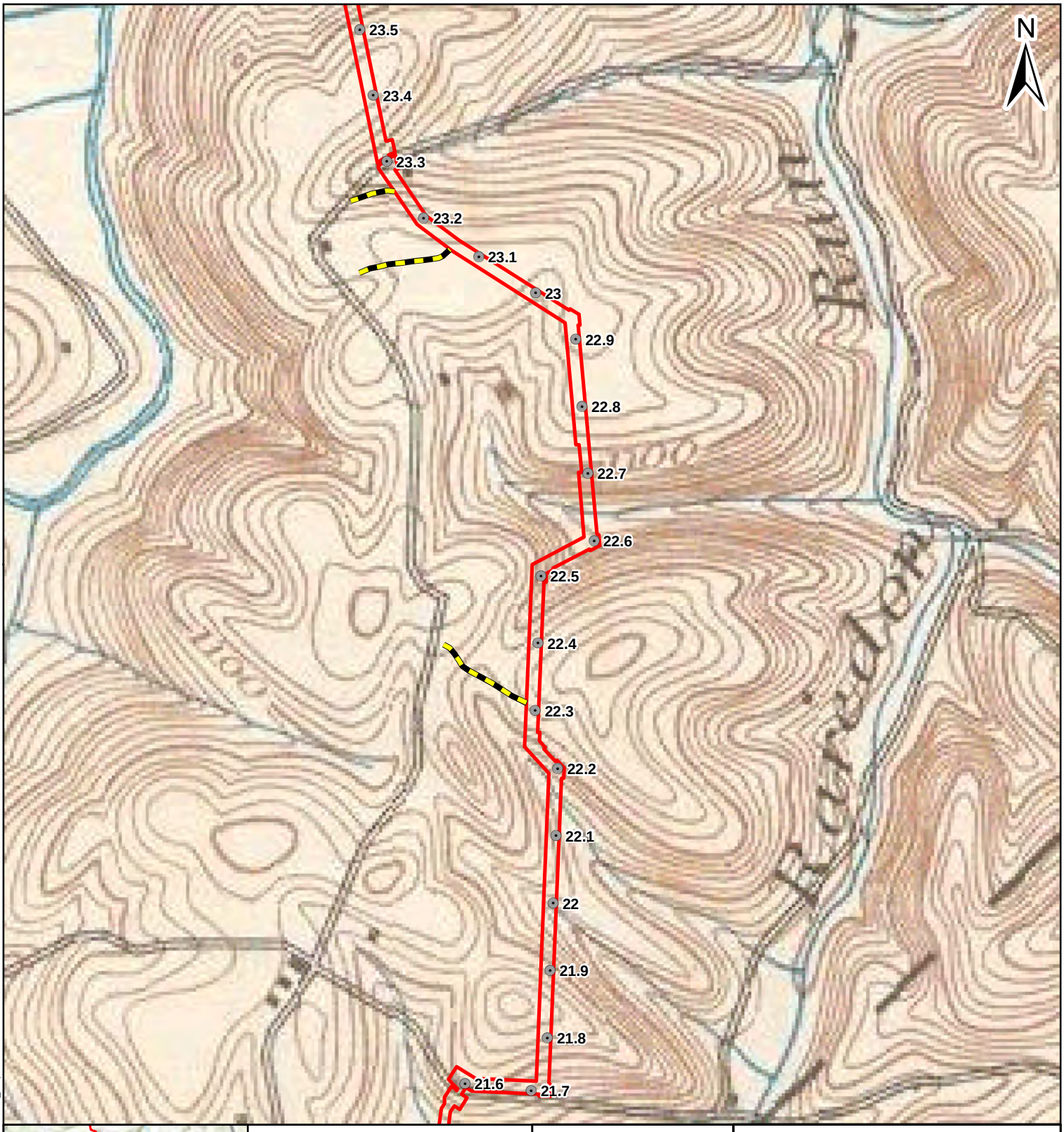
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

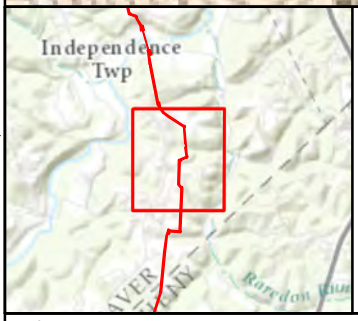
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.65

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

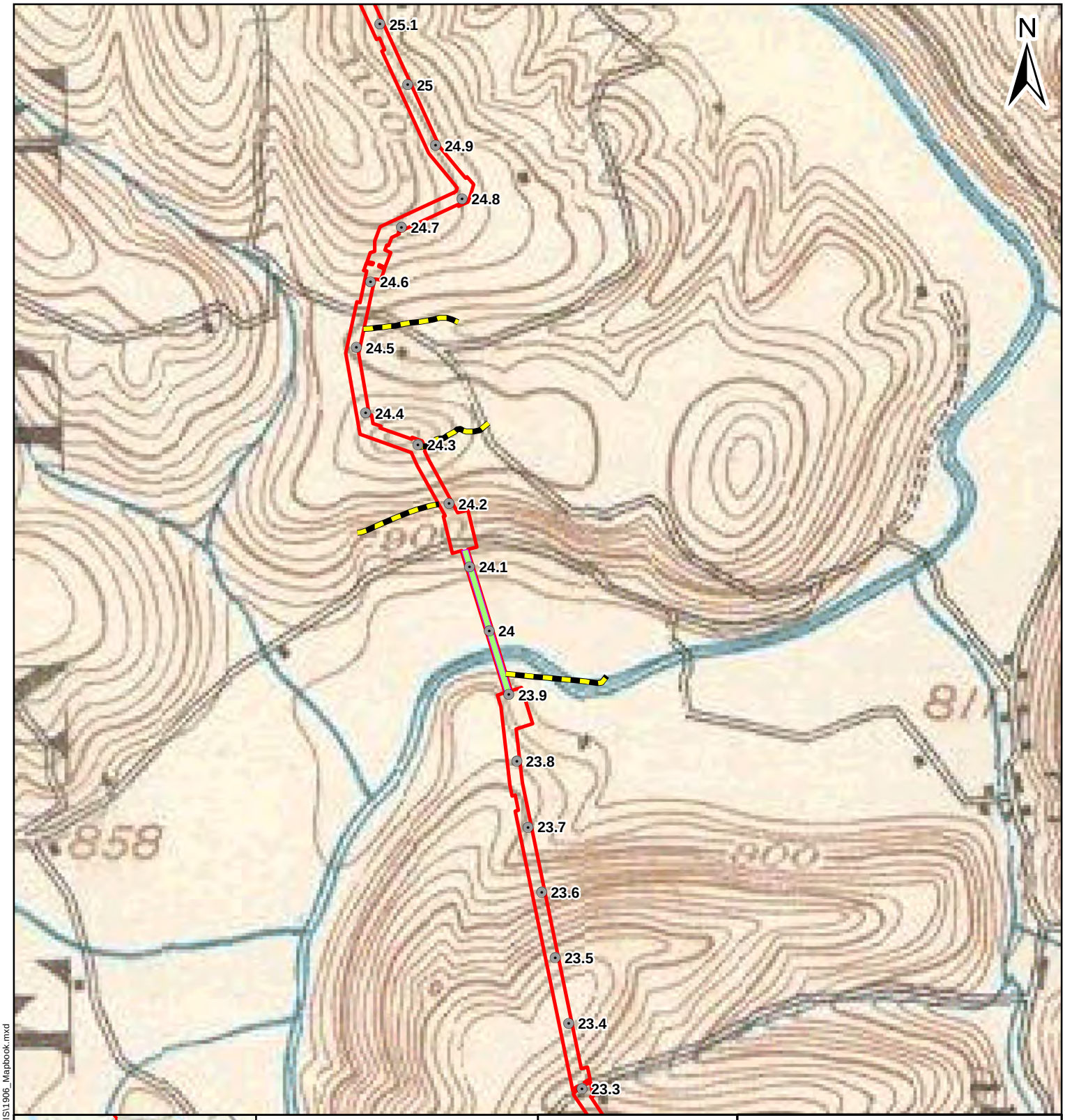
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

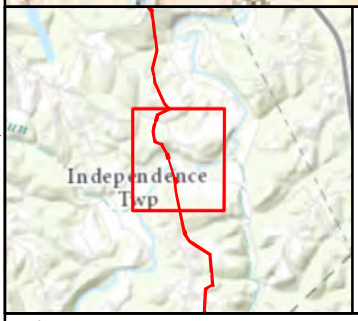
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.66

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

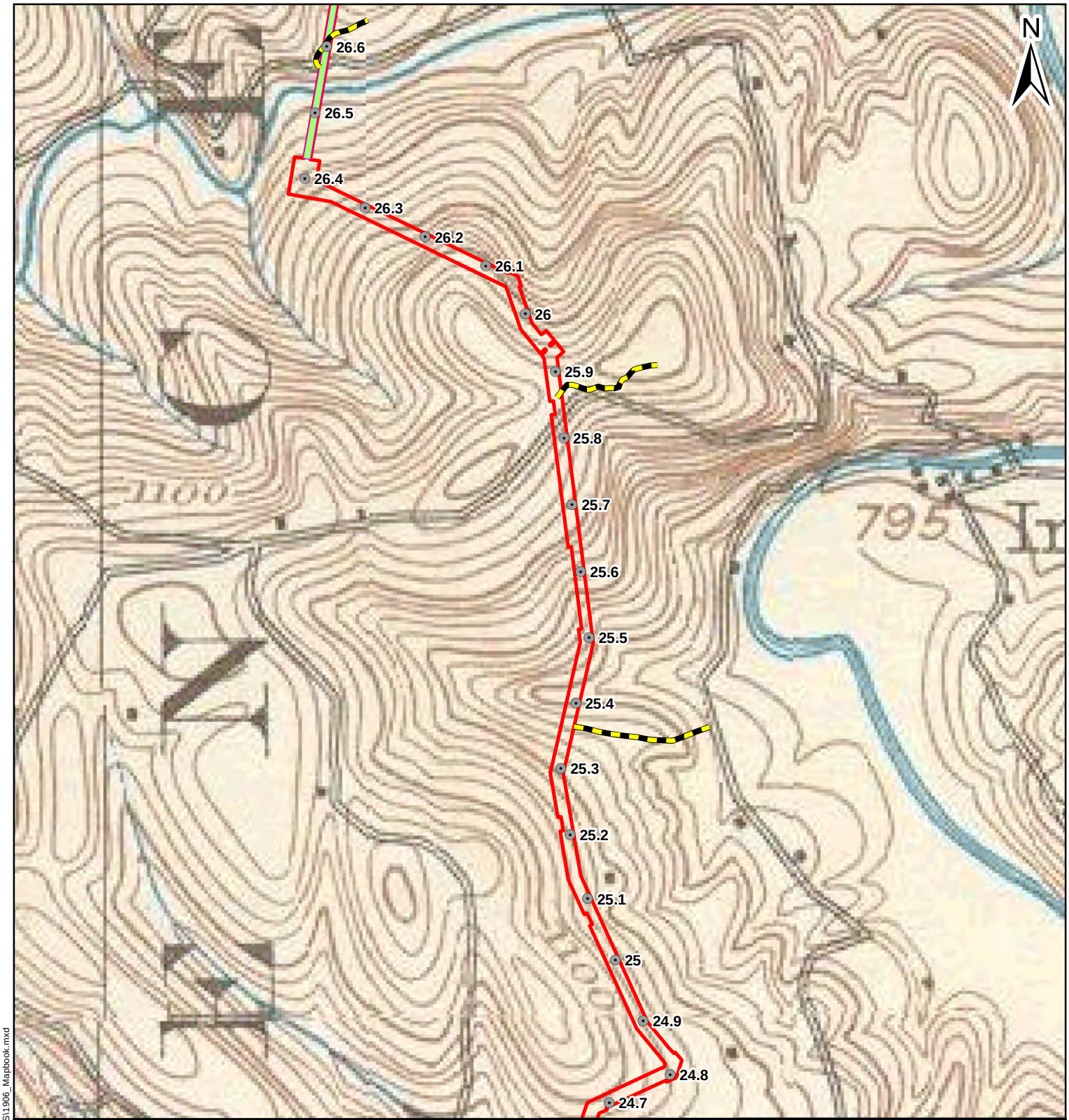
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

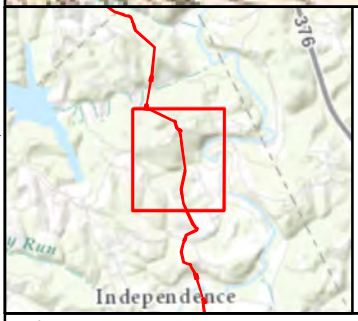
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.67

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

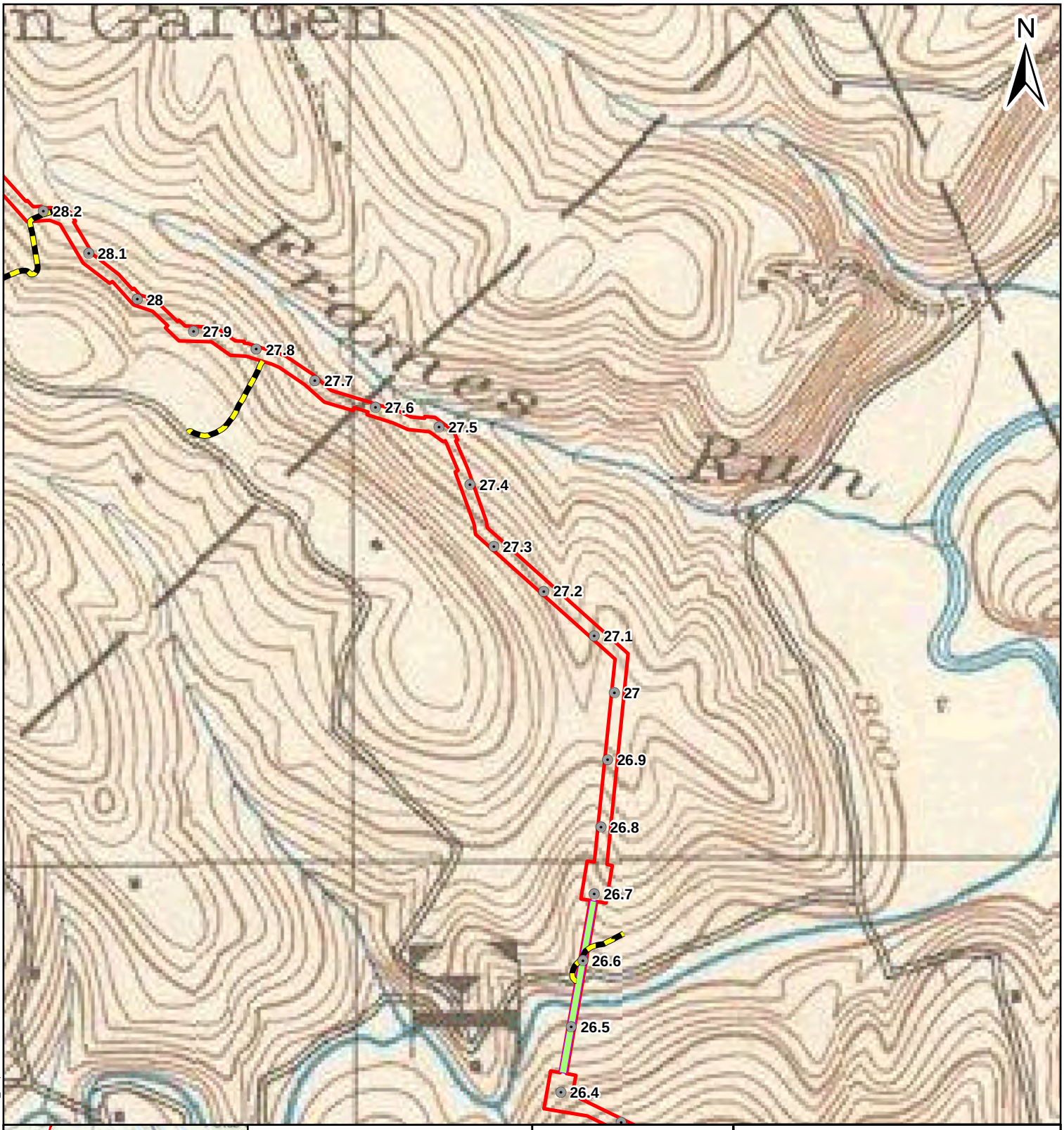
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

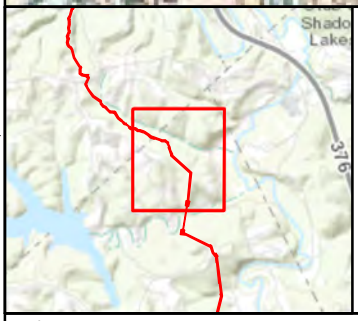
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.68

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

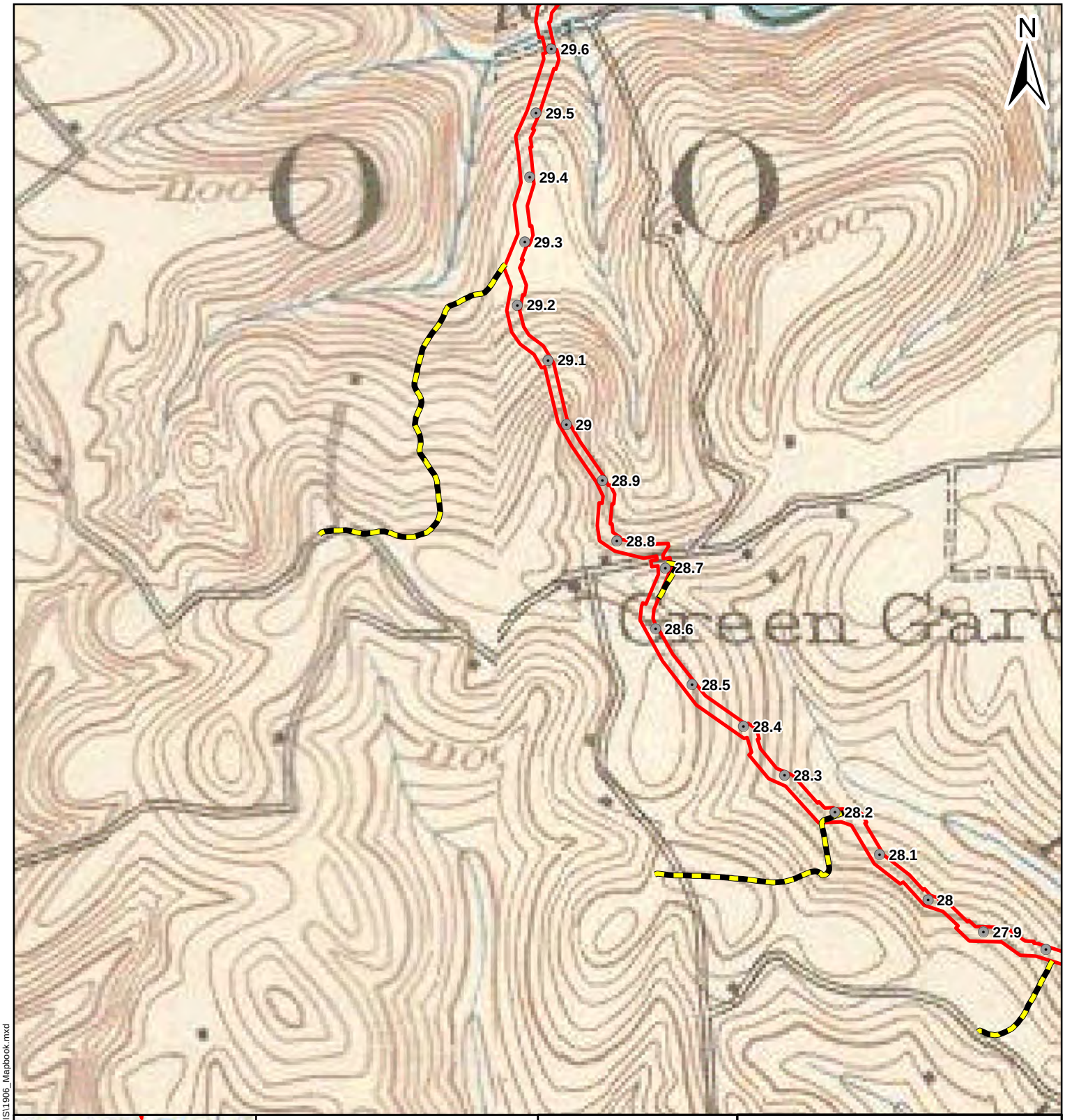
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

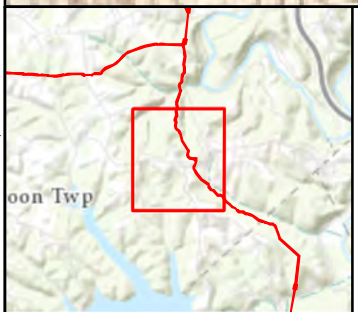
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.69

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

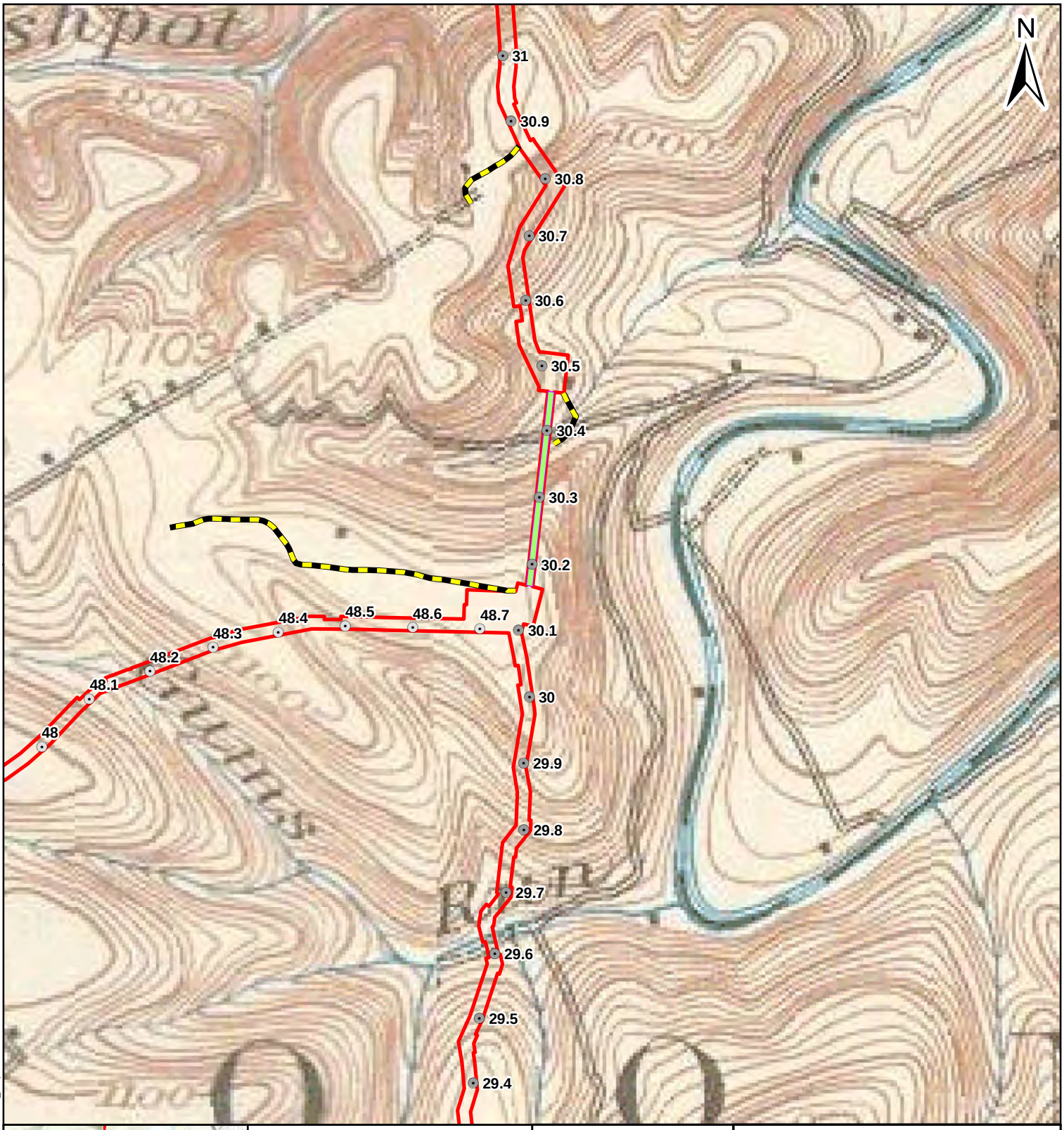
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

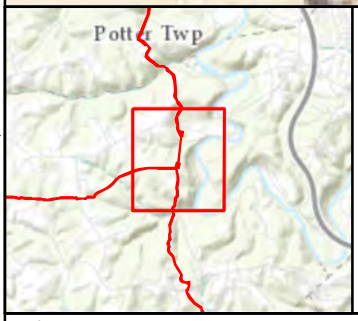
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.70

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

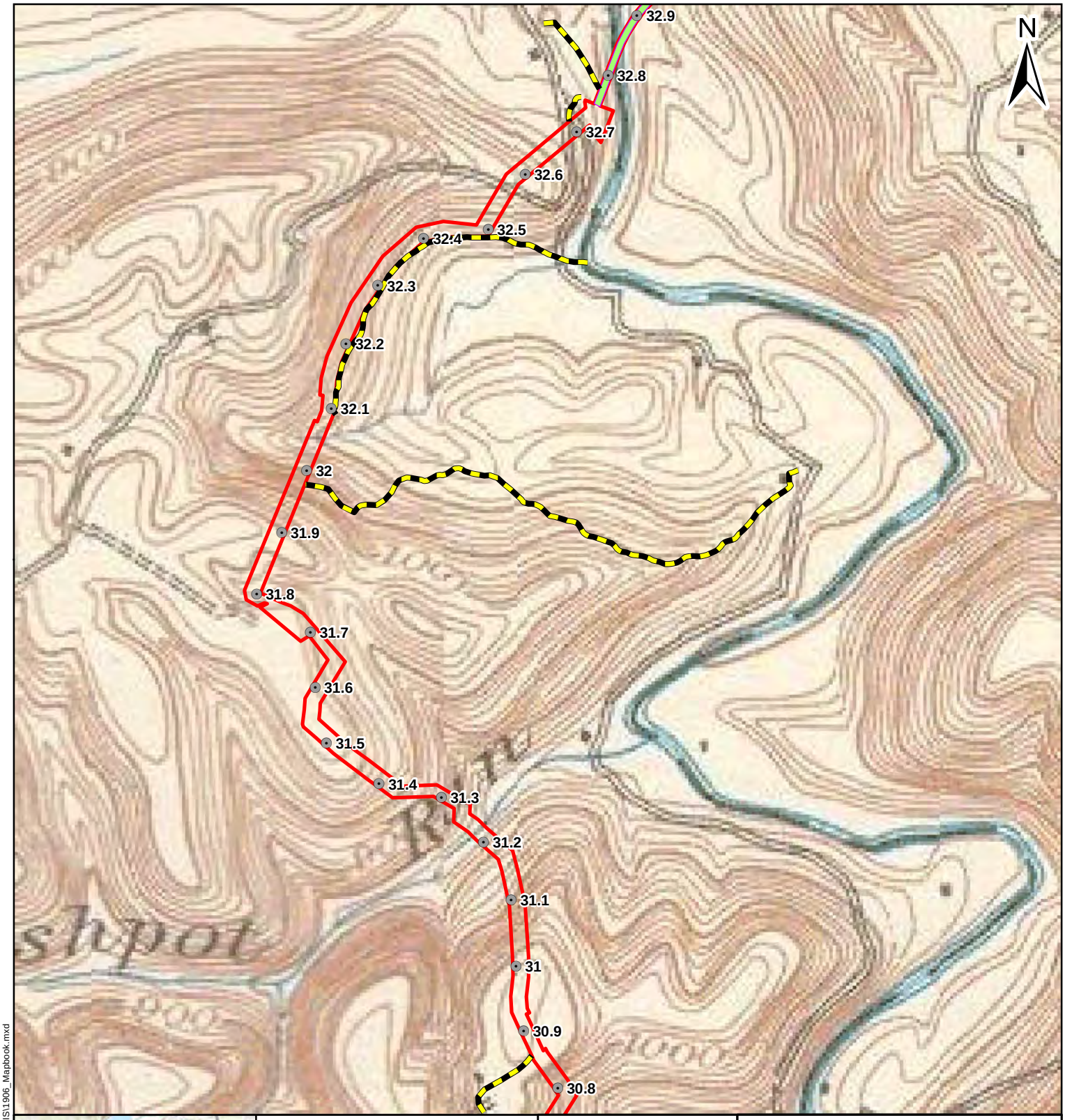
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

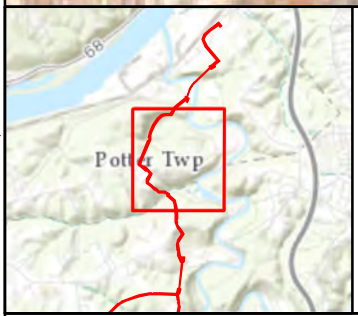
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.71

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

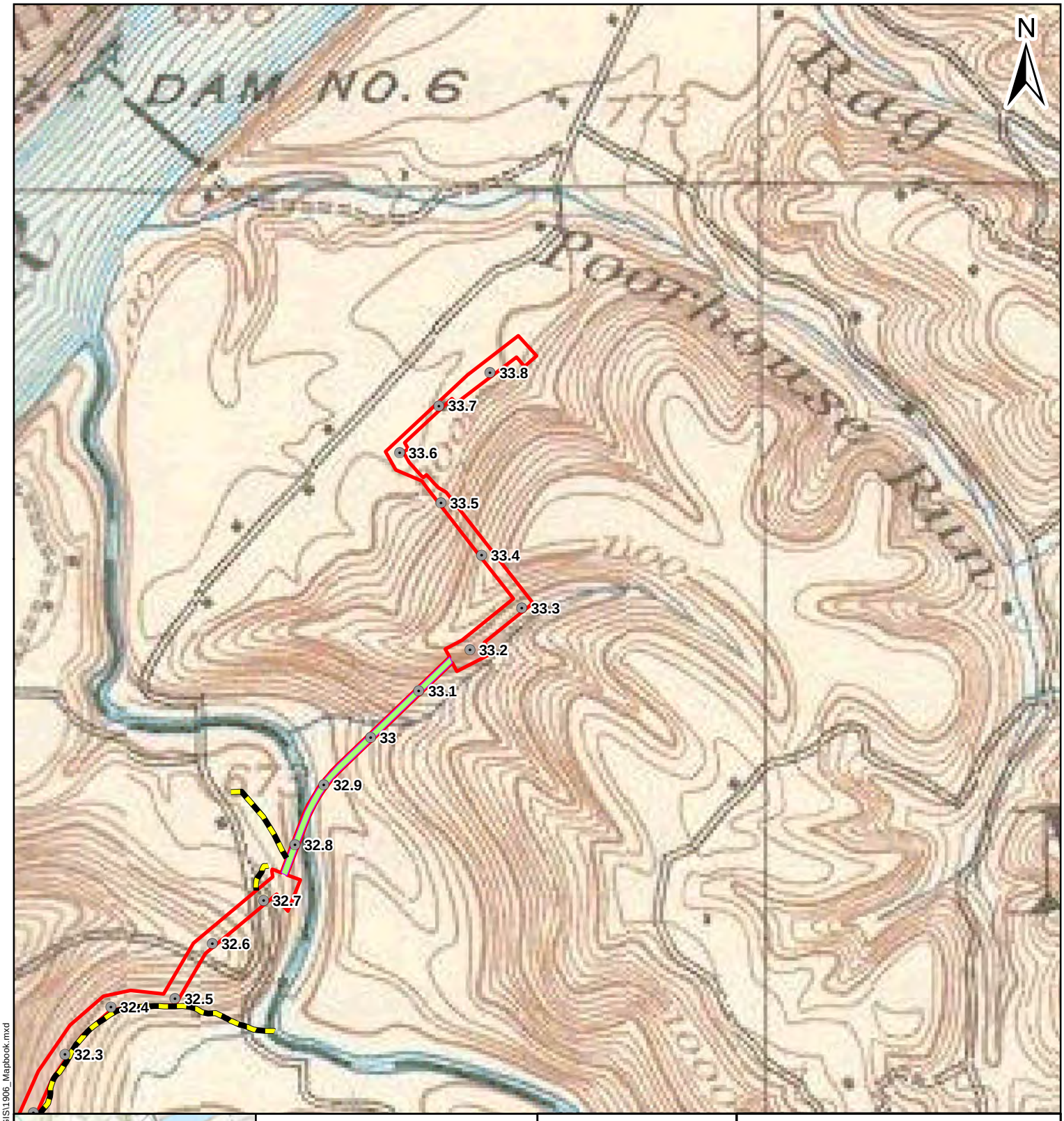
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

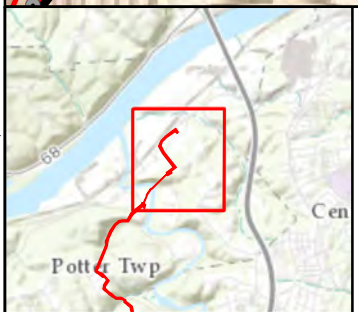
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.72

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

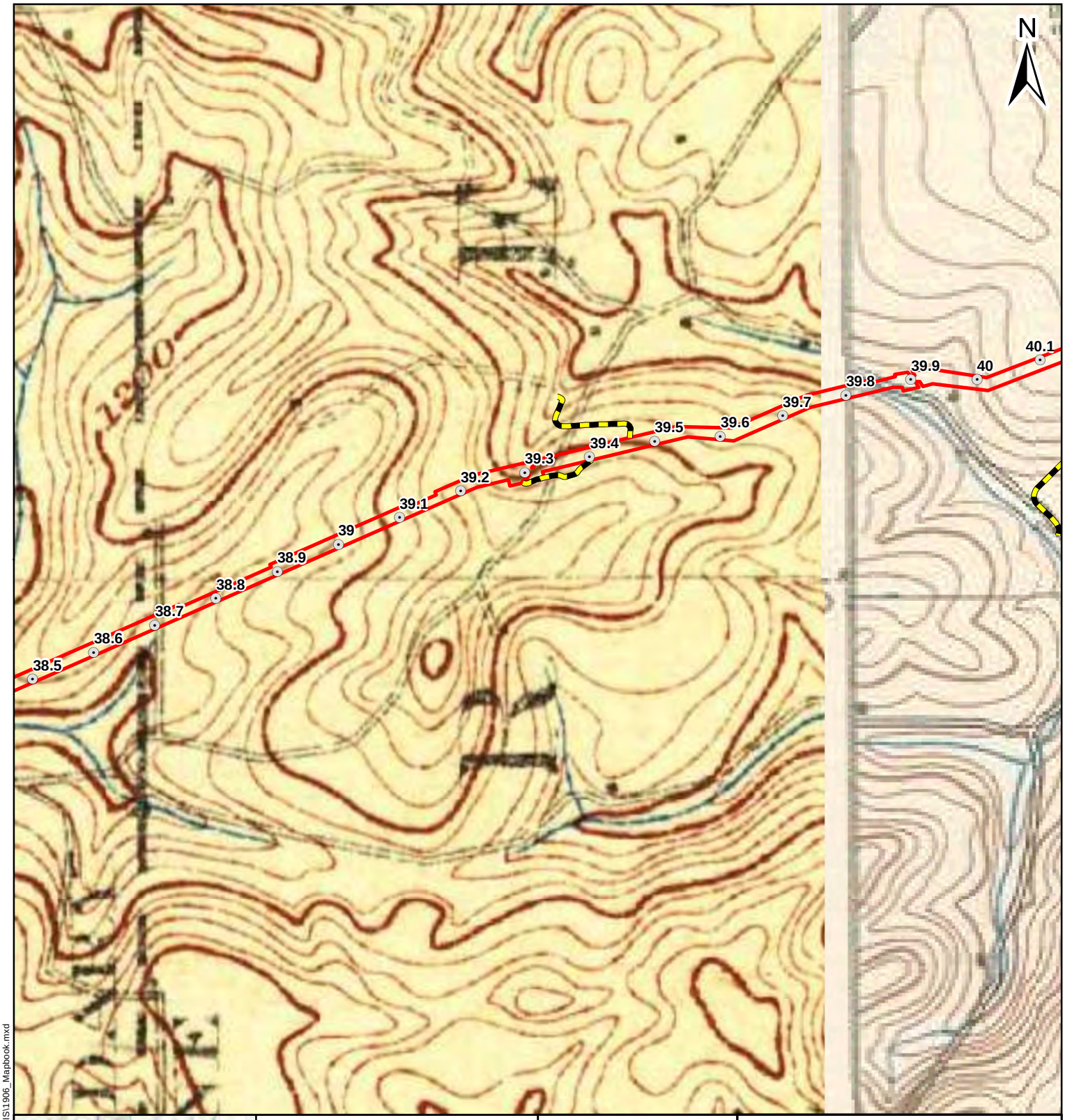
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

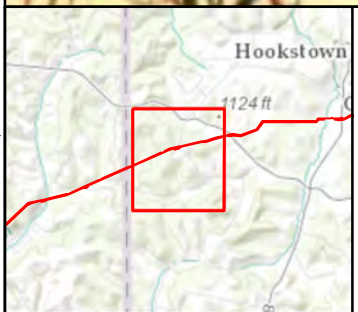
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.73

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

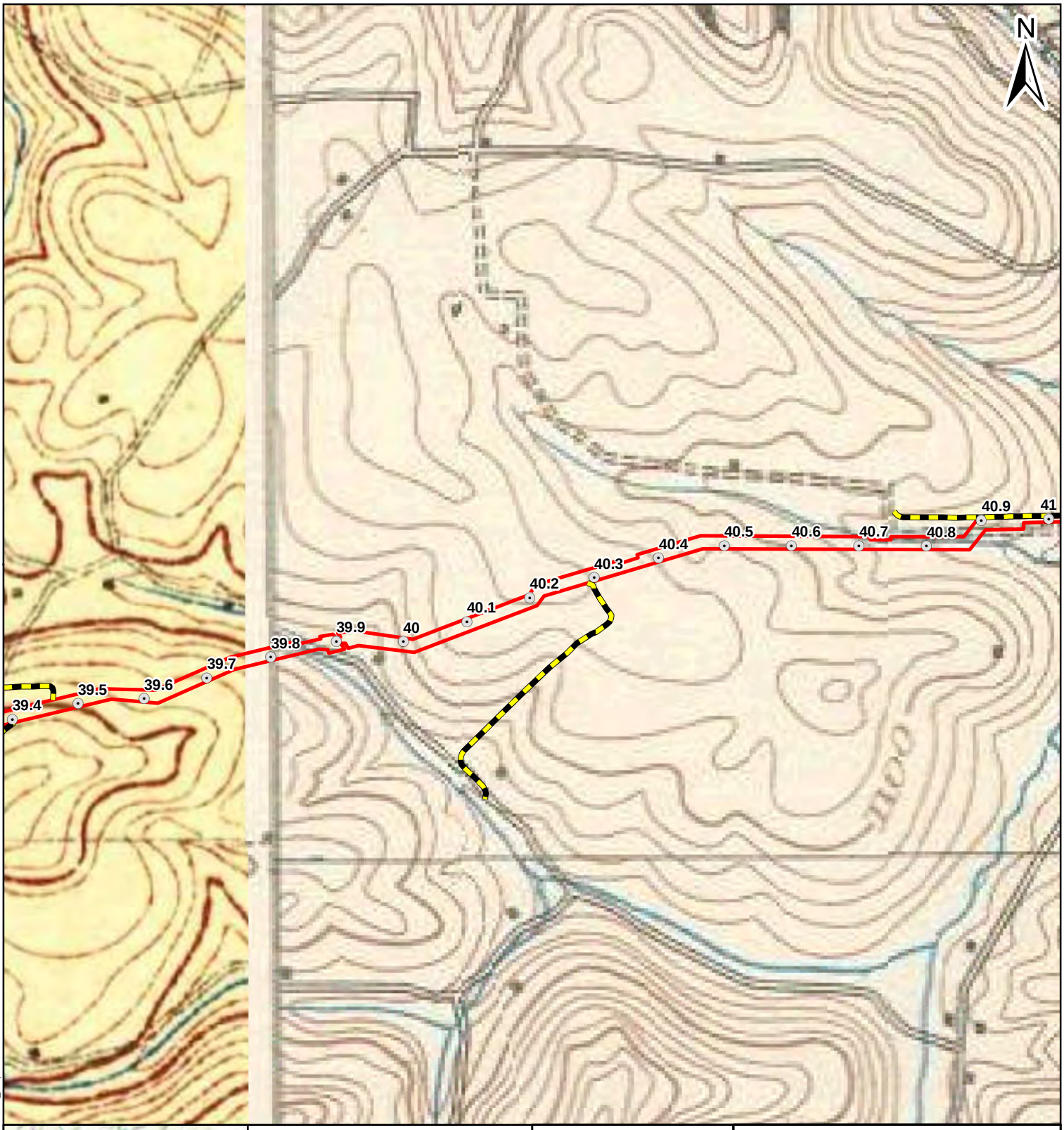
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

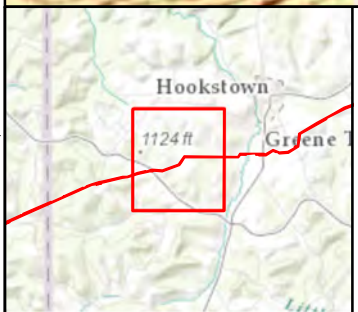
References:
USGS 1904 Wellsville WV 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.74

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

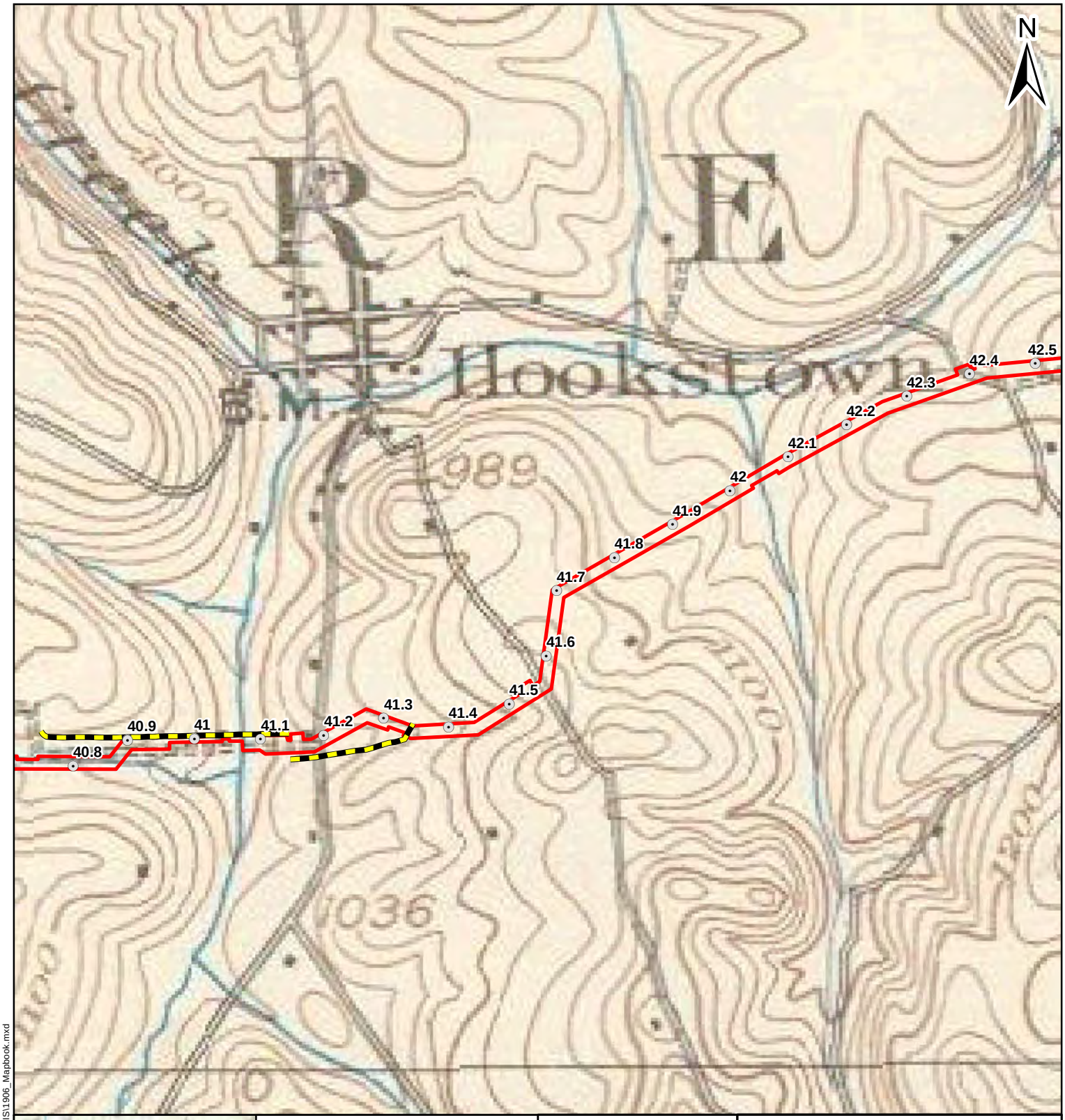
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

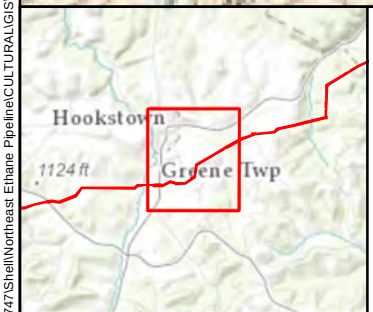
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.75

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

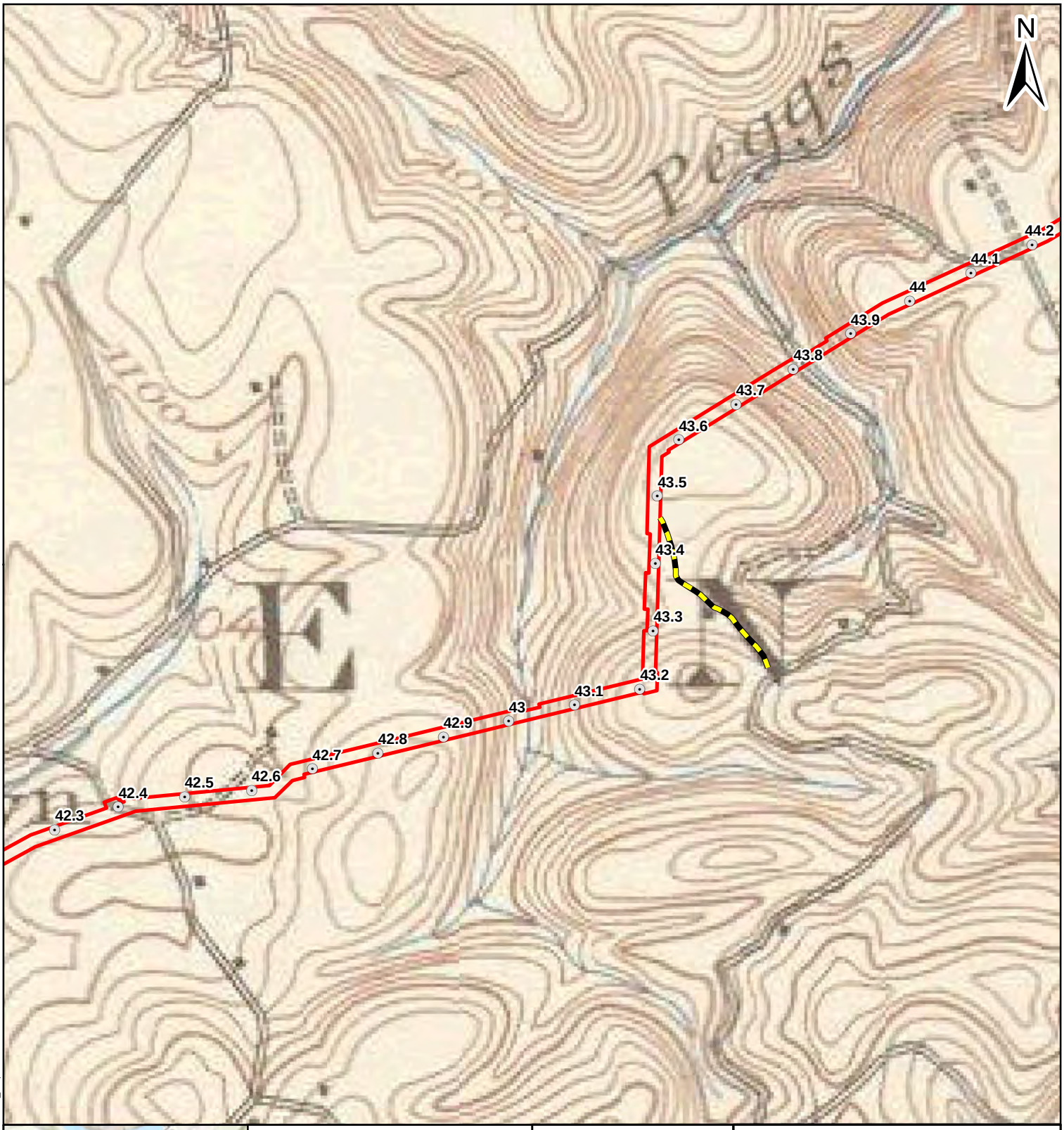
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

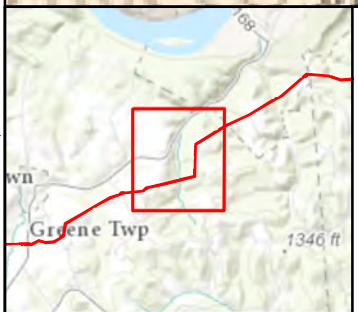
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.76

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

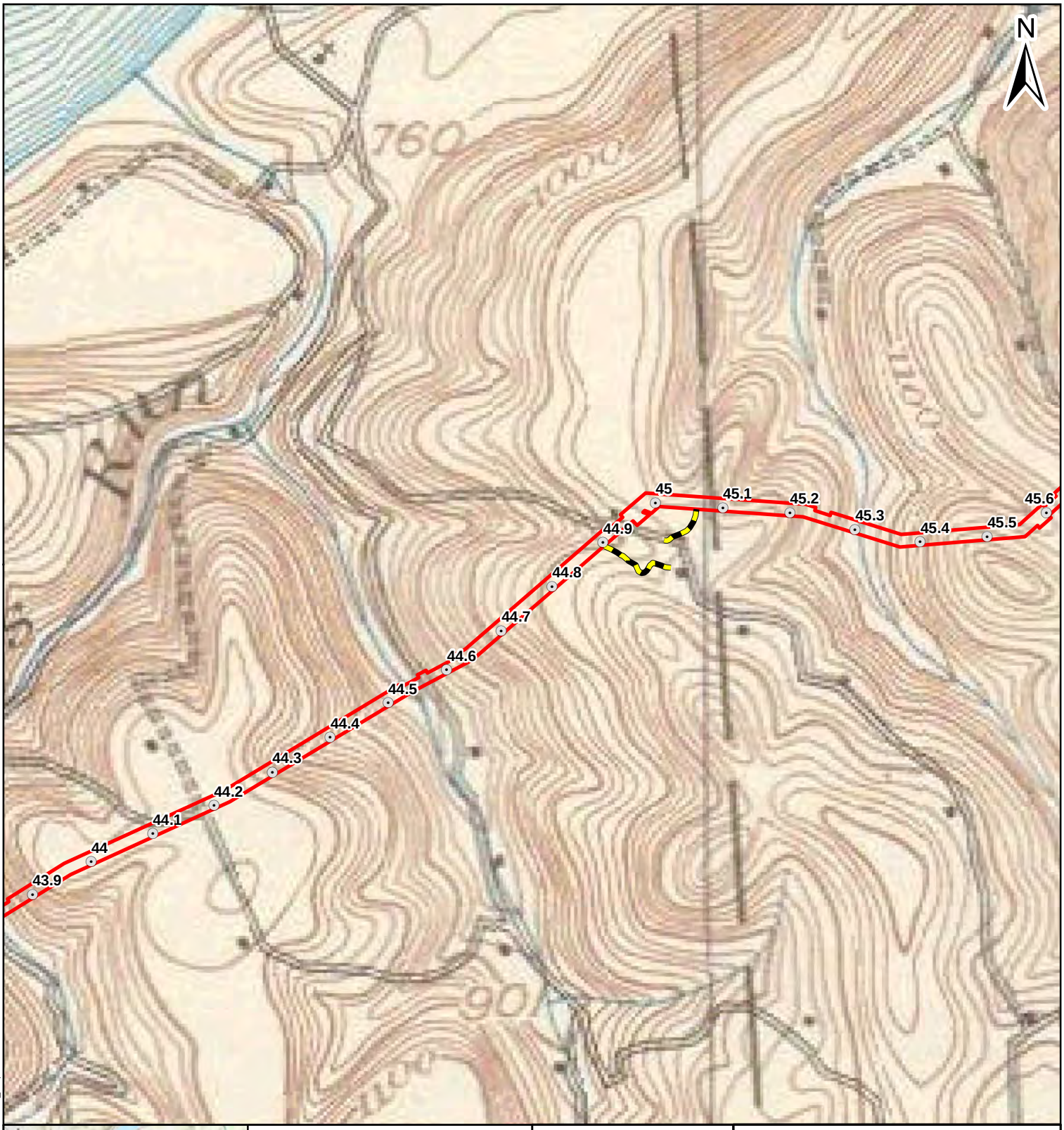
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

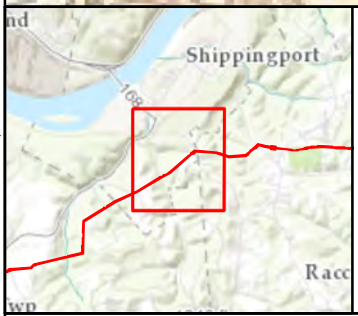
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.77

1906 USGS Topographic Map

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

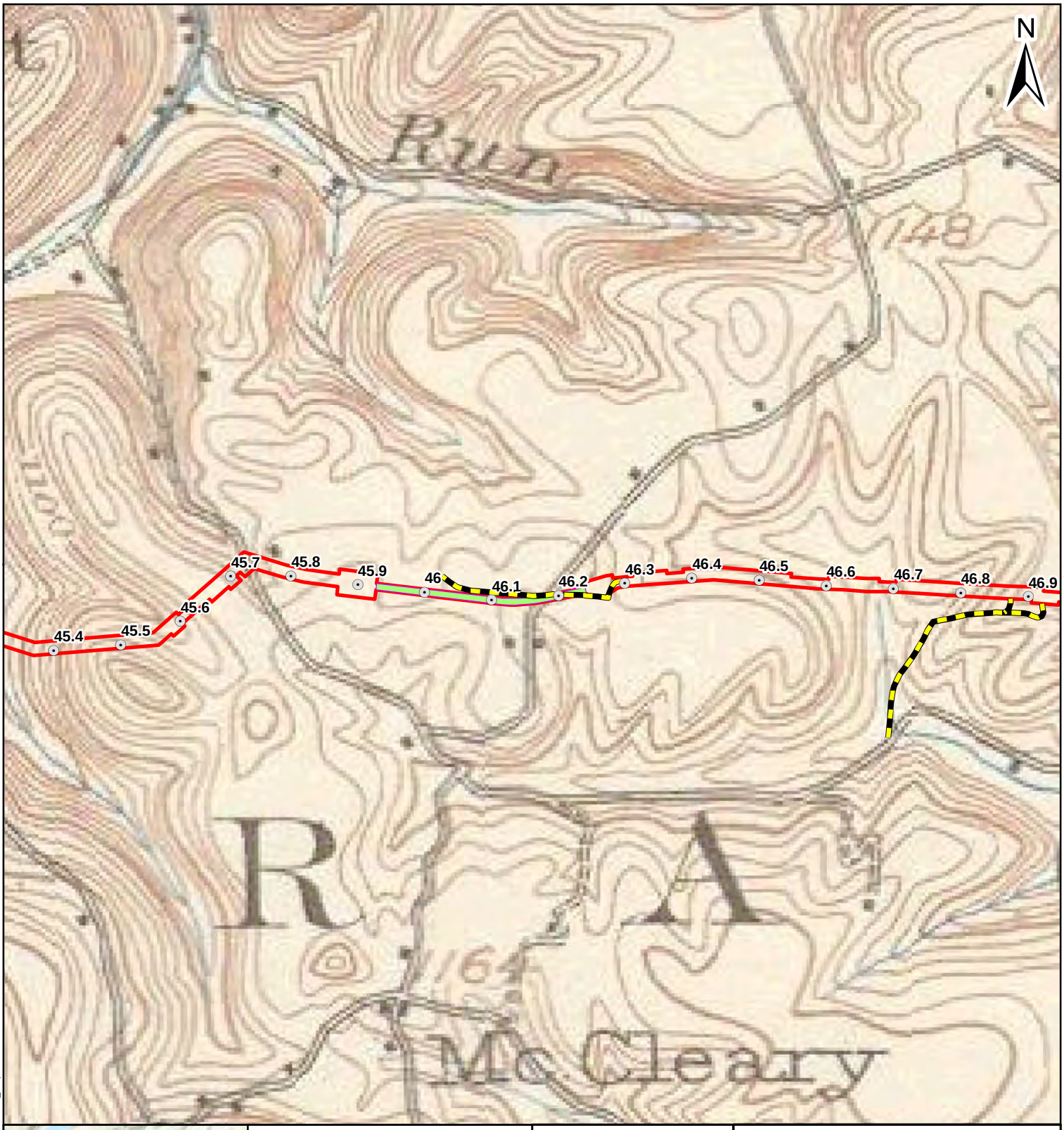
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

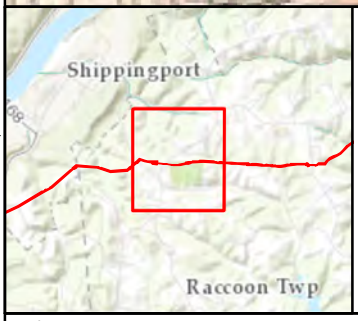
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.78

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

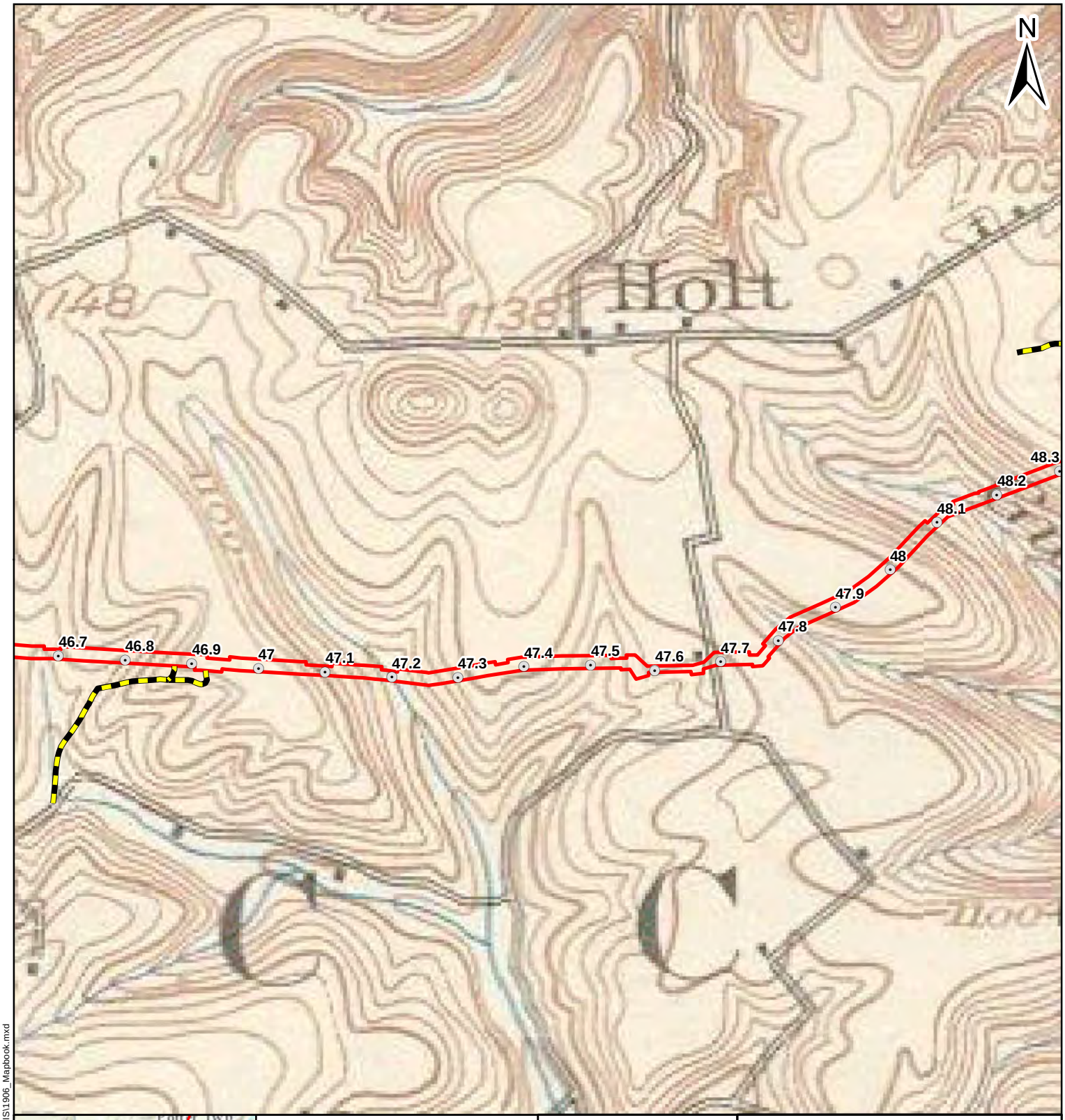
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

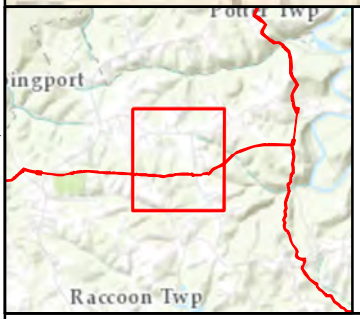
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.79

1906 USGS Topographic Map

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

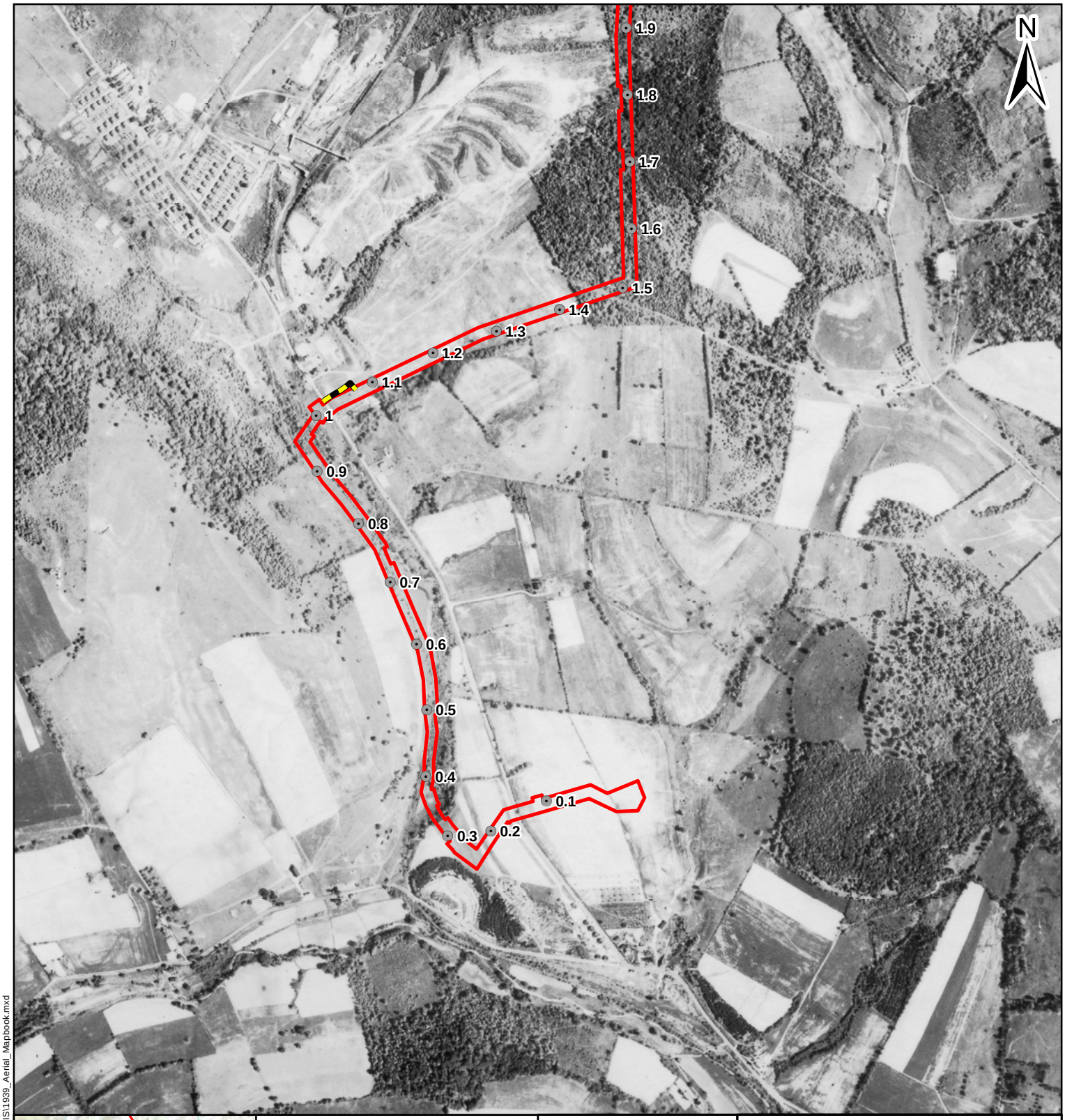
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

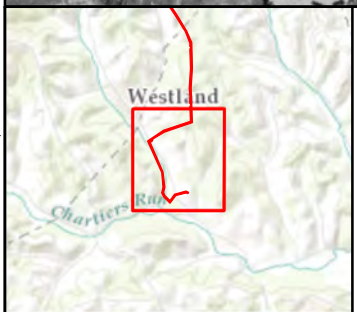
References:
USGS 1904 Beaver PA 15-Minute Quadrangle. 1:62,500.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1906_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.80

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

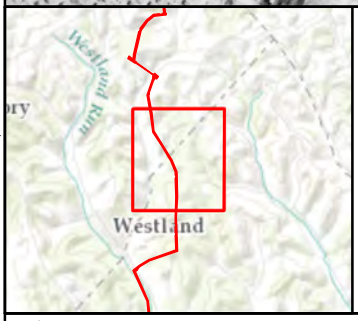
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #78, Photograph #51. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.81

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

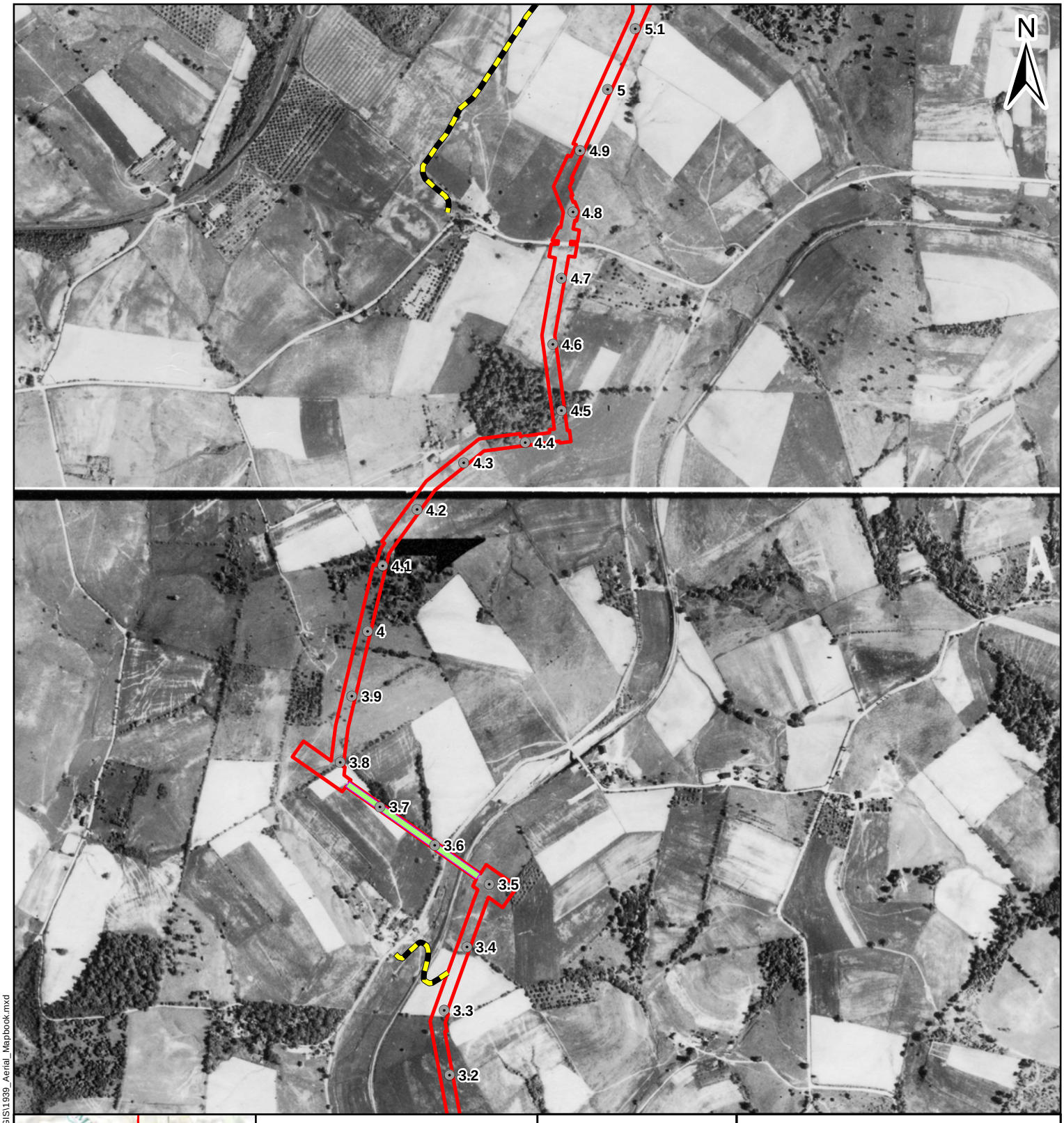
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

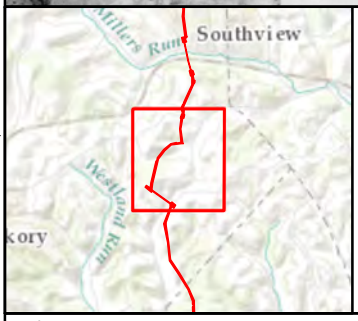
References:
USDA 1939 Roll #78, Photograph #51, #53. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.82

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

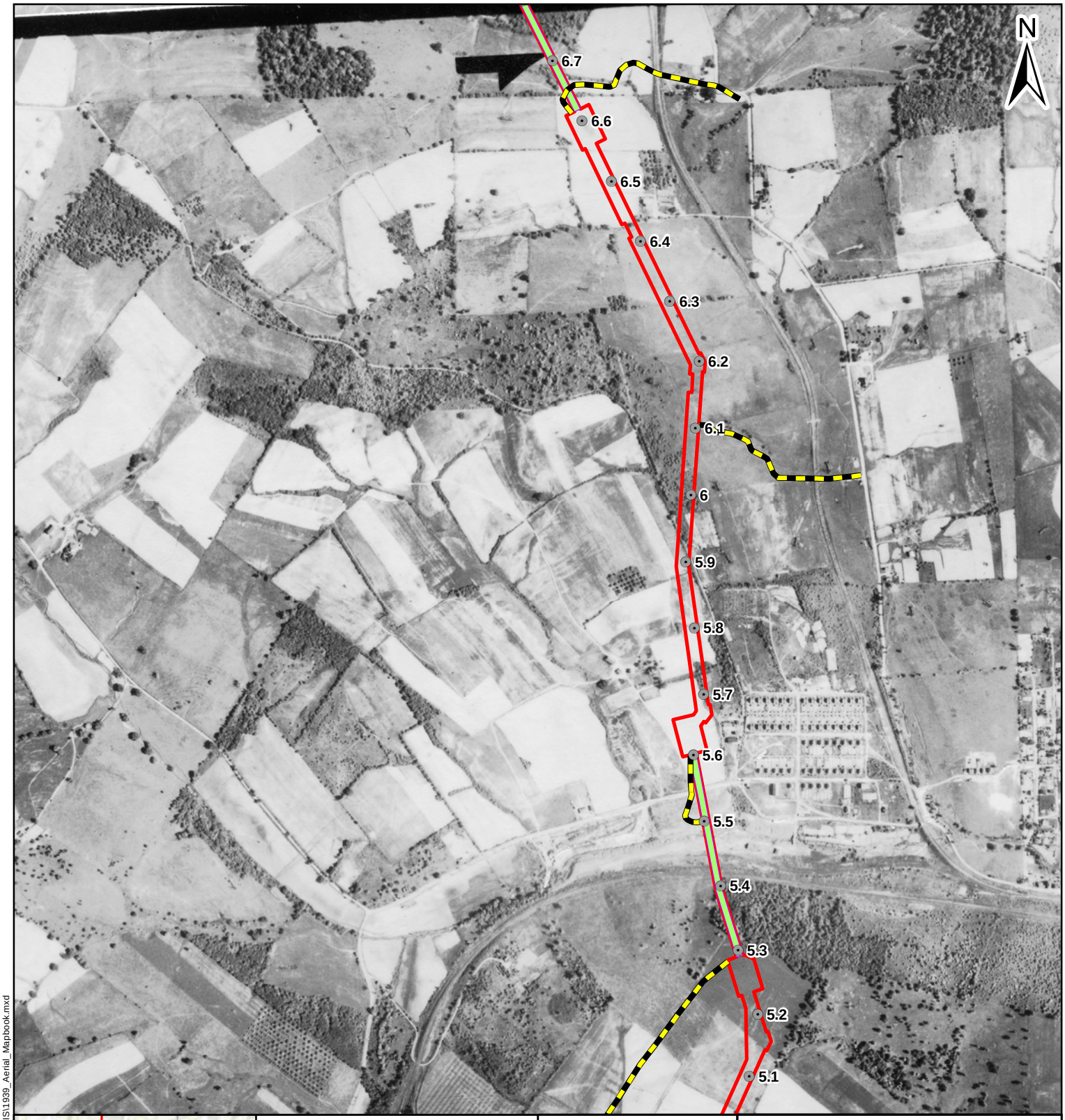
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

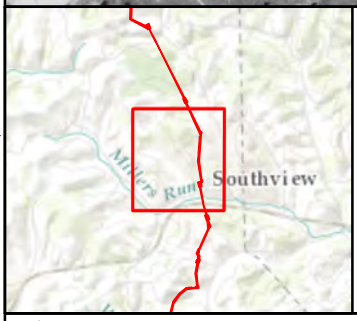
References:
USDA 1939 Roll #78, Photograph #53, #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.83

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

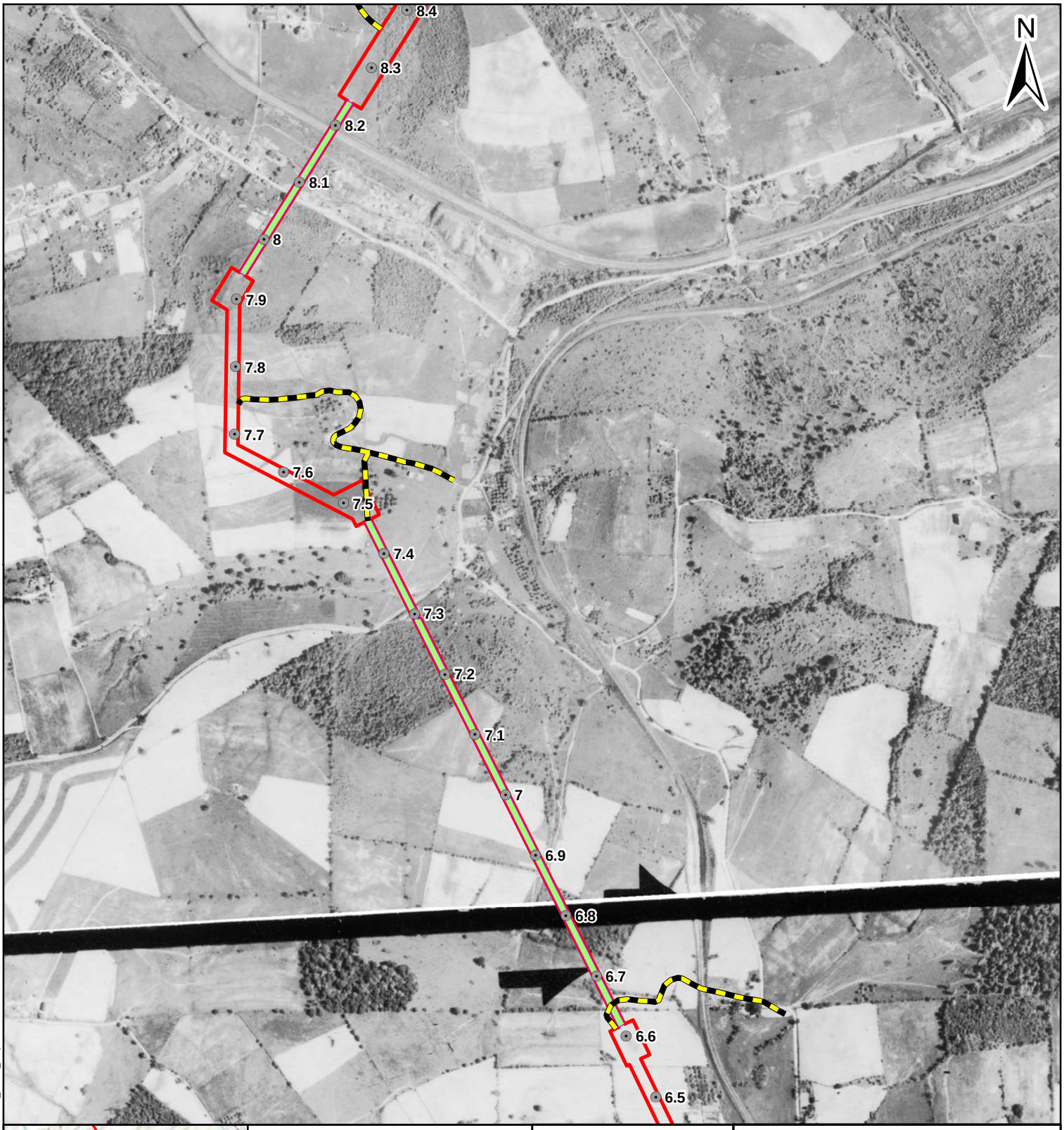
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

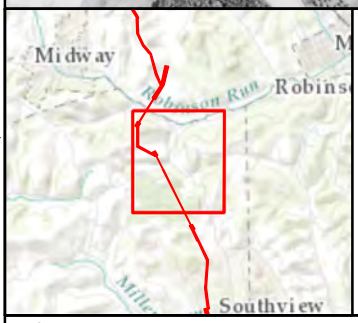
References:
USDA 1939 Roll #78, Photograph #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.84

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

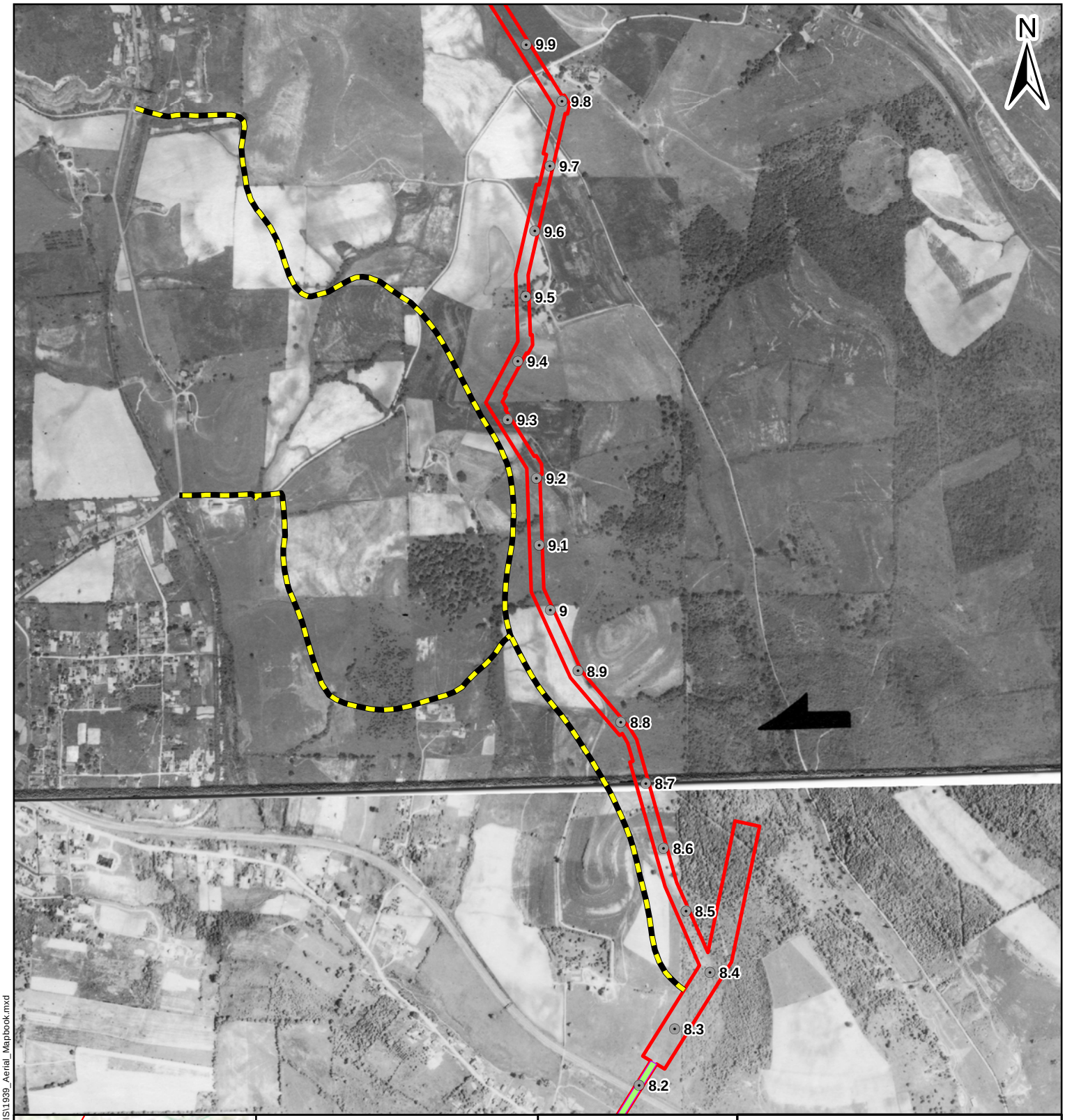
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

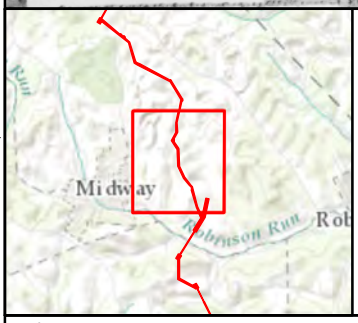
References:
USDA 1939 Roll #78, Photograph #59. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.85

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

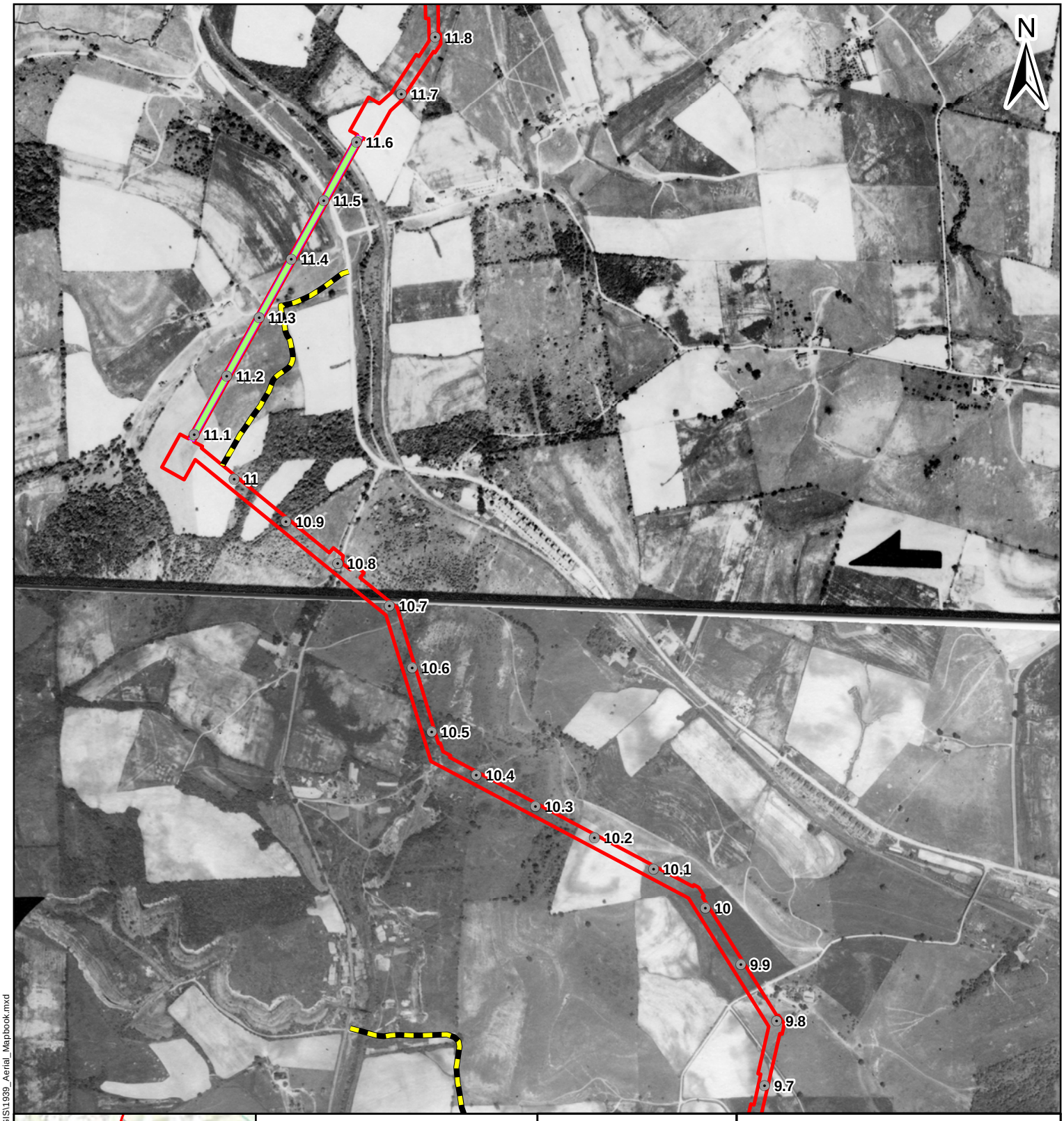
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

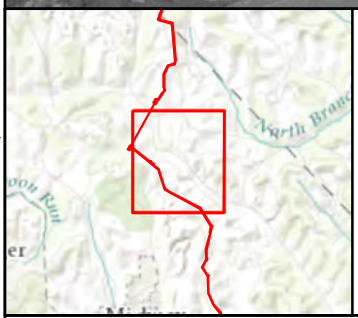
References:
USDA 1939 Roll #88, Photograph #10. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.86

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

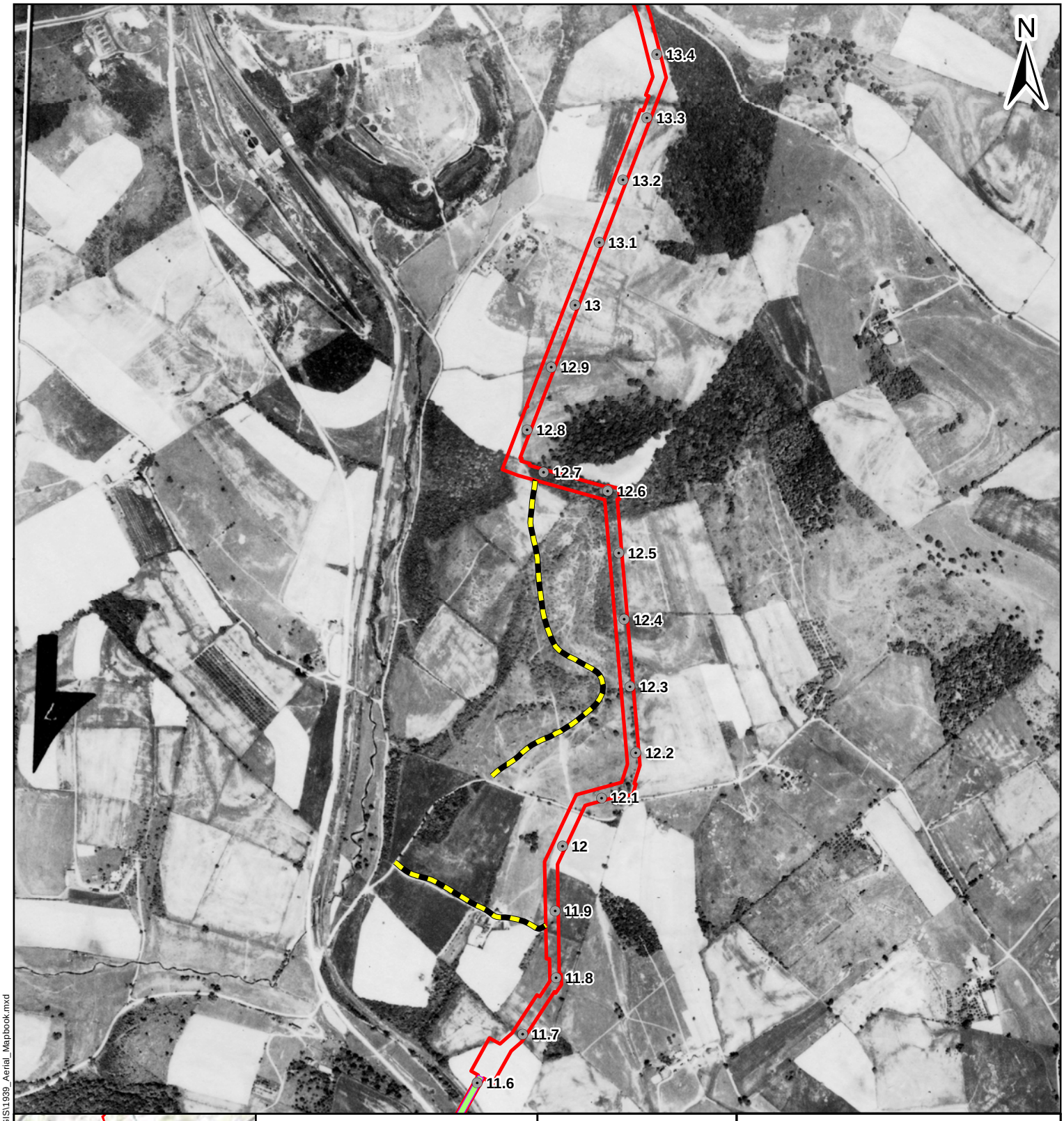
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

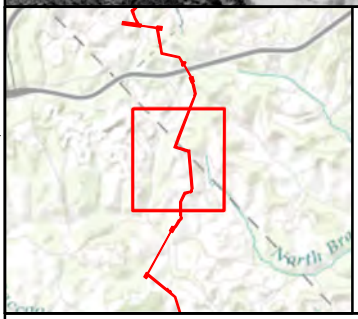
References:
USDA 1939 Roll #88, Photograph #08, #10. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.87

1939 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

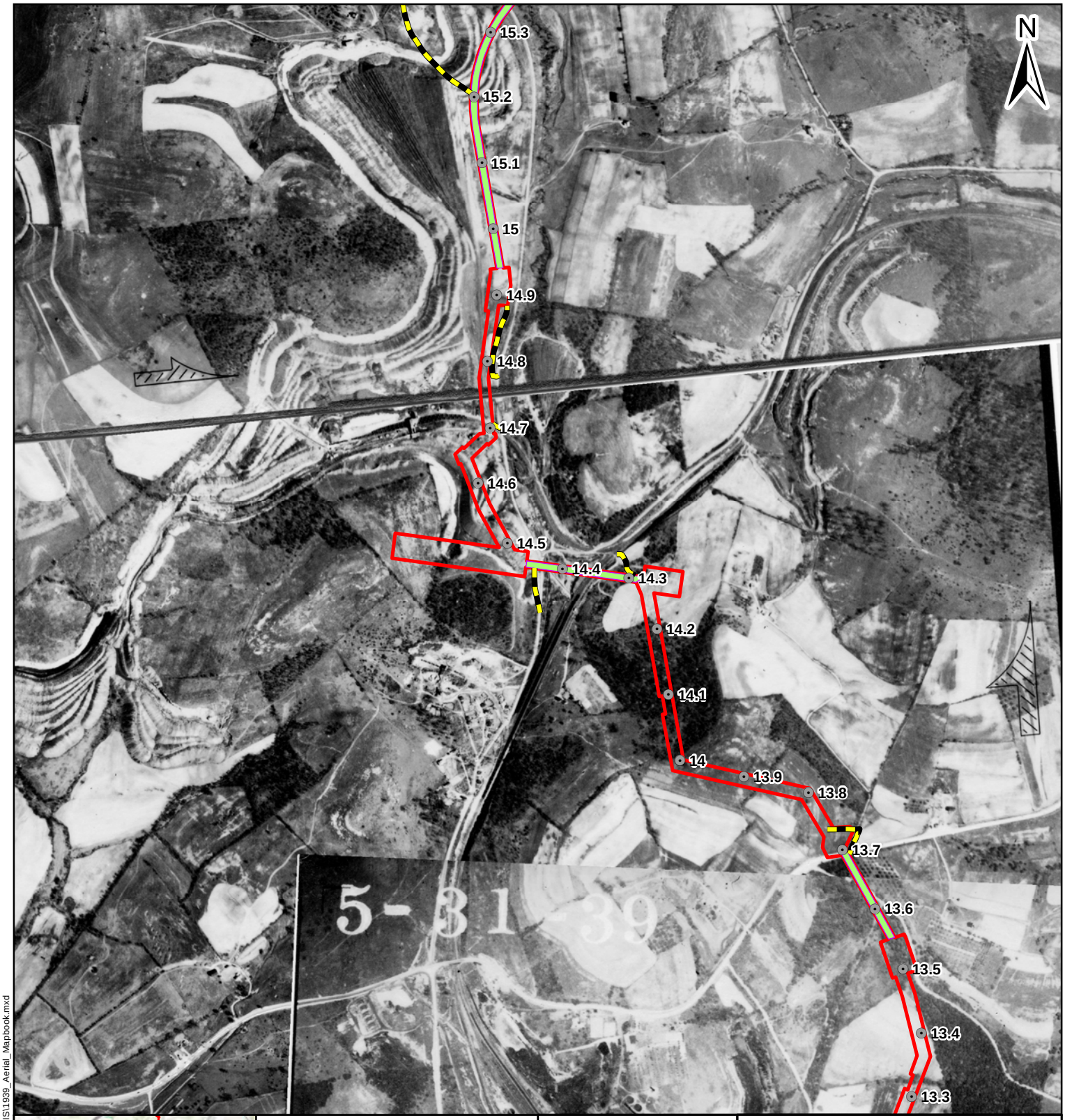
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

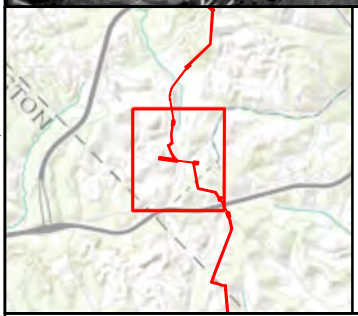
References:
USDA 1939 Roll #88, Photograph #08. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.88

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

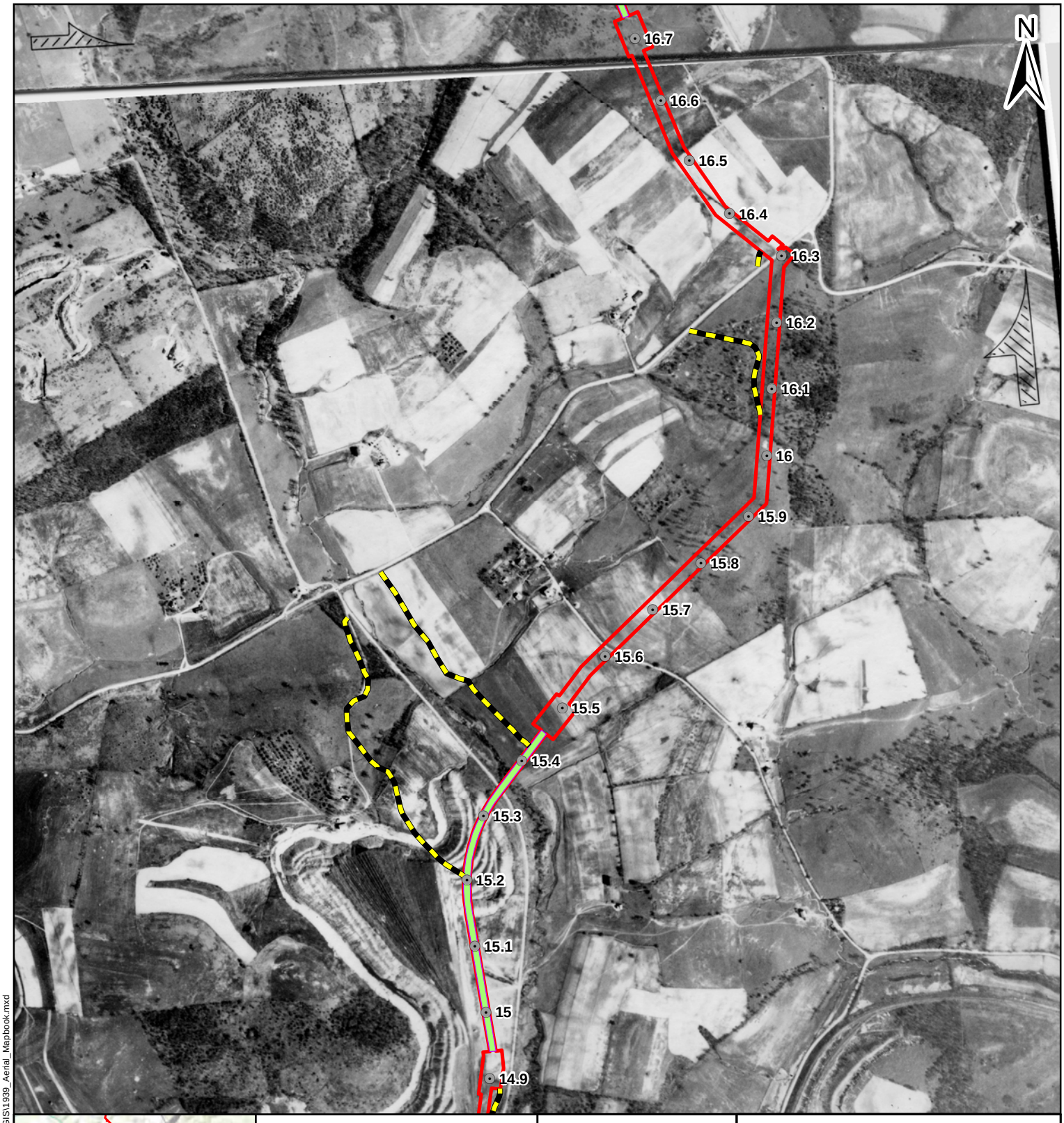
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #56, Photograph #67, #69. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.89

1939 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

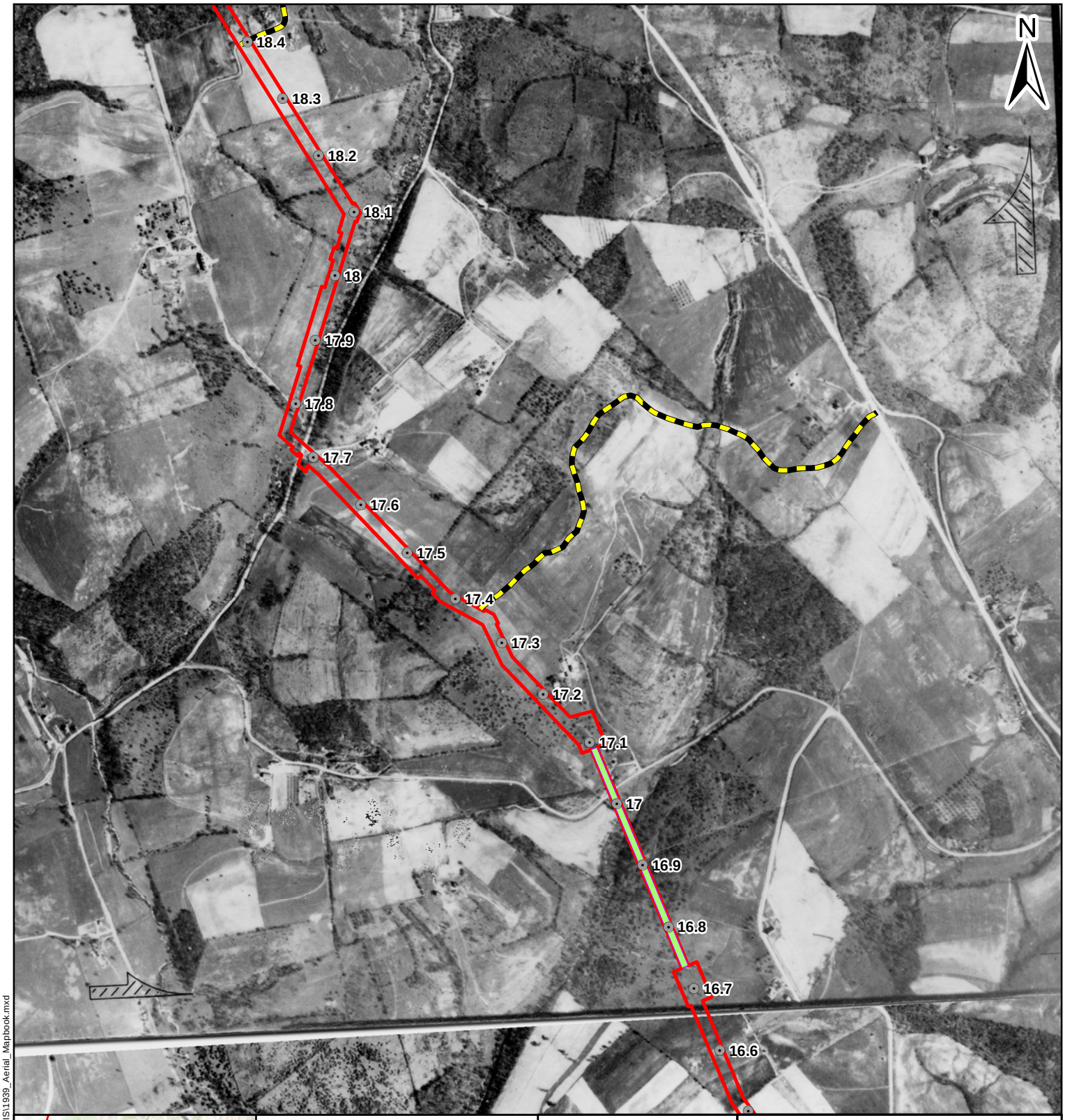
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

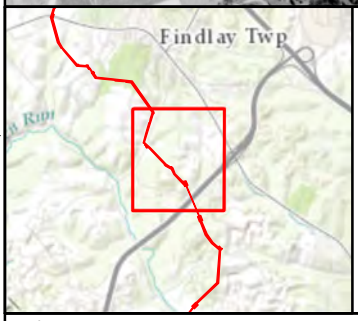
References:
USDA 1939 Roll #56, Photograph #67. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.90

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

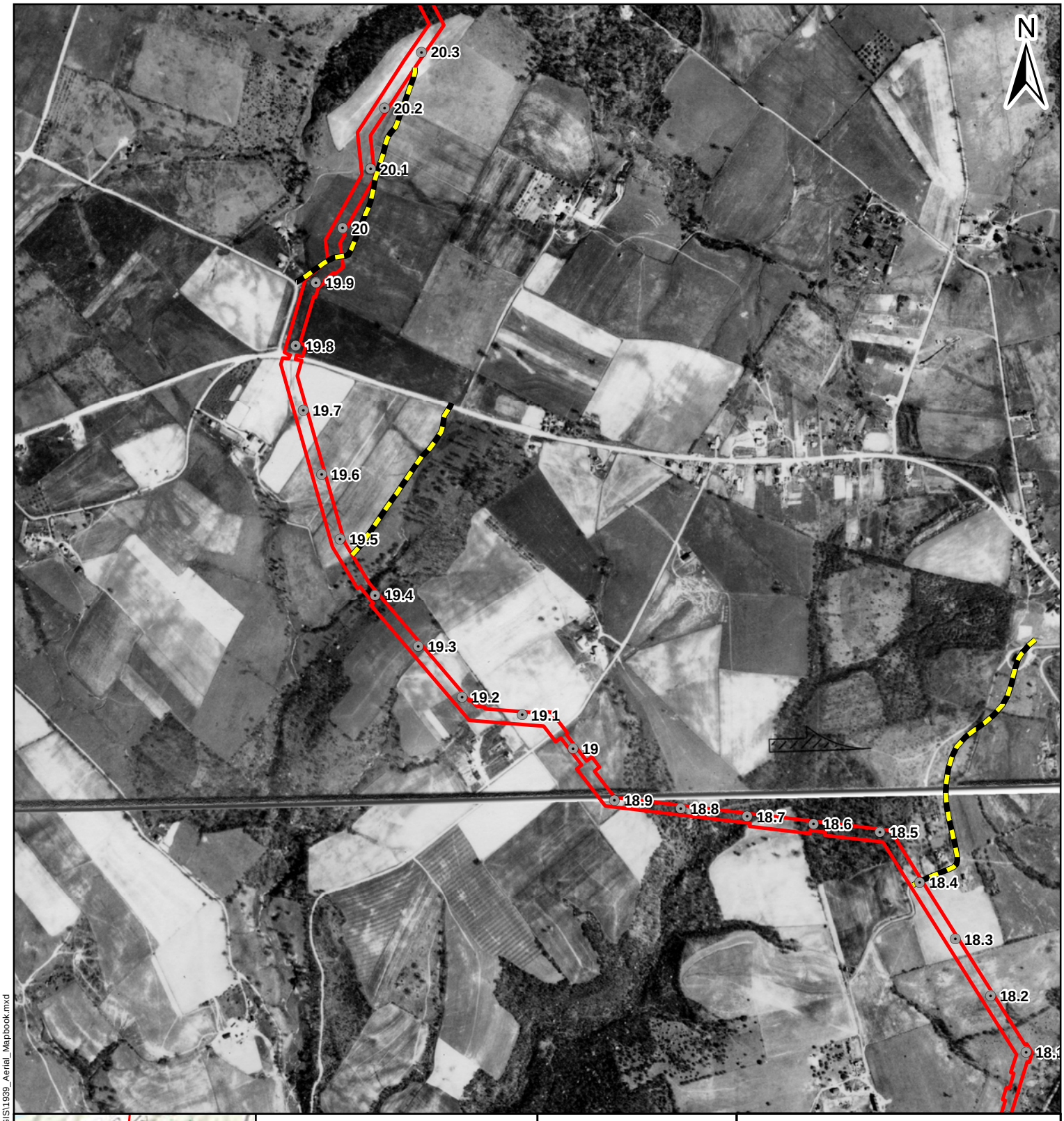
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #56, Photograph #65. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.91

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

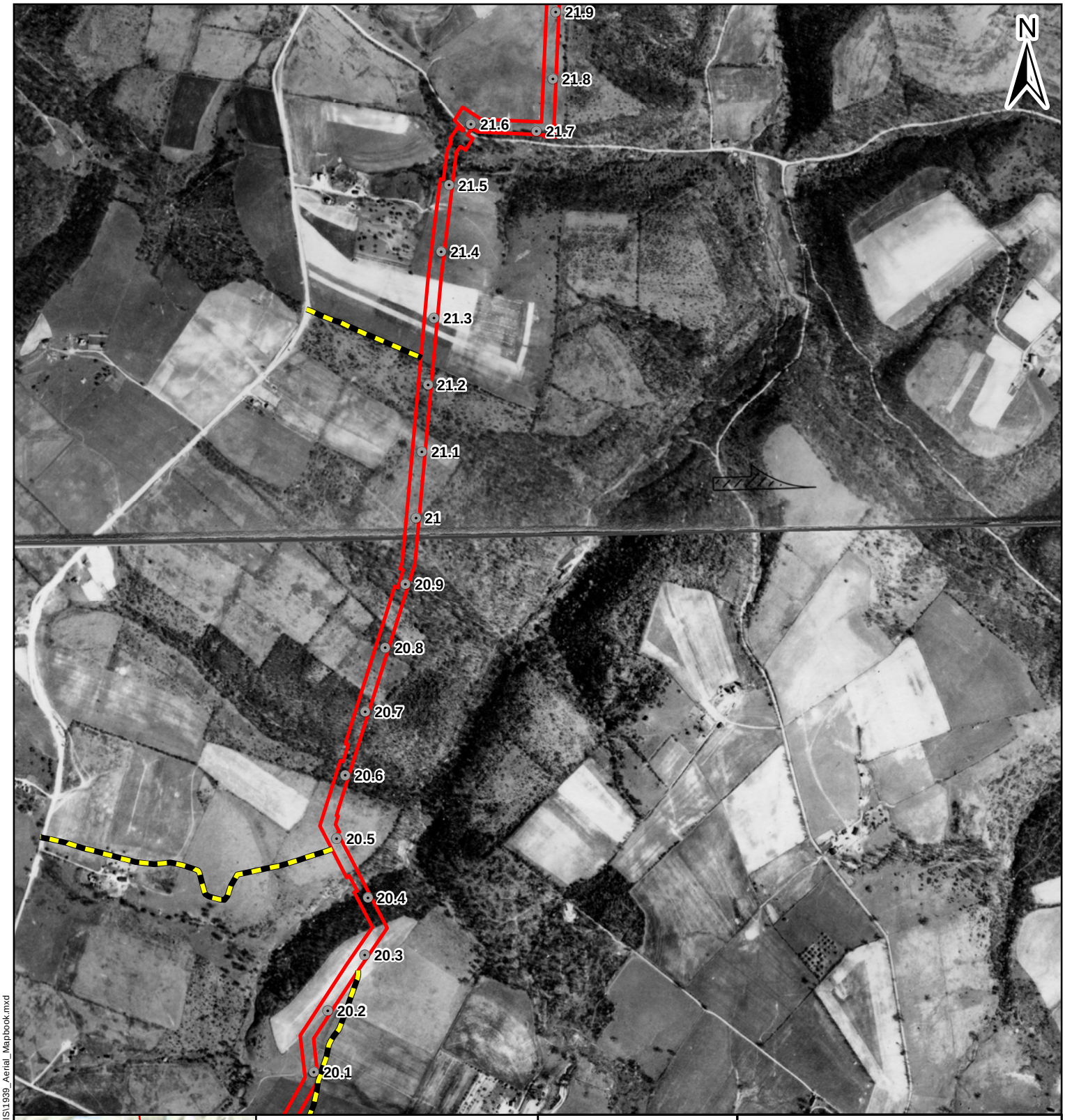
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

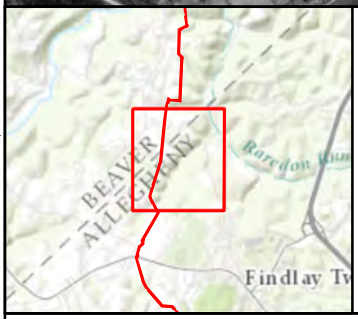
References:
USDA 1939 Roll #56, Photograph #63. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.92

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

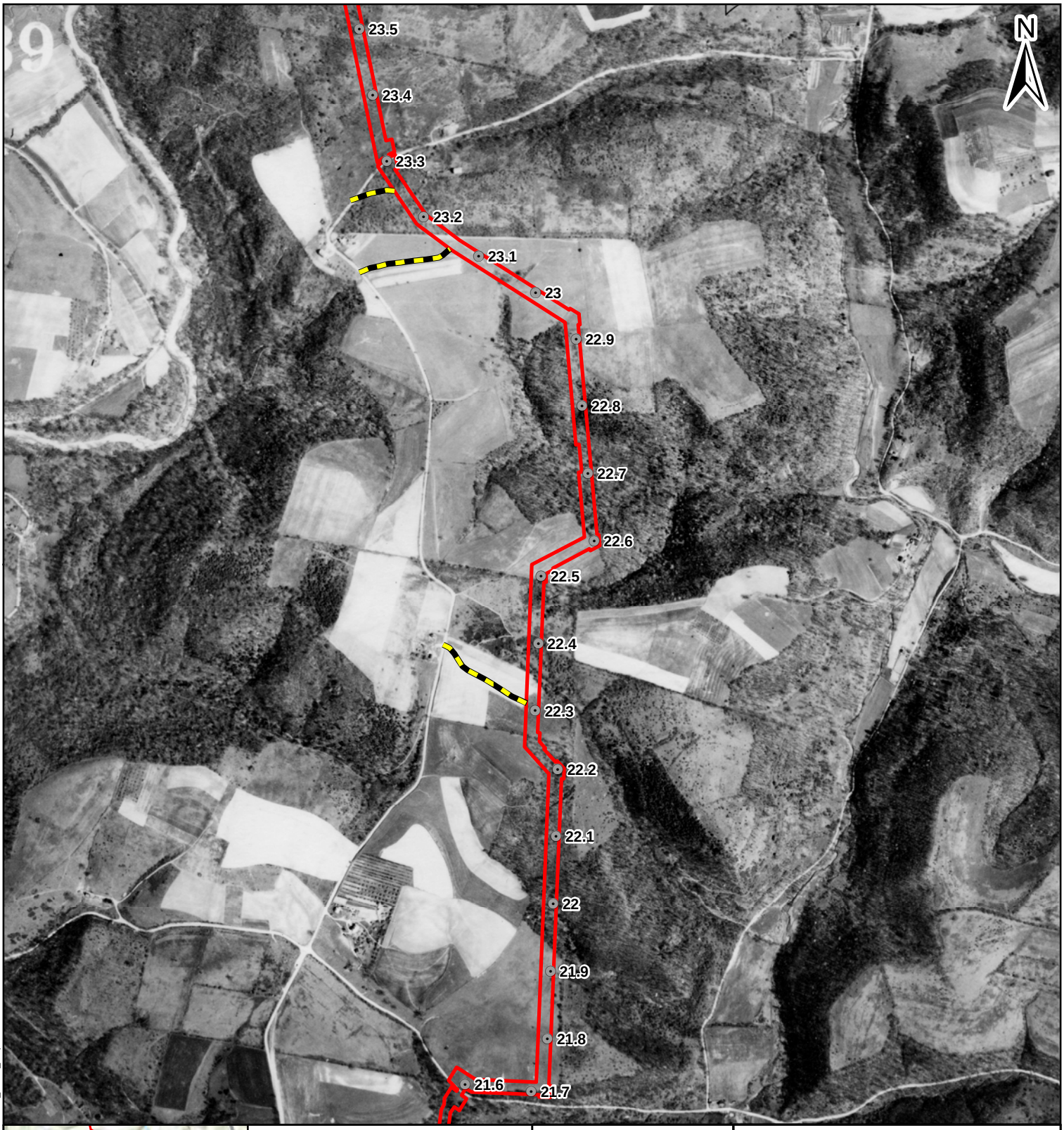
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

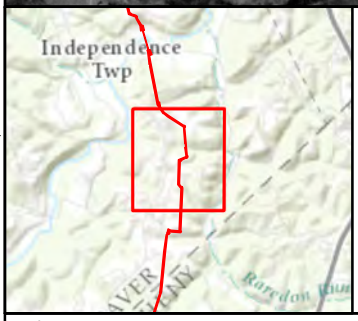
References:
USDA 1939 Roll #56, Photograph #63, #61. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.93

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

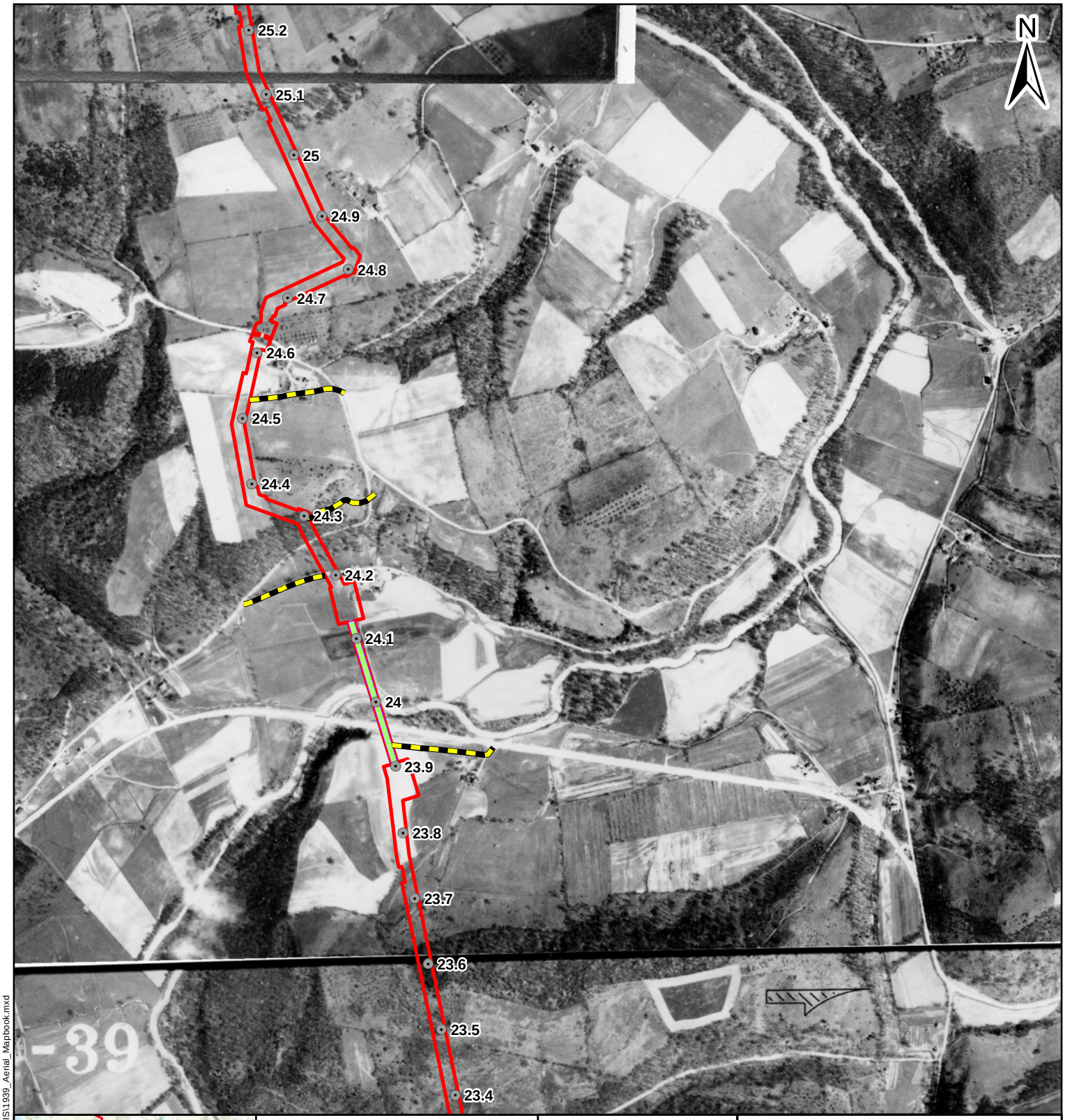
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

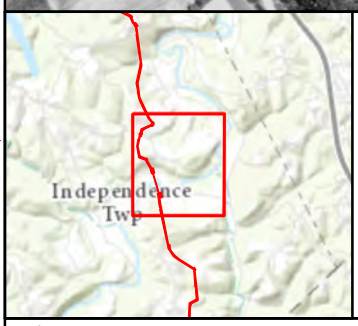
References:
USDA 1939 Roll #56, Photograph #61. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.94

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

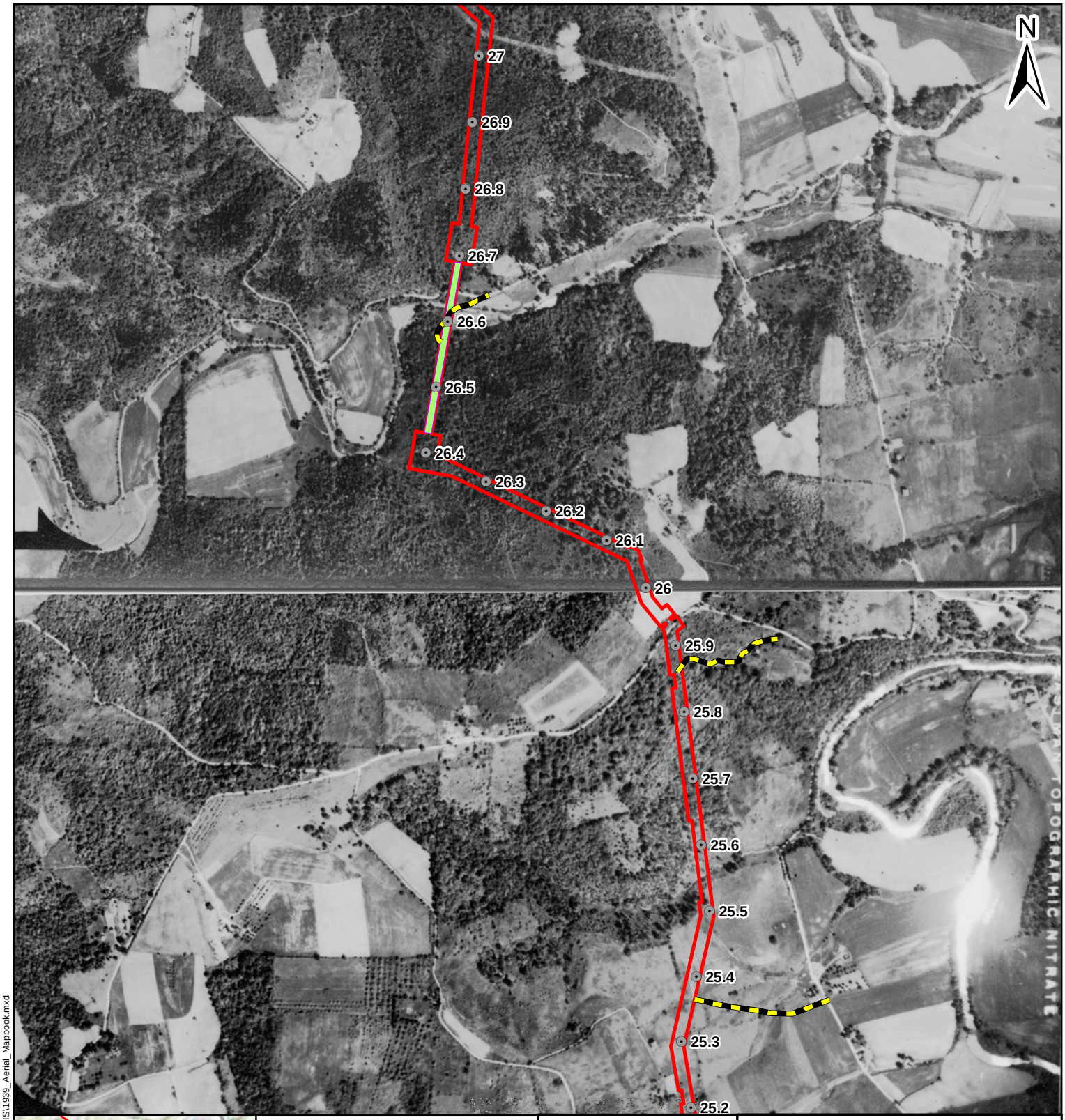
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

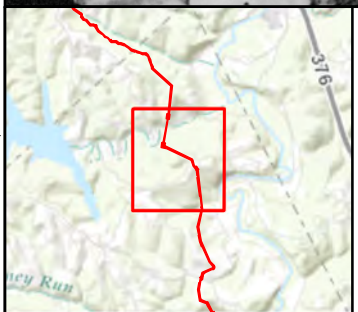
References:
USDA 1939 Roll #56, Photograph #59. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.95

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

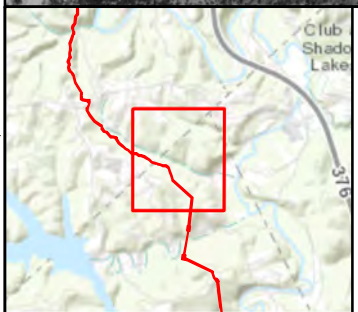
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #56, Photograph #59. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.96

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

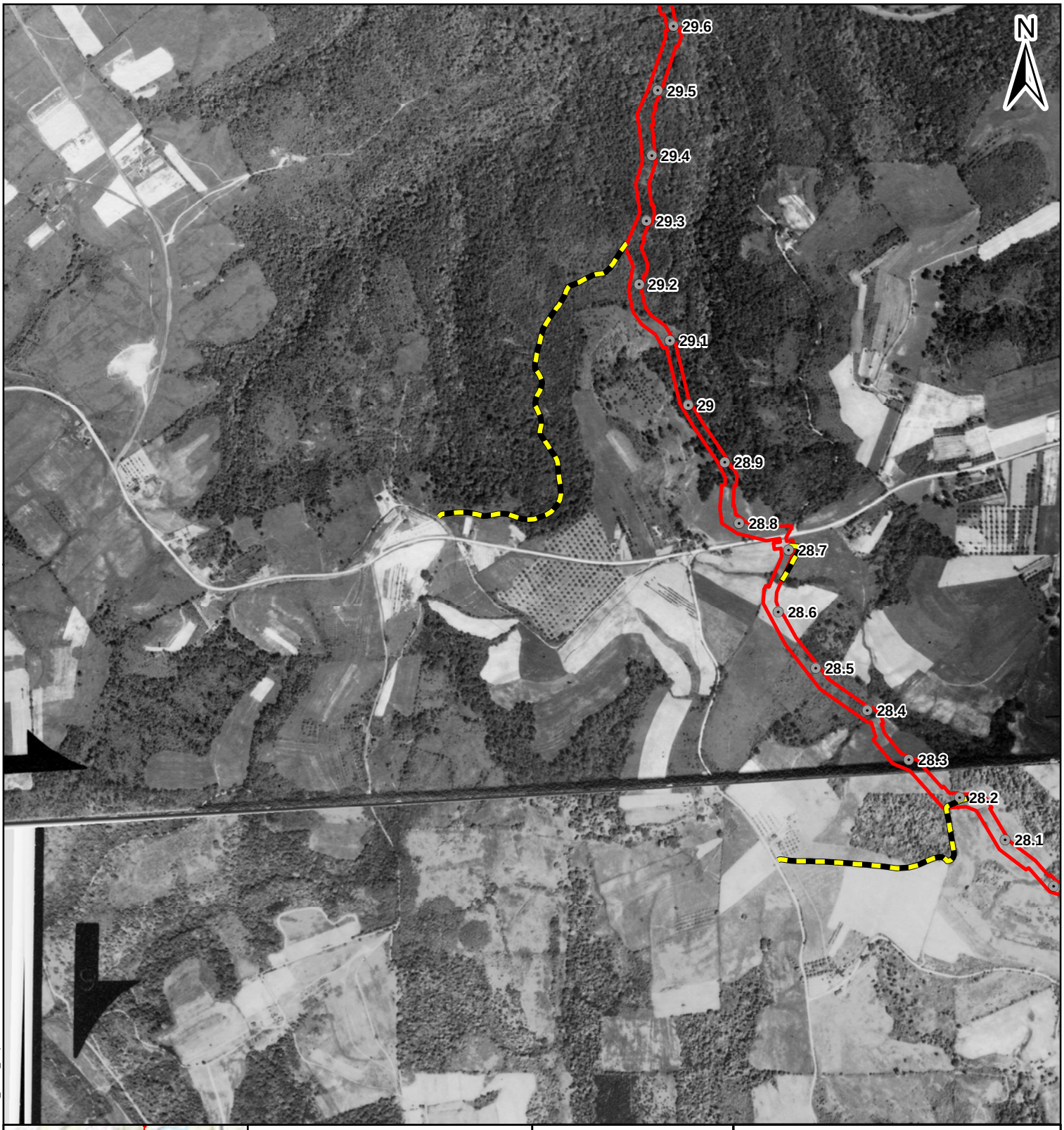
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

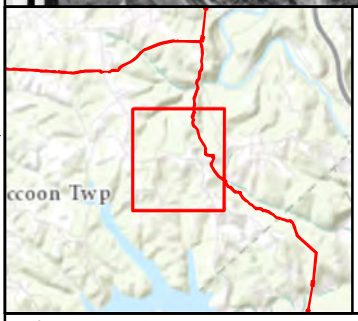
References:
USDA 1939 Roll #74, Photograph #39. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.97

1939 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

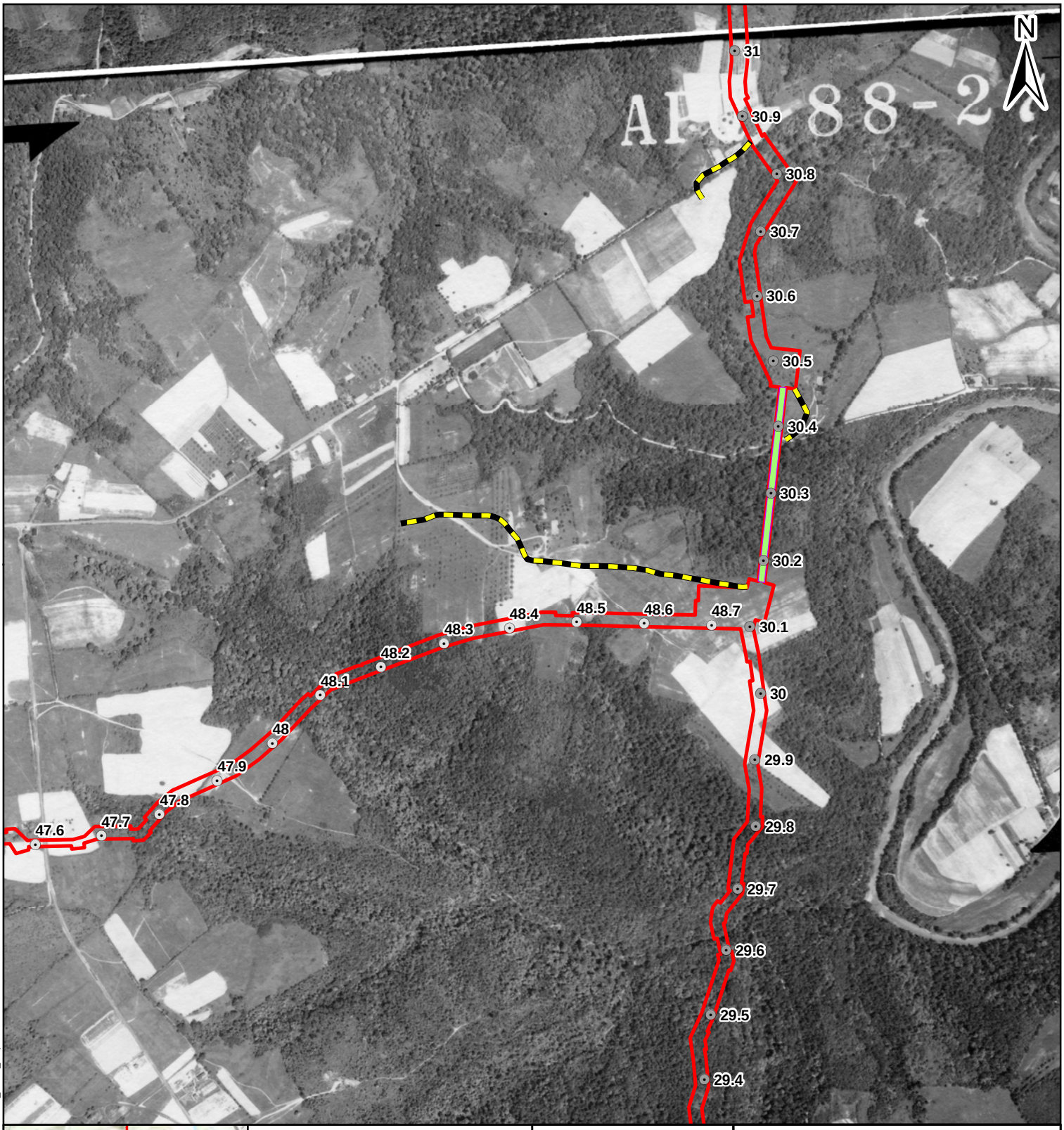
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

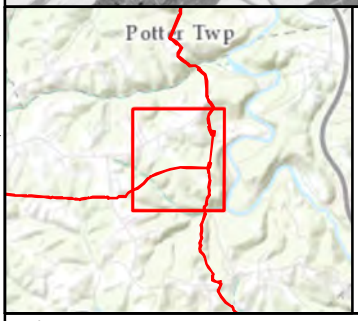
References:
USDA 1939 Roll #88, Photograph #27. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.98

1939 Aerial Photographs

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

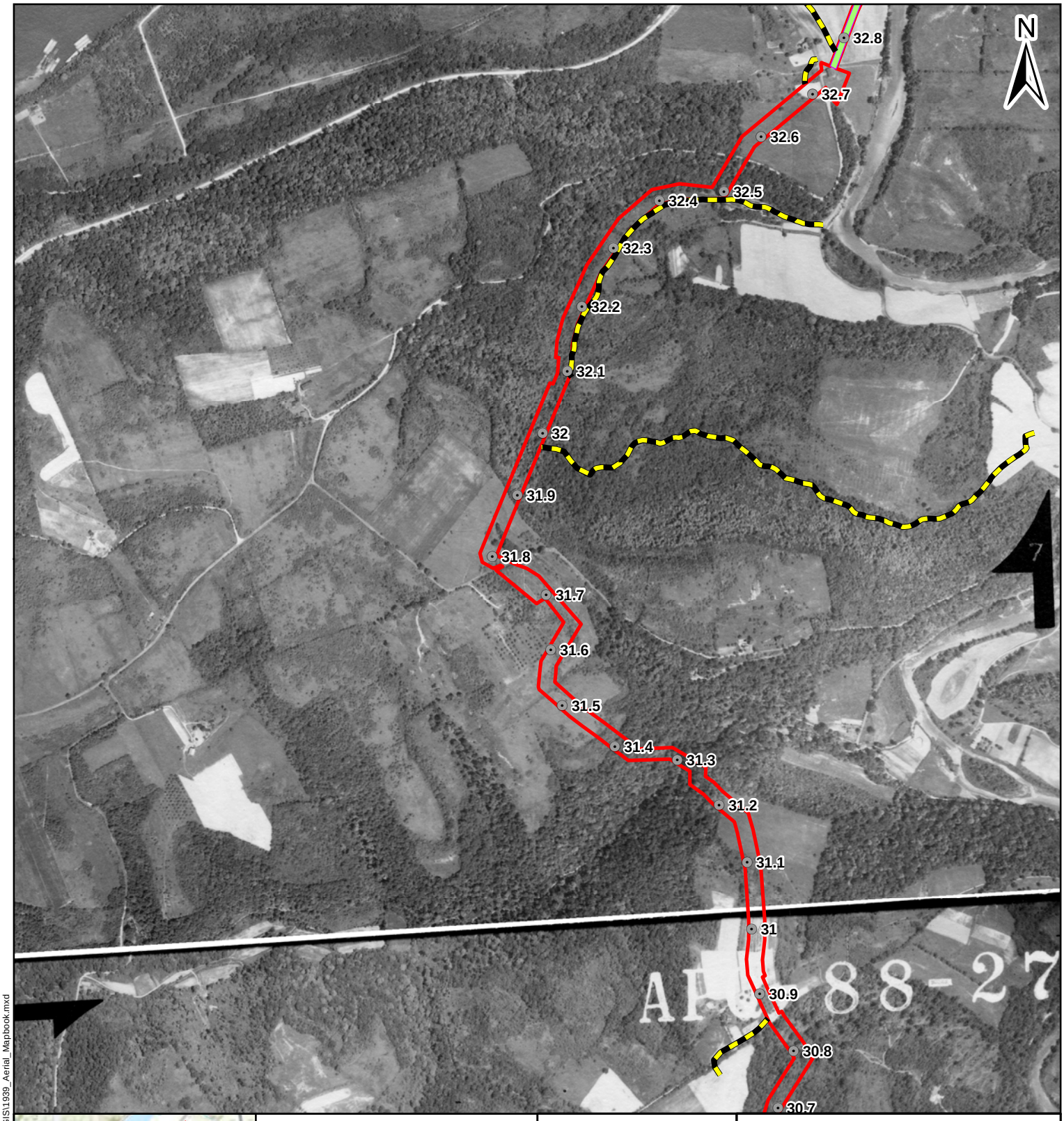
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

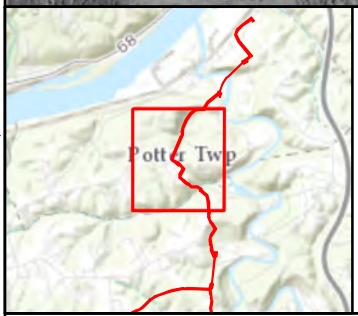
References:
USDA 1939 Roll #88, Photograph #27. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.99

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

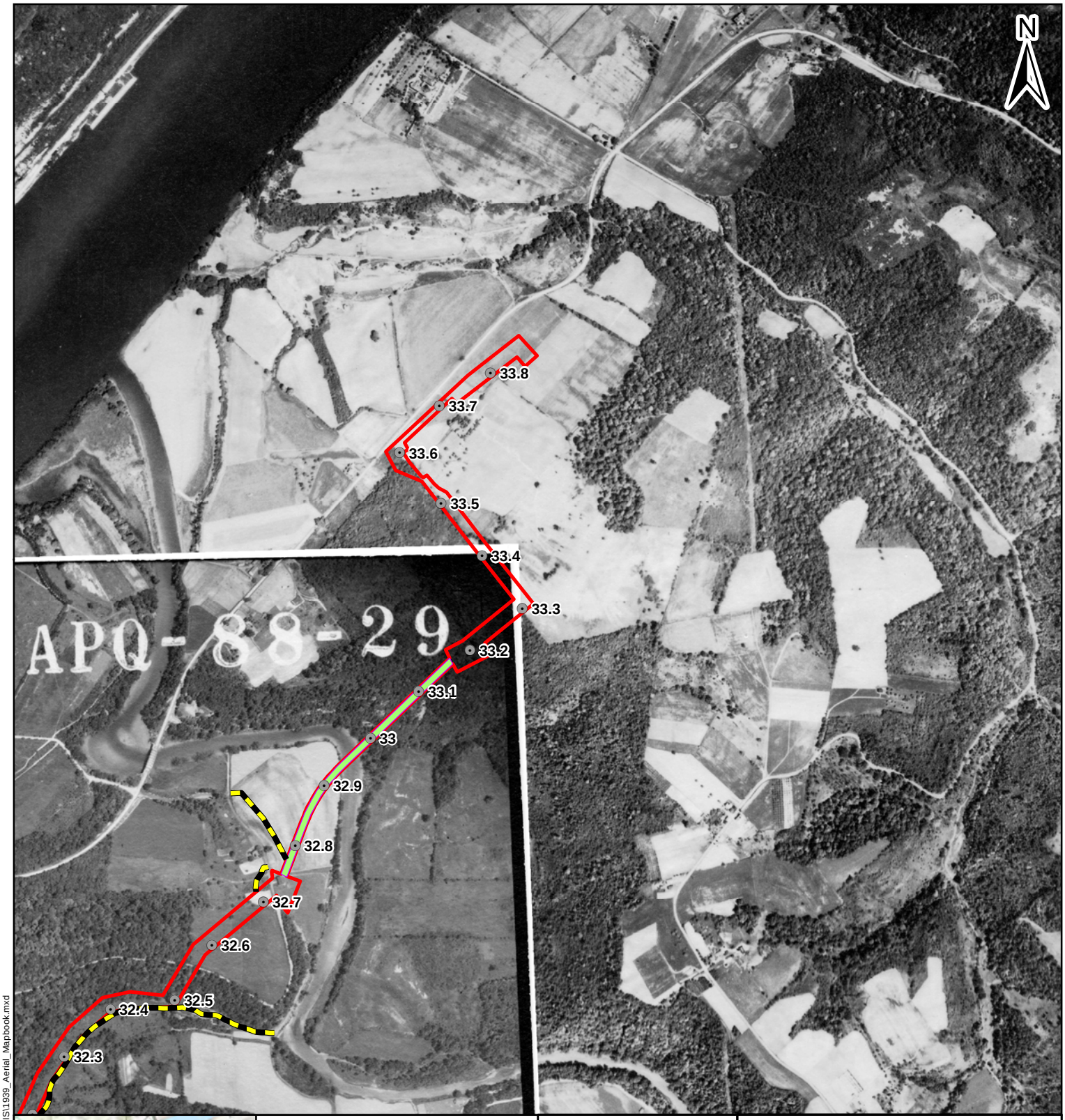
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

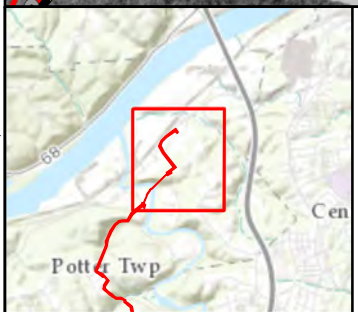
References:
USDA 1939 Roll #88, Photograph #29. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.100

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

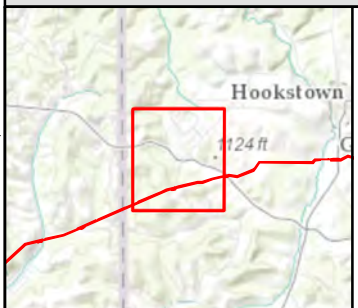
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #88, Photograph #29, #34. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.101

1939 Aerial Photographs

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

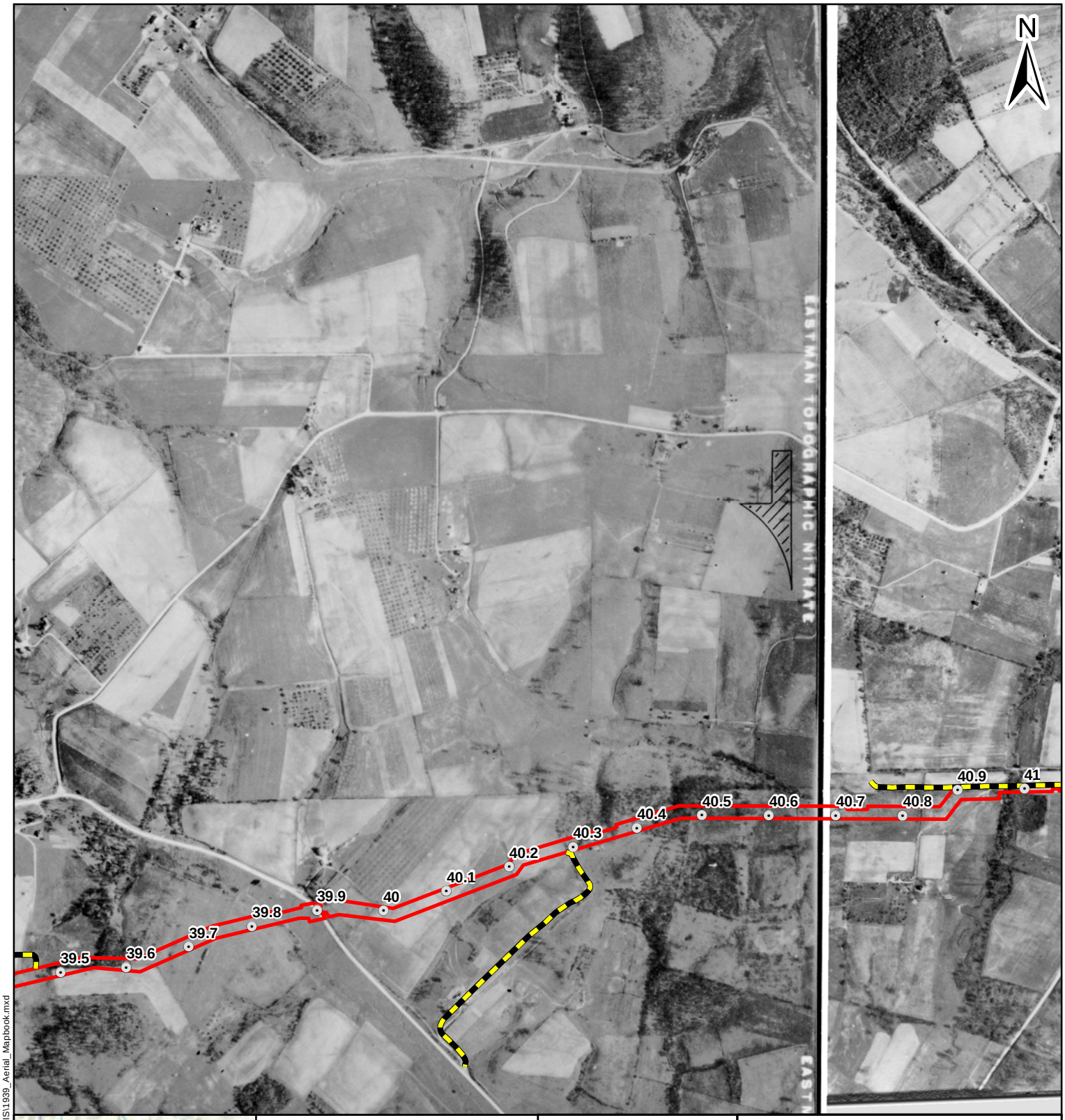
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

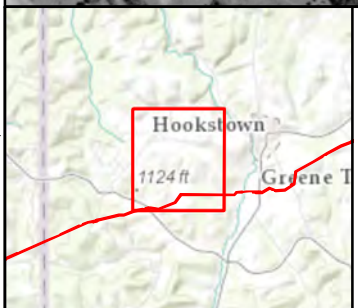
References:
USDA 1939 Roll #55, Photograph #31. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.102

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

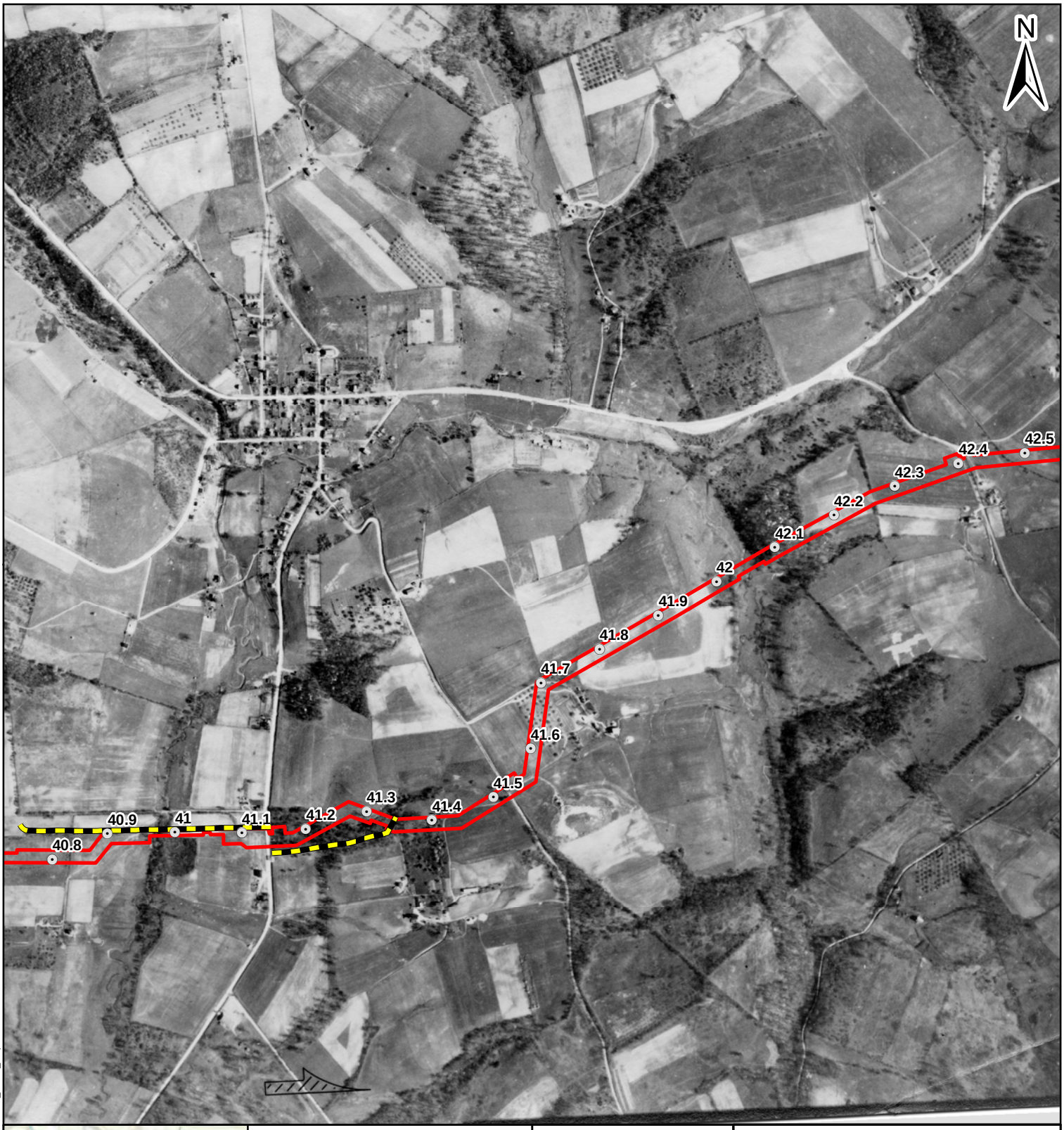
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

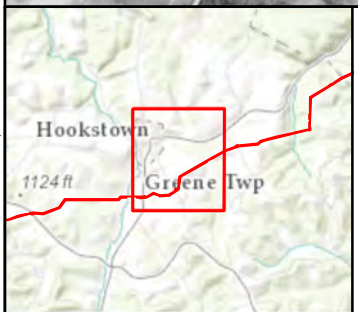
References:
USDA 1939 Roll #55, Photograph #31. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.103

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

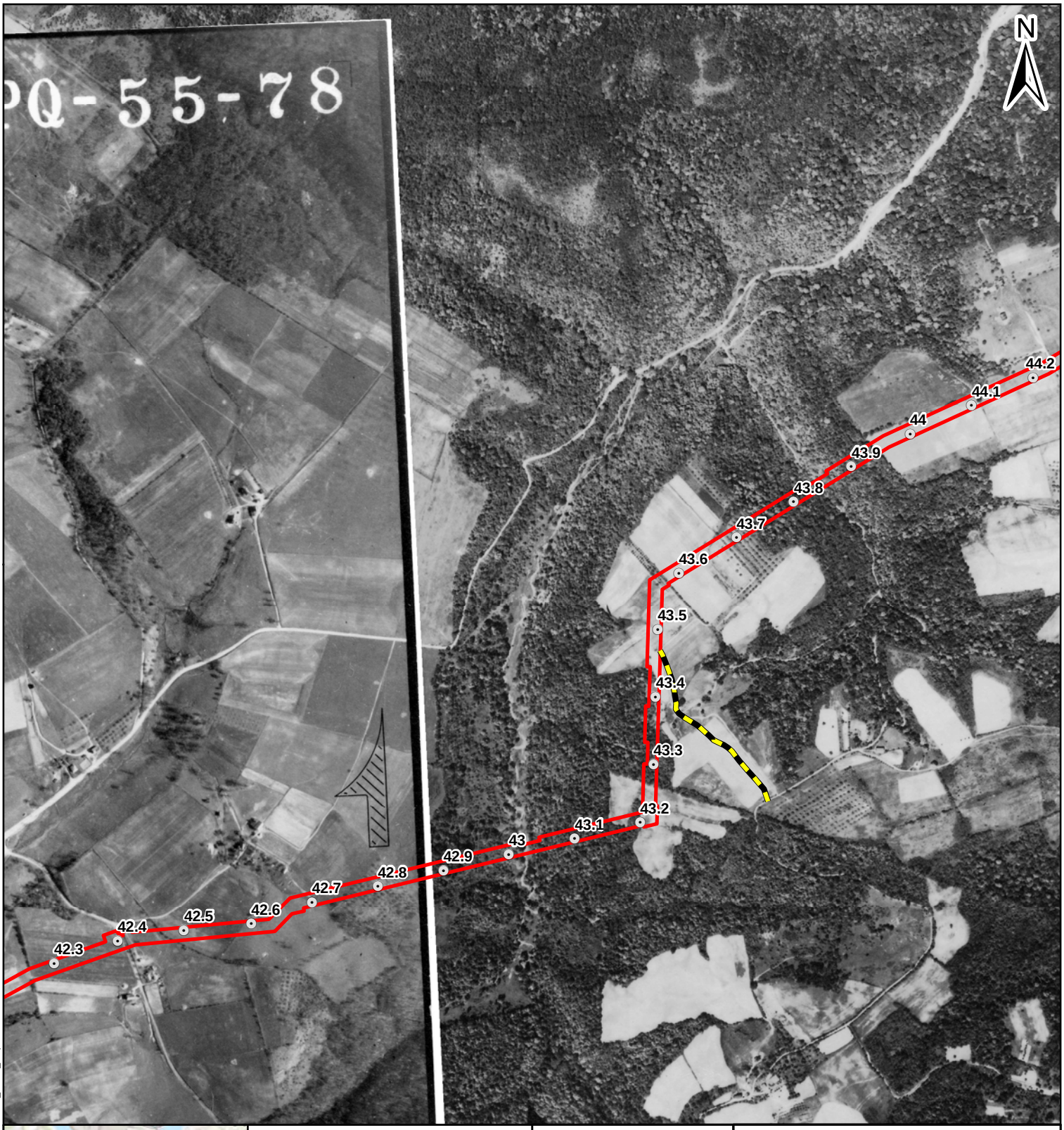
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

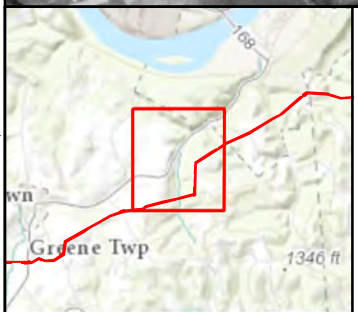
References:
USDA 1939 Roll #55, Photograph #78. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.104

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

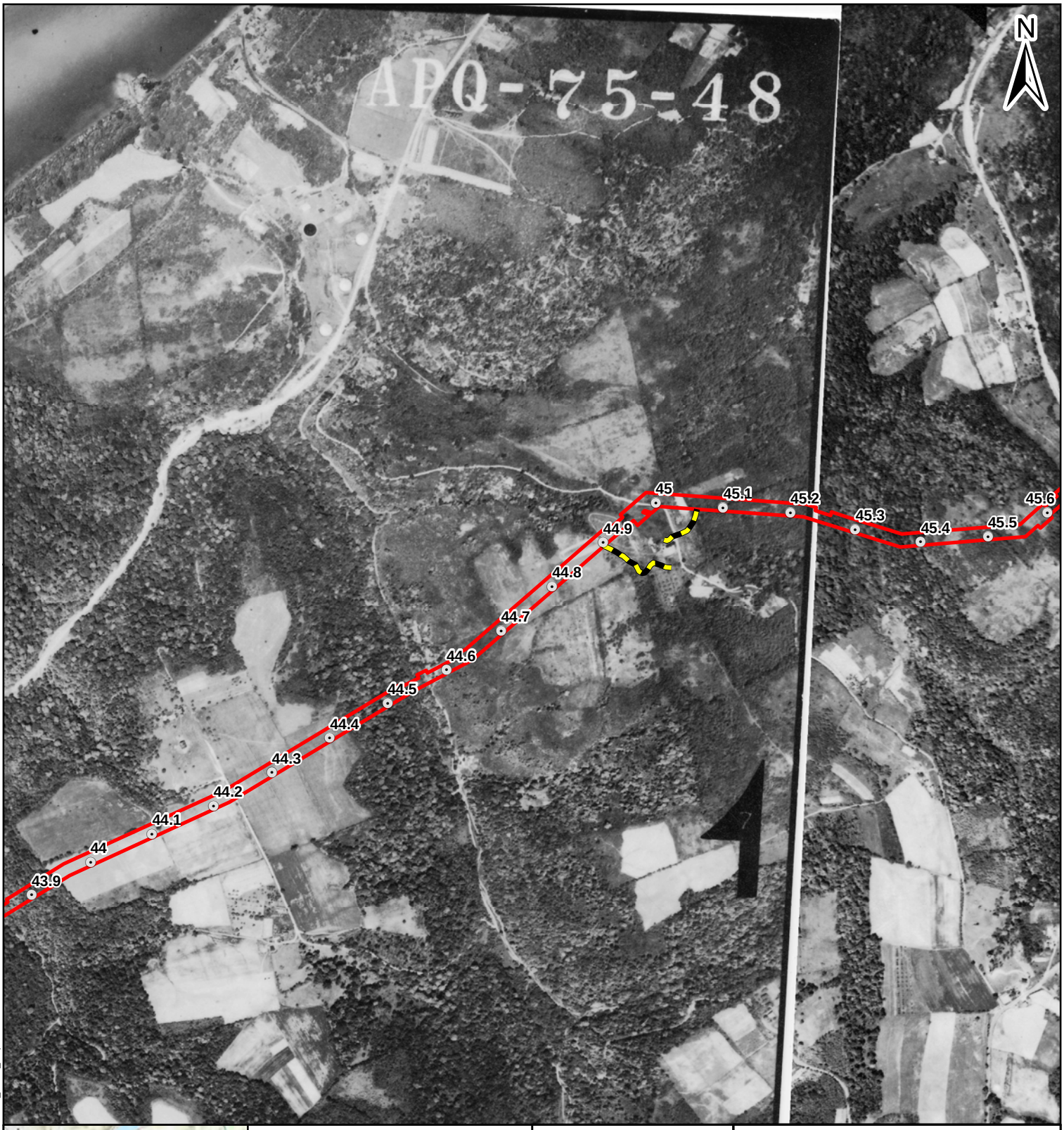
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #75, Photograph #27, #48. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.105

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

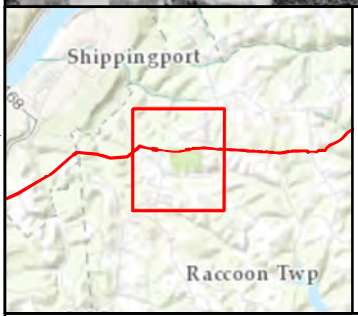
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1939 Roll #75, Photograph #48. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.106

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

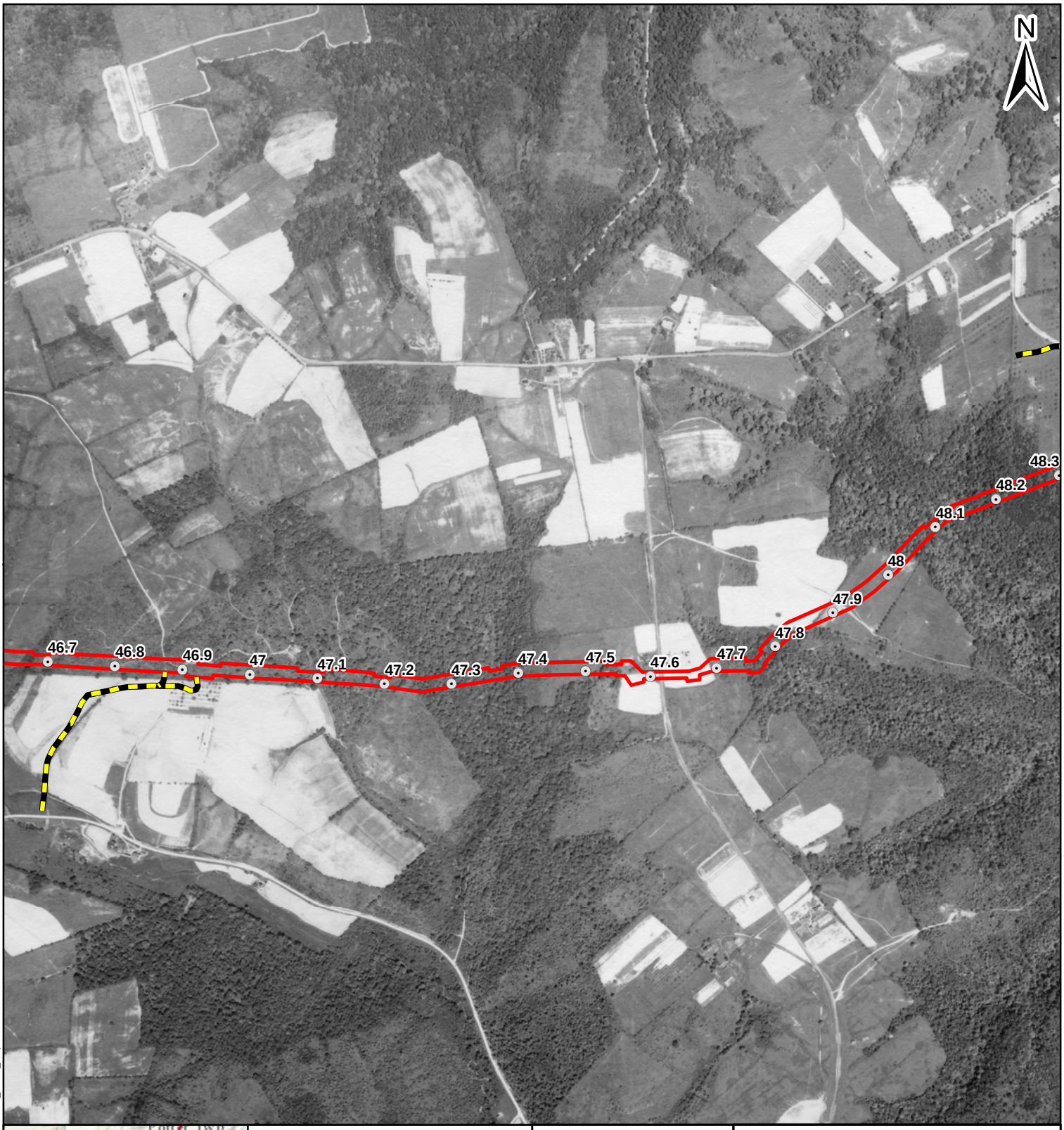
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

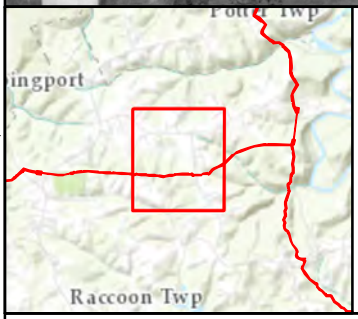
References:
USDA 1939 Roll #75, Photograph #27. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.107

1939 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

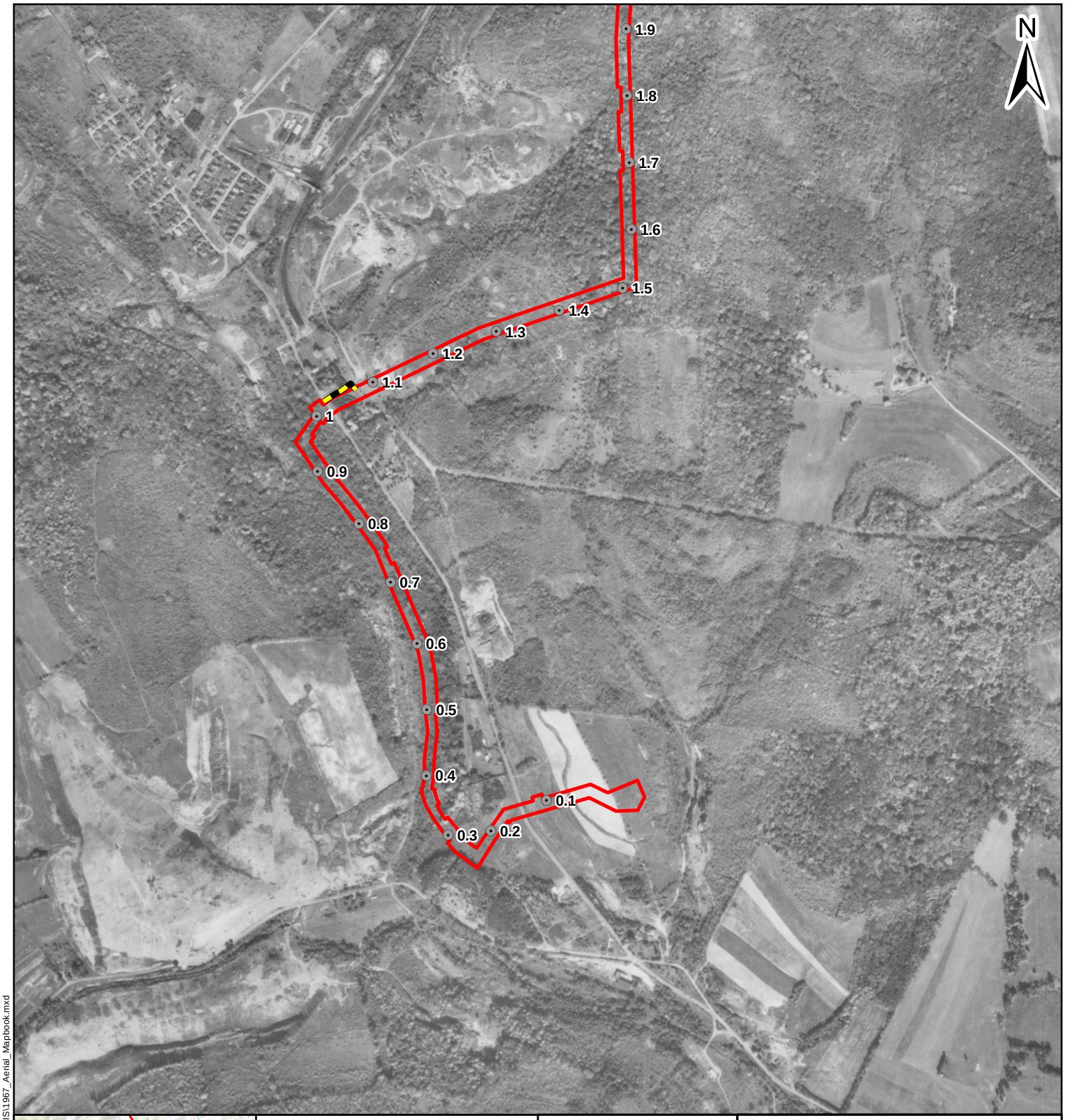
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

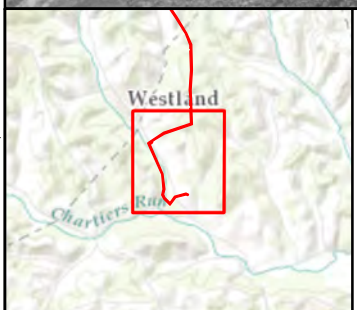
References:
USDA 1939 Roll #88, Photograph #27. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1939_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.108

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

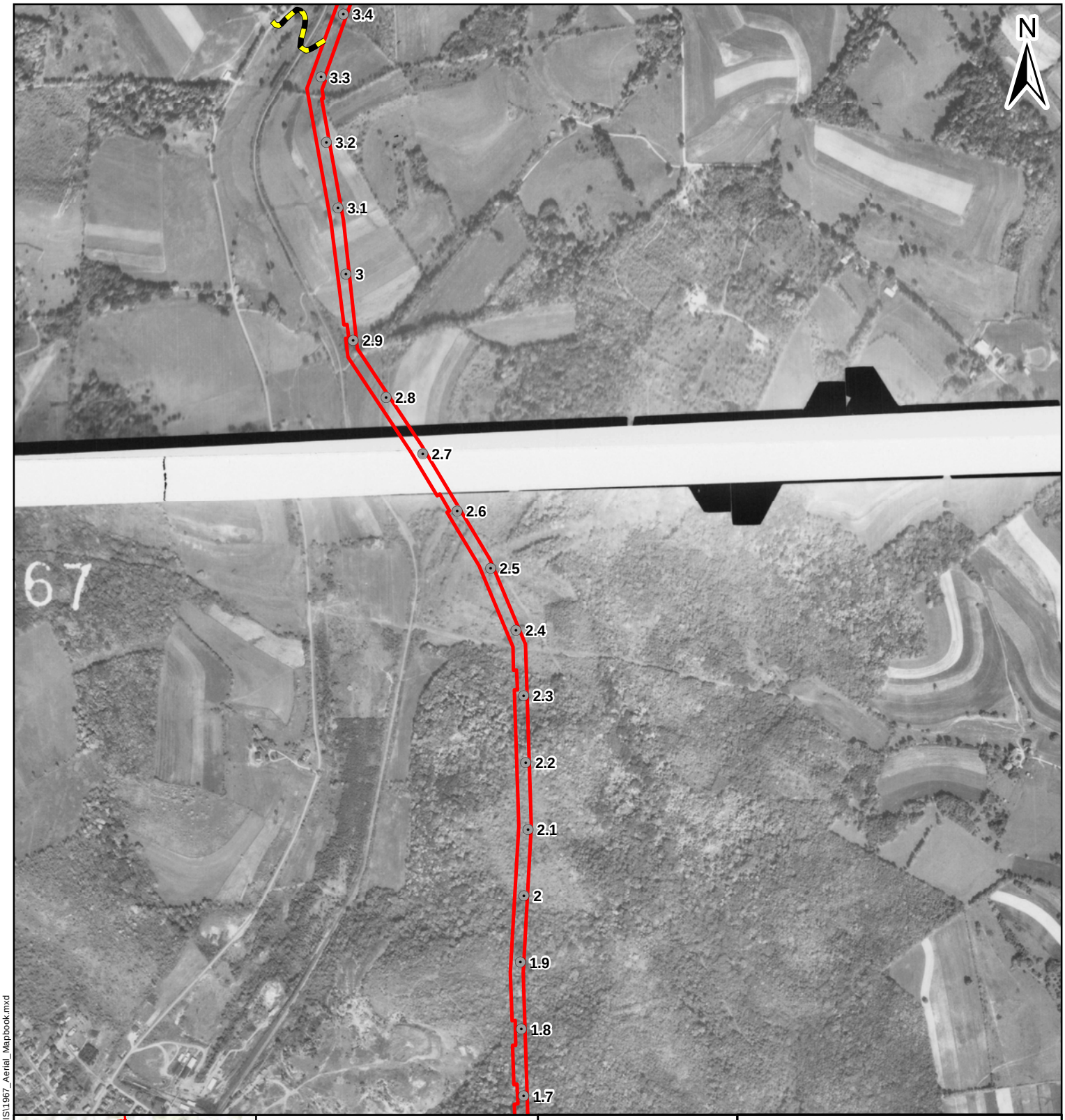
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1967 Roll #8hh, Photograph #42. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.109

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

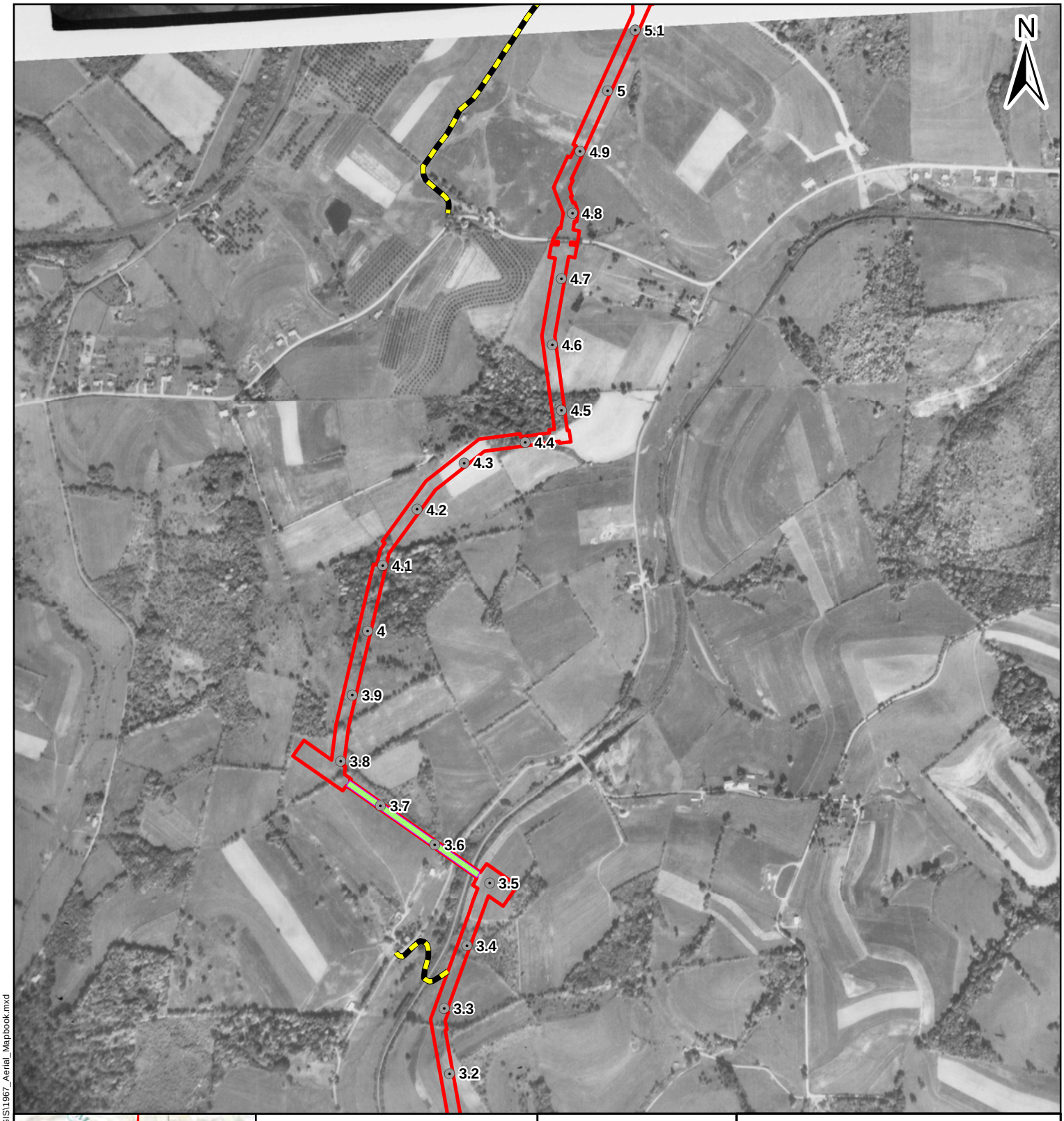
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

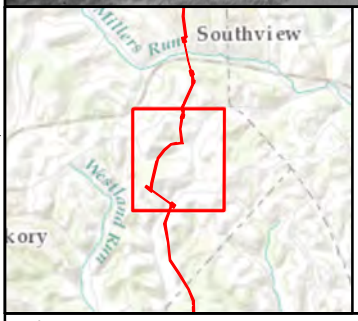
References:
USDA 1967 Roll #8hh, Photograph #42, #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.110

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

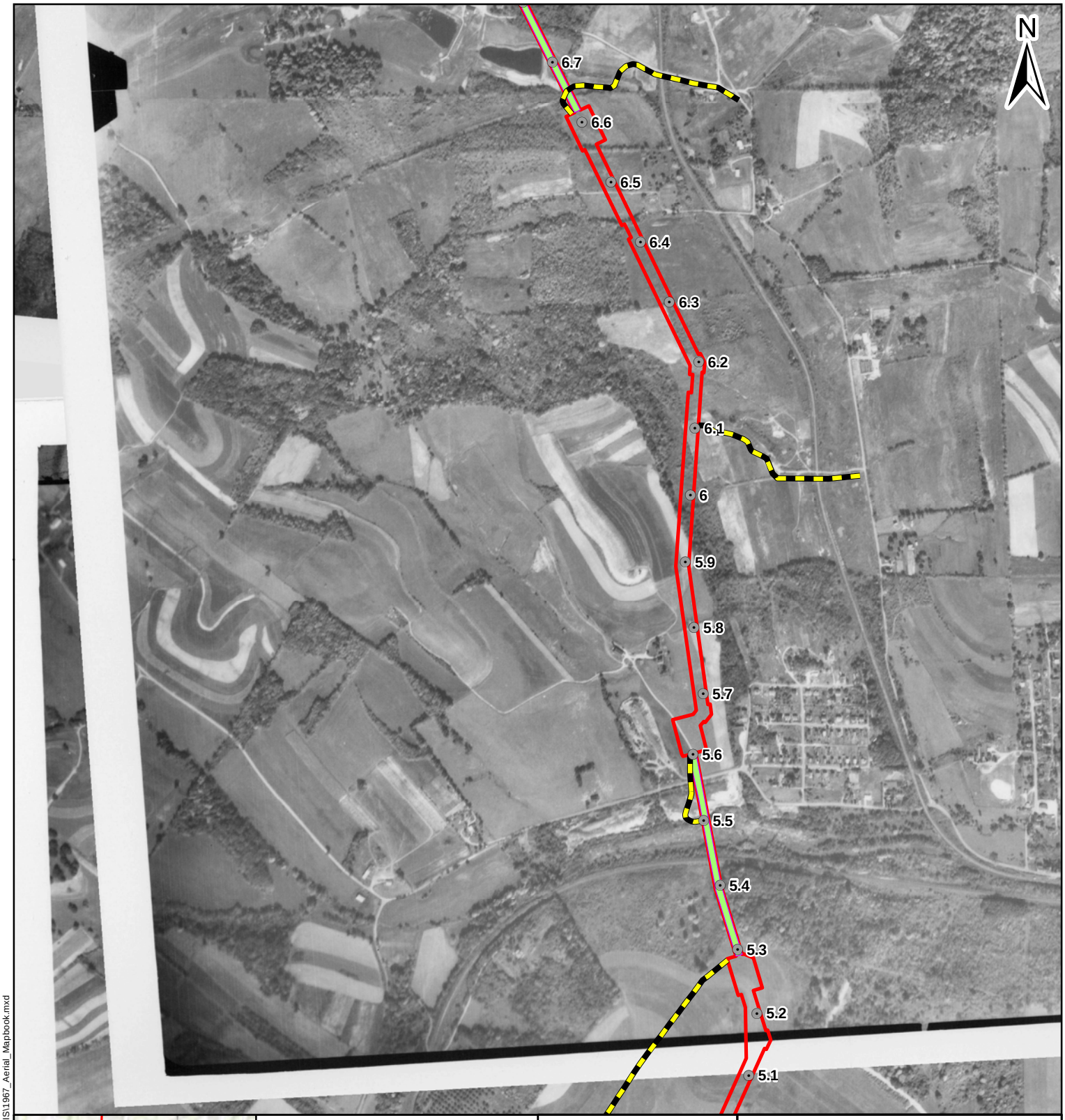
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

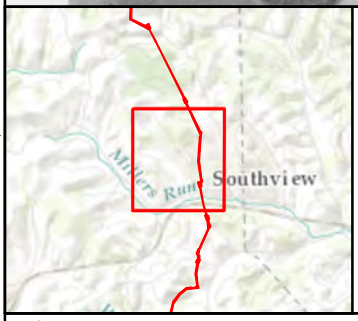
References:
USDA 1967 Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.111

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

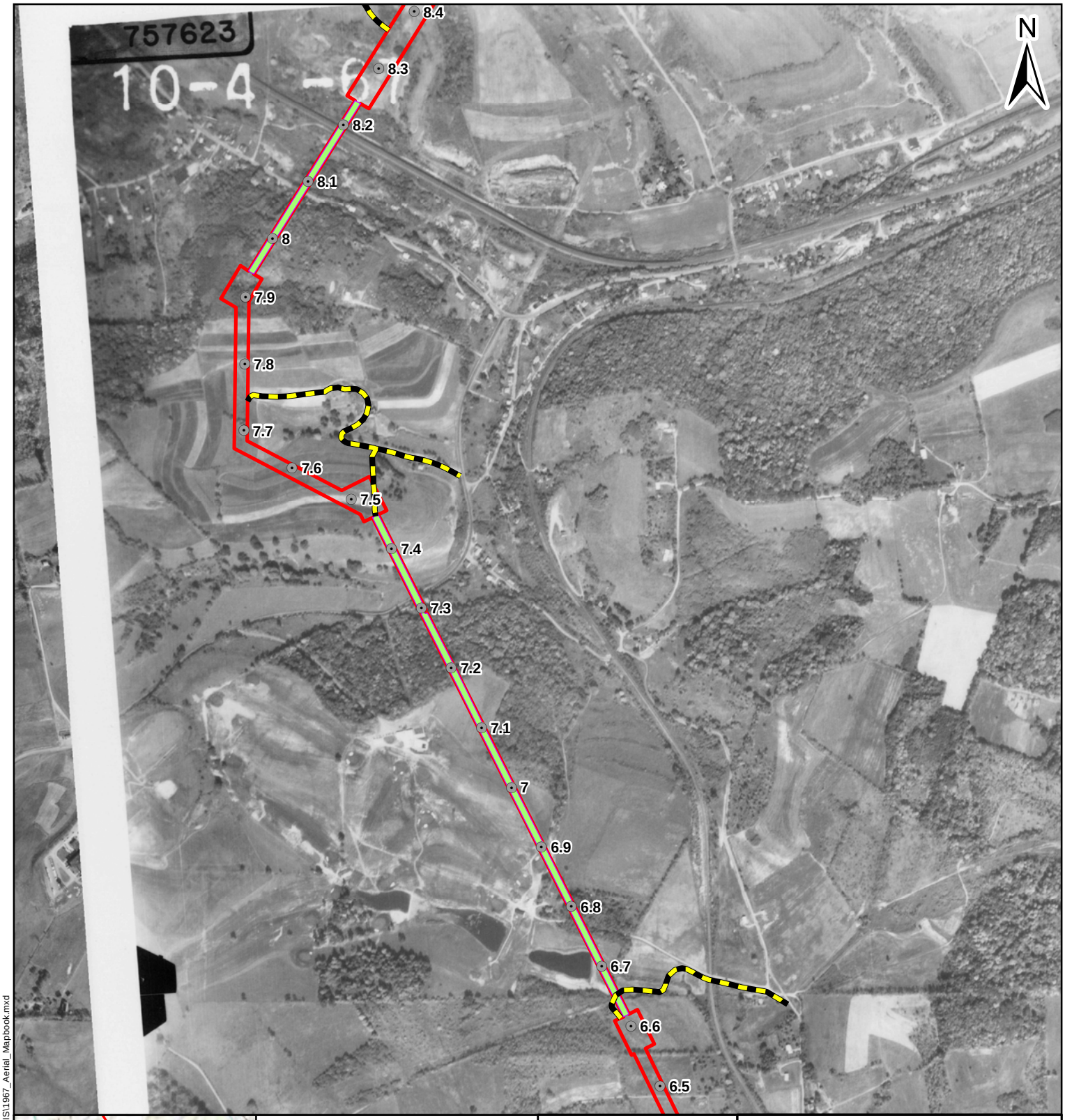
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

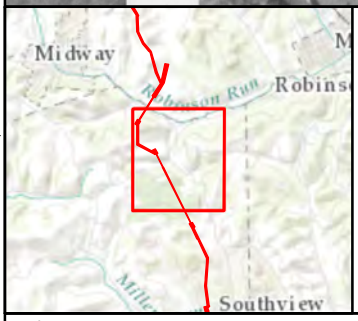
References:
USDA 1967 Roll #8hh, Photograph #47. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.112

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

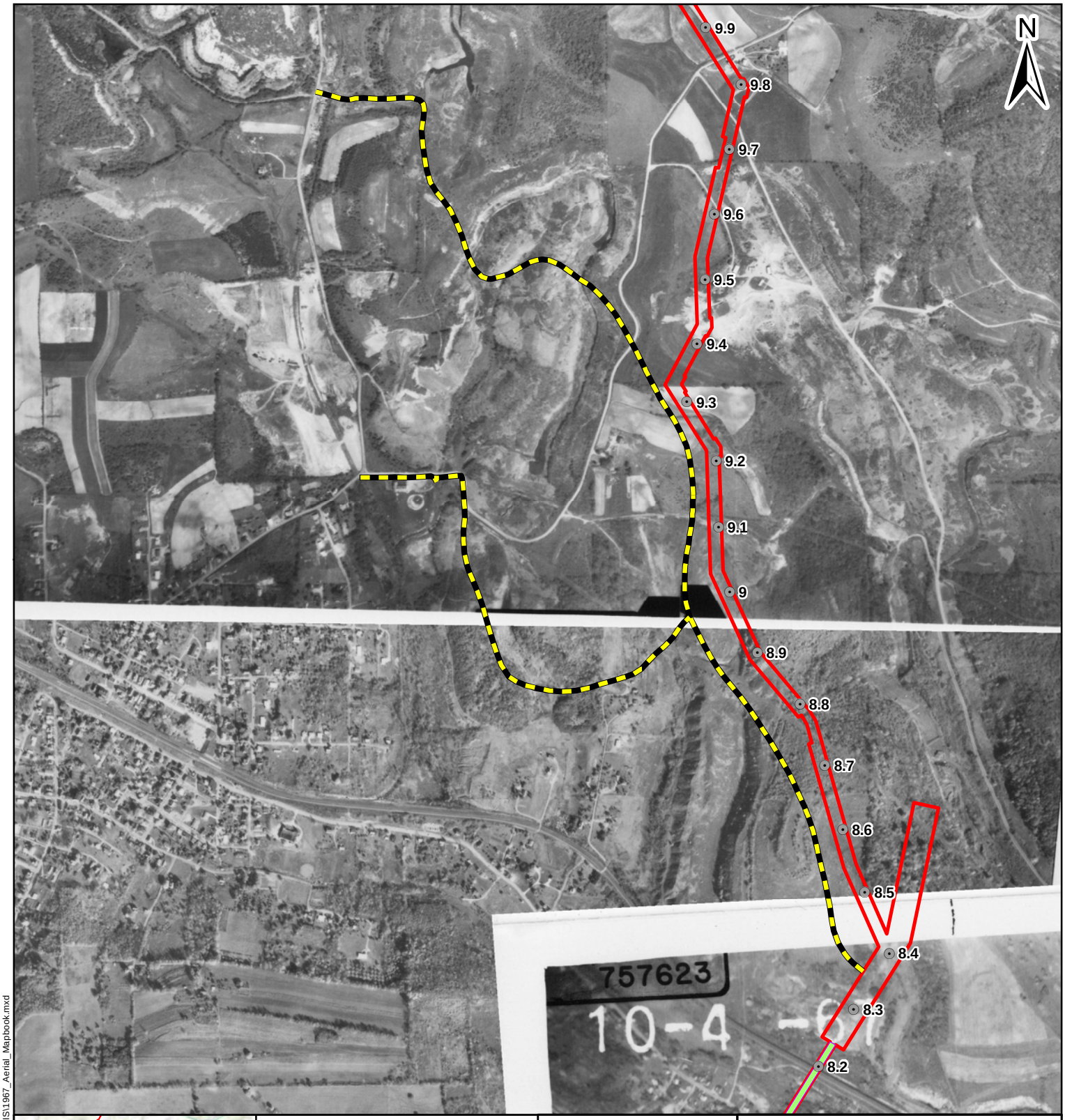
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1967 Roll #8hh, Photograph #47. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.113

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

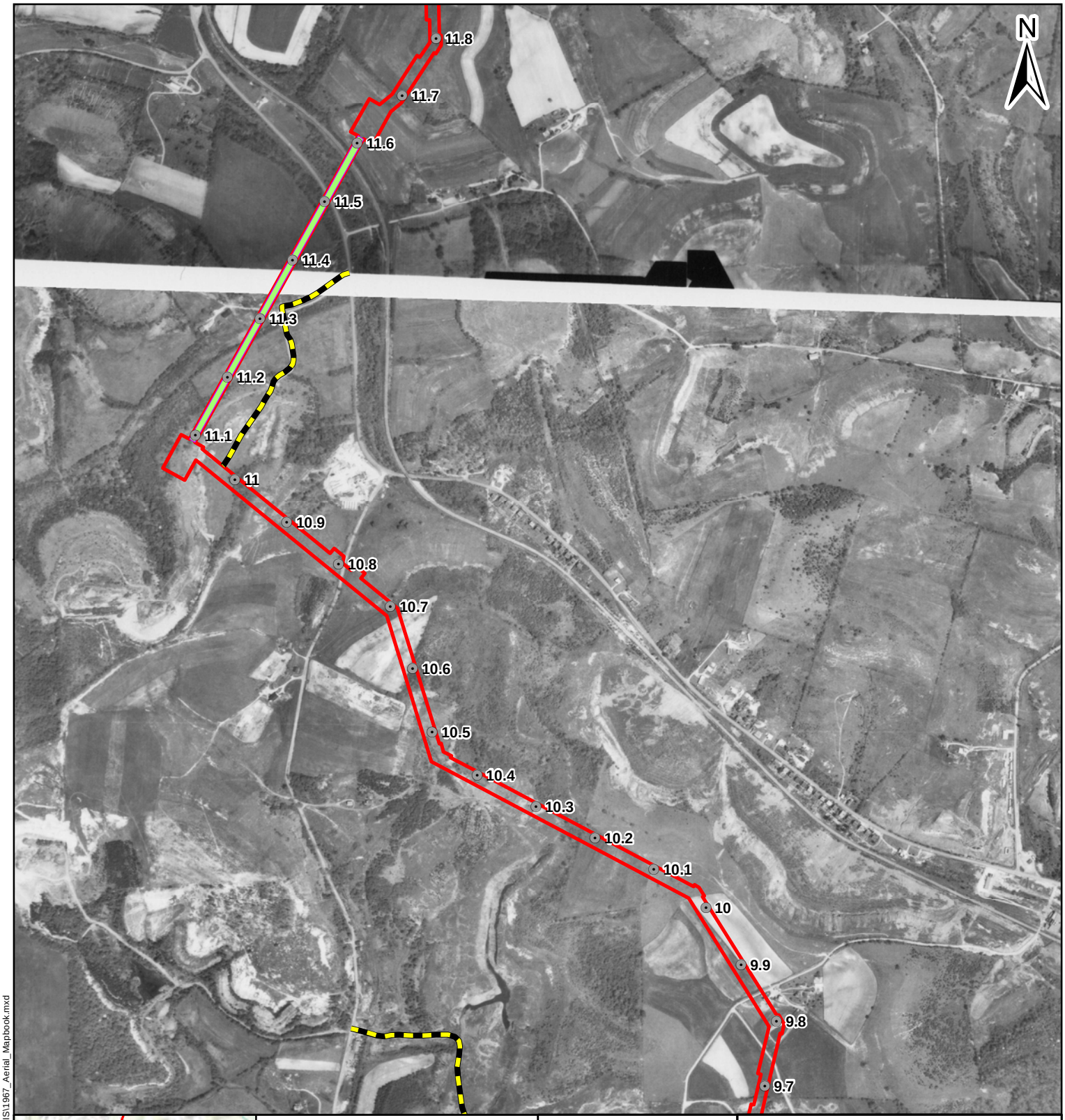
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

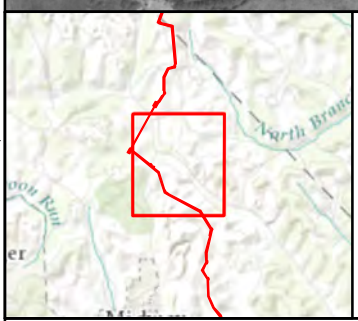
References:
USDA 1967 Roll #4hh, Photograph #25, #44. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.114

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

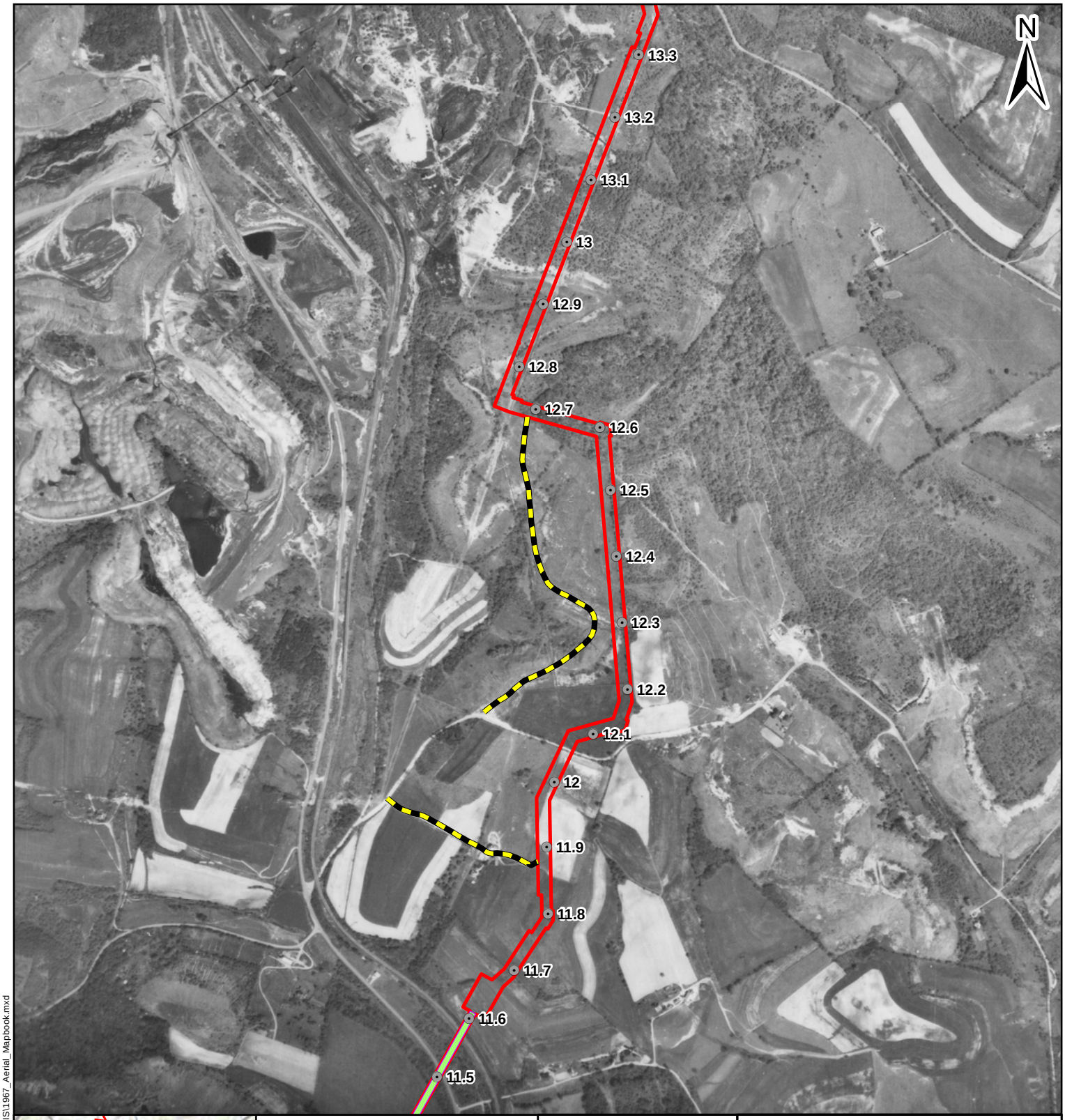
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

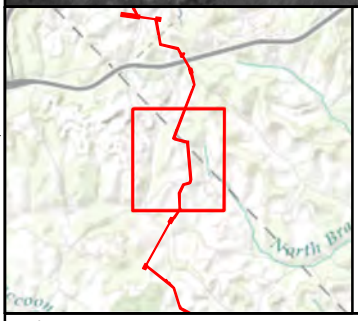
References:
USDA 1967 Roll #4hh, Photograph #44. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.115

1967 Aerial Photographs

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

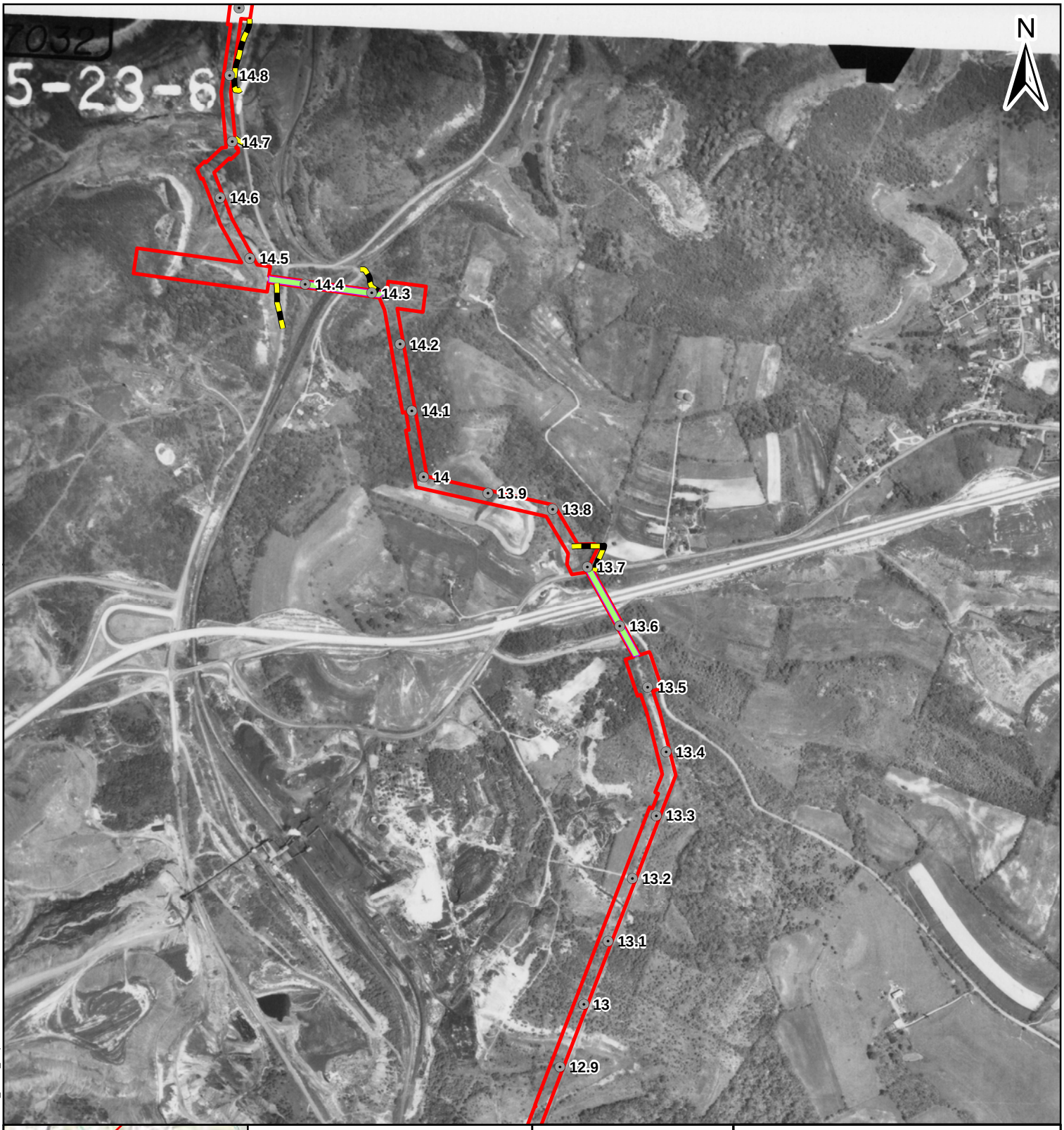
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

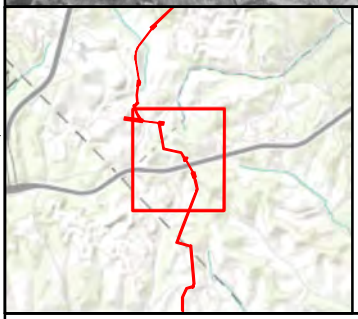
References:
USDA 1967 Roll #4hh, Photograph #42. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.116

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

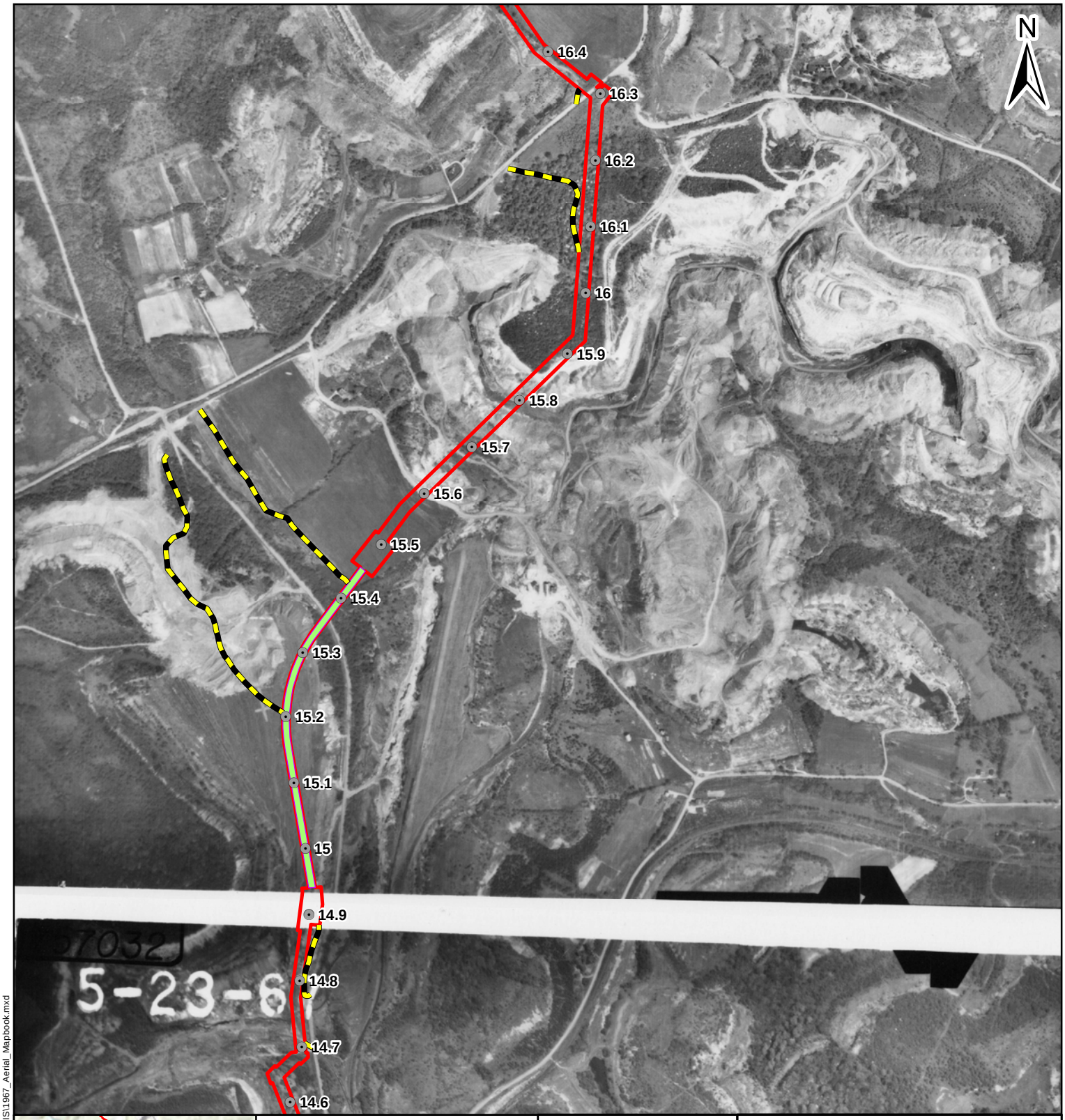
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

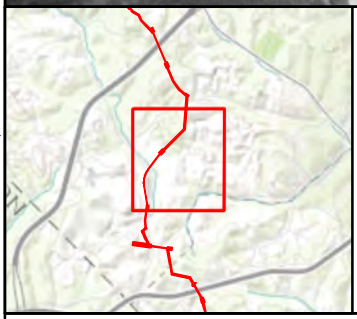
References:
USDA 1967 Roll #4hh, Photograph #42. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.117

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

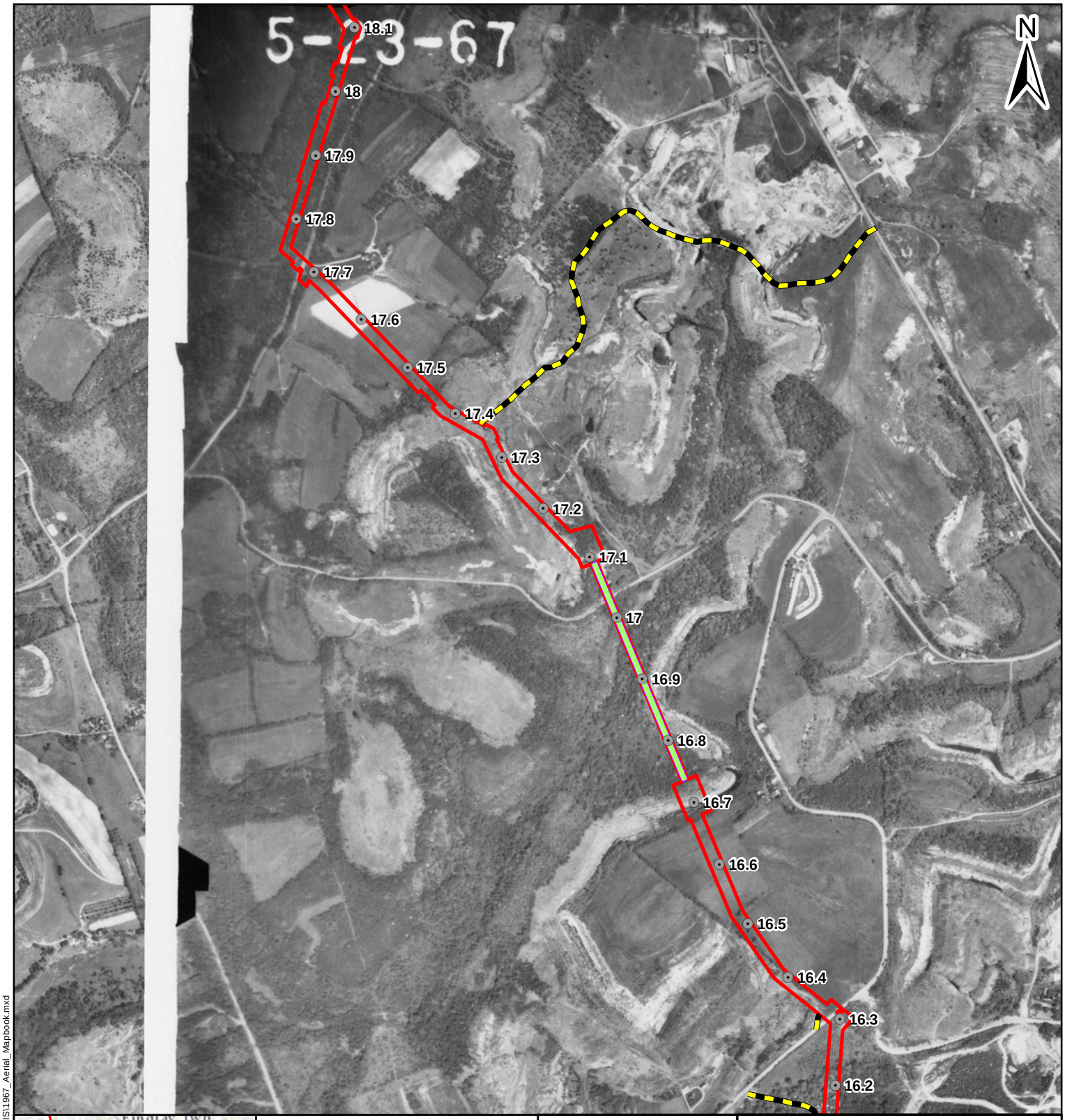
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

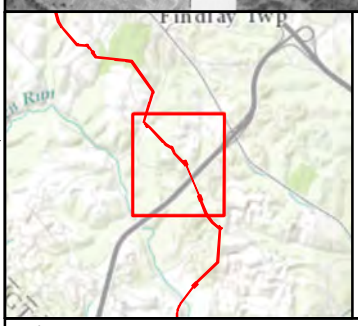
References:
USDA 1967 Roll #4hh, Photograph #39. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.118

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

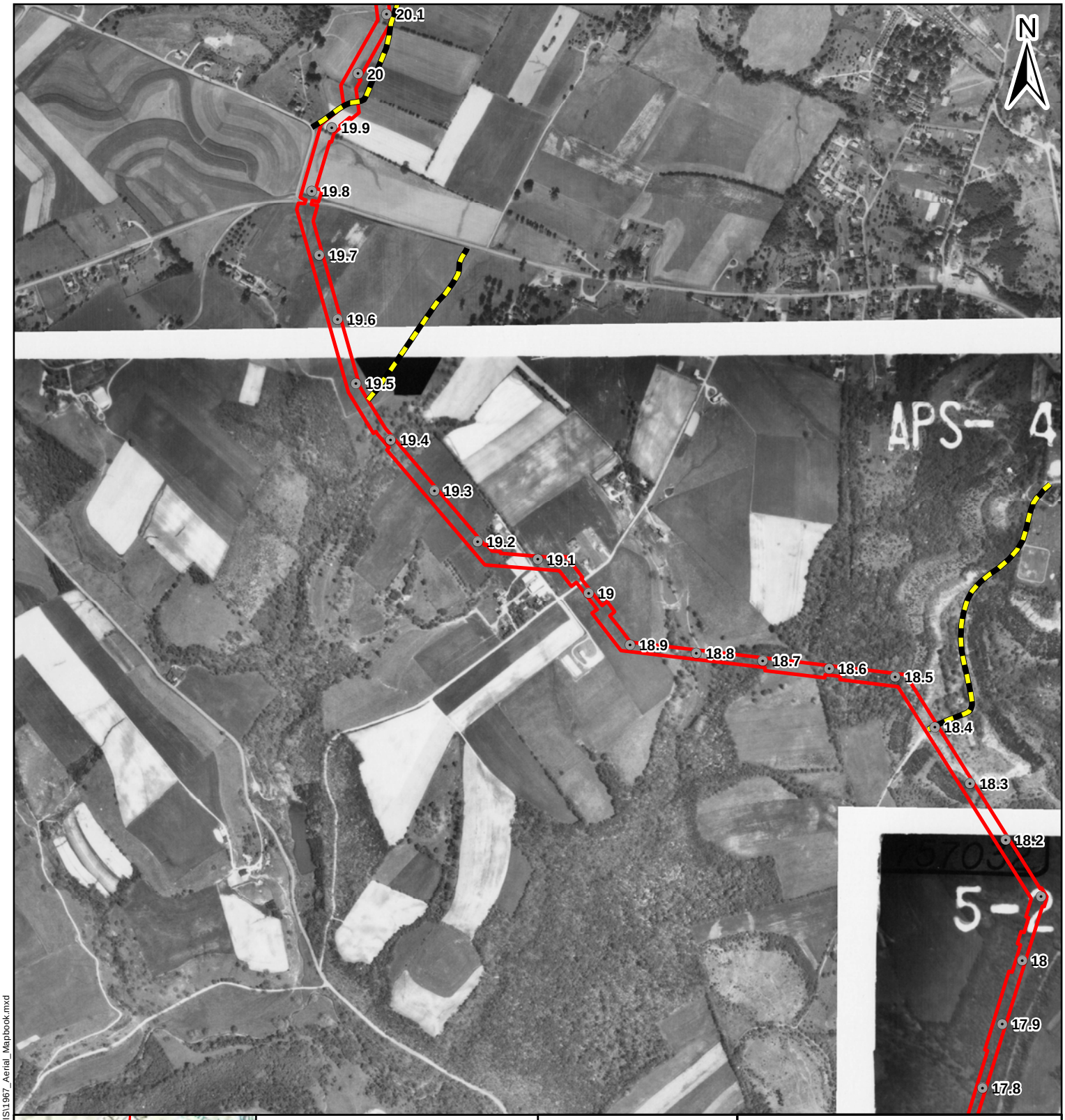
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

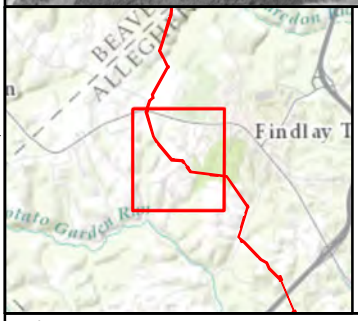
References:
USDA 1967 Roll #4hh, Photograph #39. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.119

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

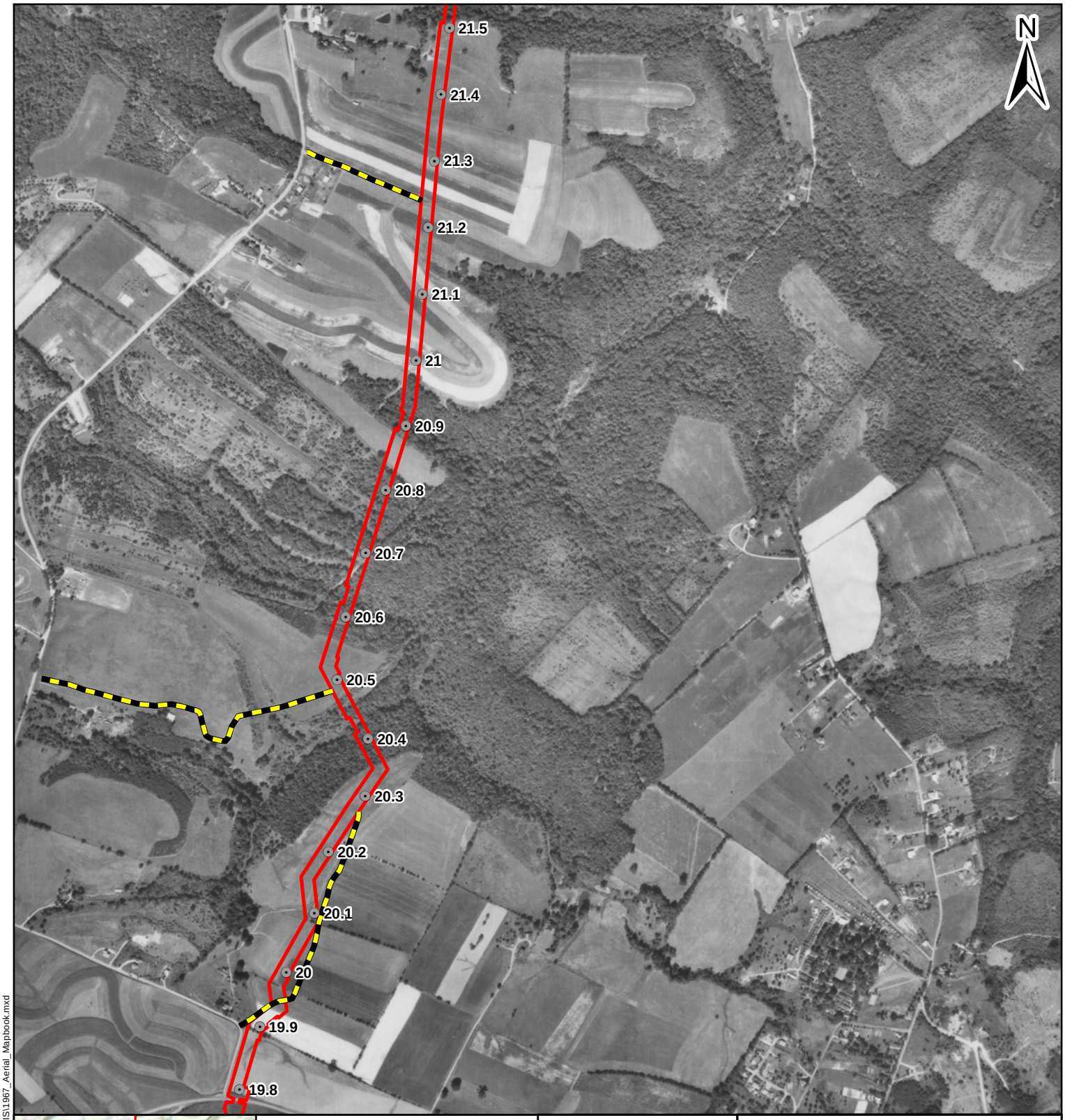
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

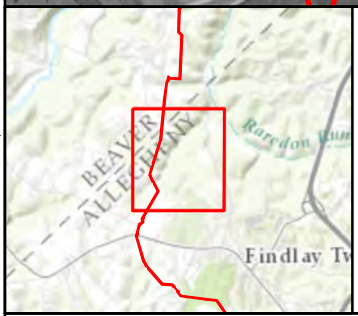
References:
USDA 1967 Roll #4hh, Photograph #68. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.120

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

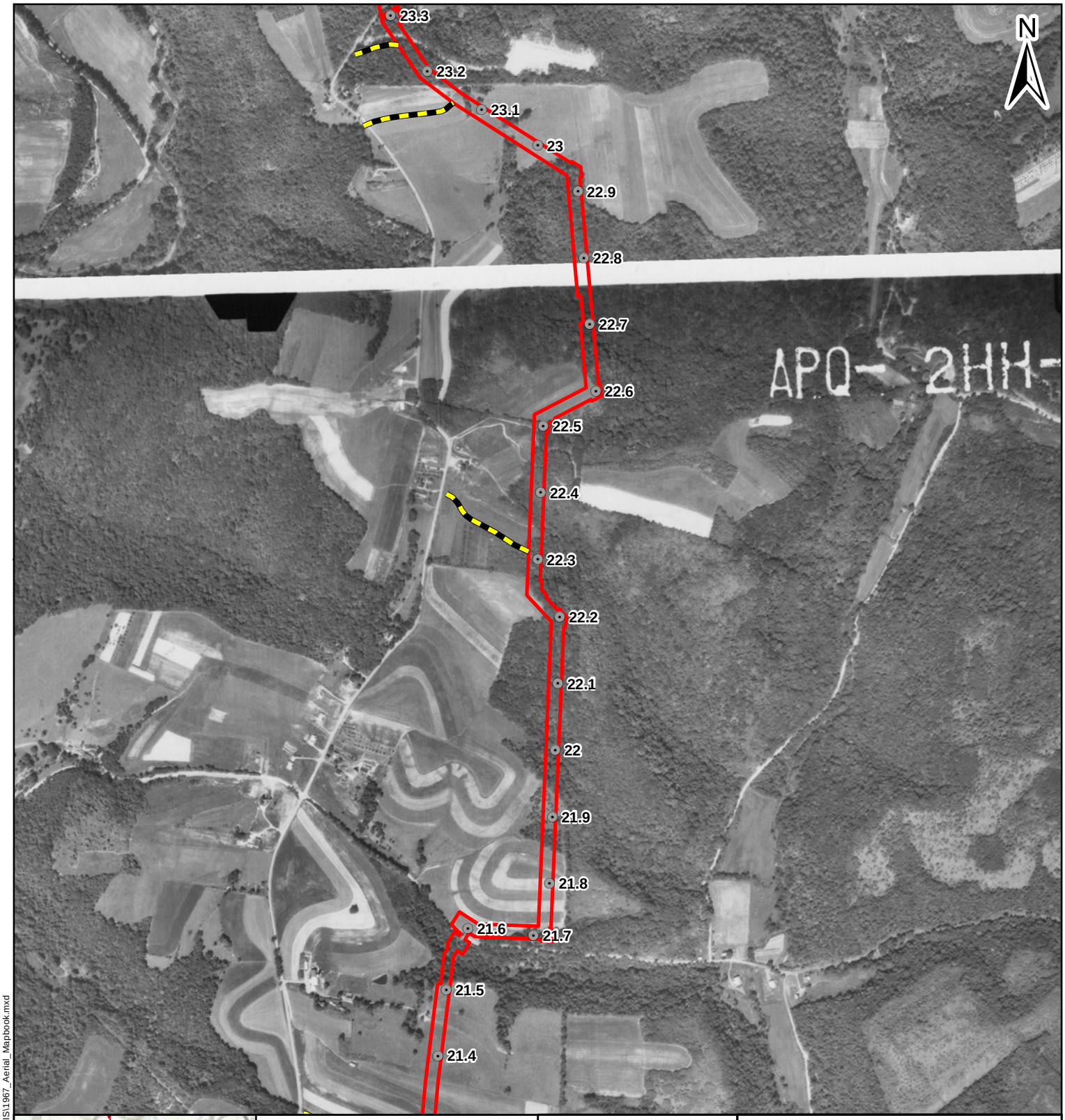
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

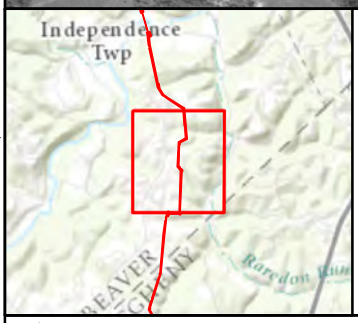
References:
USDA 1967 Roll #2hh, Photograph #120. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.121

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

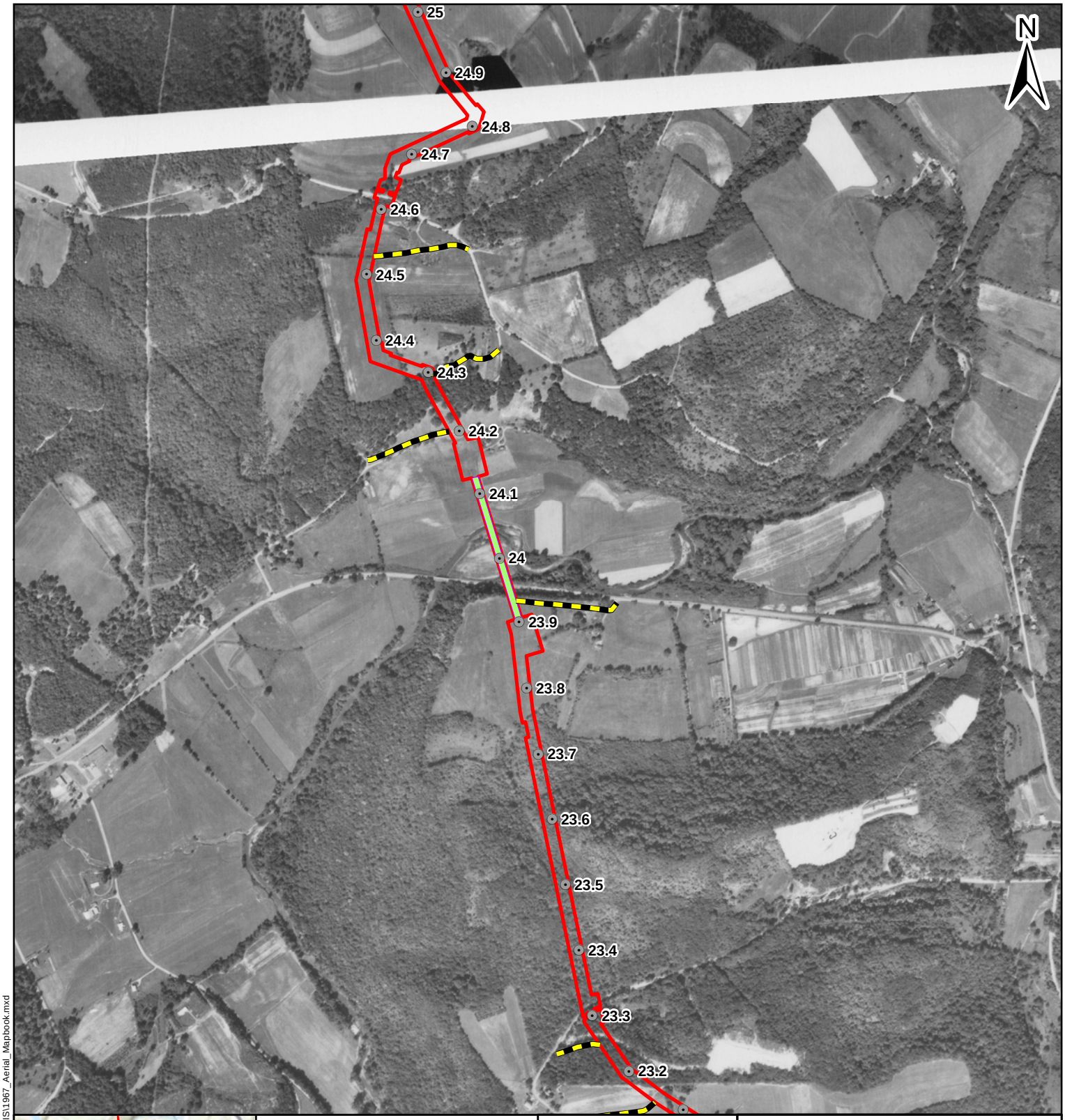
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

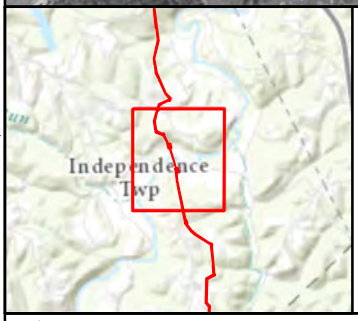
References:
USDA 1967 Roll #2hh, Photograph #120. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.122

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

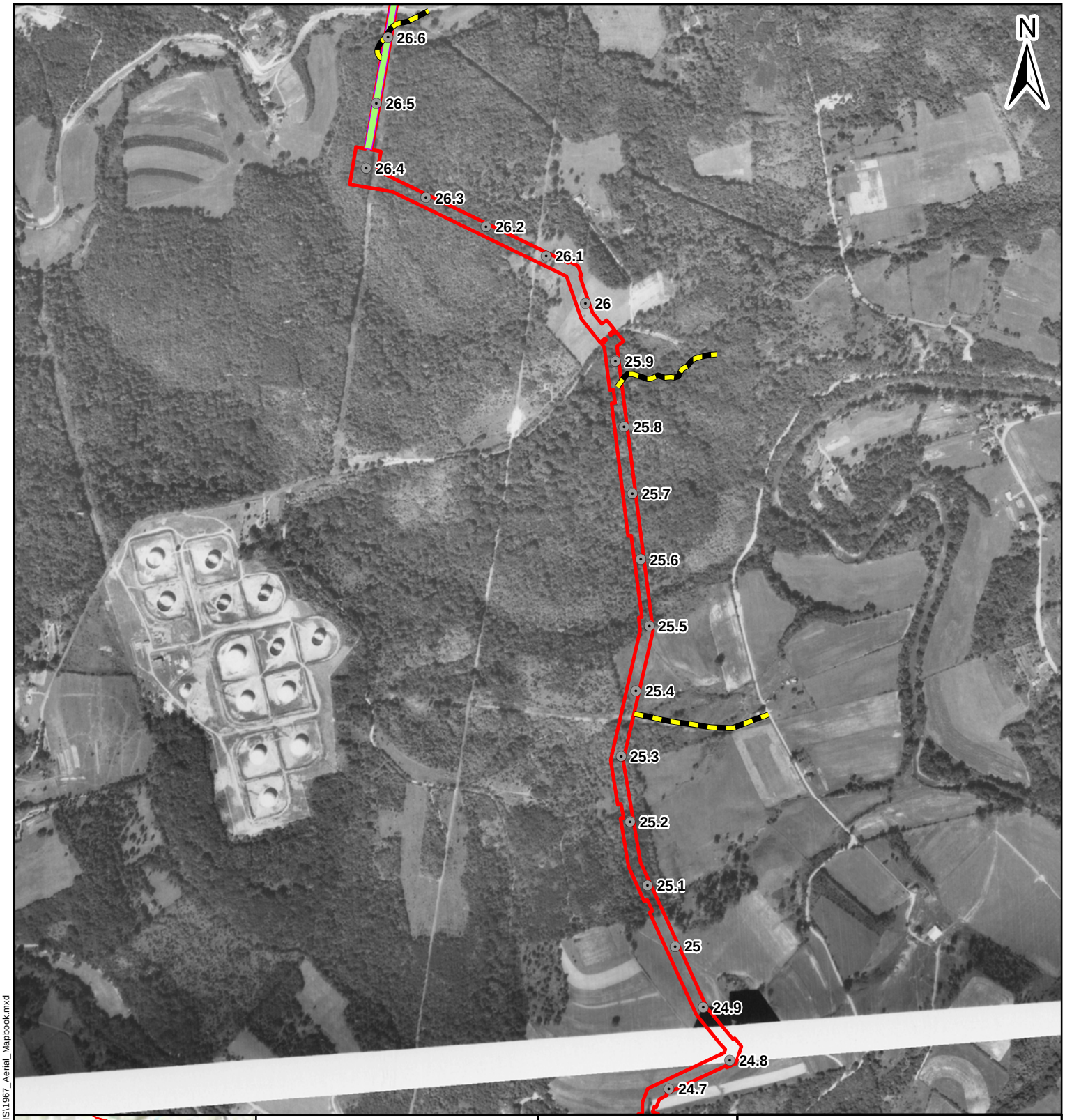
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

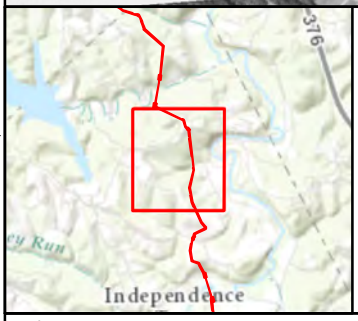
References:
USDA 1967 Roll #2hh, Photograph #122. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.123

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

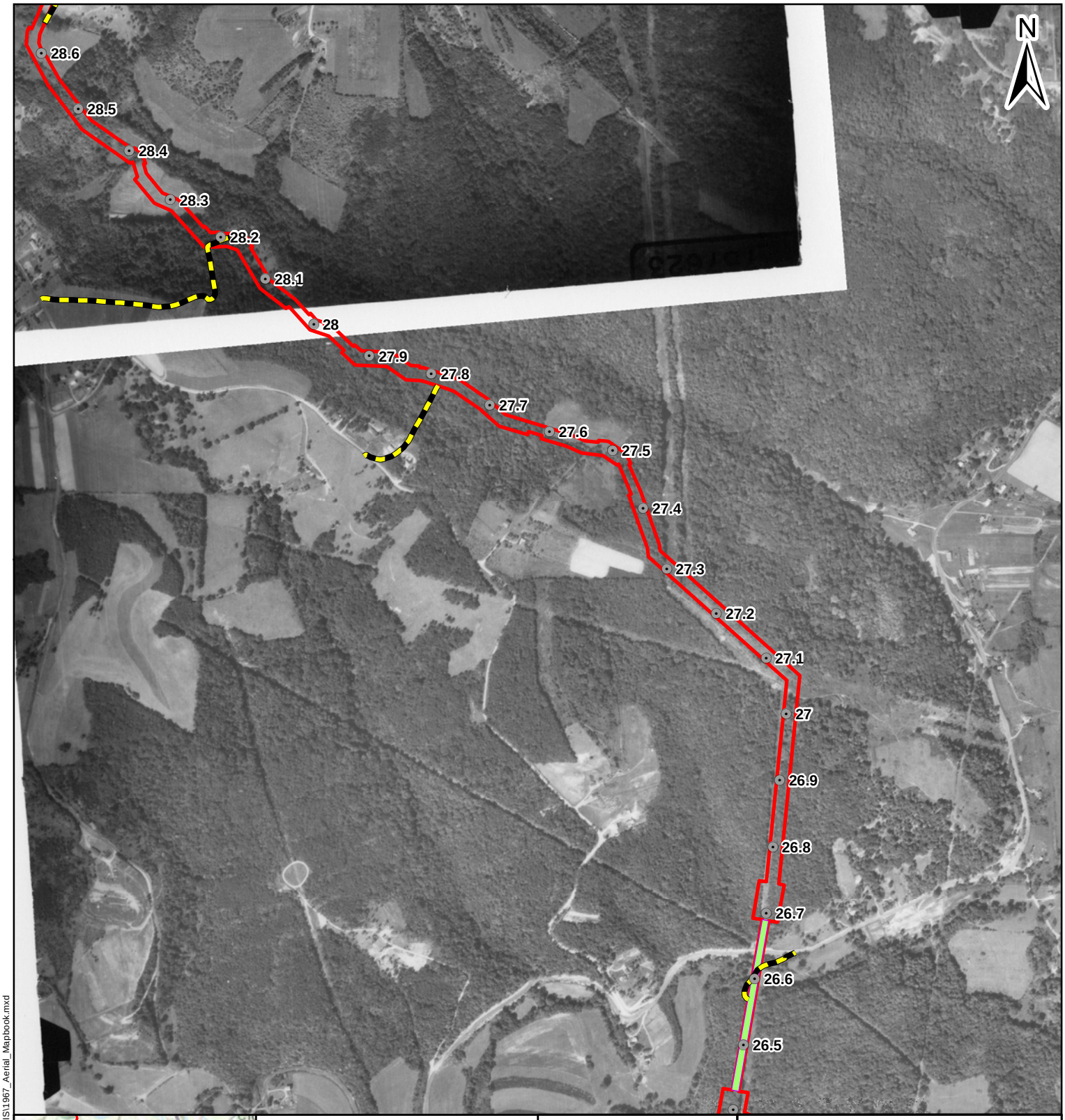
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

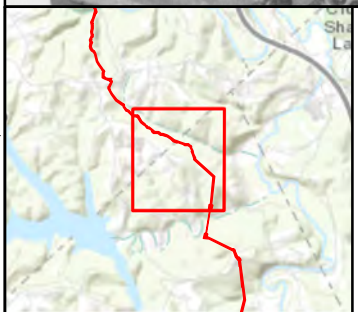
References:
USDA 1967 Roll #2hh, Photograph #124. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.124

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

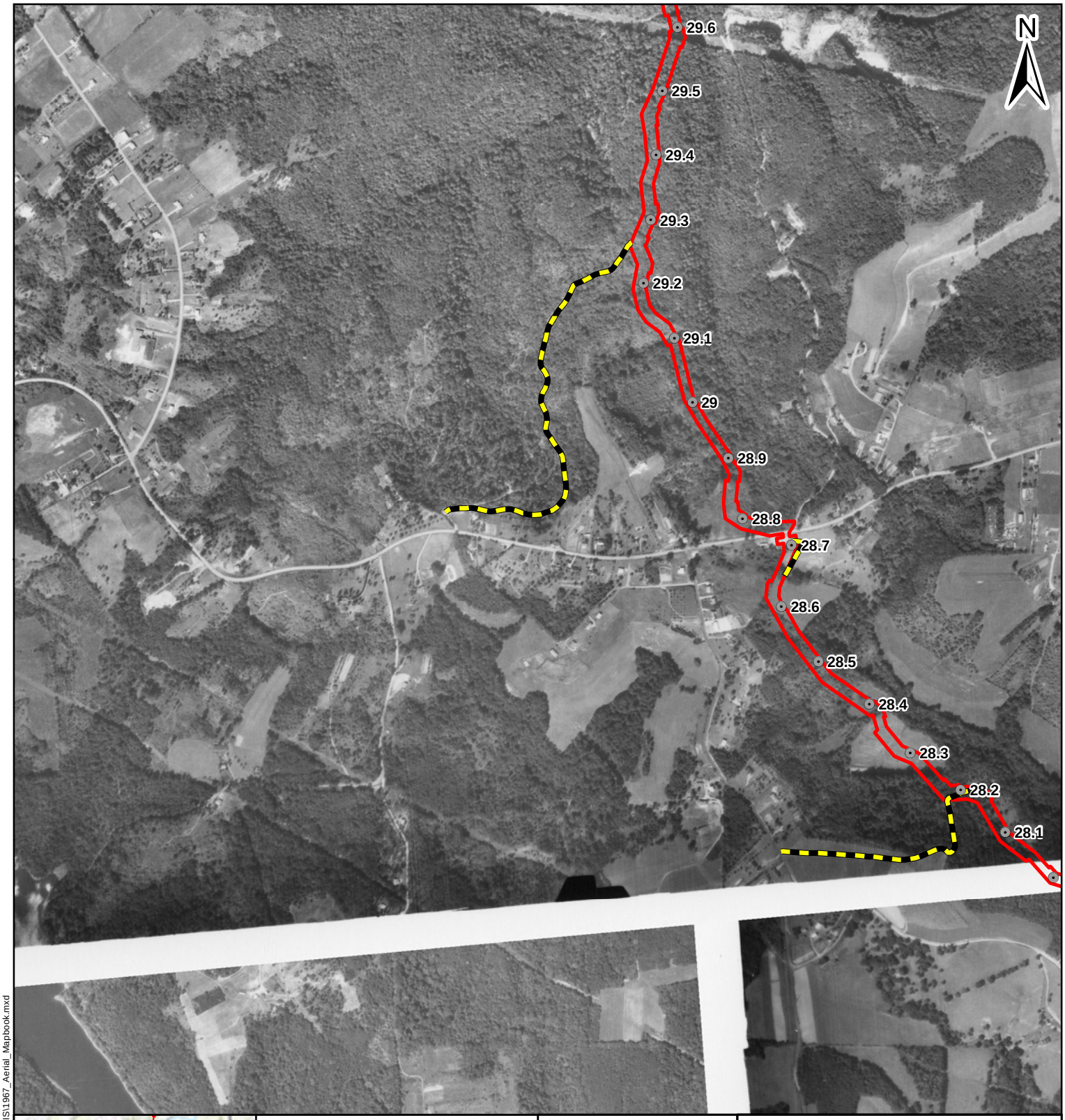
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

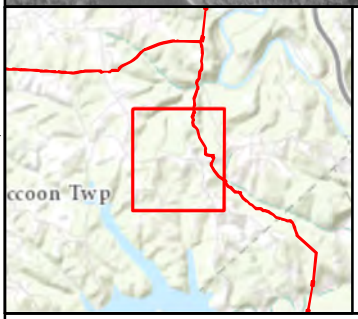
References:
USDA 1967 Roll #2hh, Photograph #124. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.125

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

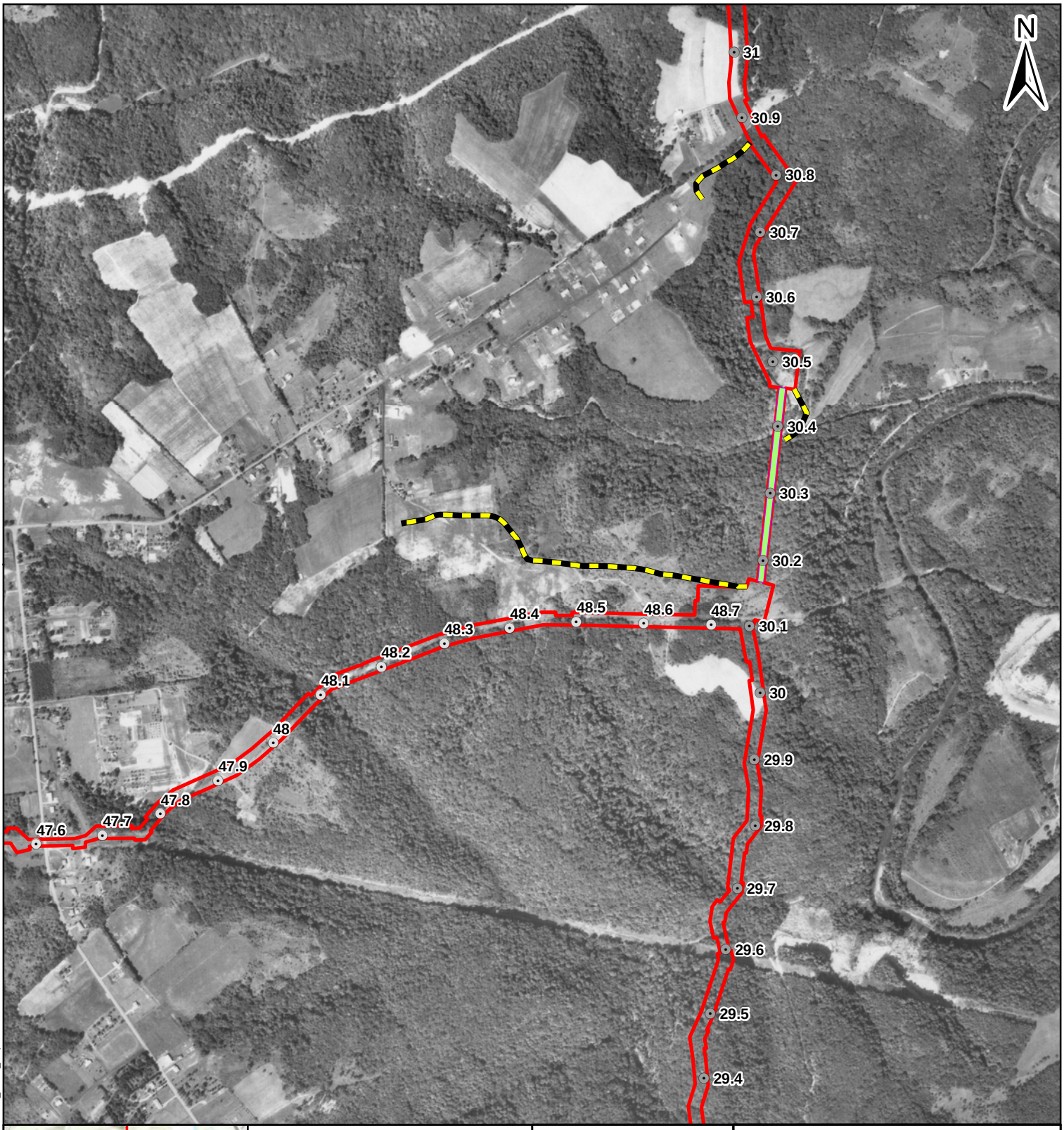
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

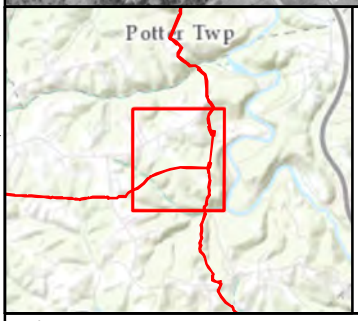
References:
USDA 1967 Roll #2hh, Photograph #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.126

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

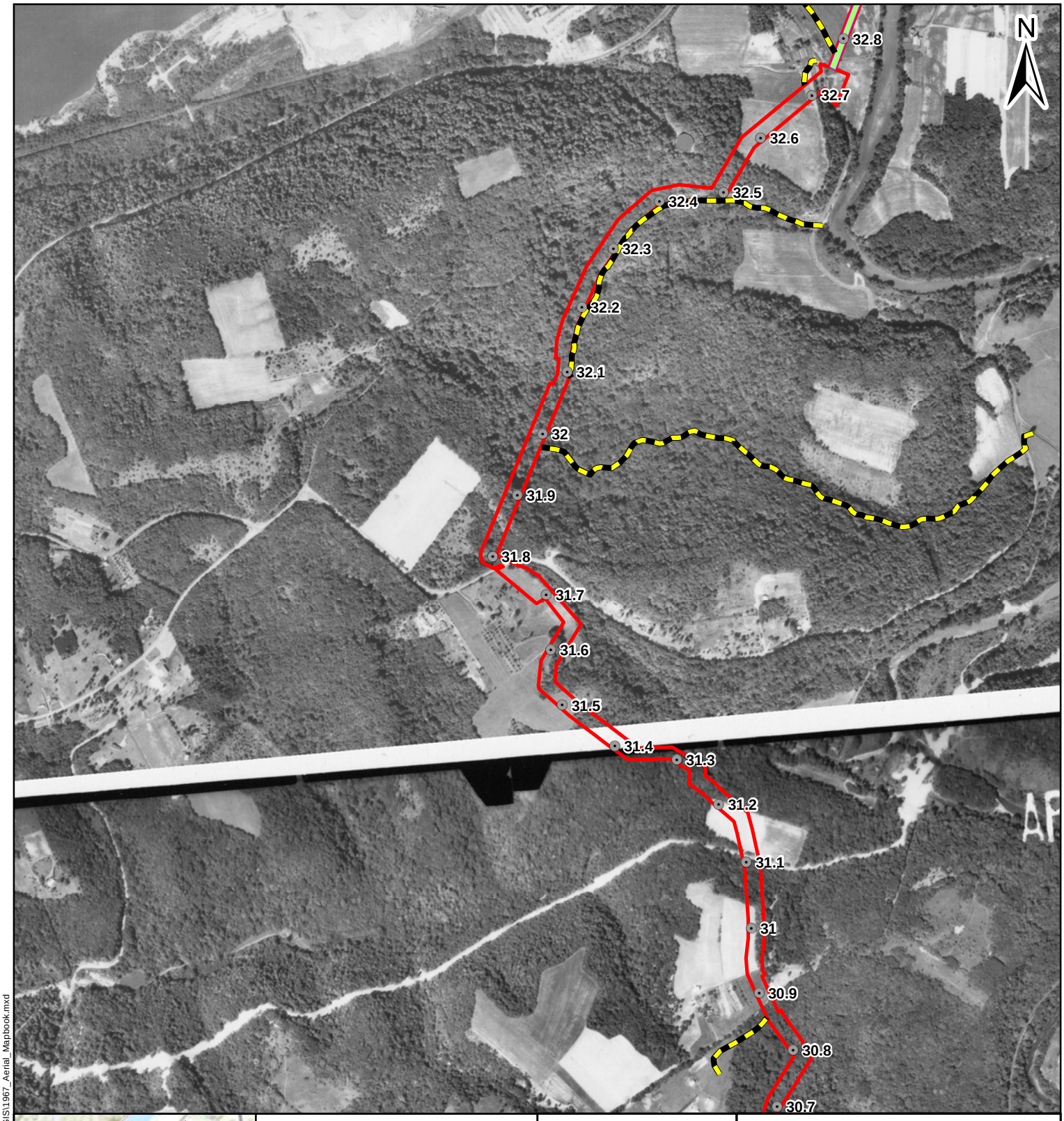
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

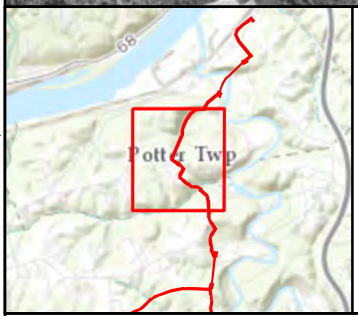
References:
USDA 1967 Roll #2hh, Photograph #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.127

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

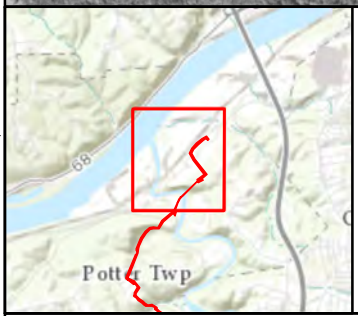
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1967 Roll #2hh, Photograph #192, #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd



Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.128

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

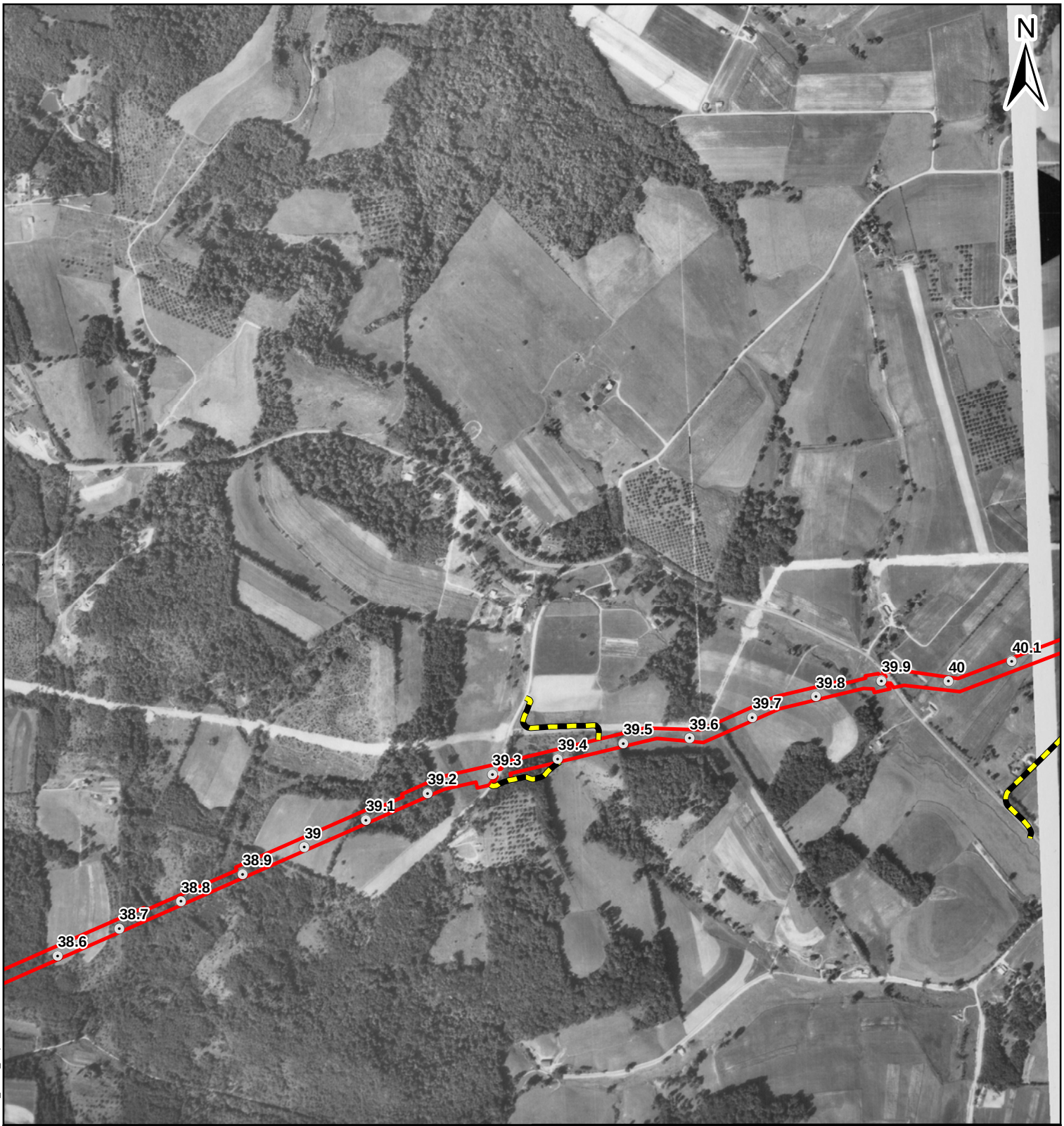
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

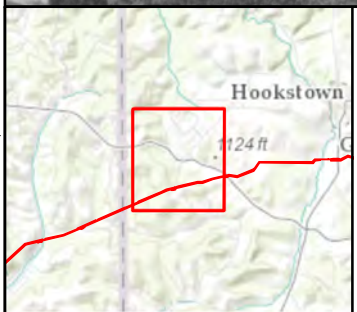
References:
USDA 1967 Roll #2hh, Photograph #192. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.129

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

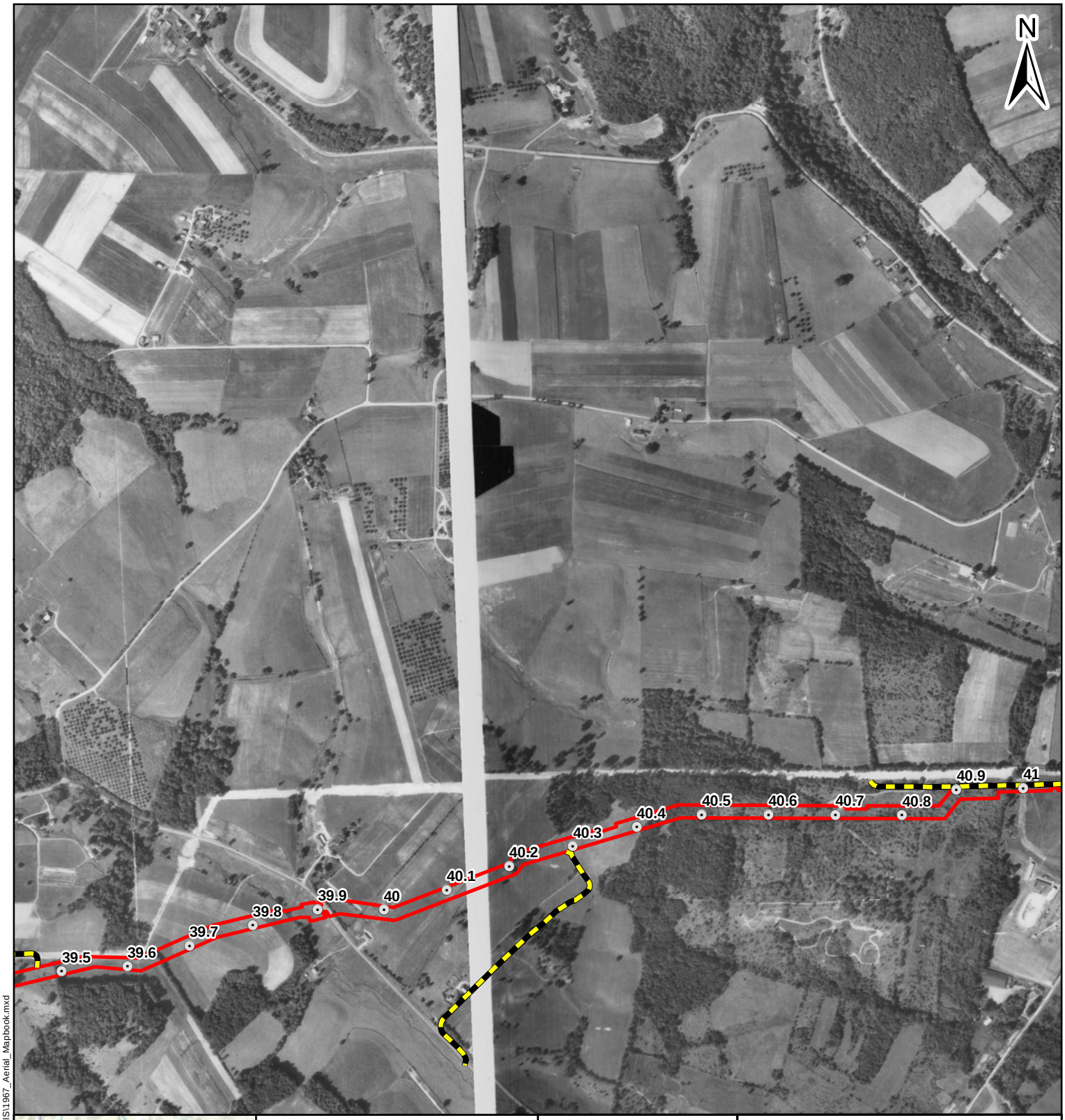
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

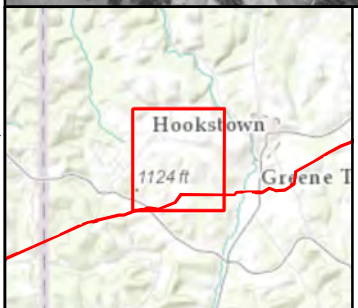
References:
USDA 1967 Roll #3hh, Photograph #127. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.130

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

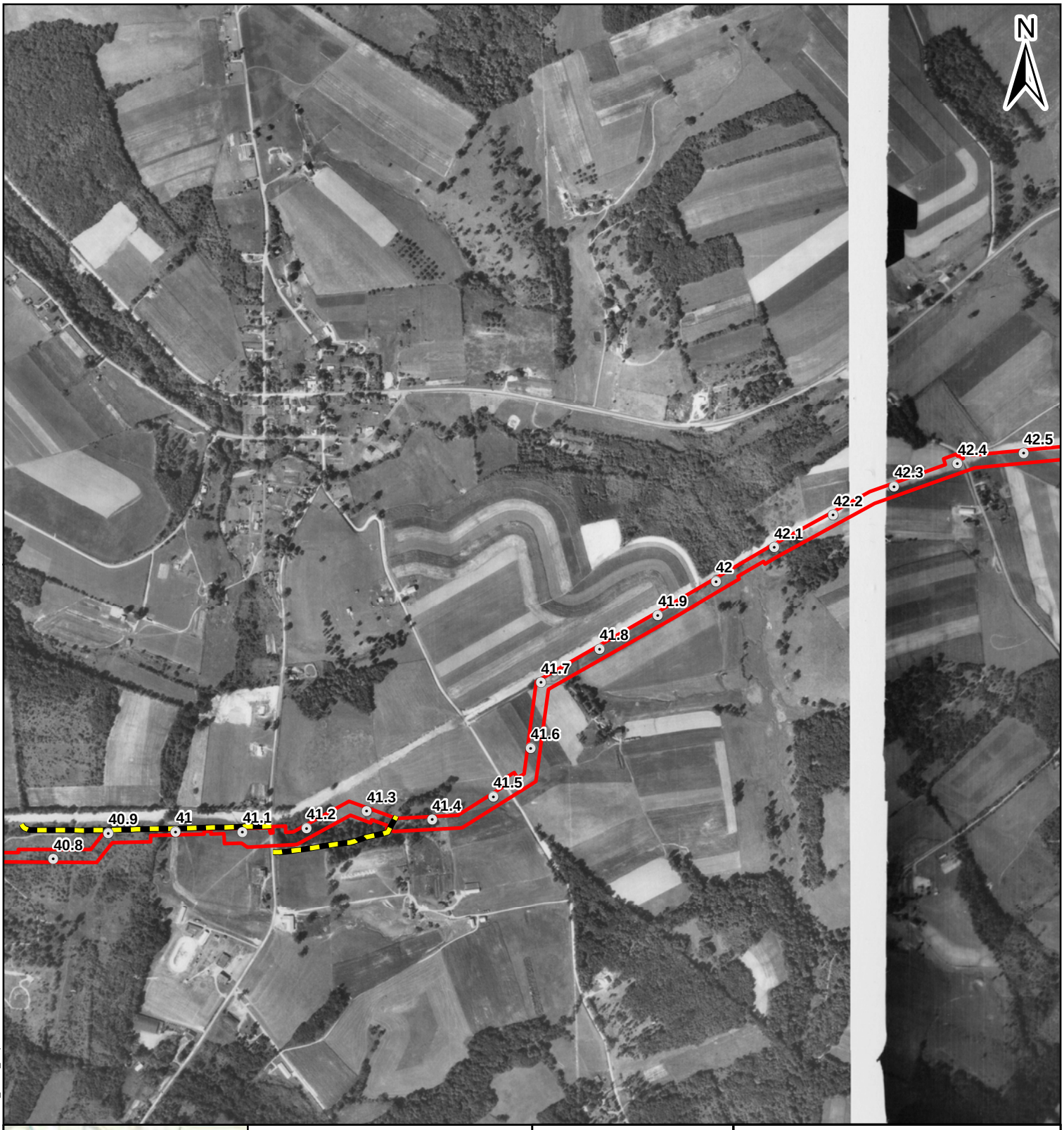
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

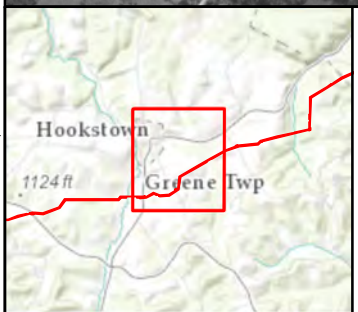
References:
USDA 1967 Roll #3hh, Photograph #36, #127. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.131

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

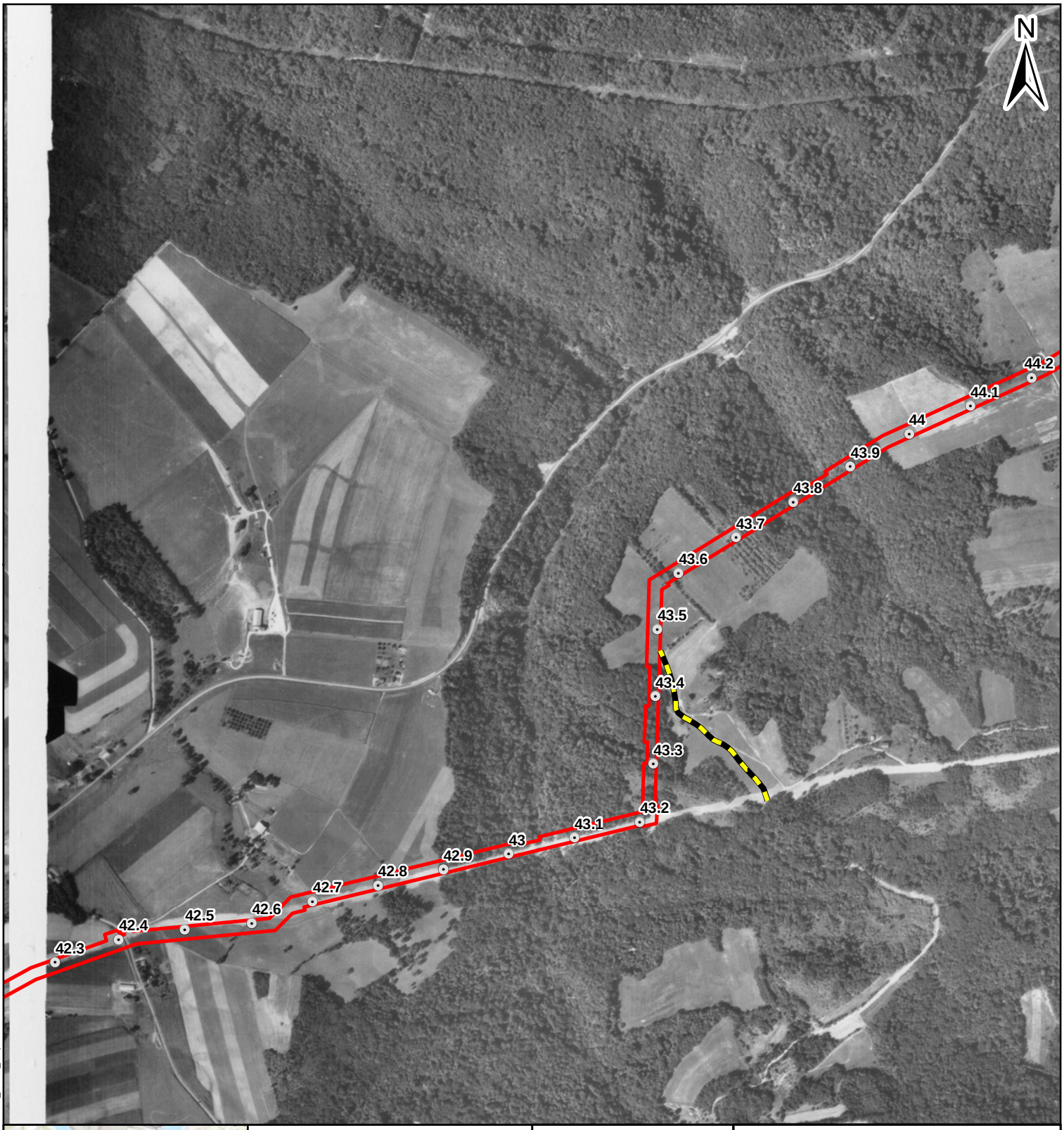
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

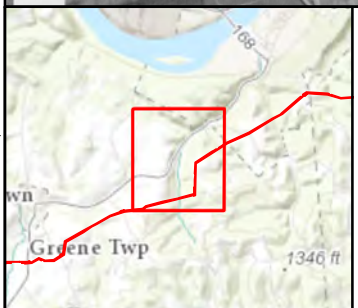
References:
USDA 1967 Roll #3hh, Photograph #36. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.132

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

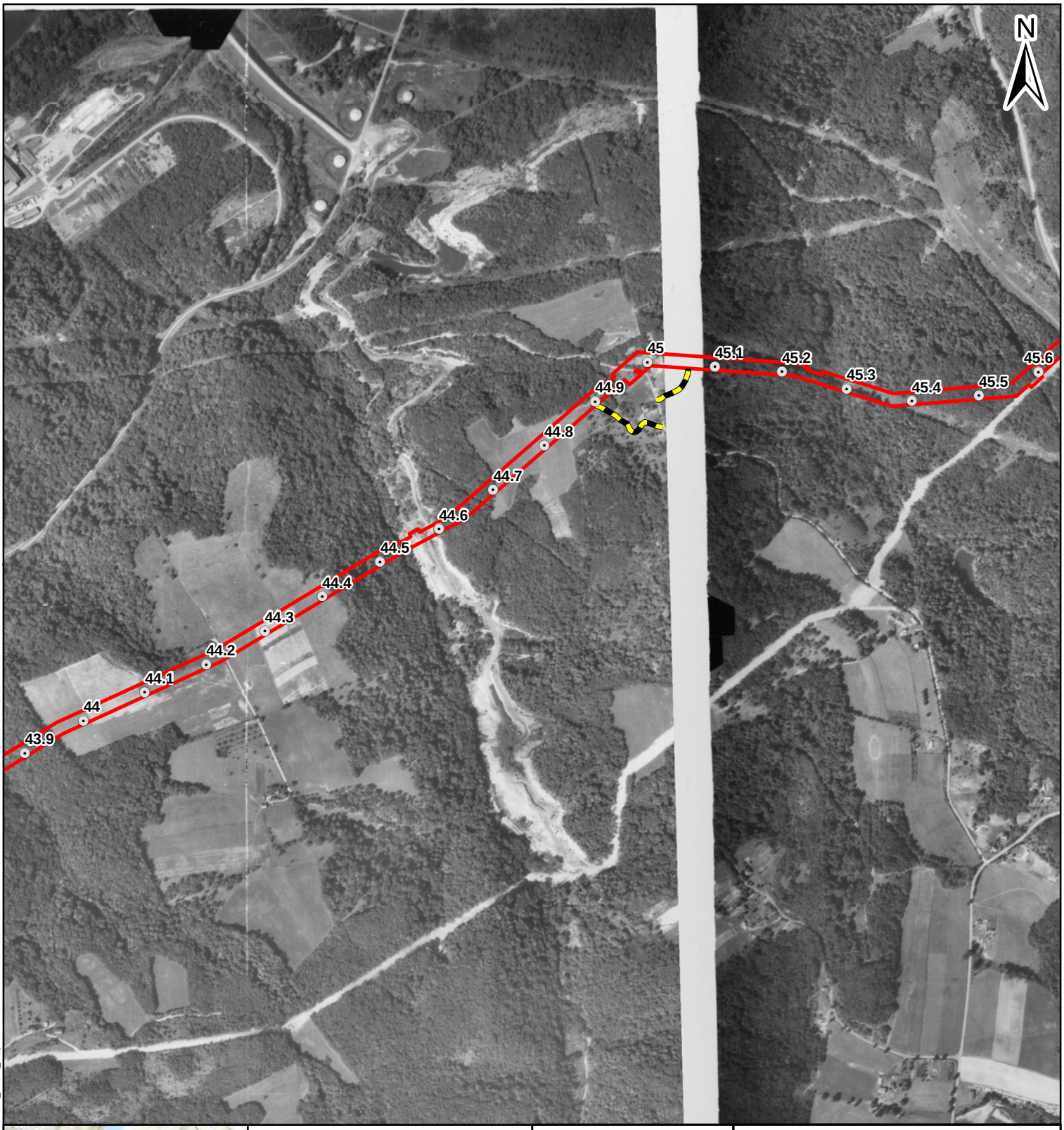
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

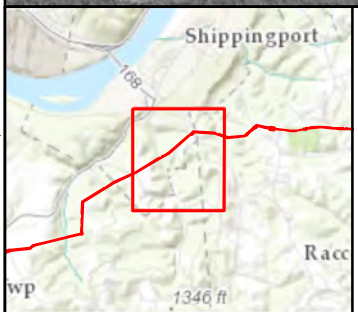
References:
USDA 1967 Roll #3hh, Photograph #58. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.133

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

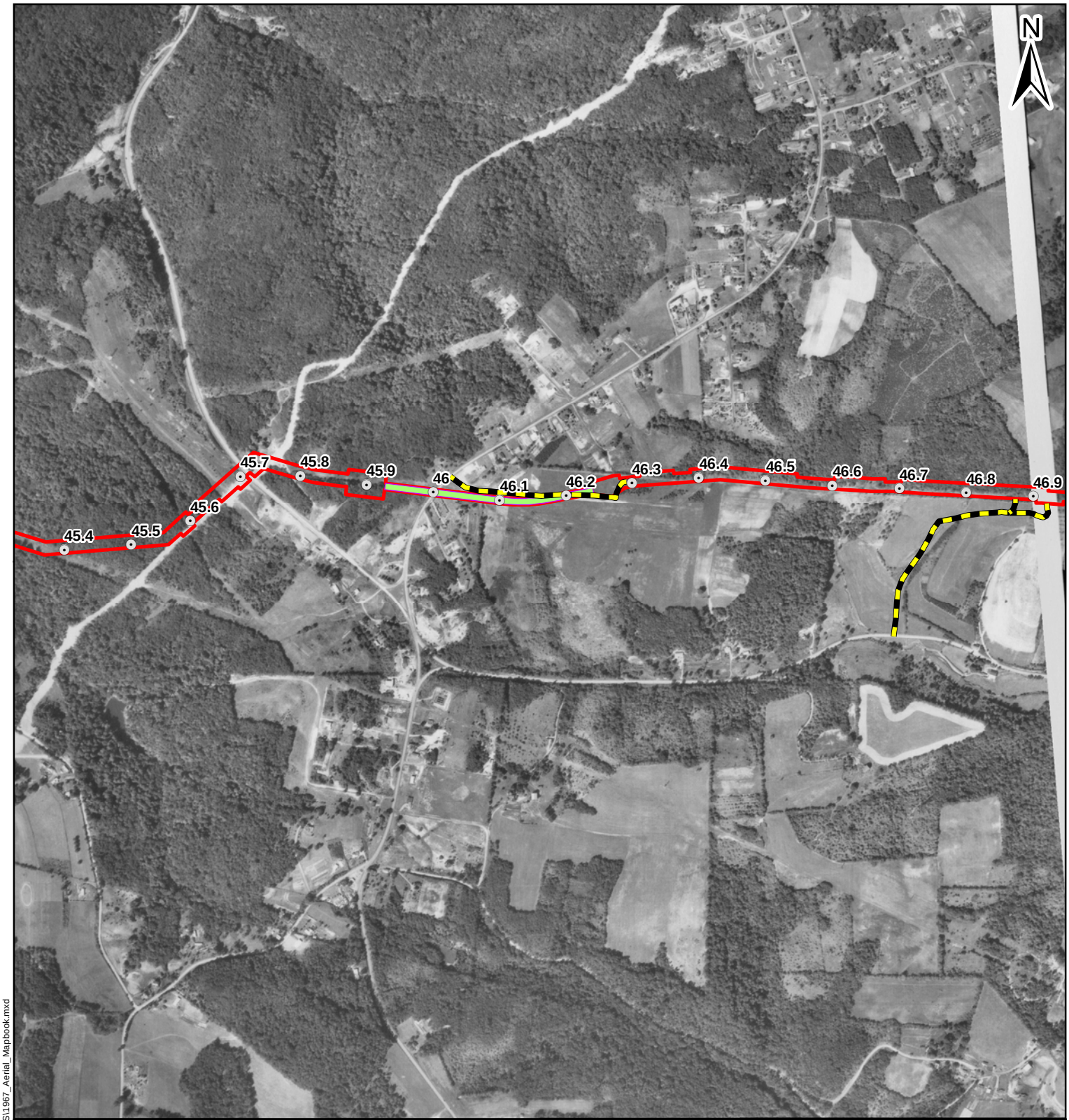
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

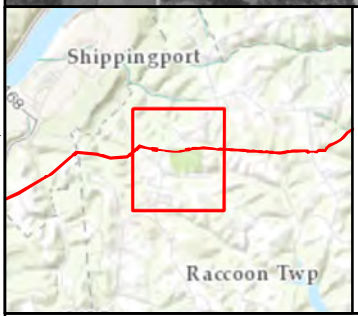
References:
USDA 1967 Roll #3hh, Photograph #58. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.134

1967 Aerial Photographs

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

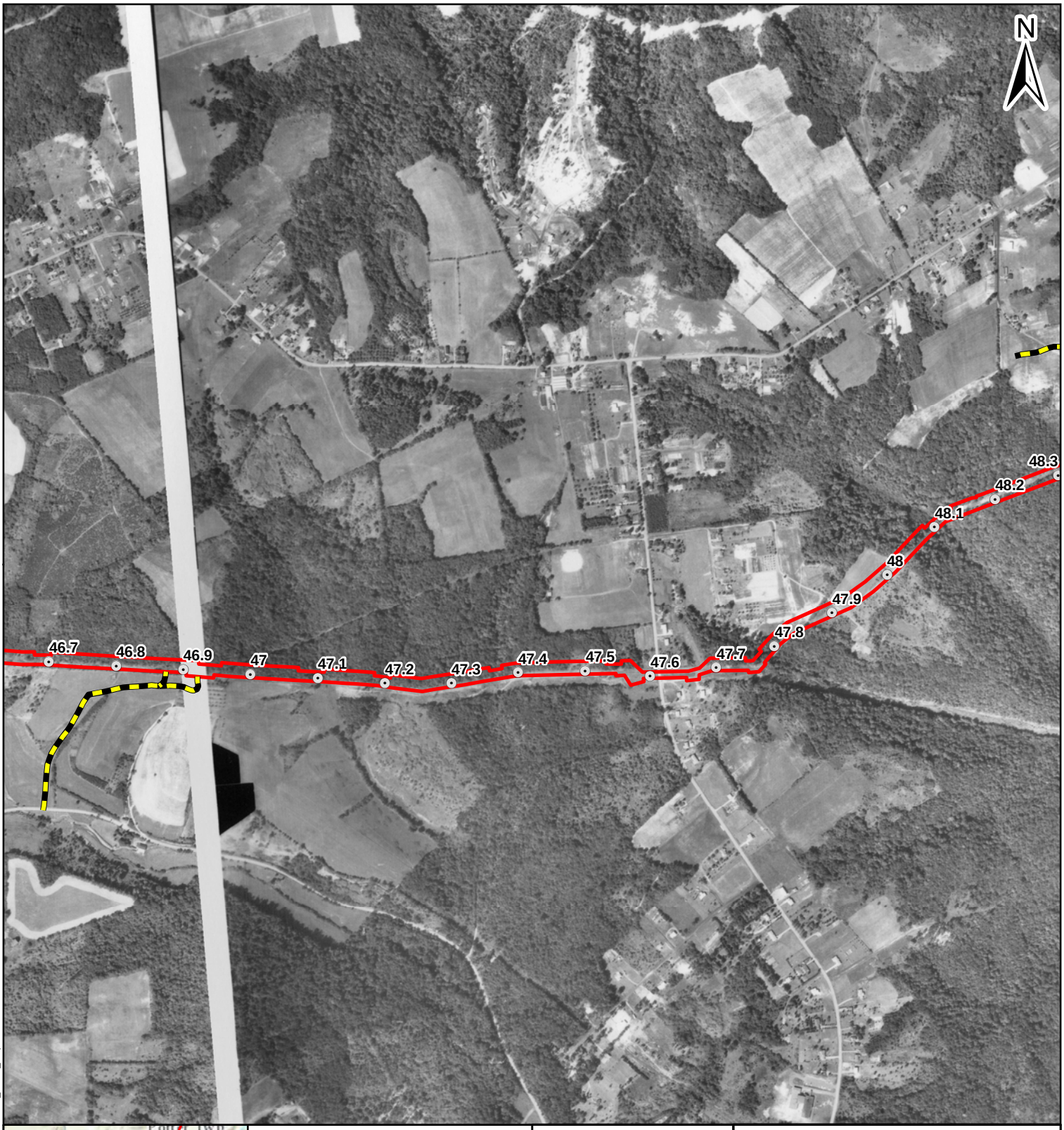
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

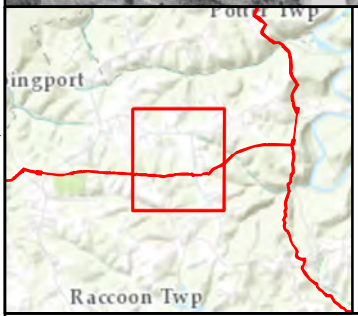
References:
USDA 1967 Roll #2hh, Photograph #216. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd





Legend

Project Features

- Houston-Monaca Milepost
- Scio-Monaca Milepost
- Proposed Access Road
- Proposed HDD Location
- Proposed Limits of Disturbance

Miles
0 0.5 1 2

Figure 4.135

1967 Aerial Photographs

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

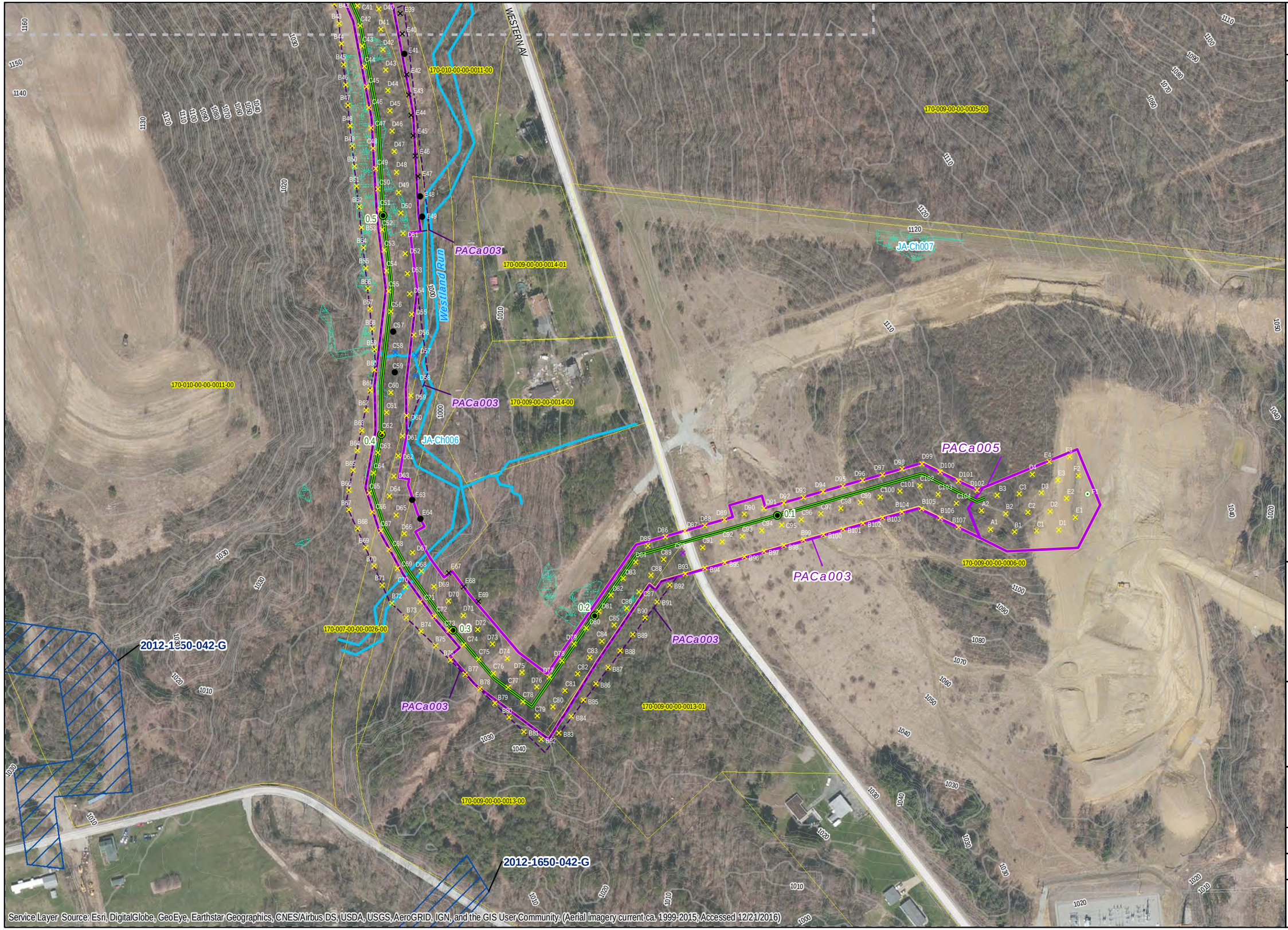
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

References:
USDA 1967 Roll #2hh, Photograph #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/6/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\1967_Aerial_Mapbook.mxd



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.1

Project Location:

County: Washington
Municipality: Chartiers
USGS Quad: Midway

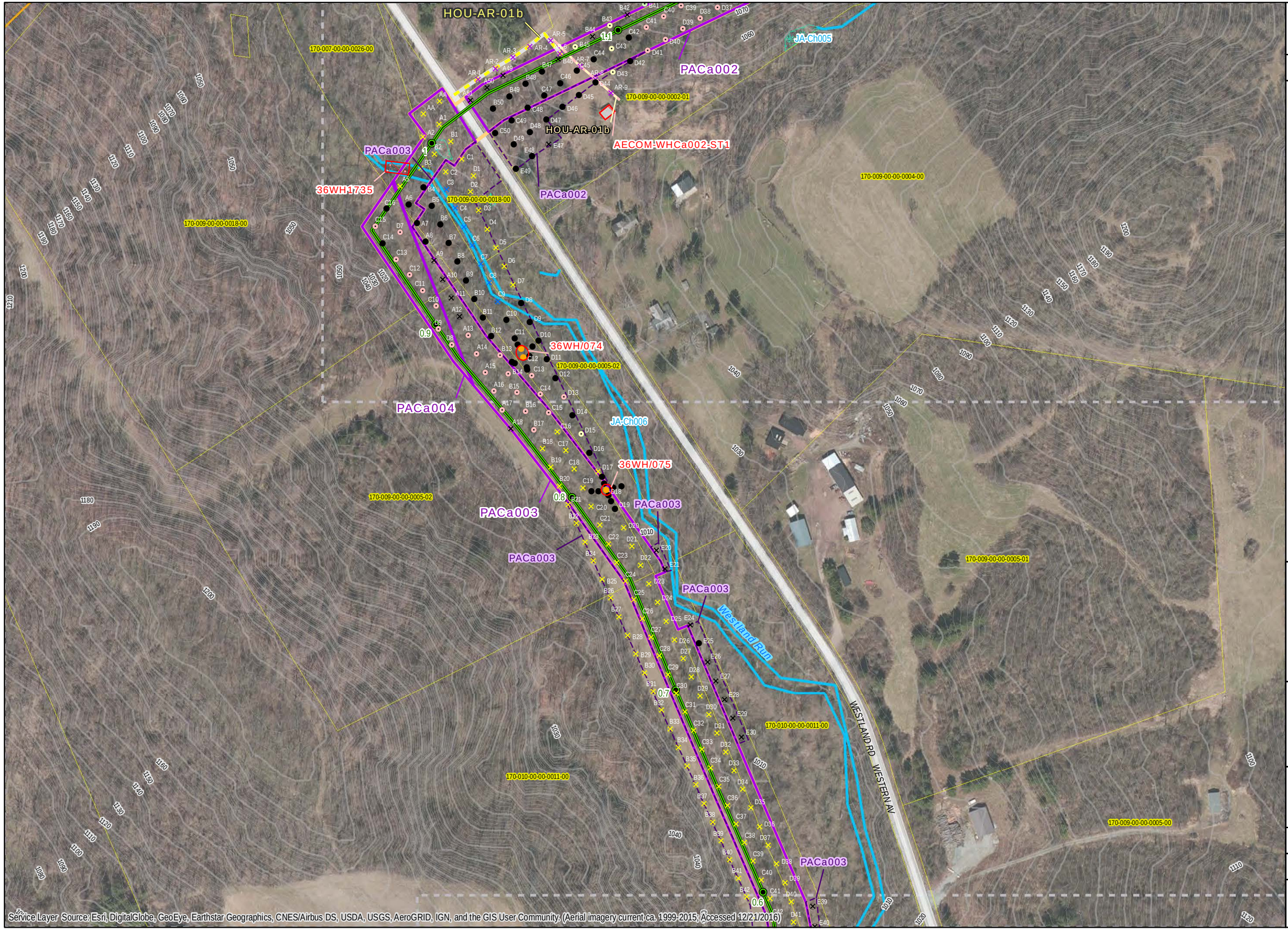
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.2

Project Location:

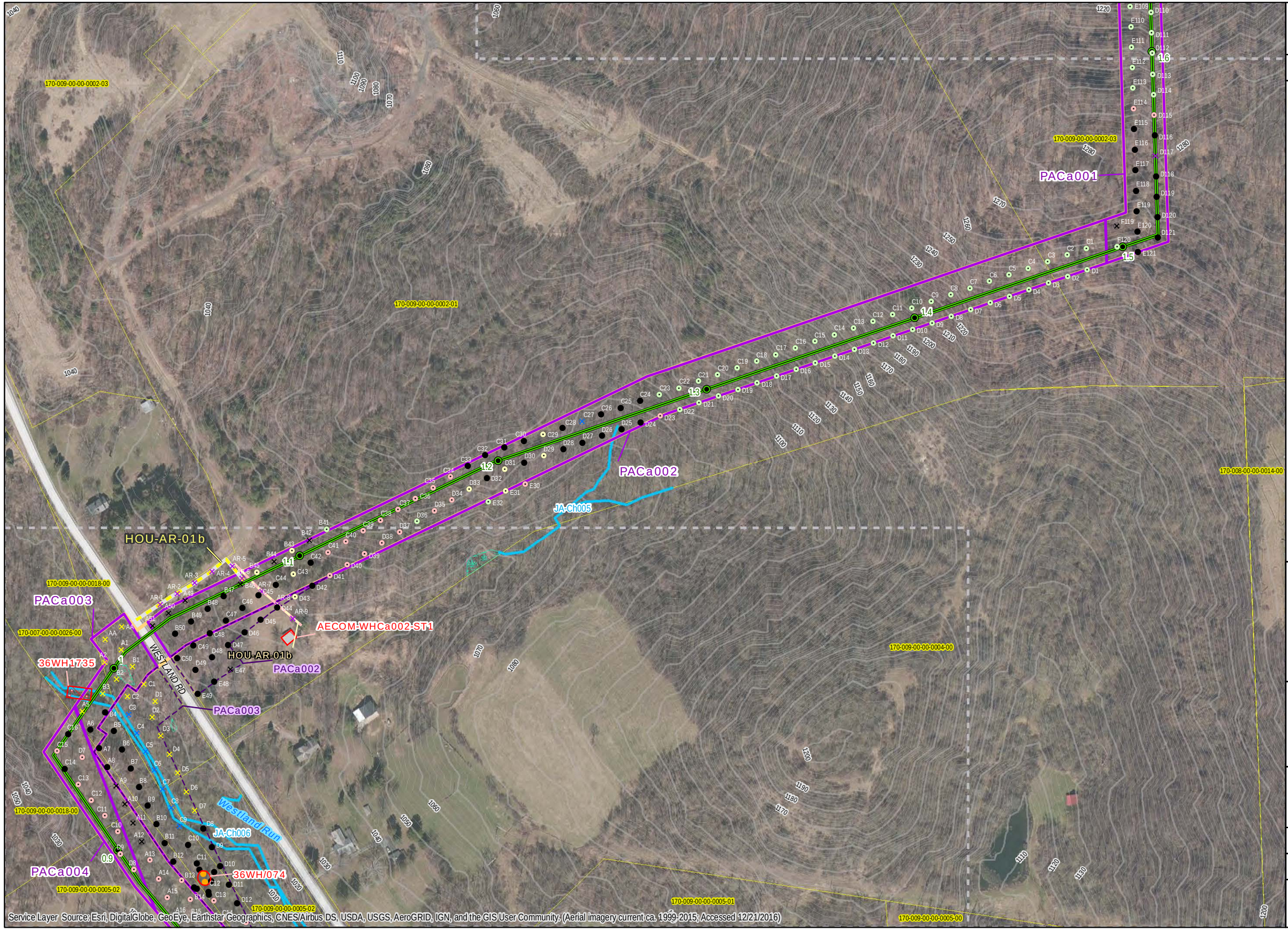
County: Washington
Municipality: Chartiers/Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.3

Project Location:

County: Washington
Municipality: Chartiers
USGS Quad: Midway

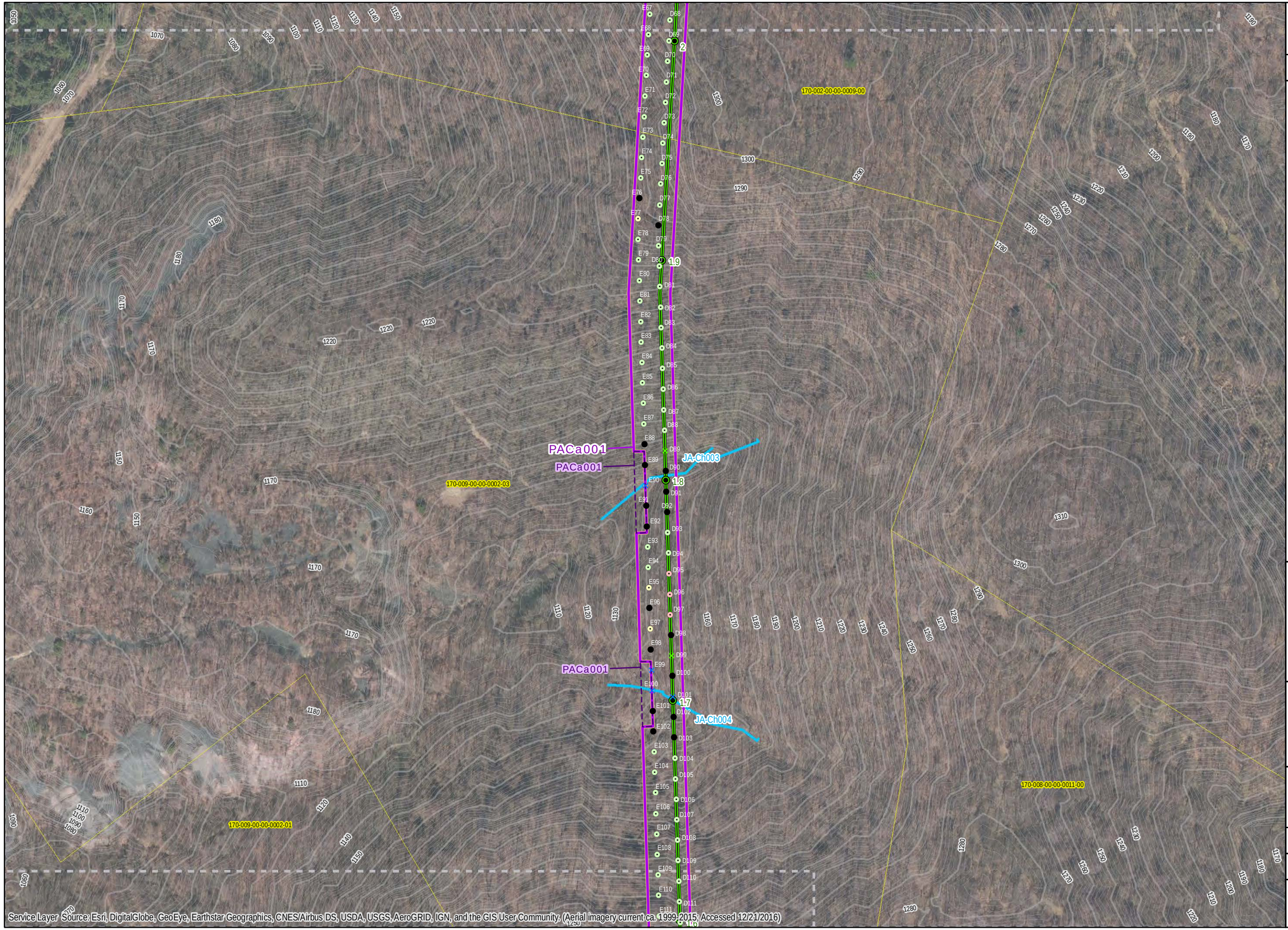
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.4

Project Location:

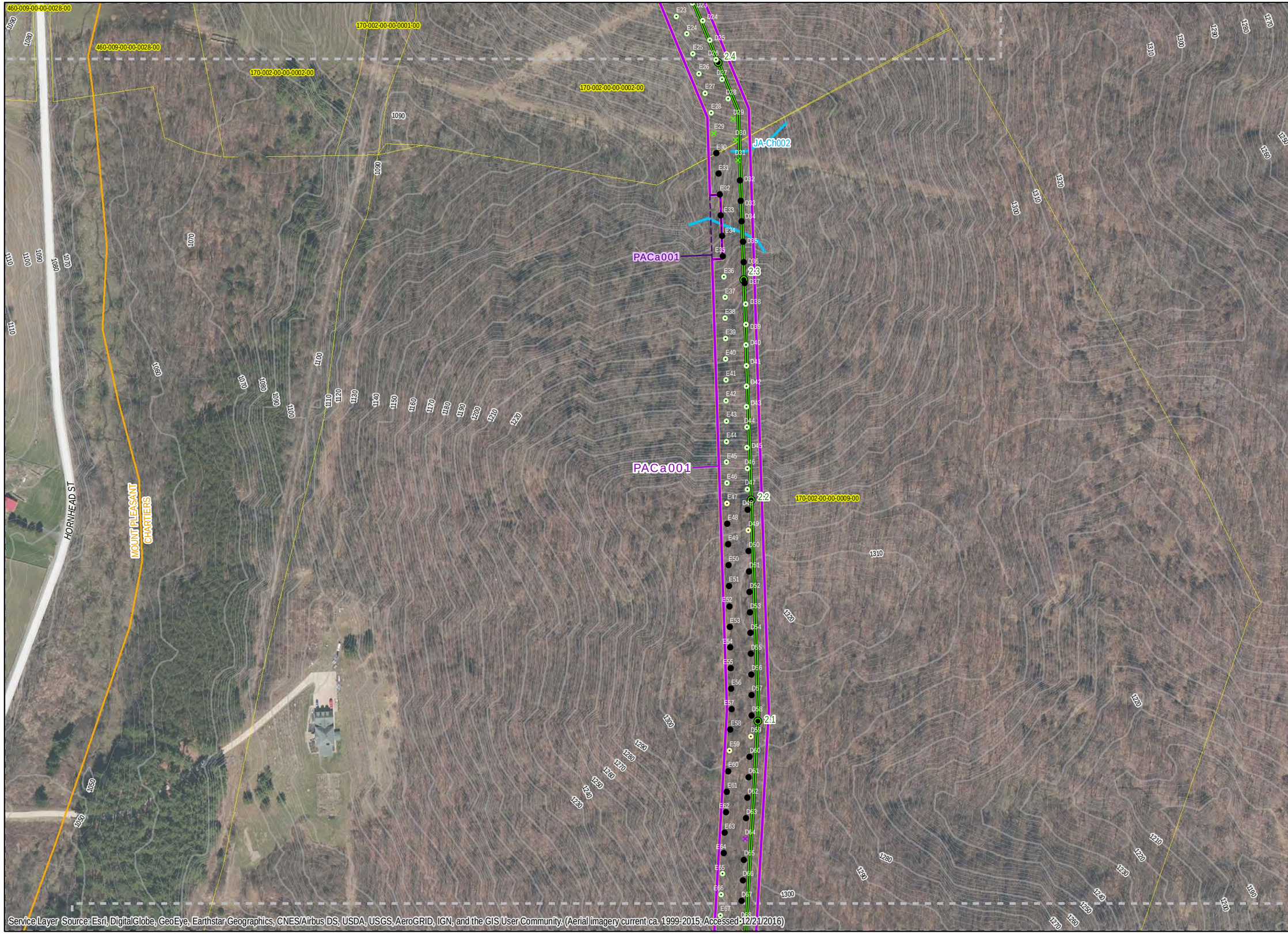
County: Washington
Municipality: Chartiers
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

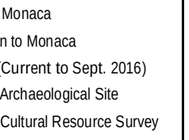
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.5

Project Location:



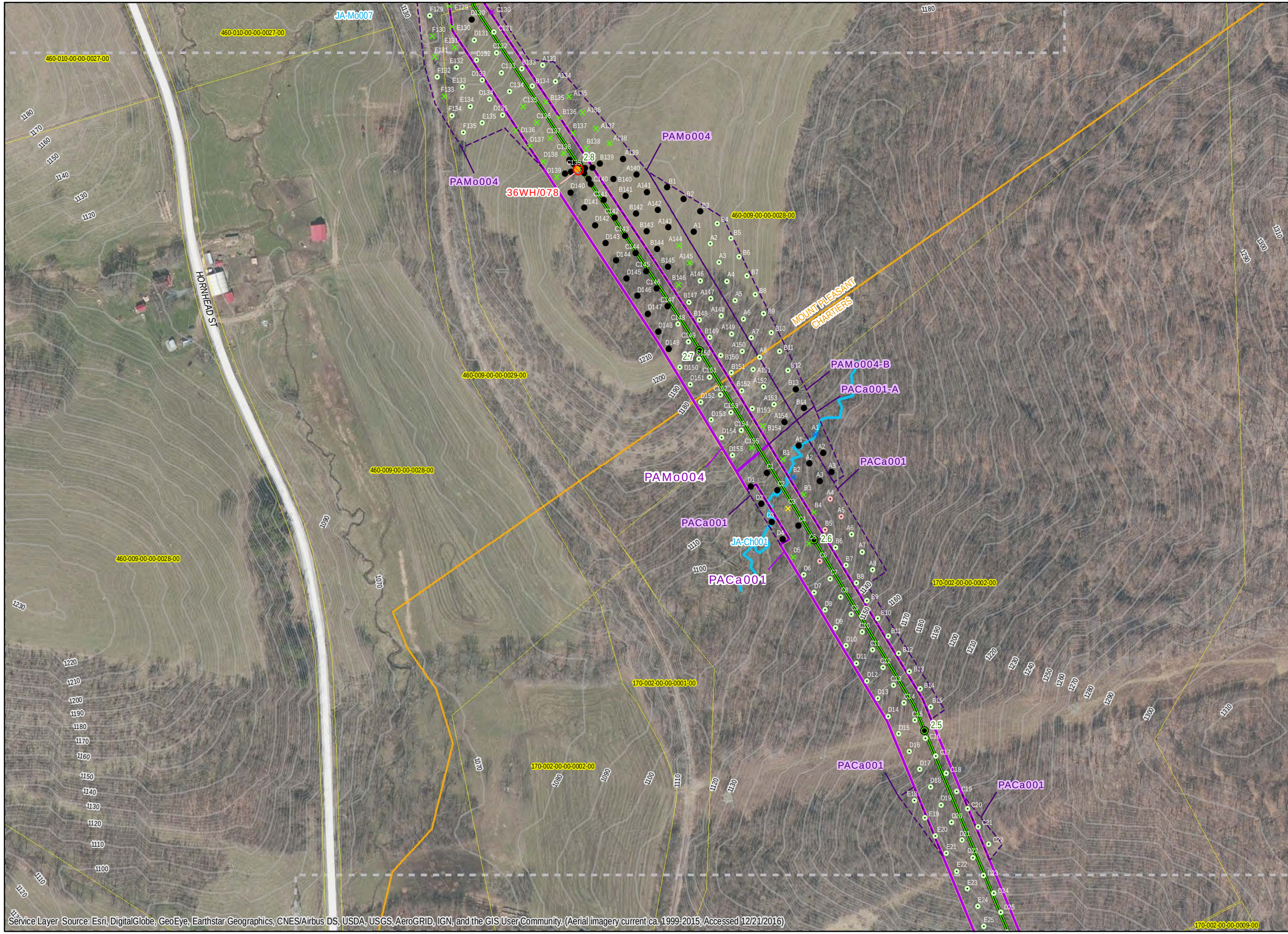
County: Washington
Municipality: Chartiers
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.6

Project Location:

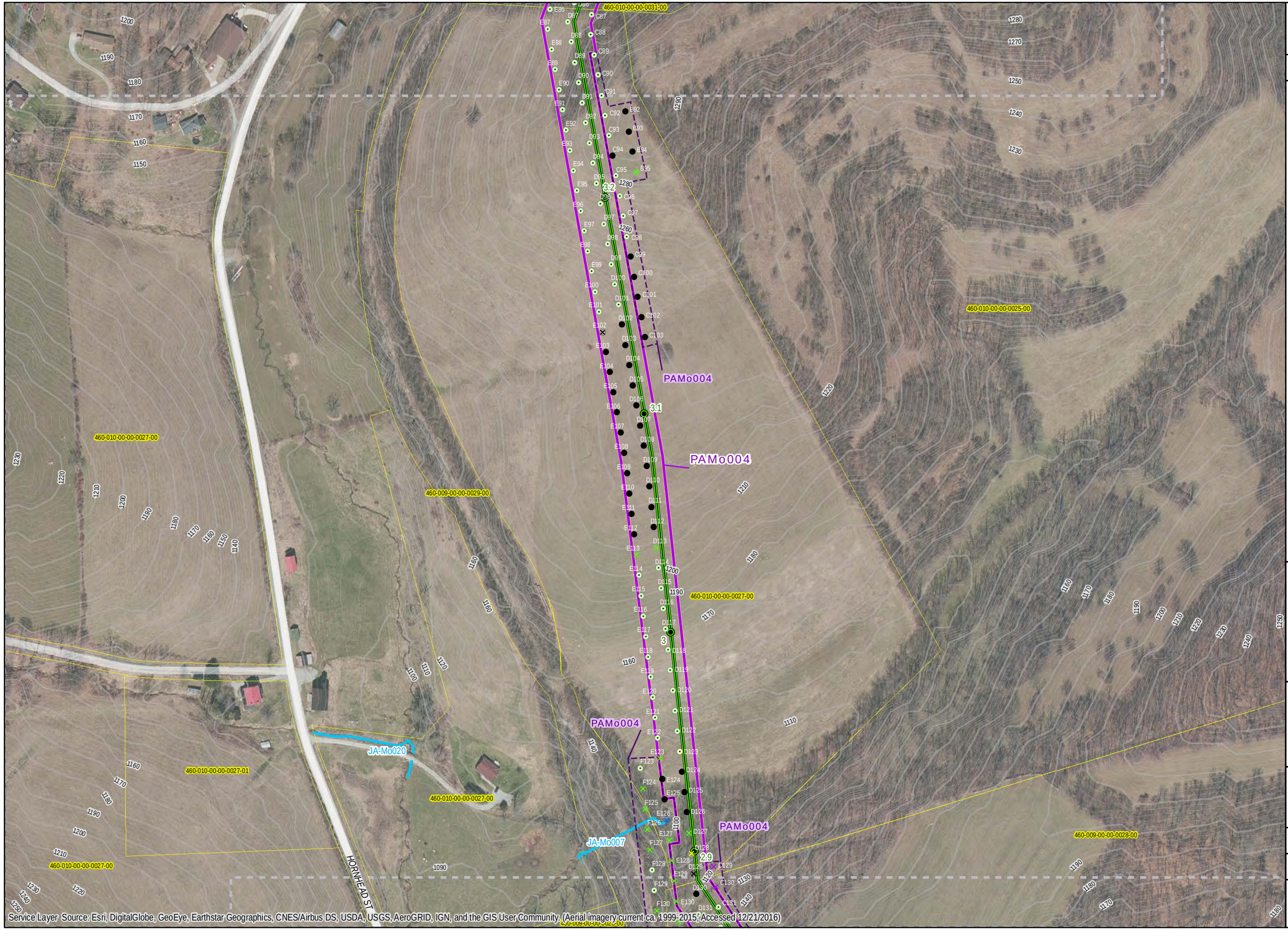
County: Washington
Municipality: Chartiers/Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

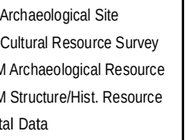
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.7

Project Location:



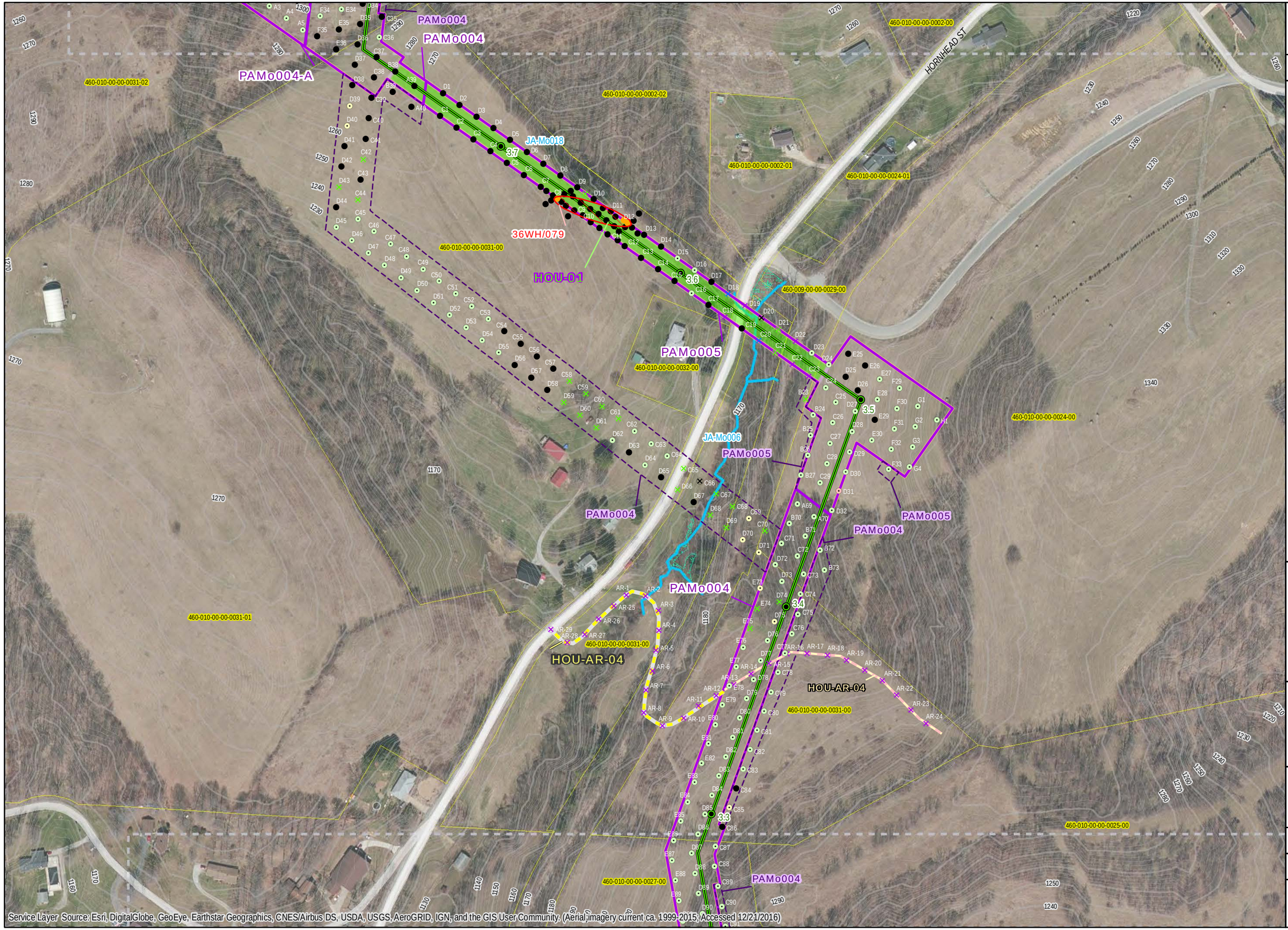
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.8

Project Location:

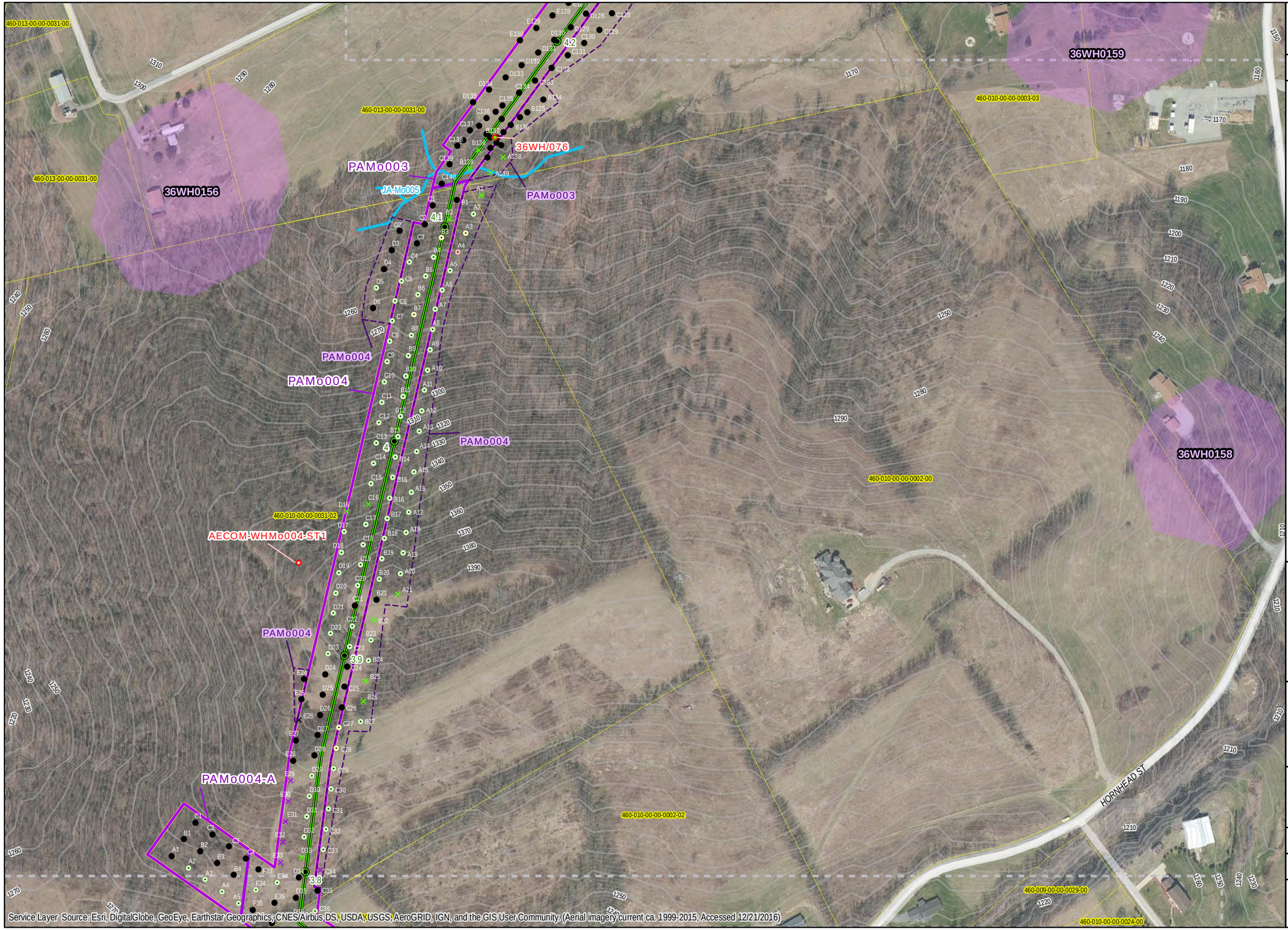
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.9

Project Location:

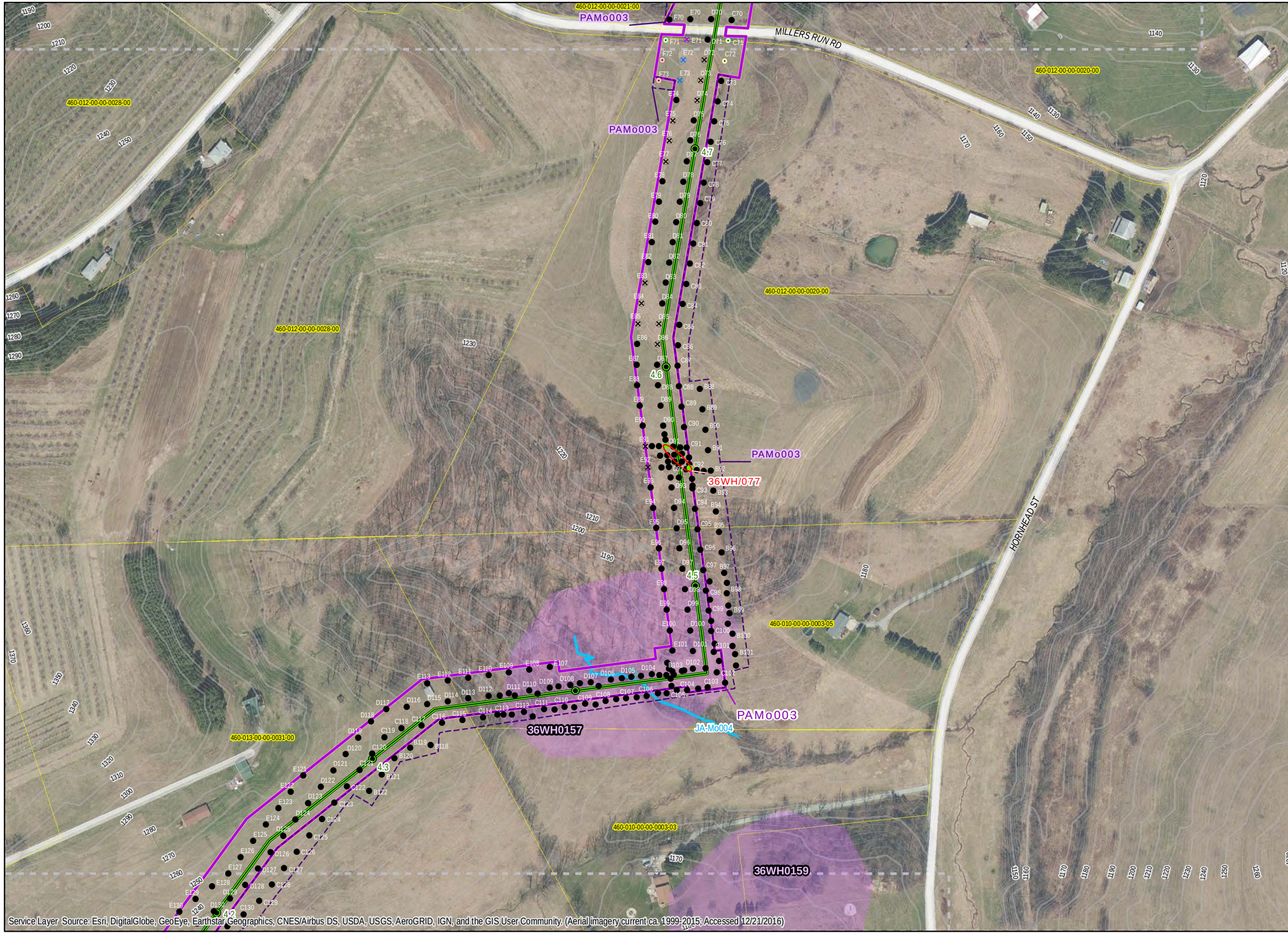
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.10

Project Location:

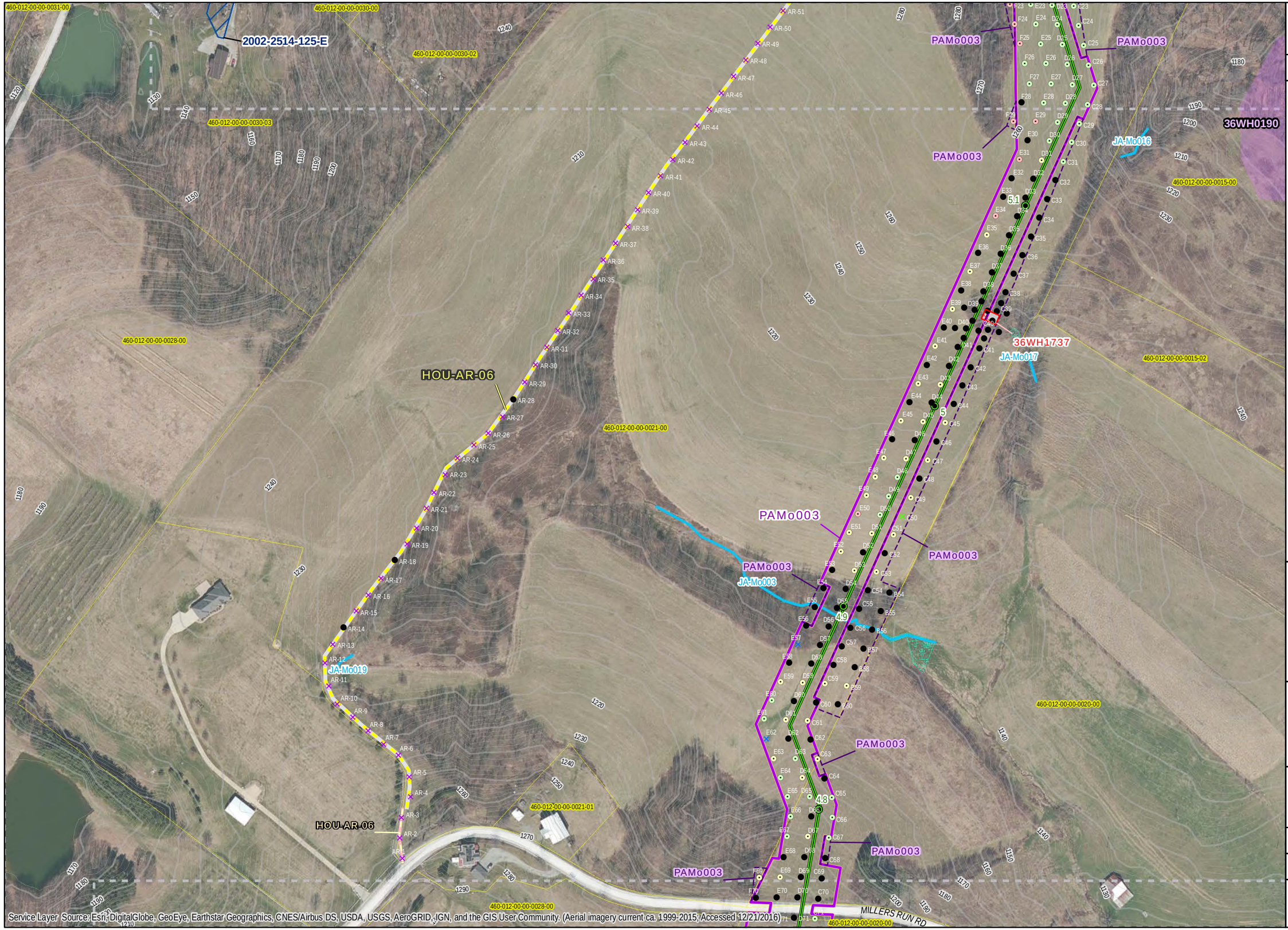
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.11

Project Location:

County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.12

Project Location:

County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

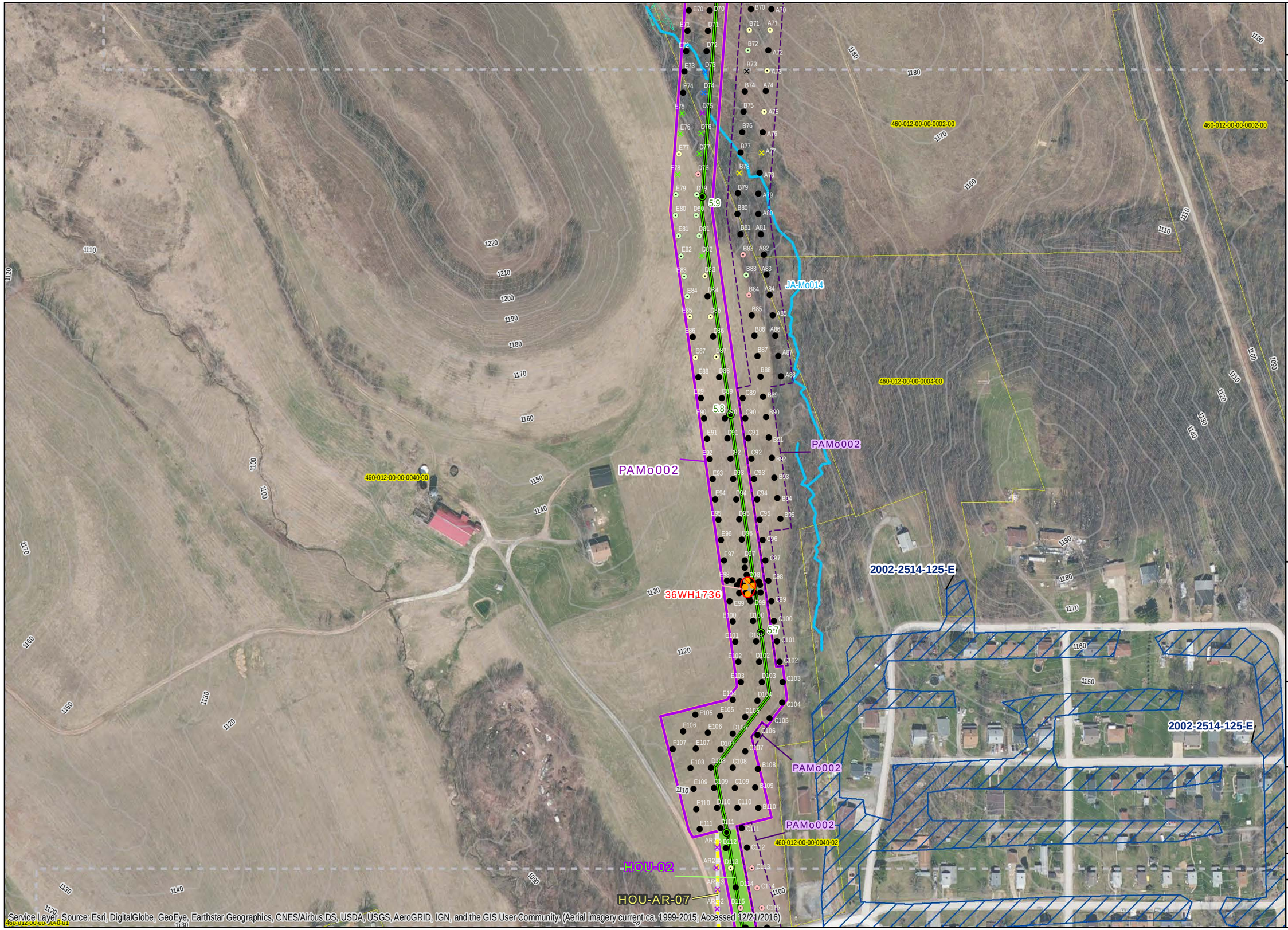
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.13

Project Location:

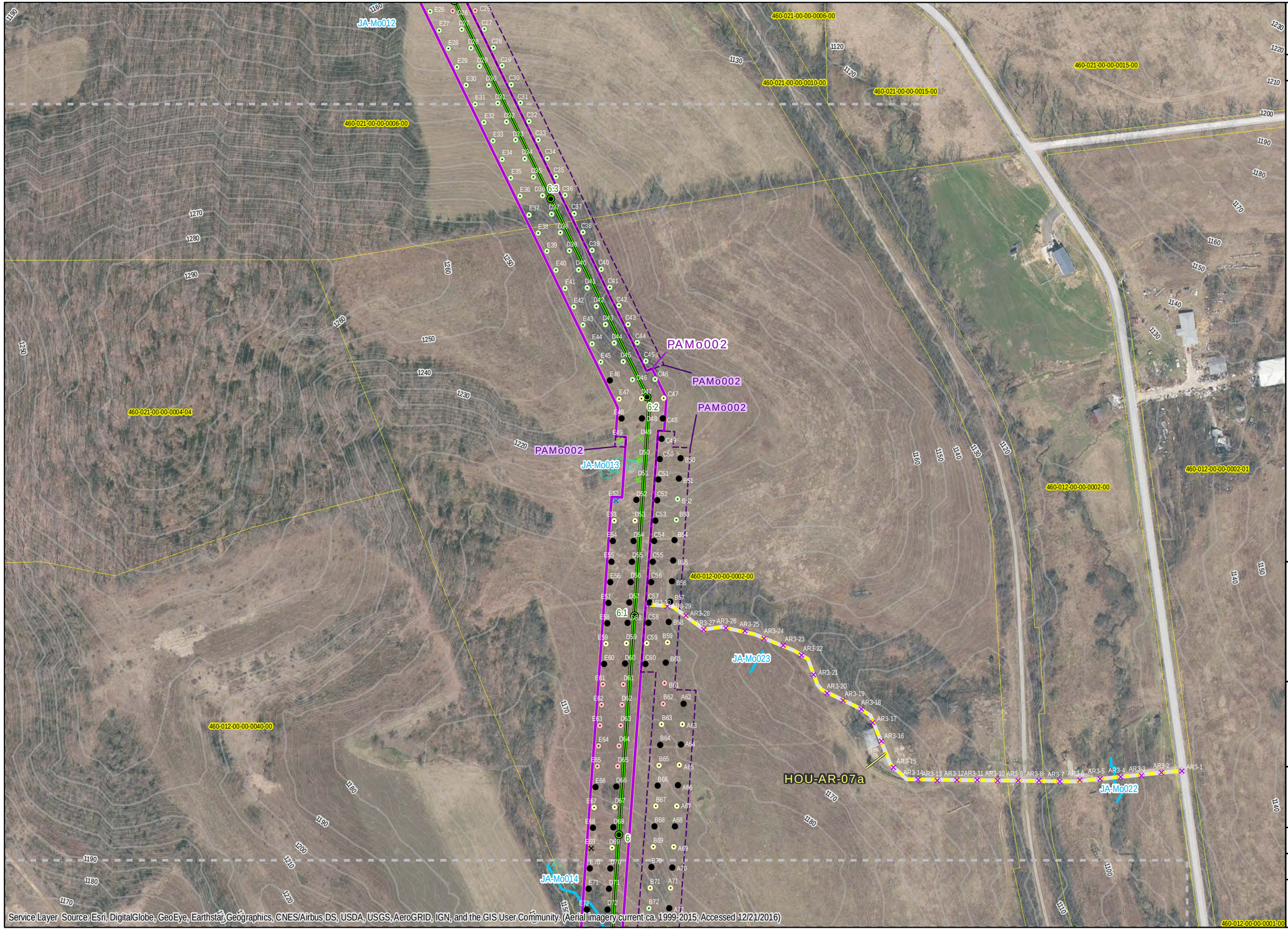
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.14

Project Location:

County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.15

Project Location:

County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.16

Project Location:

County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

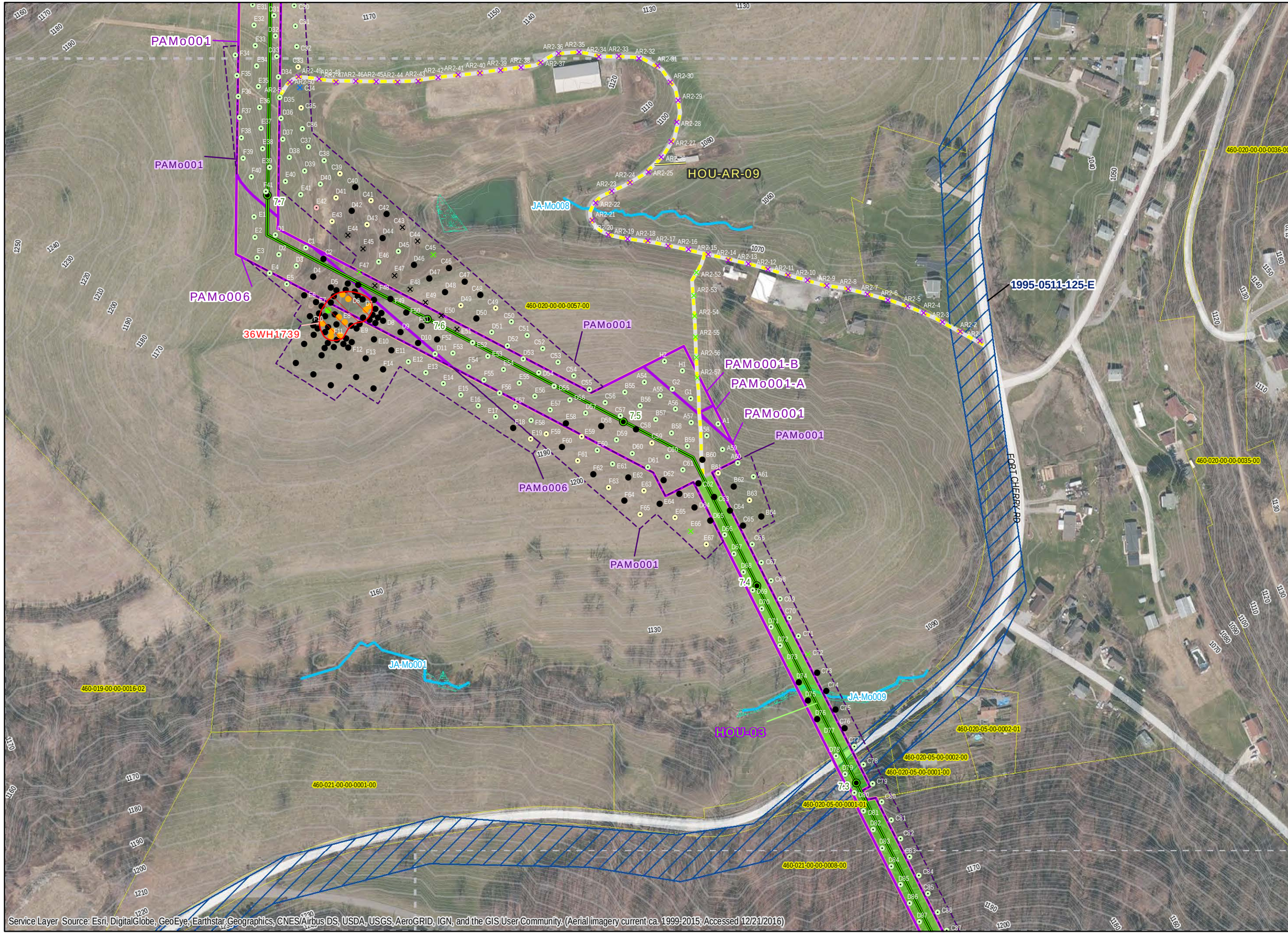
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.17

Project Location:

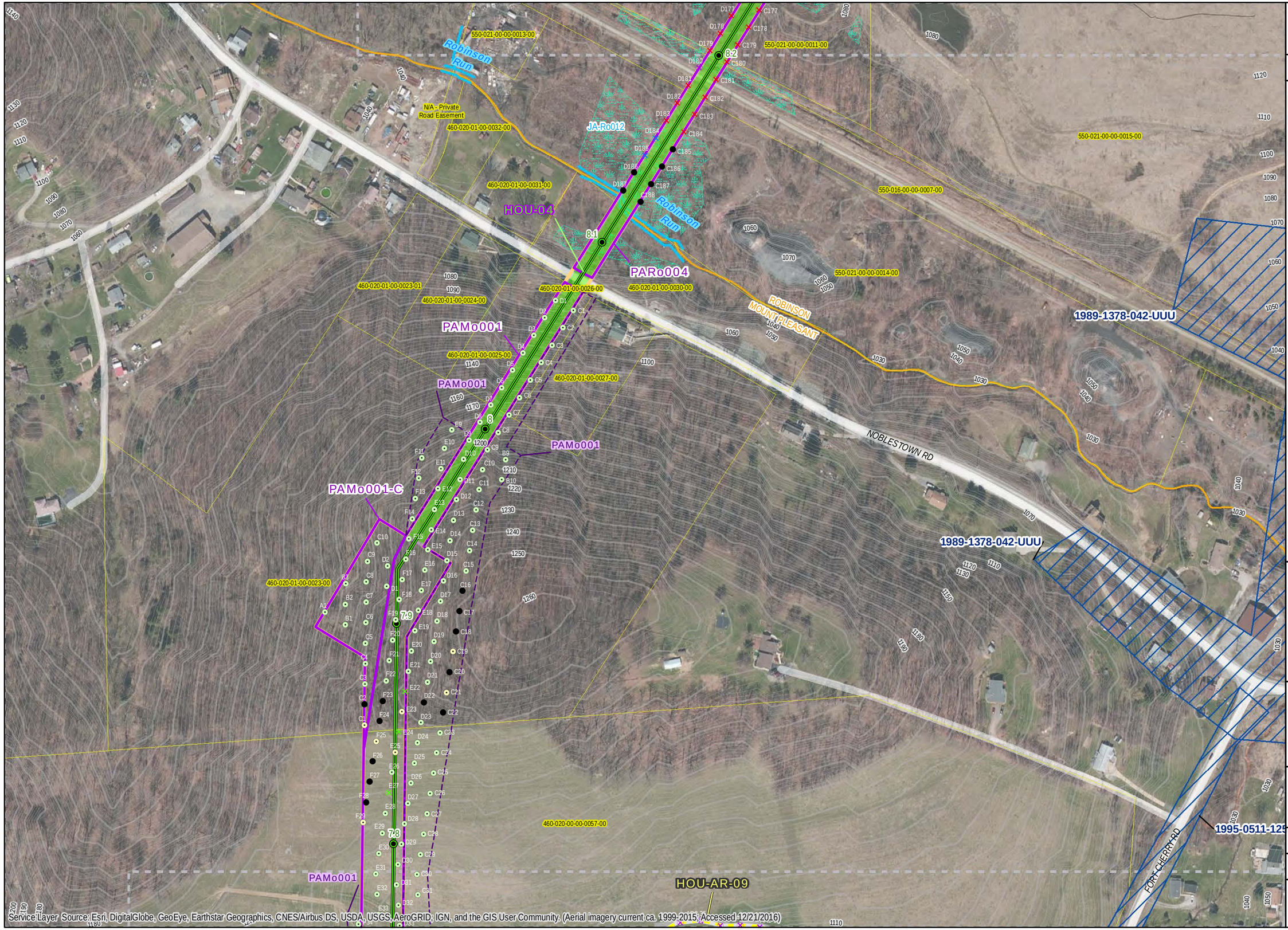
County: Washington
Municipality: Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.18

Project Location:

County: Washington
Municipality: Robinson/Mount Pleasant
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.19

Project Location:

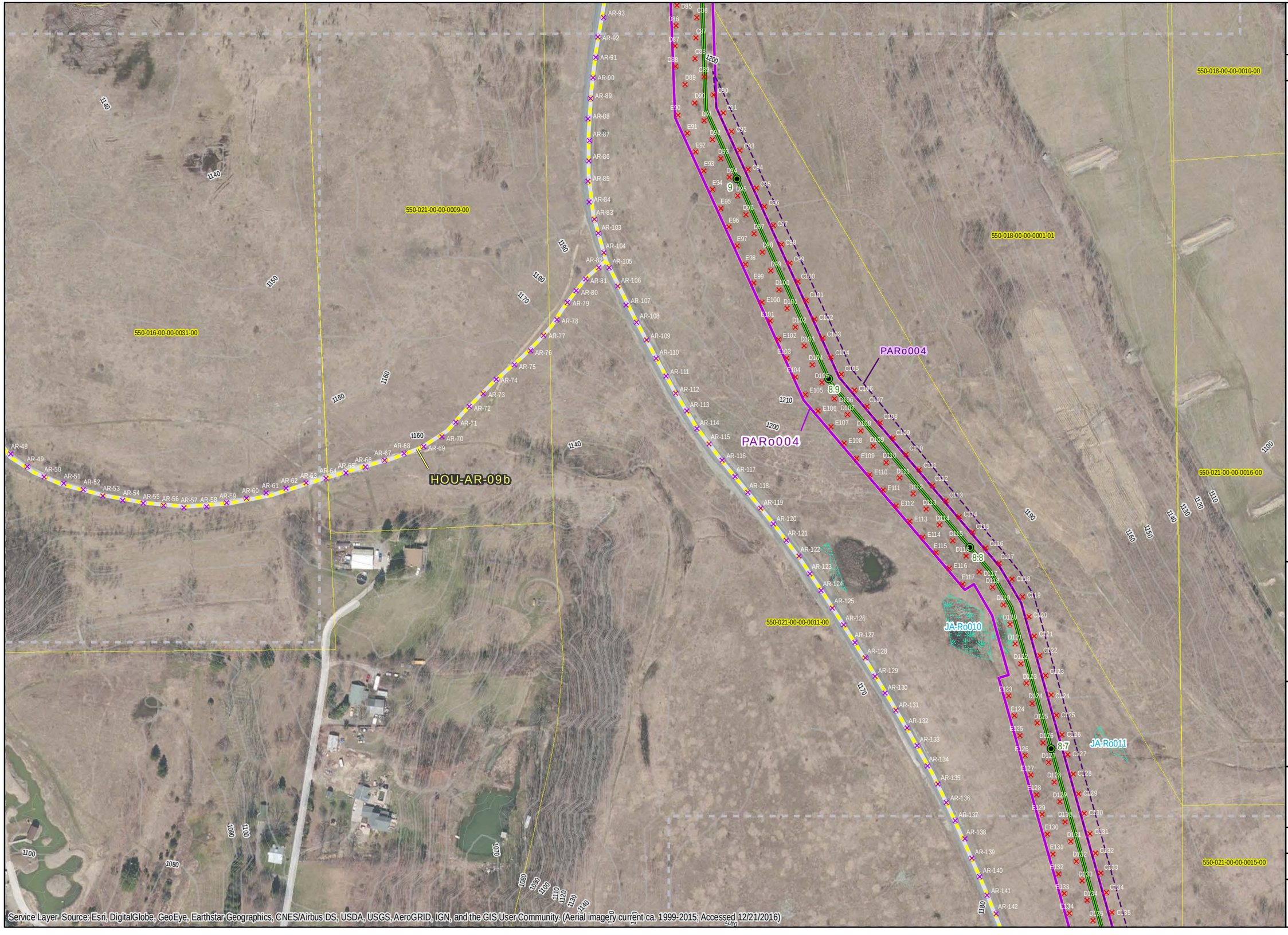
County: Washington
Municipality: Robinson
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.20

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.21

Project Location:

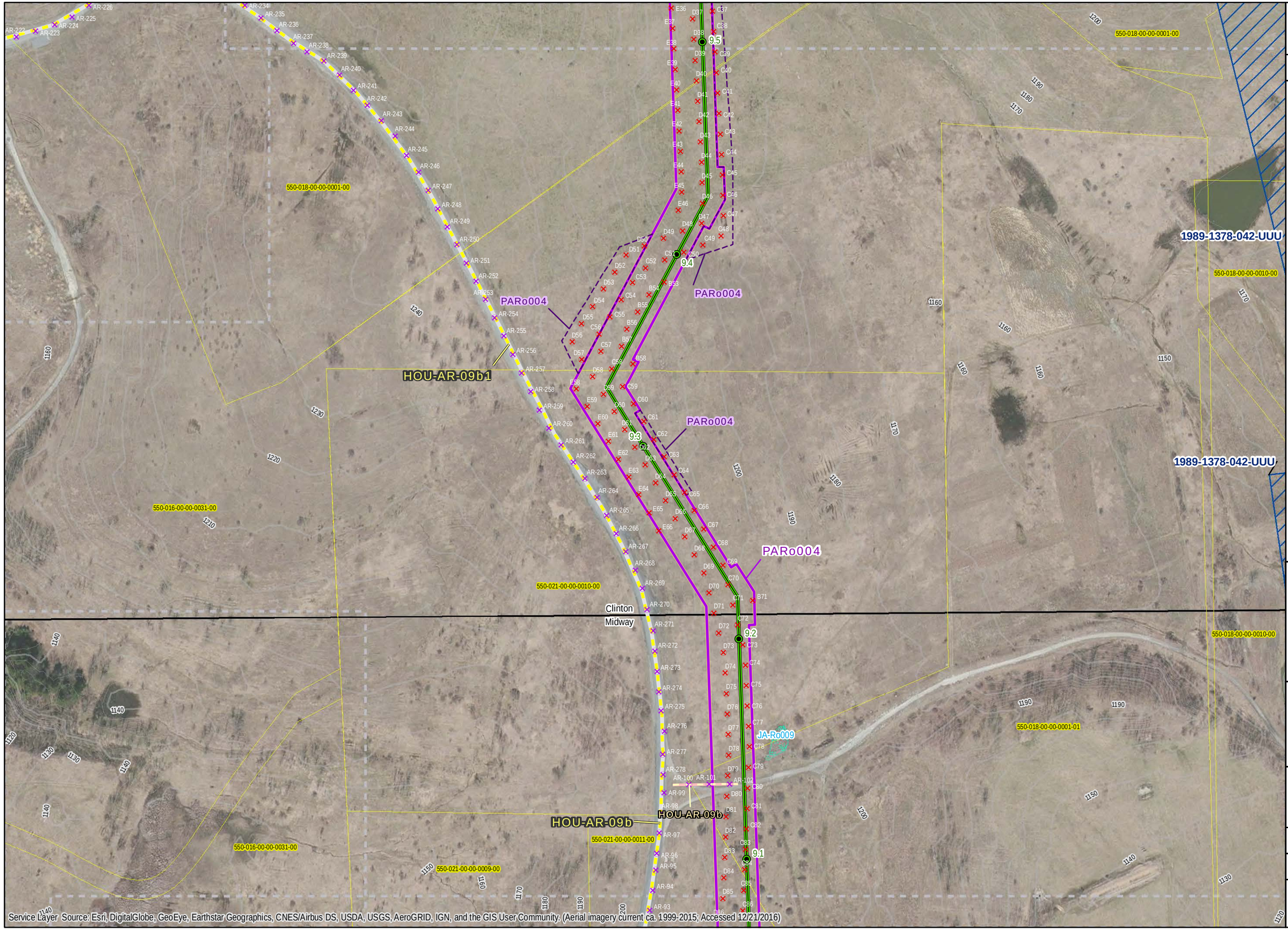
County: Washington
Municipality: Robinson/Midway
USGS Quad: Midway/Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.22

Project Location:

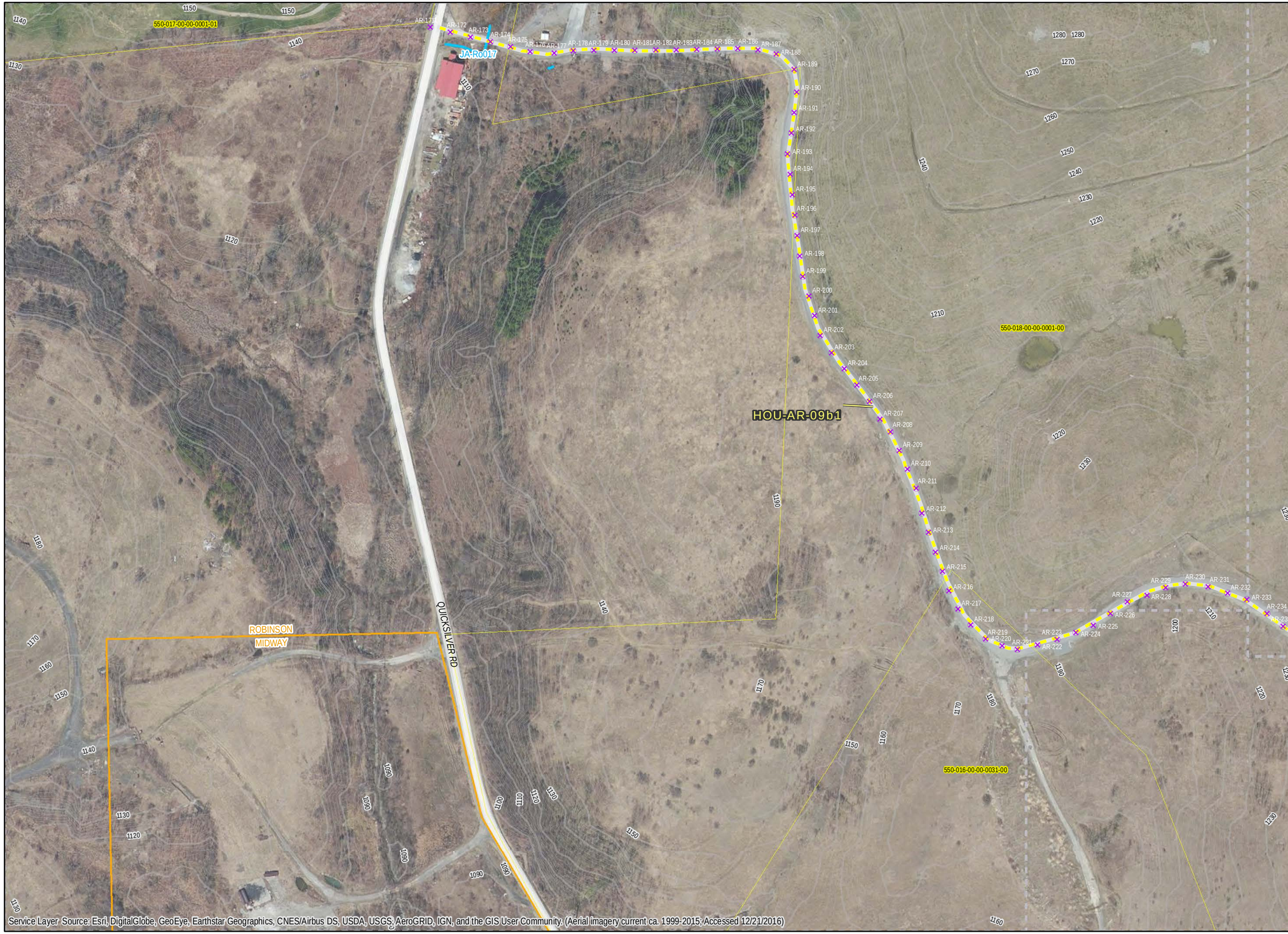
County: Washington
Municipality: Robinson
USGS Quad: Clinton/Midway

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.23

Project Location:

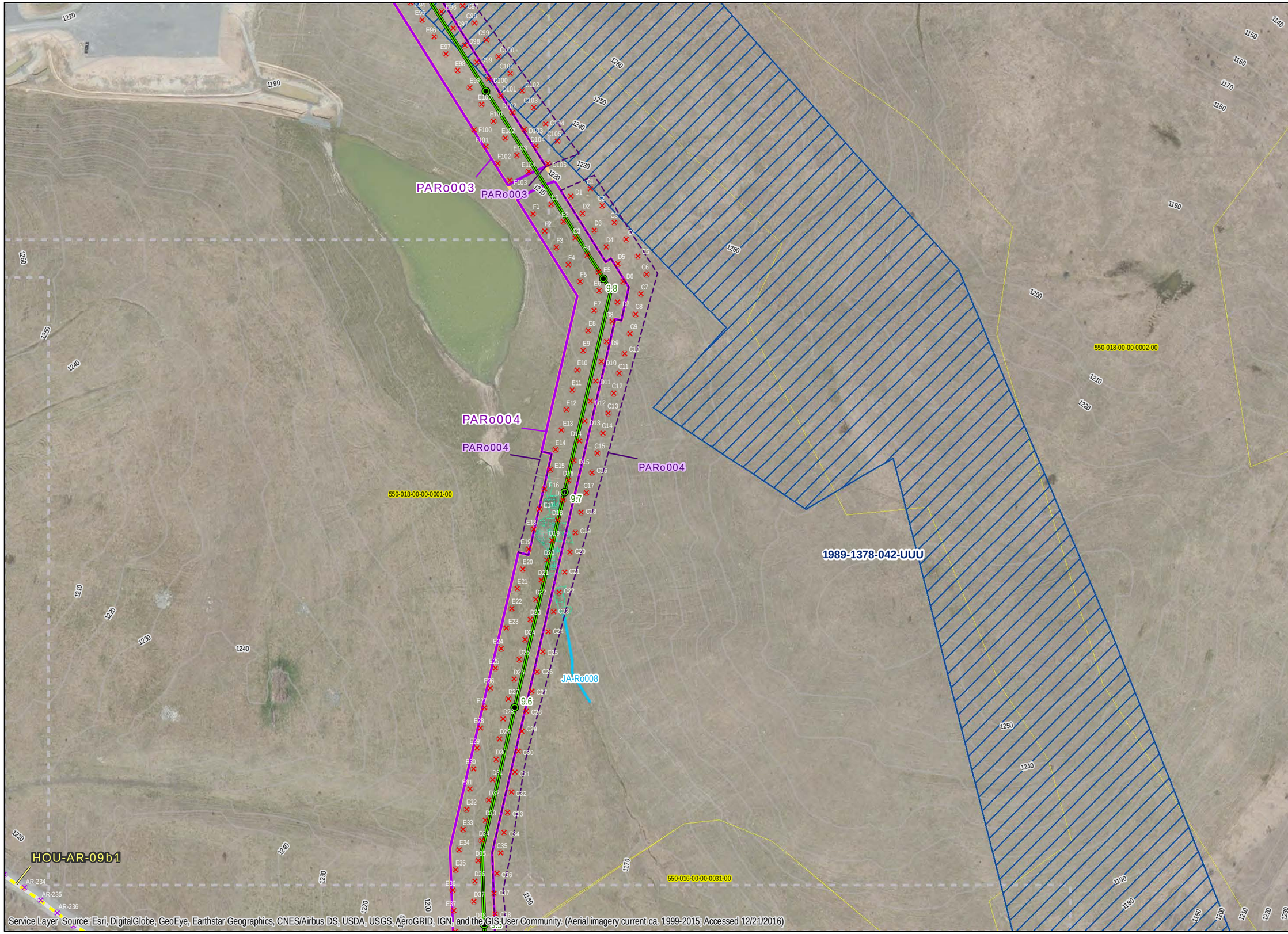
County: Washington
Municipality: Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.24

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.25

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.26

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Clinton

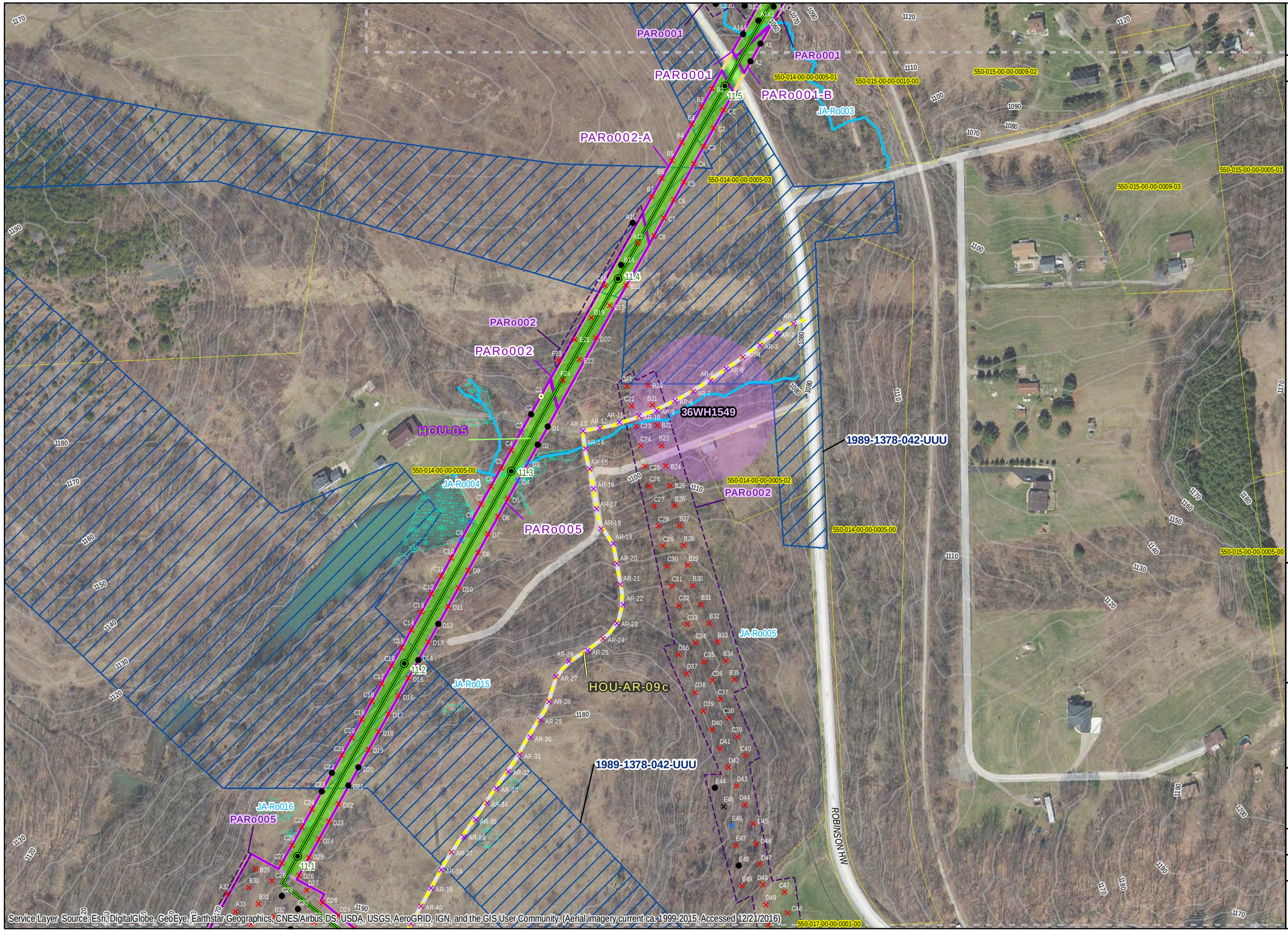
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.27

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.28

Project Location:

County: Washington
Municipality: Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.29

Project Location:

County: Allegheny
Municipality: North Fayette/Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

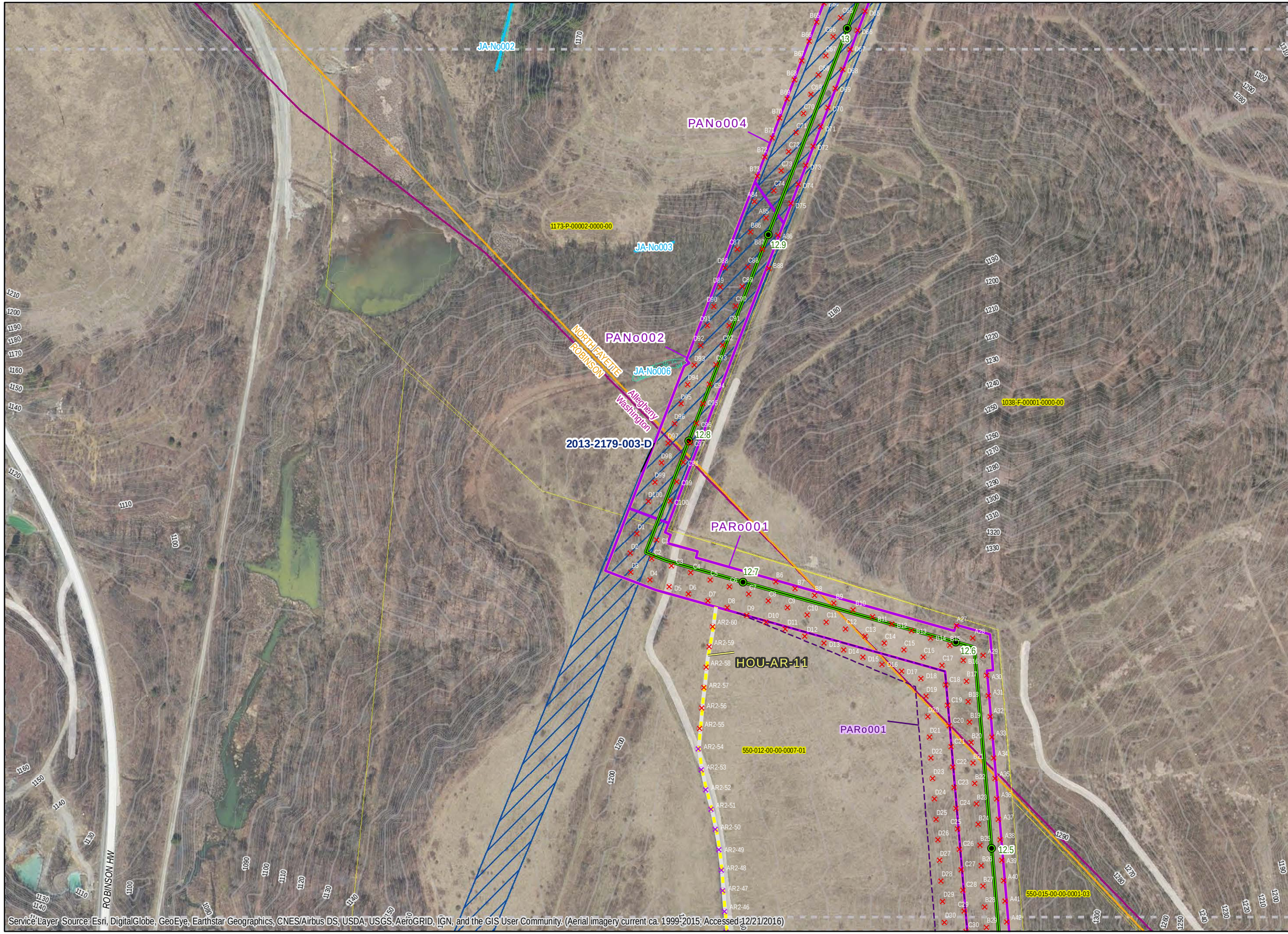
DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

2013-2179-003-D
36WH0608
HOU-AR-11
550-012-00-00-0007-01
JA-Ro001
PARo001
550-012-00-00-0007-02
550-012-00-00-0007-03
550-012-00-00-0007-00
550-015-00-00-0001-03
550-015-00-00-0001-01
550-015-00-00-0001-05
550-015-00-00-0004-00
1038-F-00001-0000-00
36WH0800
Allegheny
Washington
NORTH FAYETTE
ROBINSON

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.30

Project Location:

County: Allegheny/Washington
Municipality: North Fayette/Robinson
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.31

Project Location:

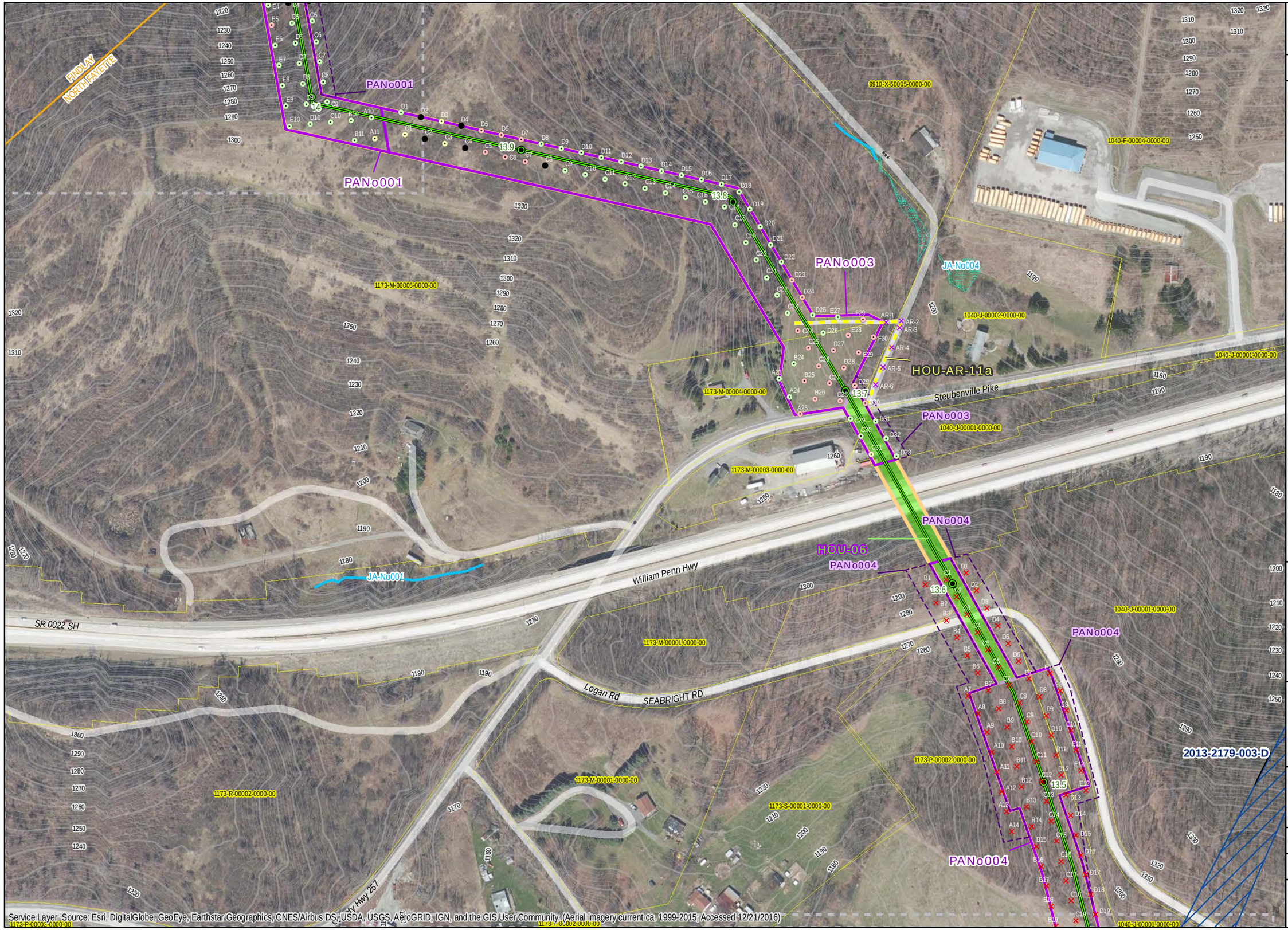
County: Allegheny
Municipality: North Fayette
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.32

Project Location:

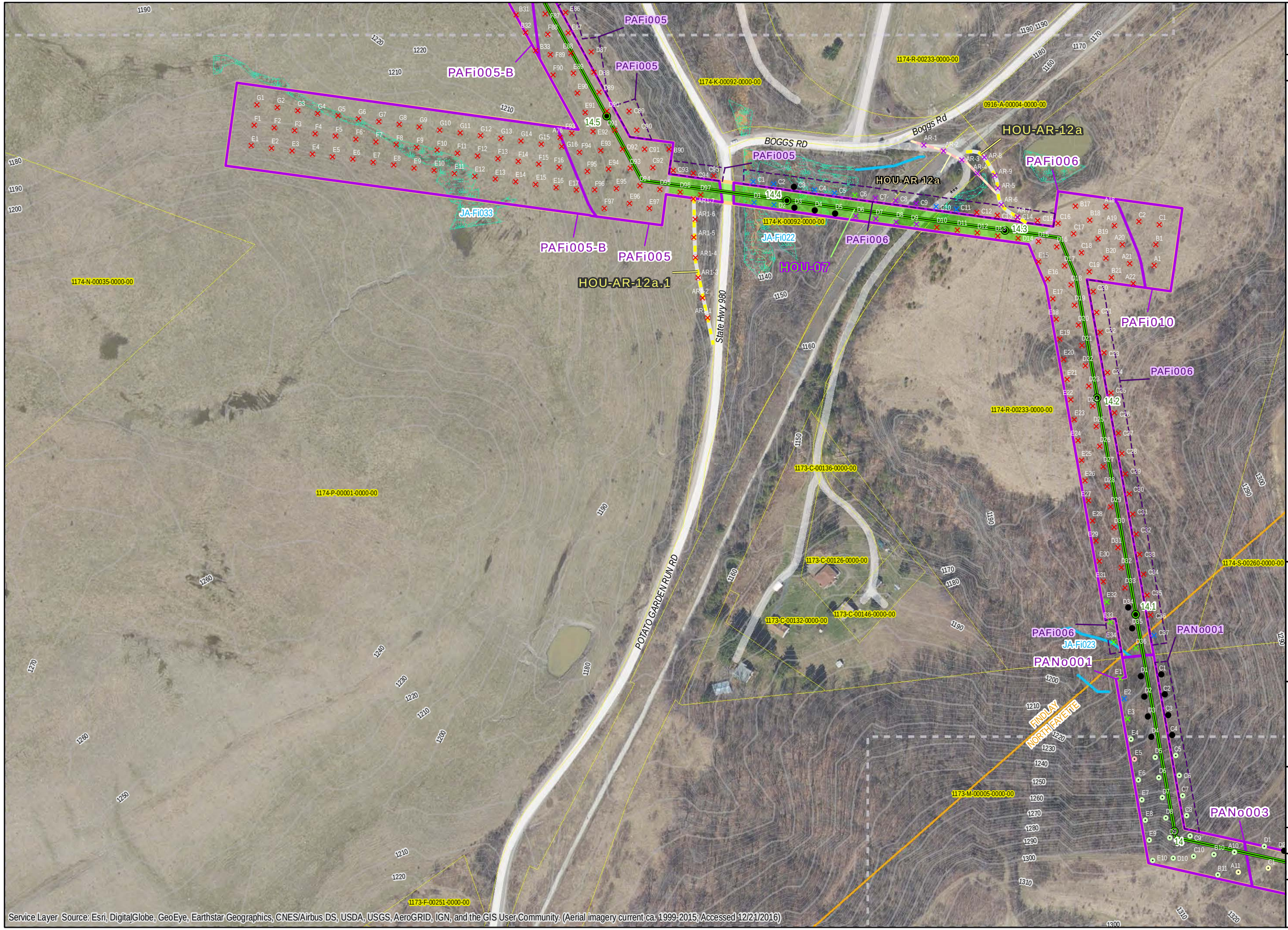
County: Allegheny
Municipality: North Fayette
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.33

Project Location:

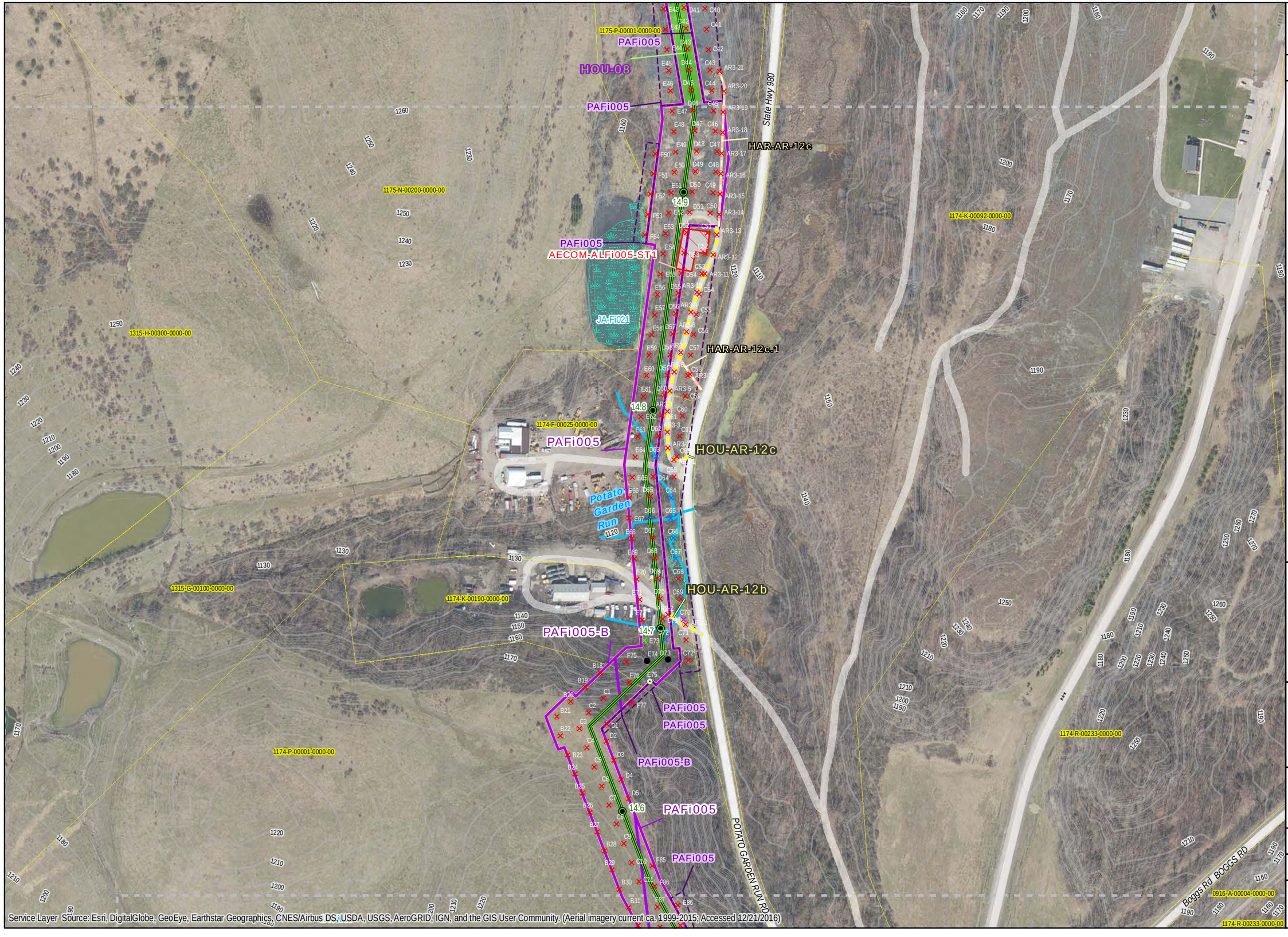
County: Allegheny
Municipality: Findlay/North Fayette
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.34

Project Location:

County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.35

Project Location:

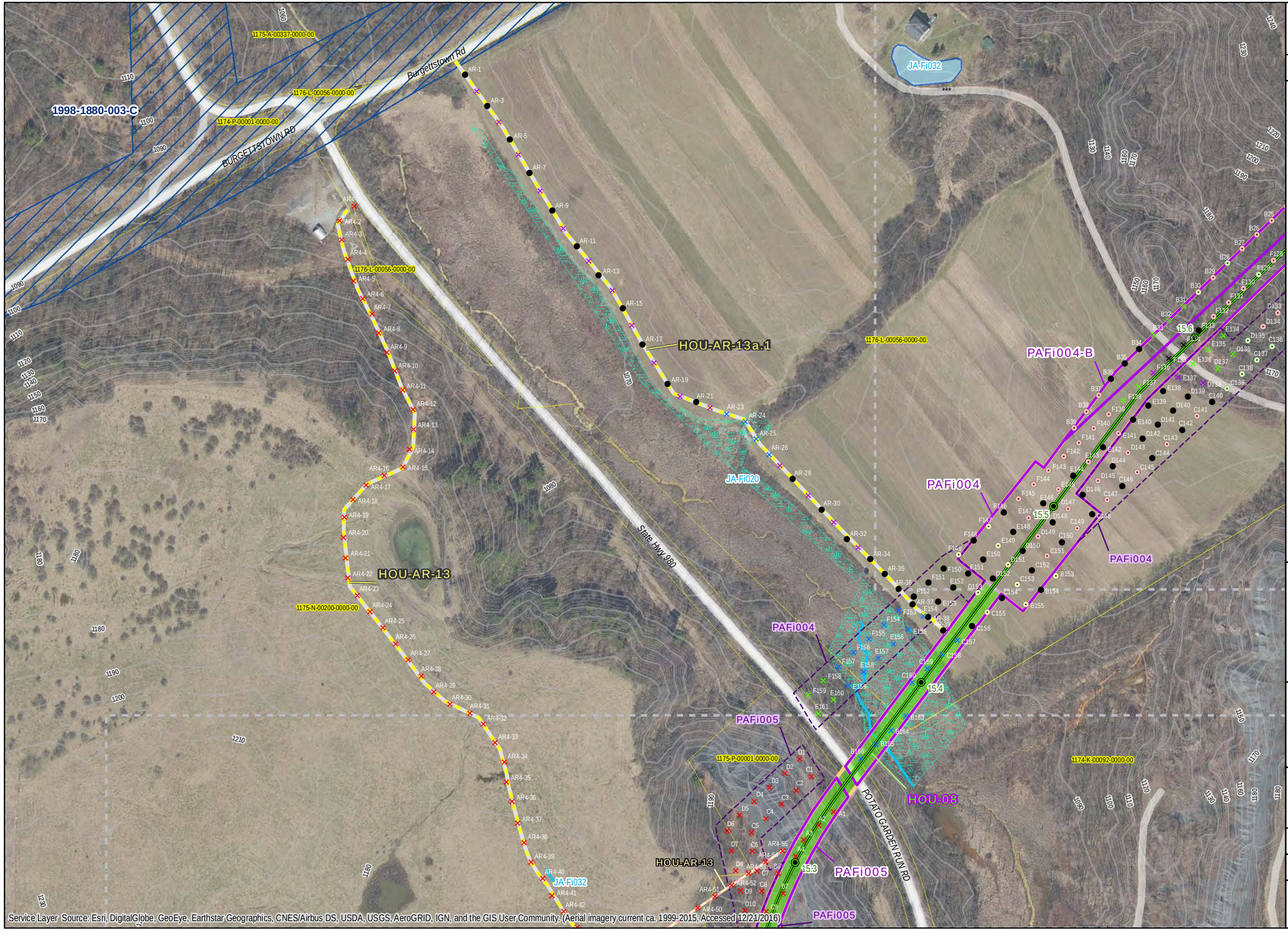
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.36

Project Location:

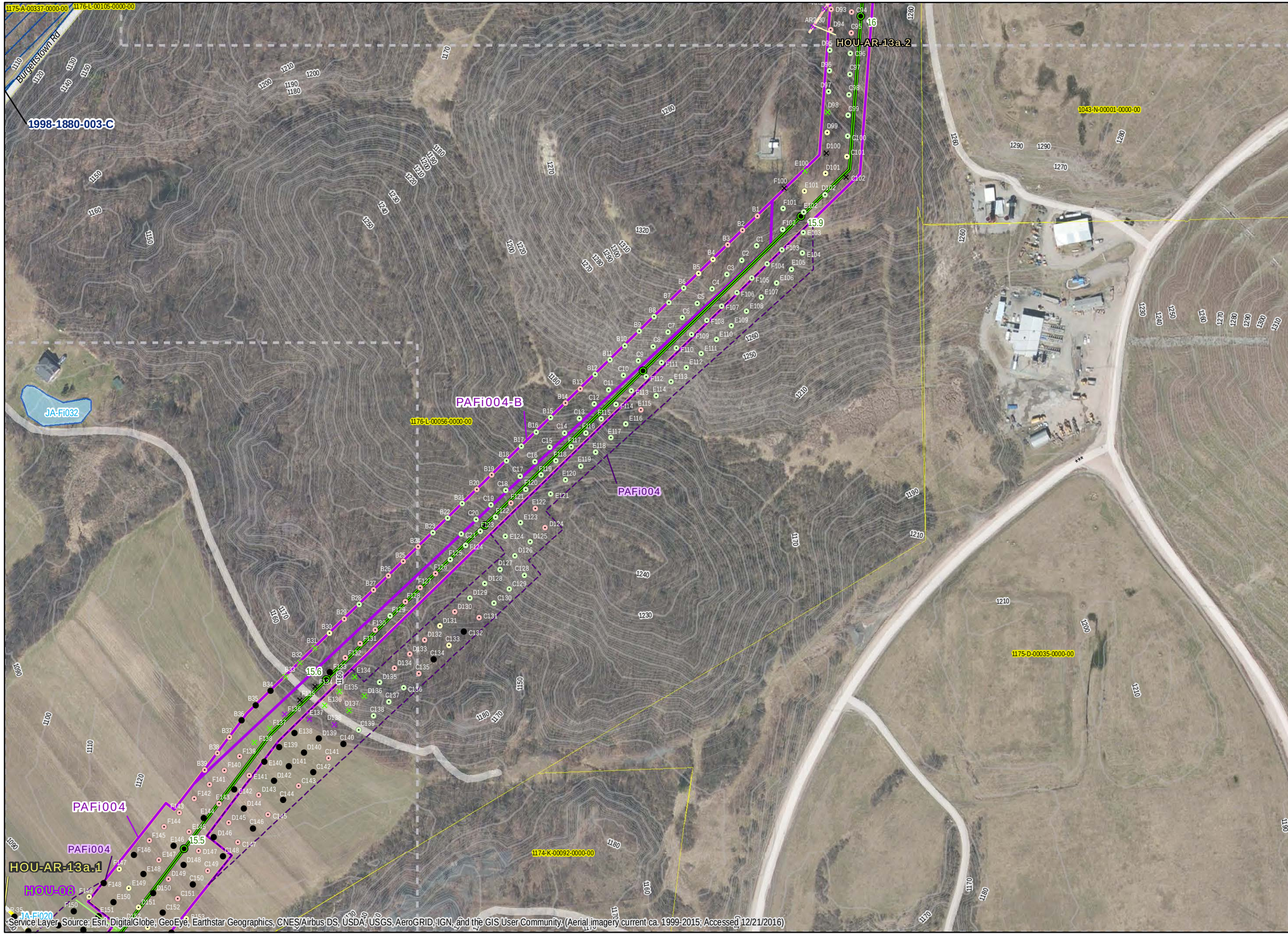
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.37

Project Location:

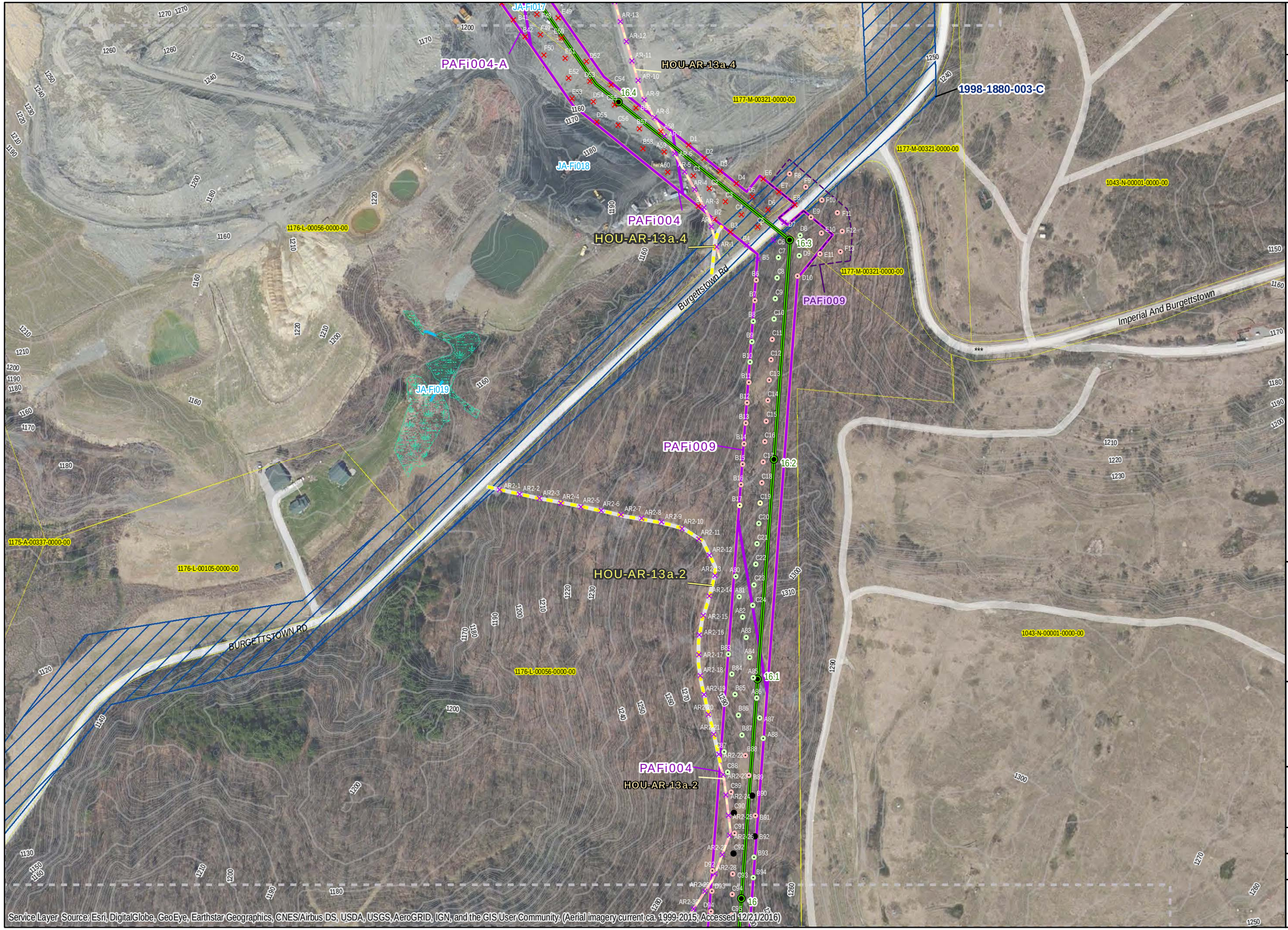
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.38

Project Location:

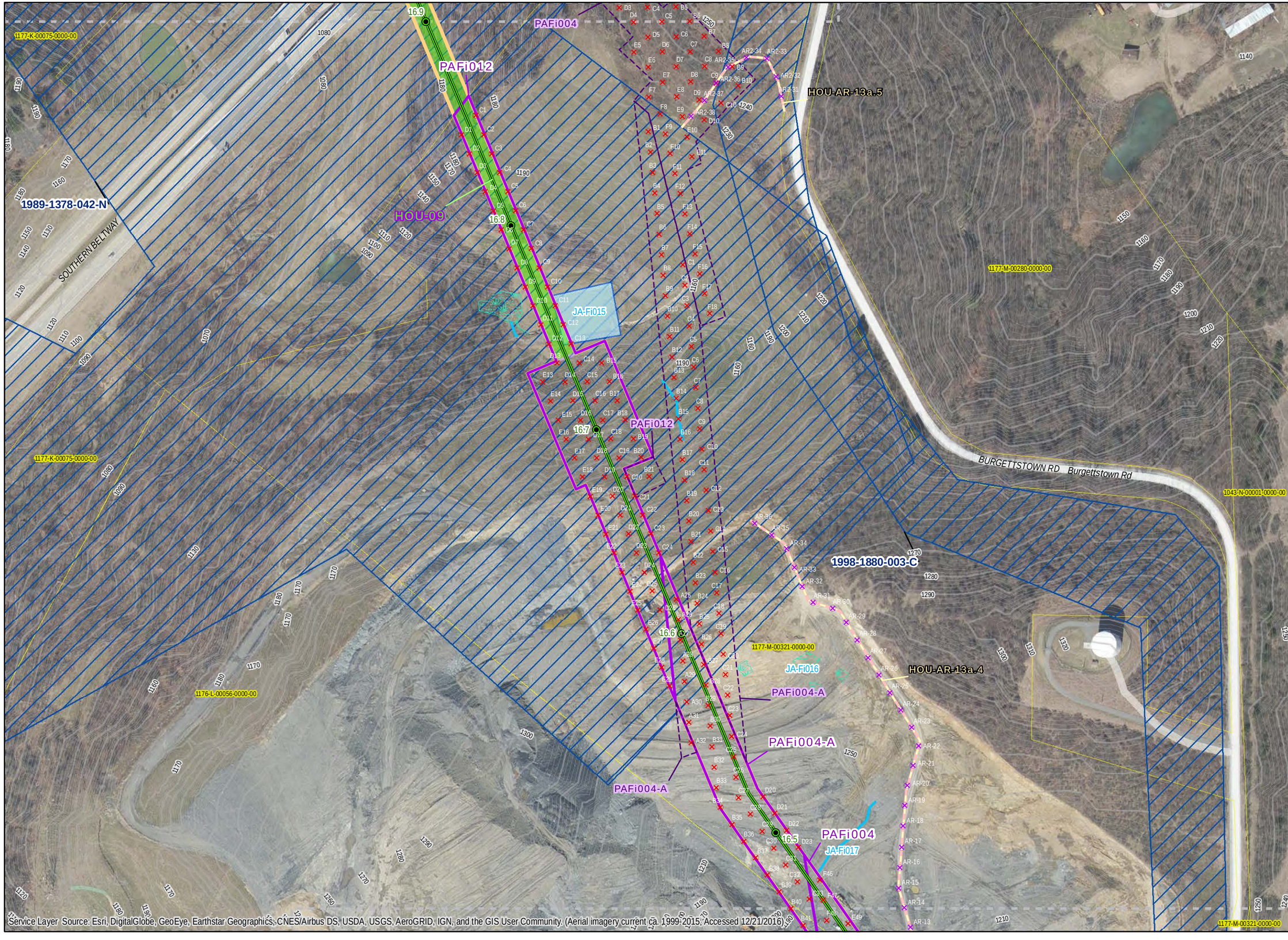
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.39

Project Location:

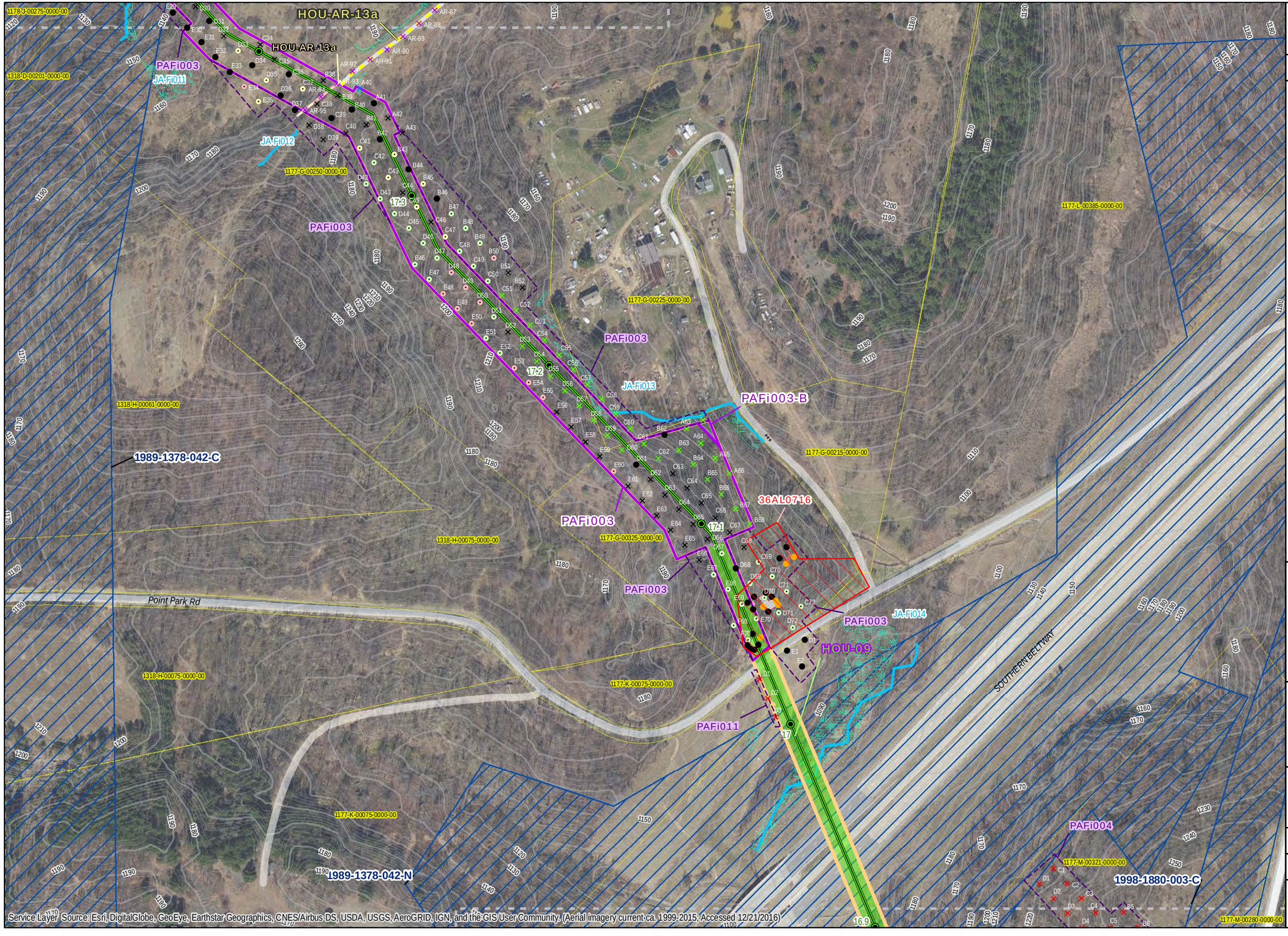
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.40

Project Location:

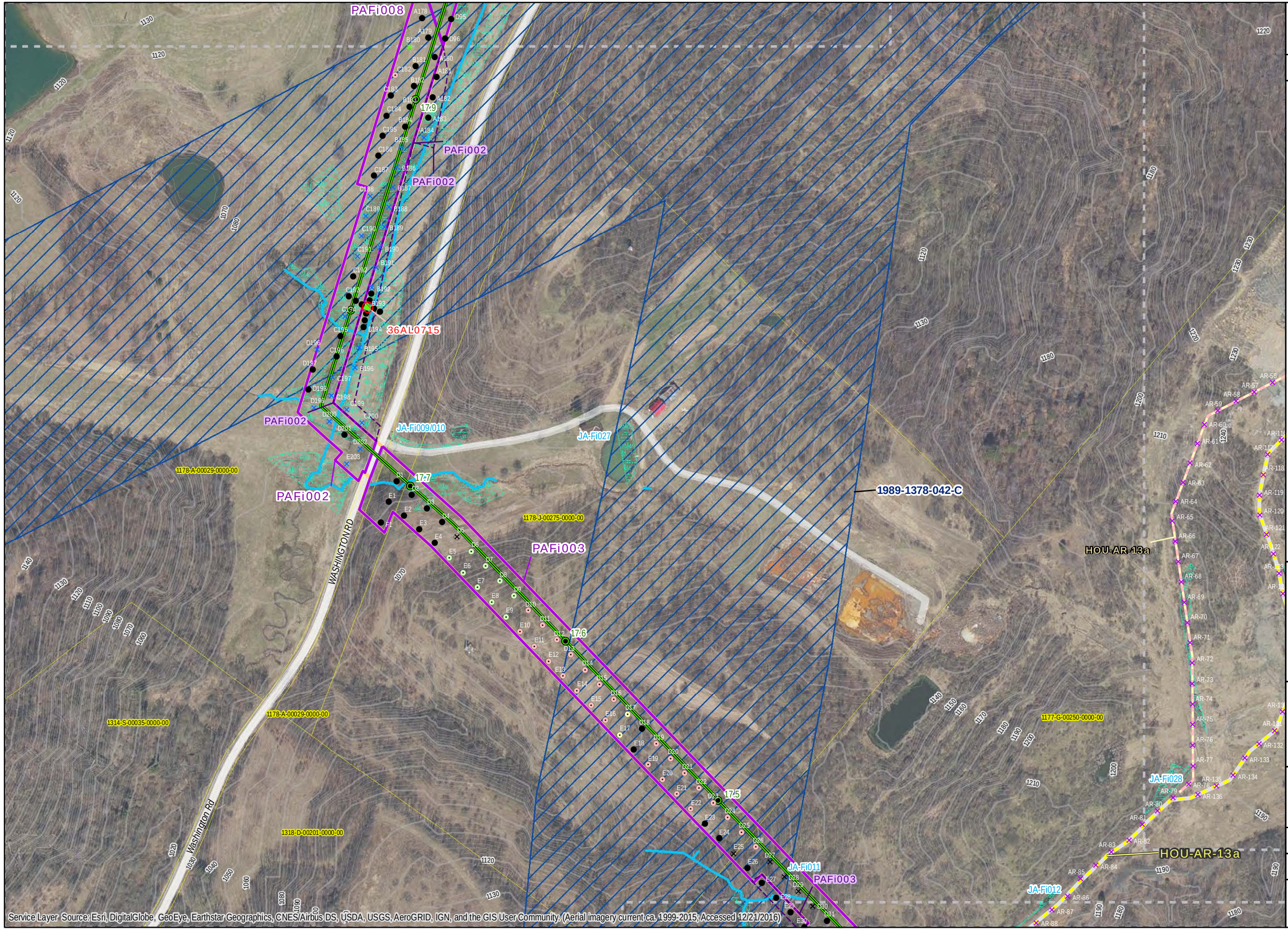
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.41

Project Location:

County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.42

Project Location:

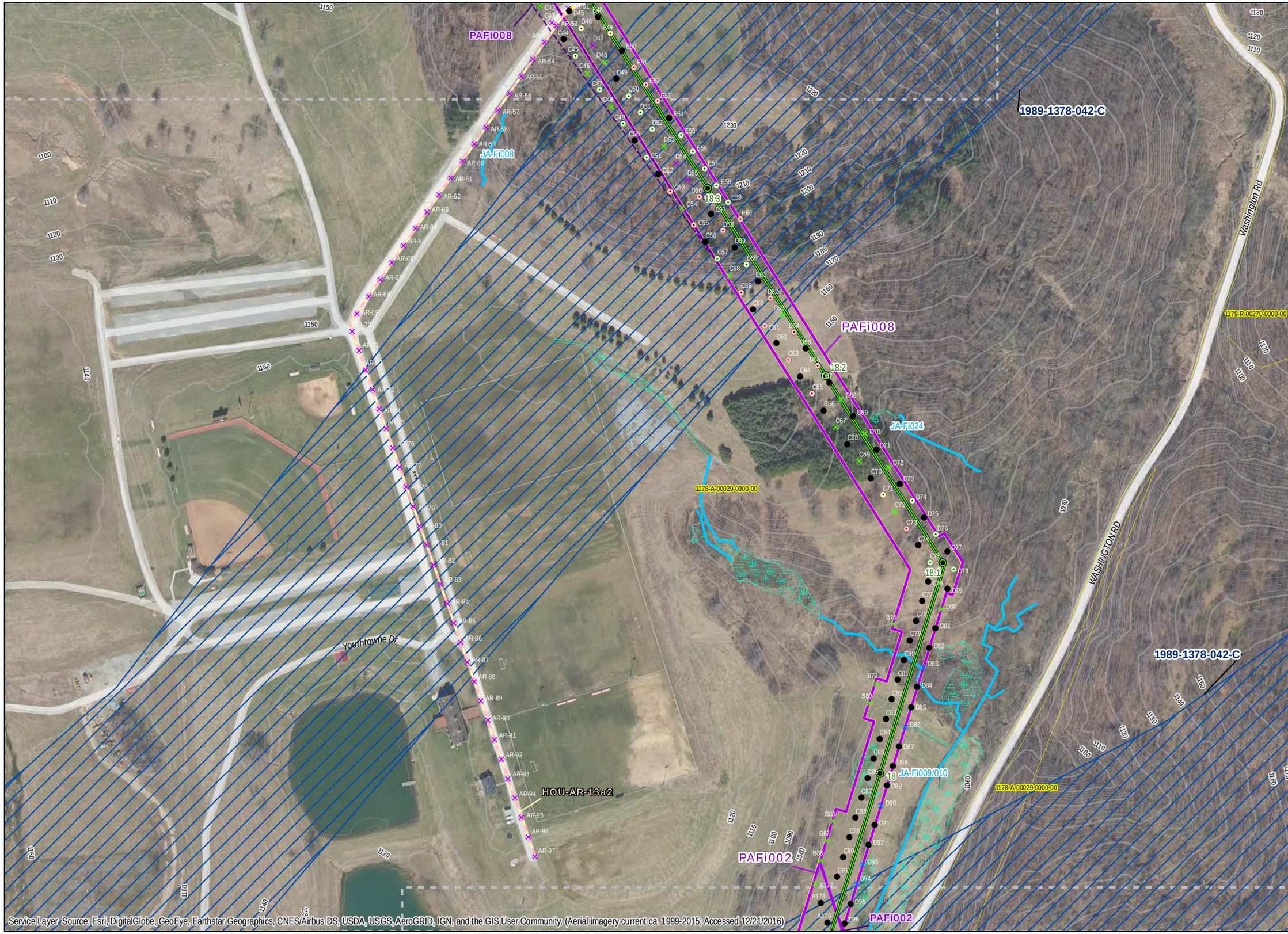
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.43

Project Location:

County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.44

Project Location:

County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

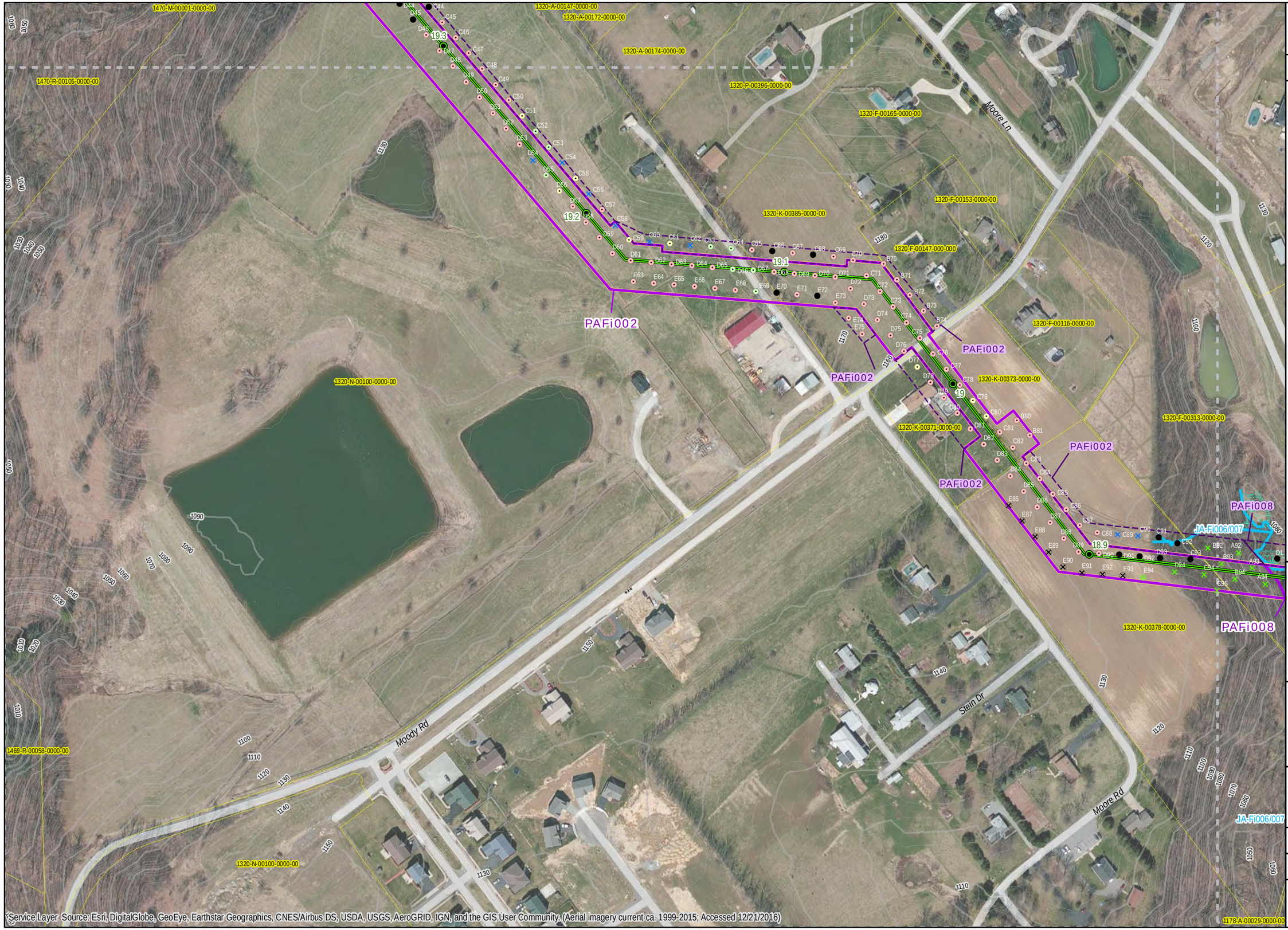
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.45

Project Location:

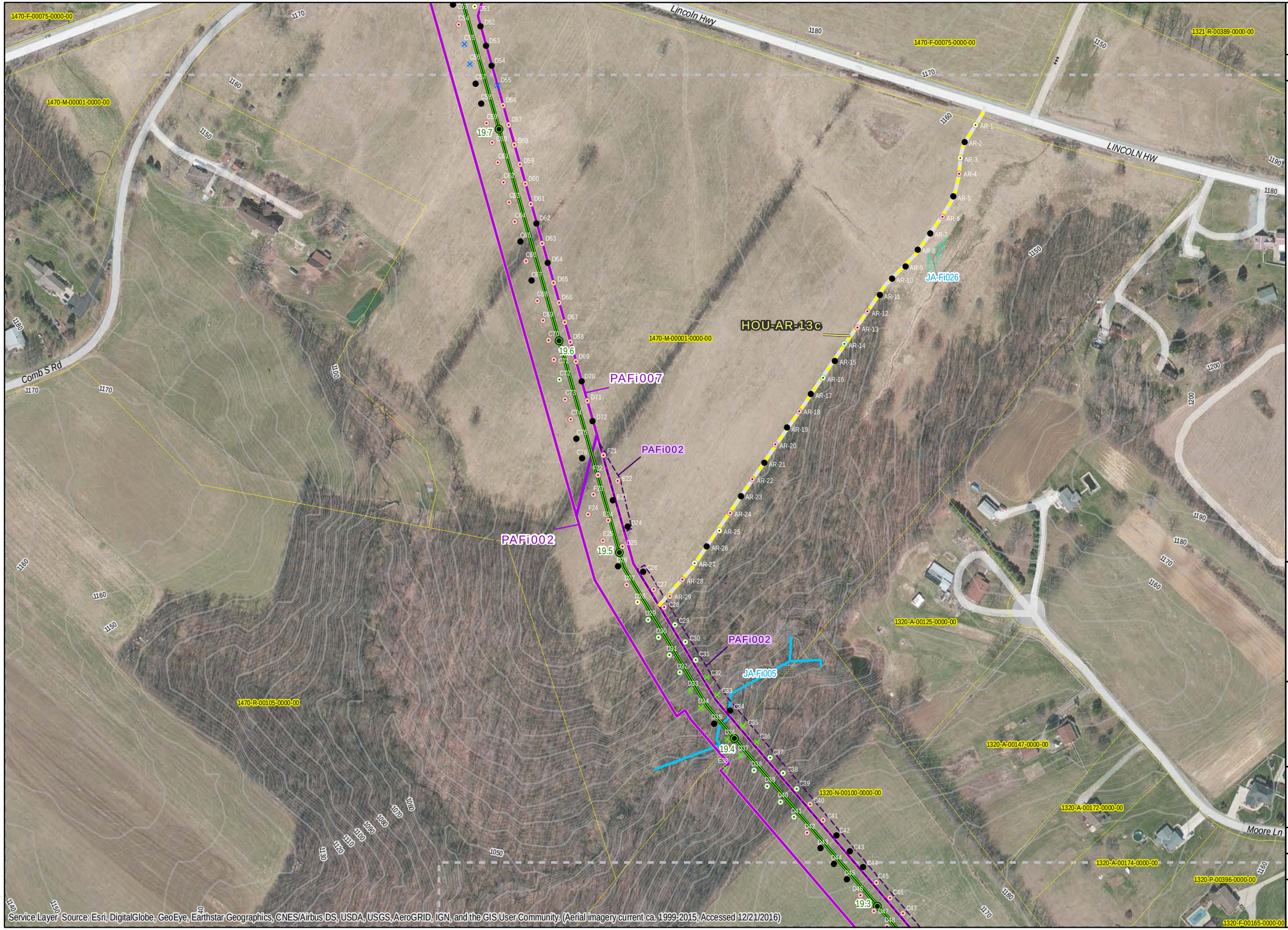
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.46

Project Location:

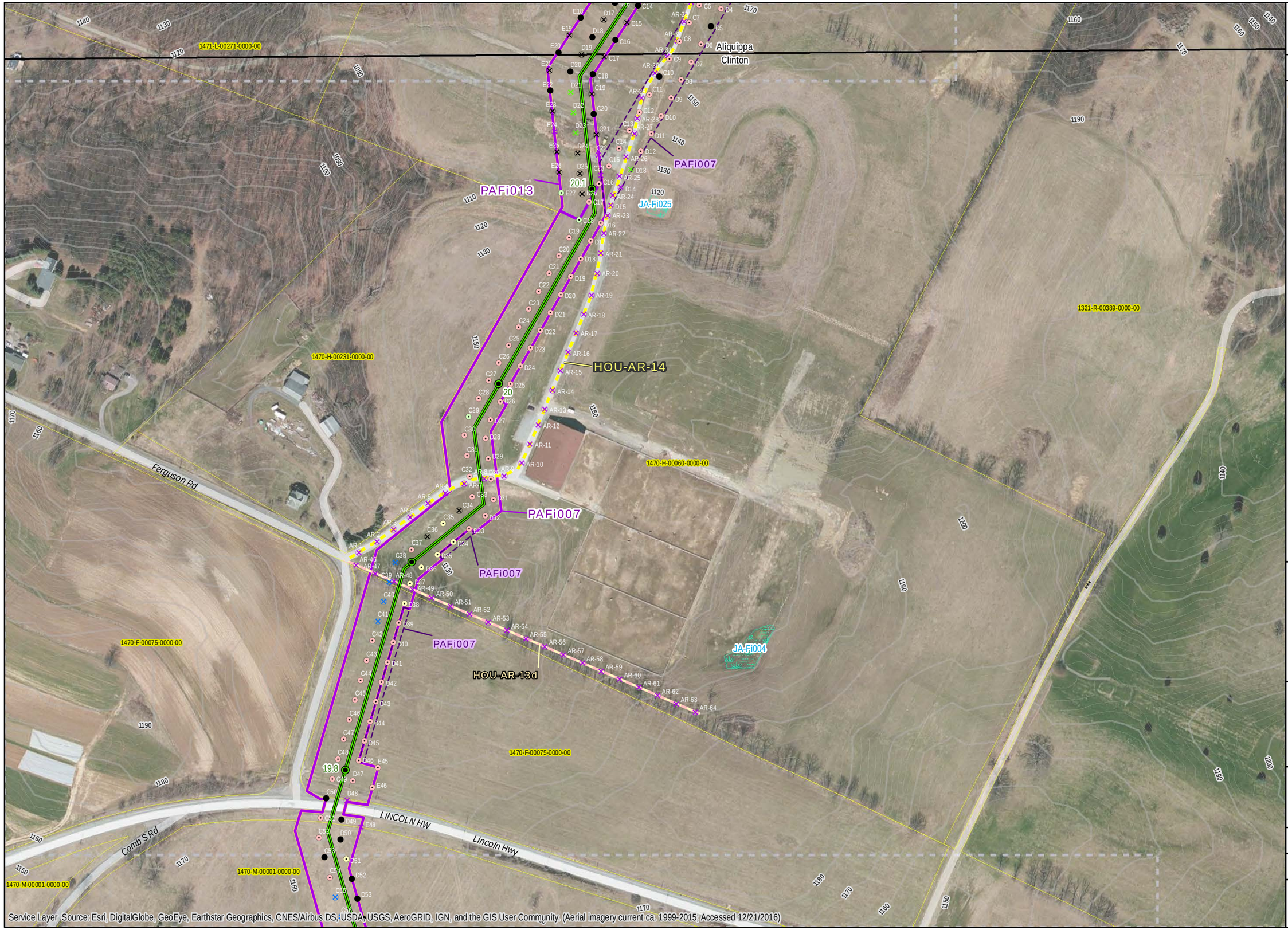
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.47

Project Location:

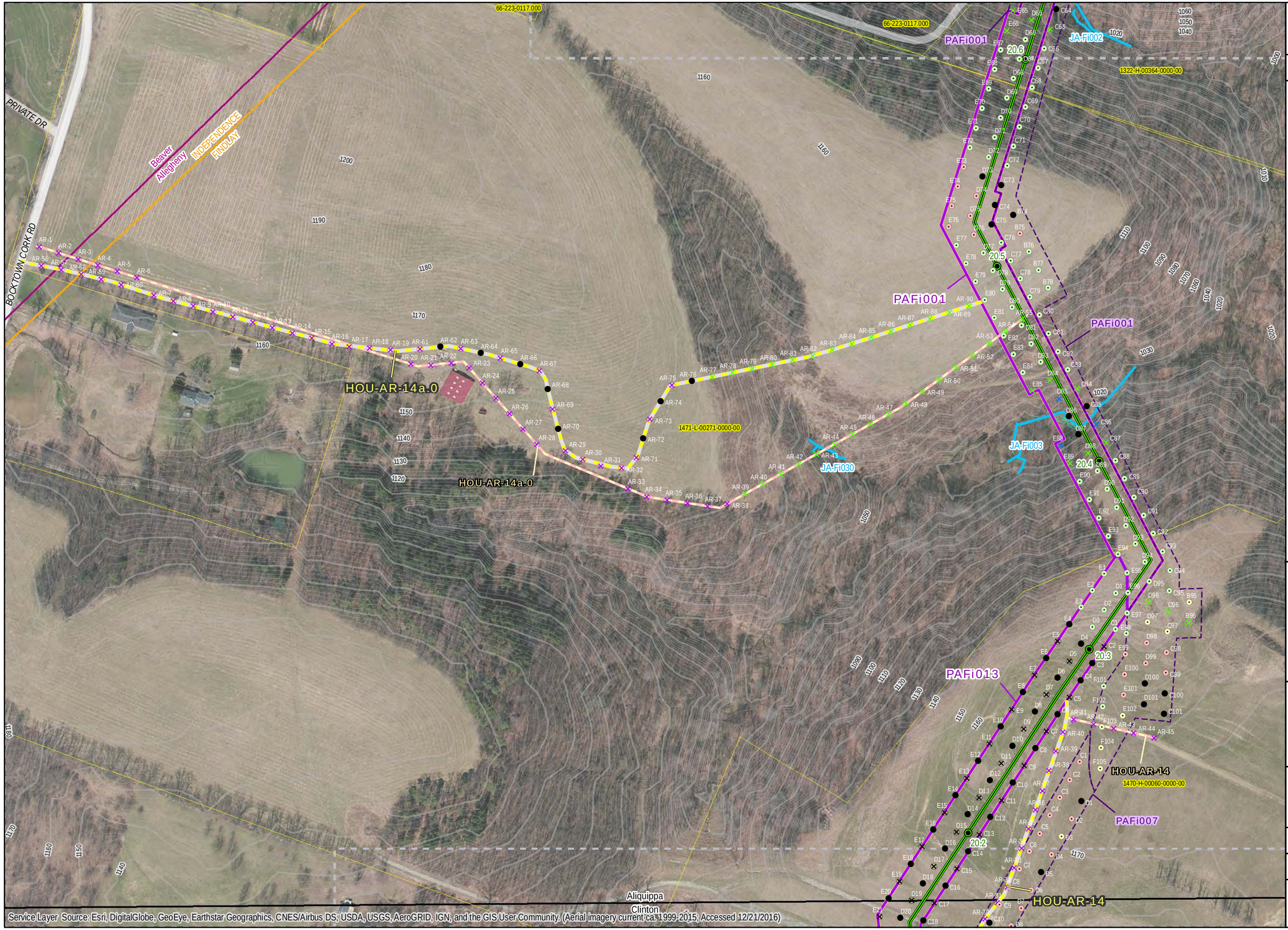
County: Allegheny
Municipality: Findlay
USGS Quad: Clinton/Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.48

Project Location:

County: Allegheny/Beaver
Municipality: Findlay/Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.49

Project Location:

County: Allegheny/Beaver
Municipality: Findlay/Independence
USGS Quad: Aliquippa

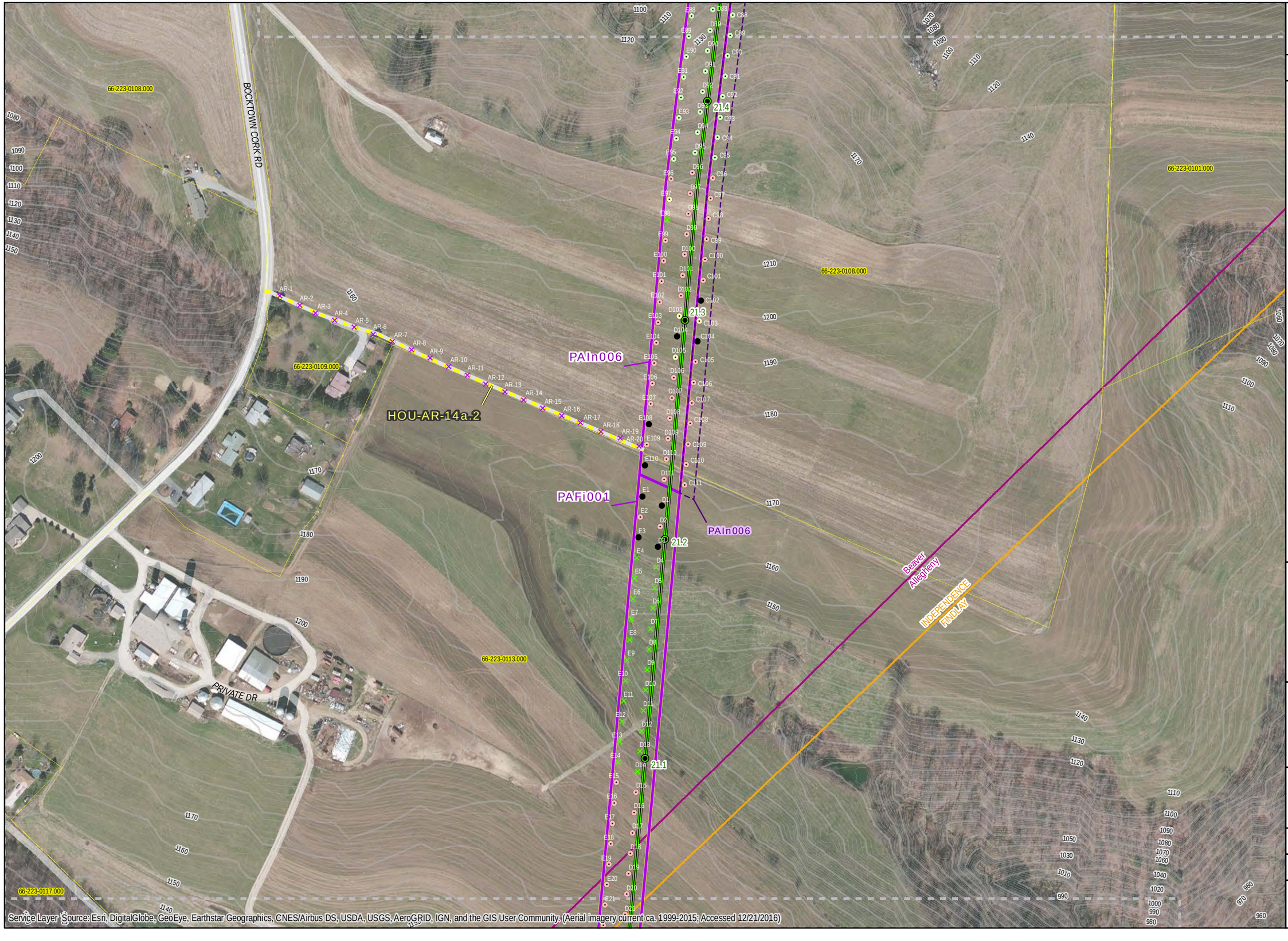
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.50

Project Location:

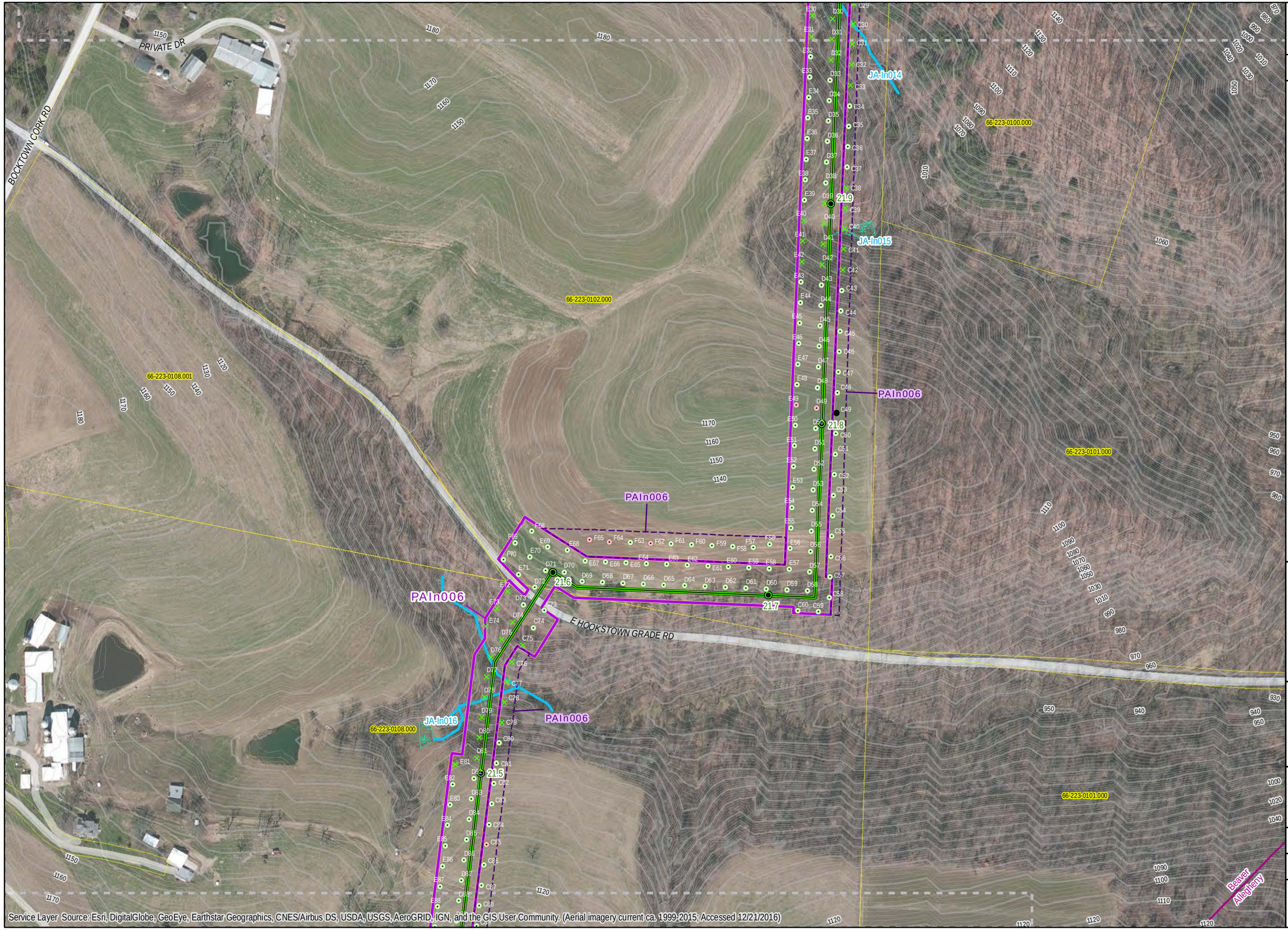
County: Beaver/Allegheny
Municipality: Independence/Findlay
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.51

Project Location:

County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.52

Project Location:

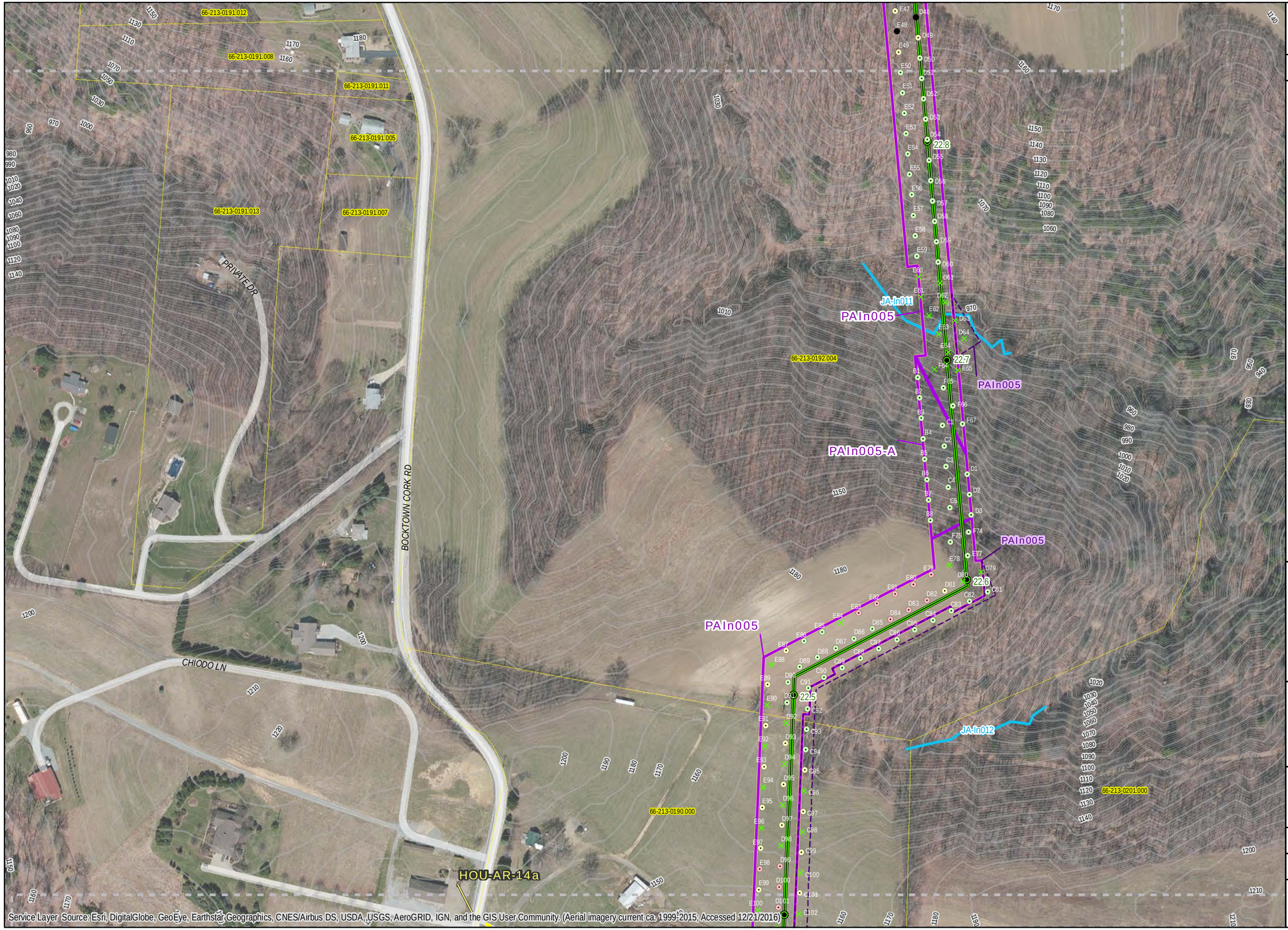
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.53

Project Location:

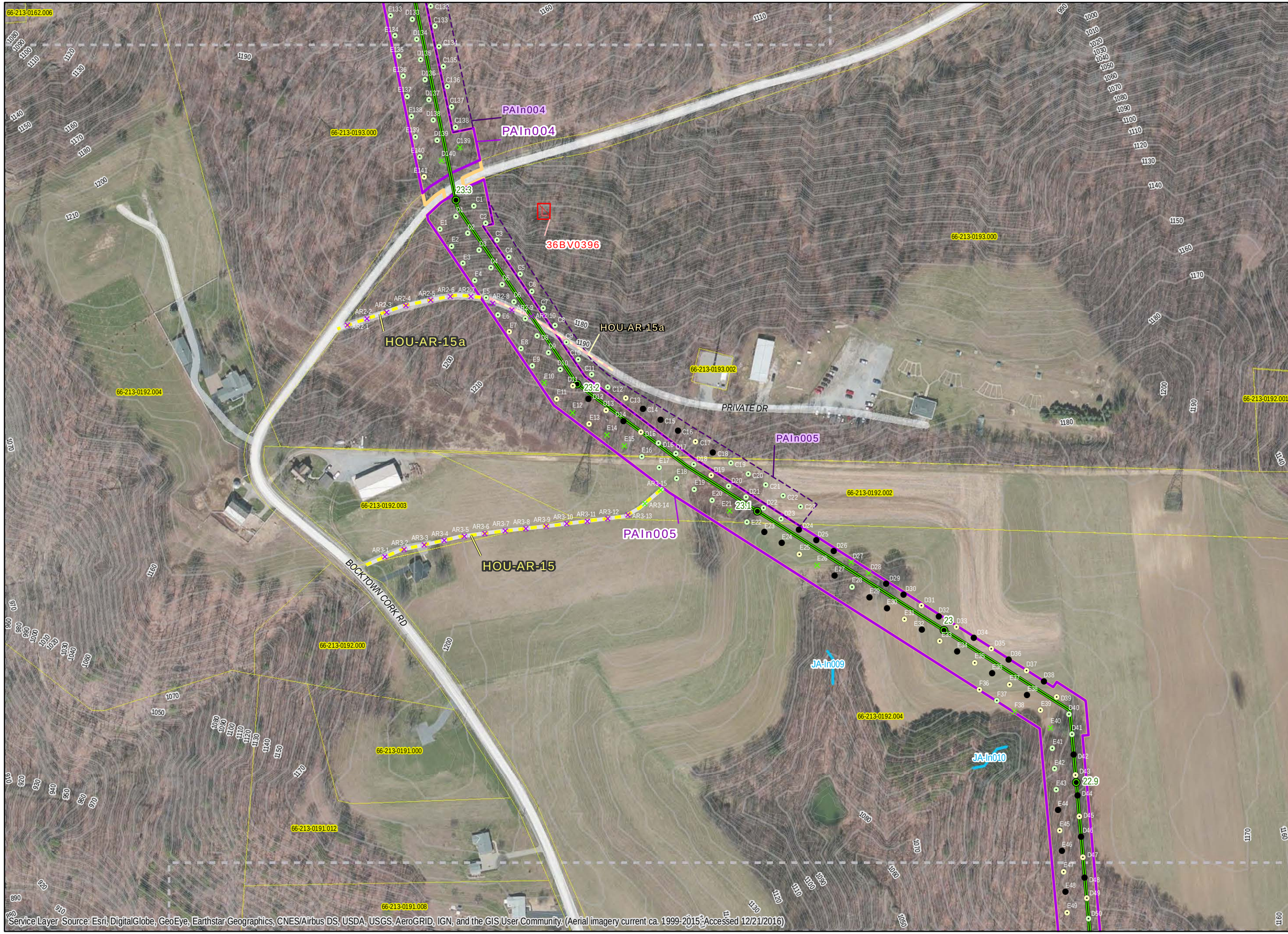
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.54

Project Location:

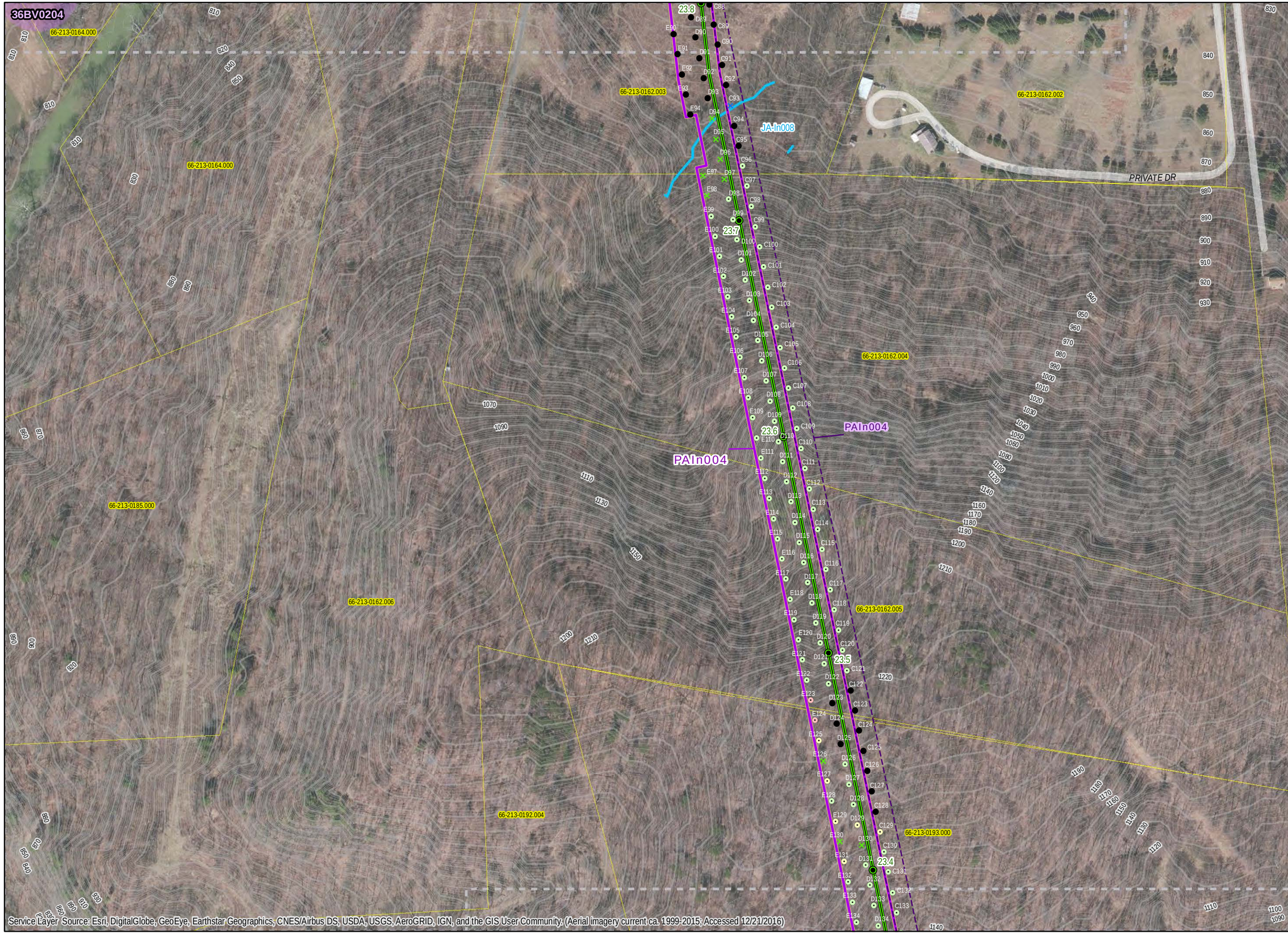
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.55

Project Location:

County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.56

Project Location:

County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

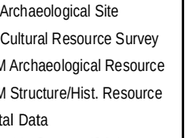
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.57

Project Location:



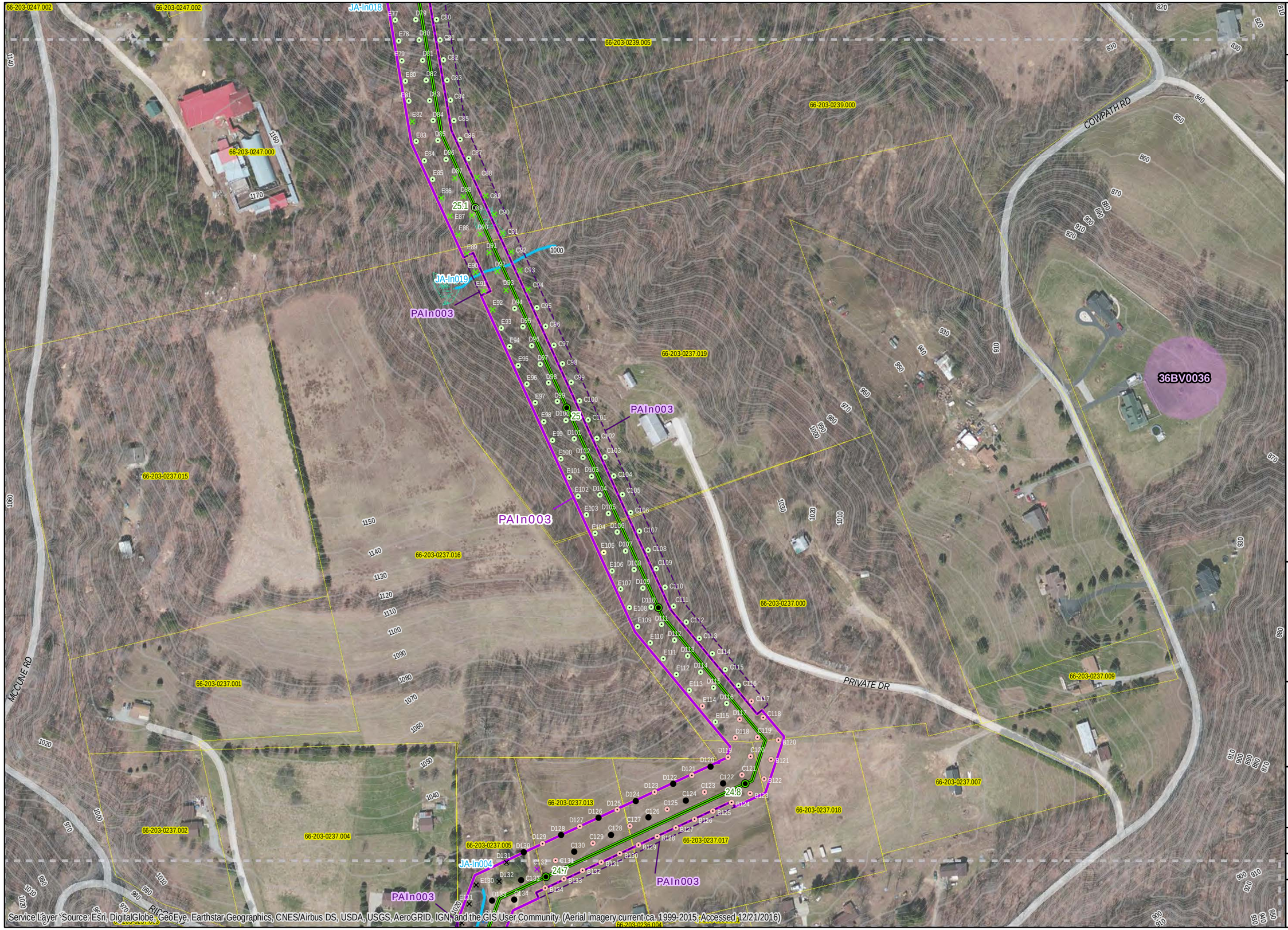
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.58

Project Location:

County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015, Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.59

Project Location:

County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

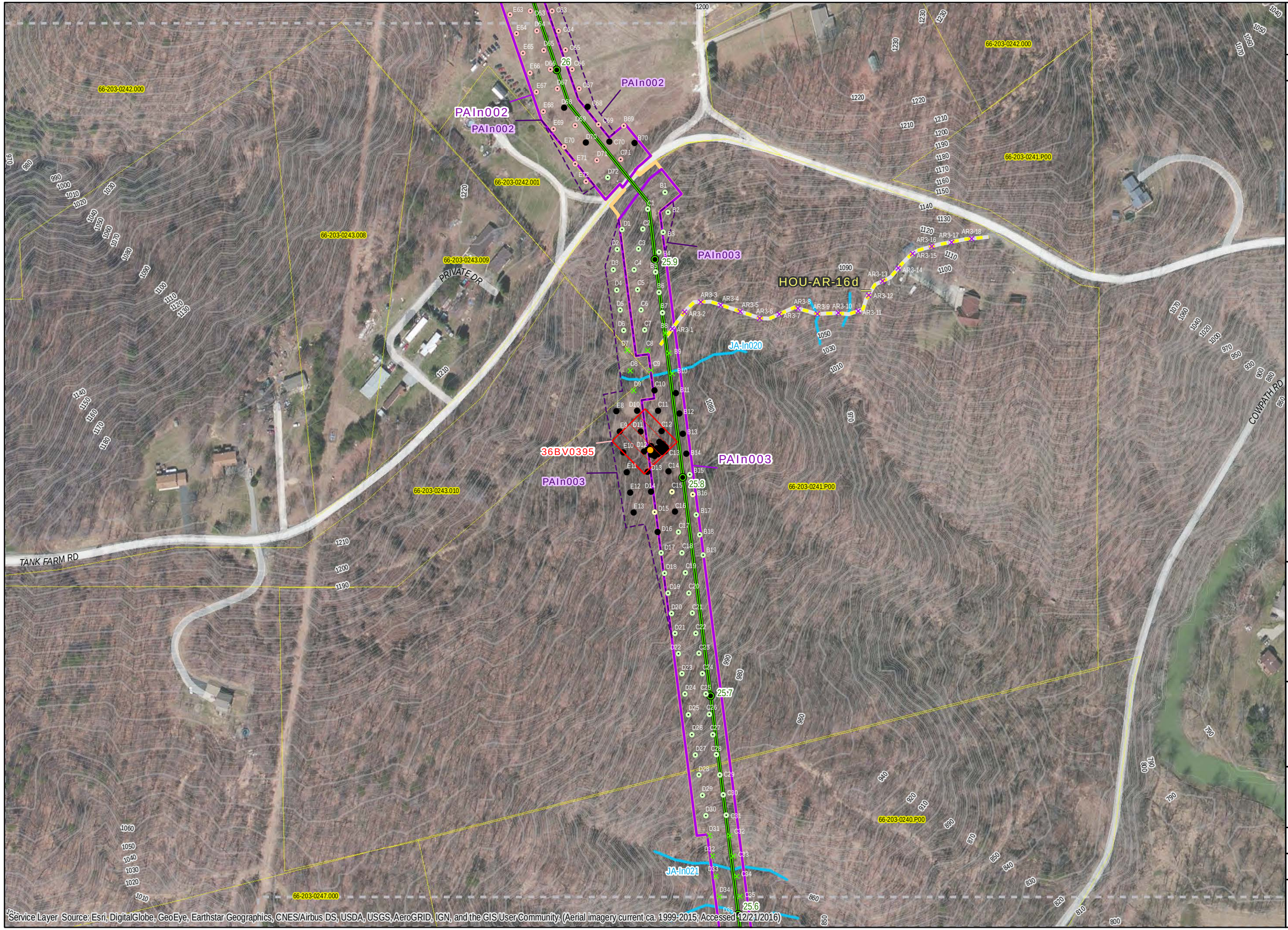
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015, Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Project Location:

Figure 6.60

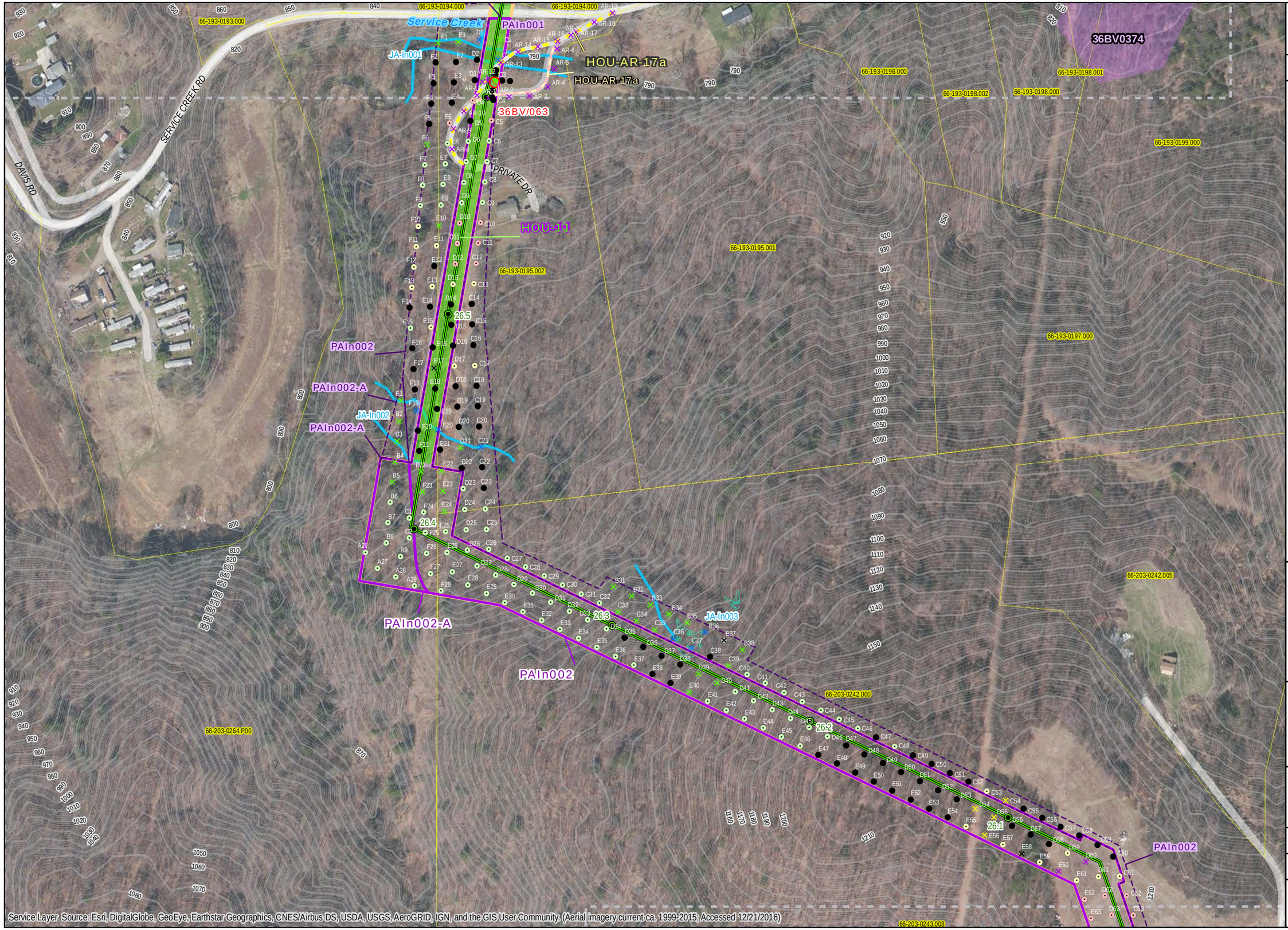
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.61

Project Location:

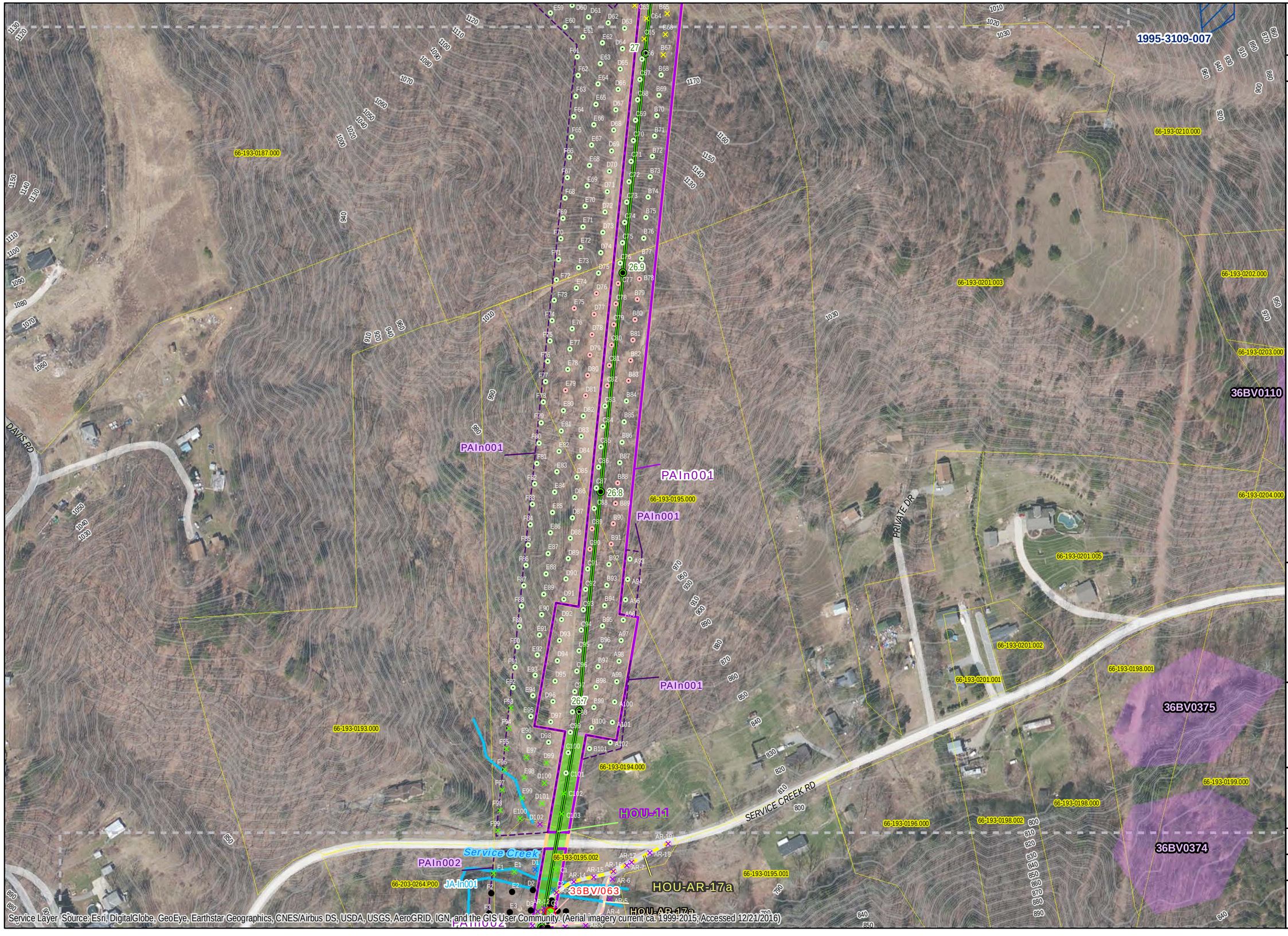
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.62

Project Location:

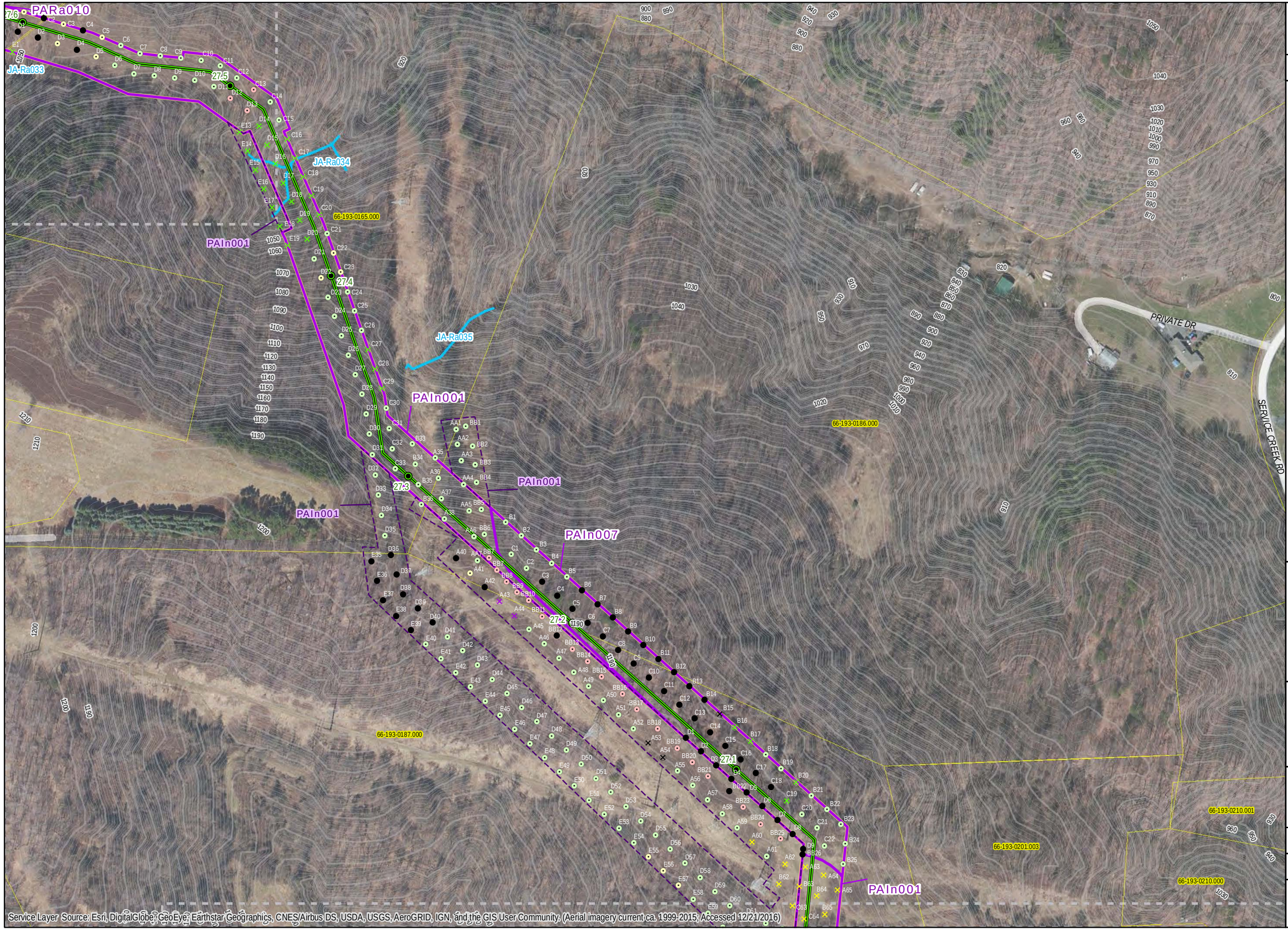
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.63

Project Location:

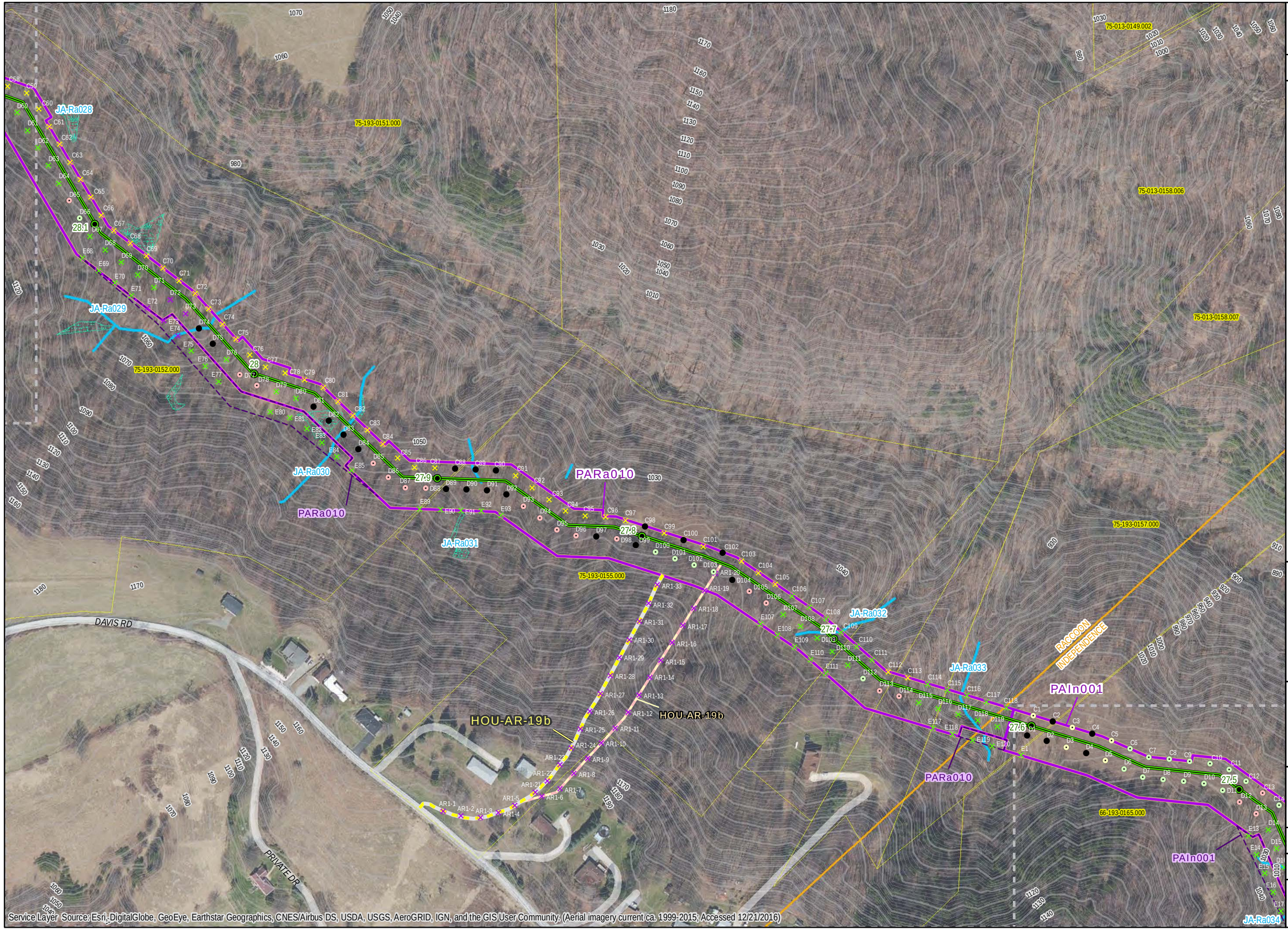
County: Beaver
Municipality: Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.64

Project Location:

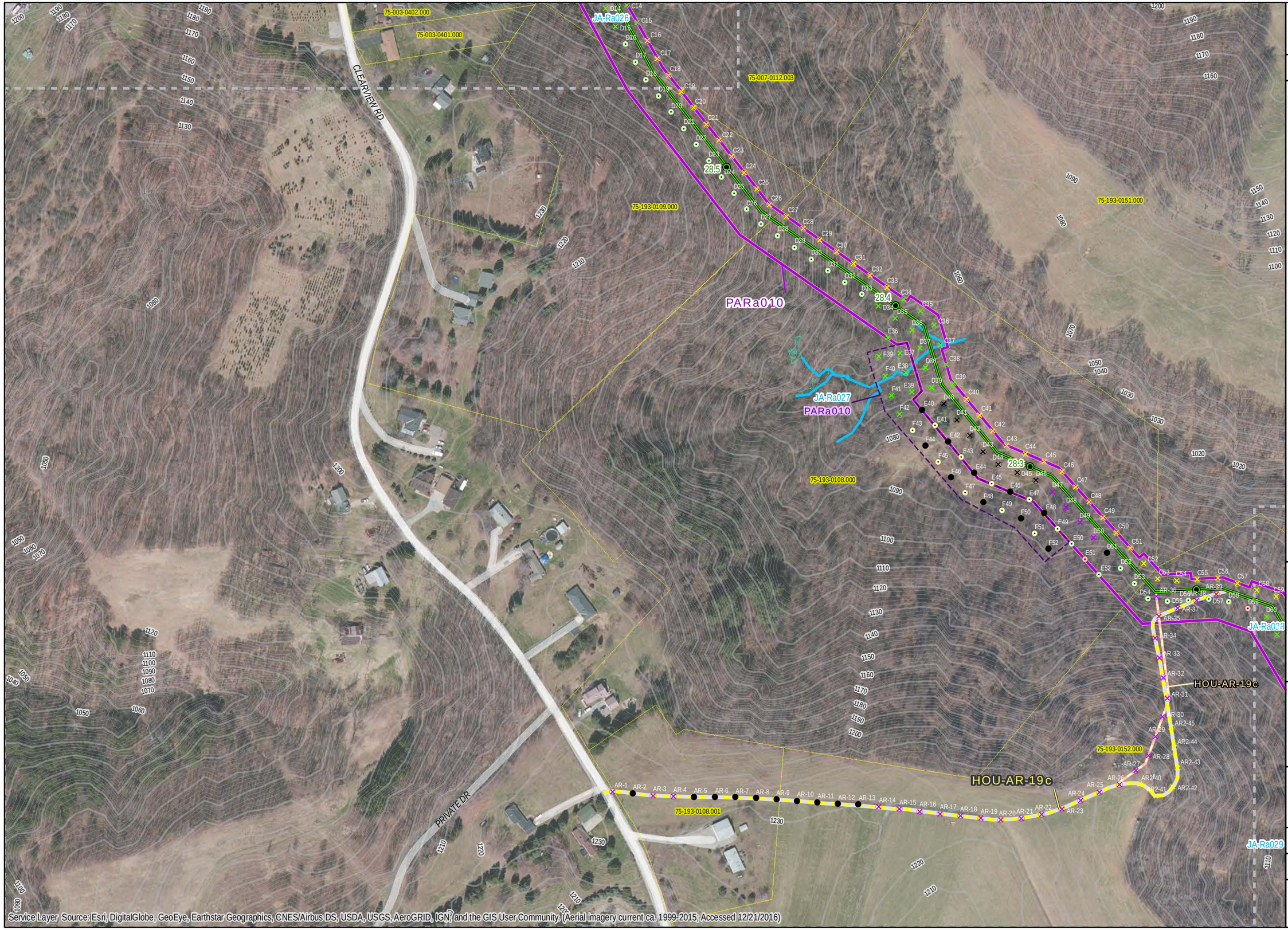
County: Beaver
Municipality: Raccoon/Independence
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.65

Project Location:

County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.66

Project Location:

County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

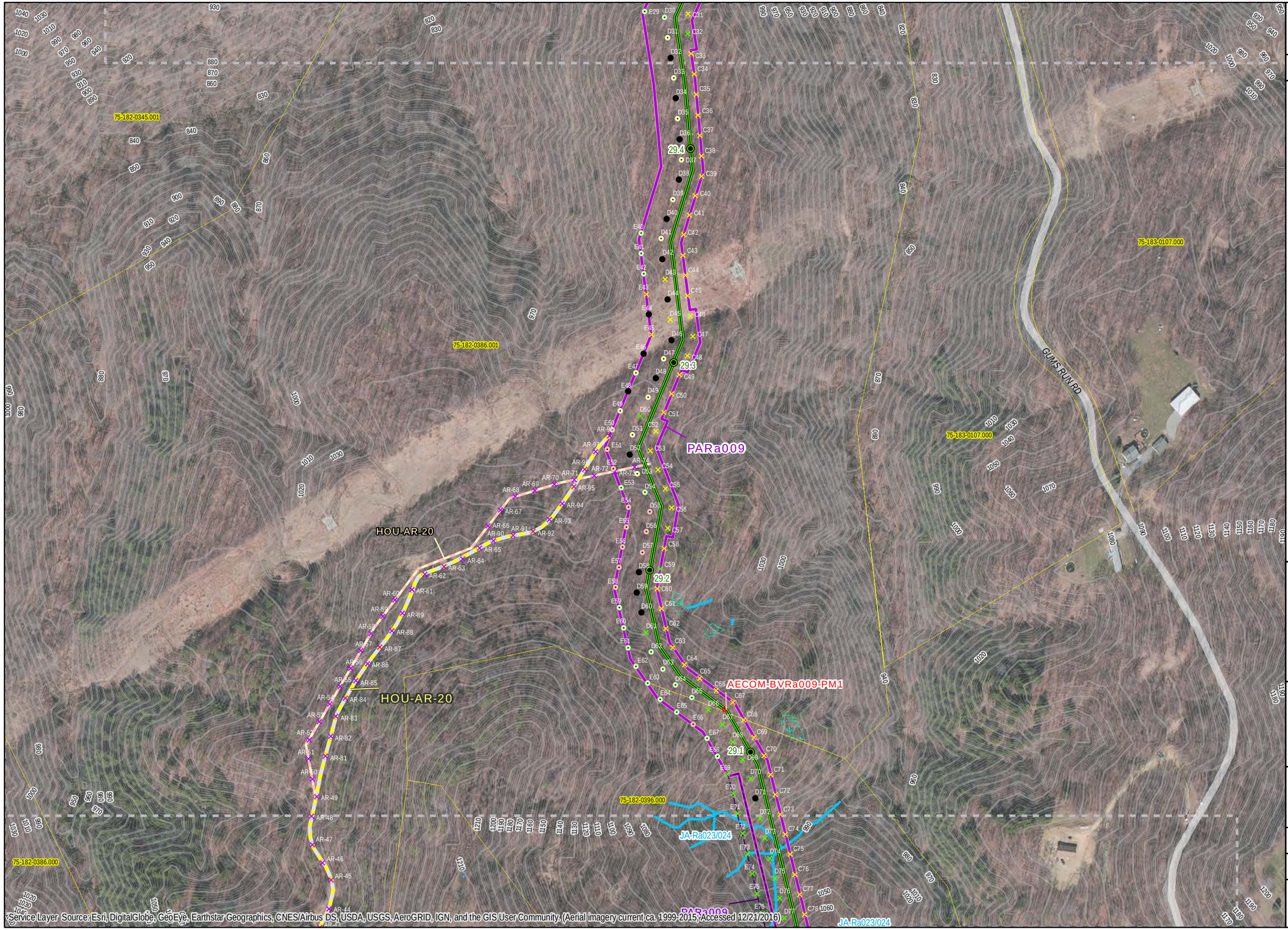
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015, Accessed 12/21/2016)



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015, Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

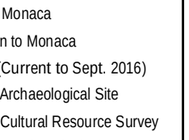
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.67

Project Location:



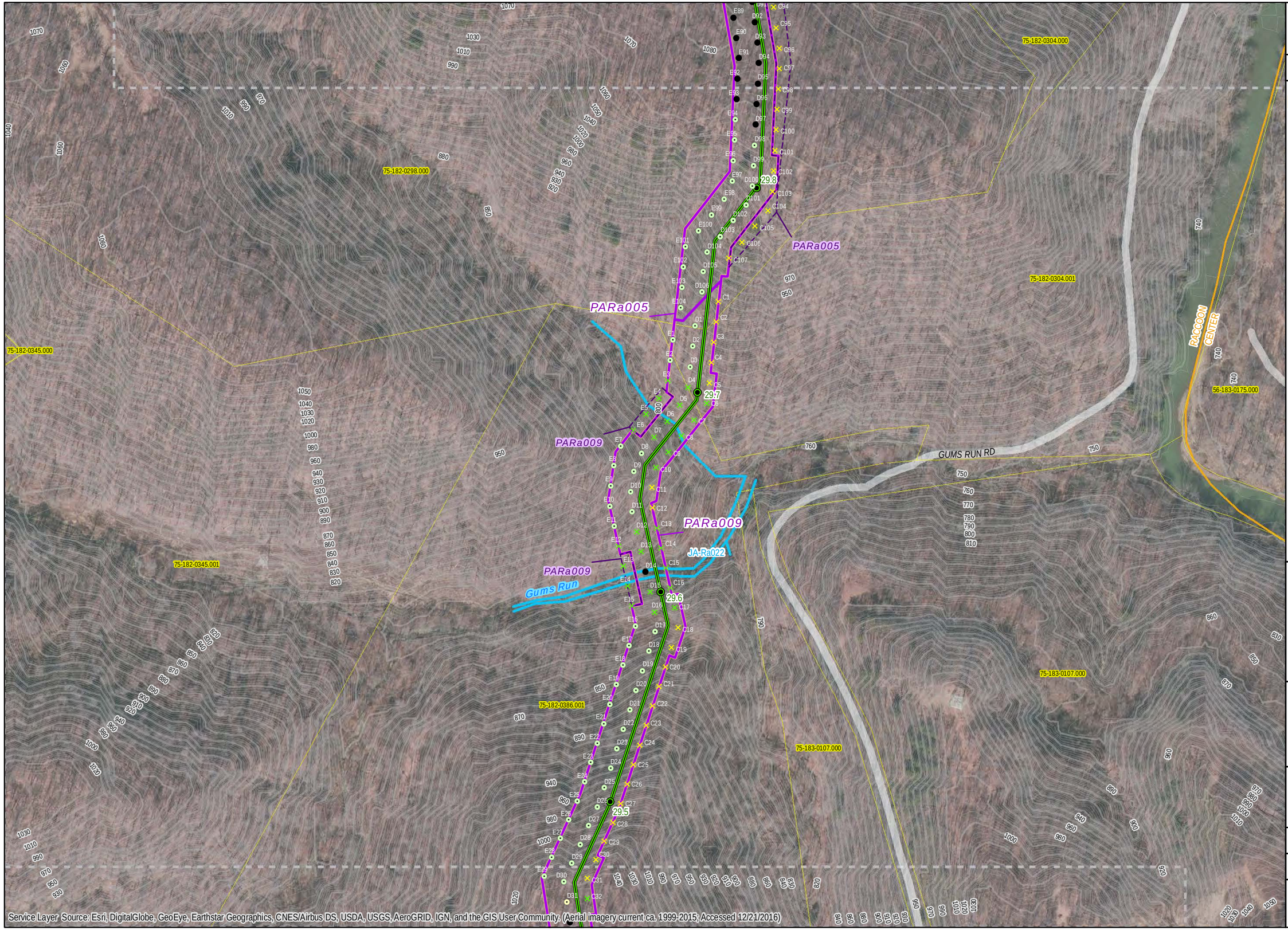
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.68

Project Location:

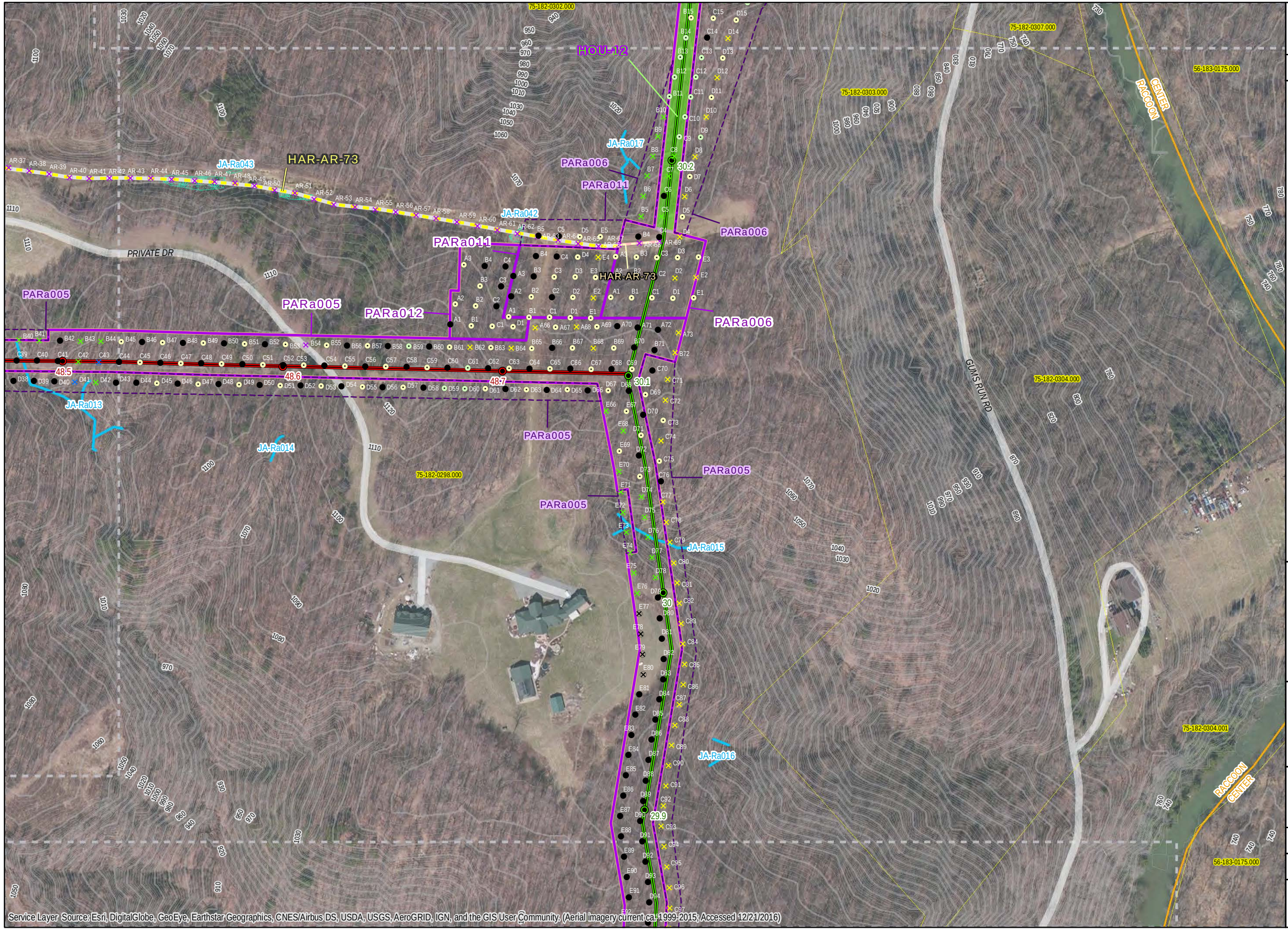
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.69

Project Location:

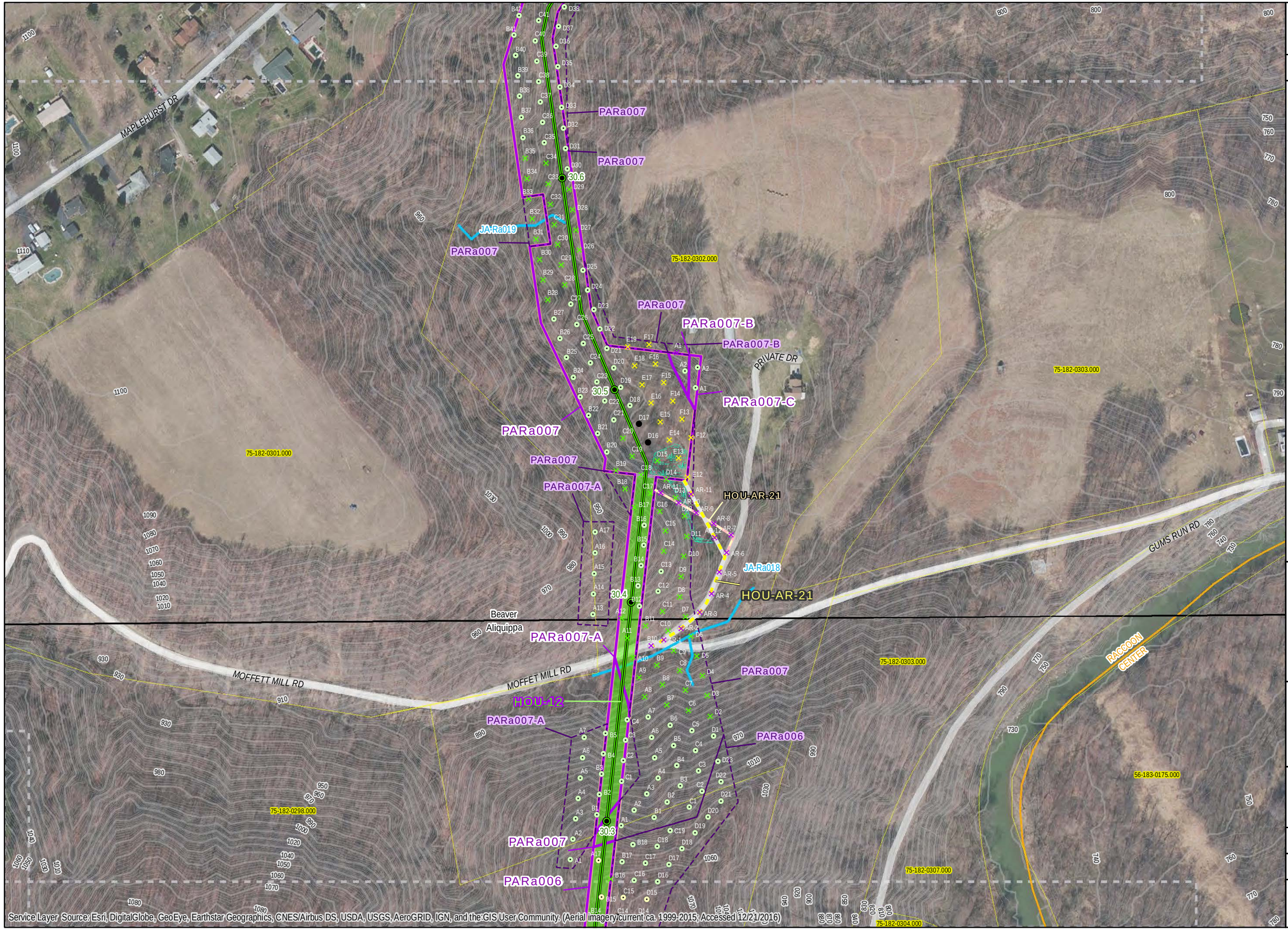
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.70

Project Location:

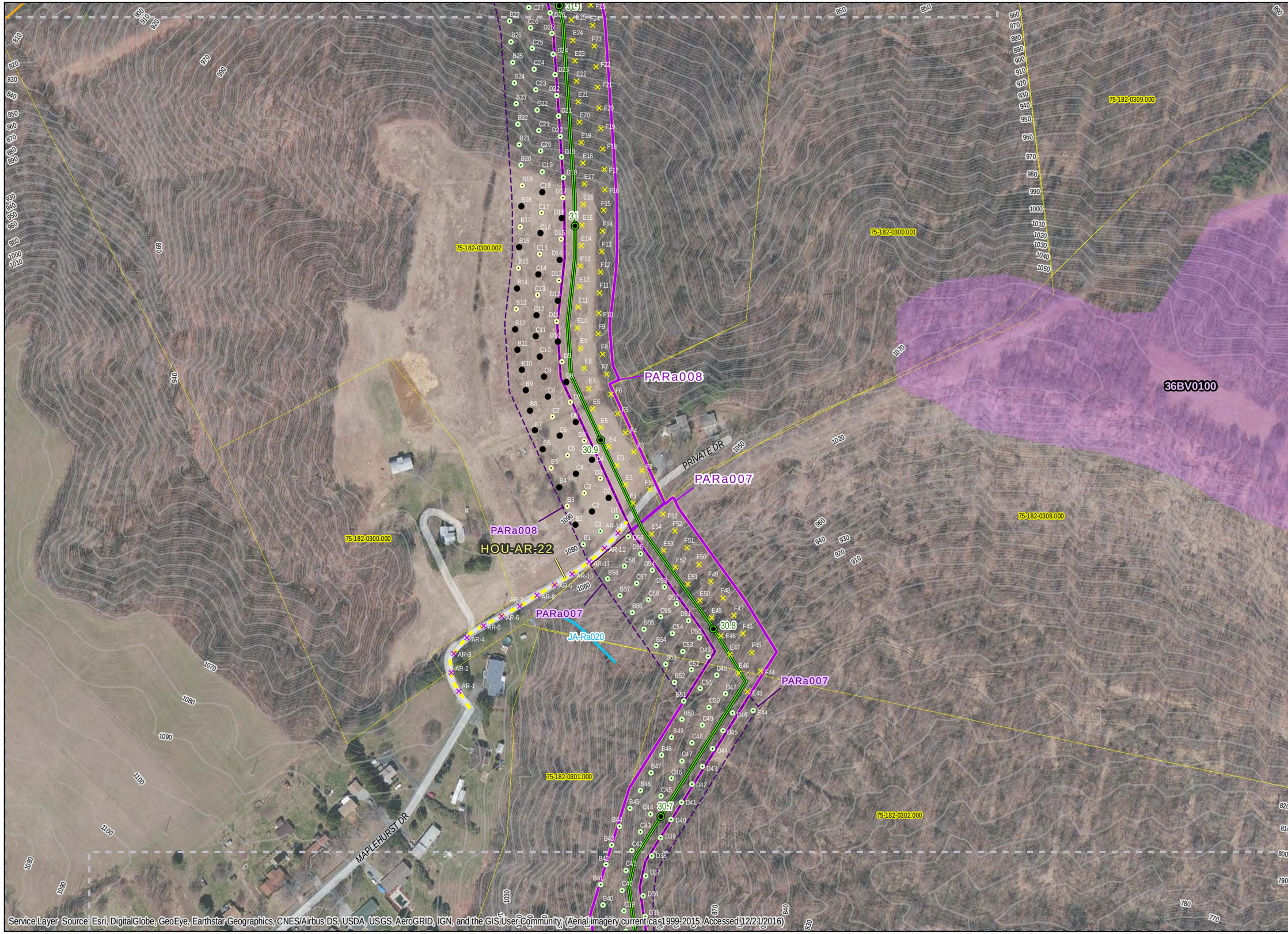
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa/Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.71

Project Location:

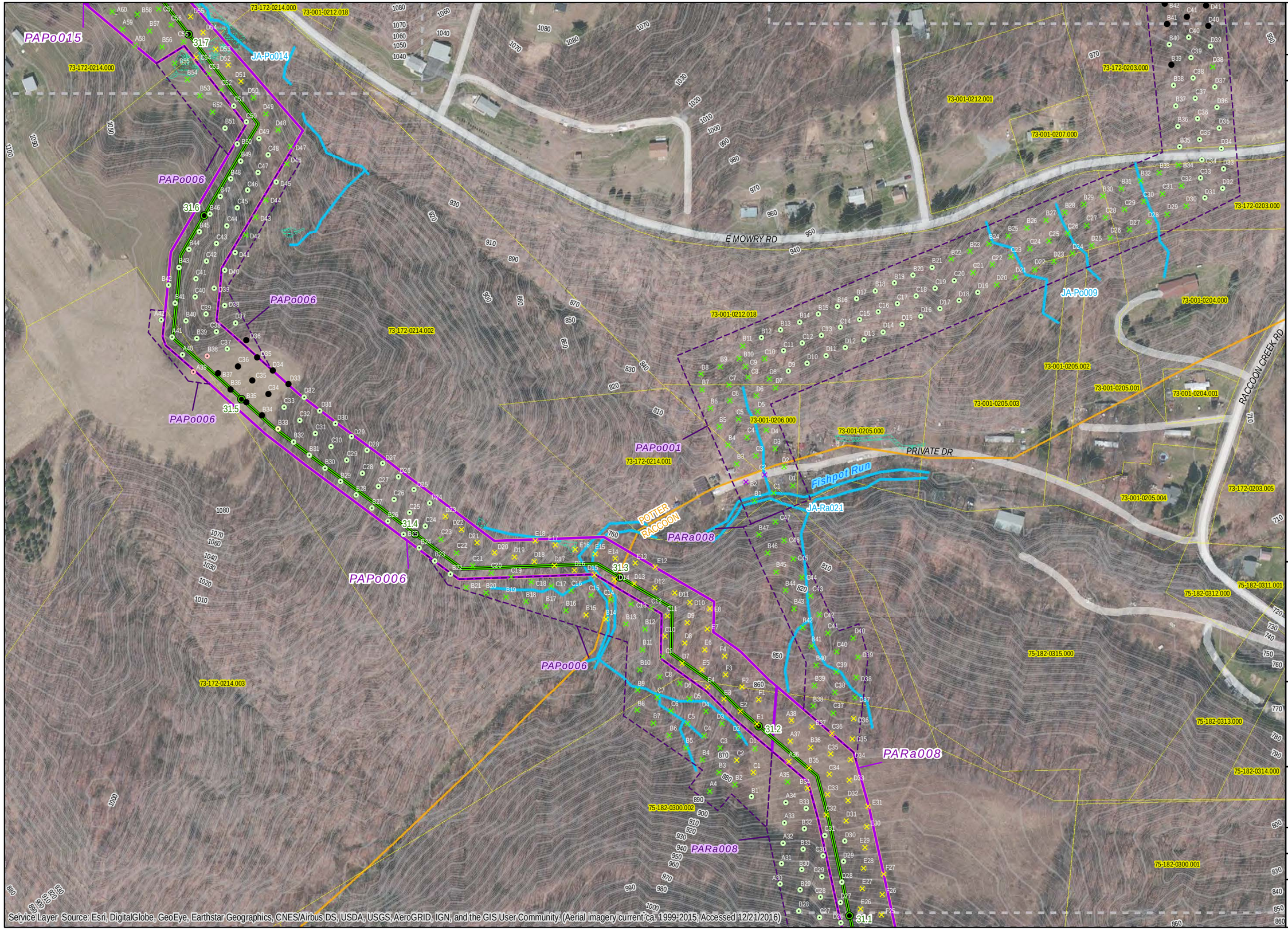
County: Beaver
Municipality: Raccoon
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.72

Project Location:

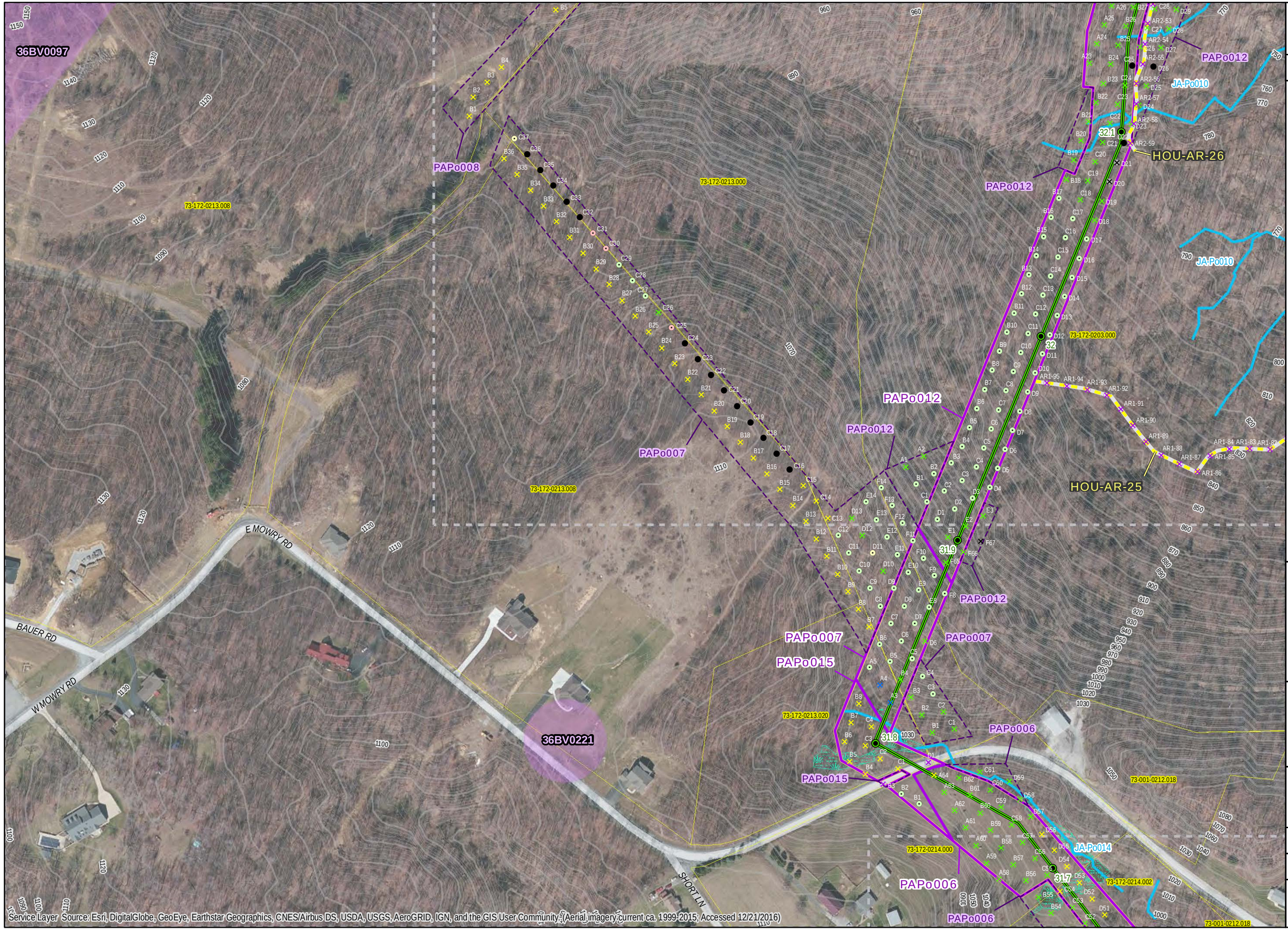
County: Beaver
Municipality: Potter/Raccoon
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.73

Project Location:

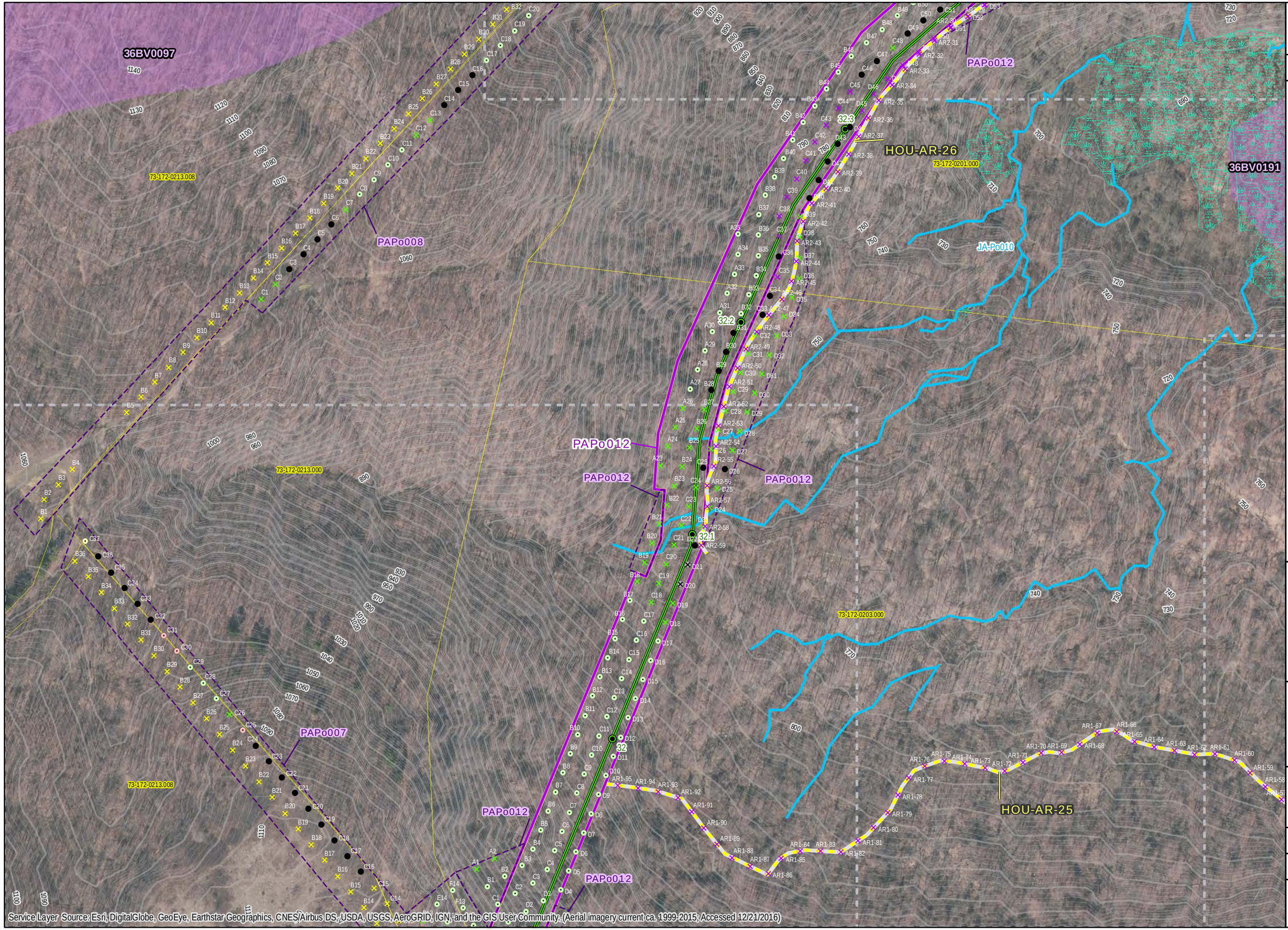
County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond

JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary

- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.74

Project Location:

County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.75

Project Location:

County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters
N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.76

Project Location:

County: Beaver
Municipality: Potter
USGS Quad: Beaver

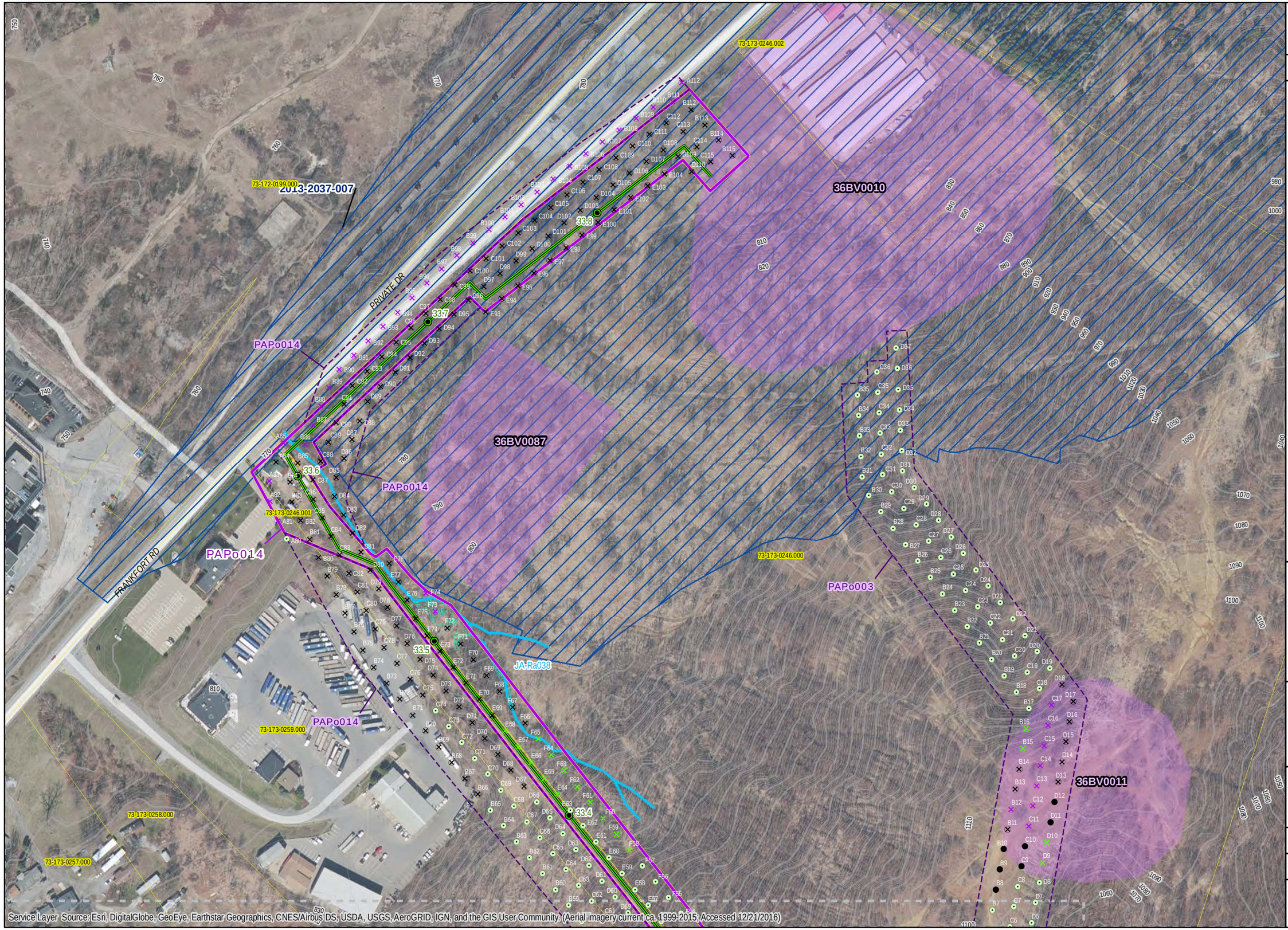
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca.1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.77

Project Location:

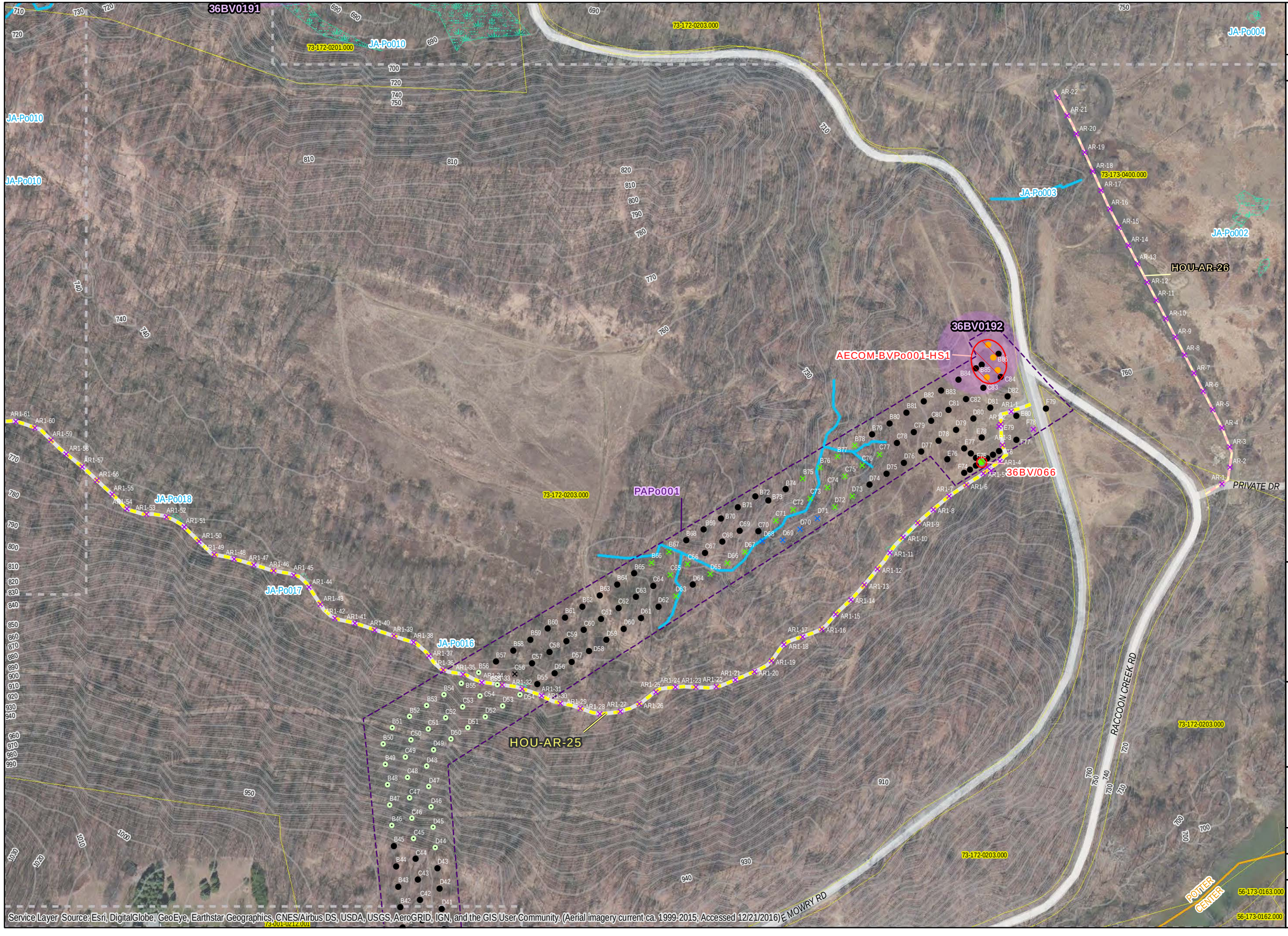
County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.78

Project Location:

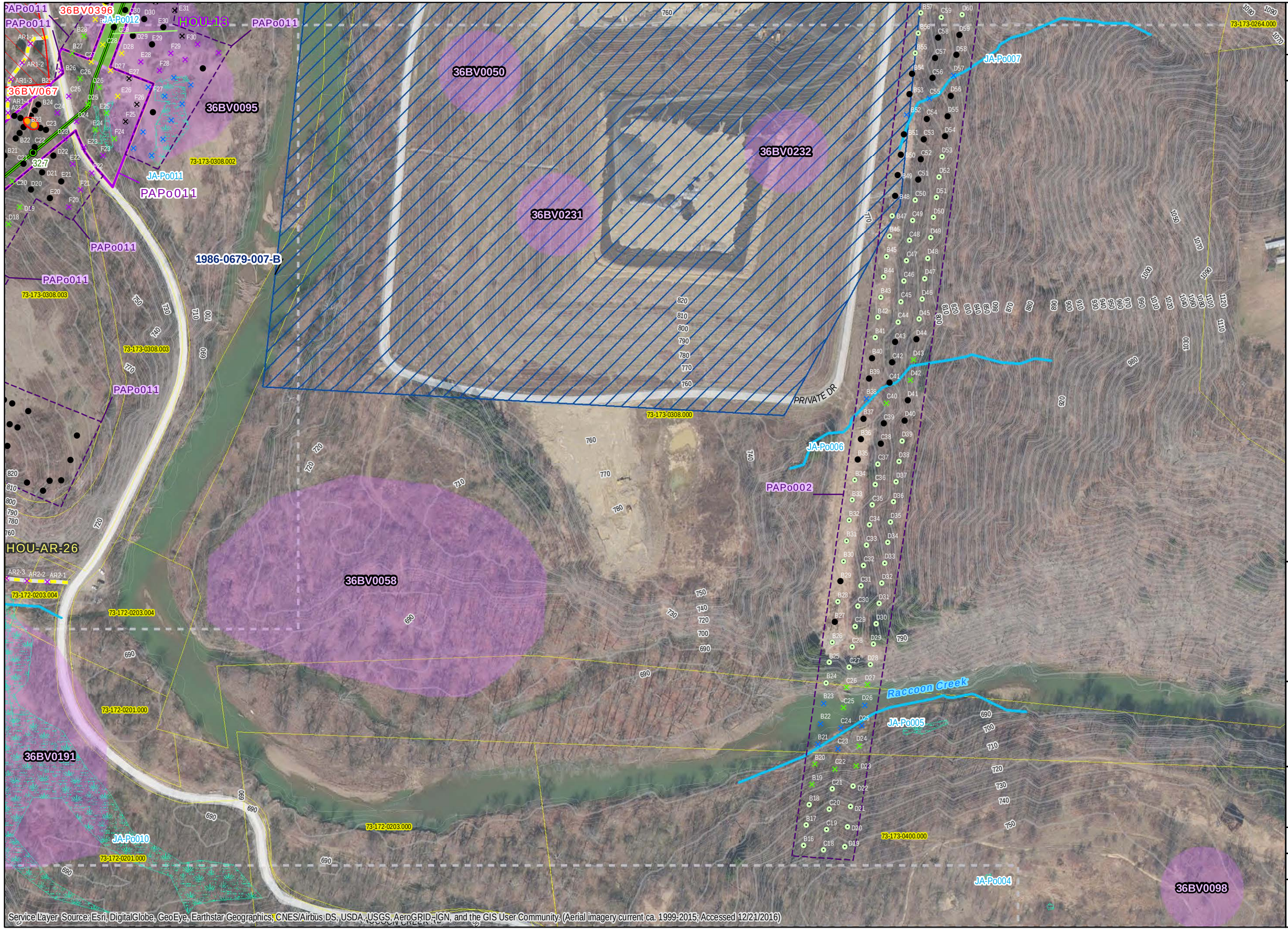
County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

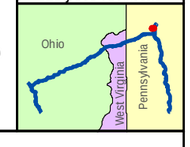
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.79

Project Location:



County: Beaver
Municipality: Potter
USGS Quad: Beaver

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.80

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: East Liverpool South

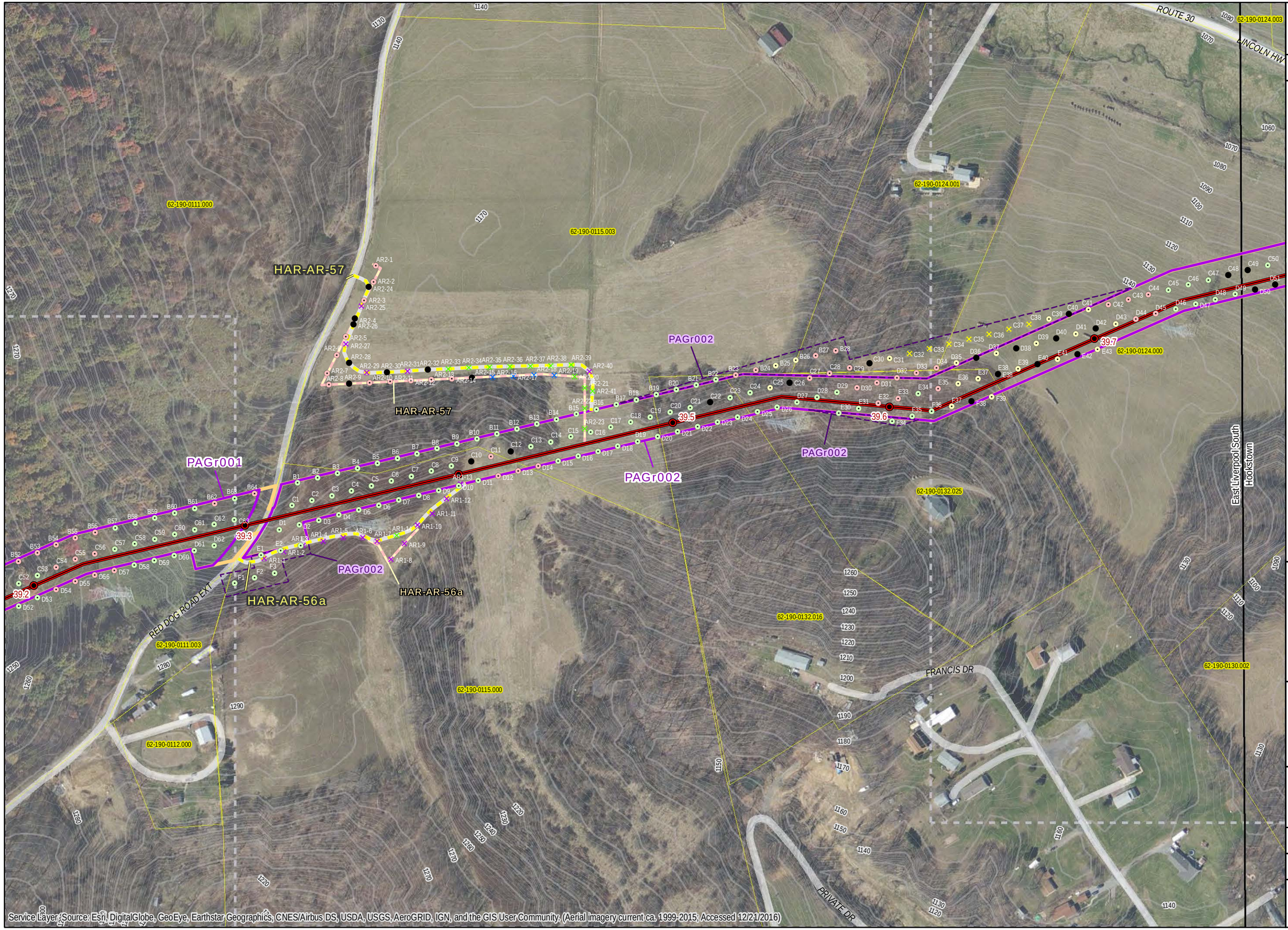
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Project Location:

Figure 6.81

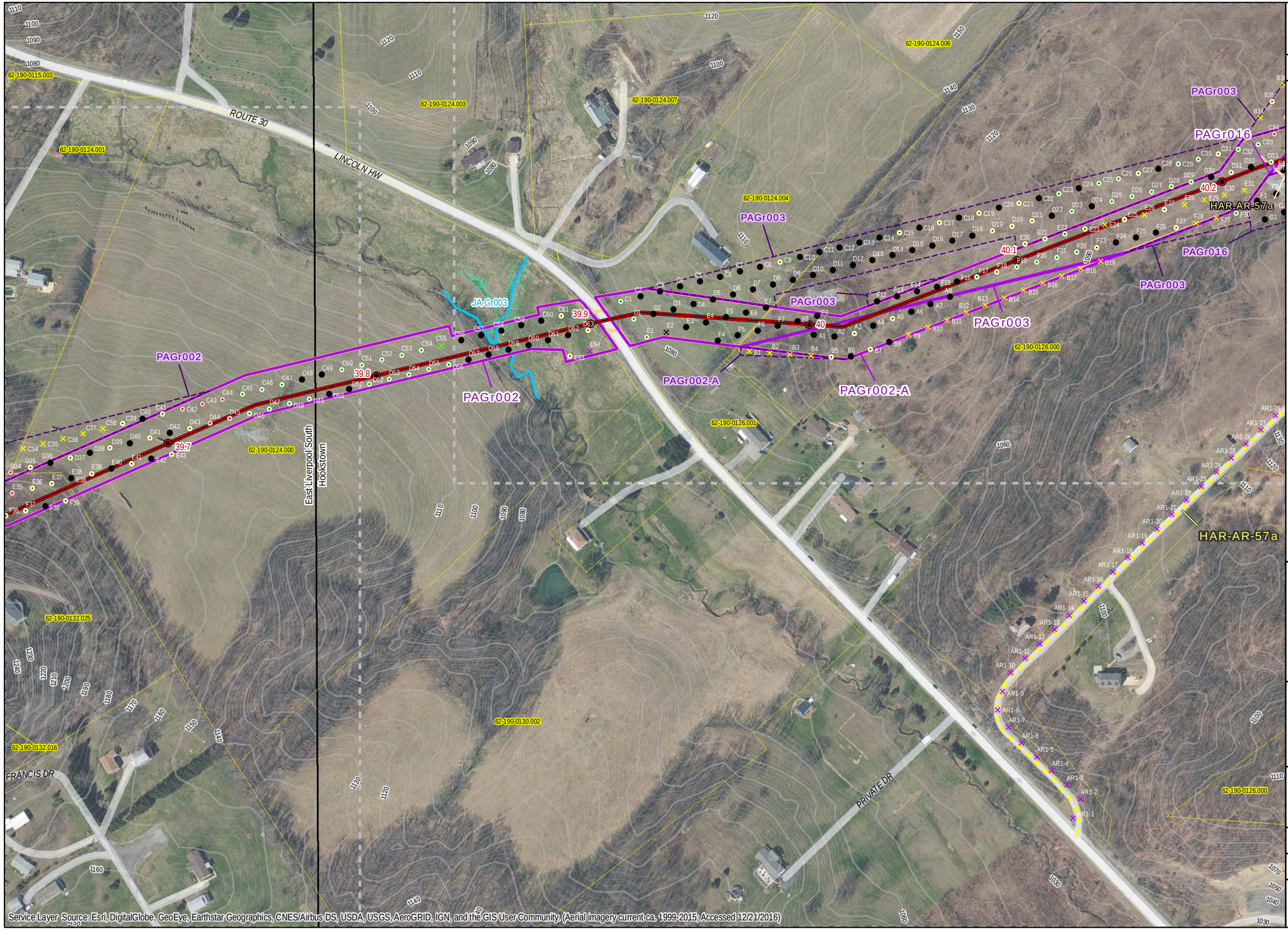
County: Beaver
Municipality: Greene
USGS Quad: East Liverpool South/Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.82

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: East Liverpool South/Hookstown

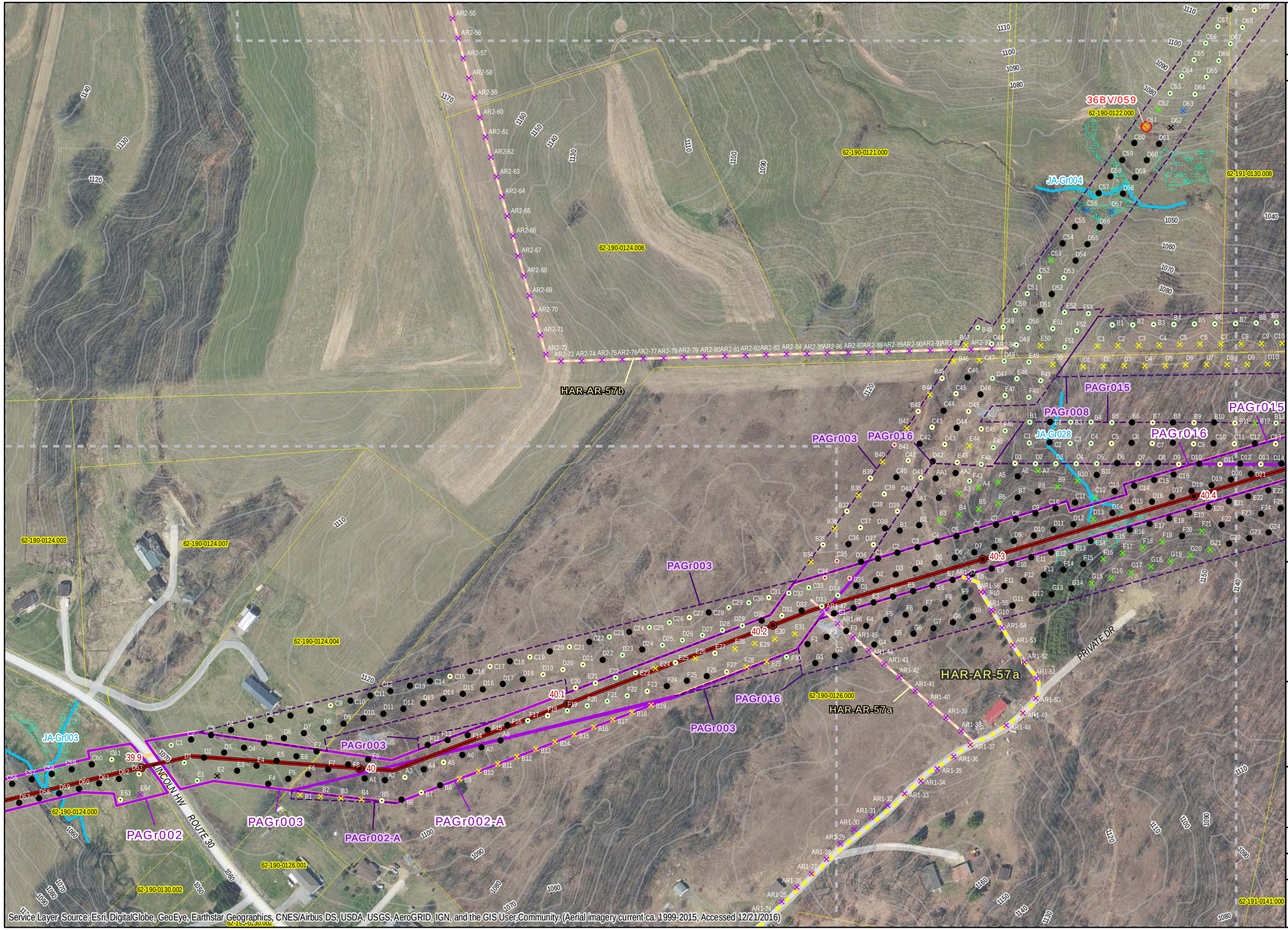
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.83

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

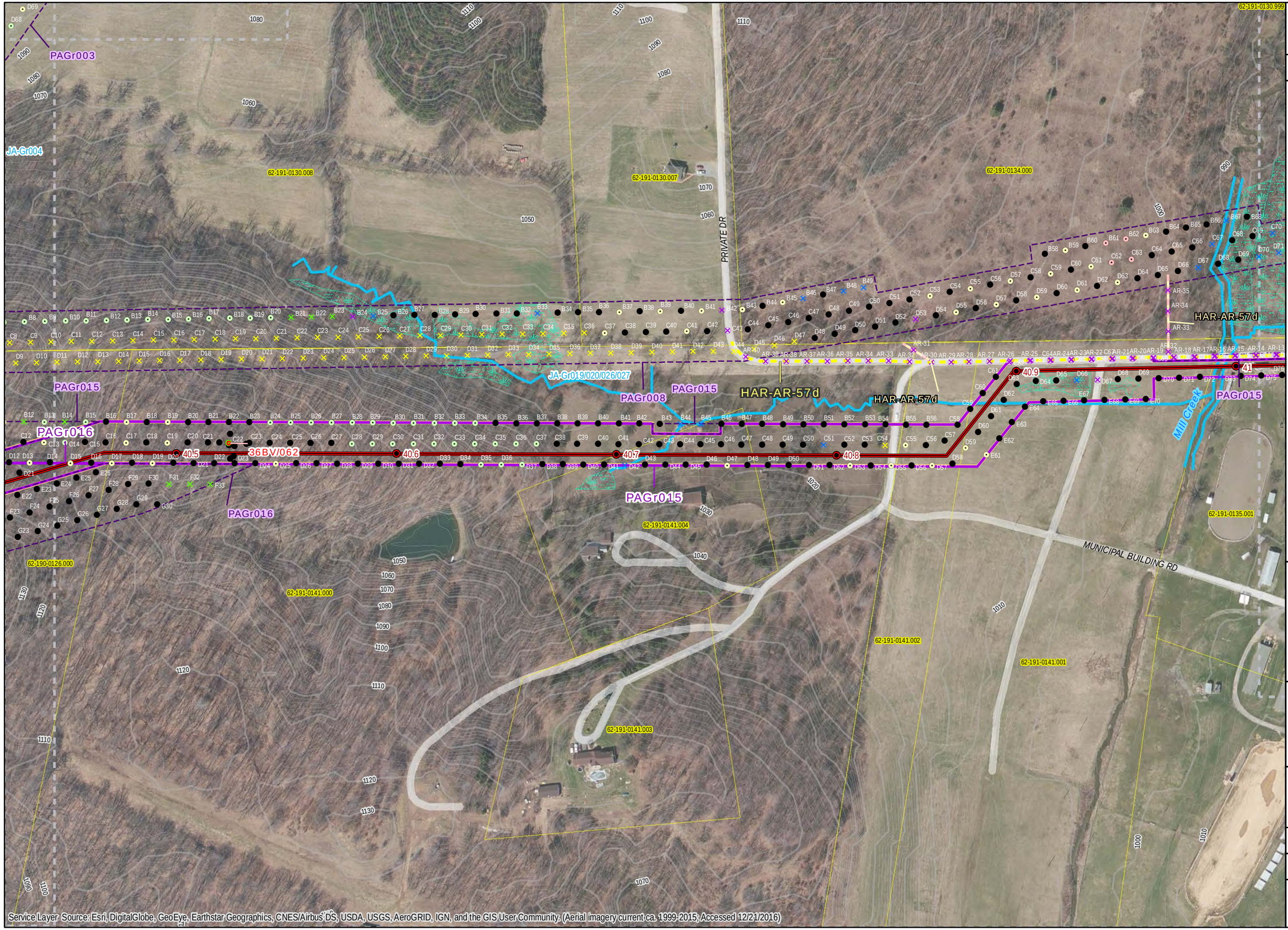
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.84

Project Location:

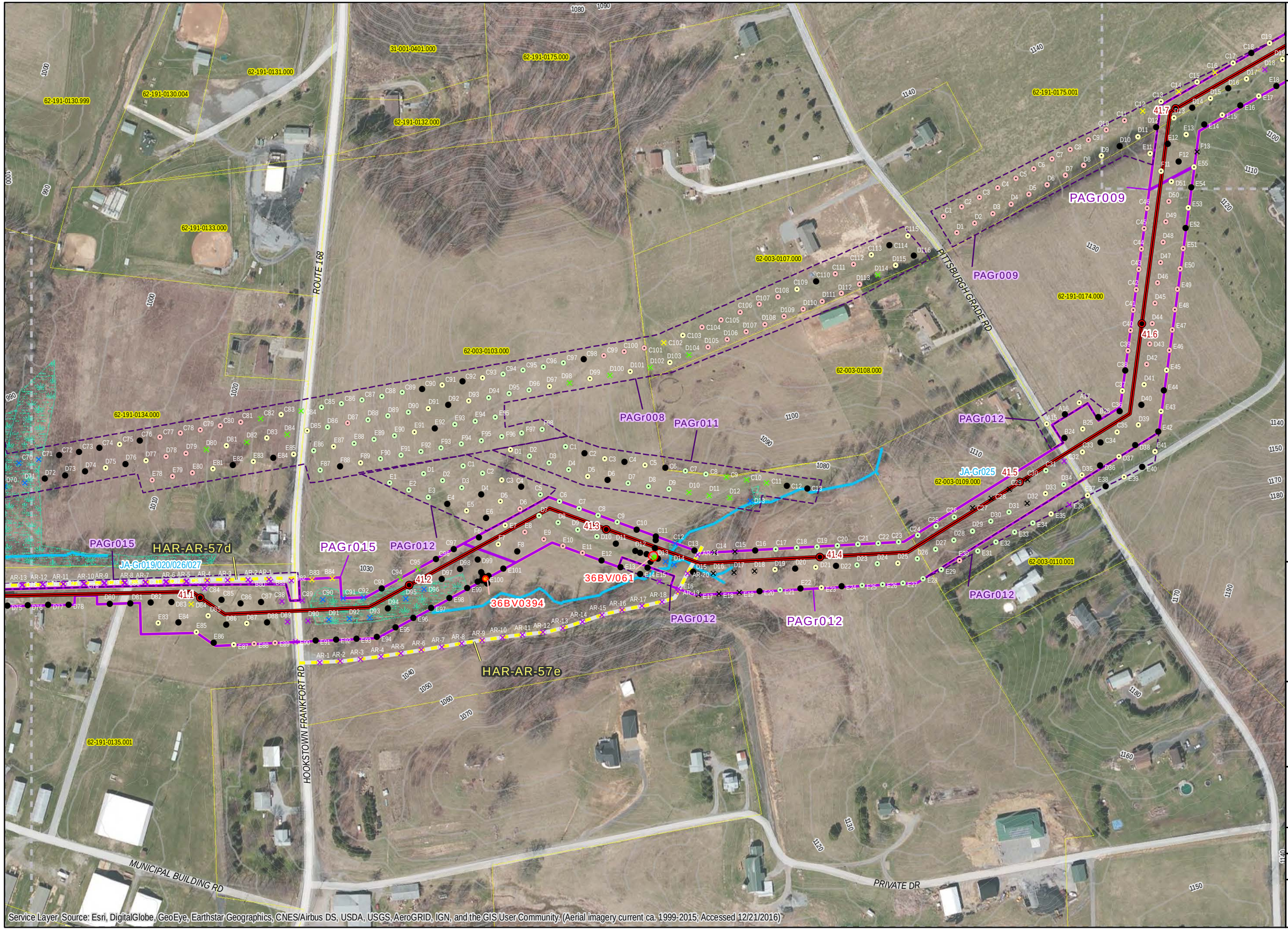
County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.85

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.86

Project Location:

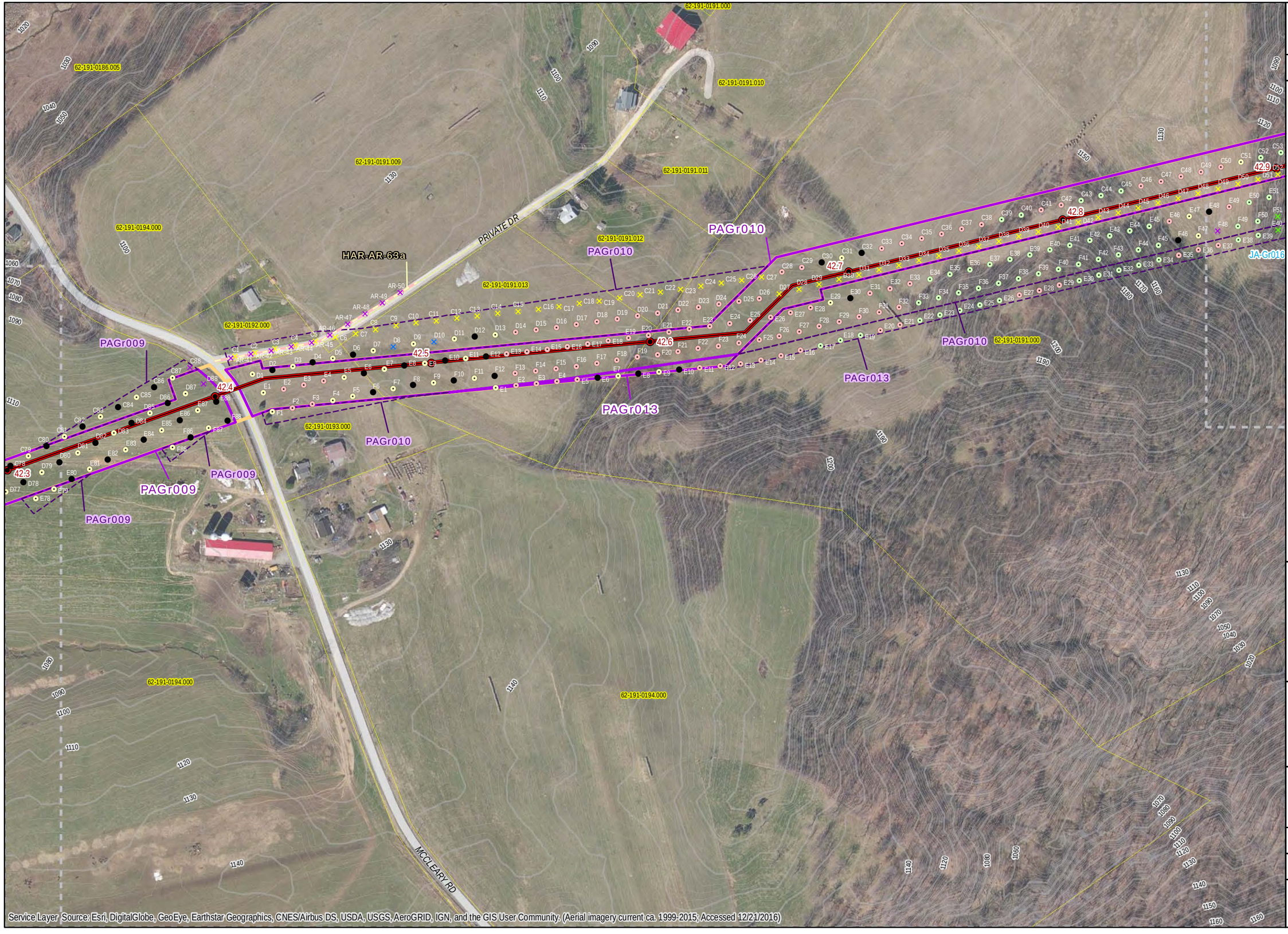
County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

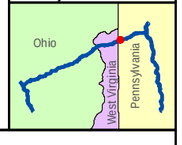
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.87

Project Location:



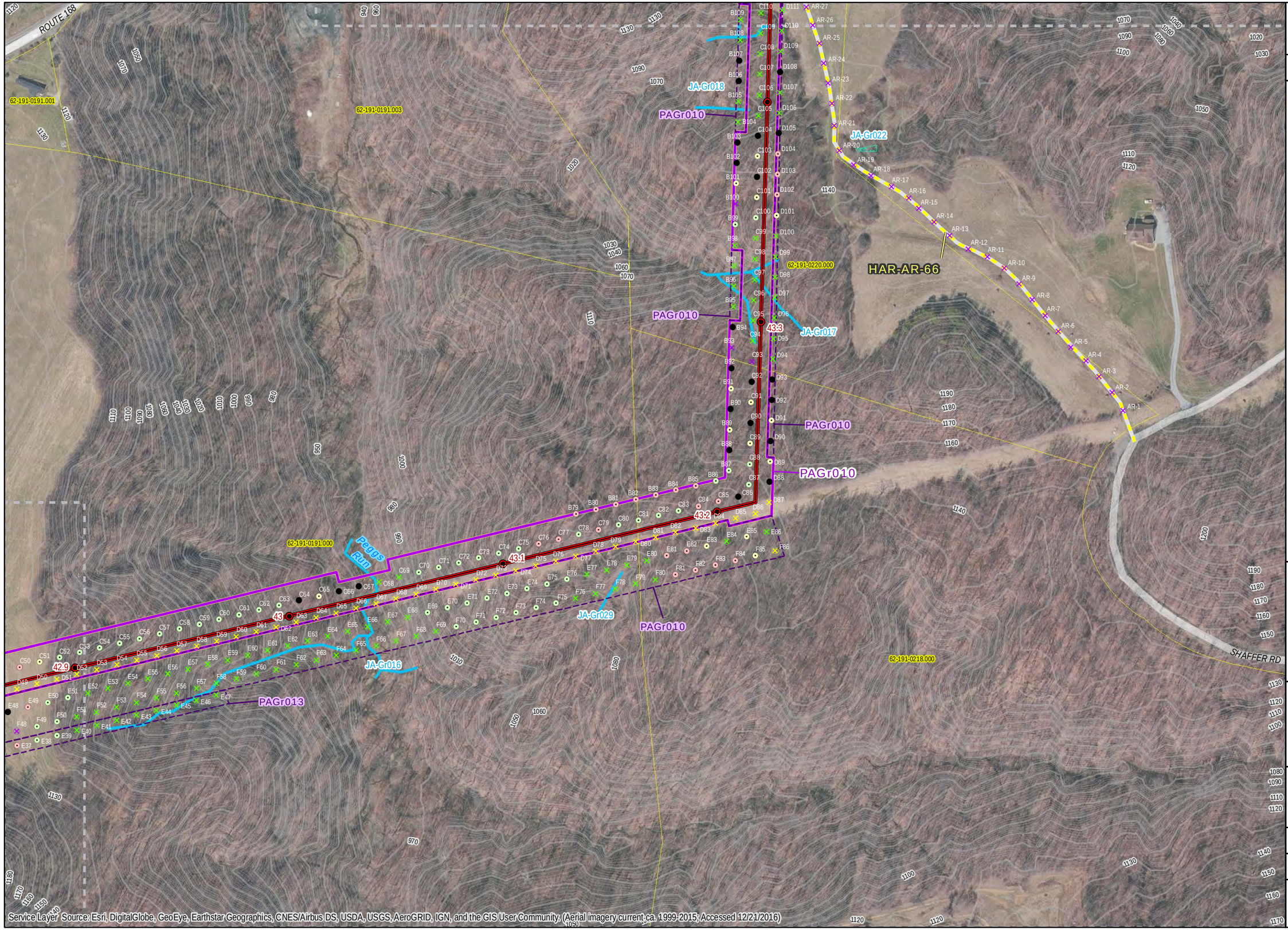
County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current: ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.88

Project Location:

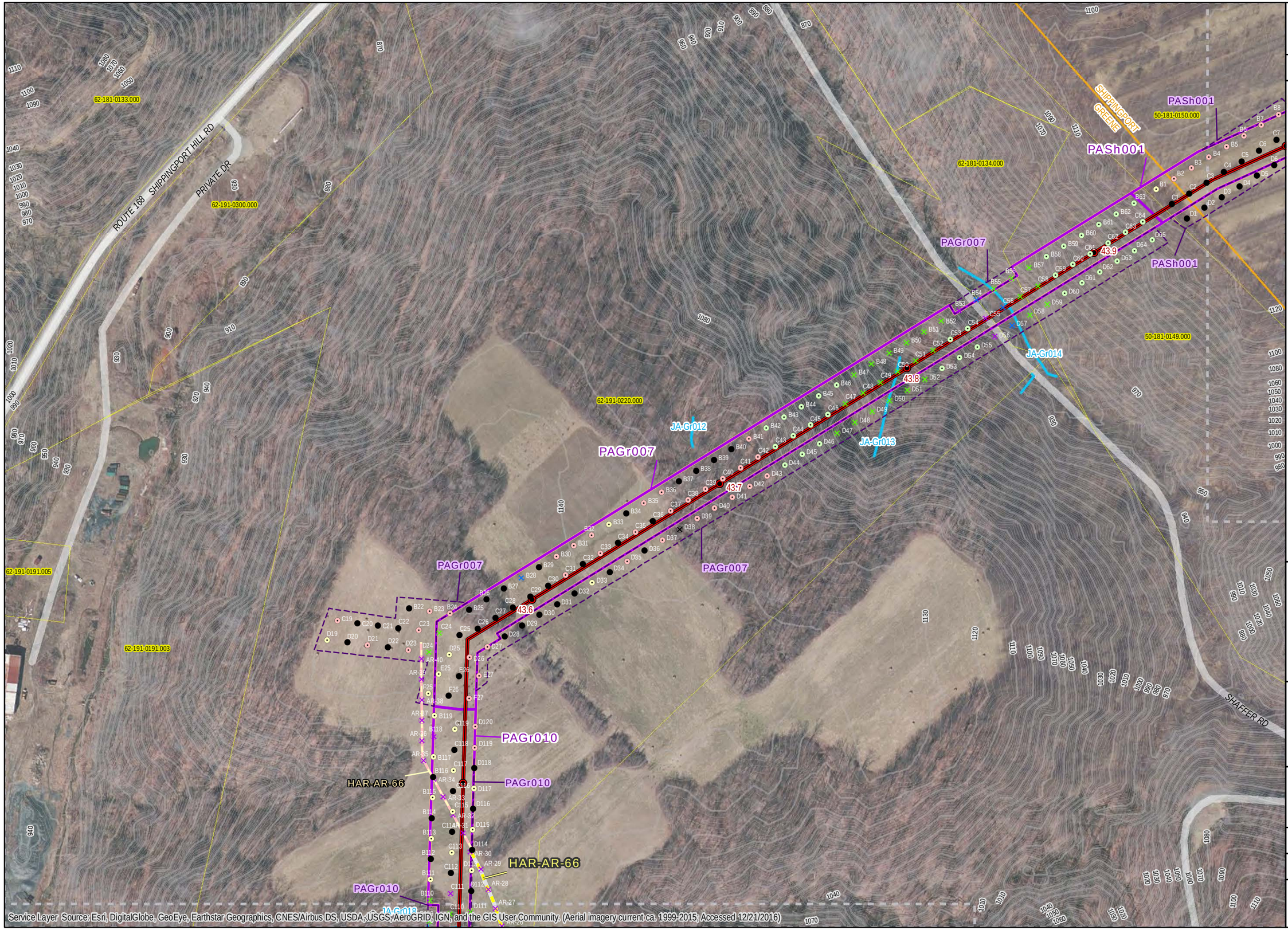
County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

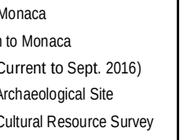
Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.89

Project Location:



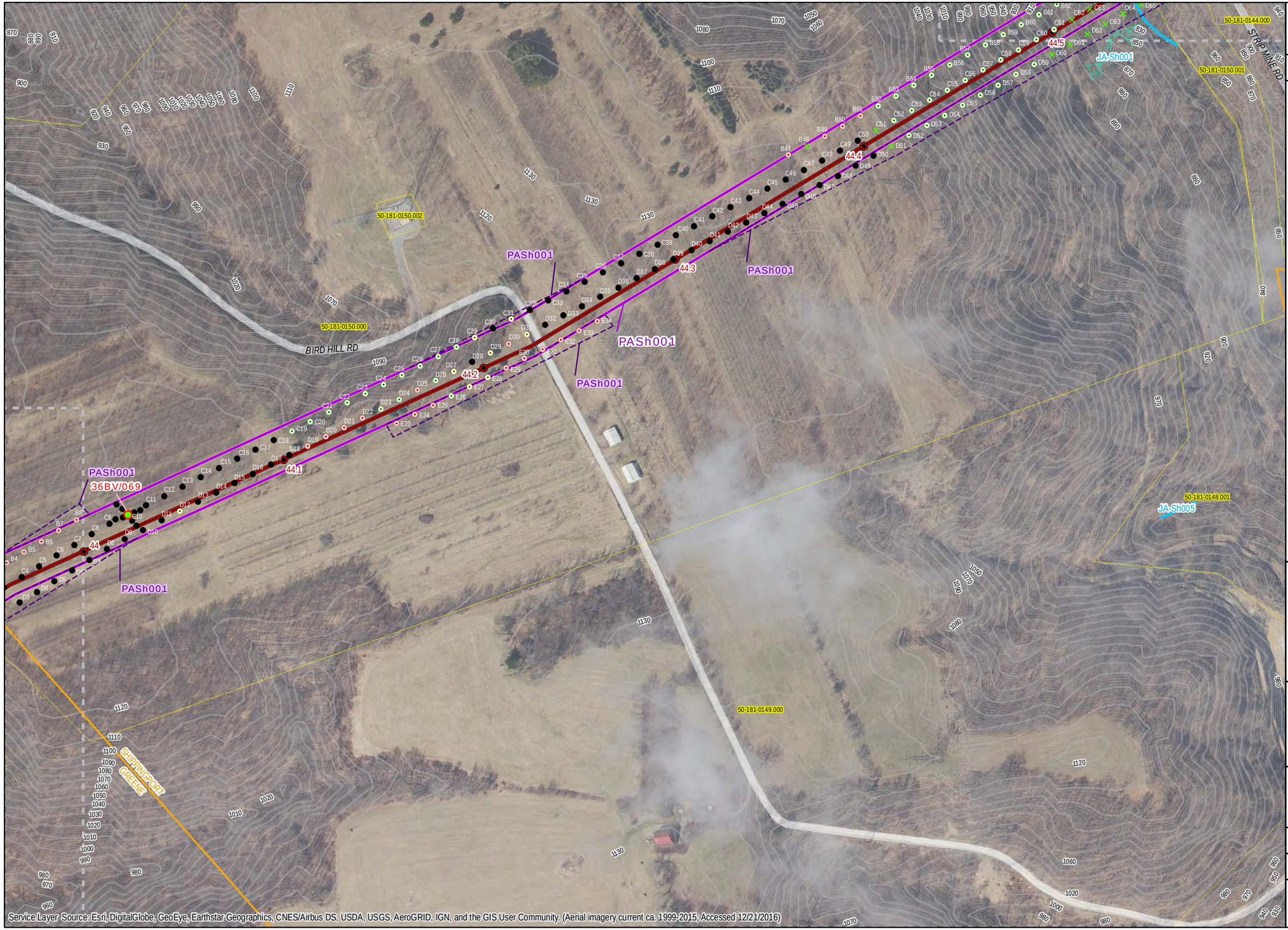
County: Beaver
Municipality: Greene/Shippingport
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.90

Project Location:

County: Beaver
Municipality: Greene/Shippingport
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.91

Project Location:

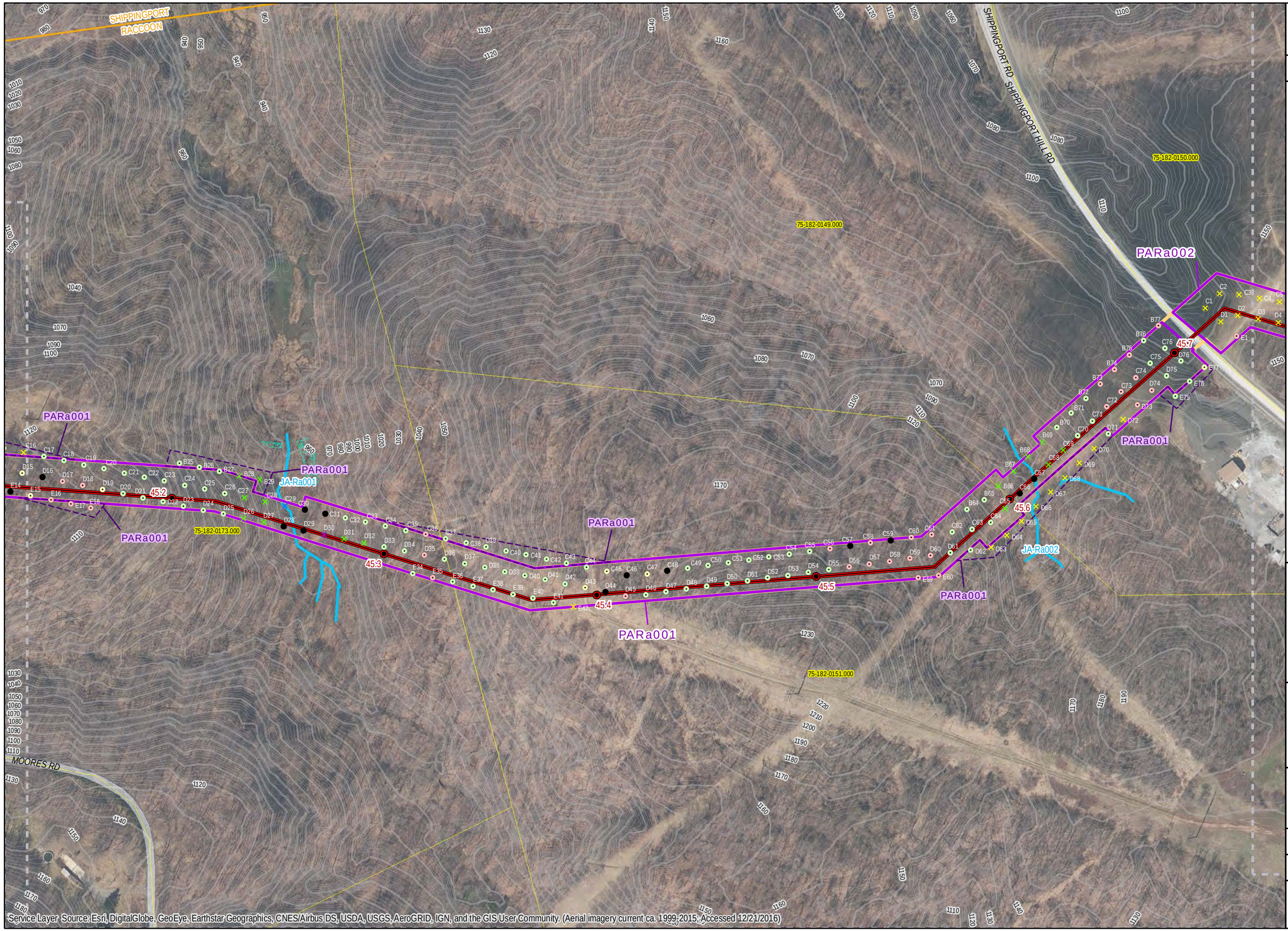
County: Beaver
Municipality:
Raccoon/Shippingport/Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental
data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.92

Project Location:

County: Beaver
Municipality: Raccoon
USGS Quad: Hookstown

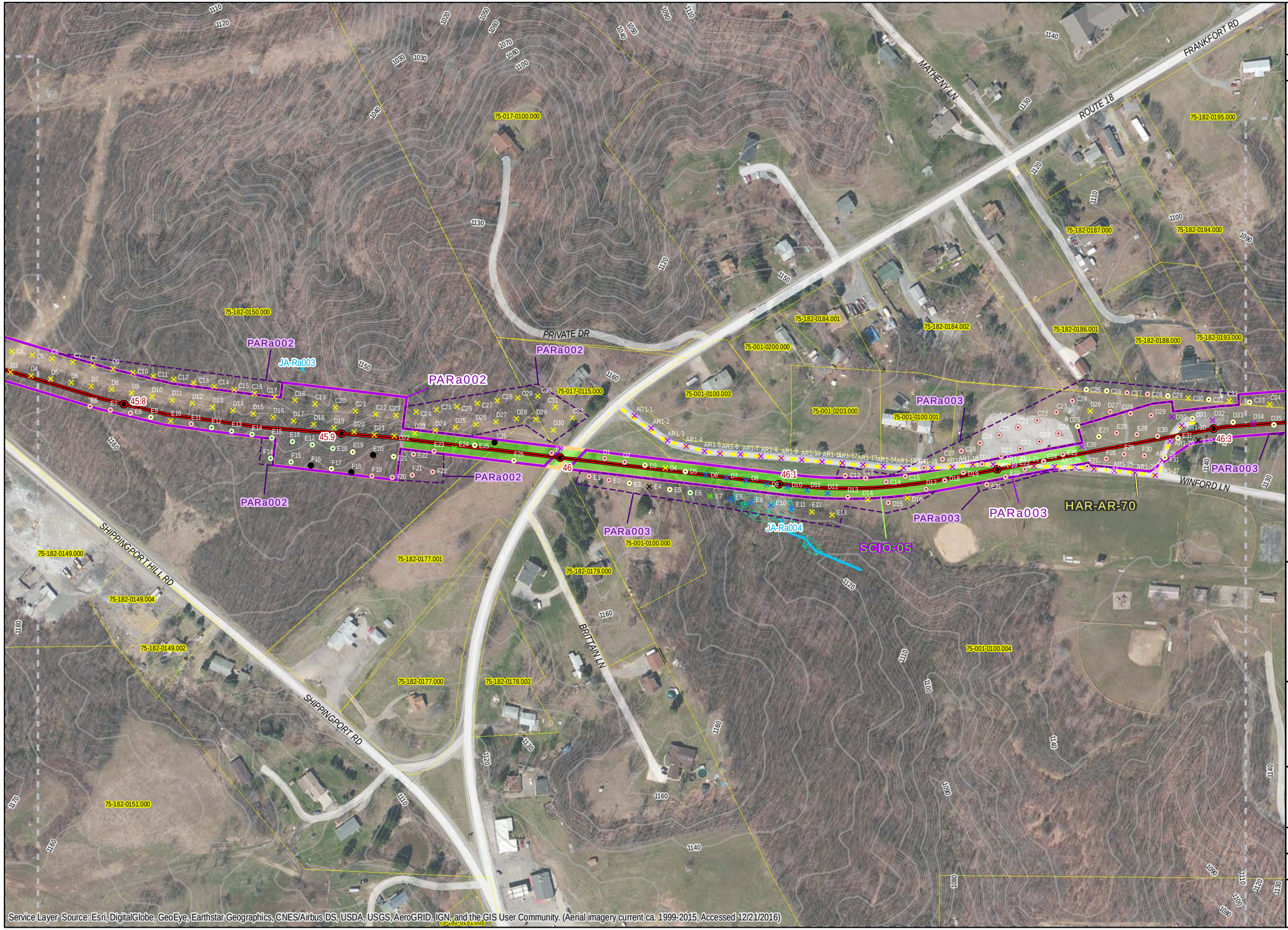
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015, Accessed 12/21/2016)



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.93

Project Location:

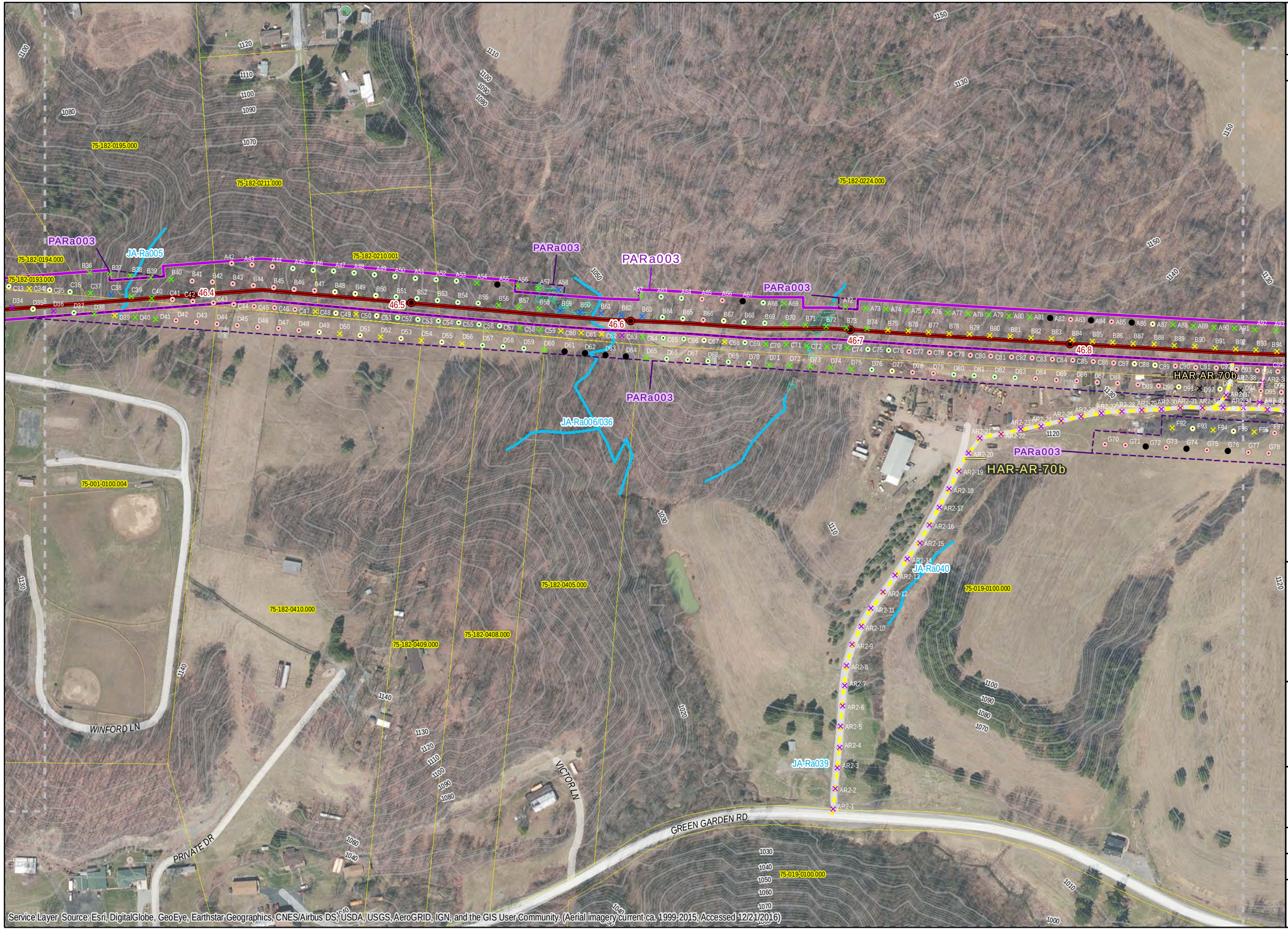
County: Beaver
Municipality: Raccoon
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.94

Project Location:

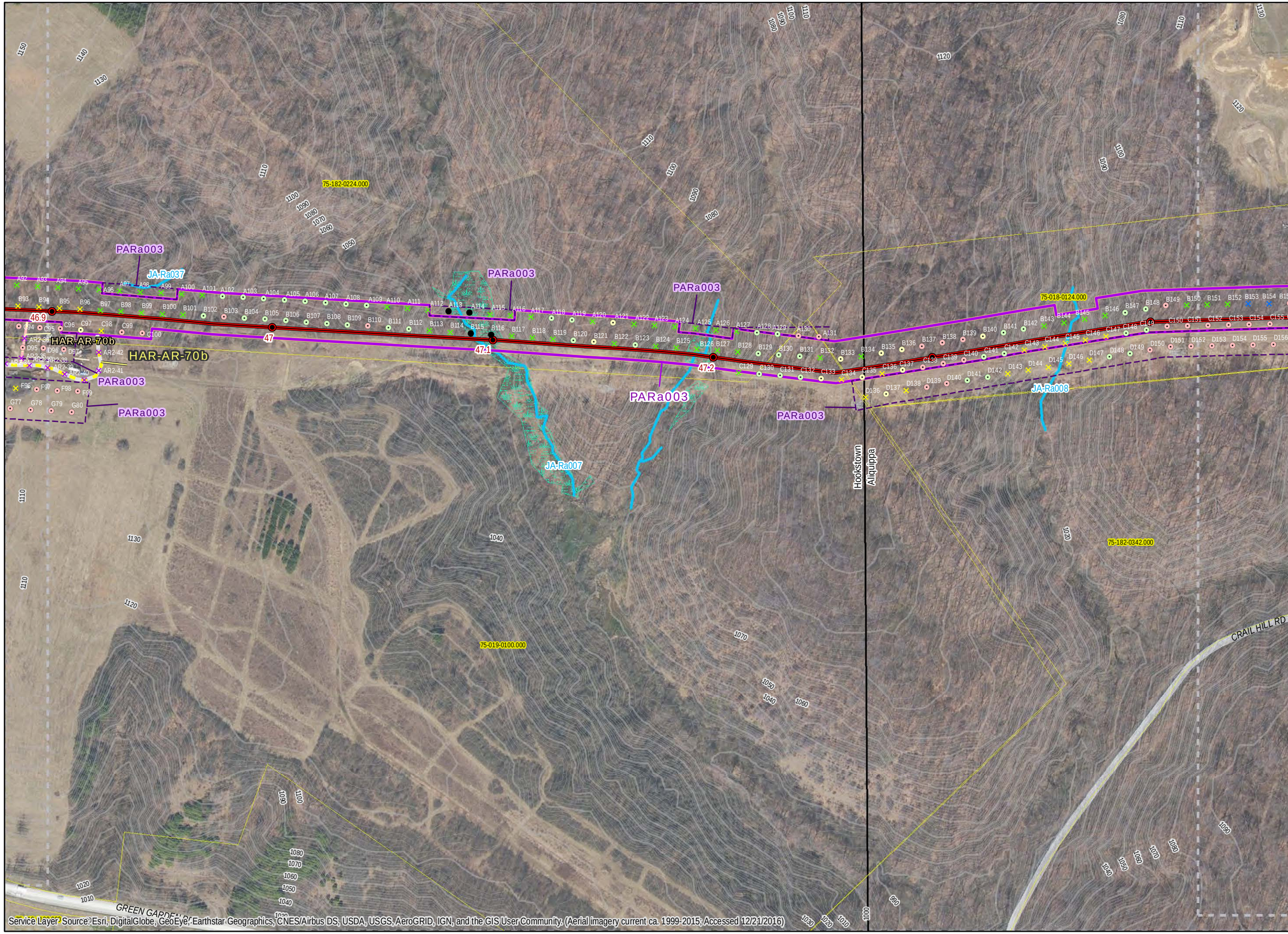
County: Beaver
Municipality: Raccoon
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond

JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.95

Project Location:

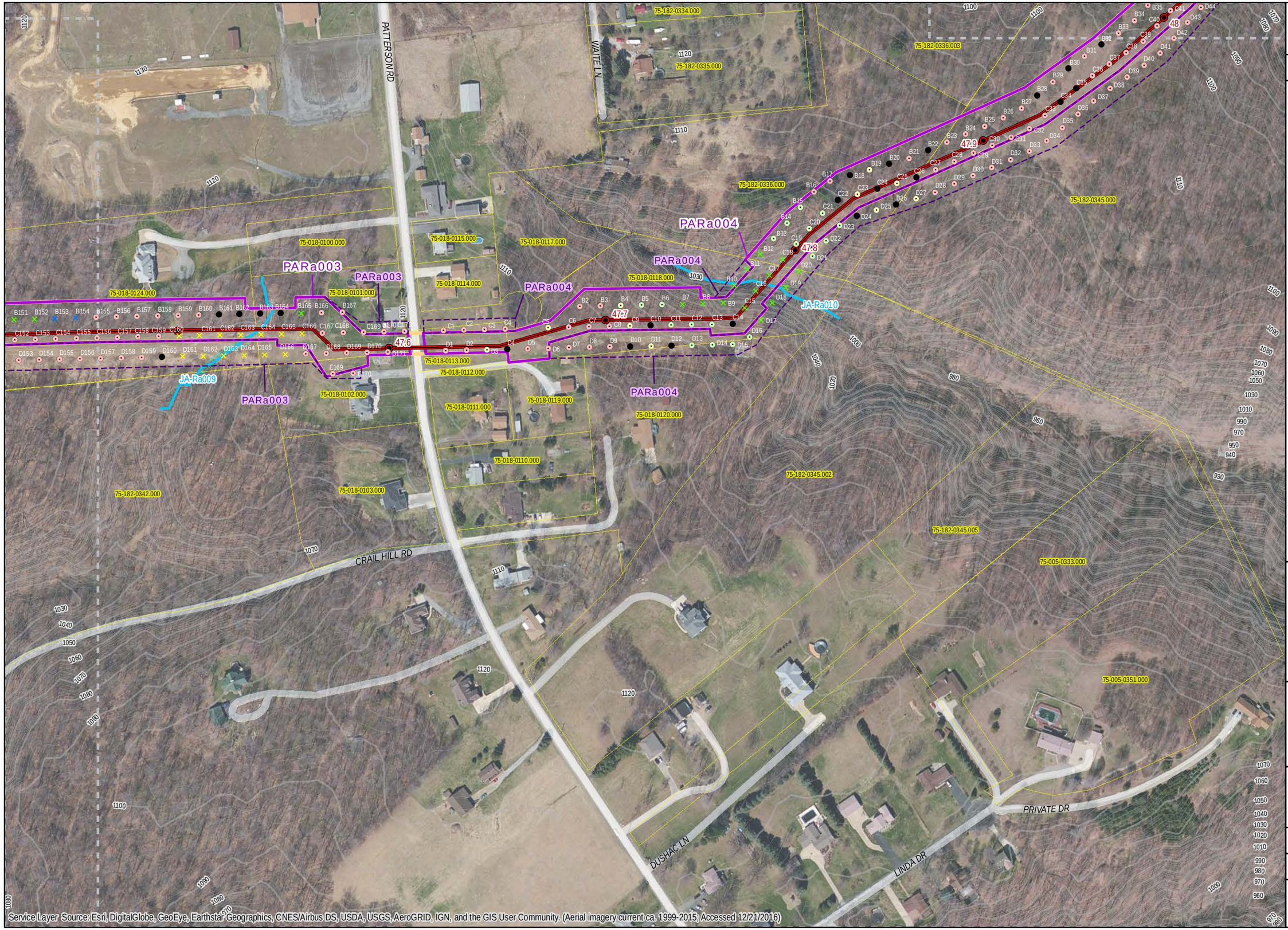
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa/Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.96

Project Location:

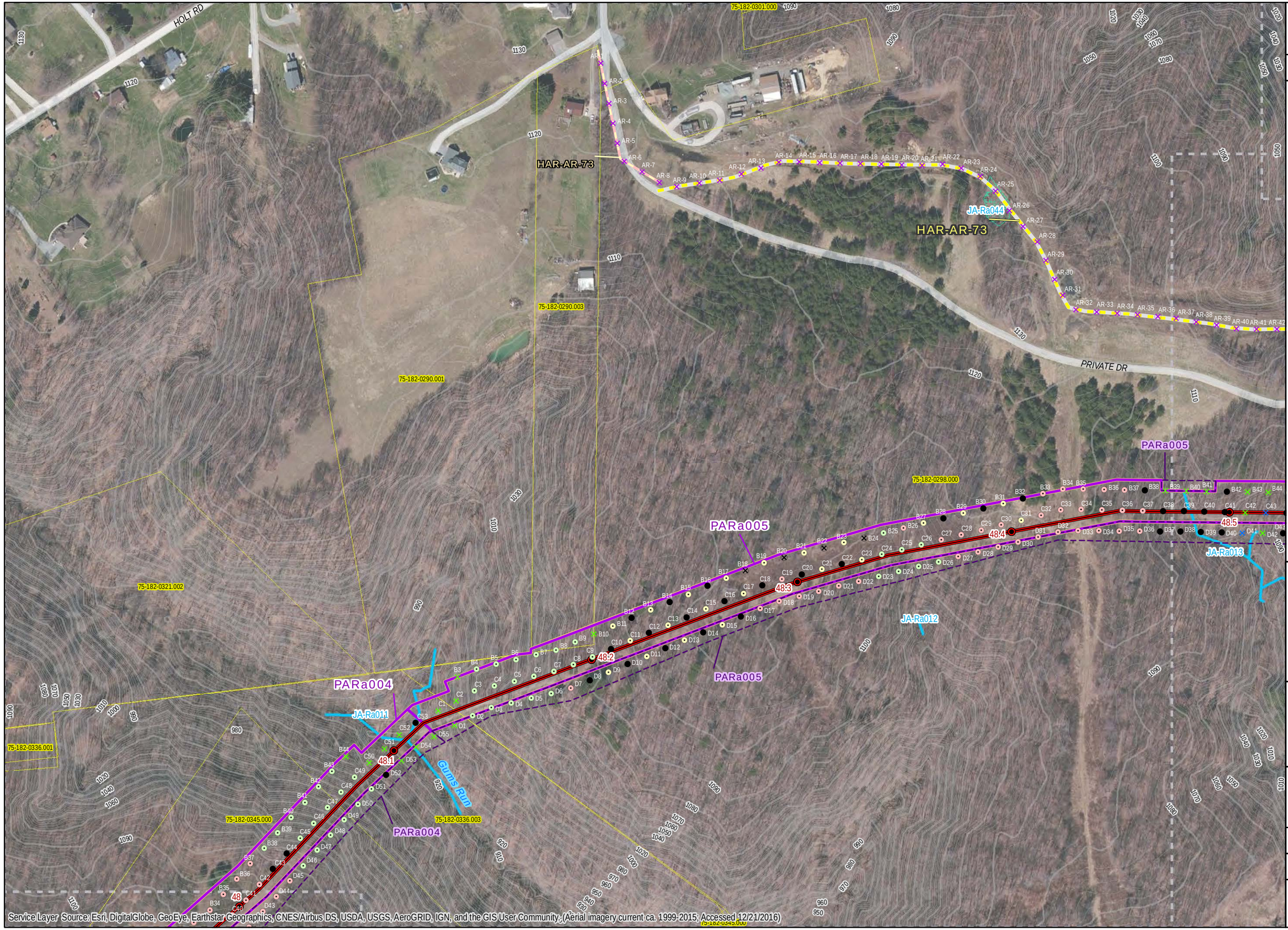
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.97

Project Location:

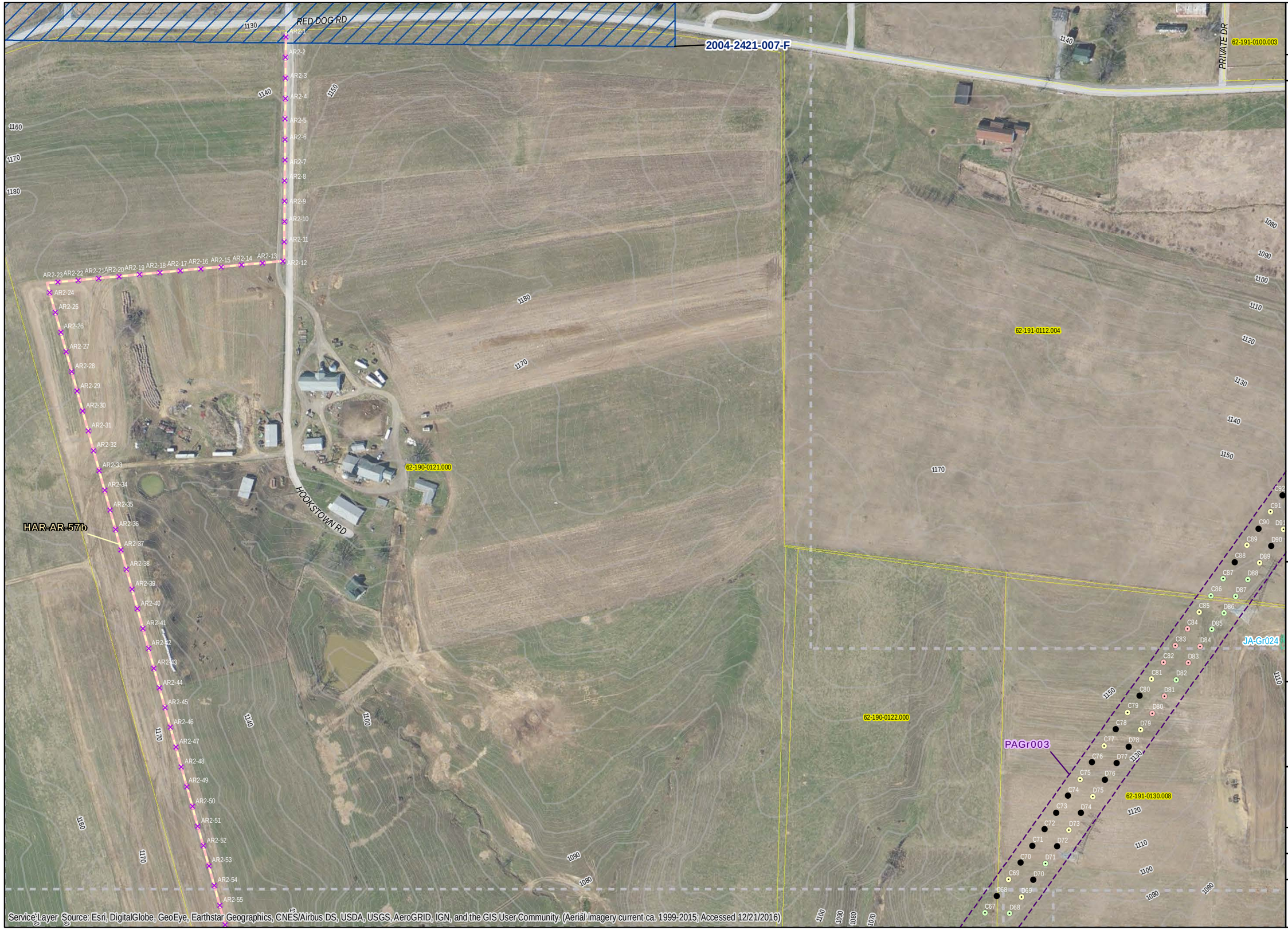
County: Beaver
Municipality: Raccoon
USGS Quad: Aliquippa

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.98

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.99

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.100

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR DATE: 12/21/2016
APPROVED BY: EAL PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.101

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

N

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

36BV0247

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE
4TH FLOOR
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY, LP
FALCON ETHANE PIPELINE PROJECT

Project Features
- Proposed Limit of Disturbance
- Proposed HDD Location
- Surveyed Area: Proposed Alignment
- Surveyed Area: Former Alignment
- Proposed Access Road
- Formerly Proposed Access Road

Proposed Centerline with Mileposts
- Cadiz to Scio
- Scio to Monaca
- Houston to Monaca

PHMC Data (Current to Sept. 2016)
- PHMC Archaeological Site
- PHMC Cultural Resource Survey
- AECOM Archaeological Resource
- AECOM Structure/Hist. Resource

Environmental Data
- Topographic Contour (2 ft.)
- Topographic Contour (10 ft.)
- Stream
- Wetland
- Pond
- JA-## Jurisdictional Area

Municipal Boundaries
- State Boundary
- County Boundary
- Local Municipal Boundary
- USGS Quadrangle
- Parcel boundary

Map feature
- Map Page Overlap

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Bedrock
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance
- Excavation Unit

Figure 6.102

Project Location:

County: Beaver
Municipality: Greene
USGS Quad: Hookstown

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FT
All route and environmental data current to 8/15/2016.

DRAWN BY: MMR
APPROVED BY: EAL
DATE: 12/21/2016
PROJECT #: 60487539

0 50 100 200 Feet
0 12.5 25 50 Meters

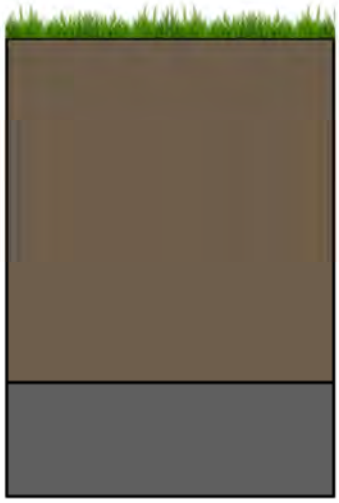
N

JA-Gr011
JA-Gr010
PAGr004
62-191-0181.000
62-181-0133.000
62-191-0186.006
62-191-0191.014
62-191-0186.012
62-191-0181.001
62-191-0191.008
62-191-0186.011
62-191-0186.009
62-191-0180.000
62-191-0186.003
CAIN RD
PRIVATE DR
GOURLEY LN

Service Layer Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. (Aerial imagery current ca. 1999-2015; Accessed 12/21/2016)

PACa001: STP D60

0.00 – 0.21 meters: A-horizon; very dark grayish brown (10YR 3/2) silt loam
0.21 – 0.35 meters: B-horizon; yellowish brown (10YR 5/4) silt loam



PACa001: STP C2

0.00 – 0.30 meters: AO-horizon; dark grayish brown (10YR 4/2) silty clay
0.30 – 0.40 meters: Gley-horizon; dark gray (Gley 1 4/N) clay

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

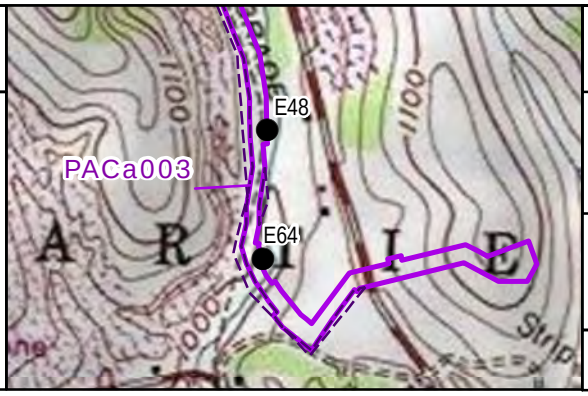


Figure 6.103

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PACa003: STP D18

0.00 – 0.27 meters: A-horizon; very dark grayish brown (10YR 3/2) silt loam to loam
0.27 + meters: Rock Impasse

PACa003: STP A8

0.00 – 0.21 meters: Ap-horizon; very dark grayish brown (10YR 3/2) silt loam
0.21 – 0.35 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

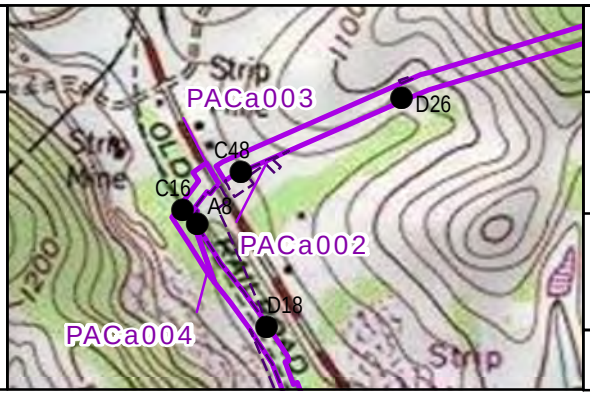


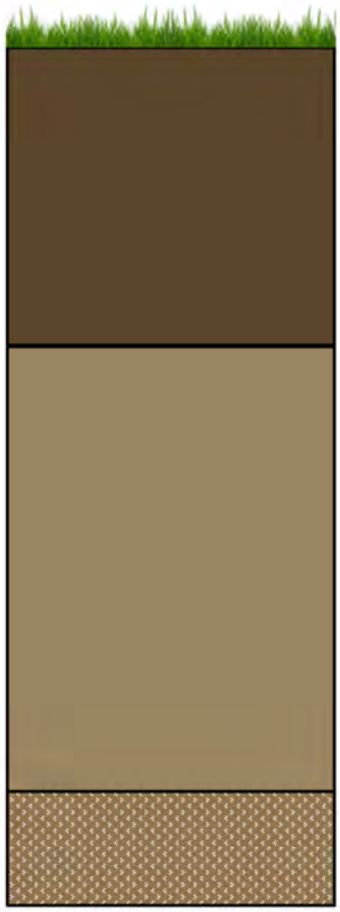
Figure 6.104

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PACa004: STP C16

0.00 – 0.26 meters: Fill; dark brown (10YR 3/3) silt loam
0.26 – 0.65 meters: Fill; brown (10YR 5/3) silt loam
0.65 – 0.75 meters: Fill; yellowish brown (10YR 5/4) loam to sandy loam with coal/pebble-sized inclusions and iron oxide mottling

0 0.05 0.1 0.2
Meters

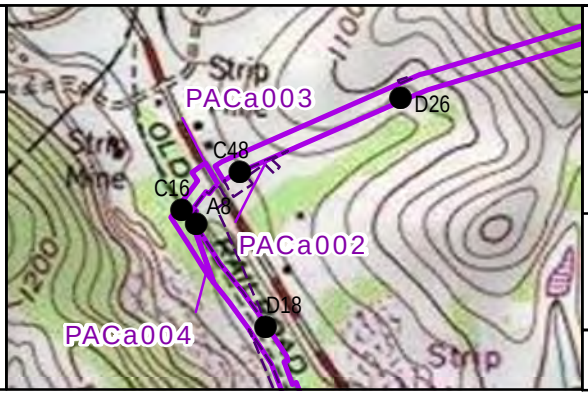


Figure 6.105

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

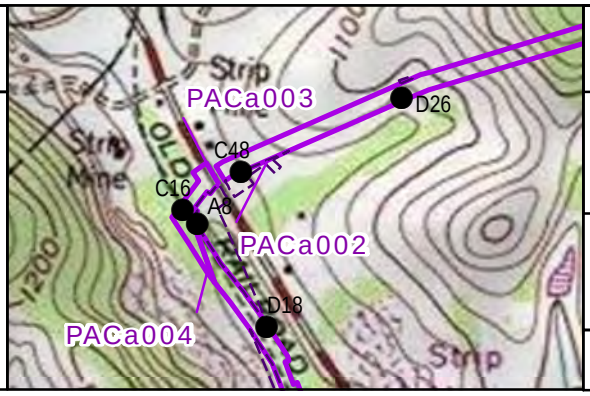
PACa002: STP C48

0.00 – 0.24 meters: A-horizon; dark yellowish brown (10YR 4/4) silt loam
0.24 – 0.37 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

PACa002: STP D26

0.00 – 0.22 meters: A-horizon; yellowish brown (10YR 5/4) silt loam
0.22– 0.35 meters: B-horizon; brownish yellow (10YR 6/6) silty clay loam

0 0.05 0.1 0.2 Meters



AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

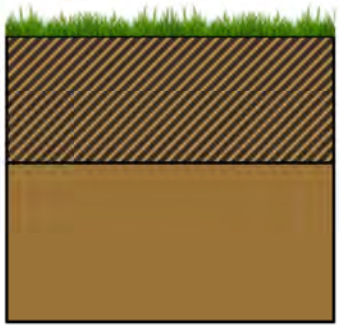
Figure 6.106

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

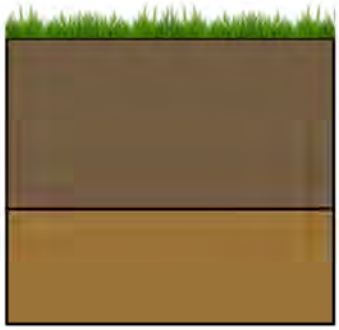
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PACa001: STP E117

0.00 – 0.11 meters: AO-horizon; very dark brown (10YR 2/2) mottled with a brownish yellow (10YR 6/6) silt loam

0.11 – 0.25 meters: Bt-horizon; yellowish brown (10YR 5/6) silt loam



PACa001: STP D92

0.00 – 0.15 meters: A-horizon; brown (10YR 4/3) silt loam

0.15 – 0.25 meters: Bt-horizon; yellowish brown (10YR 5/6) silt loam

0 0.05 0.1 0.2 Meters

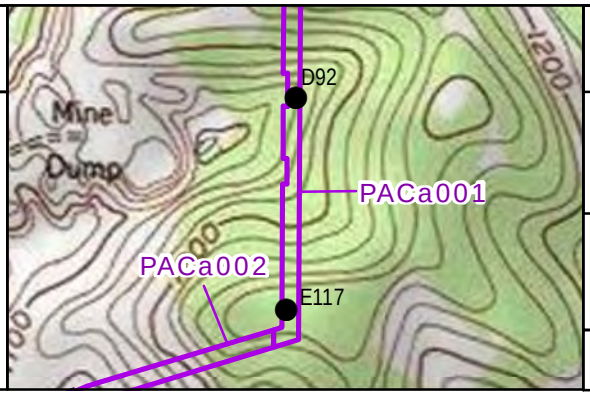


Figure 6.107

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

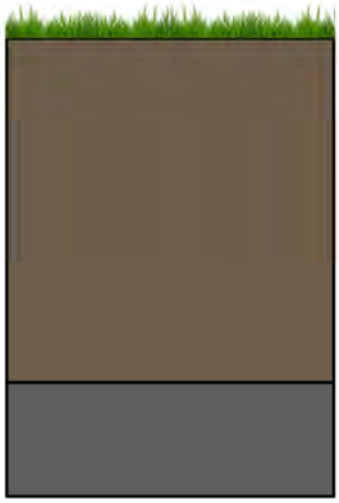
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PACa001: STP D60

0.00 – 0.21 meters: A-horizon; very dark grayish brown (10YR 3/2) silt loam
0.21 – 0.35 meters: B-horizon; yellowish brown (10YR 5/4) silt loam



PACa001: STP C2

0.00 – 0.30 meters: AO-horizon; dark grayish brown (10YR 4/2) silty clay
0.30 – 0.40 meters: Gley-horizon; dark gray (Gley 1 4/N) clay

0 0.05 0.1 0.2 Meters

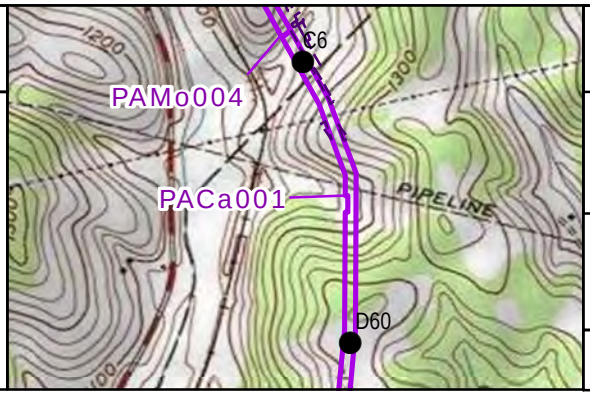


Figure 6.108

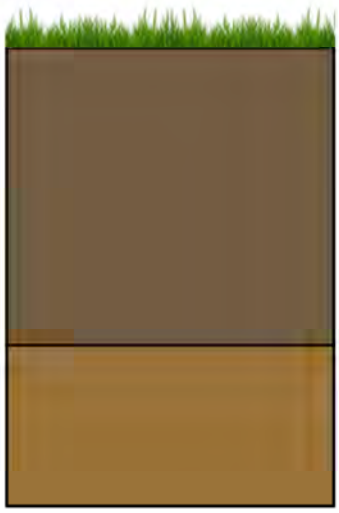
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAMo004: STP C140

0.00 – 0.26 meters: Ap-horizon; brown (10YR 4/3) silt loam to silty clay loam
0.26 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) clay loam to silty clay loam

PAMo004: STP D125

0.00 – 0.38 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.38– 0.50 meters: Bg-horizon; grayish brown (10YR 5/2) silty clay

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

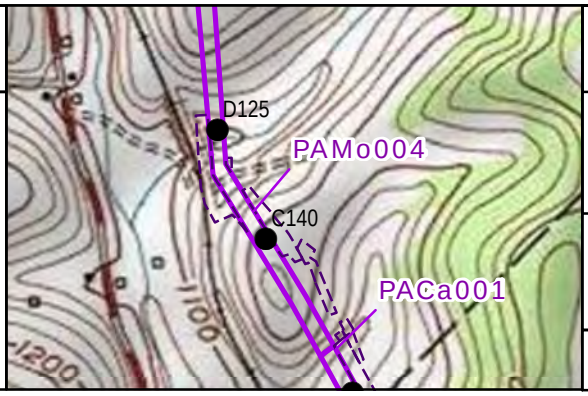


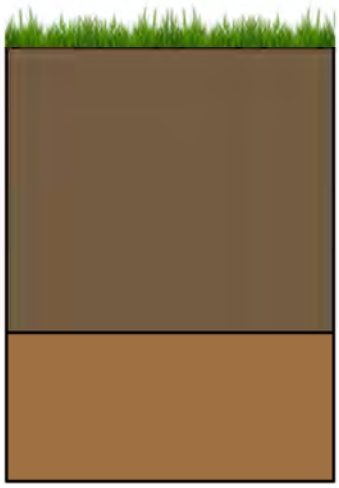
Figure 6.109

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

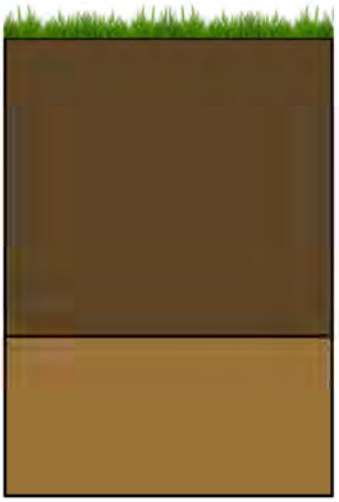
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAMo004: STP C25

0.00 – 0.25 meters: Ap-horizon; brown (10YR 4/3) clay loam
0.25 – 0.38 meters: B-horizon; strong brown (7.5YR 5/6) silt loam to silty clay loam



PAMo004: STP B1

0.00 – 0.26 meters: AO-horizon; dark yellowish brown (10YR 3/4) silt loam
0.26 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

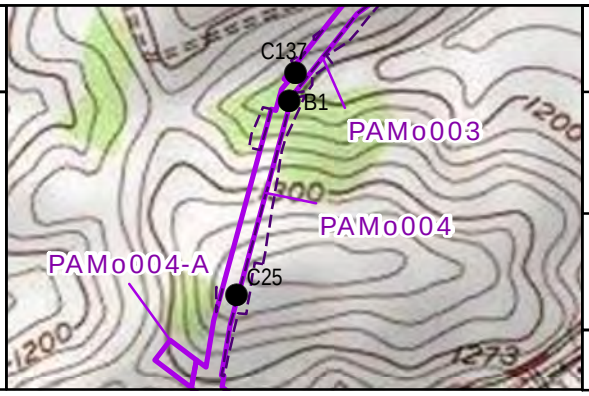


Figure 6.110

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAMo005: STP D25

0.00 – 0.27 meters: A-horizon; dark yellowish brown (10YR 4/4) silt loam
0.28 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silt loam to silty clay loam

PAMo005: STP D12

0.00 – 0.28 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.27 – 0.38 meters: B-horizon; strong brown (7.5YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

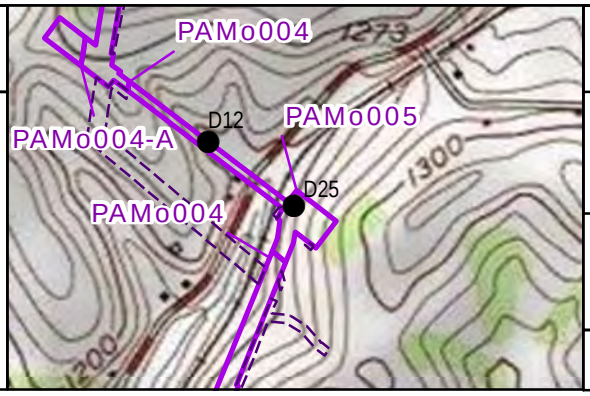


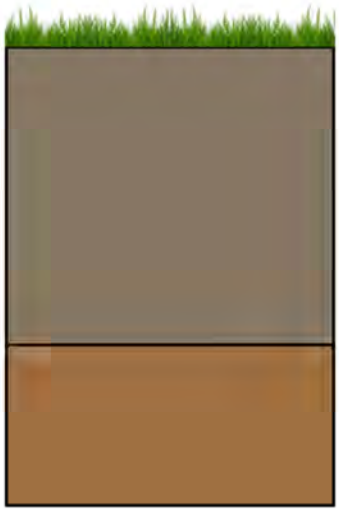
Figure 6.111

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

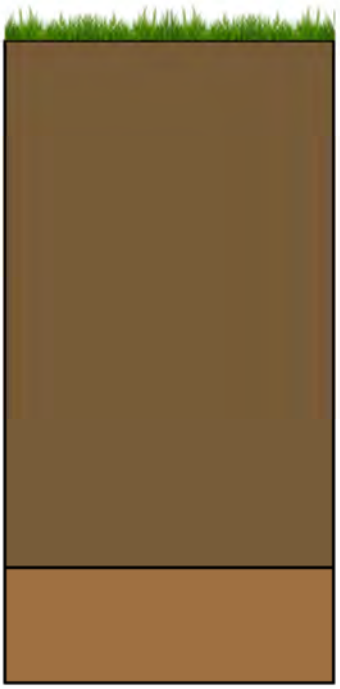
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAMo003: STP C137

0.00 – 0.26 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.26 – 0.40 meters: B-horizon; brownish yellow (10YR 5/6) silty clay loam



PAMo003: STP D106

0.00 – 0.46 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.46– 0.56 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

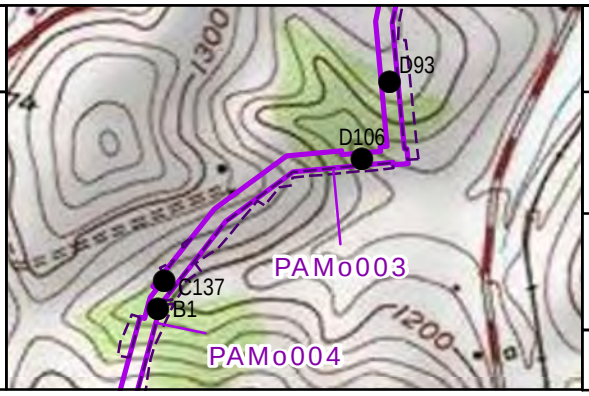


Figure 6.112

REPRESENTATIVE SOIL PROFILES

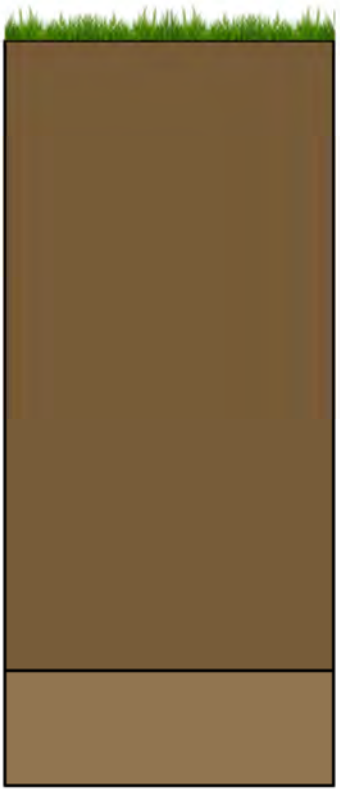
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAMo003: STP D93

0.00 – 0.27 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.27– 0.40 meters: B-horizon: yellowish brown (10YR 5/6) silt loam



PAMo003: STP C55

0.00 – 0.55 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.55– 0.65 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

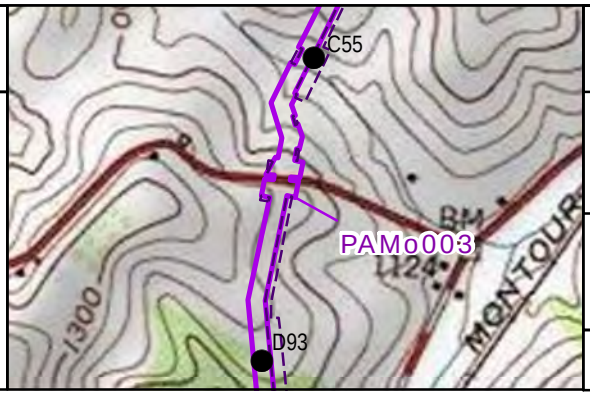


Figure 6.113

REPRESENTATIVE SOIL PROFILES

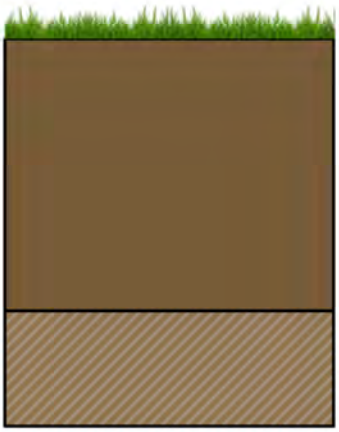
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAMo002: STP D98

0.00 – 0.30 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.30 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silty clay



PAMo002: STP B87

0.00 – 0.24 meters: Ag-horizon; dark yellowish brown (10YR 4/4) clay loam
0.24 – 0.34 meters: Bg-horizon; yellowish brown (10YR 5/4) mottled with light brownish gray (10YR 6/2) clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

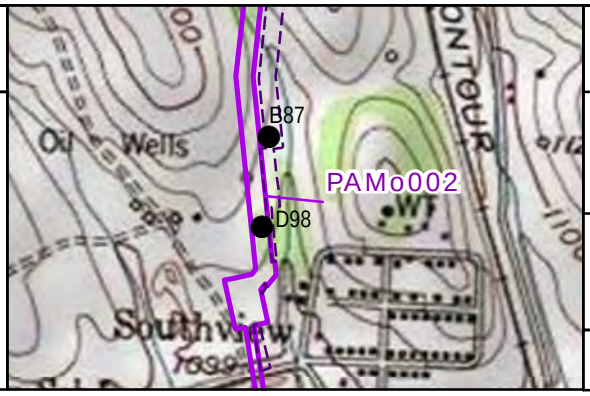


Figure 6.114

REPRESENTATIVE SOIL PROFILES

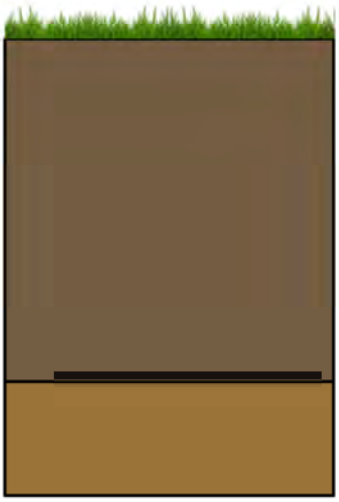
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAMo002: STP C54

0.00 – 0.23 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.23– 0.35 meters: B-horizon; yellowish brown (10YR 5/6) silty clay loam



PAMo002: STP C12

0.00 – 0.30 meters: Ap-horizon; brown (10YR 4/3) silt loam to silty clay loam
0.30 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

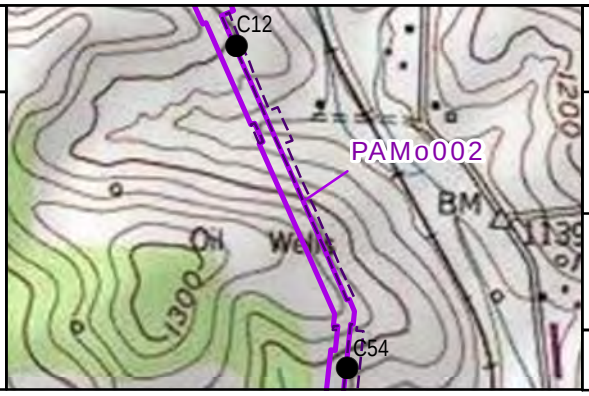


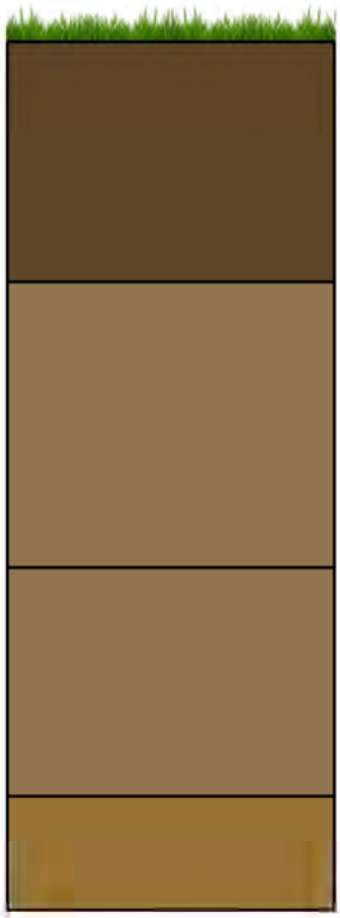
Figure 6.115

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAMo001: STP C75

0.00 – 0.21 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.21 – 0.46 meters: Bt1-horizon; yellowish brown (10YR 5/4) silt loam
0.46 – 0.66 meters: Bt2-horizon; yellowish brown (10YR 5/4) silt loam to silty clay loam
0.66 – 0.76 meters: BC-horizon; yellowish brown (10YR 5/6) sandy clay

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

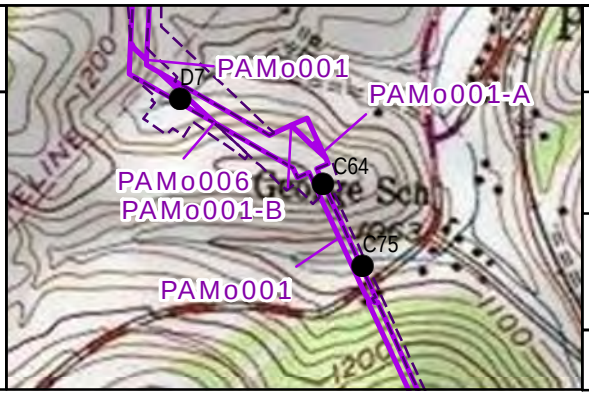


Figure 6.116

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAMo001: STP C64

0.00 – 0.21 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.21– 0.35 meters: Bt-horizon; yellowish brown (10YR 5/6) silt loam to silty clay loam

PAMo006: STP D7

0.00 – 0.32 meters: Fill; brown (10YR 4/3) mottled with dark yellowish brown (10YR 4/6) silt loam
0.32 – 0.42 meters: Fill; light brownish yellow (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

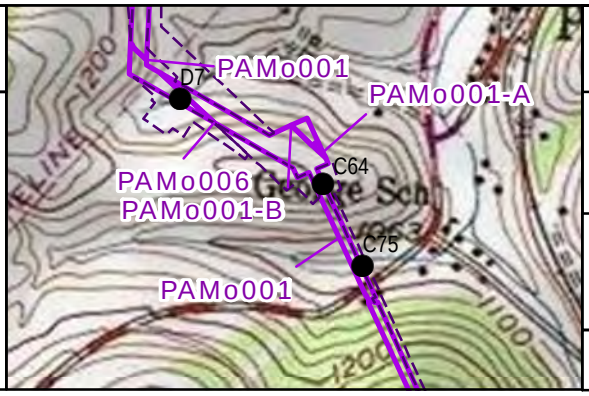


Figure 6.117

REPRESENTATIVE SOIL PROFILES

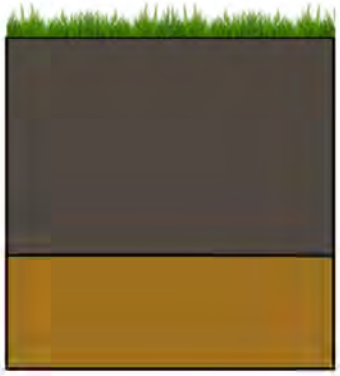
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

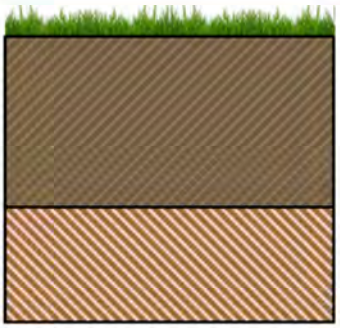
PARo004: STP C188

0.00 – 0.37 meters: AO-horizon; very dark gray (10YR 3/1) silt loam
0.37 – 0.50 meters: Btg-horizon; grayish brown (10YR 5/2) mottled with yellowish brown (10YR 5/8) silt loam to silty clay loam



PARo004: STP C76

0.00 – 0.19 meters: Fill; very dark gray (10YR 3/1) silt loam to silty clay loam
0.19 – 0.29 meters: Fill; grayish brown (10YR 5/2) mottled with yellowish brown (10YR 5/8) clay loam



PARo003: STP C76

0.00 – 0.15 meters: Fill; brown (10YR 4/3) mottled with brown (10YR 5/3) and reddish gray (2.5YR 5/1) sandy clay loam
0.15 – 0.25 meters: Fill; yellowish brown (10YR 5/6) mottled with reddish gray (2.5YR 5/1) silty clay loam

0 0.05 0.1 0.2 Meters

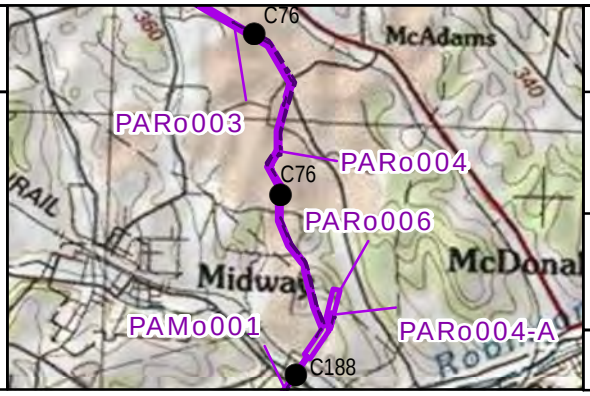


Figure 6.118

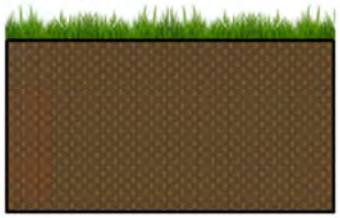
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PARo005: STP C52

0.00 – 0.15 meters: Fill; dark brown (10YR 3/3) mottled with yellowish brown (10YR 5/4) silt loam with 60 percent angular cobble inclusions

PARo005: STP D1

0.00 – 0.19 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.19– 0.27 meters: Fill; light brownish gray (10YR 6/2) mottled with yellowish brown (10YR 5/4) silty clay loam
0.27 – 0.32 meters: BC-horizon; yellowish brown (10YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

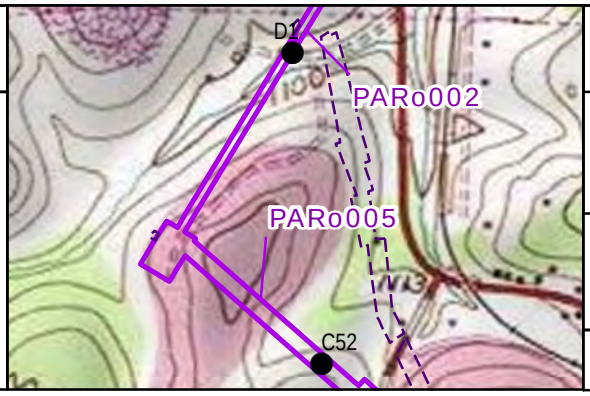


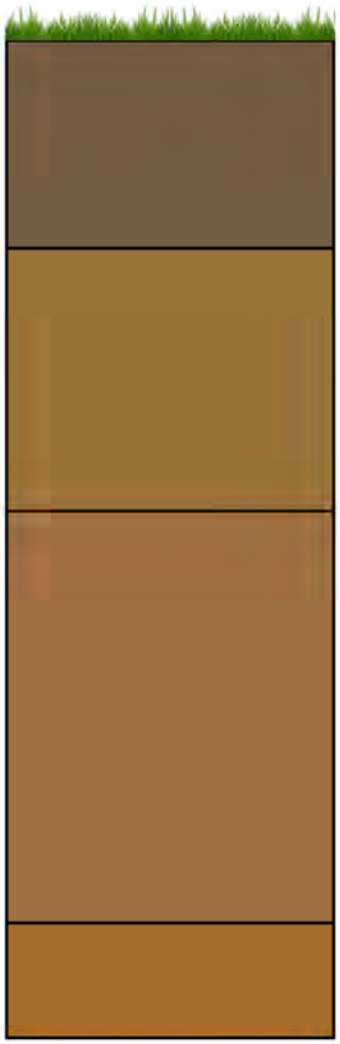
Figure 6.119

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PARo001, PARo001-A: STP A143

0.00 – 0.18 meters: A-horizon; brown (10YR 4/3) silt loam
0.18 – 0.41 meters: Bw1-horizon; yellowish brown (10YR 5/6) silt loam
0.41 – 0.79 meters: Bw2-horizon; strong brown (7.5YR 5/6) sandy loam
0.79 – 0.89 meters: BC-horizon; strong brown (7.5YR 5/8) sandy loam with 70% angular gravels

PARo001, PARo001-A: STP D60

0.00 – 0.15 meters: Fill; grayish brown (10YR 5/2) mottled with brownish yellow (10YR 6/6) and yellowish brown (10YR 5/4) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

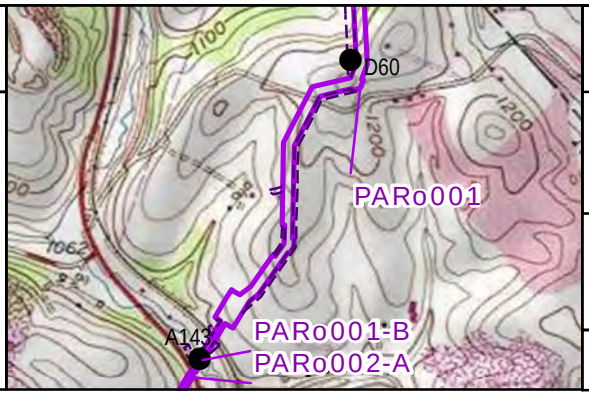


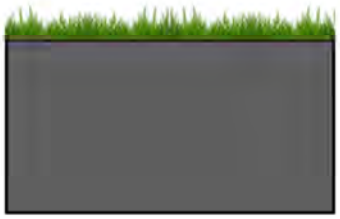
Figure 6.120

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

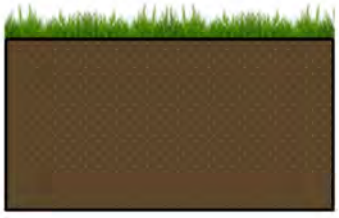


PANo002: STP A85

0.00 – 0.15 meters: Fill; dark gray (Gley1 4/N) clay

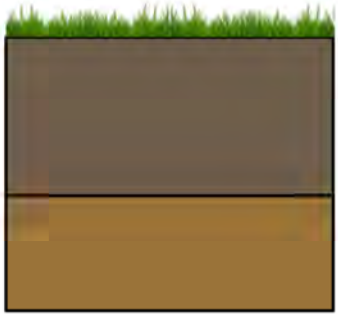
PANo004: STP D38

0.00 – 0.15 meters: Fill; dark brown (10YR 3/3) mottled with yellowish brown (10YR 5/6) silt loam with 40 percent angular cobble inclusions



PANo003: STP C4

0.00 – 0.15 meters: Fill; dark brown (10YR 3/3) mottled with yellowish brown (10YR 5/4) silty clay loam with 20 percent angular cobble inclusions



PANo001: STP C4

0.00 – 0.14 meters: A-horizon; dark grayish brown (10YR 4/2) silt loam

0.14 – 0.24 meters: B-horizon; yellowish brown (10YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

Figure 6.121

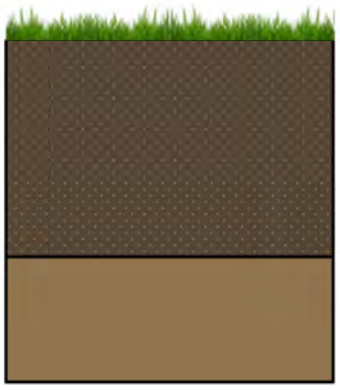
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAFi006: STP D35

0.00 – 0.19 meters: Fill; dark grayish brown (10YR 4/2) silt loam with 60 percent angular cobble inclusions
0.19 – 0.30 meters: Fill; yellowish brown (10YR 5/4) silty clay loam

PAFi006: STP D4

0.00 – 0.10 meters: Fill; very dark grayish brown (10YR 3/2) silt loam
0.10 – 0.20 meters: Fill; dark gray (Gley 1 4/N) clay

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

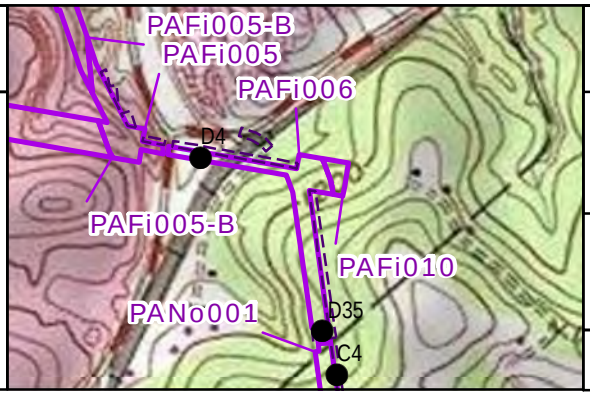


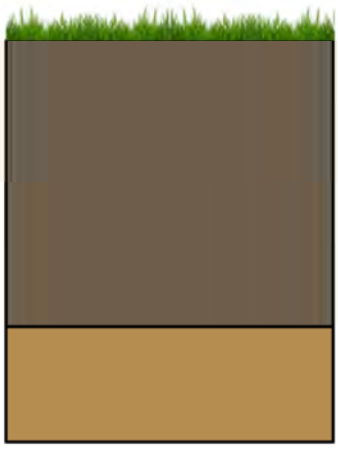
Figure 6.122

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAFi004: STP D144

0.00 – 0.25 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.25 – 0.35 meters: Bt-horizon; brownish yellow (10YR 6/6) silty clay loam

PAFi004: STP C132

0.00 – 0.15 meters: Fill; dark brown (10YR 3/3) mottled with yellowish brown (10YR 5/4) silt loam with 60 percent angular pebble and cobble inclusions

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

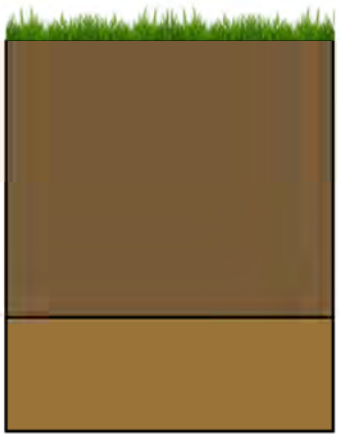
Figure 6.123

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

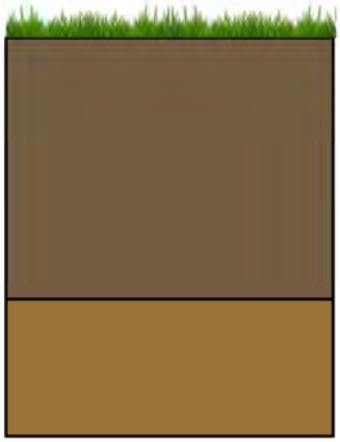
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAFi003: STP B62

0.00 – 0.24 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.24 – 0.34 meters: B-horizon; yellowish brown (10YR 5/6) silt loam



PAFi003: STP E4

0.00 – 0.23 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.23 – 0.35 meters: B-horizon; strong brown (7.5YR 4/6) silty clay loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

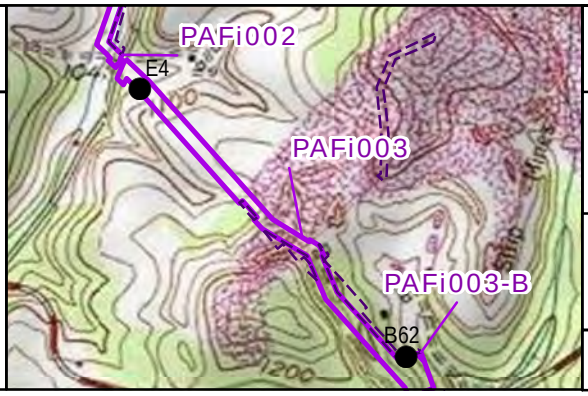


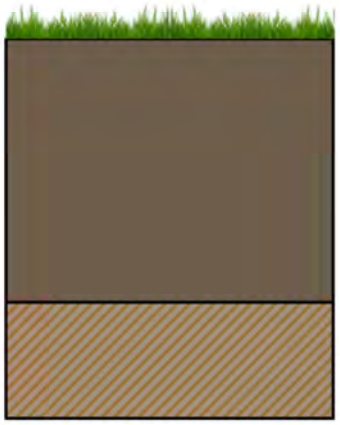
Figure 6.124

REPRESENTATIVE SOIL PROFILES

**SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT**

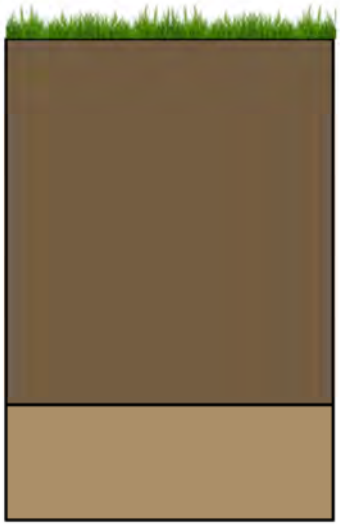
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



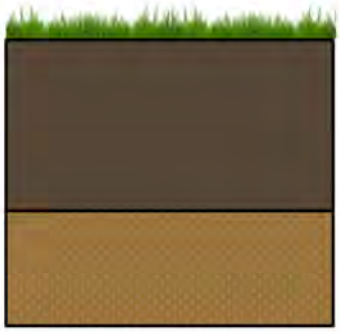
PAFi002: STP A182

0.00 – 0.23 meters: A-horizon; dark grayish brown (10YR 4/2) silt loam
0.23 – 0.33 meters: Bg-horizon; gray (10YR 6/1) mottled with a yellowish brown (10YR 5/6) silty clay loam



PAFi002: STP C68

0.00 – 0.32 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.32 – 0.42 meters: B-horizon; light yellowish brown (10YR 6/4) silt loam



PAFi002: STP C34

0.00 – 0.15 meters: AO-horizon; very dark grayish brown (10YR 3/2) silt loam
0.15 – 0.25 meters: B-horizon; yellowish brown (10YR 5/6) silt loam with 50 percent sub-angular cobble inclusions

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

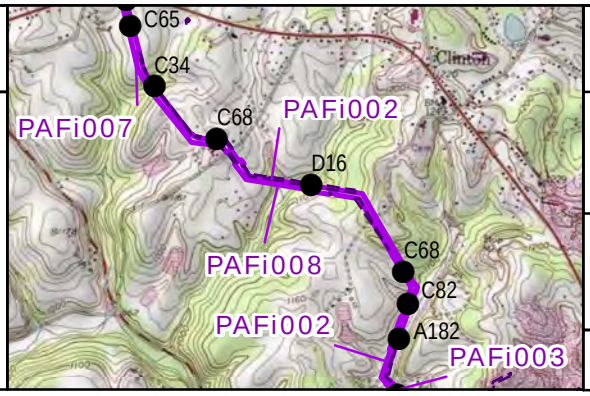


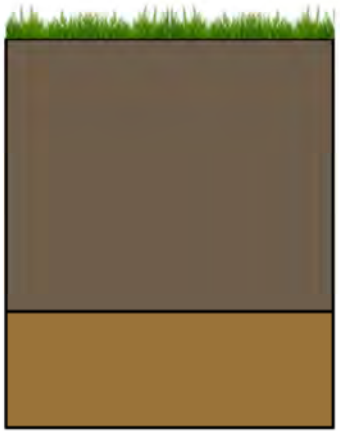
Figure 6.125

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

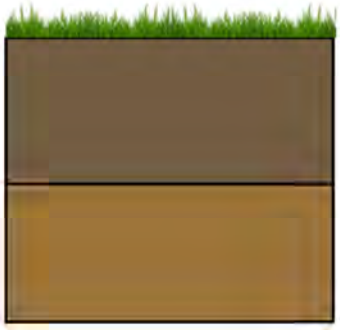
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAFi008: STP C82

0.00 – 0.24 meters: A-horizon; dark grayish brown (10YR 4/2) silt loam
0.24 – 0.34 meters: B-horizon; yellowish brown (10YR 5/6) silty clay loam



PAFi008: STP C68

0.00 – 0.13 meters: A-horizon; brown (10YR 4/3) silt loam
0.13 – 0.25 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

PAFi008: STP D16

0.00 – 0.23 meters: A-horizon; brown (10YR 4/3) loam to sandy loam
0.23 – 0.33 meters: B-horizon; brown (10YR 5/3) sandy loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

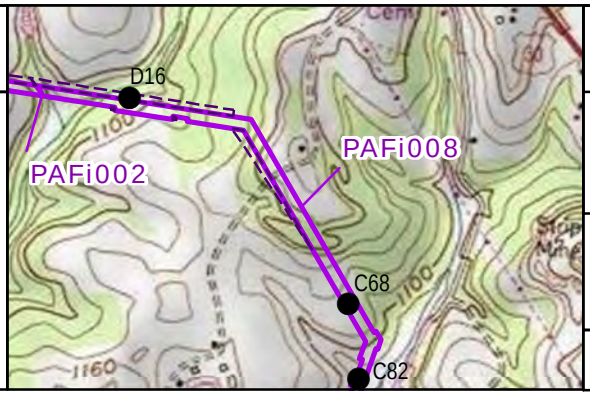


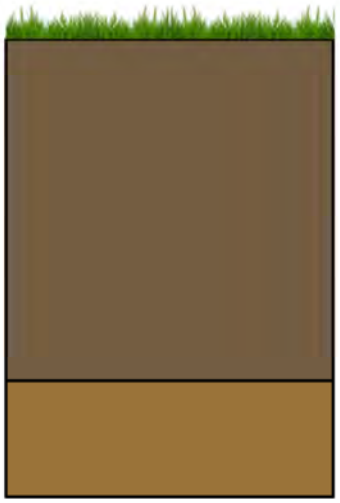
Figure 6.126

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAFi007: STP C65

0.00 – 0.30 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.30 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

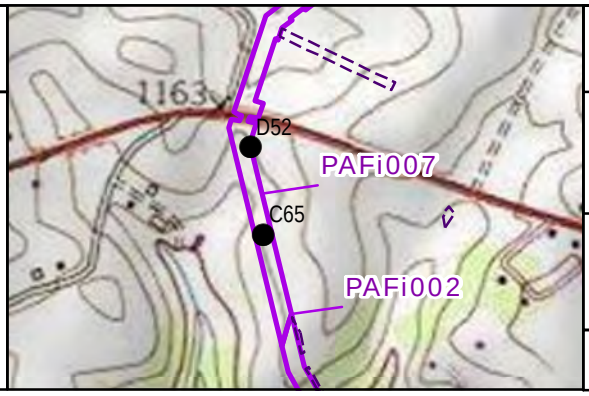
PAFi007: STP D52

0.00 – 0.24 meters: Fill; very dark brown (10YR 2/2) silt loam
0.24 – 0.34 meters: Fill; greenish black (Gley 1 2.5/10Y) clay loam

PAFi007: STP H101

0.00 – 0.35 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.35 – 0.45 meters: Bg-horizon; light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters



AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

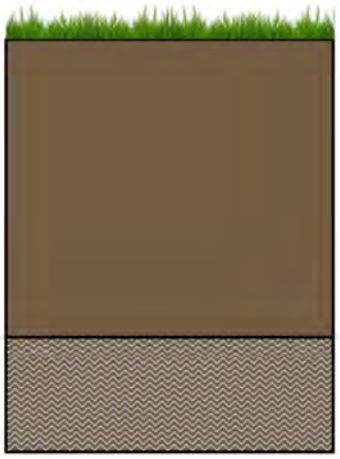
Figure 6.127

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

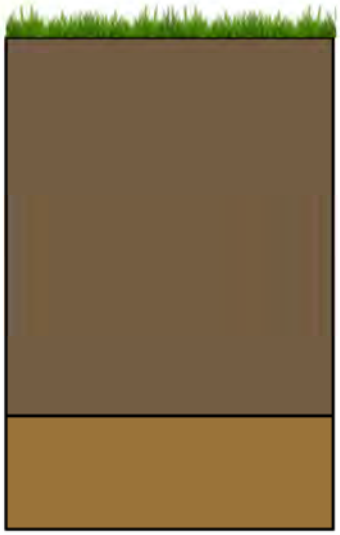


PAFi001: STP D87

0.00 – 0.26 meters: A-horizon; yellowish brown (10YR 3/4) silty clay loam
0.26+ meters: Water Table

PAFi001: STP C64

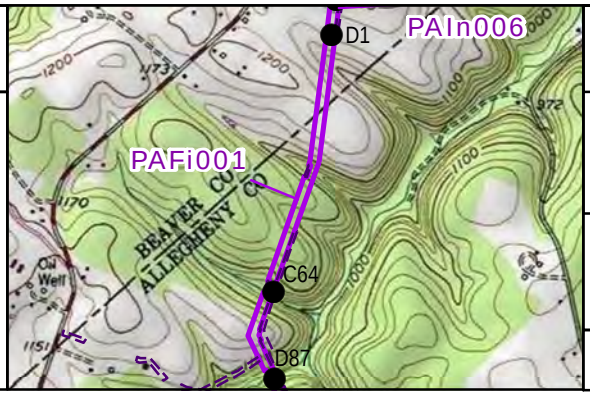
0.00 – 0.22 meters: AO-horizon; dark brown (10YR 3/3) silt loam
0.22 – 0.32 meters: B-horizon; light yellowish brown (10YR 6/4) silty clay



PAFi001: STP D1

0.00 – 0.33 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.33 – 0.44 meters: B-horizon; strong brown (7.5YR 5/6) silty clay

0 0.05 0.1 0.2 Meters



AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

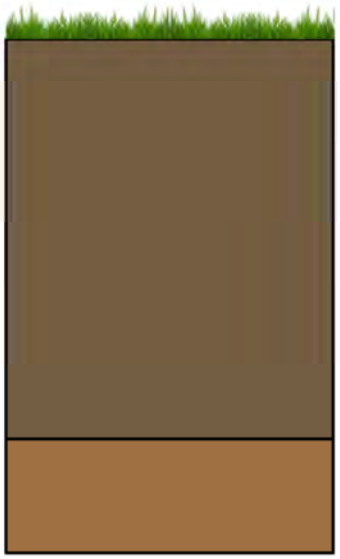
Figure 6.128

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAIn006: STP D104

0.00 – 0.35 meters: Ap-horizon; brown (10YR 4/3) silt loam

0.35 – 0.45 meters: B-horizon; strong brown (7.5YR 5/4) silt loam

PAIn006: STP C12

0.00 – 0.25 meters: Ap-horizon; brown (10YR 4/3) silt loam

0.25 – 0.35 meters: B-horizon; dark yellowish brown (10YR 5/4) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

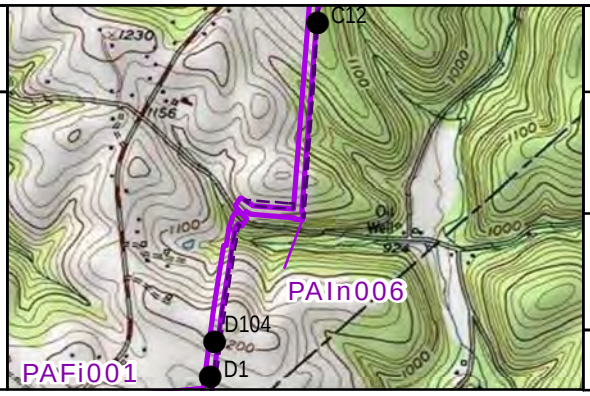


Figure 6.129

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAIn005: STP D42

0.00 – 0.27 meters: AO-horizon; dark brown (10YR 3/3) silt loam
0.27 – 0.37 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

PAIn005: STP D12

0.00 – 0.22 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.22 – 0.32 meters: Bt-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

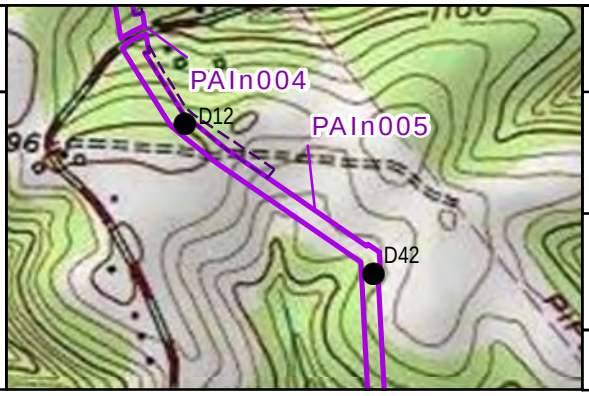


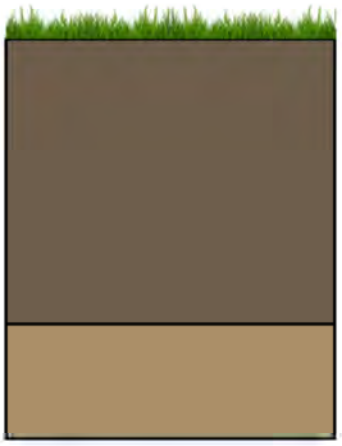
Figure 6.130

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

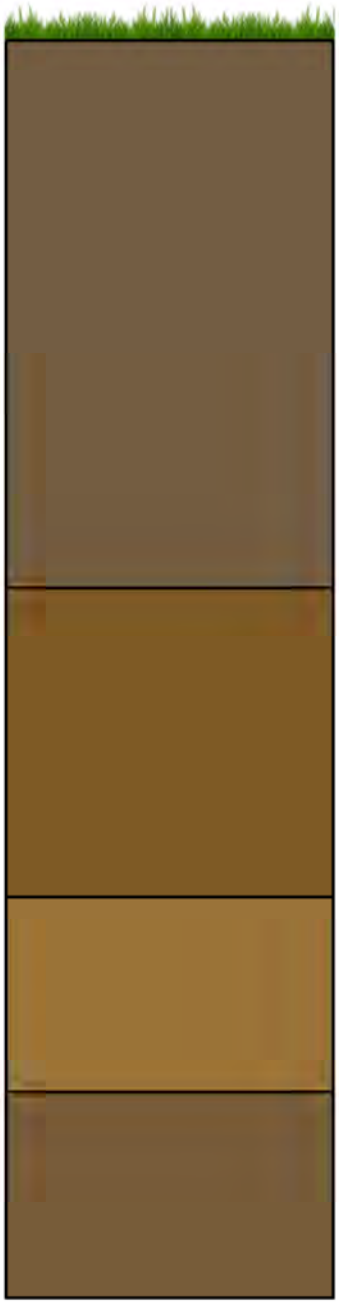
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAIn004: STP B79

0.00 – 0.25 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.25 – 0.35 meters: B-horizon; light yellowish brown (10YR 6/4) silt loam



PAIn004: STP B68

0.00 – 0.48 meters: A-horizon; brown (10YR 4/3) loam to silt loam
0.48 – 0.75 meters: AB-horizon; dark yellowish brown (10YR 4/6) silt loam
0.75 – 0.92 meters: Bw-horizon; yellowish brown (10YR 5/4) silt loam to silty clay loam
0.92 – 1.10 meters: C-horizon; dark yellowish brown (10YR 4/4) sandy loam

0 0.05 0.1 0.2 Meters

Figure 6.131

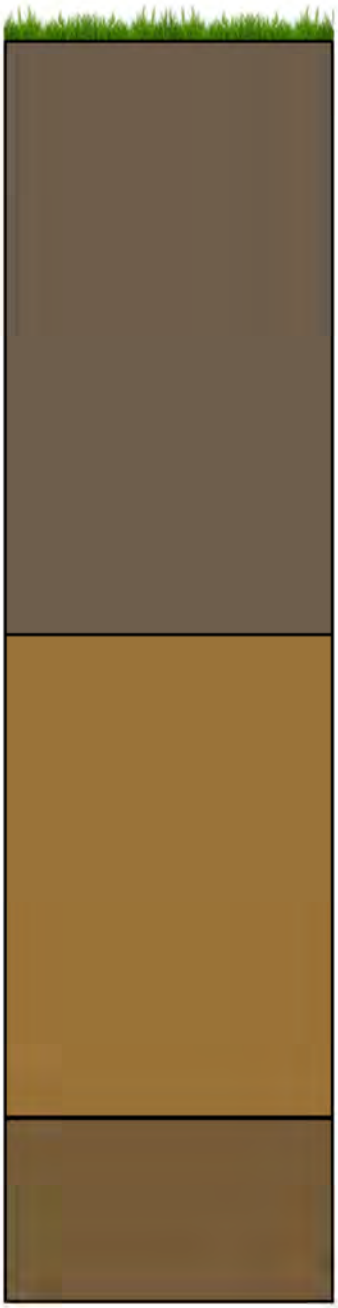
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

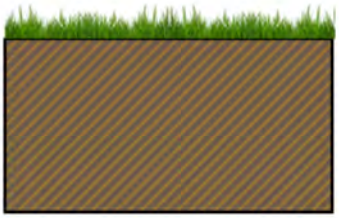
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAIn004: STP C58

0.00 – 0.52 meters: A-horizon; brown (10YR 4/3) loam to silt loam
0.52 – 0.94 meters: BC-horizon; yellowish brown (10YR 5/6) sandy loam to loam
0.94 – 1.10 meters: C-horizon; dark yellowish brown (10YR 4/4) sandy loam



PAIn004: STP E17

0.00 – 0.15 meters: Fill; brown (10YR 4/3) mottled with yellowish brown (10YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

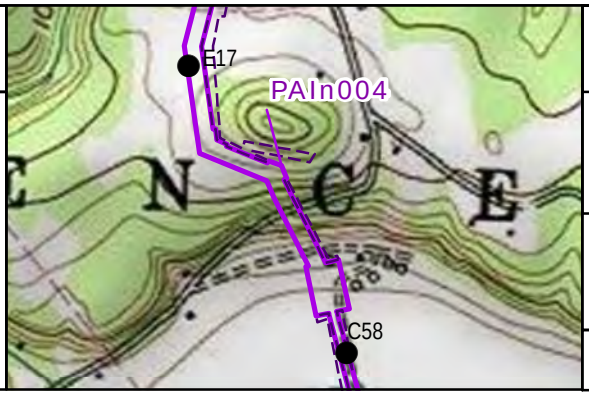


Figure 6.132

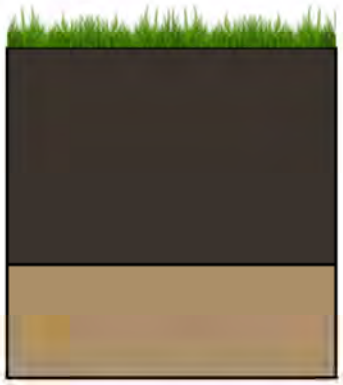
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAIn003: STP C48

0.00 – 0.19 meters: AO-horizon; black (10YR 2/1) silt loam

0.19 – 0.29 meters: Bt-horizon; light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

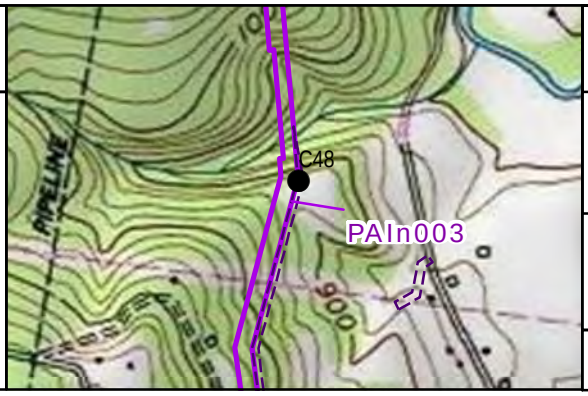


Figure 6.133

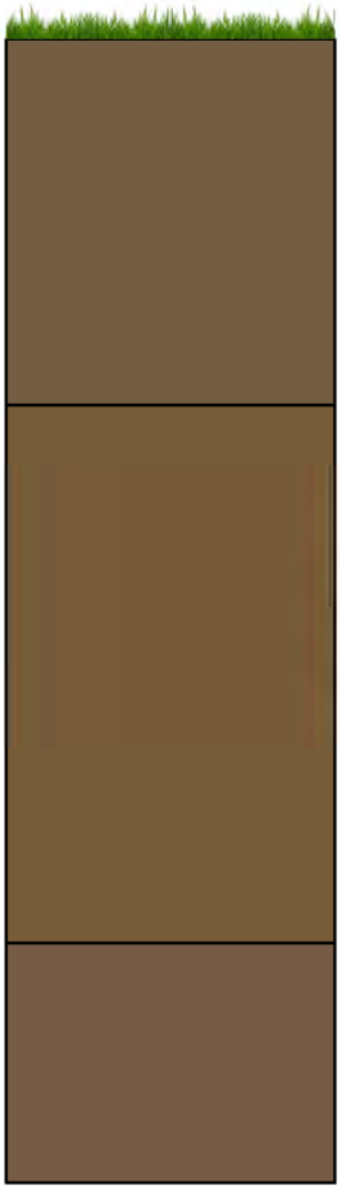
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAIn002: STP E2

0.00 – 0.32 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.32 – 0.79 meters: Bw-horizon; dark yellowish brown (10YR 4/4) loam
0.79 – 1.00 meters: C-horizon; brown (7.5YR 4/3) loam to sandy loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

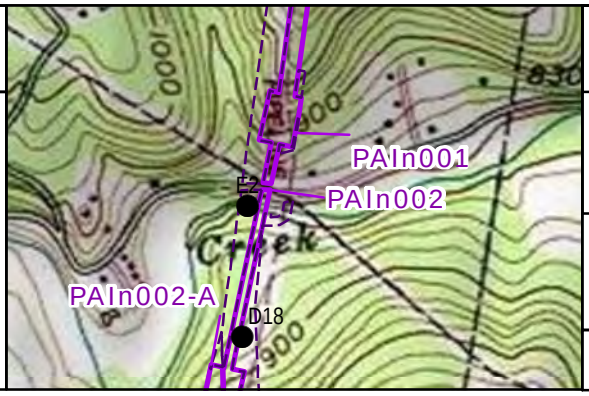


Figure 6.134

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAIn002: STP D18

0.00 – 0.9 meters: AO-horizon; very dark grayish brown (10YR 3/2) silt loam
0.09 – 0.20 meters: Bt-horizon; light yellowish brown (10YR 6/4) silty clay loam

PAIn002: STP D57

0.00 – 0.10 meters: AO-horizon; brown (10YR 4/3) silt loam
0.10 – 0.20 meters: Bt-horizon; yellowish brown (10YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

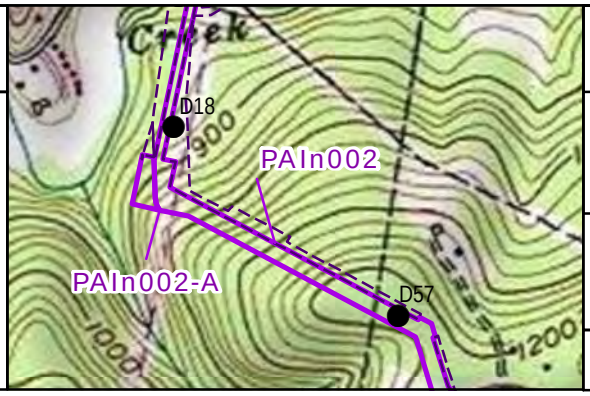


Figure 6.135

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAIn007: STP C18

0.00 – 0.20 meters: AO-horizon; very dark grayish brown (10YR 3/2) silt loam
0.20 – 0.30 meters: B-horizon; yellowish brown (10YR 5/4) silty clay loam

PARa010: STP E42

0.00 – 0.10 meters: AO-horizon; black (10YR 2/1) silt loam
0.10 – 0.20 meters: Bt-horizon; yellowish brown (10YR 5/6) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

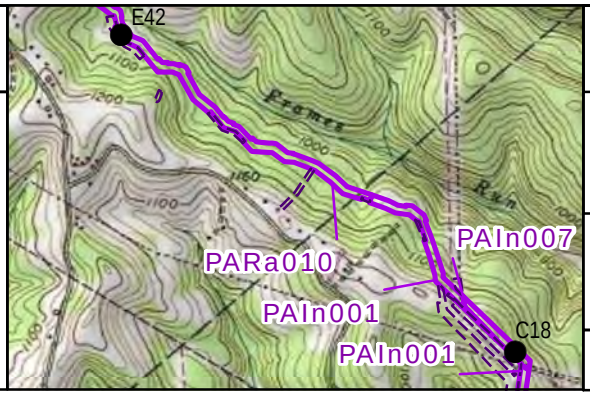


Figure 6.136

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PARa009: STP D38

0.00 – 0.09 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam

0.09 – 0.19 meters: Bt-horizon; strong brown (7.5YR 5/6) silty loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 6.137

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

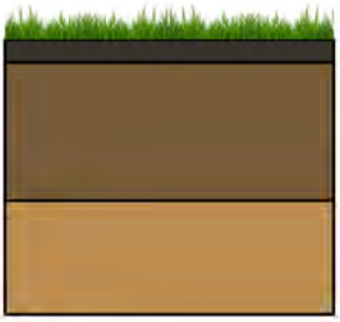
DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PARa005: STP C62

0.00 – 0.05 meters: OA-horizon; black (10YR 2/1) silt loam
0.05 – 0.23 meters: BA-horizon; yellowish brown (10YR 5/4) silt loam
0.23 – 0.33 meters: Bt-horizon; brownish yellow (10YR 6/6) silt loam



PARa005: STP D84

0.00 – 0.02 meters: OA-horizon; black (10YR 2/1) silt loam
0.02 – 0.14 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.14 – 0.24 meters: B-horizon; brownish yellow (10YR 6/6) silt loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

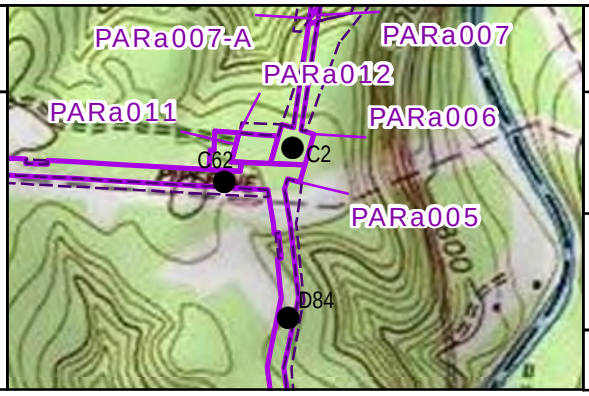


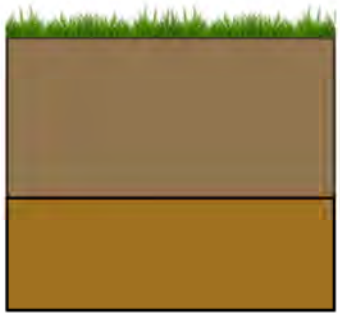
Figure 6.138

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PARa006: STP C2

0.00 – 0.14 meters: AB-horizon; yellowish brown (10YR 5/4) silt loam

0.14– 0.24 meters: Bt-horizon; yellowish brown (10YR 5/8) silty clay loam

PARa007: STP D16

0.00 – 0.15 meters: Fill-horizon; dark grayish brown (10YR 4/2) mottled with yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

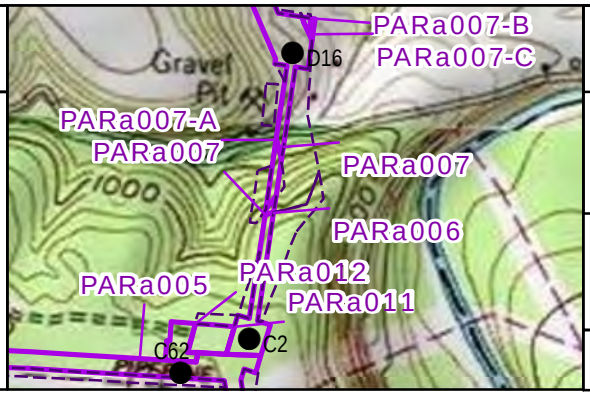


Figure 6.139

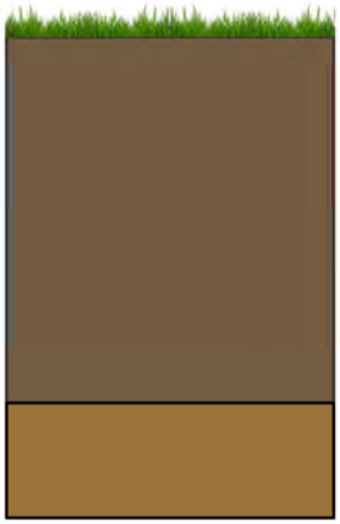
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

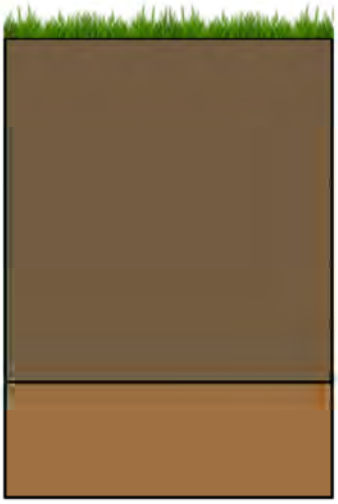
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PARa008: STP C16

0.00 – 0.32 meters: Ap-horizon; brown (10YR 4/3) silt loam

0.32– 0.42 meters: B-horizon; yellowish brown (10YR 5/6) silt loam to silty clay loam



PAPo006: STP C35

0.00 – 0.30 meters: Ap-horizon; brown (10YR 4/3) silt loam

0.30 – 0.40 meters: B-horizon; strong brown (7.5YR 5/6) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

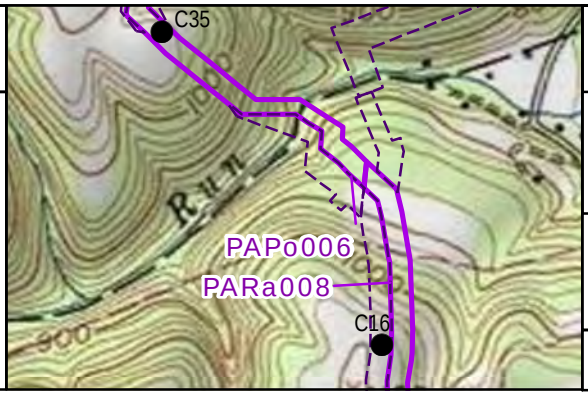


Figure 6.140

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAPo012: STP C25

0.00 – 0.28 meters: AO-horizon; dark brown (10YR 3/2) silt loam
0.28 – 0.40 meters: B-horizon; brown (10YR 5/4) silt loam

PAPo012: STP C47

0.00 – 0.17 meters: AO-horizon; dark brown (10YR 3/2) silt loam
0.17+ meters: Root Impasse

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

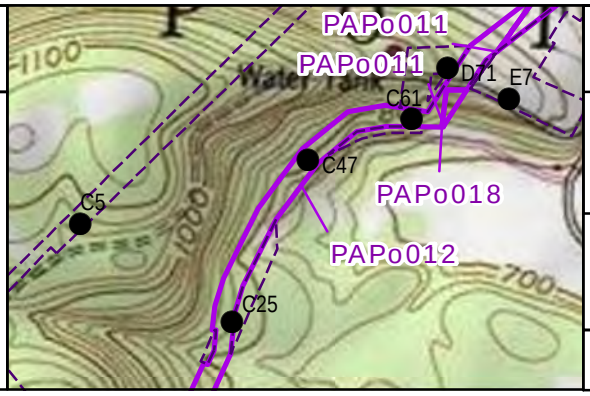


Figure 6.141

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

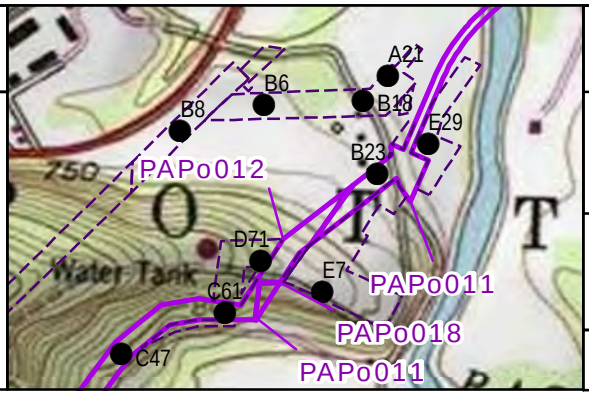
PAPo012: STP C61

0.00 – 0.28 meters: AO-horizon; very dark grayish brown (10YR 3/2) silt loam
0.28 – 0.38 meters: B-horizon: yellowish brown (10YR 5/4) silt loam

PAPo012: STP D71

0.00 – 0.20 meters: AO-horizon; very dark brown (10YR 3/2) silt loam
0.20 – 0.30 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters



AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 6.142

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAPo011: STP E7

0.00 – 0.25 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.25 – 0.35 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

PAPo012: STP B23

0.00 – 0.40 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.40 – 0.50 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

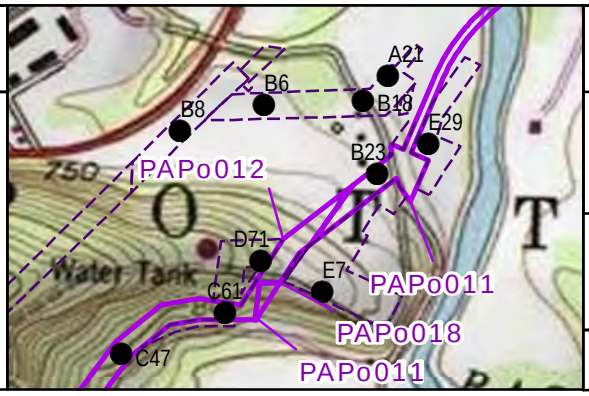


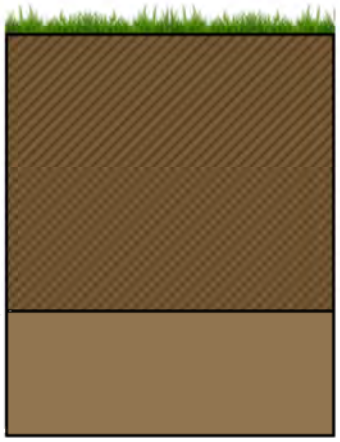
Figure 6.143

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAPo011: STP E29

0.00 - 0.24 meters: Fill; dark yellowish brown (10YR 3/4) mottled with dark yellowish brown (10YR 4/4) silt loam
0.24 – 0.35 meters: Bg-horizon; yellowish brown (10YR 5/4) silt clay loam

PAPo014: STP C52

0.00 – 0.10 meters: AO-horizon; very dark brown (10YR 3/2) silt loam
0.10 – 0.20 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

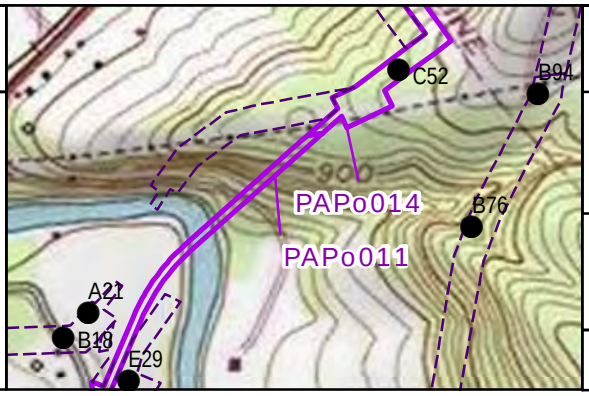


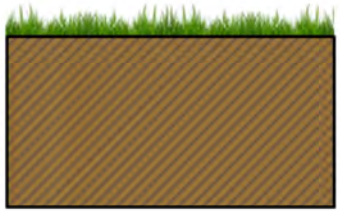
Figure 6.144

REPRESENTATIVE SOIL PROFILES

**SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT**

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAPo007: STP C18

0.00 – 0.15 meters: Fill; brown (10YR 4/3) mottled with yellowish brown (10YR 5/6) silt loam

PAPo007: STP C35

0.00 – 0.15 meters: Fill; dark brown (10YR 3/3) mottled with light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

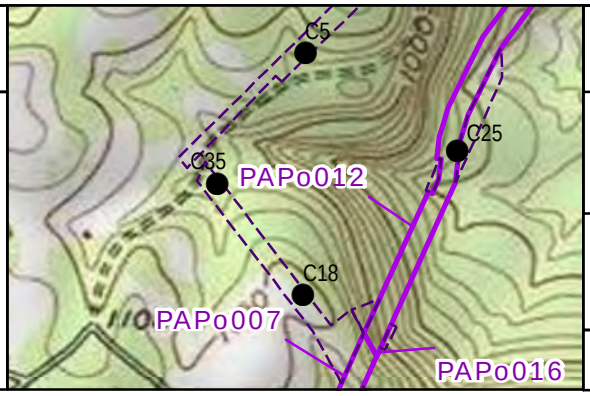


Figure 6.145

REPRESENTATIVE SOIL PROFILES

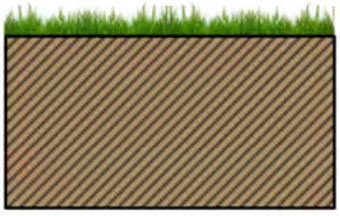
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAPo008: STP C5

0.00 – 0.05 meters: O-horizon; black (10YR 2/1) silt loam
0.05 – 0.25 meters: Ap-horizon; yellowish brown (10YR 5/4) silt loam
0.25 – 0.35 meters: B-horizon; light yellowish brown (10YR 6/4) silt loam



PAPo005: STP B8

0.00 – 0.15 meters: Fill; brown (10YR 3/2) mottled with light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

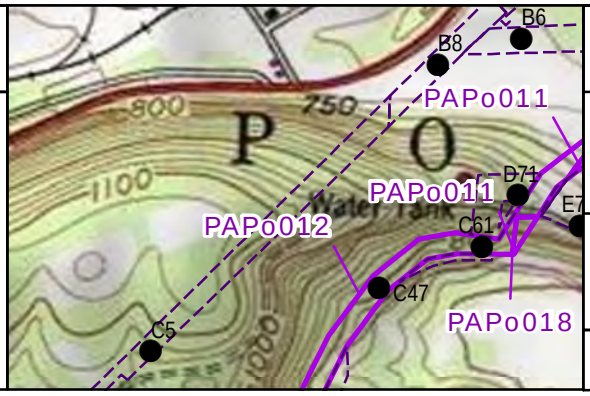


Figure 6.146

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAPo004: STP B6

0.00 – 0.32 meters: Ap-horizon; dark yellowish brown (10YR 3/4) sandy loam

0.32 – 0.44 meters: BC-horizon; strong brown (7.5YR 5/6) loam

PAPo004: STP B18

0.00 – 0.18 meters: Disturbed A-horizon; brown (10YR 4/2) silt loam

0.18 – 0.30 meters: B-horizon; brown (10YR 4/4) silt clay loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

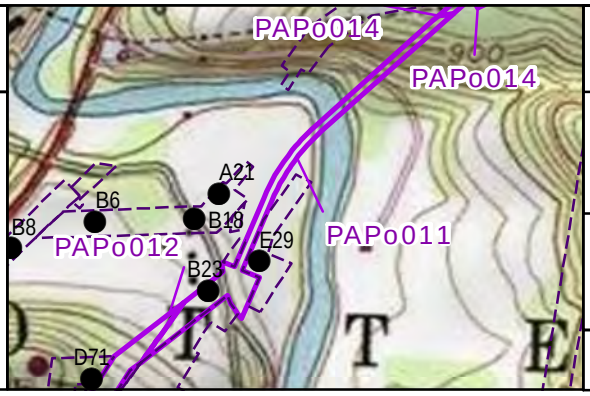


Figure 6.147

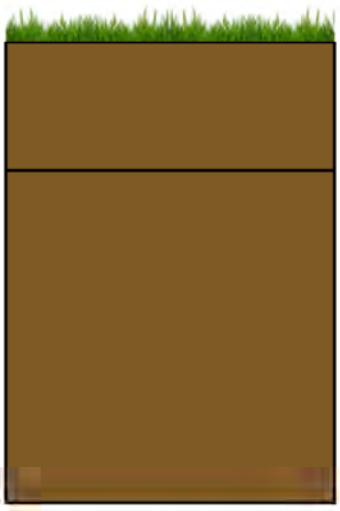
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAPa004: STP A21

0.00 – 0.11 meters: Ap-horizon; strong brown (10YR 4/6) silt loam

0.11 – 0.40 meters: Disturbed B-horizon; strong brown (10YR 4/6) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

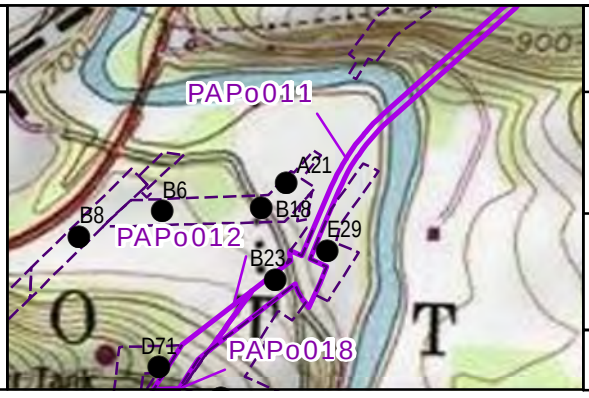


Figure 6.148

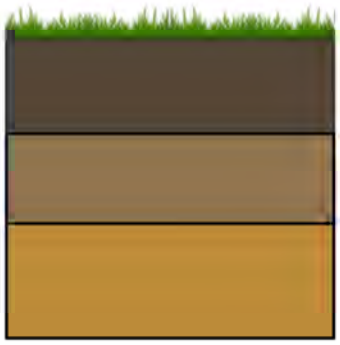
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

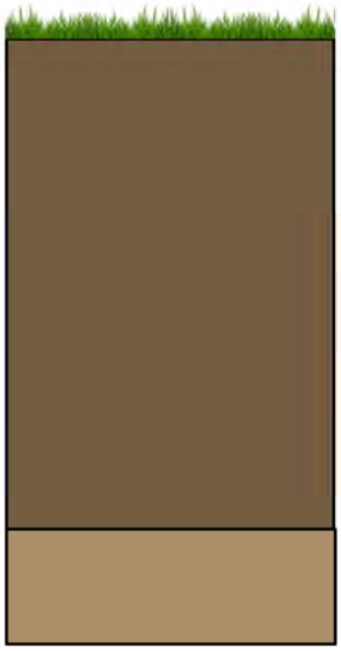
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAPo001: STP C68

0.00 – 0.08 meters: OA-horizon; very dark grayish brown (10YR 3/2) silt loam
0.08 – 0.16 meters: AB-horizon; yellowish brown (10YR 5/4) silt loam
0.16 – 0.26 meters: Bt-horizon; brownish yellow (10YR 6/8) silt loam



PAPo001: STP B86

0.00 – 0.43 meters: A-horizon; brown (10YR 4/3) silt loam
0.43 – 0.53 meters: B-horizon; light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2
Meters

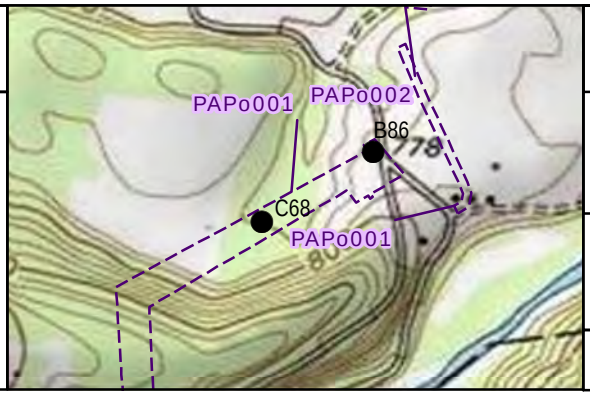


Figure 6.149

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

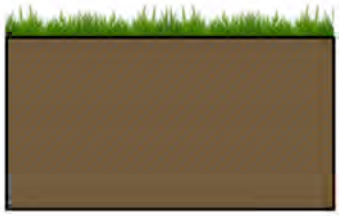
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAPo002: STP B76
0.00 – 0.15 meters: Fill; gray (10YR 6/1) silt loam

PAPo002: STP B94
0.00 – 0.10 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.10 – 0.20 meters: Bt-horizon; brownish yellow (10YR 6/6) silt loam

PAPo002: STP C38
0.00 – 0.14 meters: A-horizon; dark yellowish brown (10YR 4/4) silt loam
0.14 – 0.24 meters: Bt-horizon; yellowish brown (10YR 5/4) silt loam



PAPo003: STP D12
0.00 – 0.15 meters: Fill; brown (10YR 4/4) mottled with dark grayish brown (10YR 4/2) silt loam

0 0.05 0.1 0.2 Meters

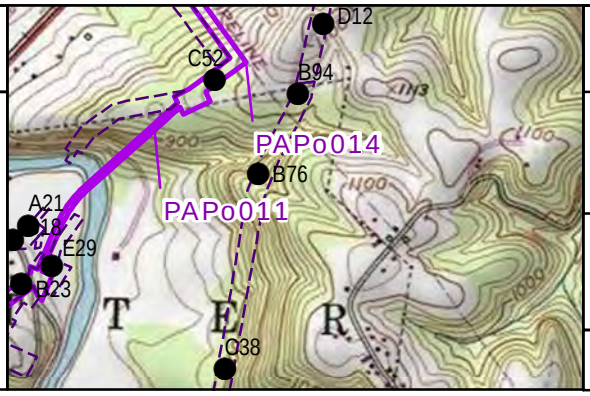


Figure 6.150

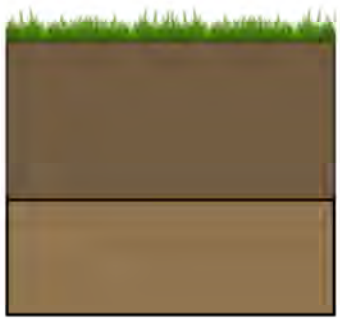
REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

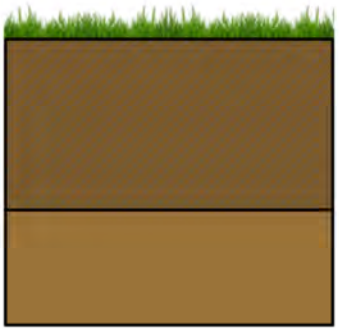
DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PAGr001: STP C13

0.00 – 0.14 meters: A-horizon; brown (10YR 4/3) silt loam
0.14 – 0.24 meters: B- horizon; yellowish brown (10YR 5/4) silty clay loam



PAGr001: STP D46

0.00 – 0.15 meters: Fill-horizon; brown (10YR 4/3) mottled with dark yellowish brown (10YR 4/6) silty clay loam
0.15 – 0.25 meters: B-horizon; yellowish brown (10YR 5/6) clayey silt loam

0 0.05 0.1 0.2 Meters

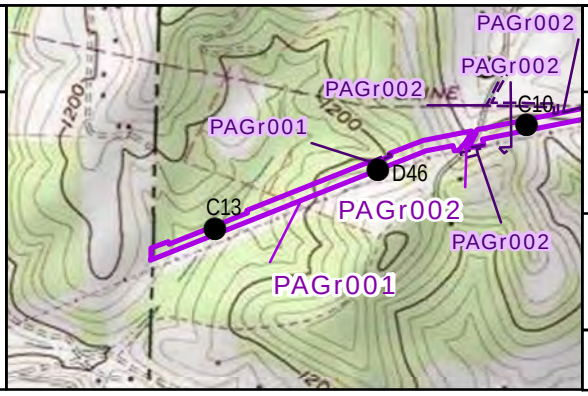


Figure 6.151

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAGr002: STP C10

0.00 – 0.20 meters: A-horizon; brown (10YR 4/3) silt loam

0.20 – 0.30 meters: B- horizon; strong brown (7.5YR 5/6) silty clay loam

PAGr002: STP C56

0.00 – 0.37 meters: Ap-horizon; brown (10YR 4/3) silt loam

0.37 – 0.47 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

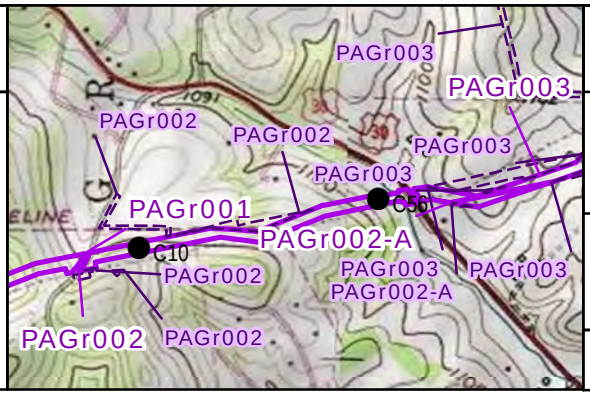


Figure 6.152

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAGr016: STP G4

0.00 – 0.26 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.26 – 0.36 meters: B-horizon; strong brown (7.5YR 4/6) silt loam to silty clay loam

PAGr015: STP D46

0.00 – 0.32 meters: A-horizon; very dark grayish brown (10YR 3/2) silt loam
0.32 – 0.42 meters: B- horizon; yellowish brown (10YR 5/4) silty loam

PAGr015: STP C72

0.00 – 0.24 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.24 – 0.35 meters: B-horizon; strong brown (7.5YR 4/6) silt loam to silt clay loam

0 0.05 0.1 0.2 Meters

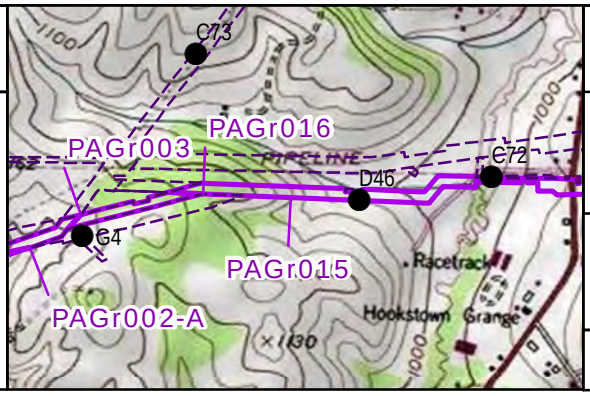


Figure 6.153

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

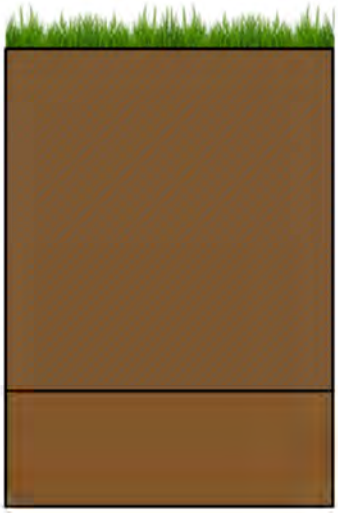
Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAGr012: STP D13

0.00 – 0.32 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.32 – 0.42 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

PAGr009: STP C36

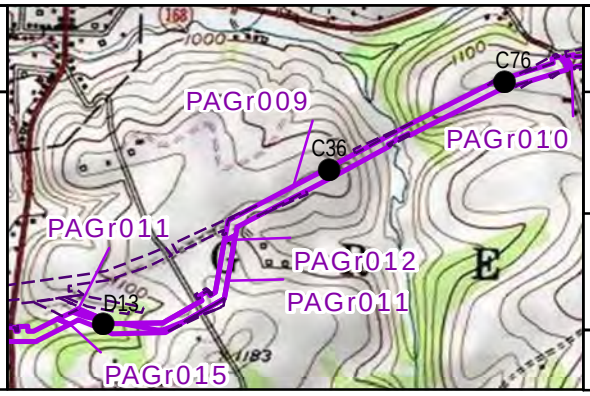
0.00 – 0.40 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.40 – 0.50 meters: B-horizon; brownish yellow (10YR 6/6) silt loam



PAGr009: STP C76

0.00 – 0.30 meters: Ap-horizon; brown (10YR 4/3) mottled with strong brown (7.5YR 4/6) silt loam
0.30 – 0.40 meters: B-horizon; strong brown (7.5YR 4/6) silt loam

0 0.05 0.1 0.2 Meters



AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 6.154

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAGr010: STP C66

0.00 – 0.25 meters: A-horizon; very dark grayish brown (10YR 3/2) silt loam
0.25 – 0.35 meters: Bg-horizon; gray (10YR 5/1) silty clay loam

PAGr010: STP D118

0.00 – 0.34 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.34 – 0.44 meters: B-horizon; strong brown (7.5YR 5/6) silt loam

PAGr007: STP C20

0.00 – 0.32 meters: Ap-horizon; dark yellowish brown (10YR 4/4) silt loam
0.32 – 0.42 meters: Bw-horizon; strong brown (7.5YR 5/6) silty clay loam

0 0.05 0.1 0.2 Meters

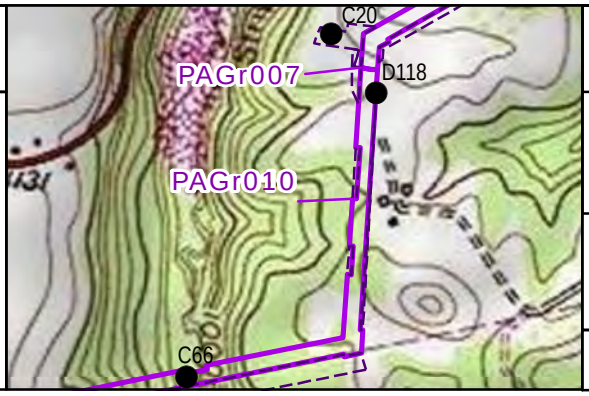


Figure 6.155

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

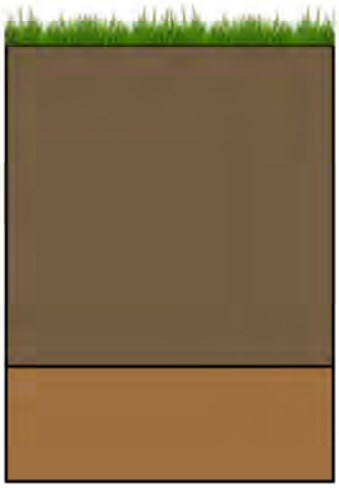
AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PASh001: STP C11

0.00 – 0.35 meters: Ap-horizon; dark grayish brown (10YR 4/2) silt loam
0.35 – 0.45 meters: Bt-horizon, yellowish brown (10YR 5/4) silt loam



PASh001: STP A86

0.00 – 0.28 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.28 – 0.38 meters: B-horizon; strong brown (7.5YR 5/6) silt loam

PASh001 - A: STP B15+10N

0.00 – 0.30 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.30 – 0.40 meters: B-horizon; strong brown (7.5YR 4/6) silt loam to silty clay loam

0 0.05 0.1 0.2 Meters

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

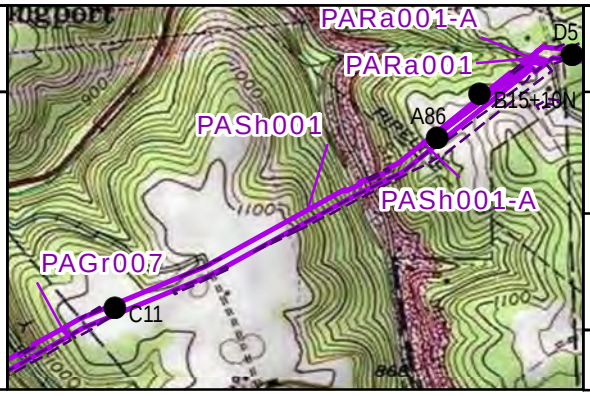


Figure 6.156

REPRESENTATIVE SOIL PROFILES

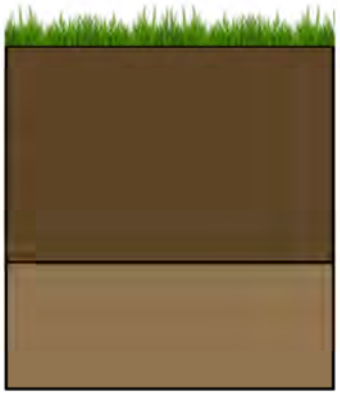
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

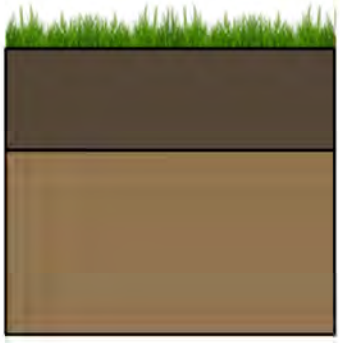
PARa001: STP D5

0.00 – 0.22 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.22 – 0.35 meters: B-horizon; strong brown (7.5YR 4/6) silty clay loam



PARa001: STP C57

0.00 – 0.19 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.19 – 0.30 meters: B-horizon; yellowish brown (10YR 5/4) silt loam



PARa002: STP F18

0.00 – 0.09 meters: AO-horizon; very dark grayish brown (10YR 3/2) silt loam
0.09 – 0.25 meters: B-horizon; yellowish brown (10YR 5/4) silty clay loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

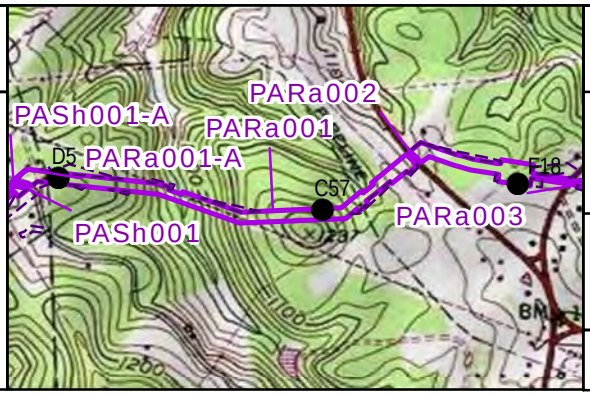


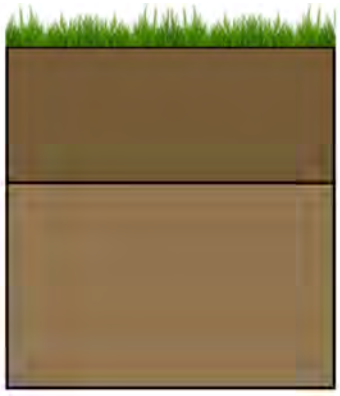
Figure 6.157

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



PARa003: STP B115

0.00 – 0.12 meters: AO-horizon; dark yellowish brown (10YR 4/4) silt loam
0.12 – 0.30 meters: B-horizon; yellowish brown (10YR 5/4) silt loam

PARa003: STP B163

0.00 – 0.26 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.26 – 0.40 meters: B-horizon; yellowish brown (10YR 5/6) silt loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

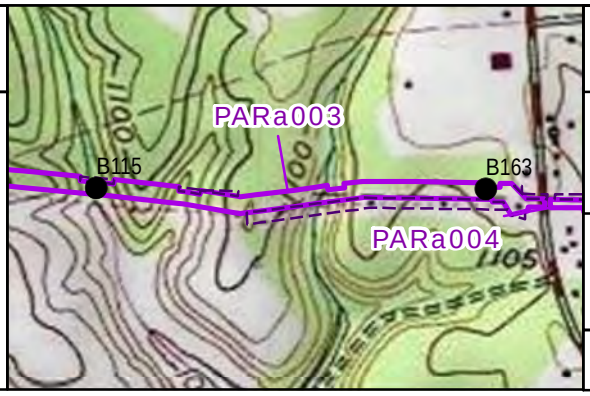


Figure 6.158

REPRESENTATIVE SOIL PROFILES

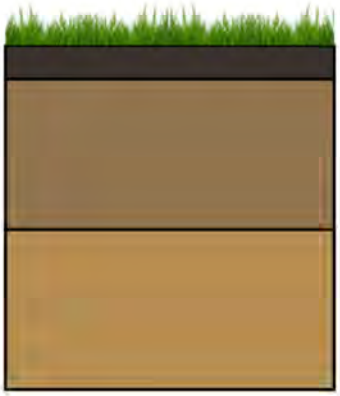
SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PARa004: STP B28

0.00 – 0.28 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.28 – 0.40 meters: Bt-horizon; yellowish brown (10YR 5/6) silt clay loam.



PARa005: STP C20

0.00 – 0.03 meters: OA-horizon; black (10YR 2/1) silt loam
0.03 – 0.16 meters: BA-horizon; yellowish brown (10YR 5/4) silt loam
0.16 – 0.30 meters: Bt-horizon; brownish yellow (10YR 6/6) silt loam

0 0.05 0.1 0.2
Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

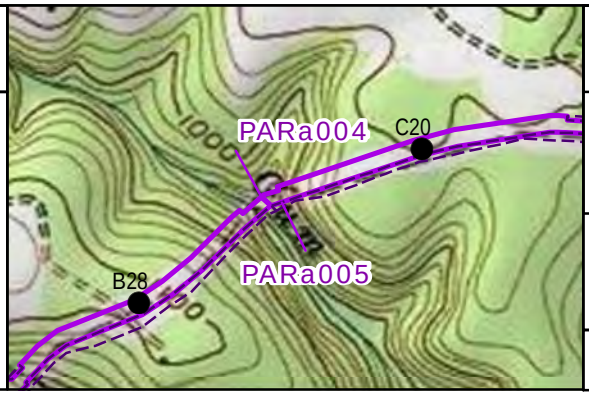


Figure 6.159

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd

PAGr003: STP C73

0.00 – 0.24 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.24 – 0.35 meters: B-horizon; strong brown (7.5YR 5/6) silt loam to silty clay loam

PAGr004: STP C12

0.00 – 0.27 meters: Ap-horizon; brown (10YR 4/3) silt loam
0.27 – 0.40 meters: B-horizon strong brown (7.5YR 5/6) silt loam to silty clay loam

PAGr004: STP D66

0.00 – 0.26 meters: Ap-horizon; dark yellowish brown (10YR 3/4) silt loam
0.26 – 0.36 meters: B-horizon; light yellowish brown (10YR 6/4) silt loam

0 0.05 0.1 0.2 Meters

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

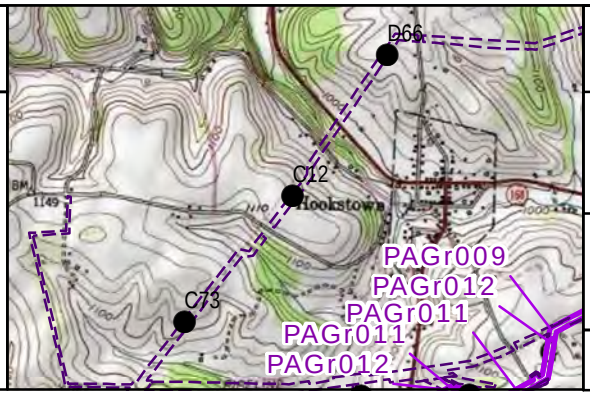


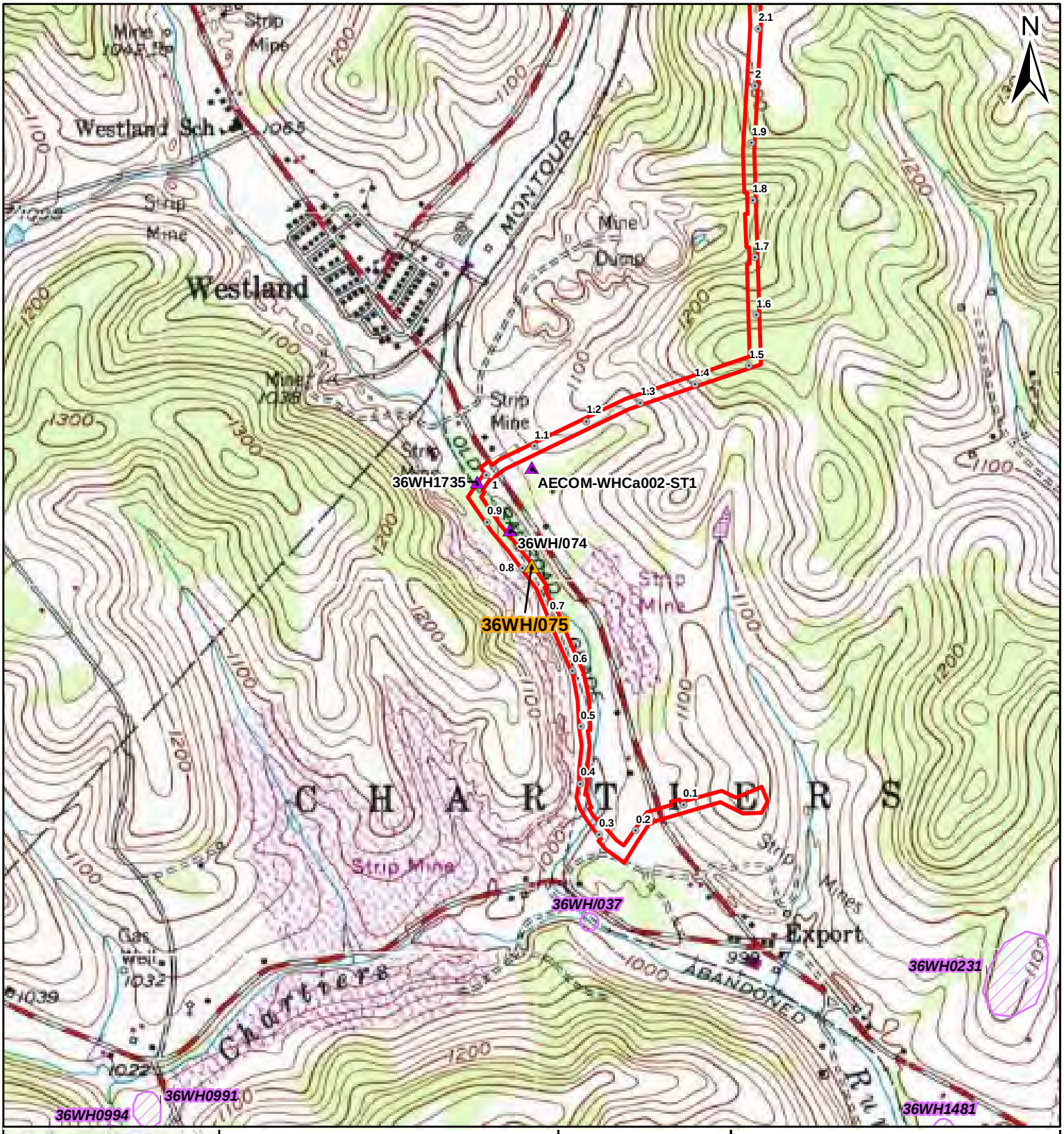
Figure 6.160

REPRESENTATIVE SOIL PROFILES

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/9/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\Soil_Profiles.mxd



Legend

Archaeological Data
- 36WH/075
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.01

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/075
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.02

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

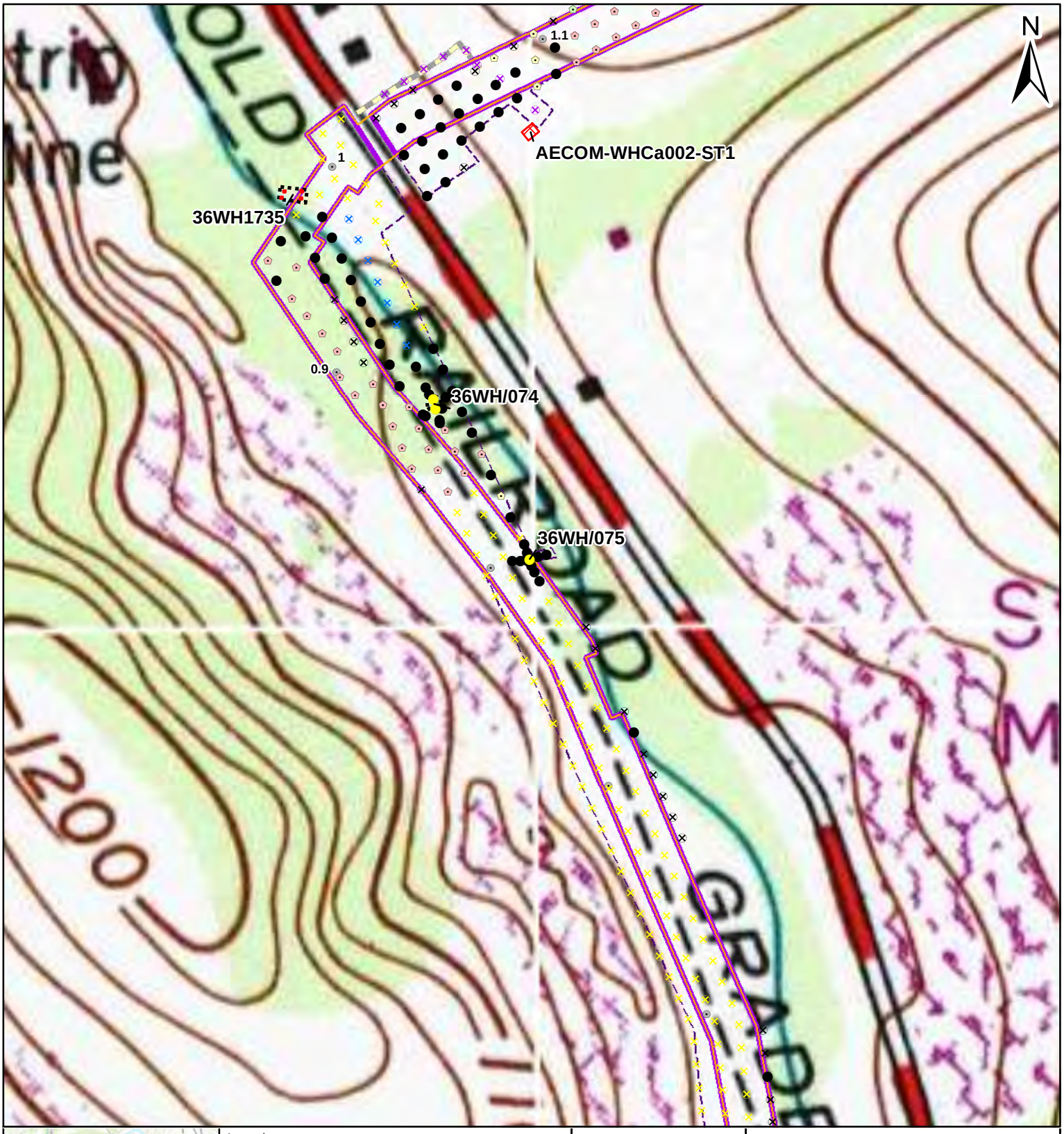
36WH/075
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.03

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/075
SITE MAP: MODERN TOPO

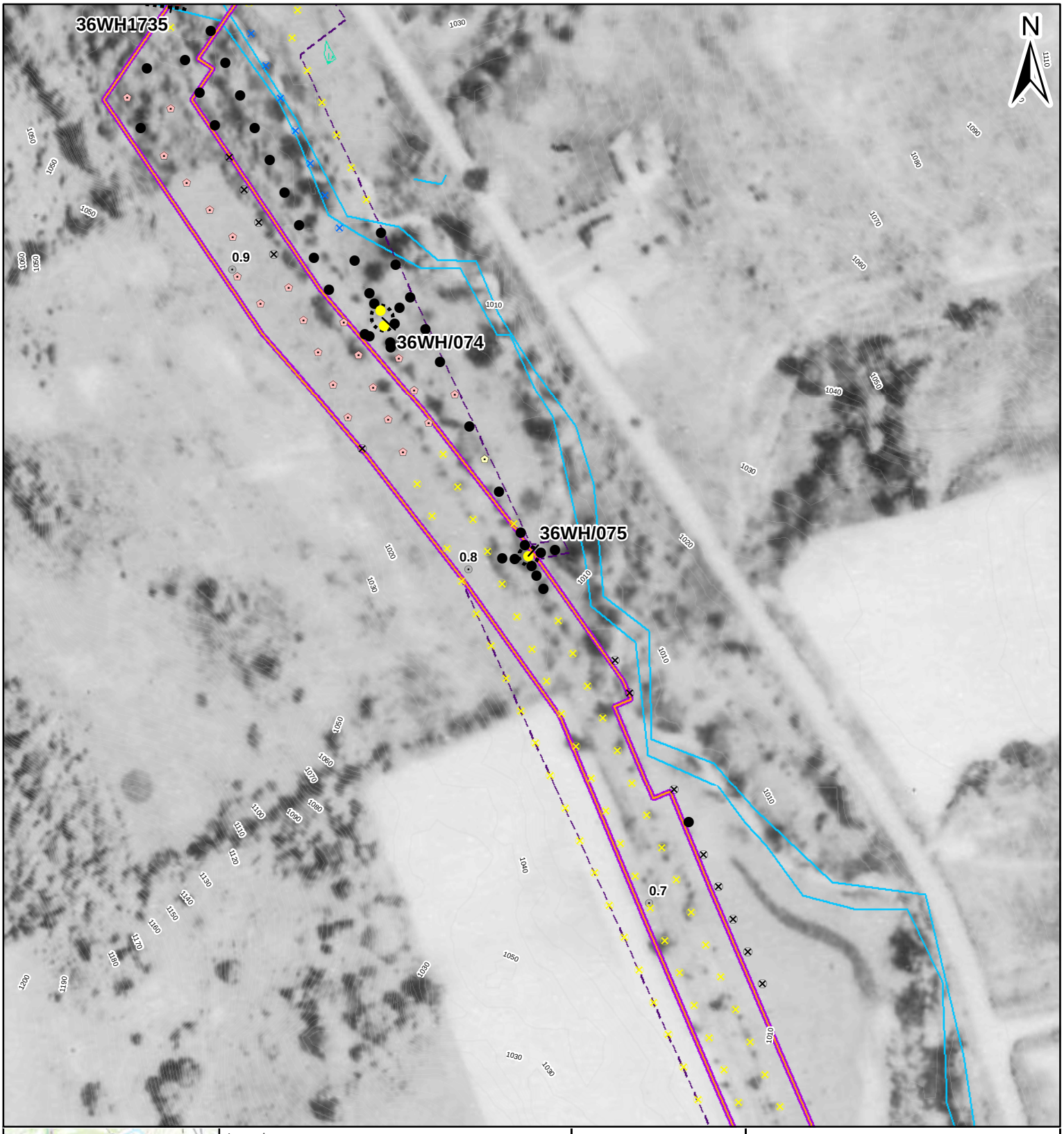
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.04

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/075
SITE MAP: 1939 AERIAL

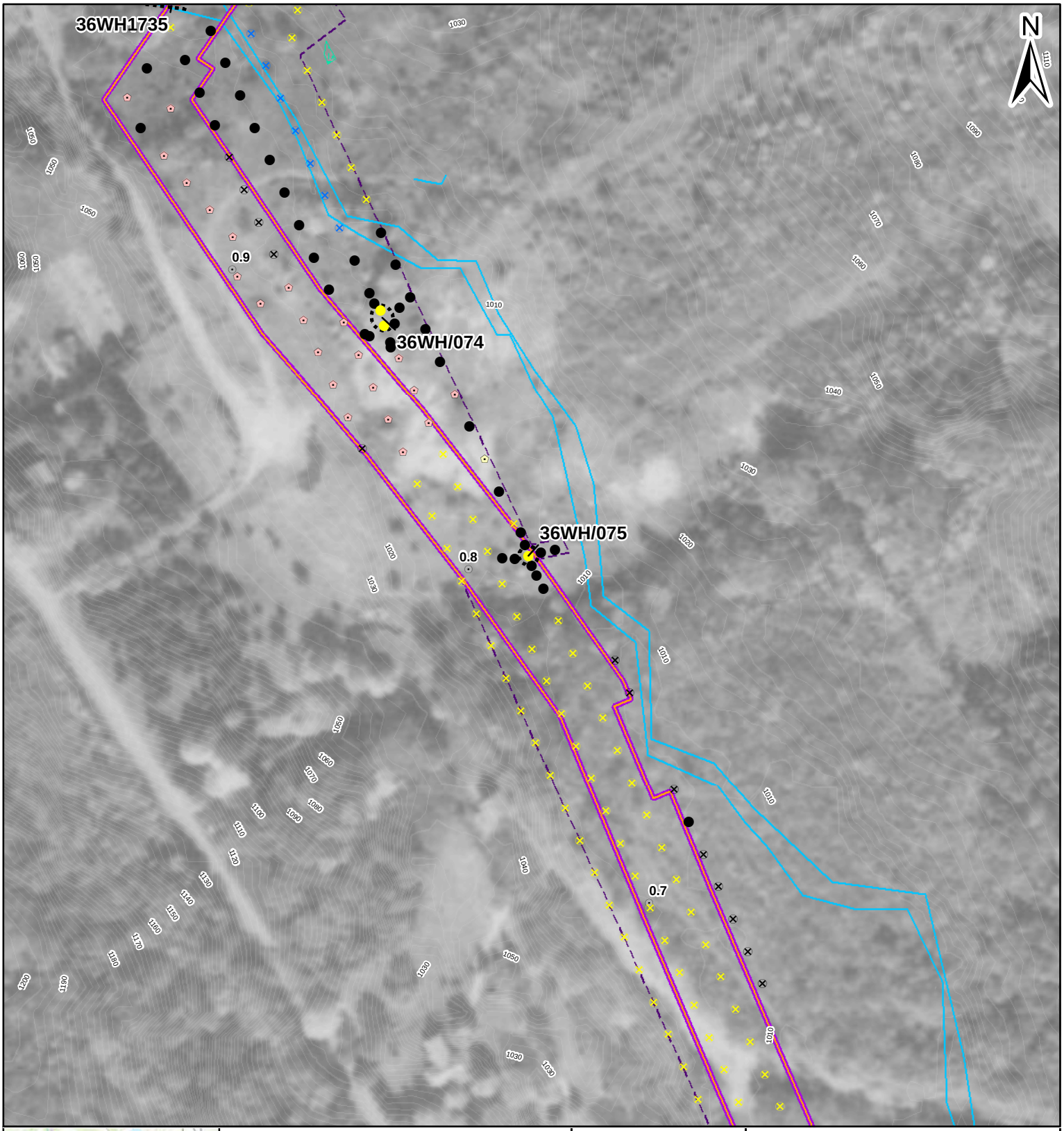
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #51. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 90 180

Figure 7.05

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/075
SITE MAP: 1967 AERIAL

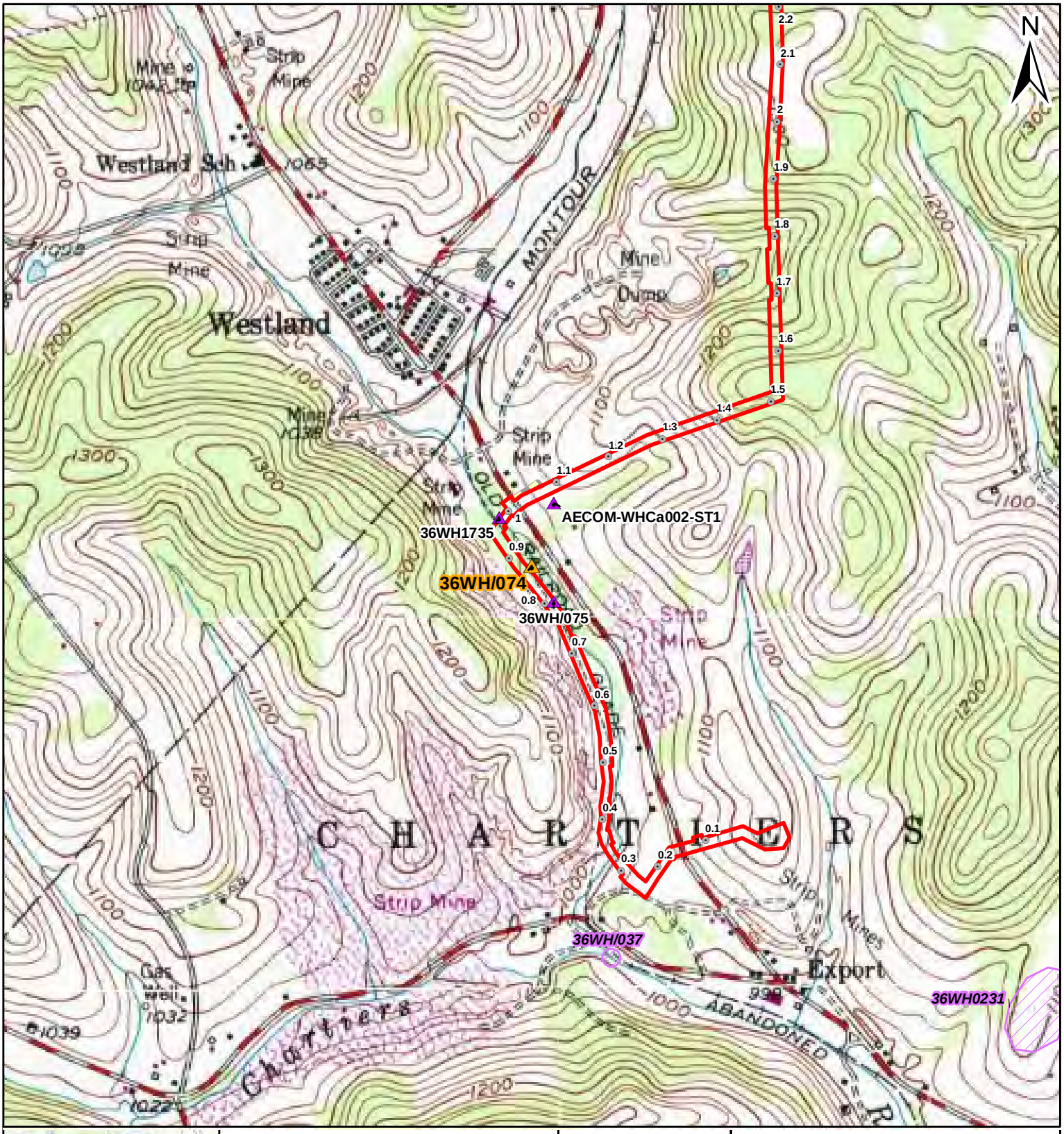
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #42. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36WH/074
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.06

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/074
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

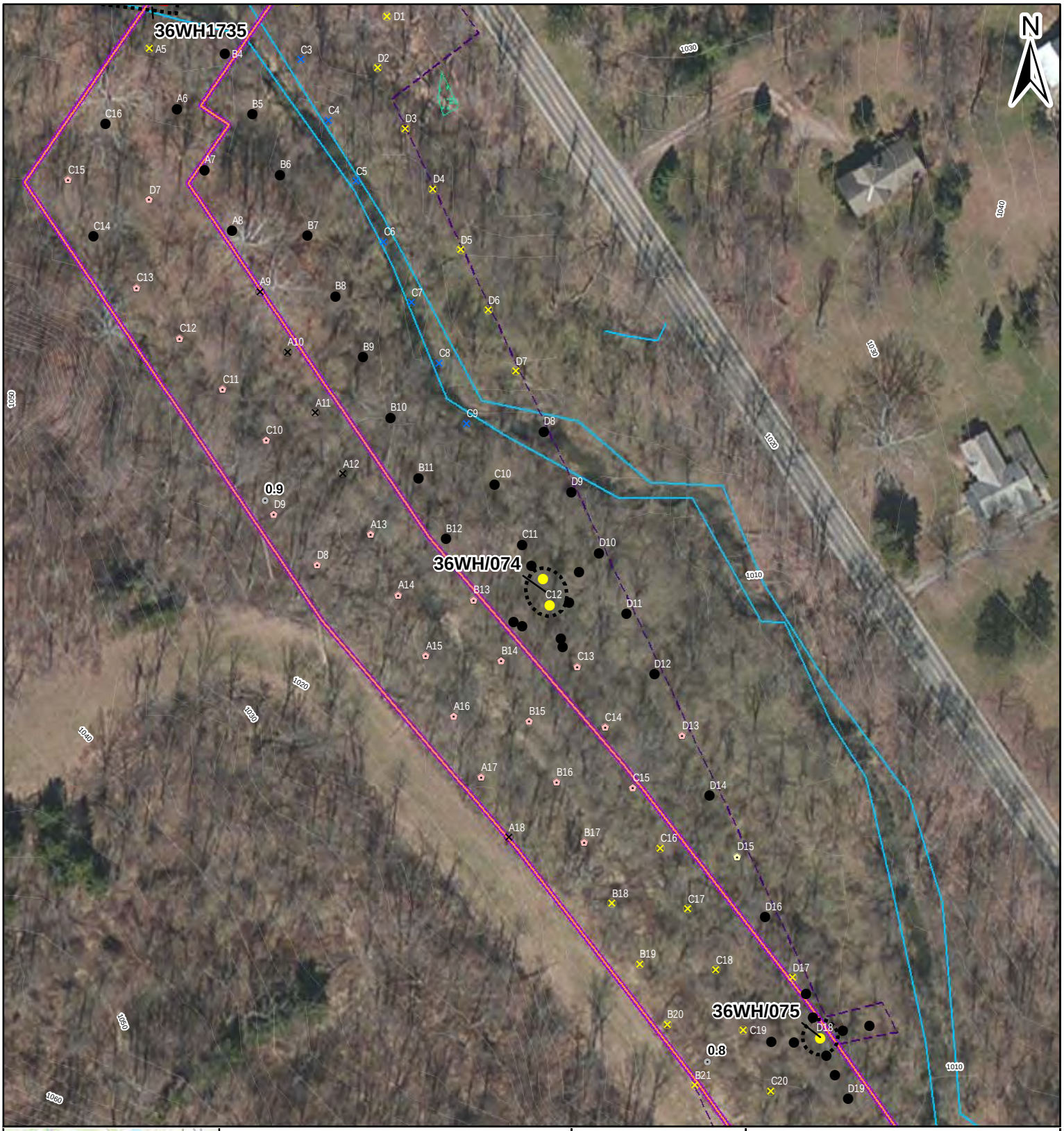
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.07

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

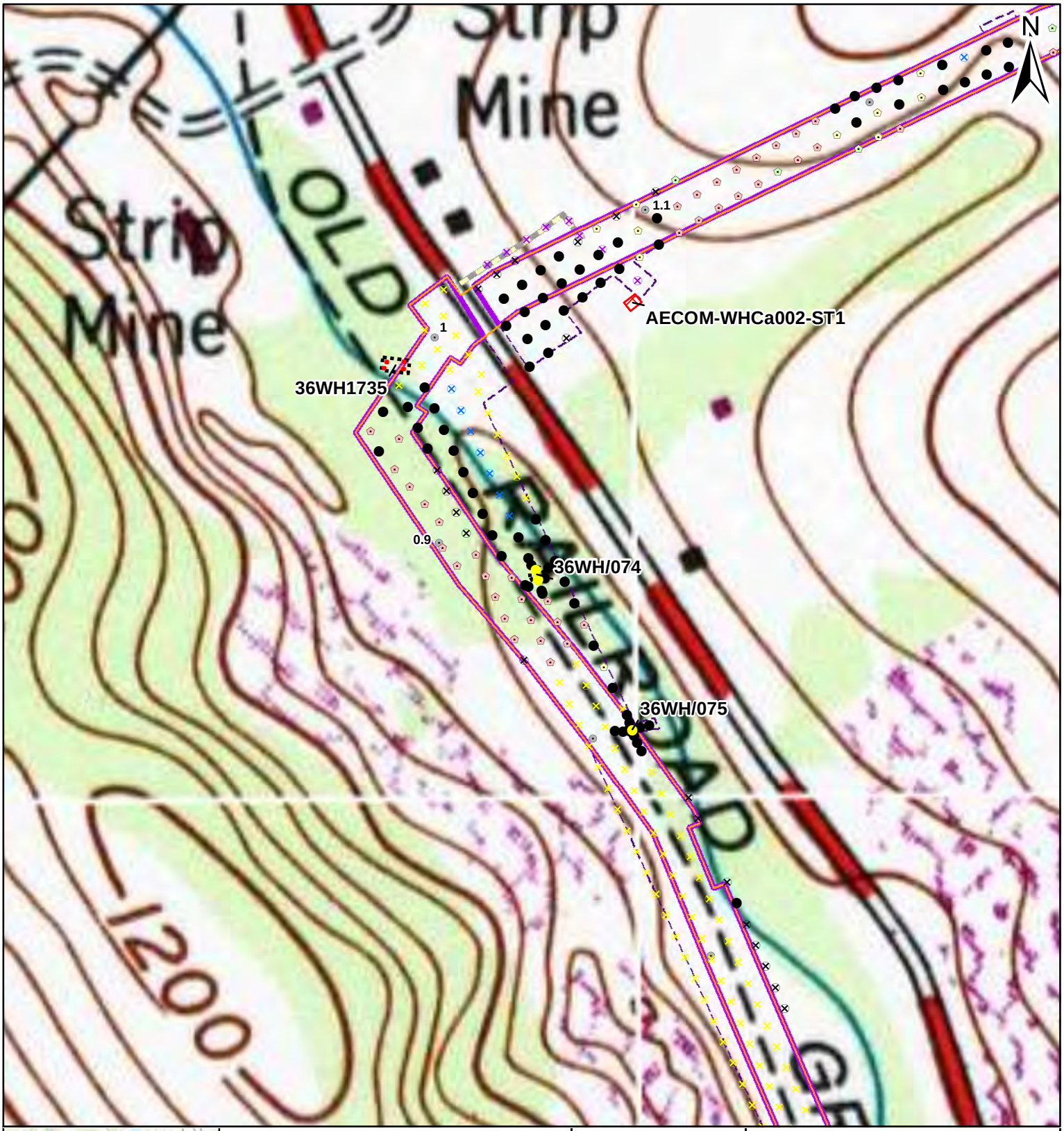
36WH/074
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.08

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/074
SITE MAP: MODERN TOPO

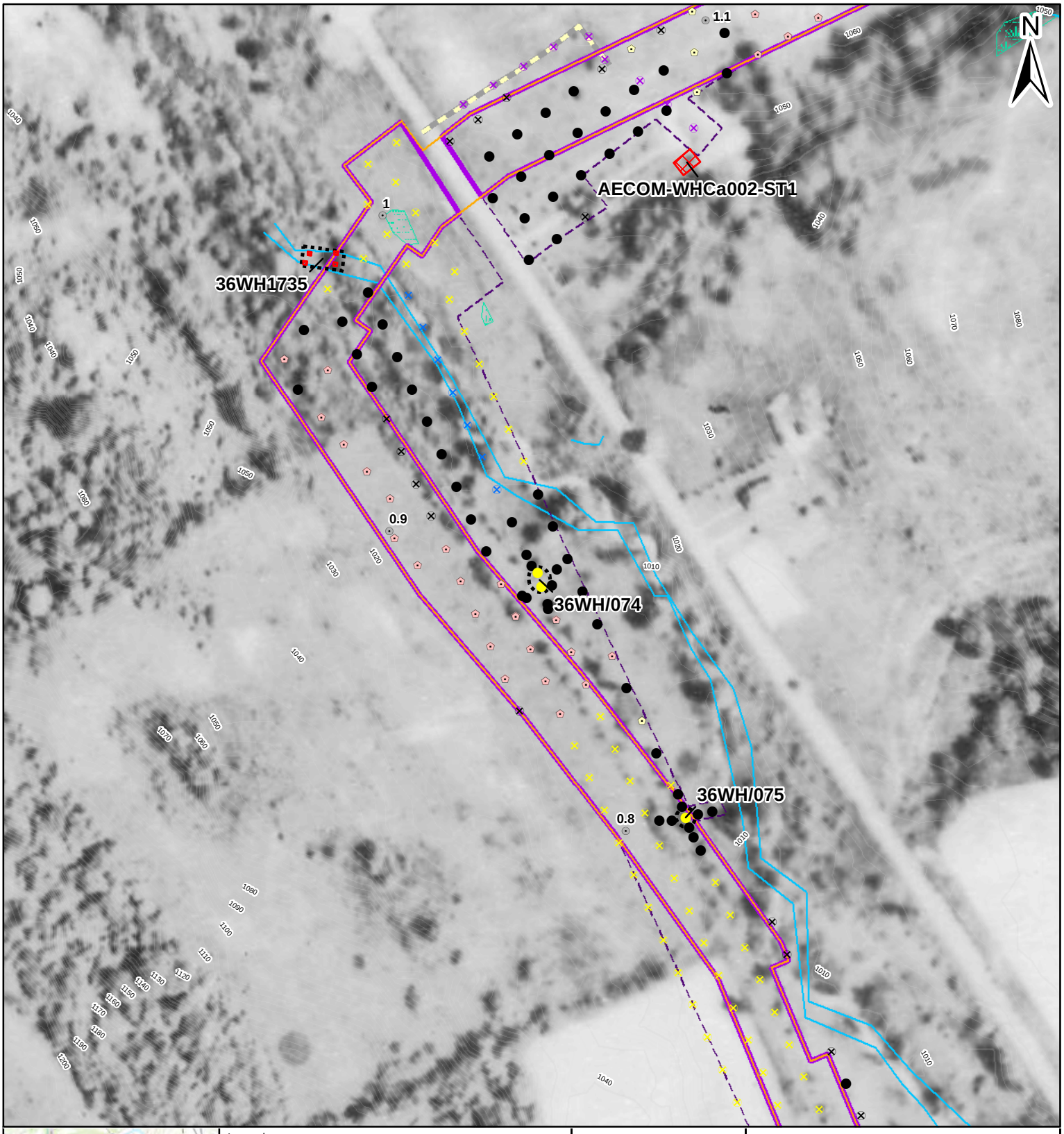
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.09

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/074
SITE MAP: 1939 AERIAL

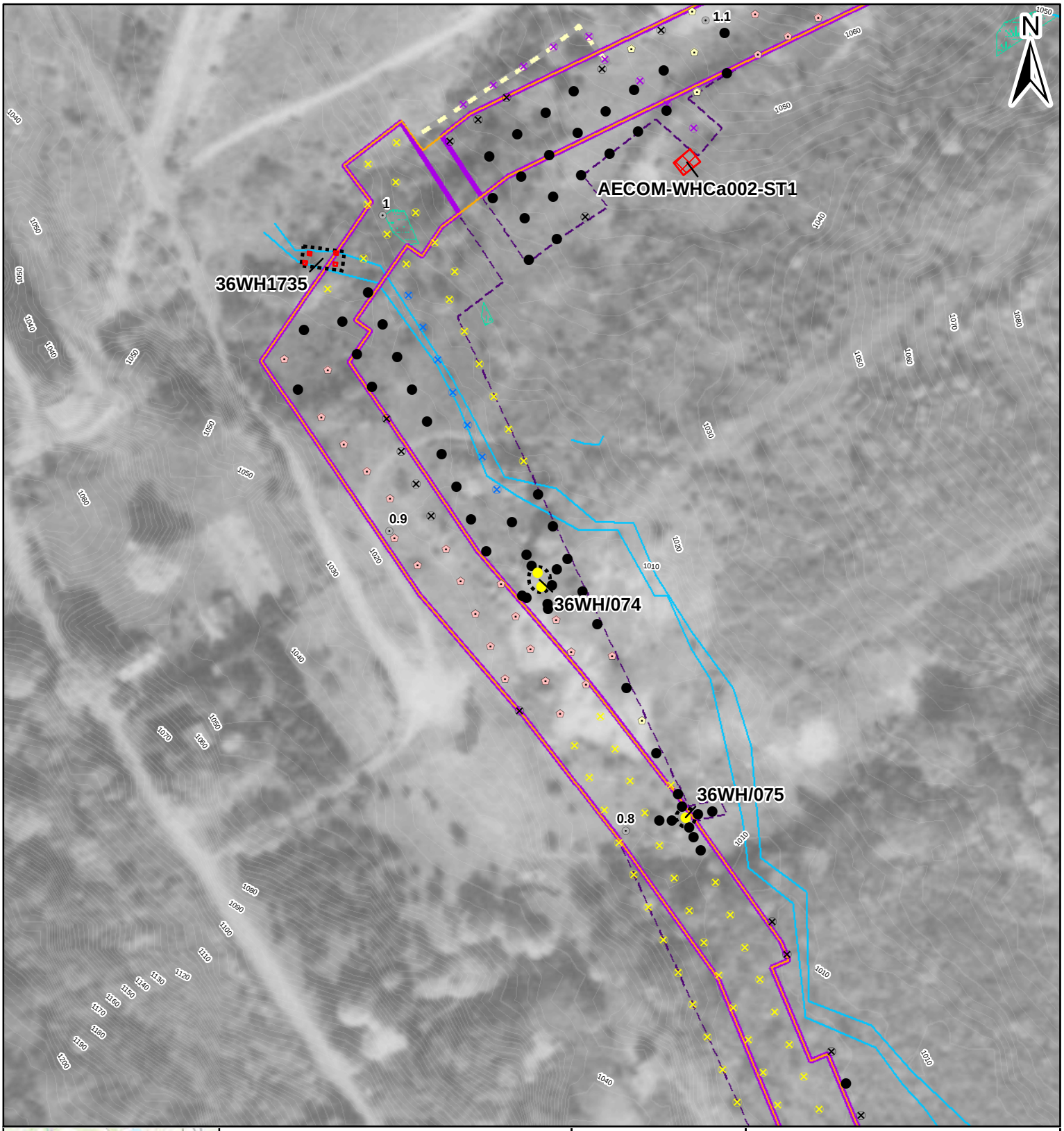
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #51. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.10

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/074
SITE MAP: 1967 AERIAL

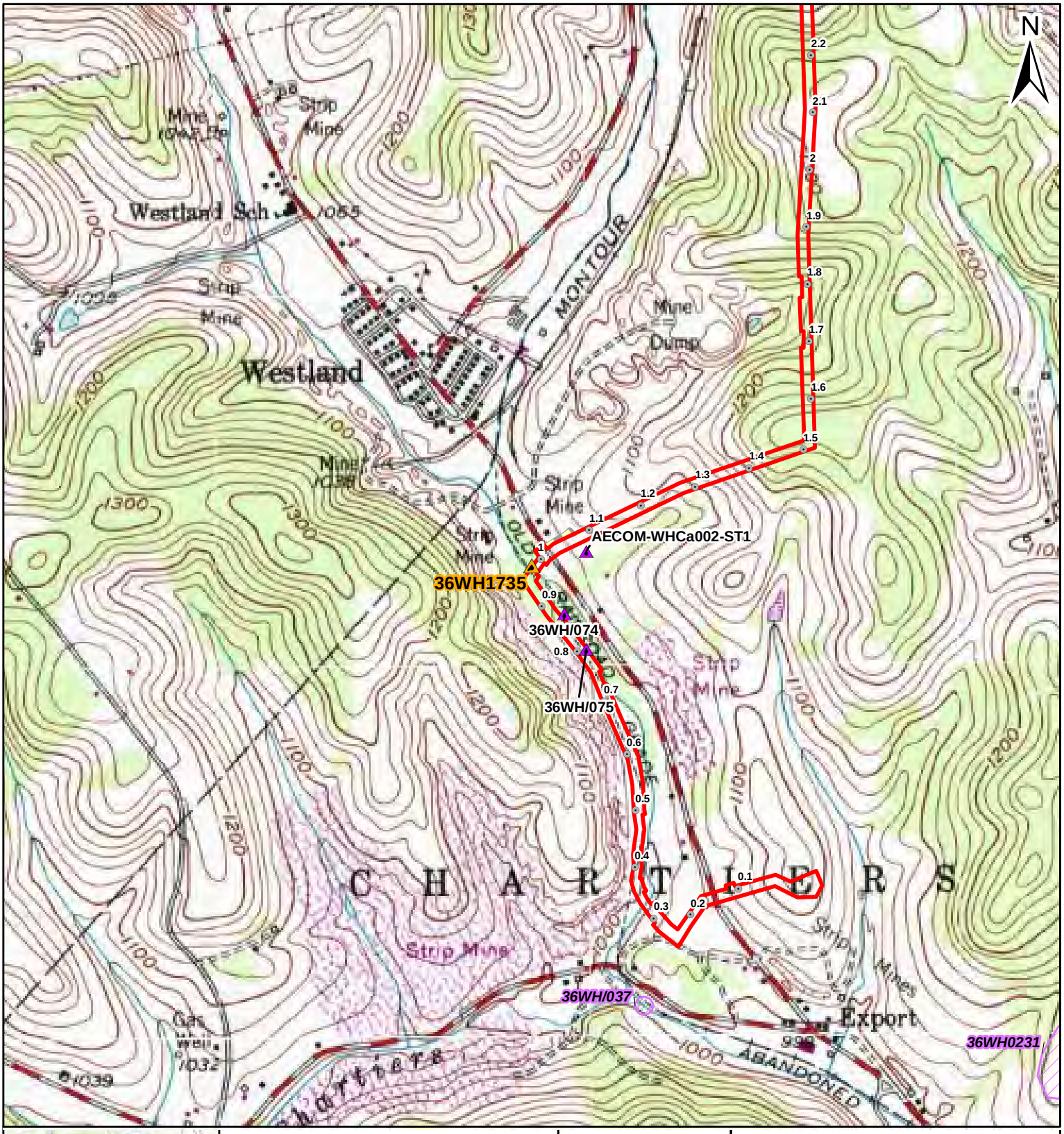
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #42. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36WH1735
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.11

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1735
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

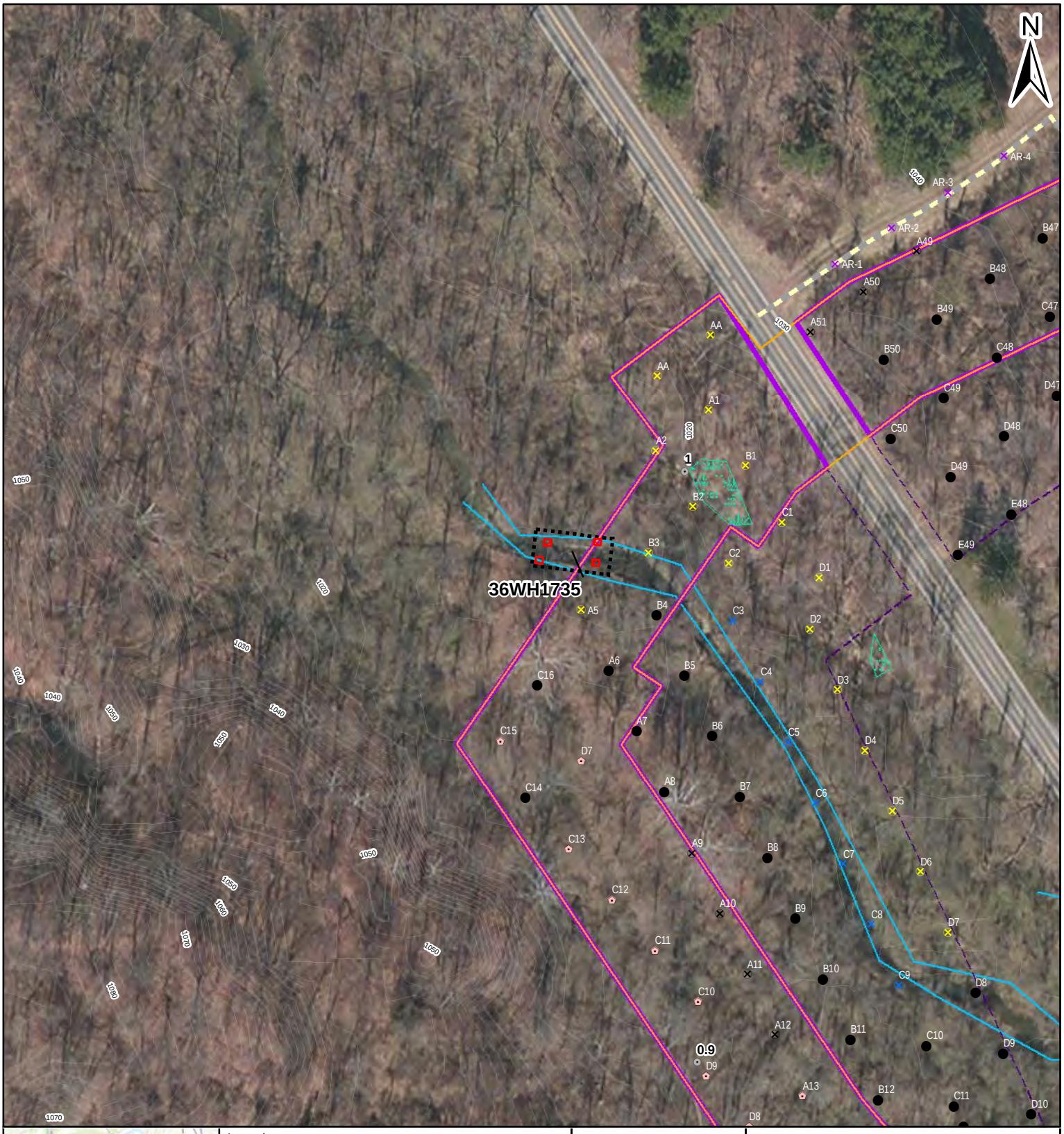
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.12

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1735
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

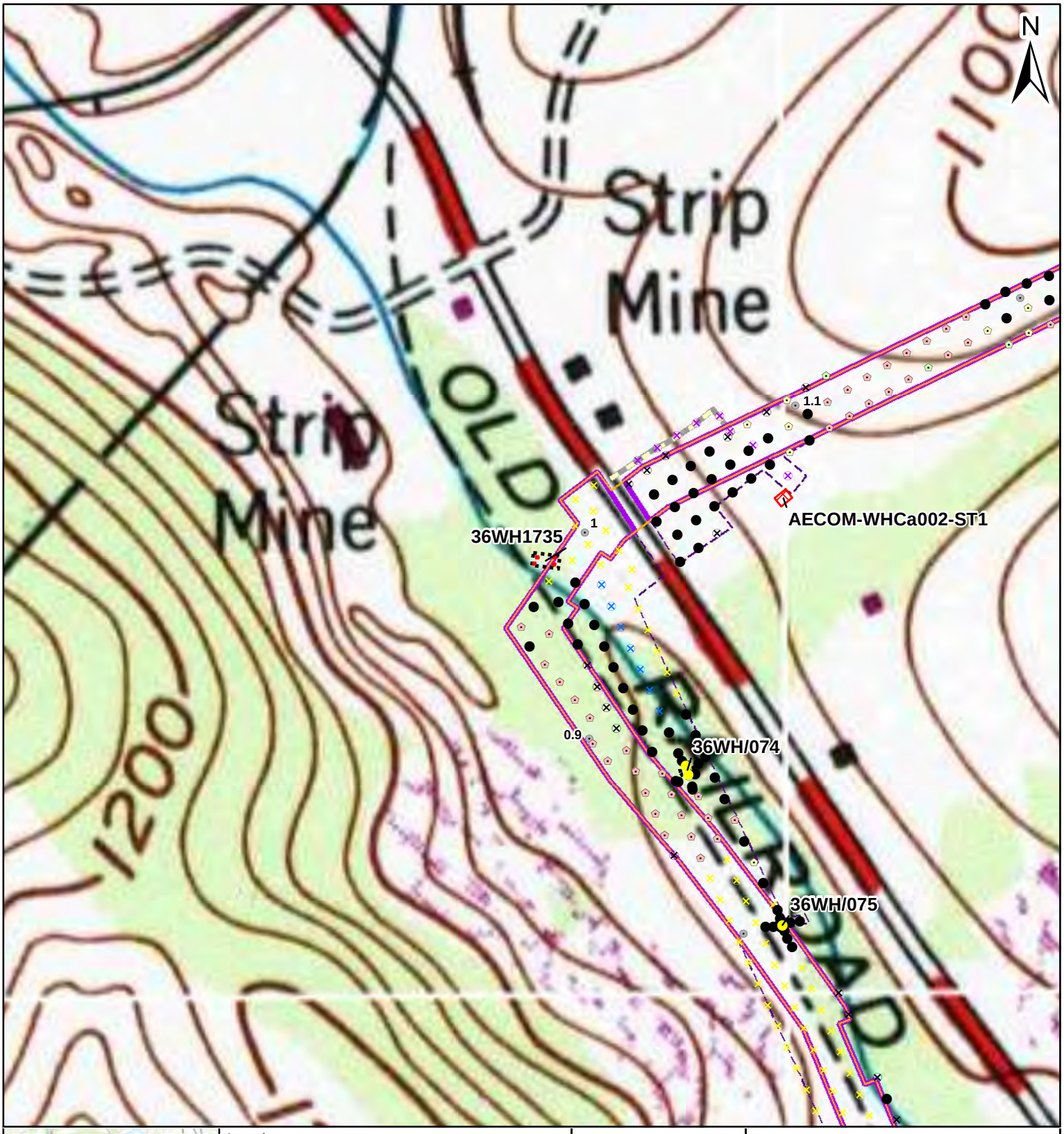
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.13

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1735
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.14

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1735
SITE MAP: 1939 AERIAL

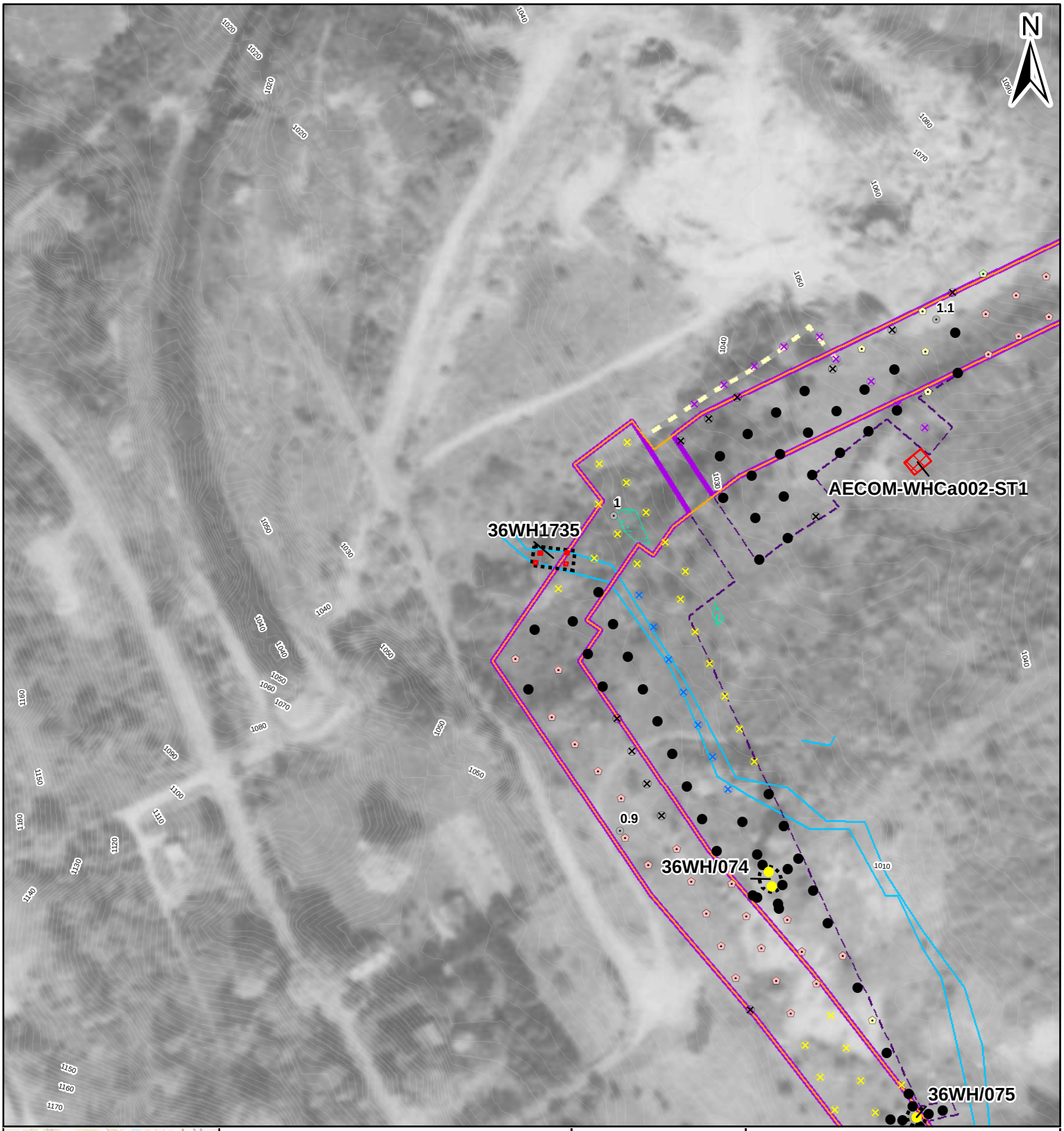
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #51. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.15

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1735
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #42. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd

Legend

Archaeological Data
- AECOM-WHCa002-ST1
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

Figure 7.16

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHCa002-ST1
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

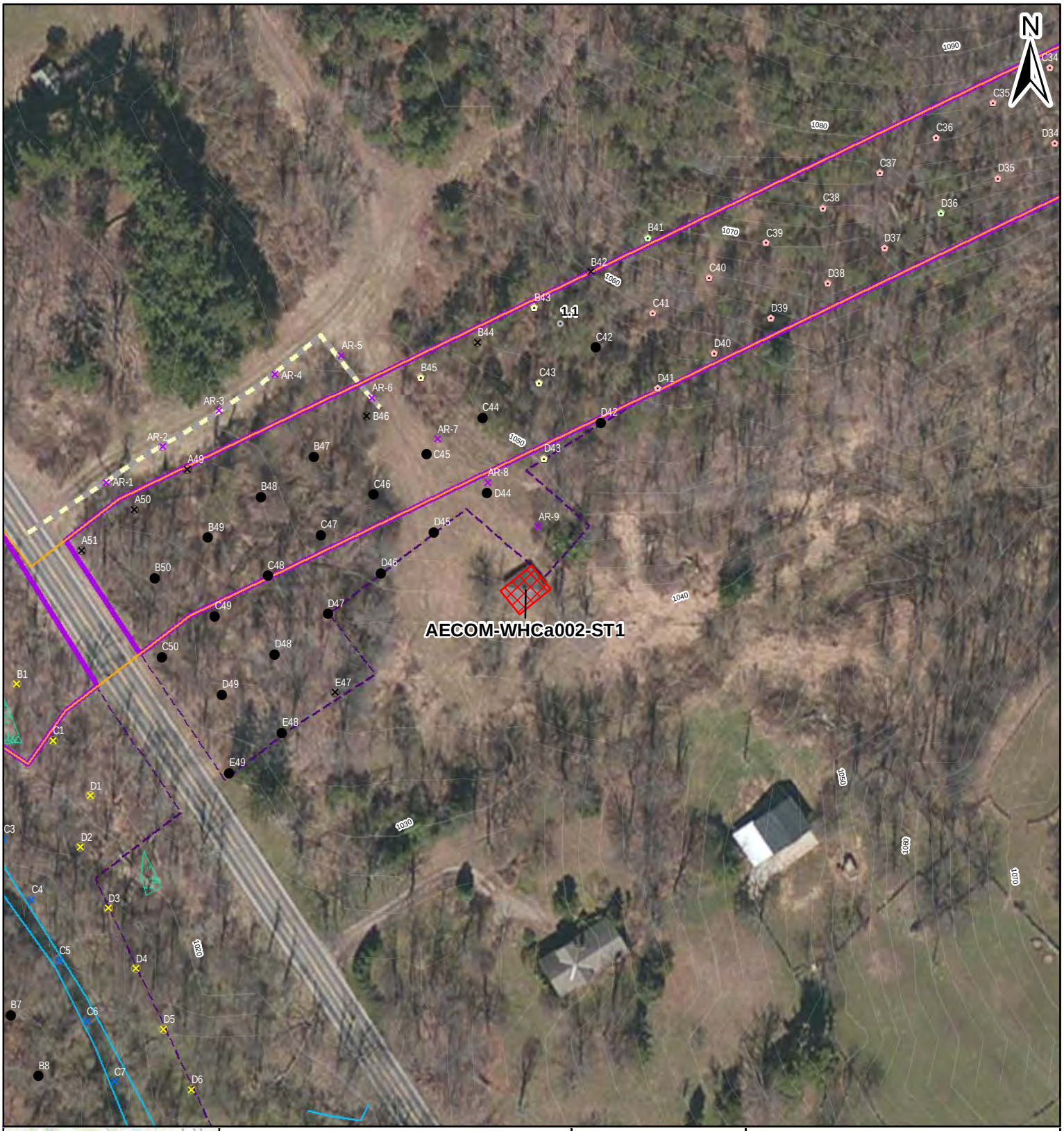
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.17

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHCa002-ST1
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Archaeological Data
- Resource Boundary
- Structure

0 140 280 Feet

Figure 7.18

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHCa002-ST1
SITE MAP: MODERN TOPO

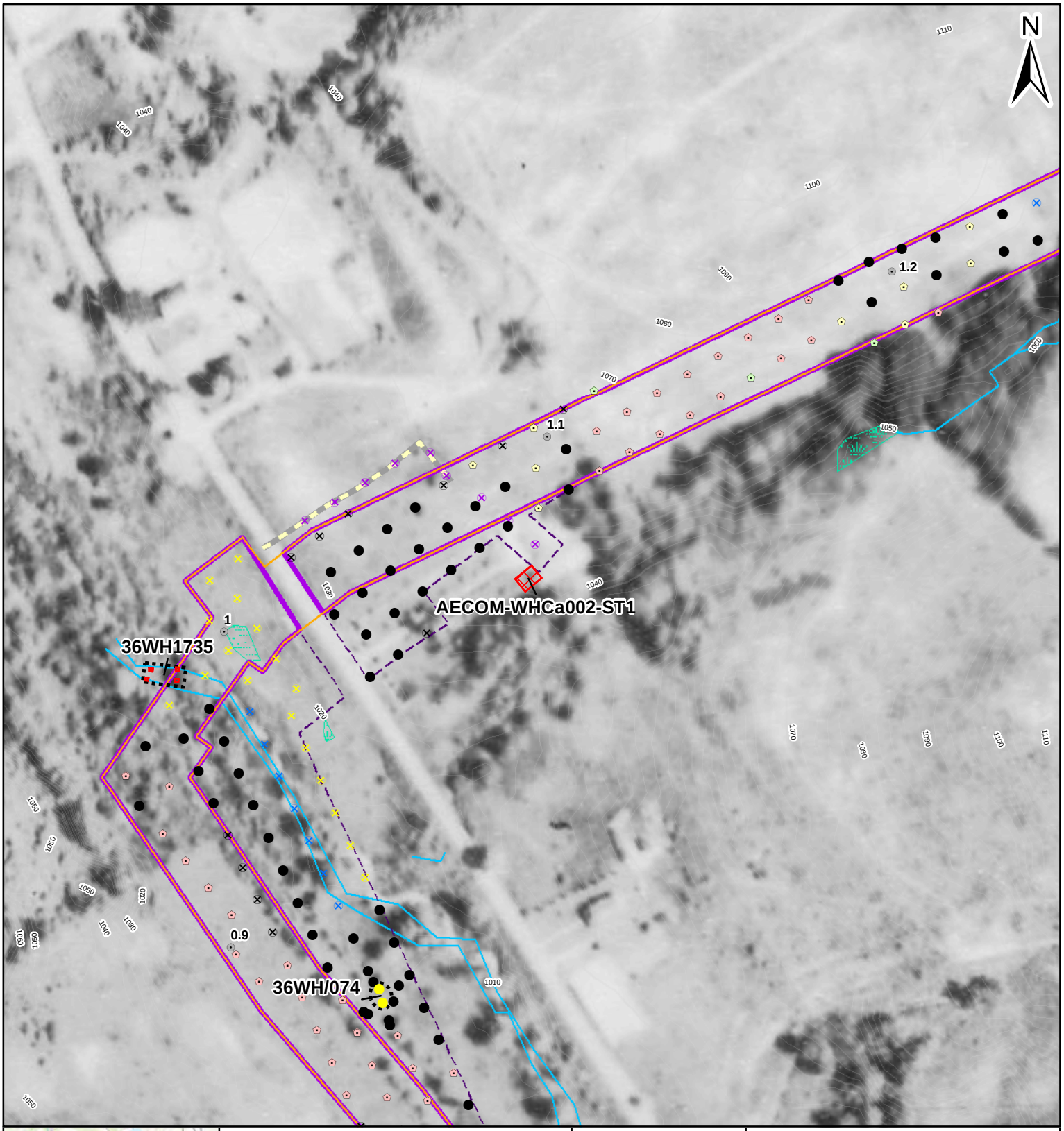
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Reference:
Roll #78, Photograph #51. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.19

AECOM

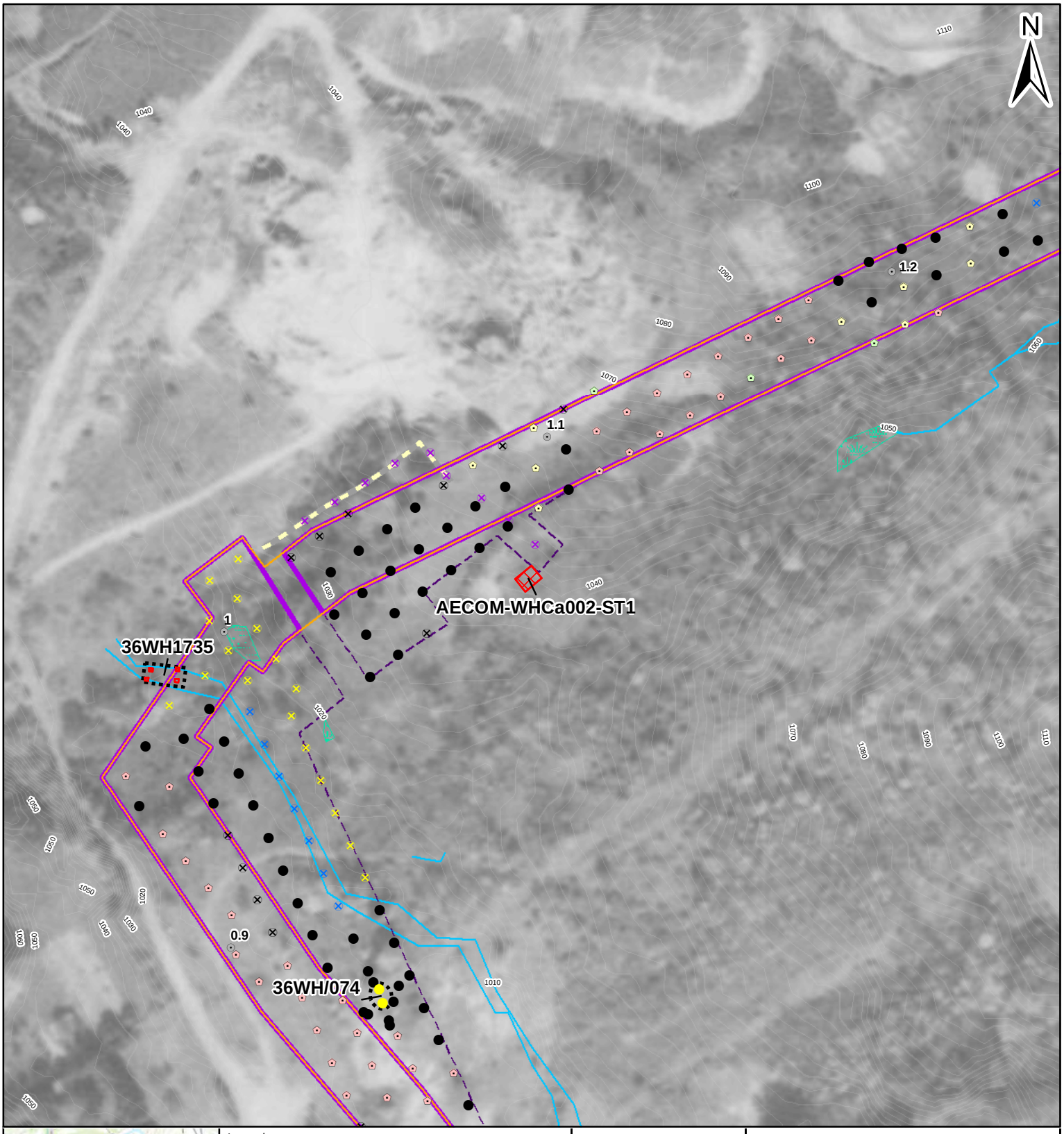
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHCa002-ST1
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.20

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHCa002-ST1
SITE MAP: 1967 AERIAL

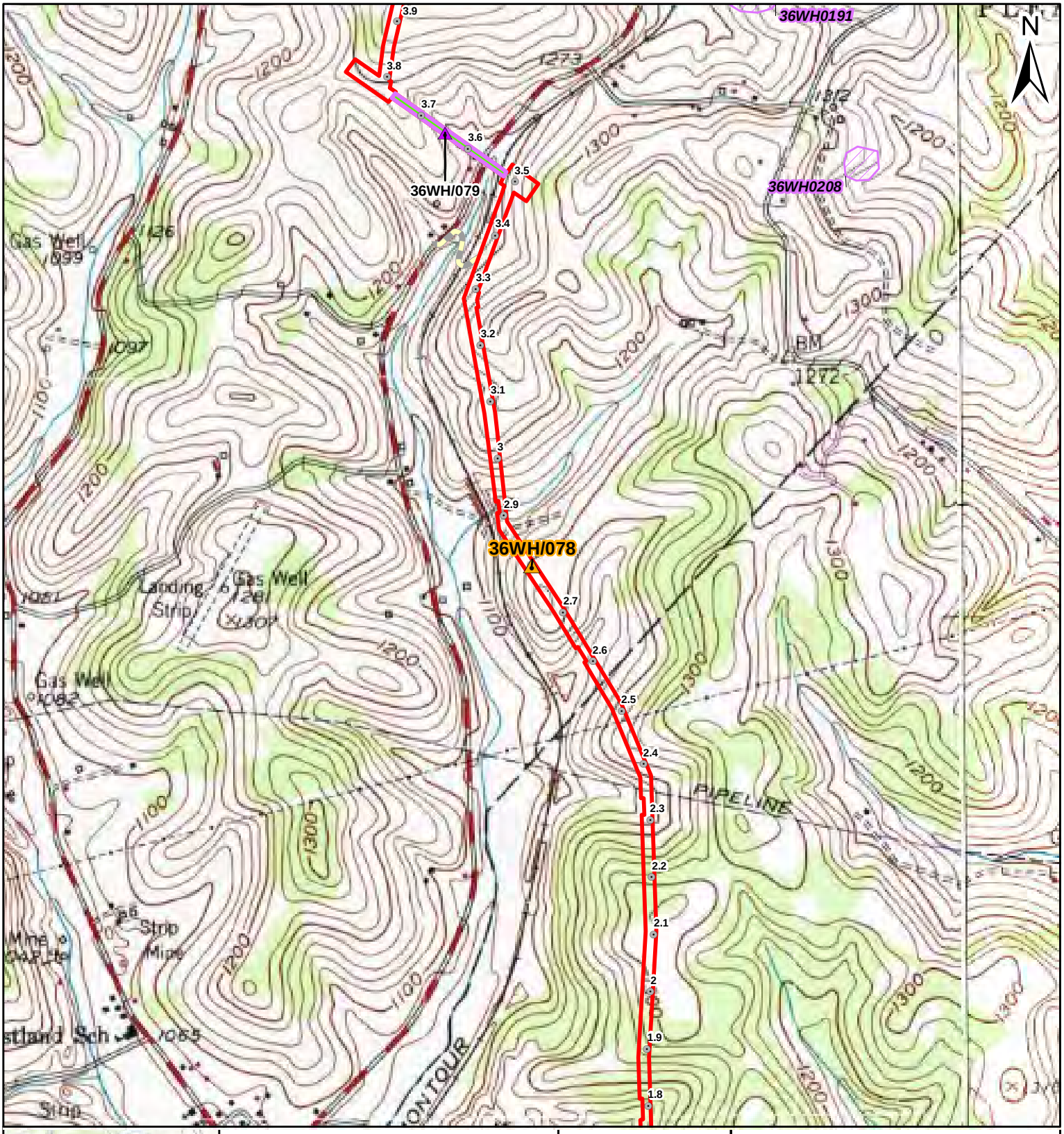
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #42. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data

- 36WH/078
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features

- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.21

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/078
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

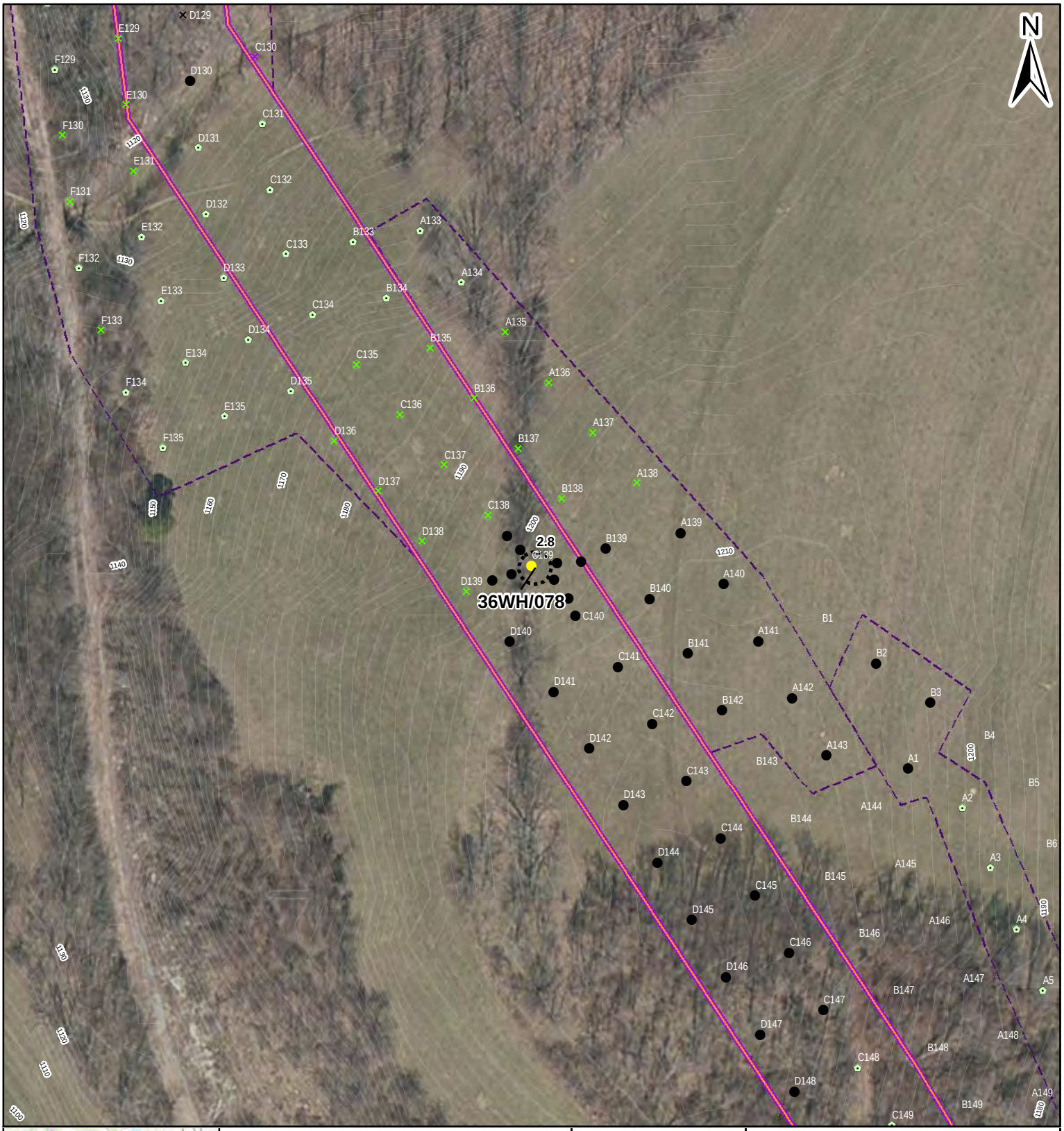
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\17747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.22

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/078
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.23

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/078
SITE MAP: MODERN TOPO

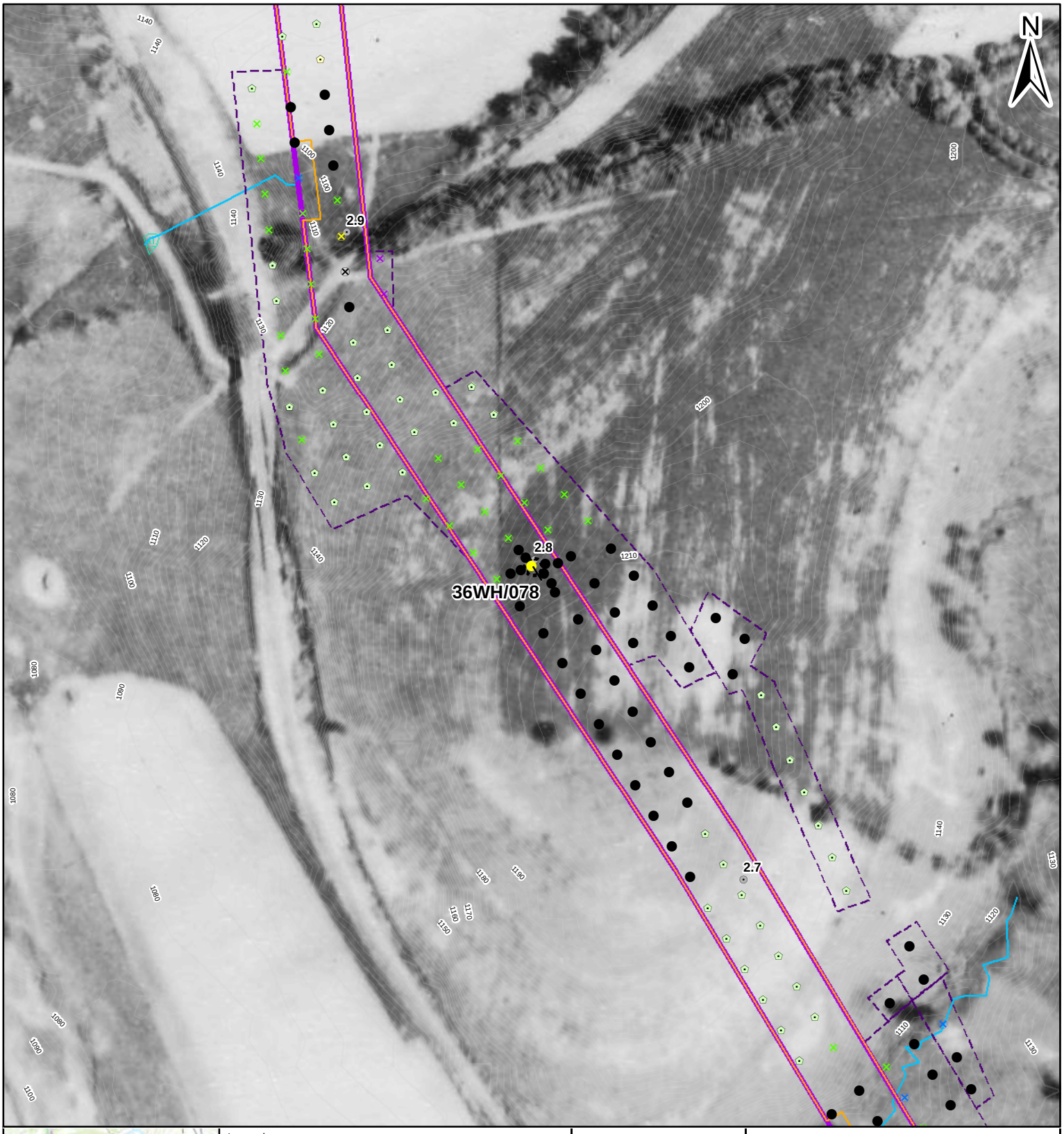
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.24

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/078
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #53. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.25

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/078
SITE MAP: 1967 AERIAL

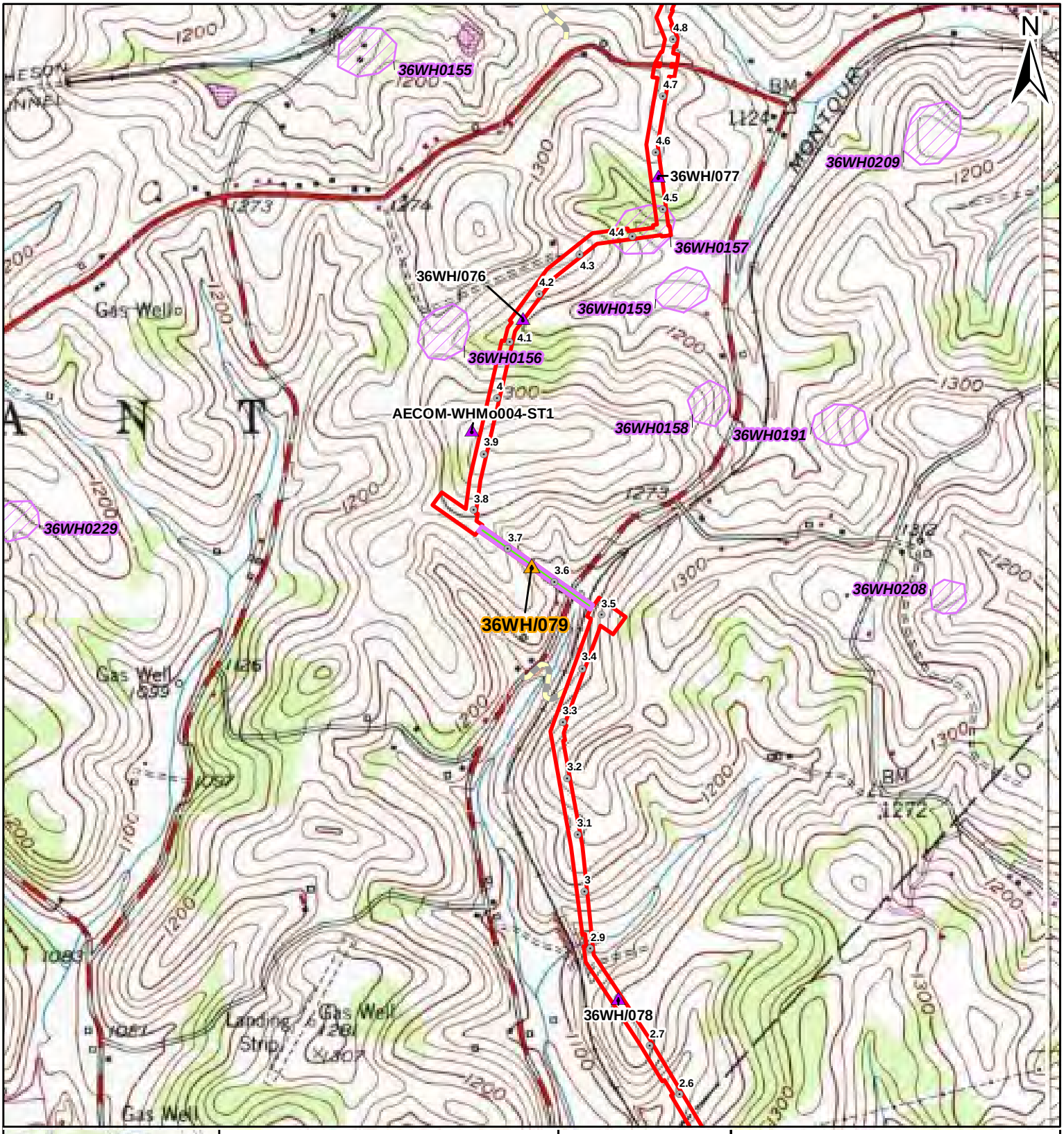
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36WH/079
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.26

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/079
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 45 90 Feet

Figure 7.27

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/079
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

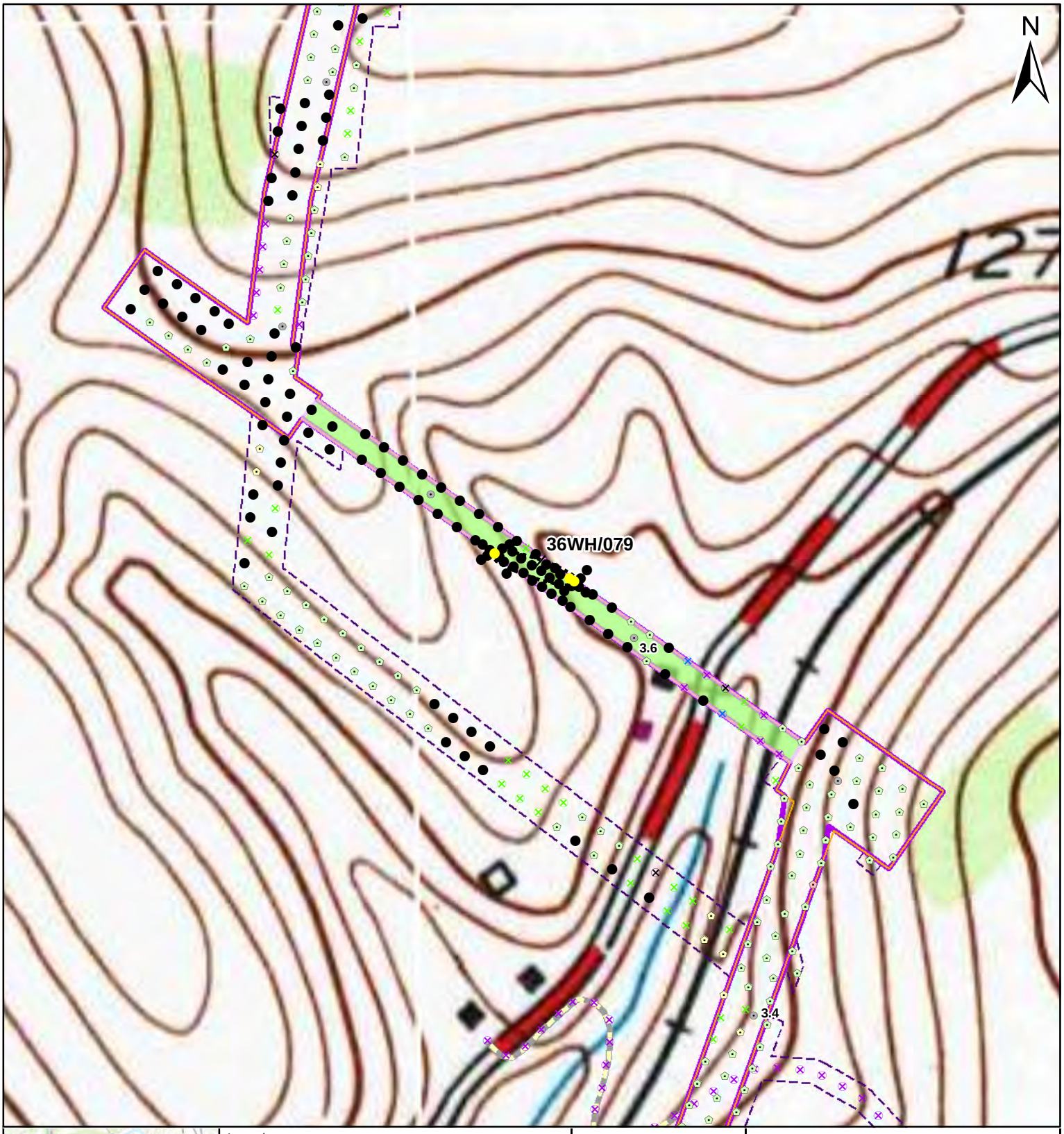
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.28

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/079
SITE MAP: MODERN TOPO

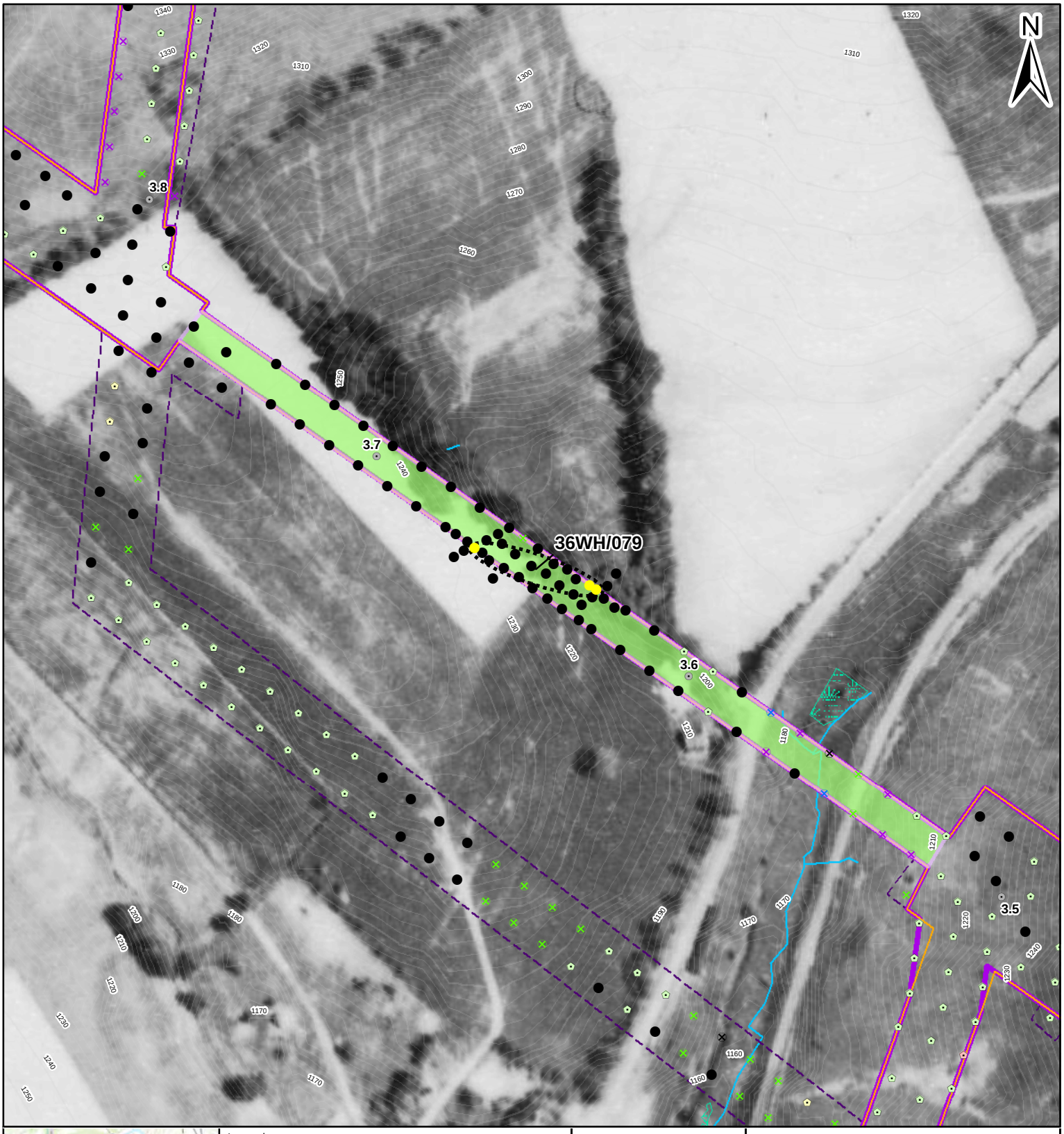
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.29

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/079
SITE MAP: 1939 AERIAL

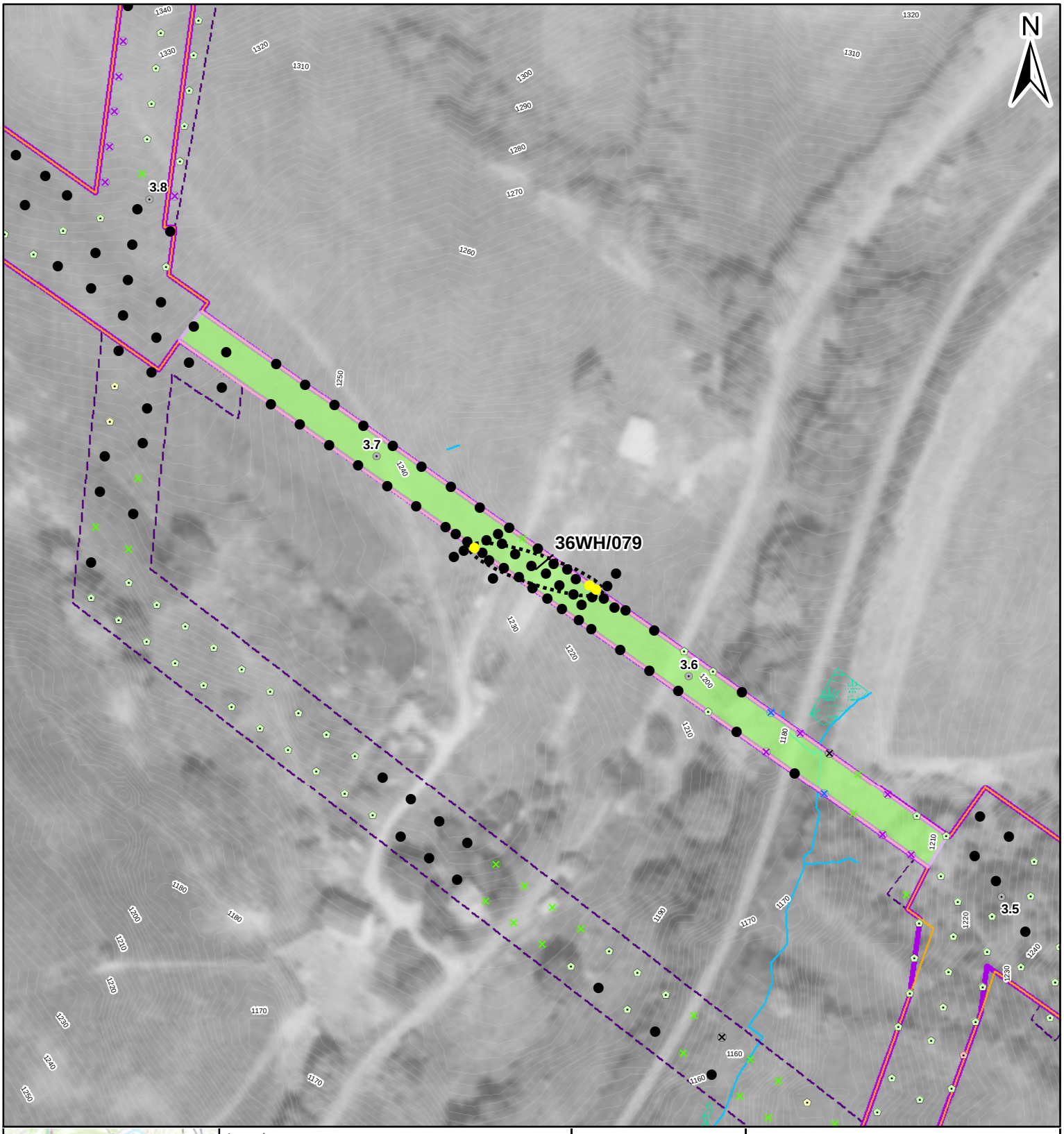
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #53. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.30

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/079
SITE MAP: 1967 AERIAL

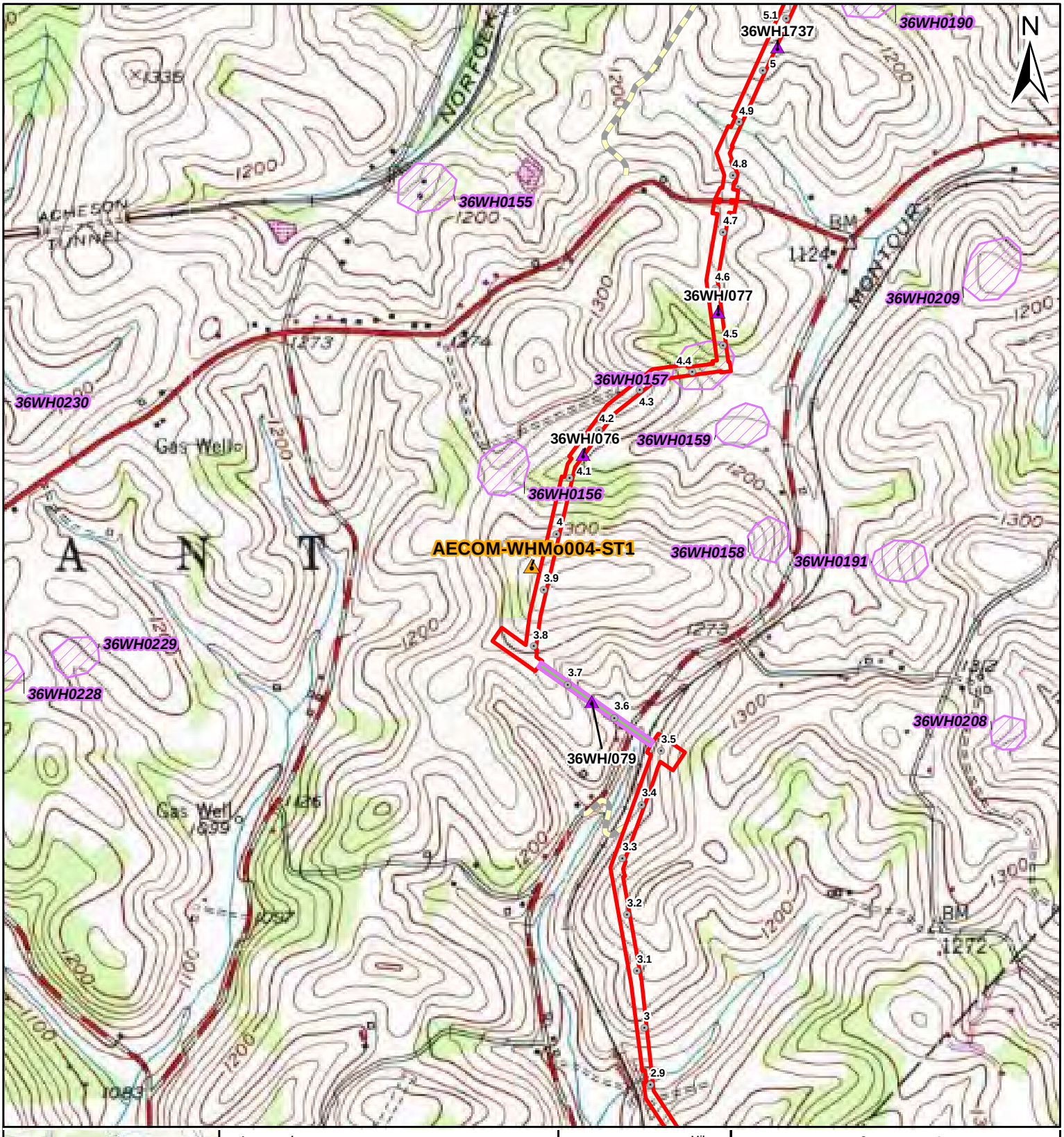
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- AECOM-WHMo004-ST1
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

Figure 7.31

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHMo004-ST1
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

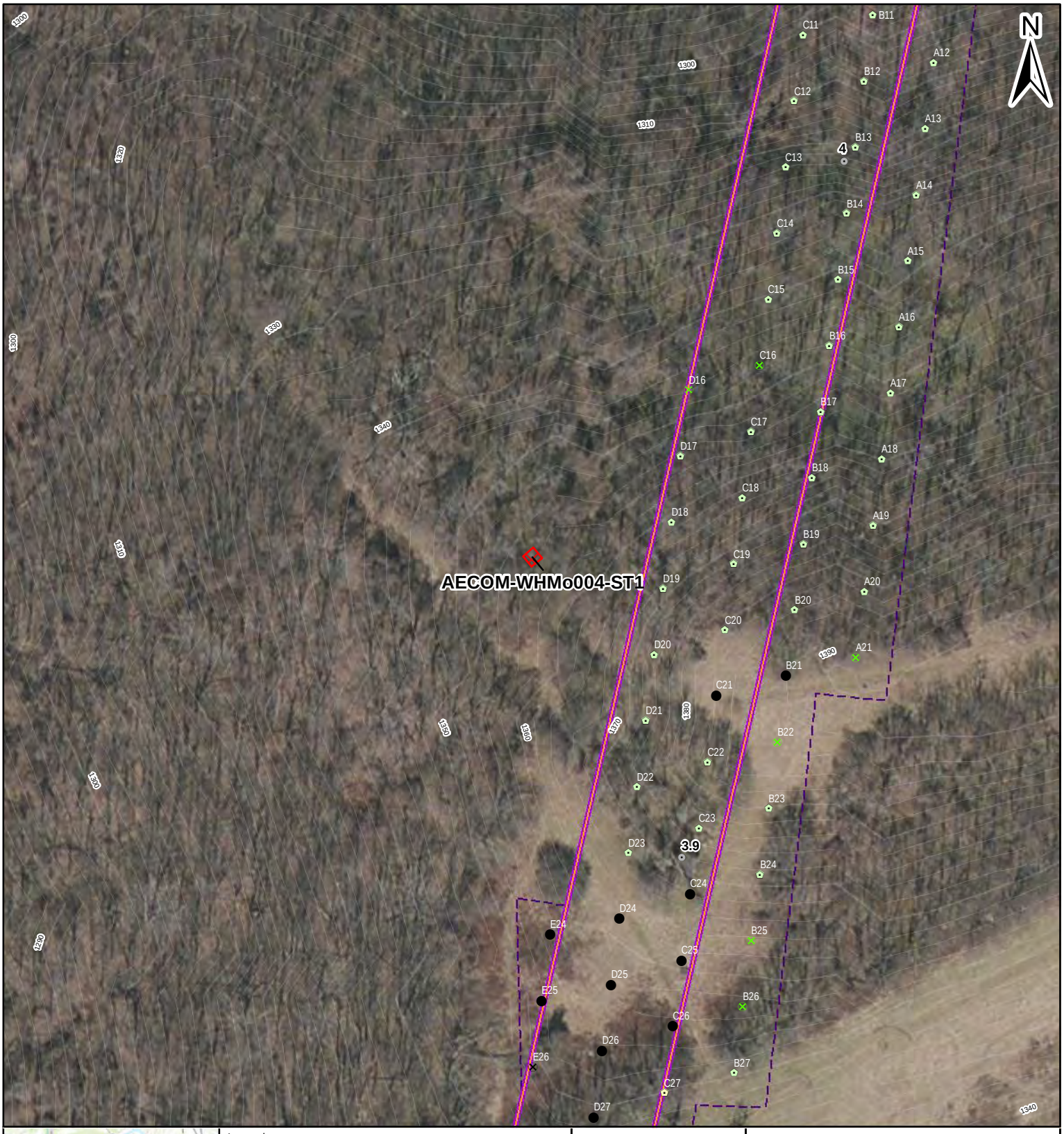
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

Figure 7.32

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHMo004-ST1
SITE MAP: MODERN AERIAL

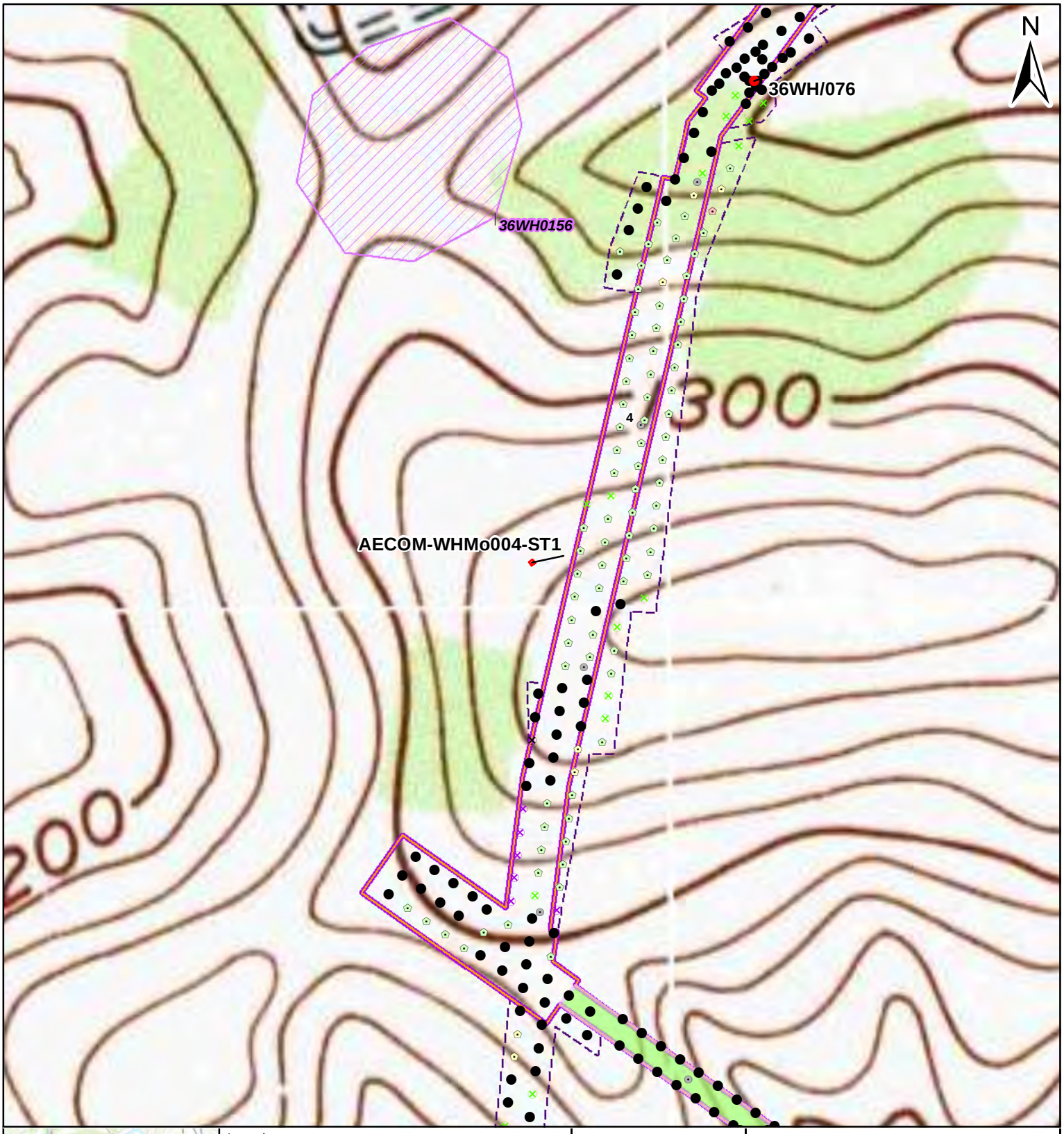
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.33

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHMo004-ST1
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

0 90 180 Feet

Reference:
Roll #78, Photograph #53. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.34

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHMo004-ST1
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

0 90 180 Feet

Figure 7.35

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-WHMo004-ST1
SITE MAP: 1967 AERIAL

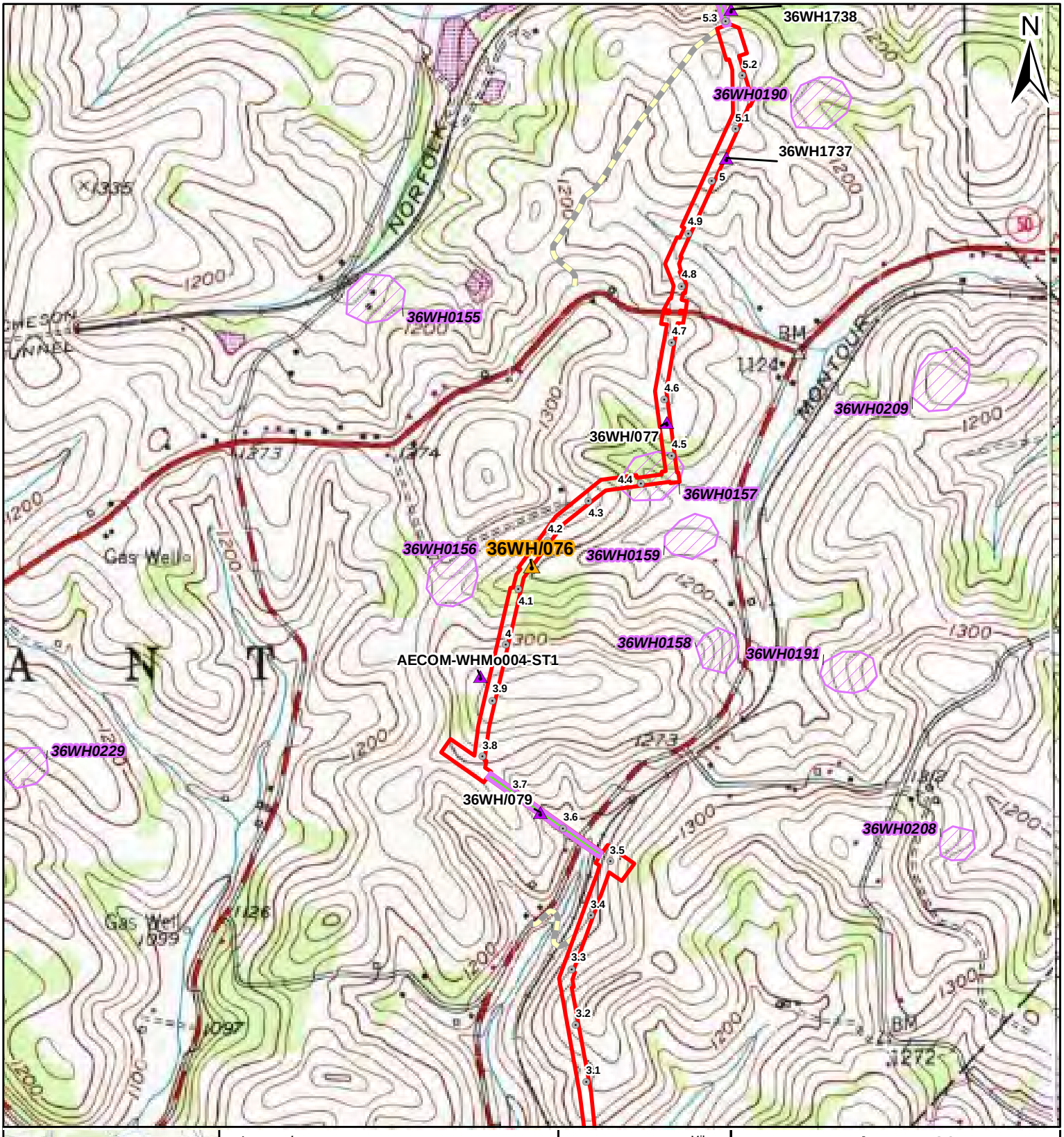
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36WH/076
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.36

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/076
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

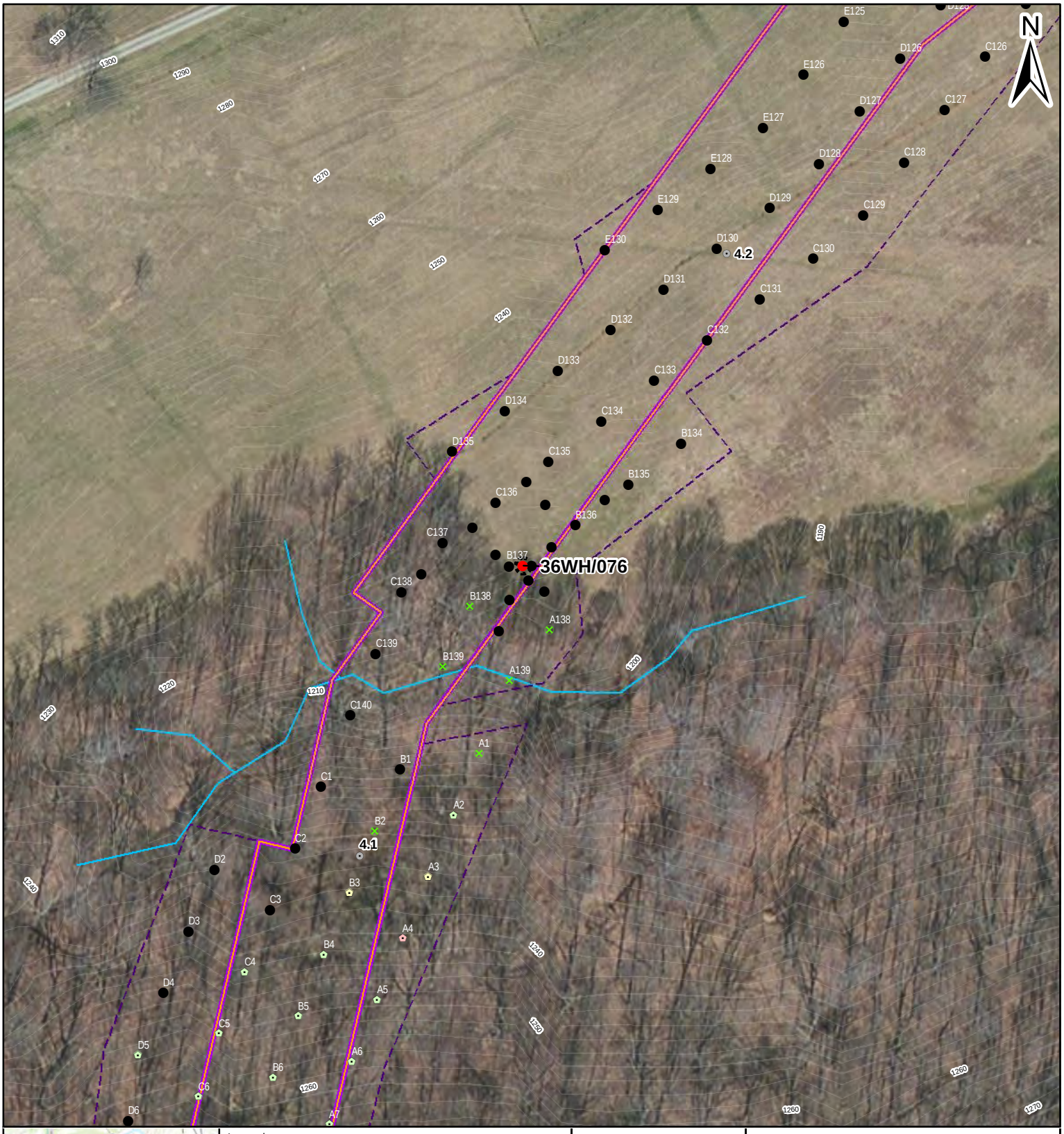
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.37

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/076
SITE MAP: MODERN AERIAL

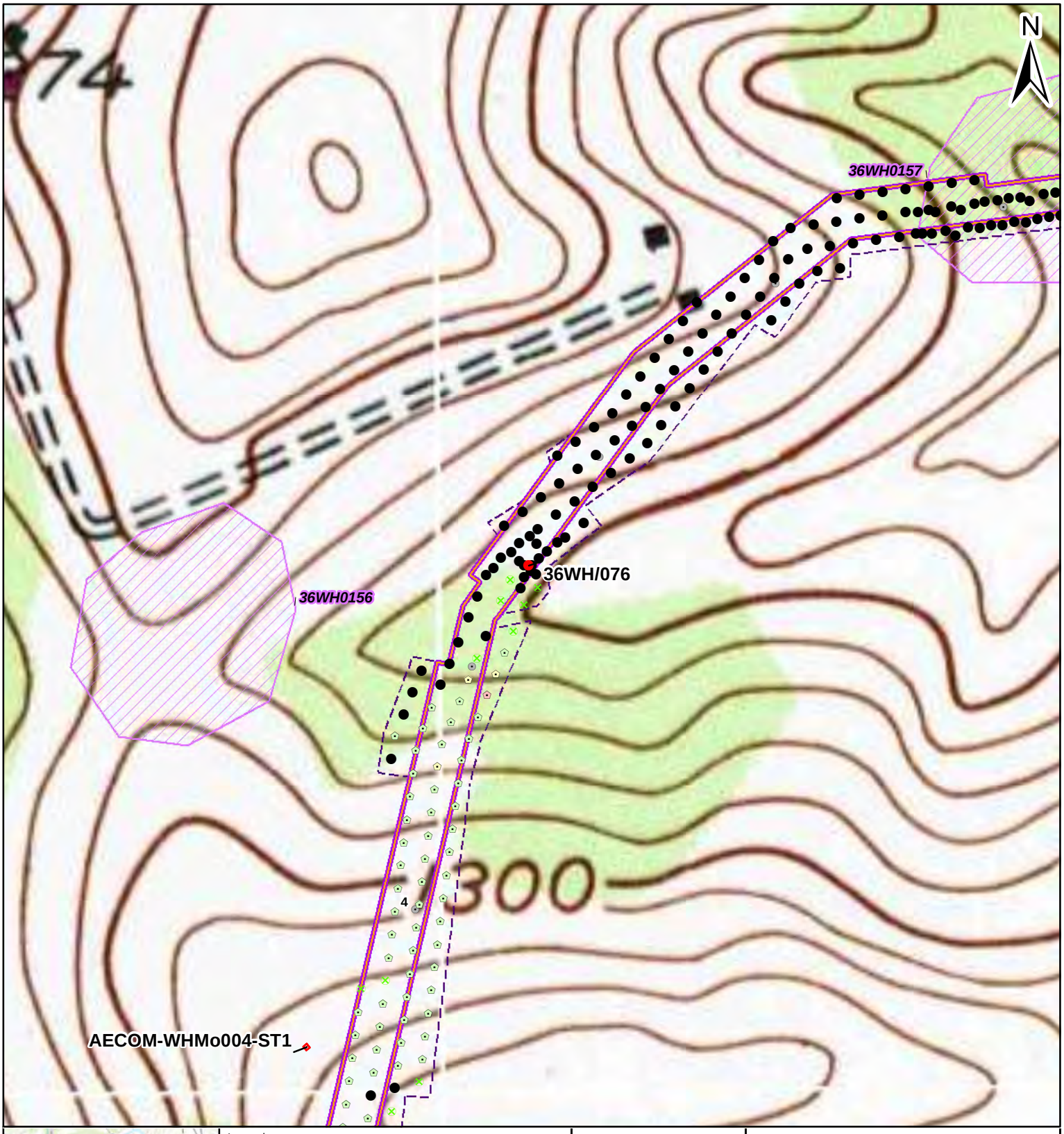
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.38

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/076
SITE MAP: MODERN TOPO

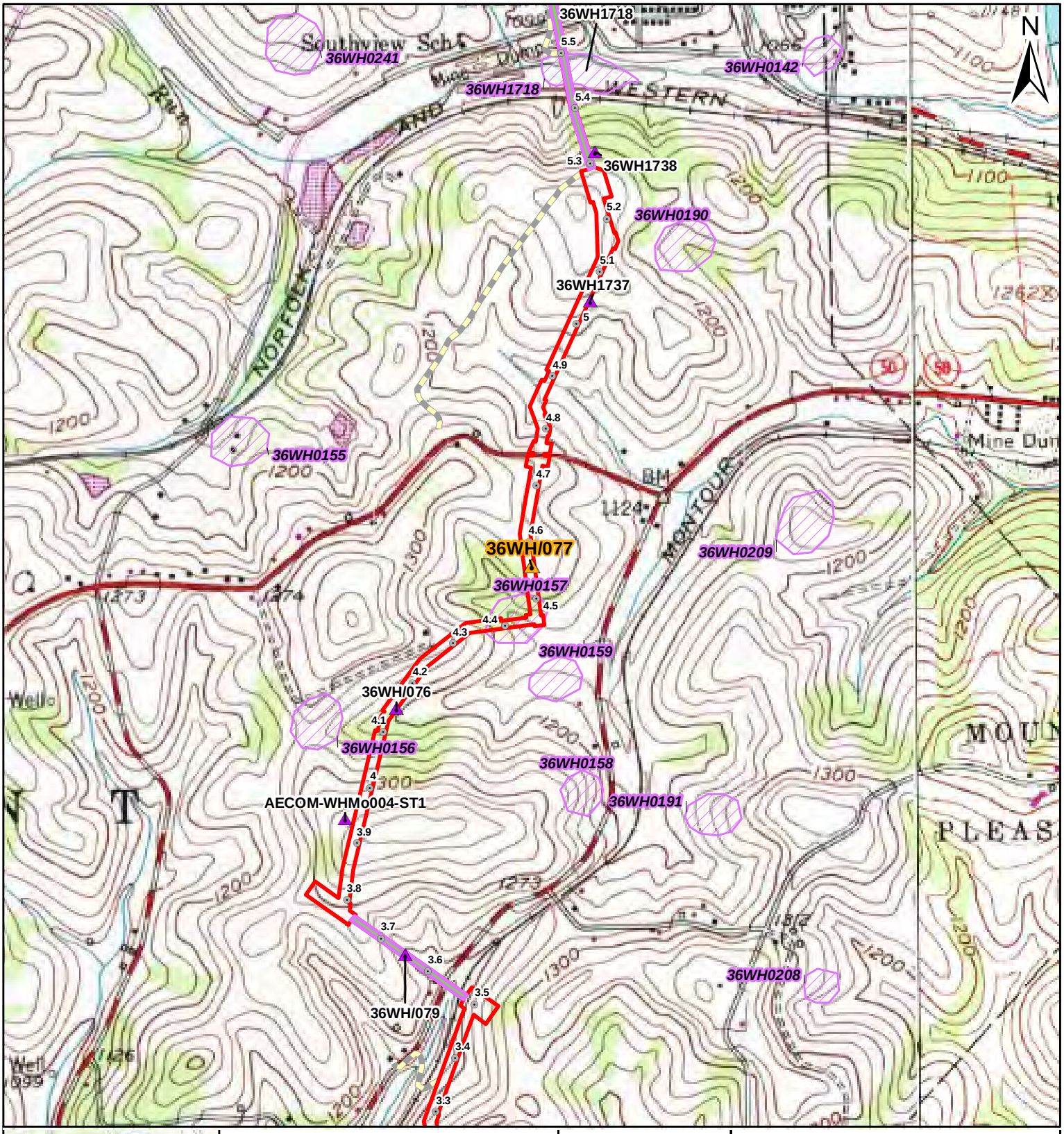
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36WH/077
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.39

36WH/077
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

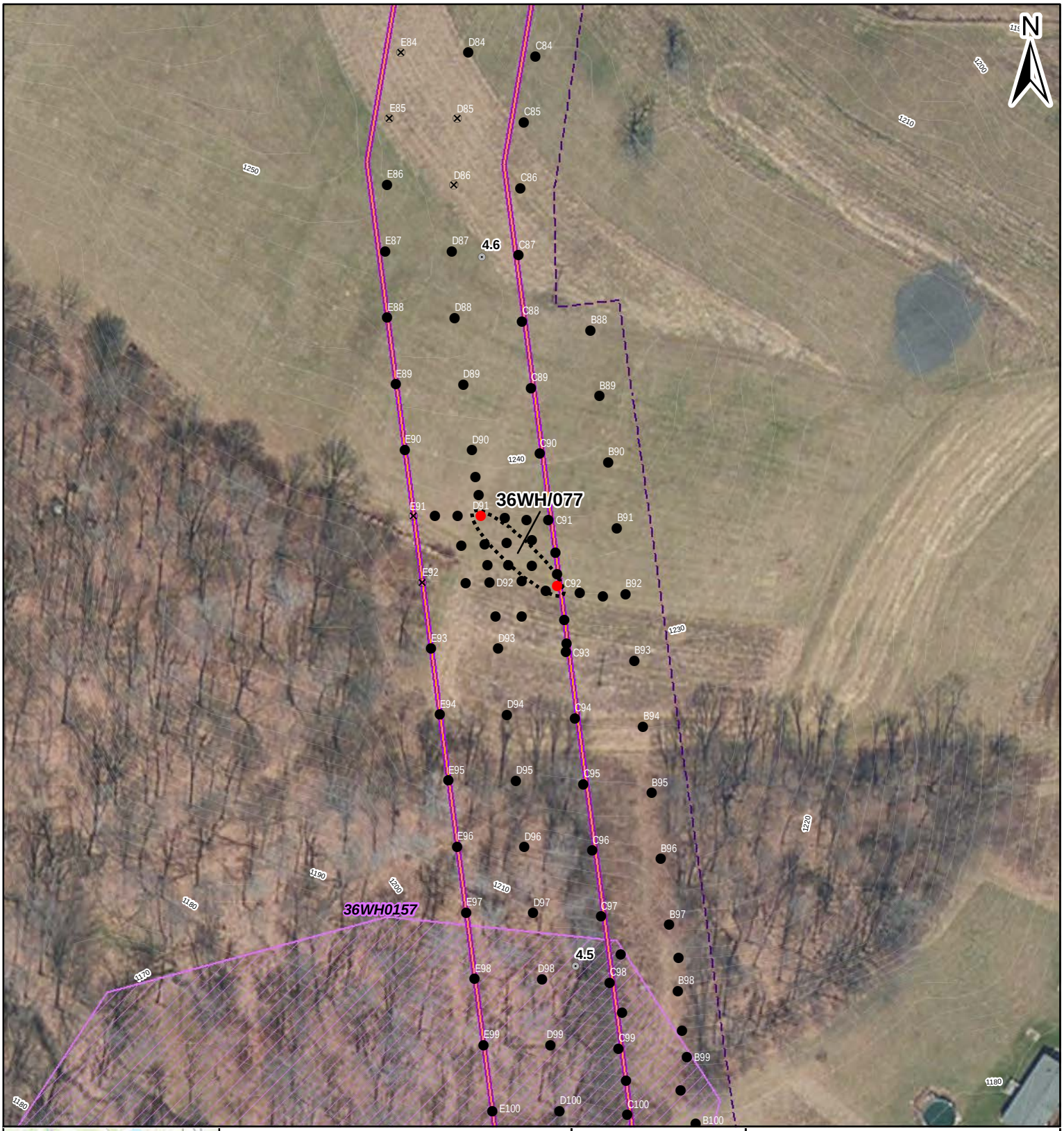
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.40

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/077
SITE MAP: MODERN AERIAL

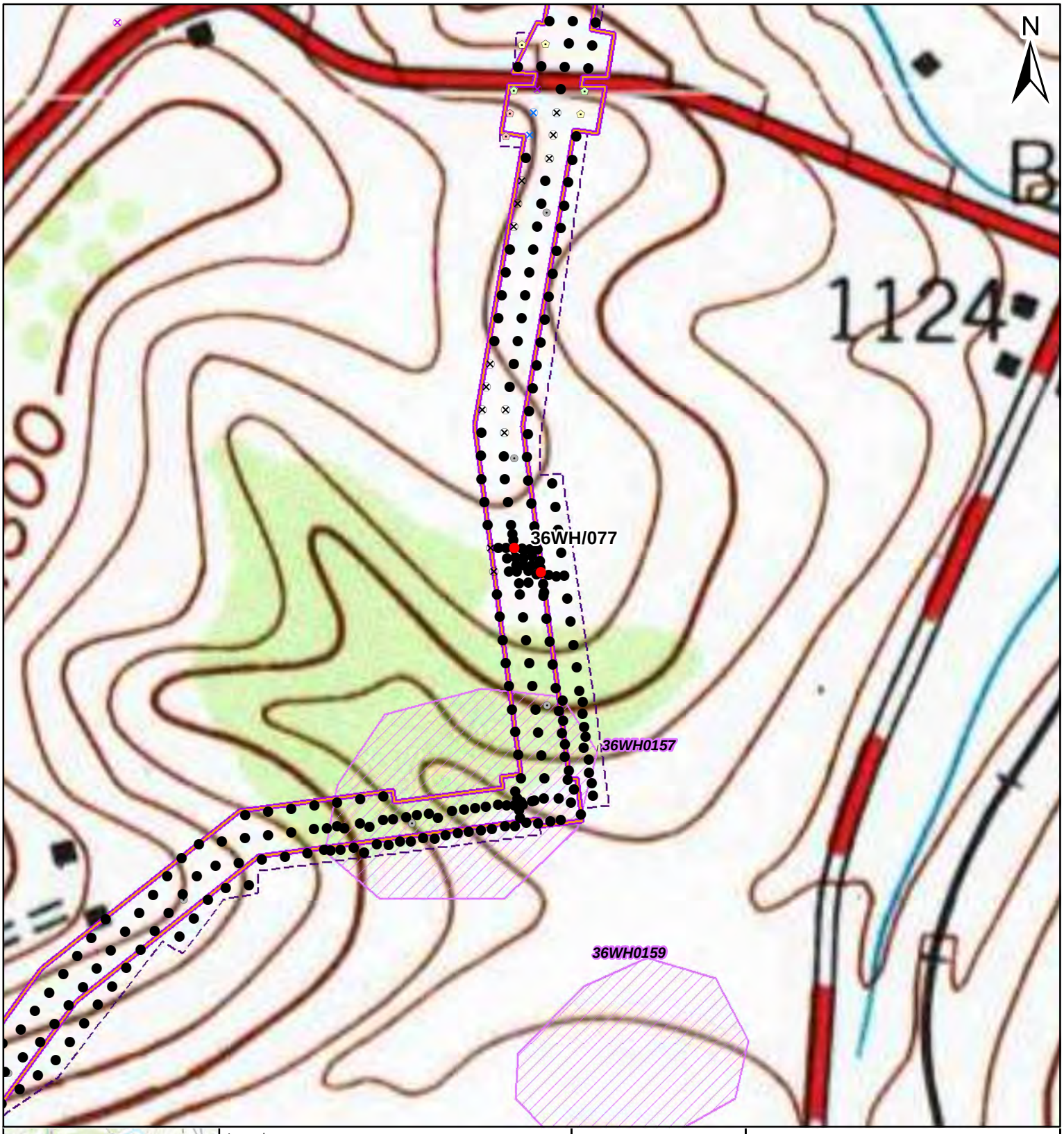
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.41

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH/077
SITE MAP: MODERN TOPO

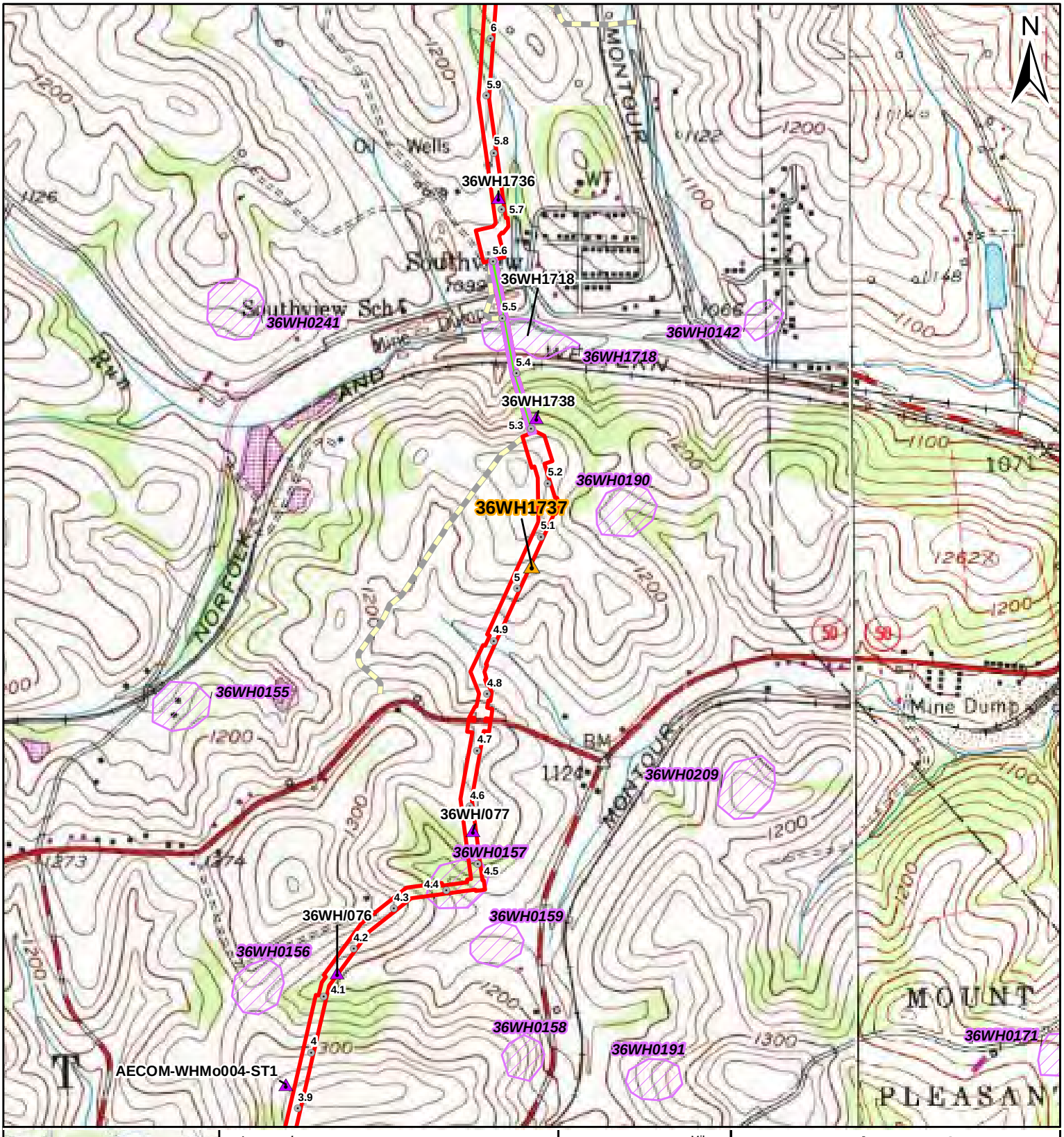
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

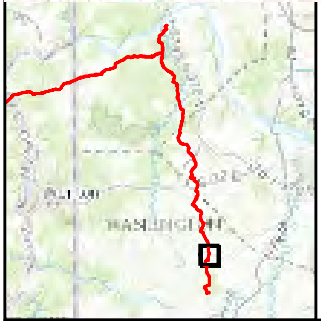
Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd





Legend

Archaeological Data
- 36WH1737
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.42

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1737
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\17747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.43

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1737
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

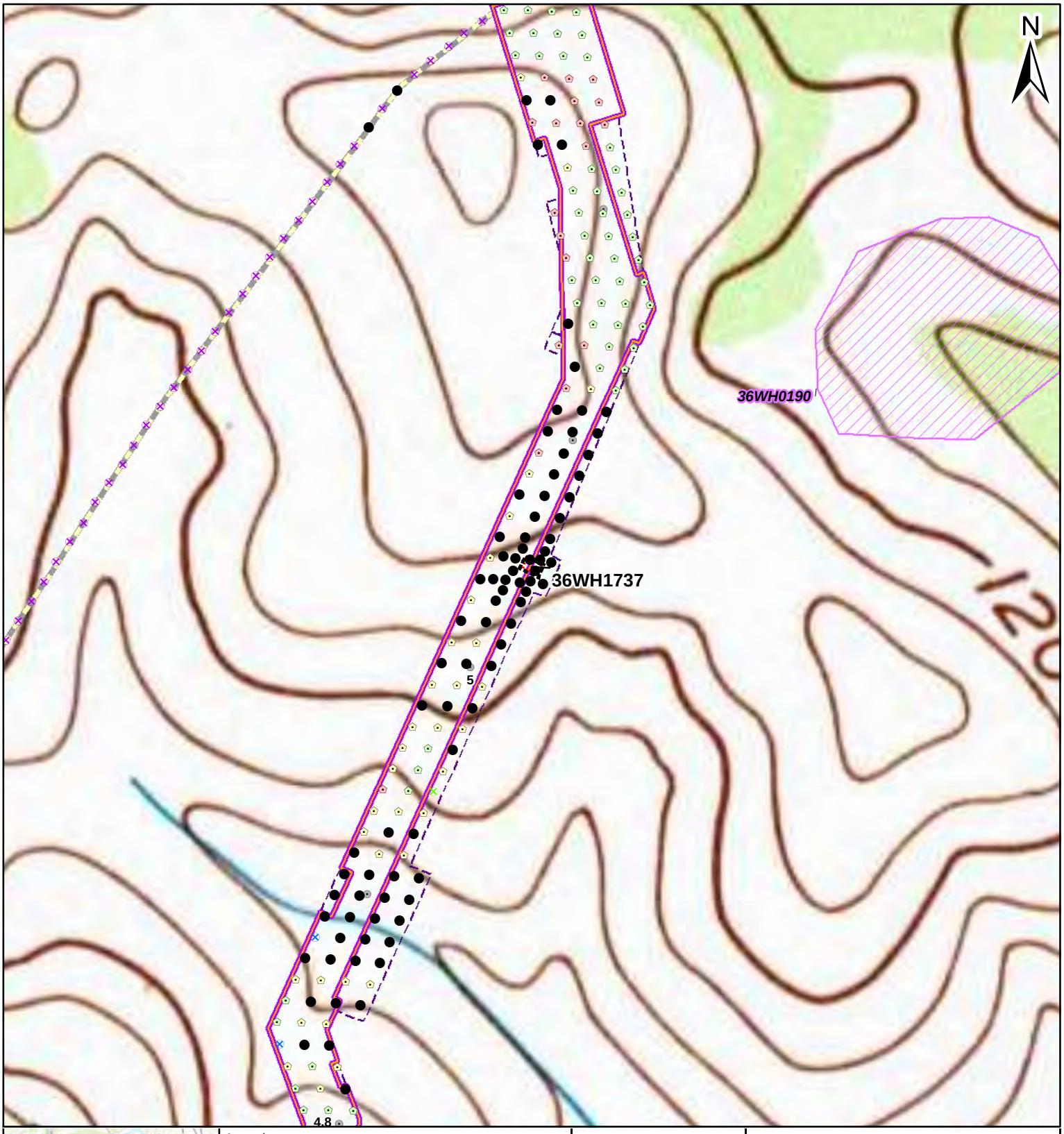
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.44

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1737
SITE MAP: MODERN TOPO

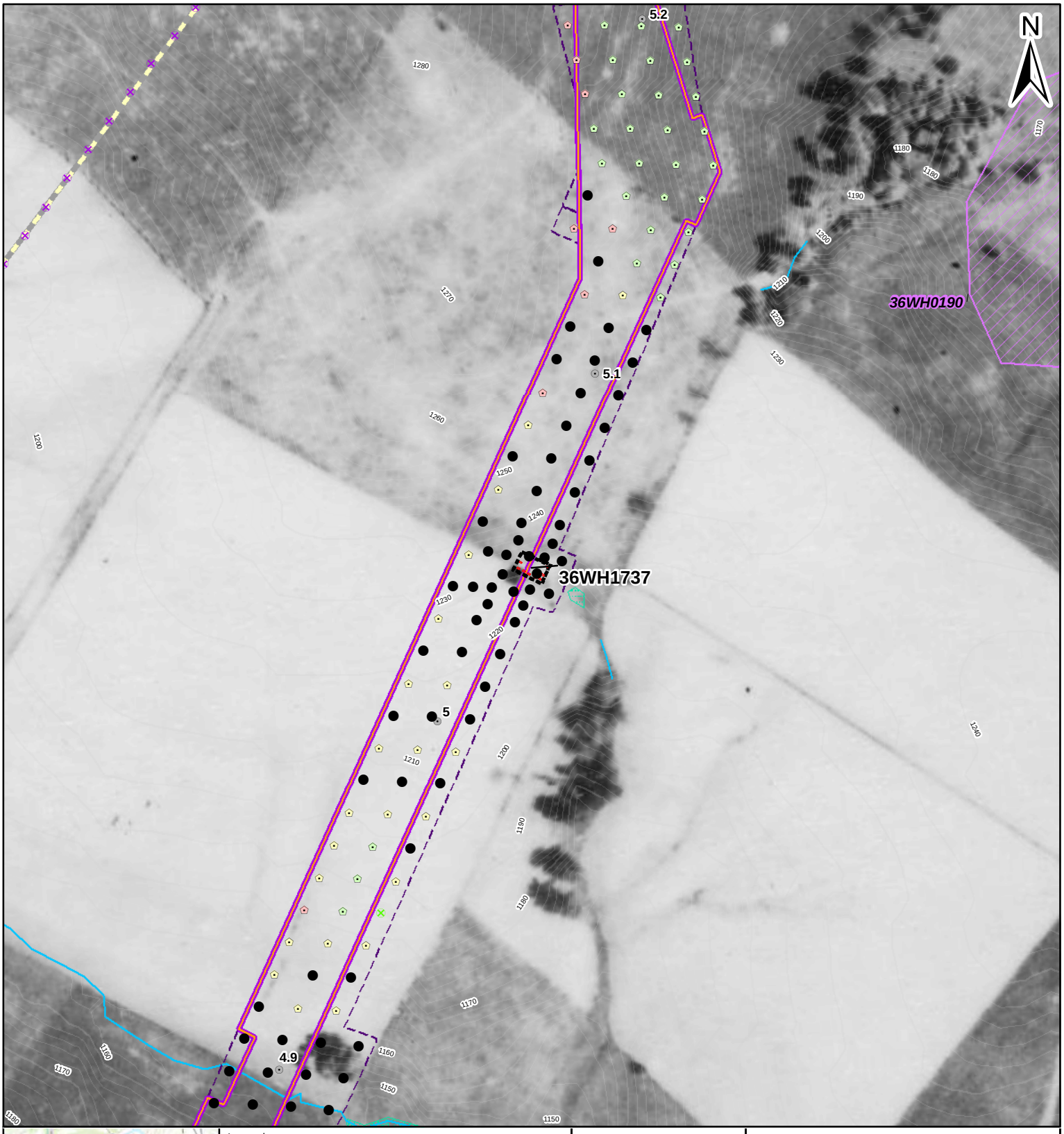
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.45

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1737
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

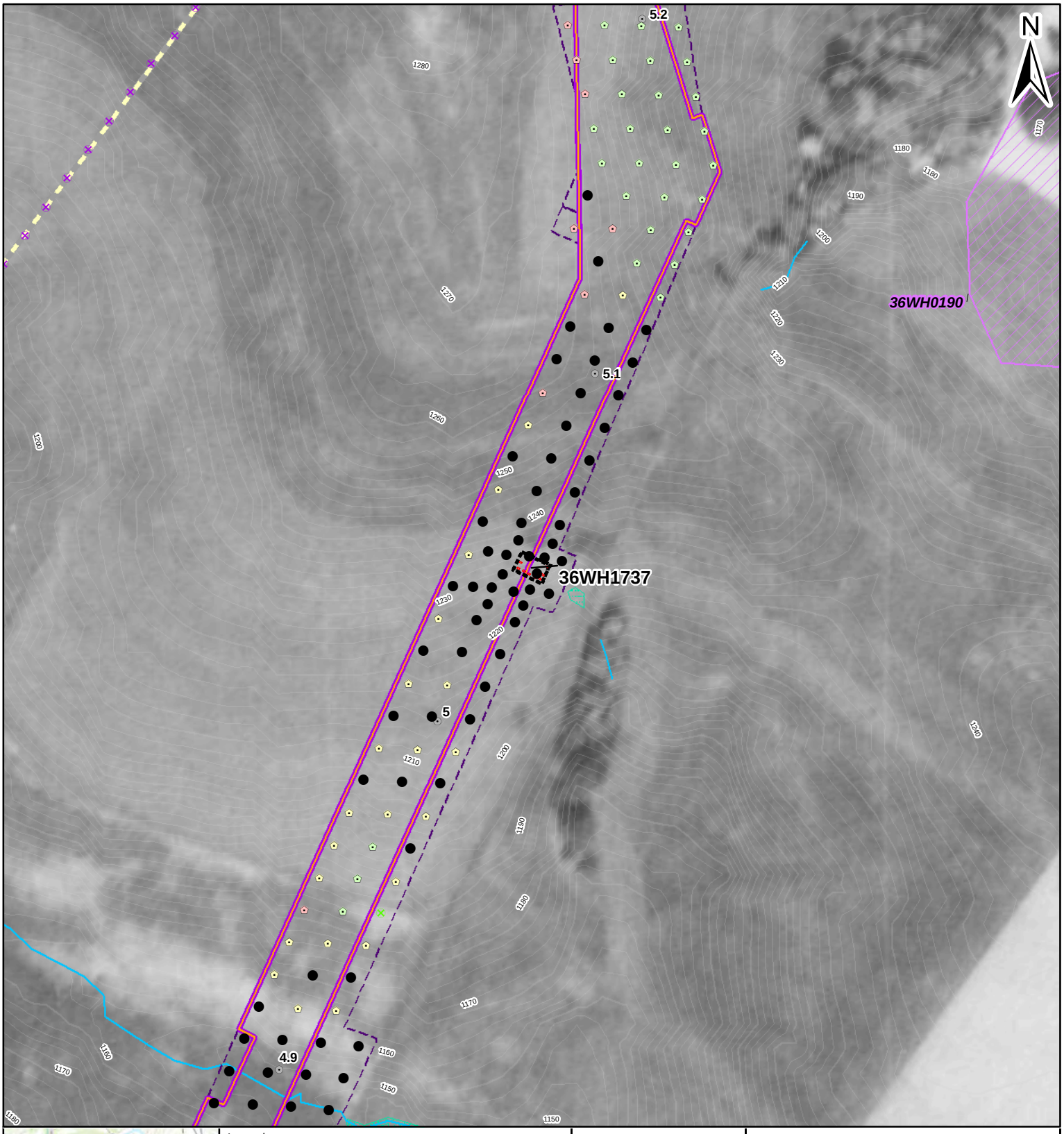
Reference:
Roll #78, Photograph #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.46

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1737
SITE MAP: 1967 AERIAL

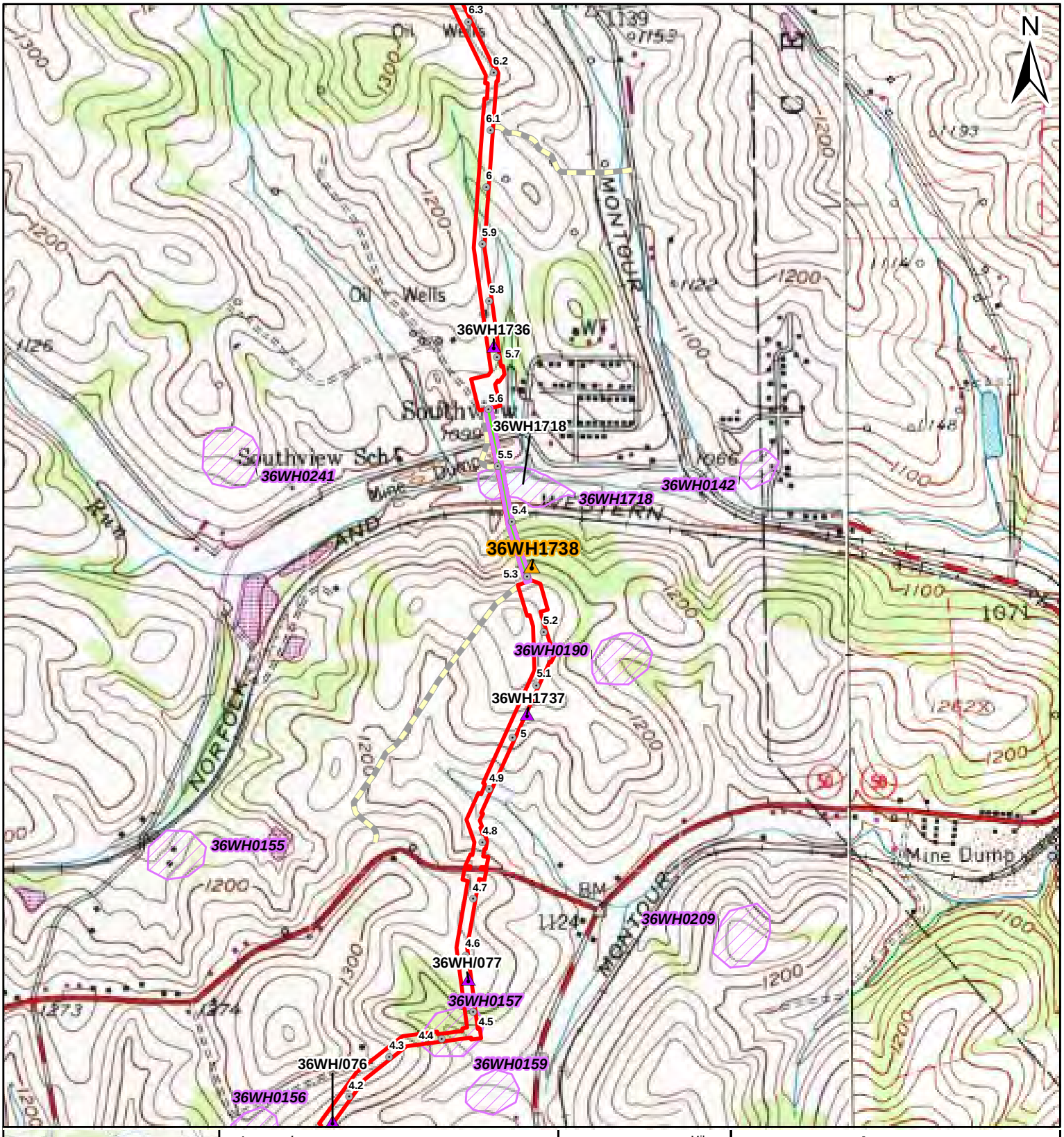
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

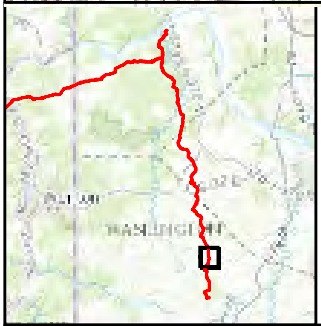
Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd





Legend

Archaeological Data
- 36WH1738
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

Figure 7.47

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1738
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

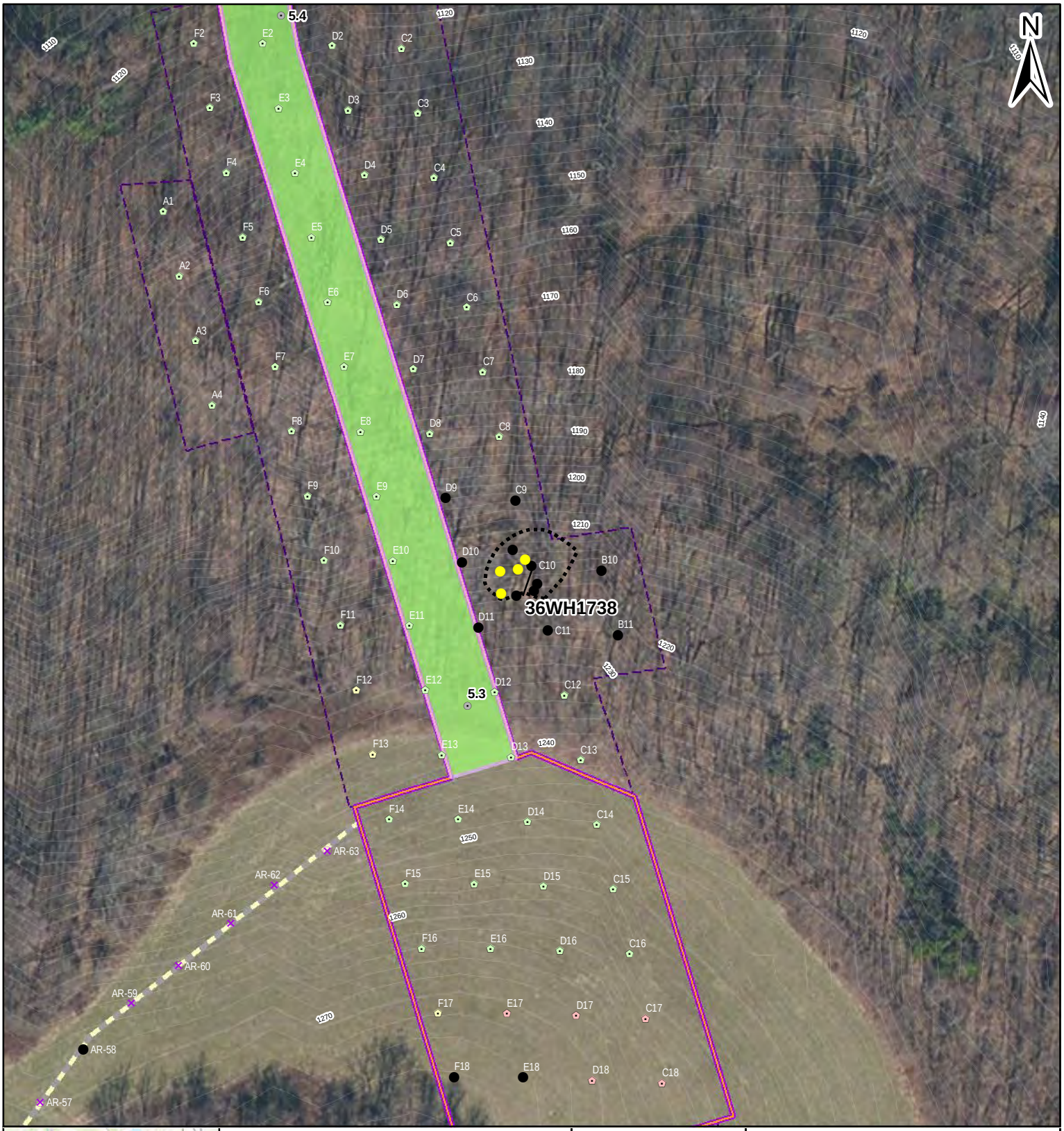
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

Figure 7.48

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

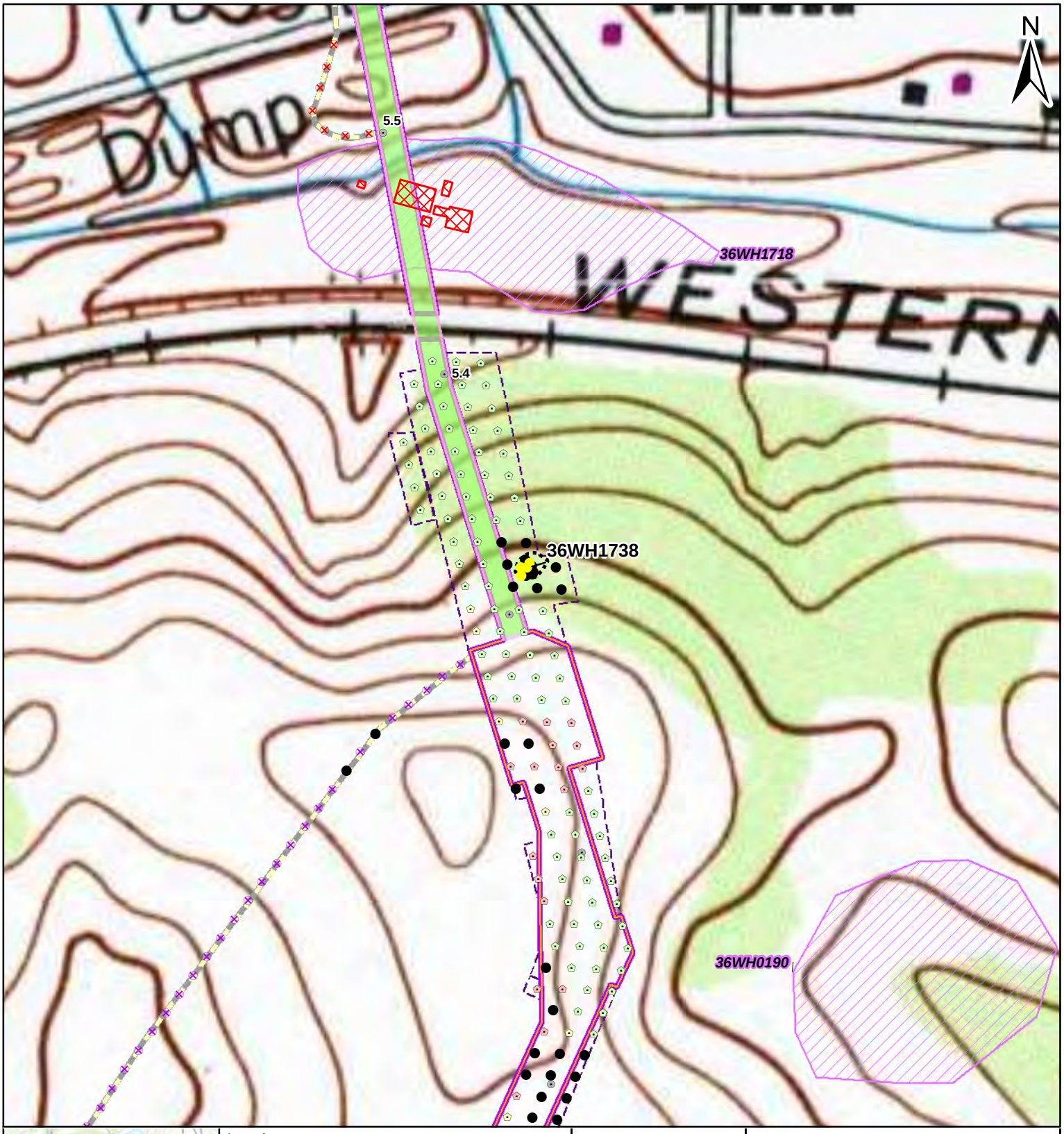
36WH1738
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.49

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1738
SITE MAP: MODERN TOPO

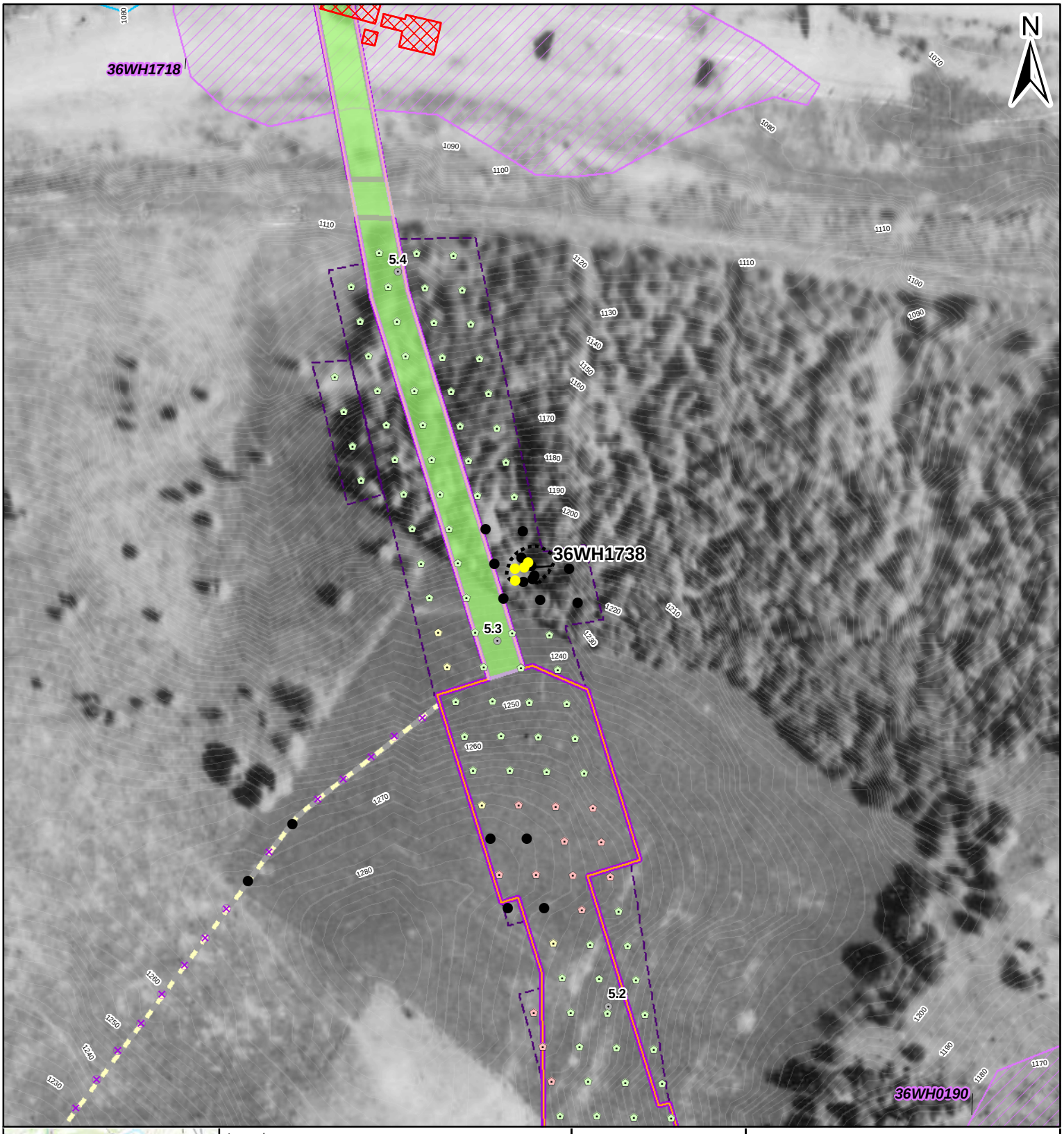
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 90 180

Reference:
Roll #78, Photograph #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

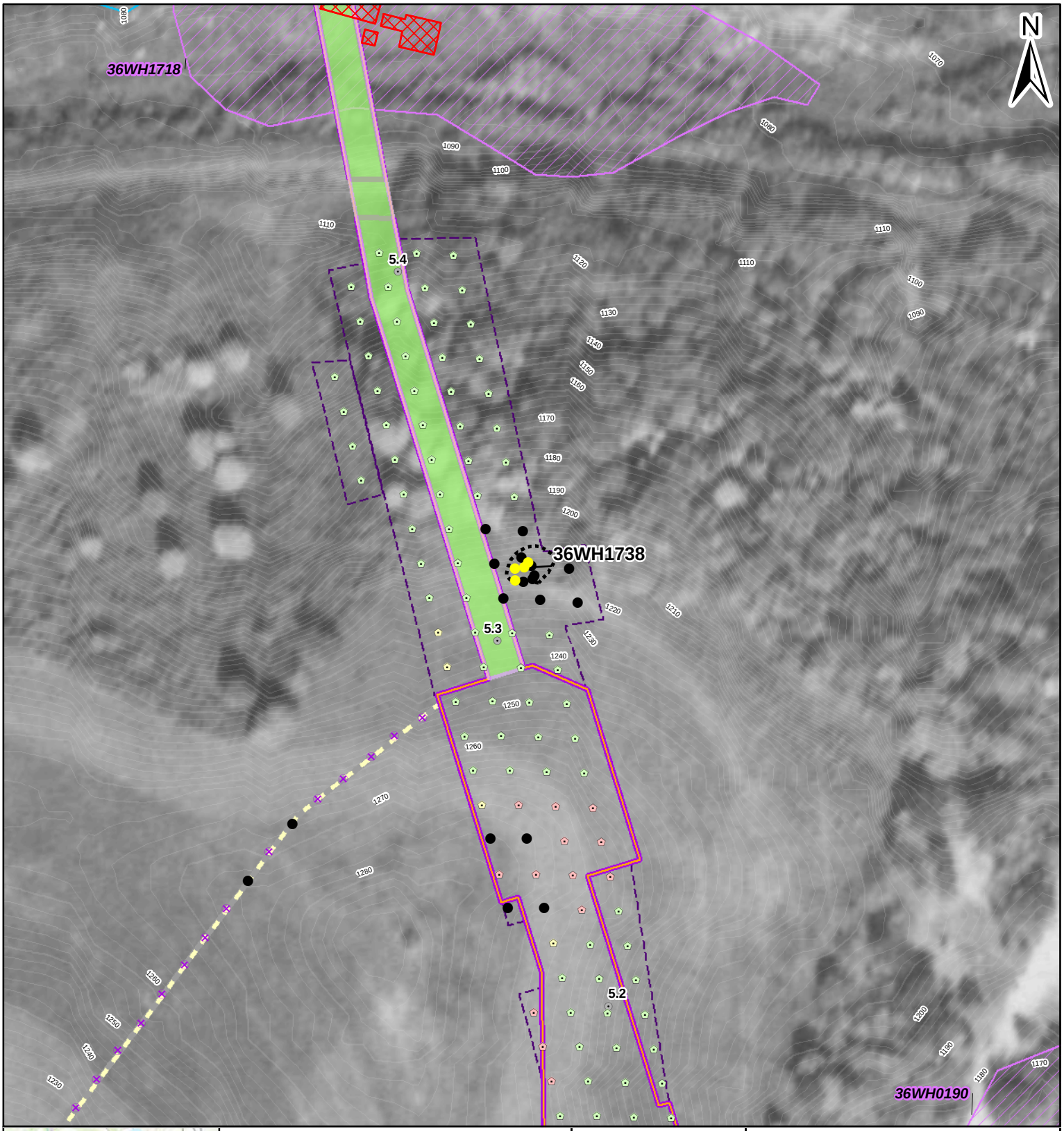
Figure 7.50

36WH1738
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 90 180

Figure 7.51

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1738
SITE MAP: 1967 AERIAL

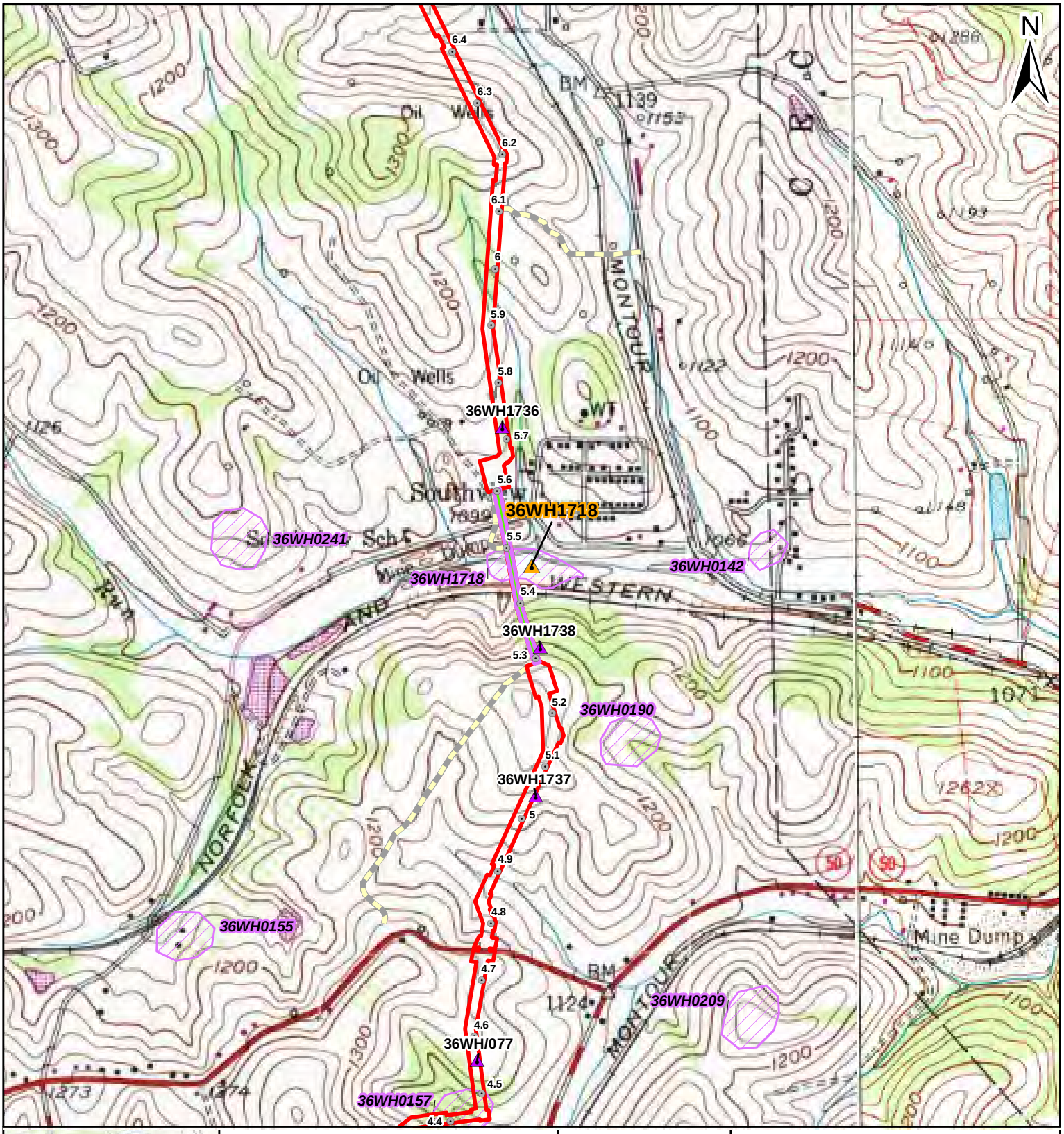
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

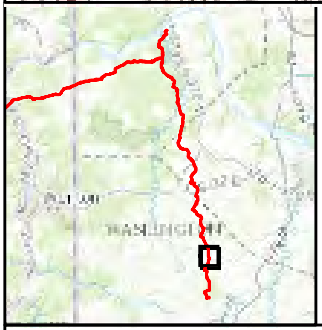
Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd





Legend

Archaeological Data
- 36WH1718
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.52

Montour Mine No. 1
36WH1718
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

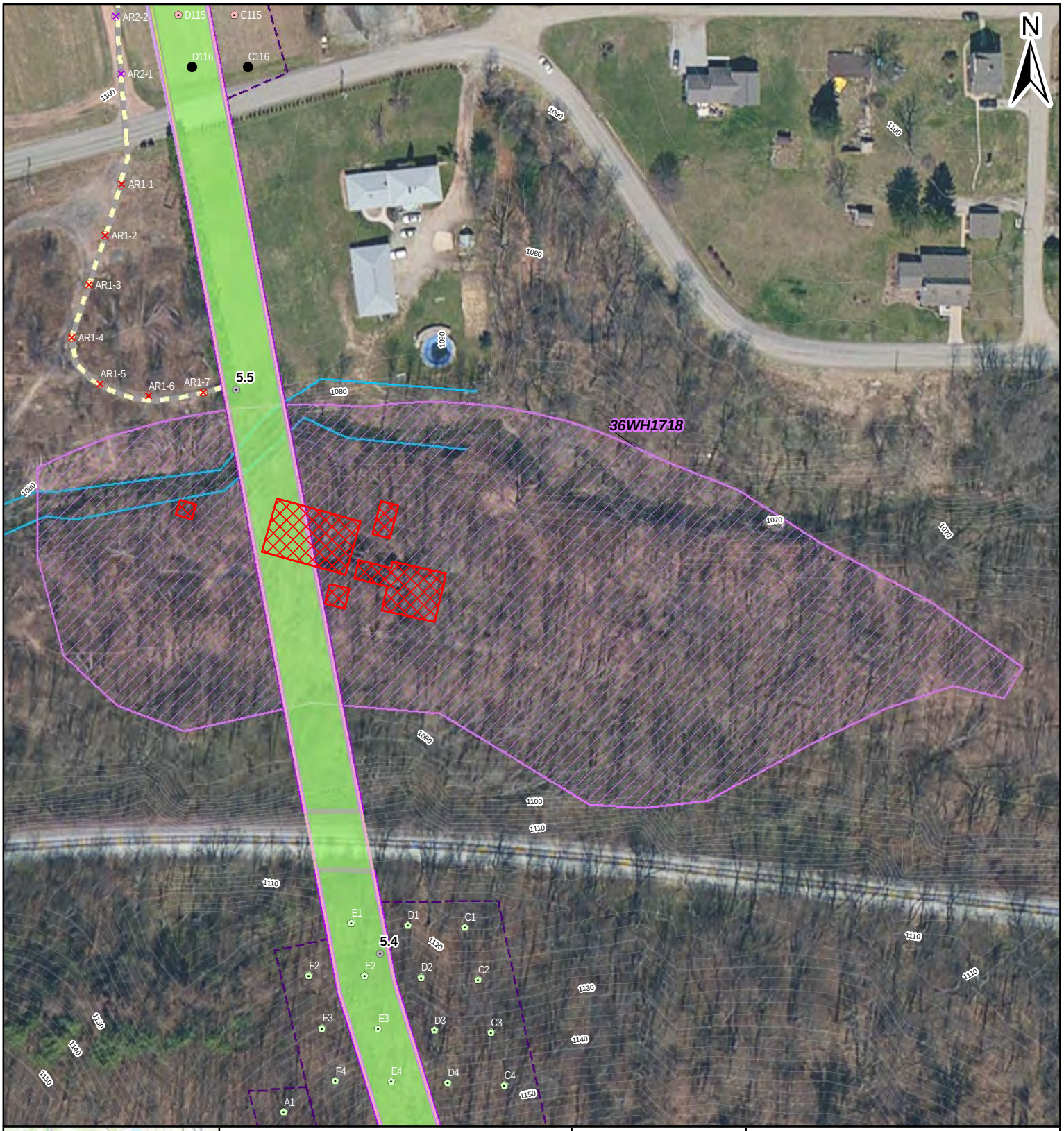
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Pedestrian Survey: Steep
- Not Excavated: Strip Mine

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 60 120 Feet

Figure 7.53

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Montour Mine No. 1
36WH1718
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 170 340

Figure 7.54

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Montour Mine No. 1
36WH1718
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd

Legend

Shovel Test Units
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 112.5 225 Feet

Reference:
Roll #78, Photograph #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.55

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

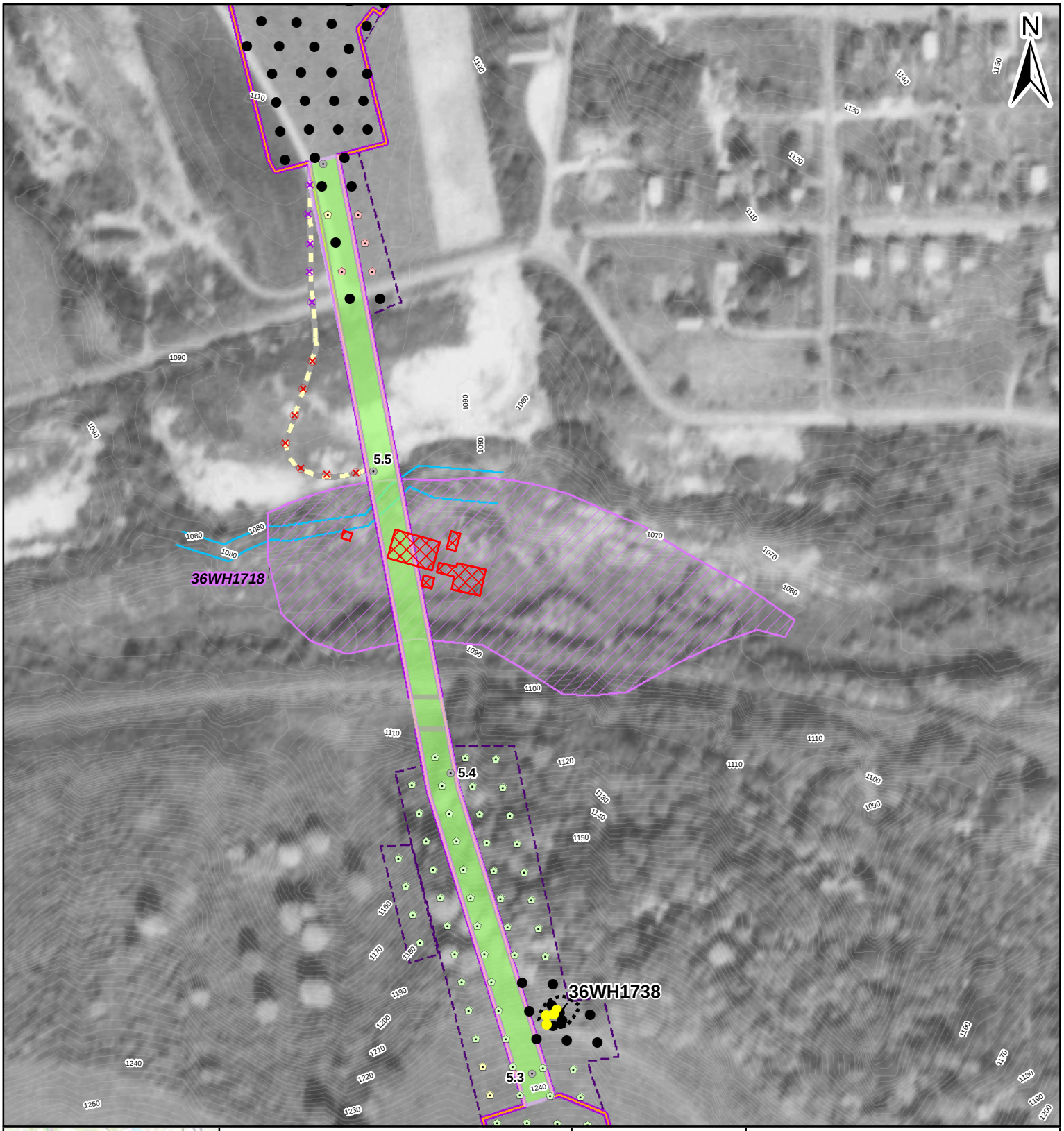
Montour Mine No. 1
36WH1718
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 112.5 225 Feet

Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.56

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

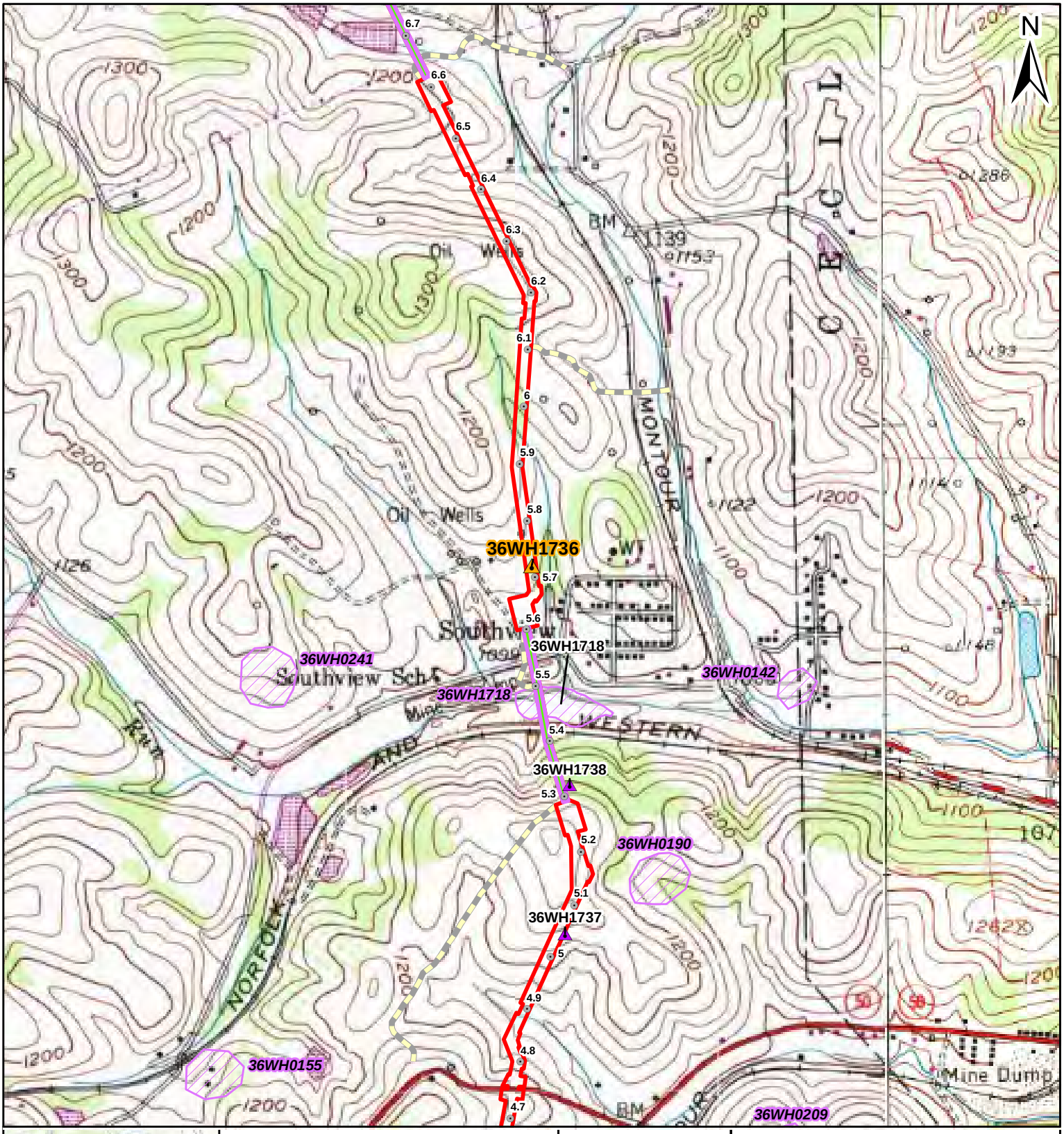
Montour Mine No. 1
36WH1718
SITE MAP: 1967 AERIAL

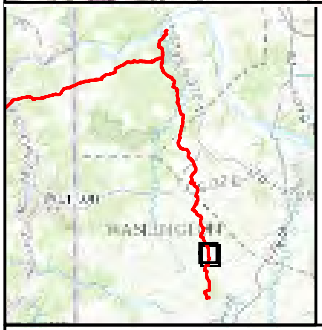
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd





Legend

Archaeological Data
- 36WH1736
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.57

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1736
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

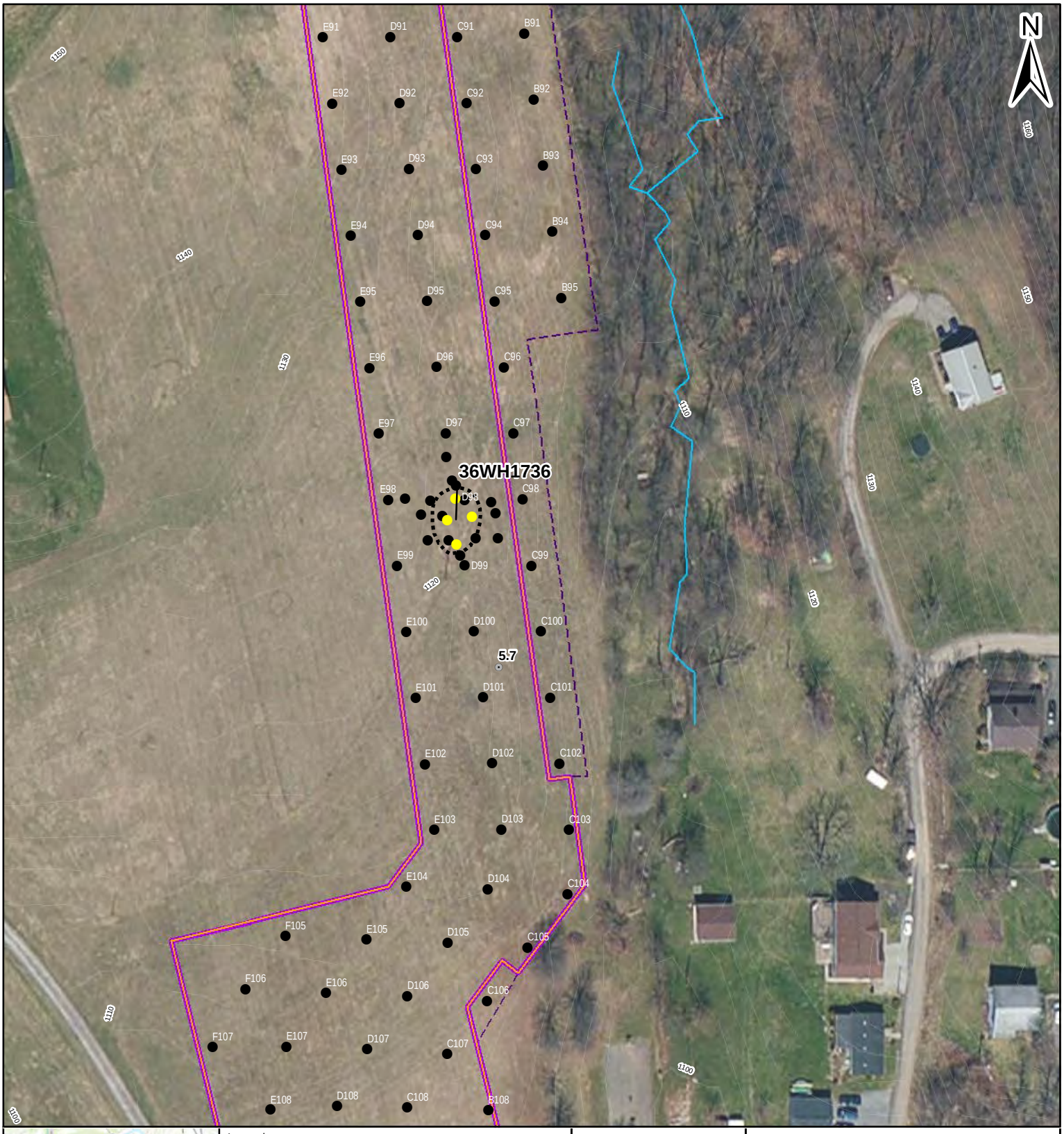
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.58

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

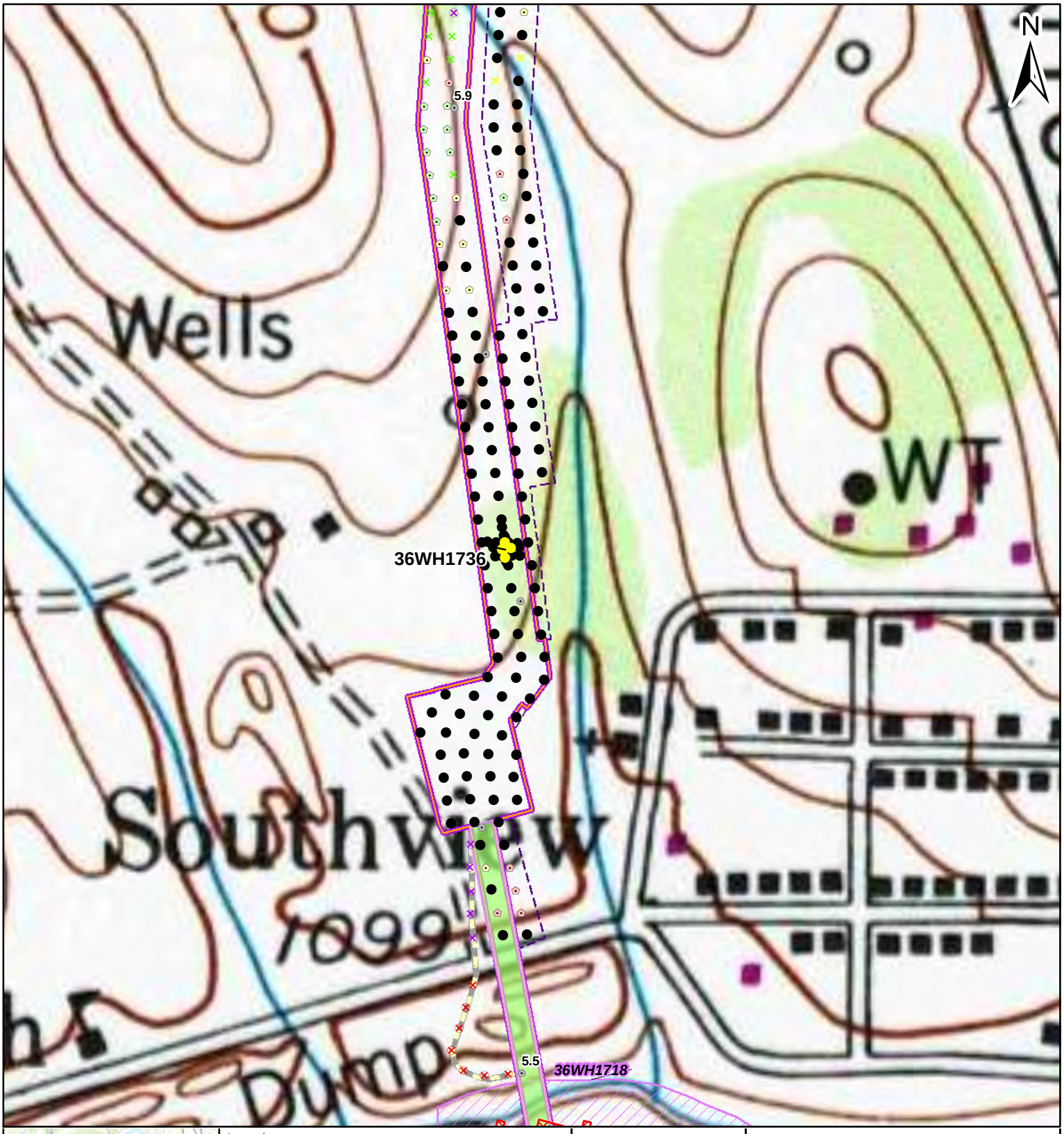
36WH1736
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.59

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1736
SITE MAP: MODERN TOPO

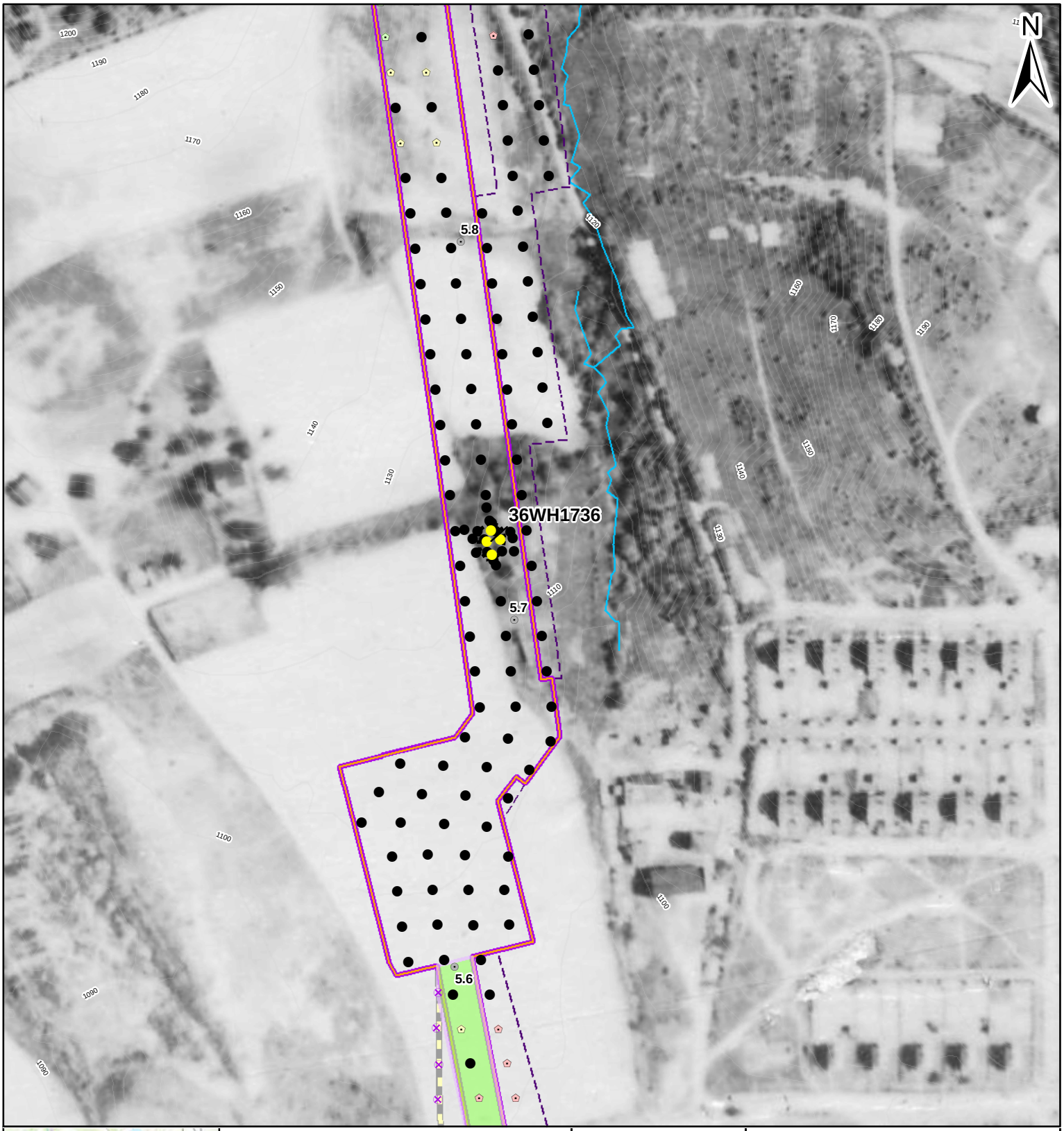
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.60

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1736
SITE MAP: 1939 AERIAL

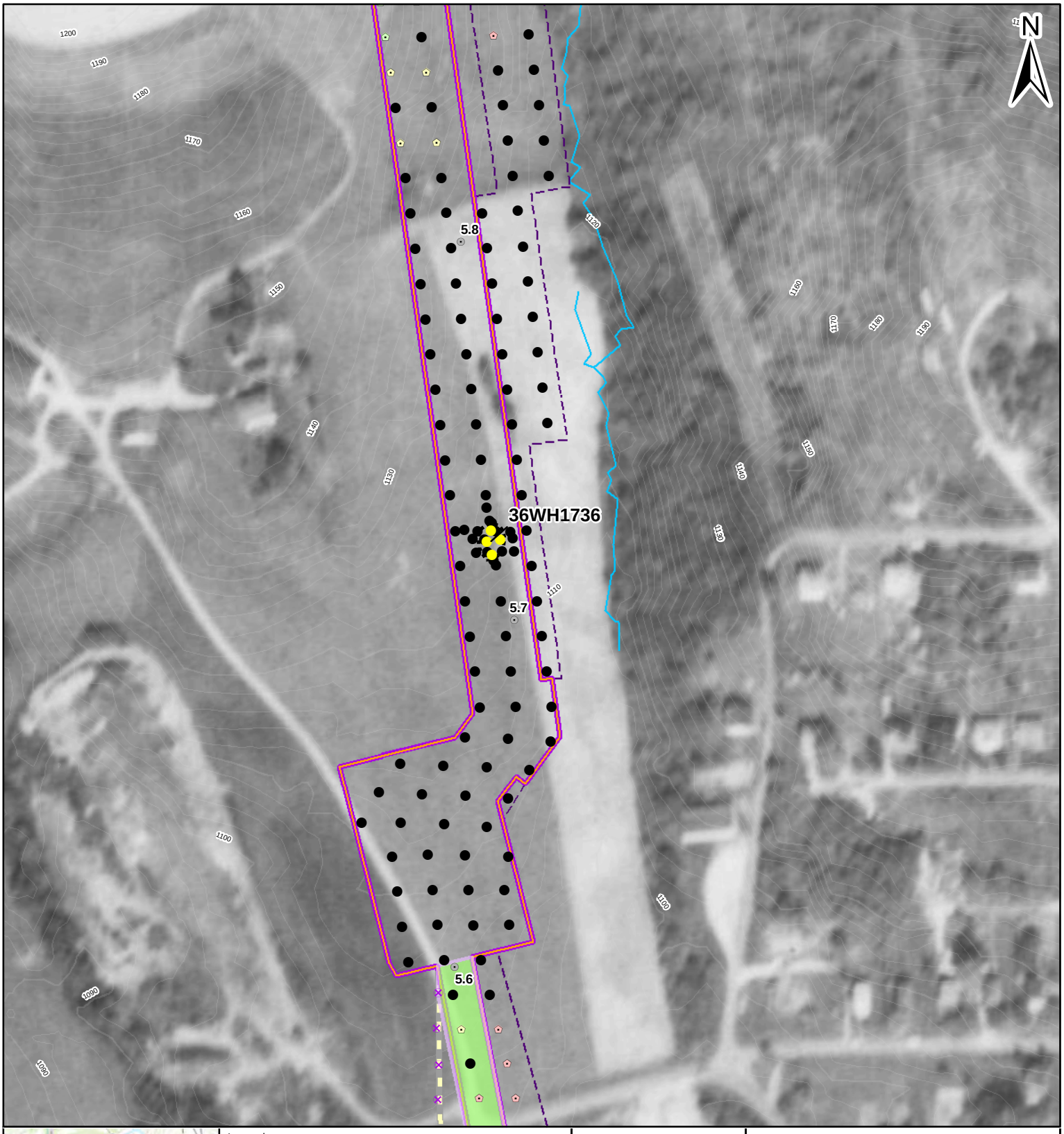
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #56. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.61

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1736
SITE MAP: 1967 AERIAL

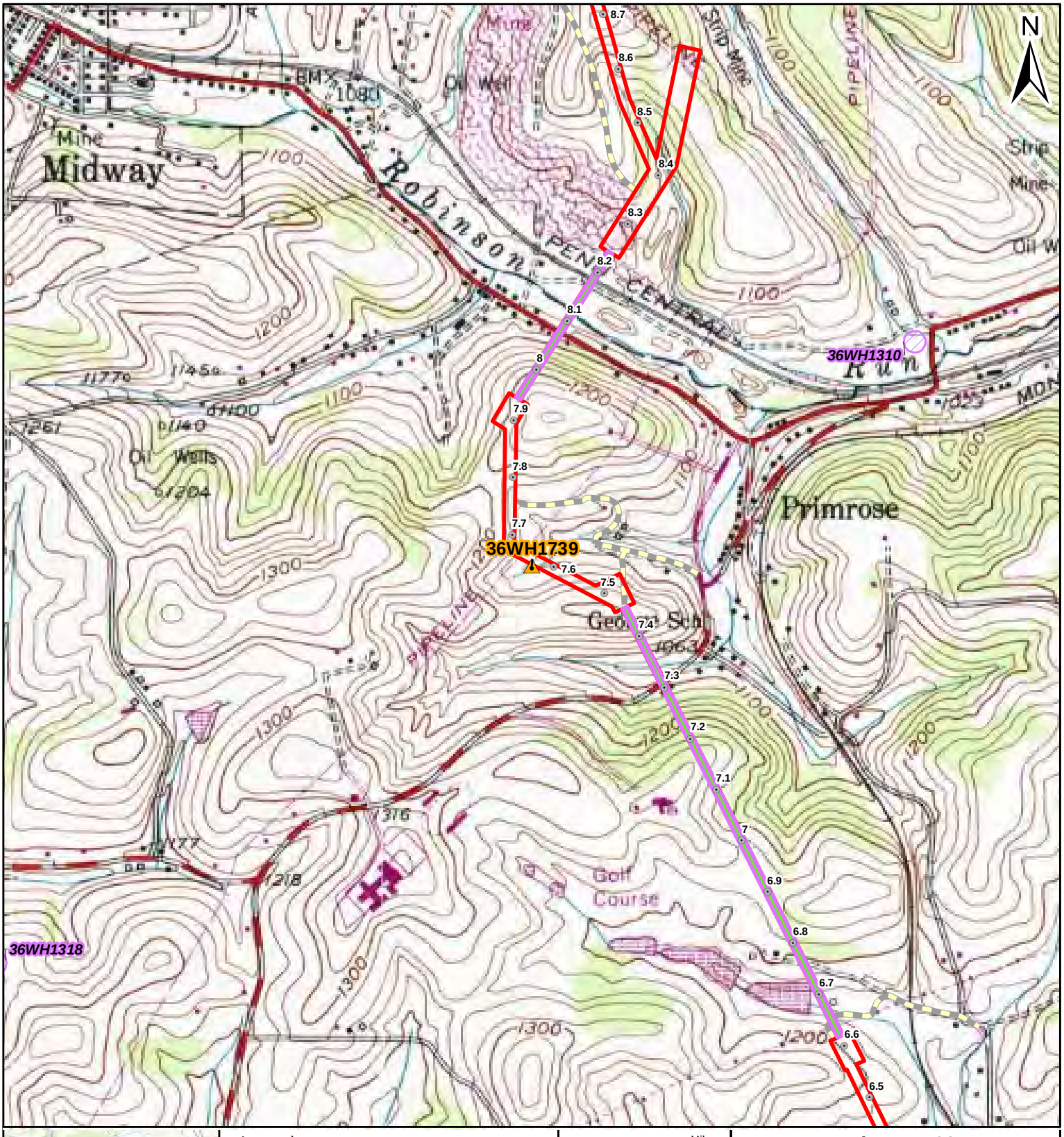
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #8hh, Photograph #45. Oct 4, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36WH1739
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

Figure 7.62

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

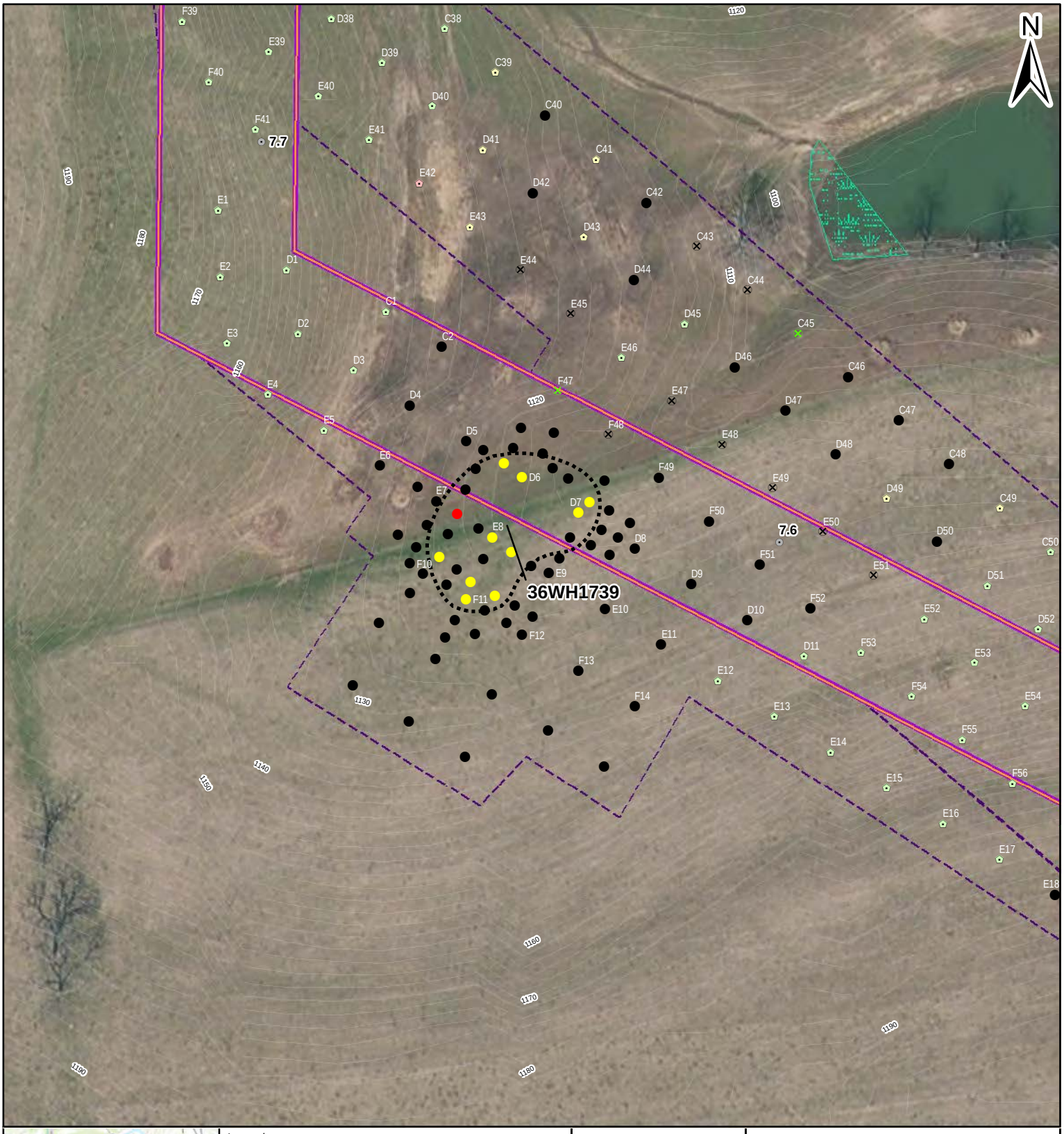
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 45 90 Feet

Figure 7.63

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.64

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: MODERN TOPO

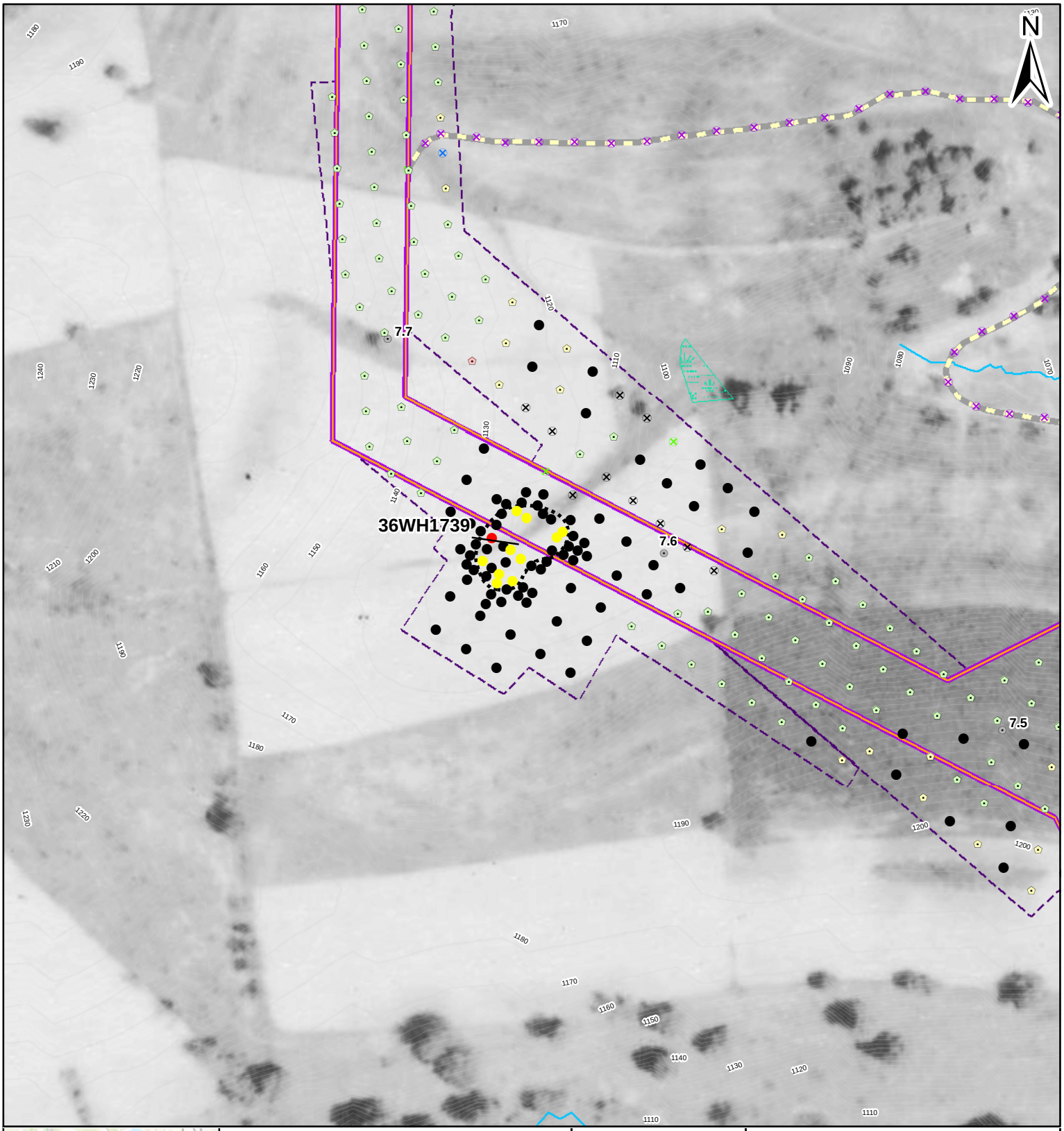
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1977 Midway, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

Feet
0 90 180

Figure 7.65

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: 1939 AERIAL

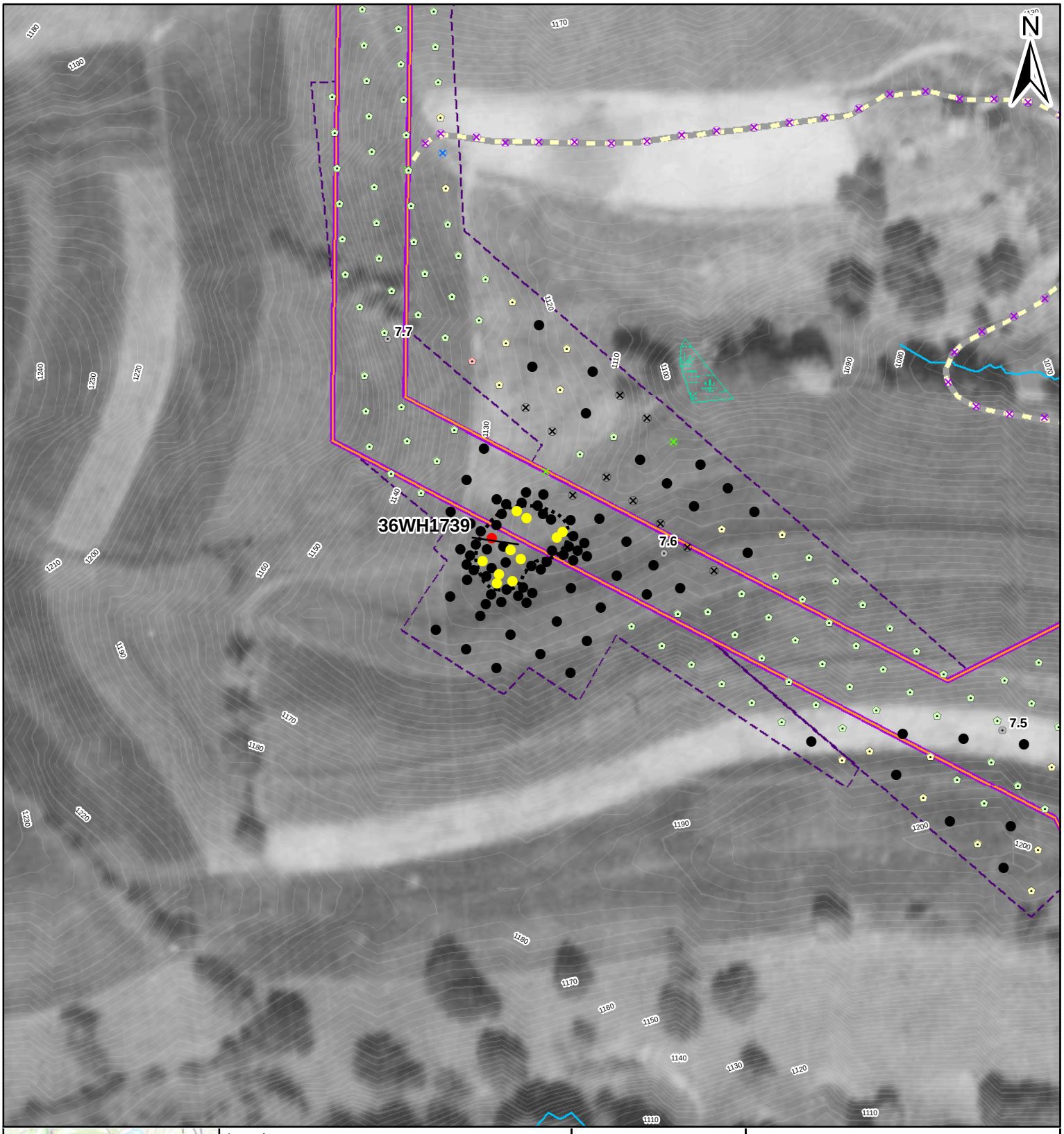
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #78, Photograph #59. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

Feet
0 90 180

Figure 7.66

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36WH1739
SITE MAP: 1967 AERIAL

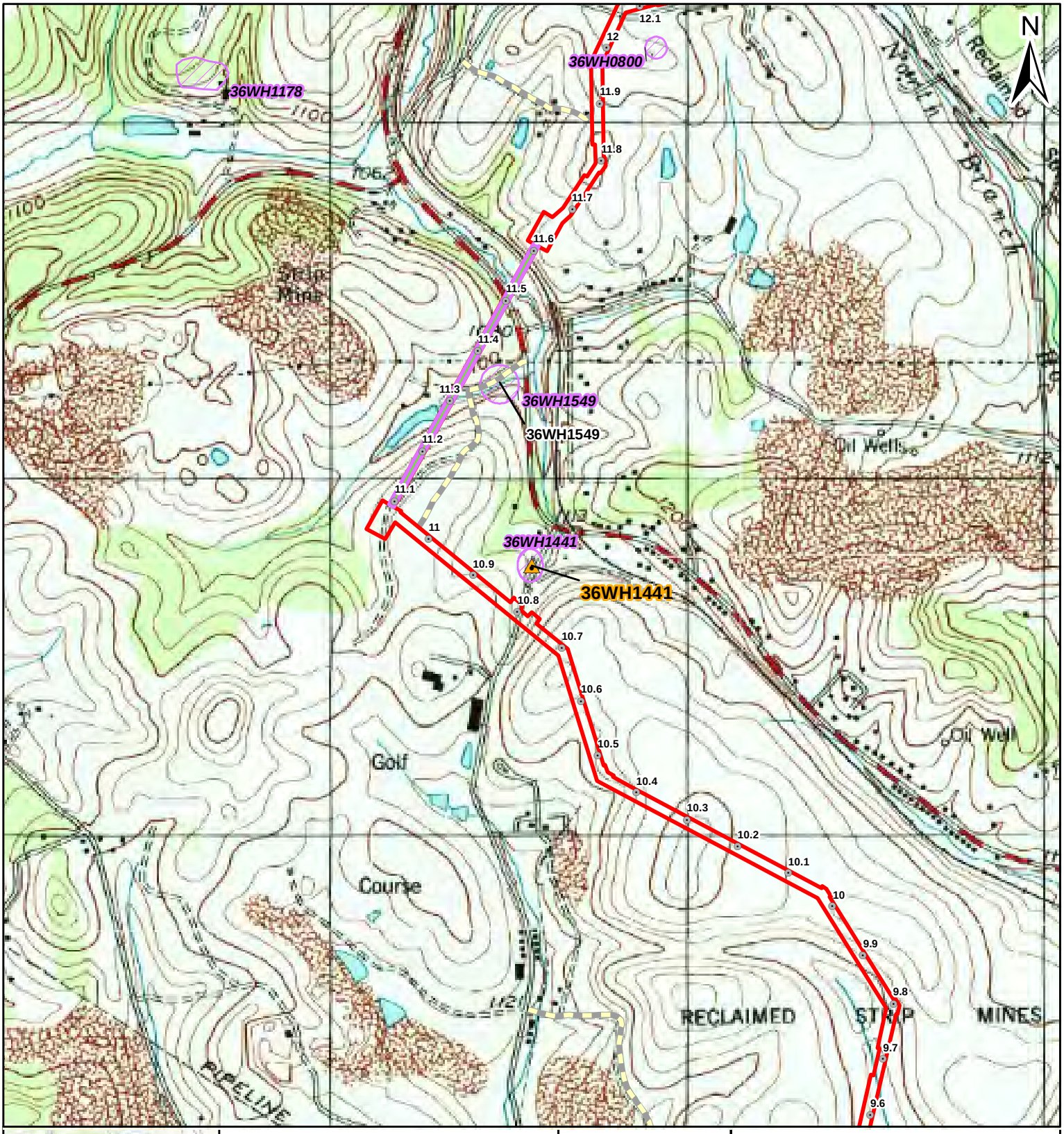
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

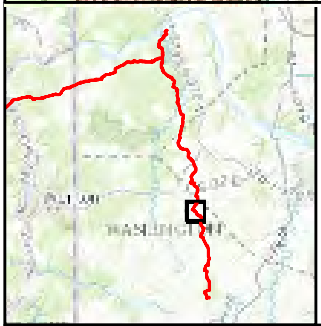
Reference:
Roll #10hh, Photograph #25. Oct 20, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd





Legend

Archaeological Data
- 36WH1441
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.67

Locus 18
36WH1441
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

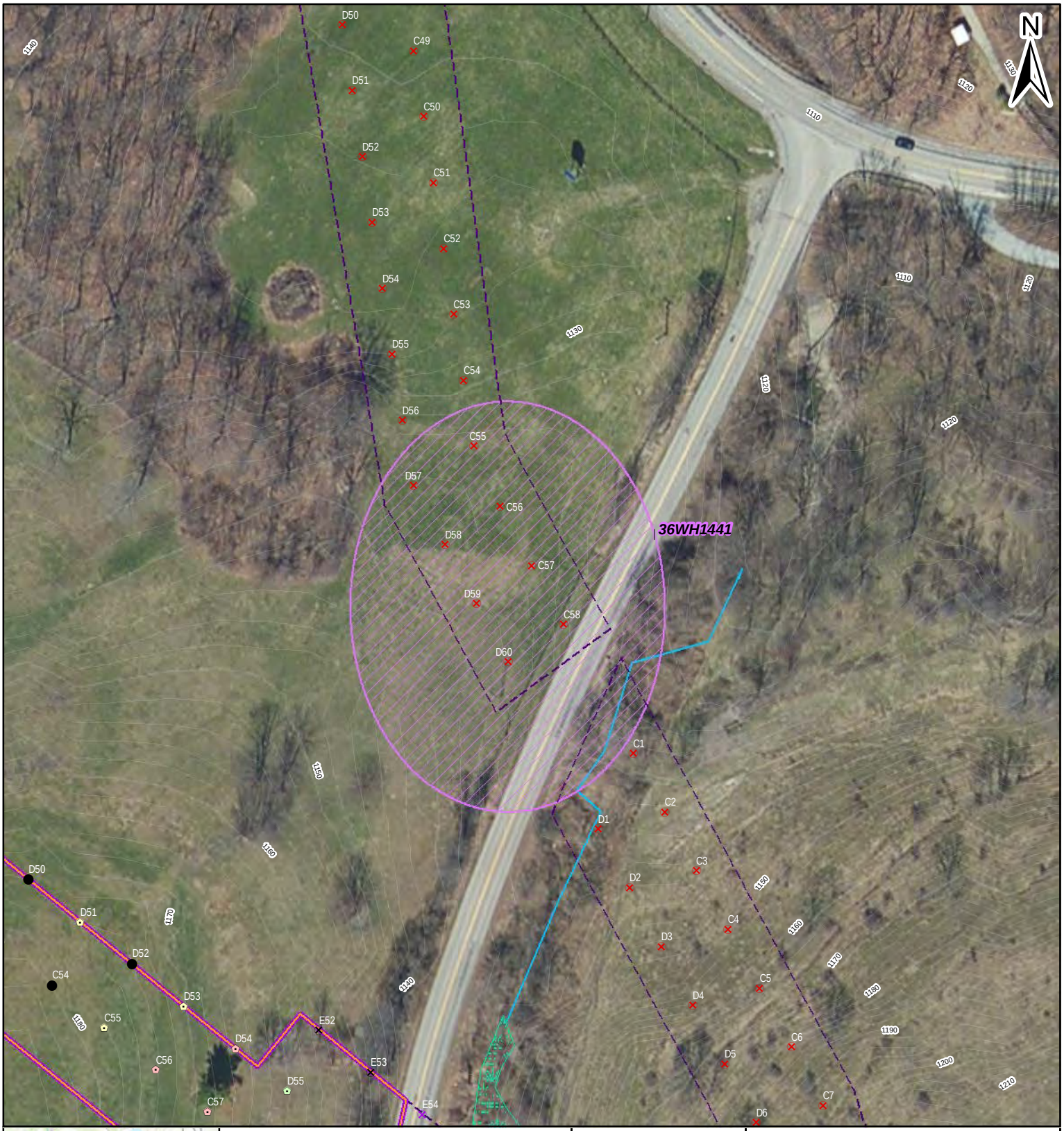
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.68

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Locus 18
36WH1441
SITE MAP: MODERN AERIAL

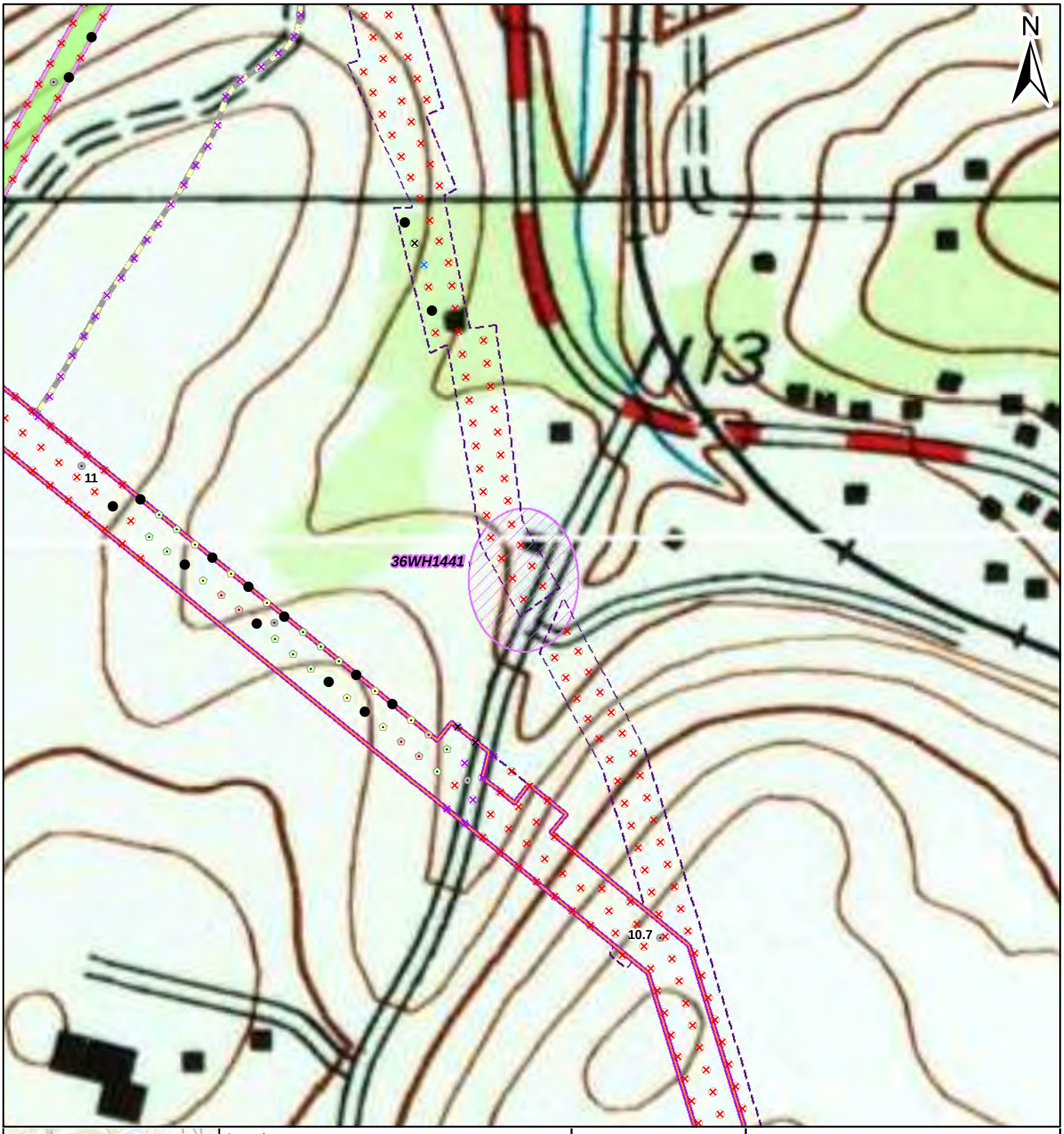
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.69

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Locus 18
36WH1441
SITE MAP: MODERN TOPO

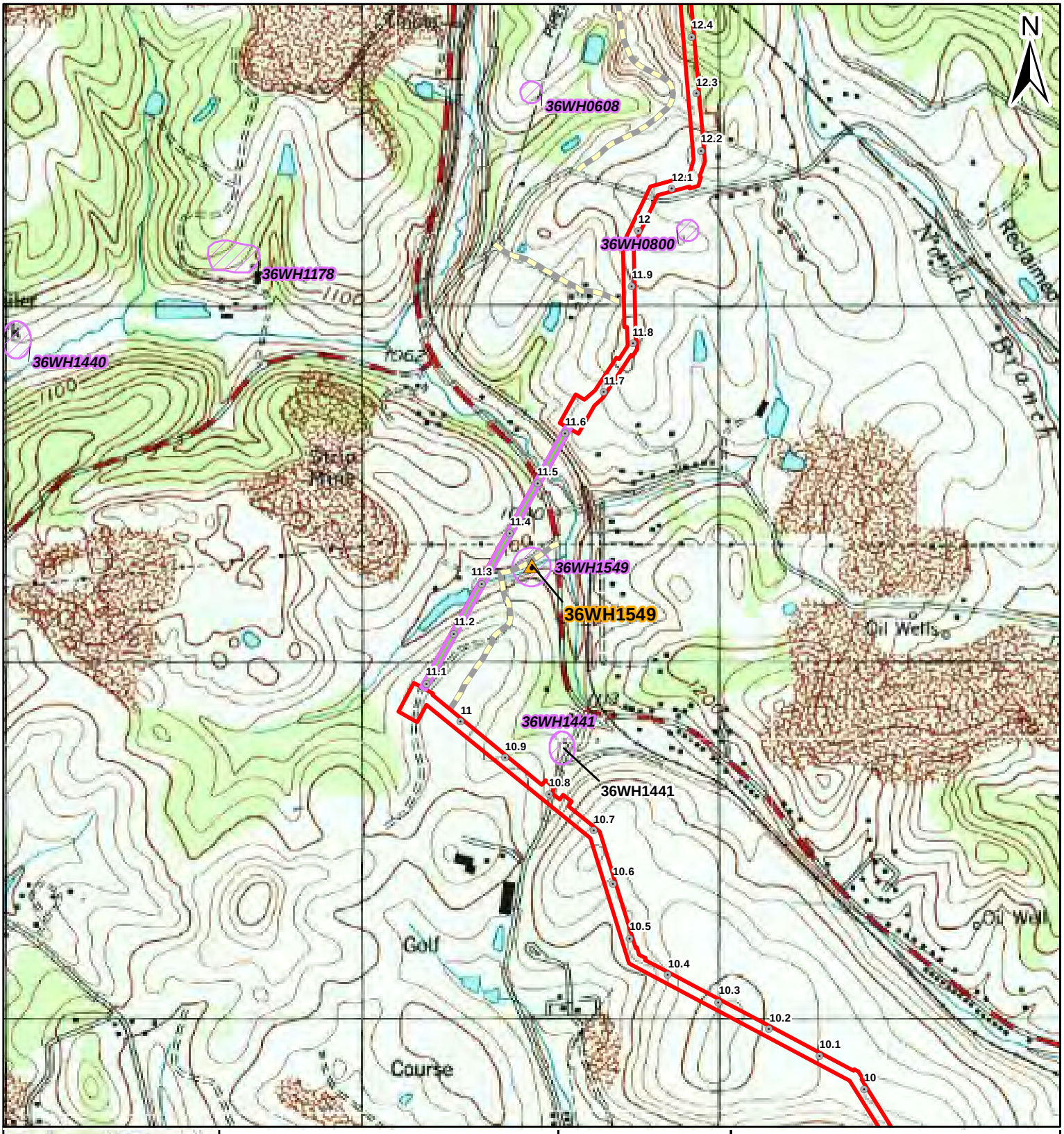
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

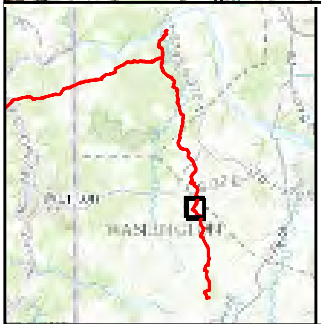
Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd





Legend

Archaeological Data
- 36WH1549
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.70

Farmhouse Area Site
36WH1549
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.71

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

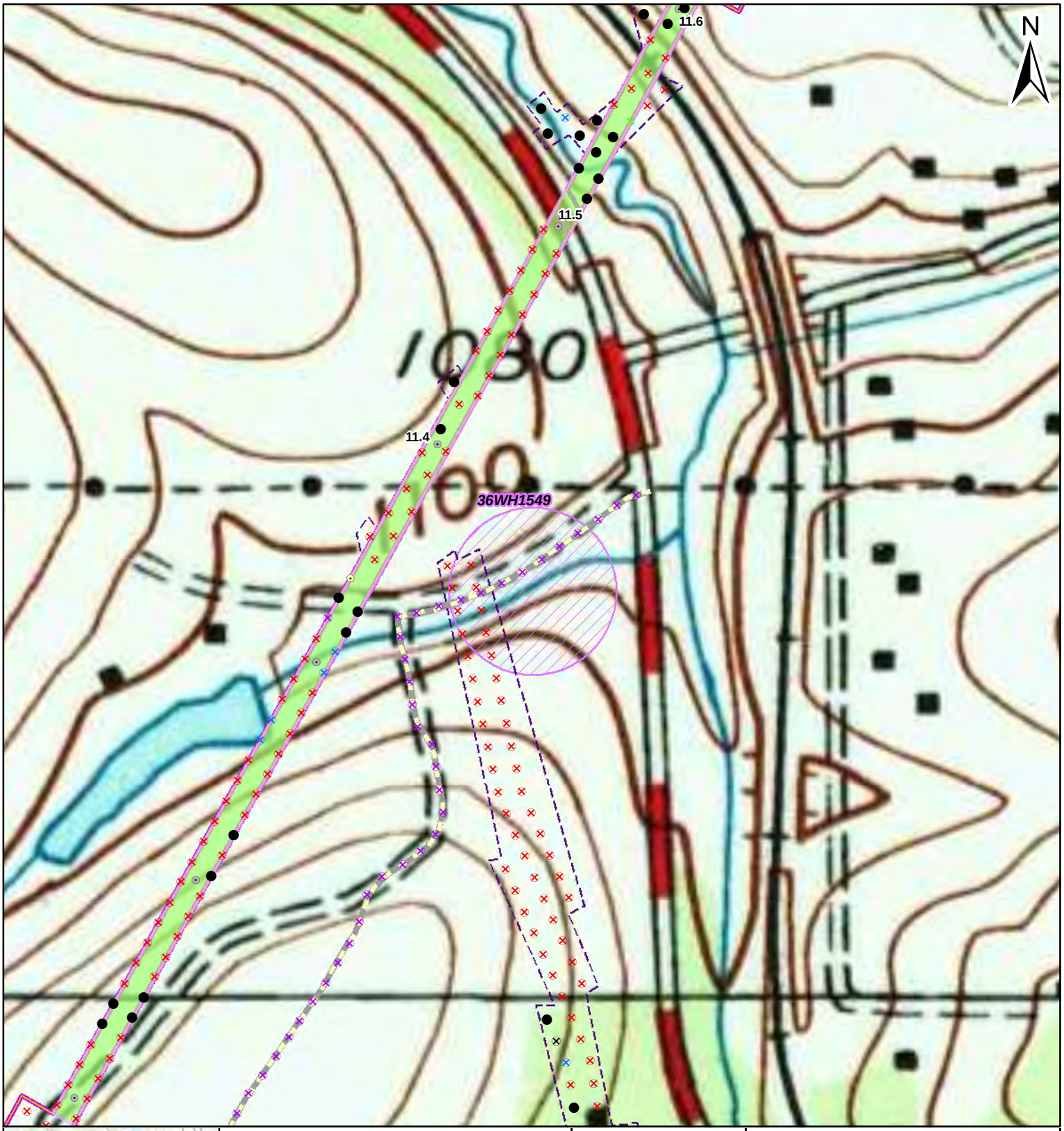
Farmhouse Area Site
36WH1549
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.72

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Farmhouse Area Site
36WH1549
SITE MAP: MODERN TOPO

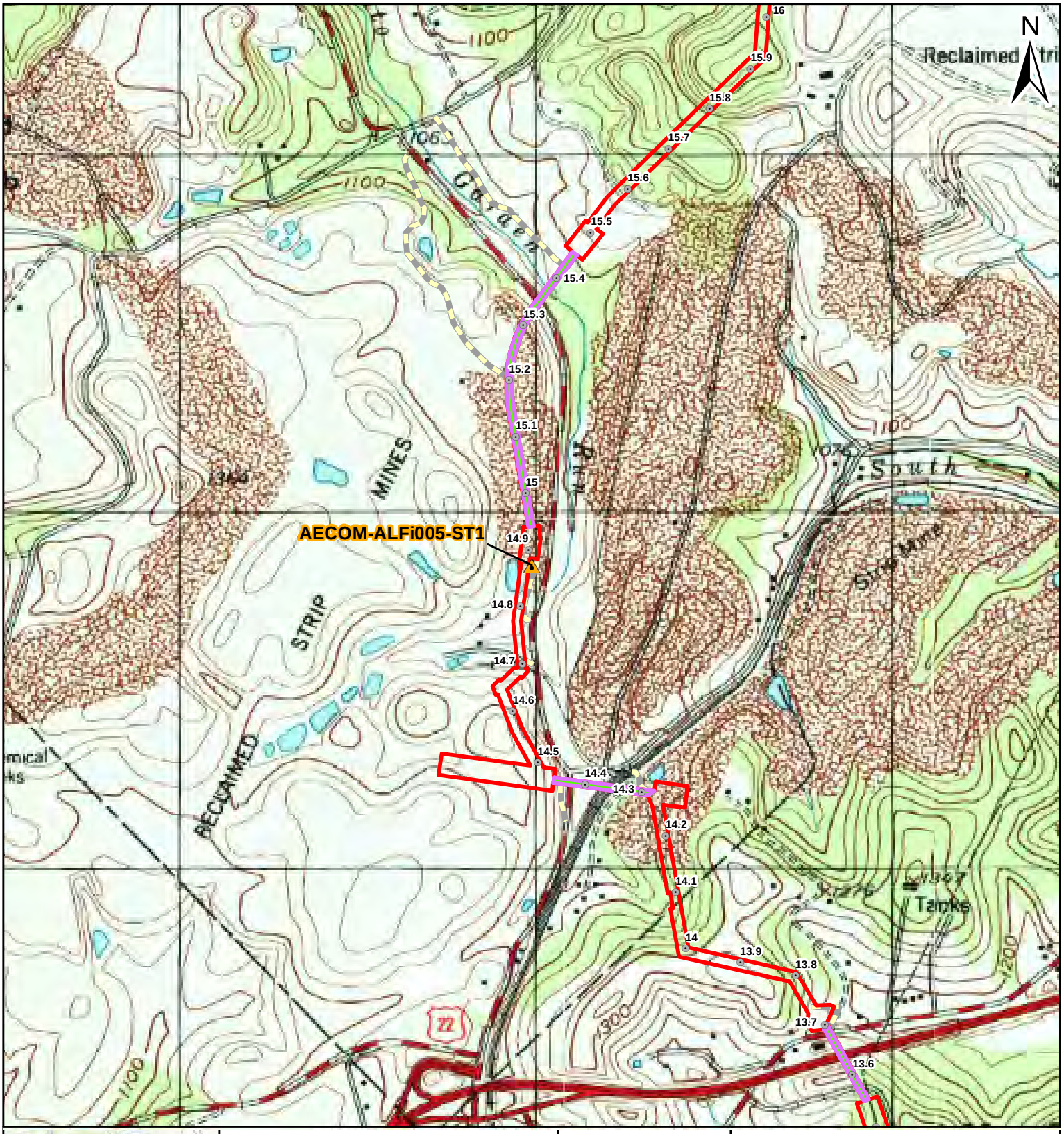
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

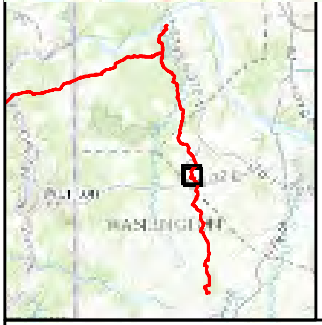
Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd





Legend

Archaeological Data
- AECOM-ALFi005-ST1
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.73

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-ALFi005-ST1
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

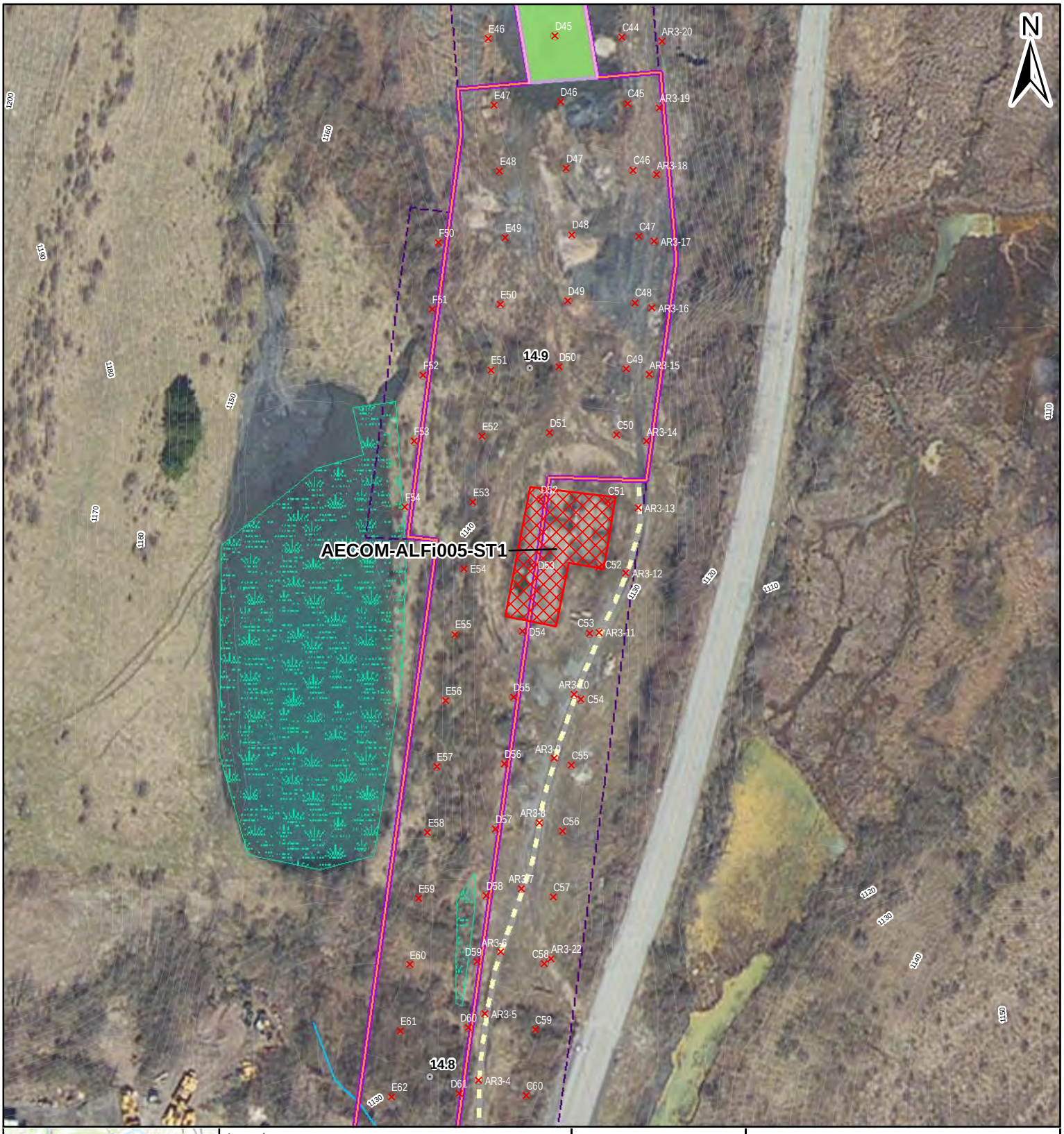
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\17475\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.74

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-ALFi005-ST1
SITE MAP: MODERN AERIAL

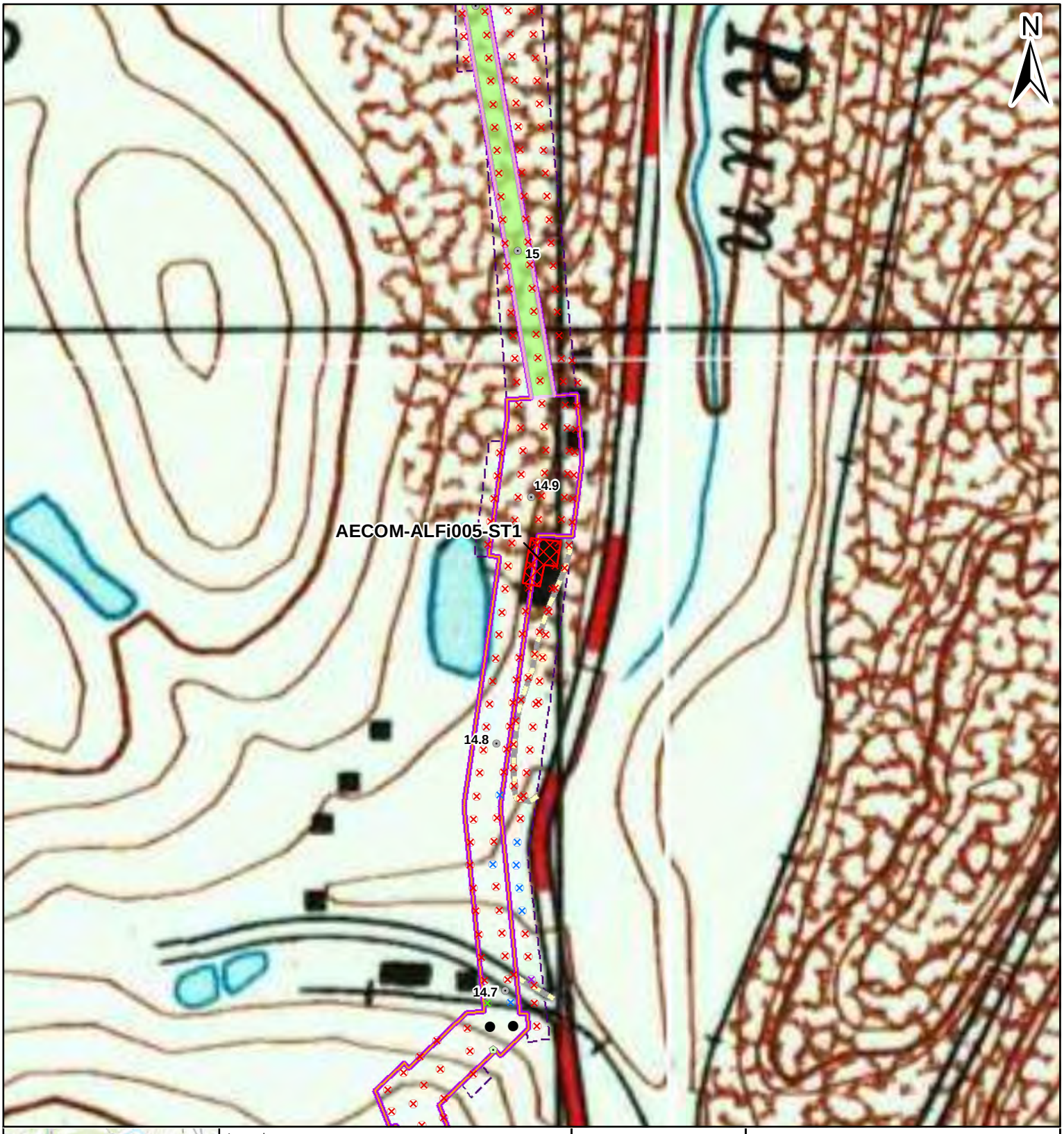
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.75

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-ALFi005-ST1
SITE MAP: MODERN TOPO

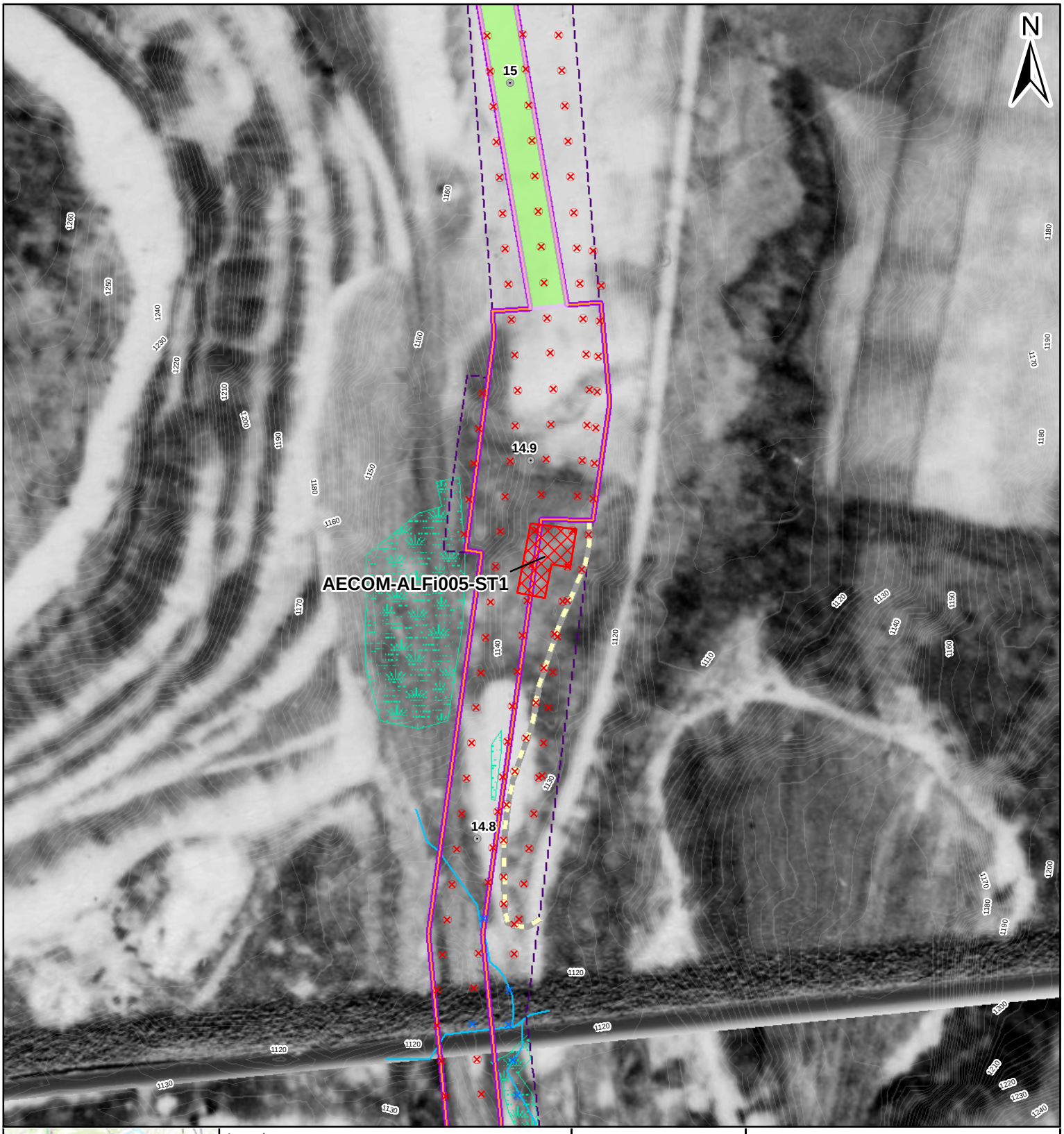
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Reference:
Roll #56, Photograph #67. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.76

AECOM

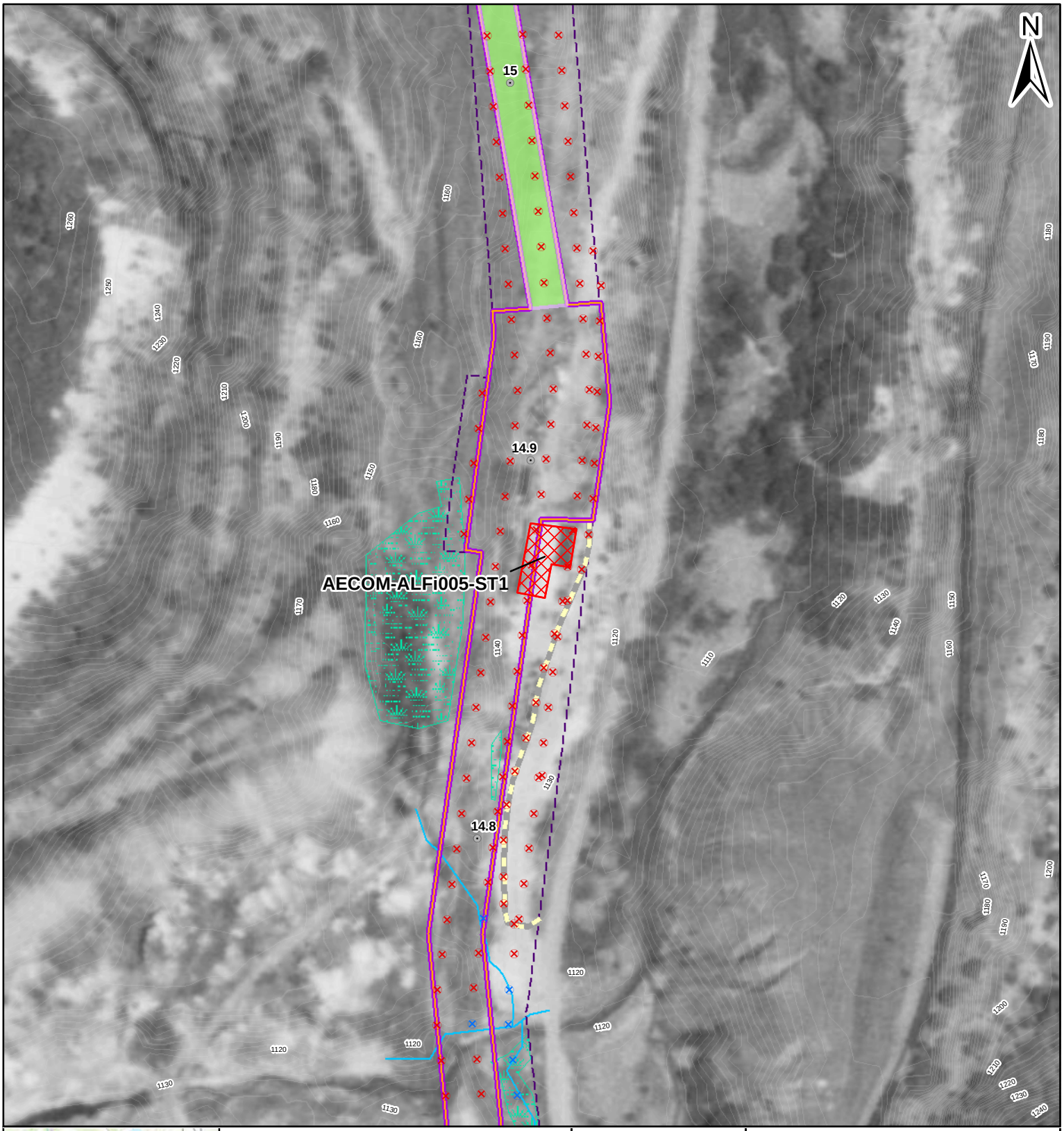
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-ALFi005-ST1
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Not Excavated: Strip Mine
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Reference:
Roll #4hh, Photograph #41. May 23, 1967

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

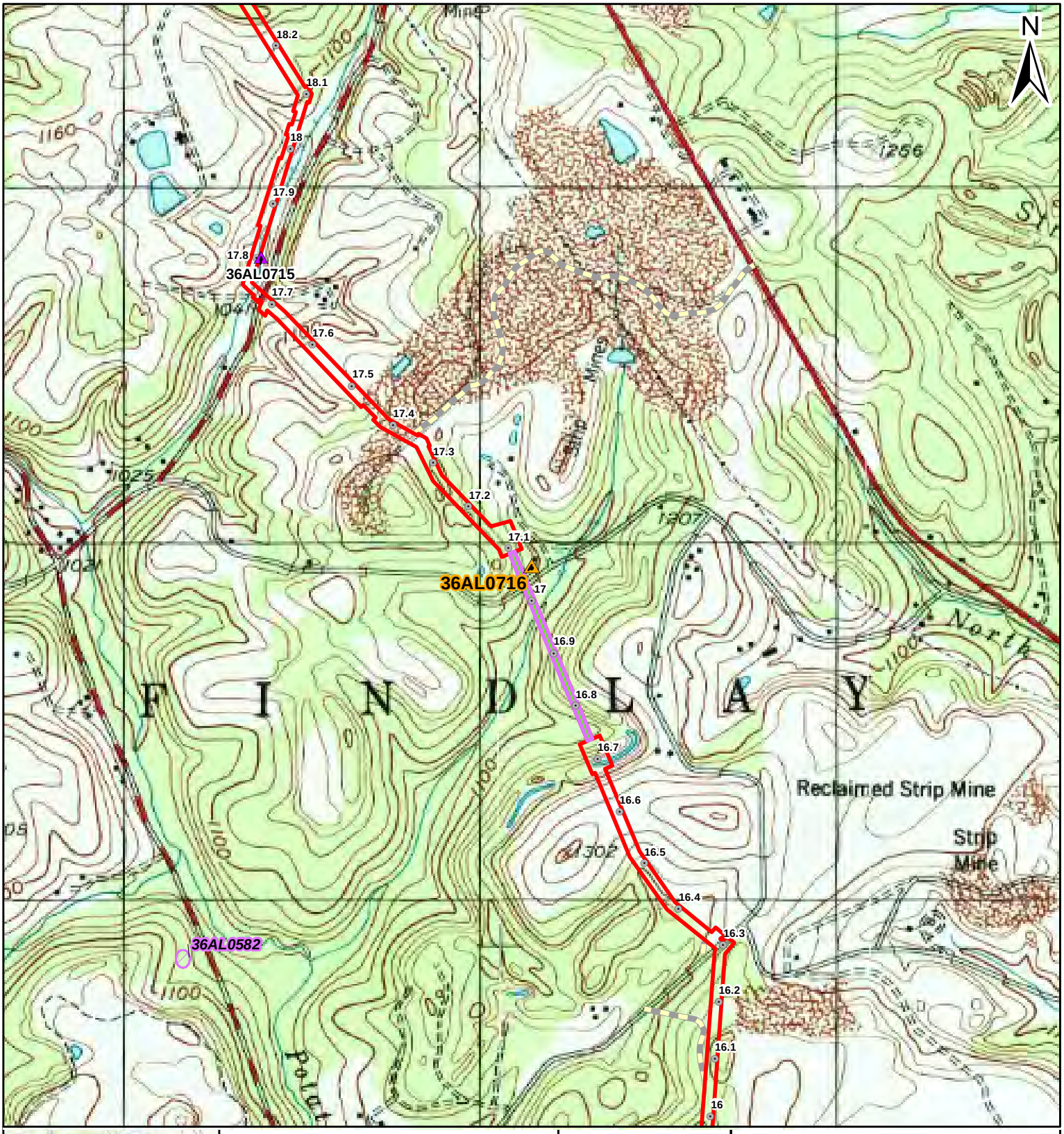
Figure 7.77

AECOM-ALFi005-ST1
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36AL0716
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.78

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0716
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

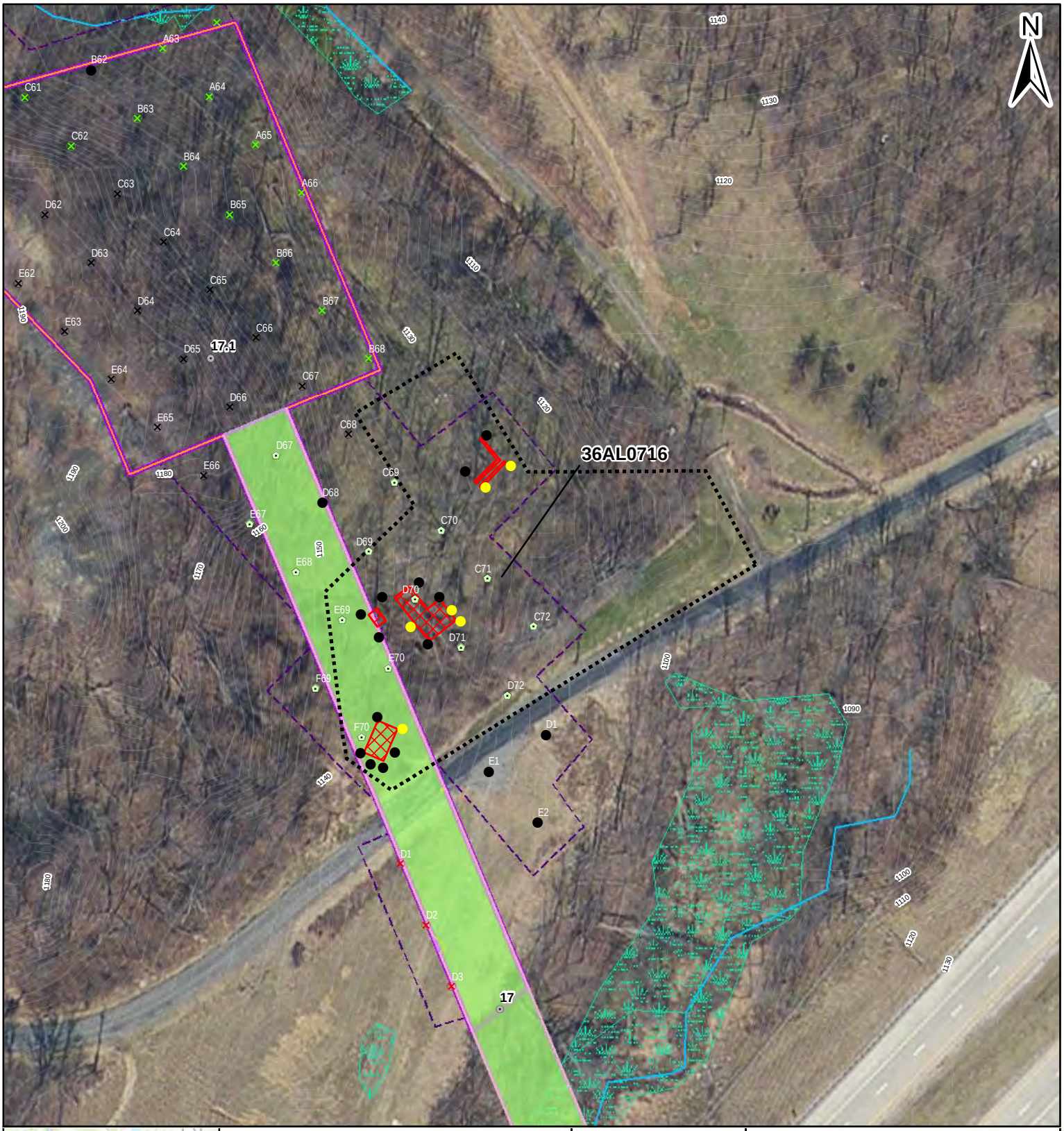
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.79

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

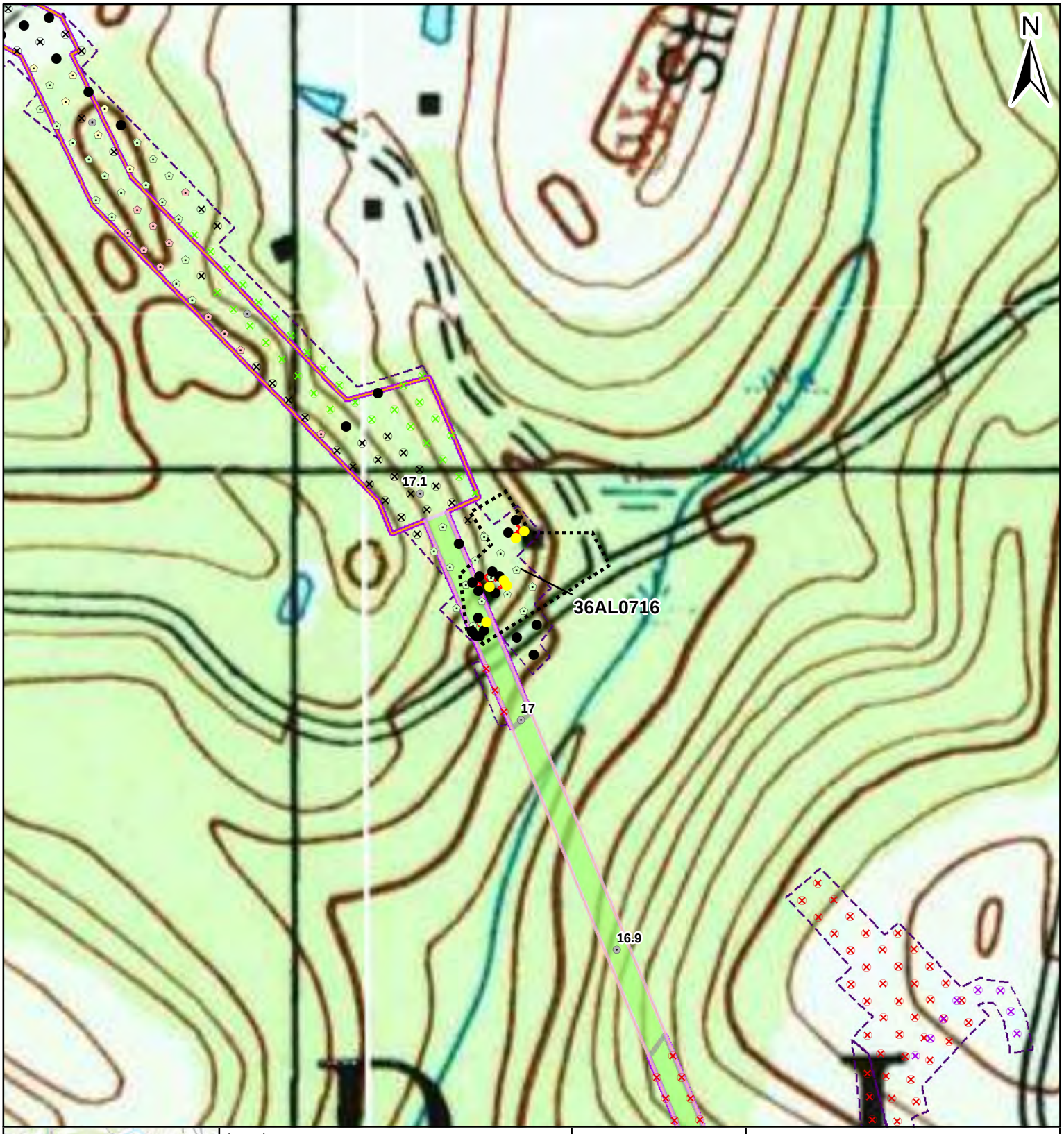
36AL0716
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.80

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0716
SITE MAP: MODERN TOPO

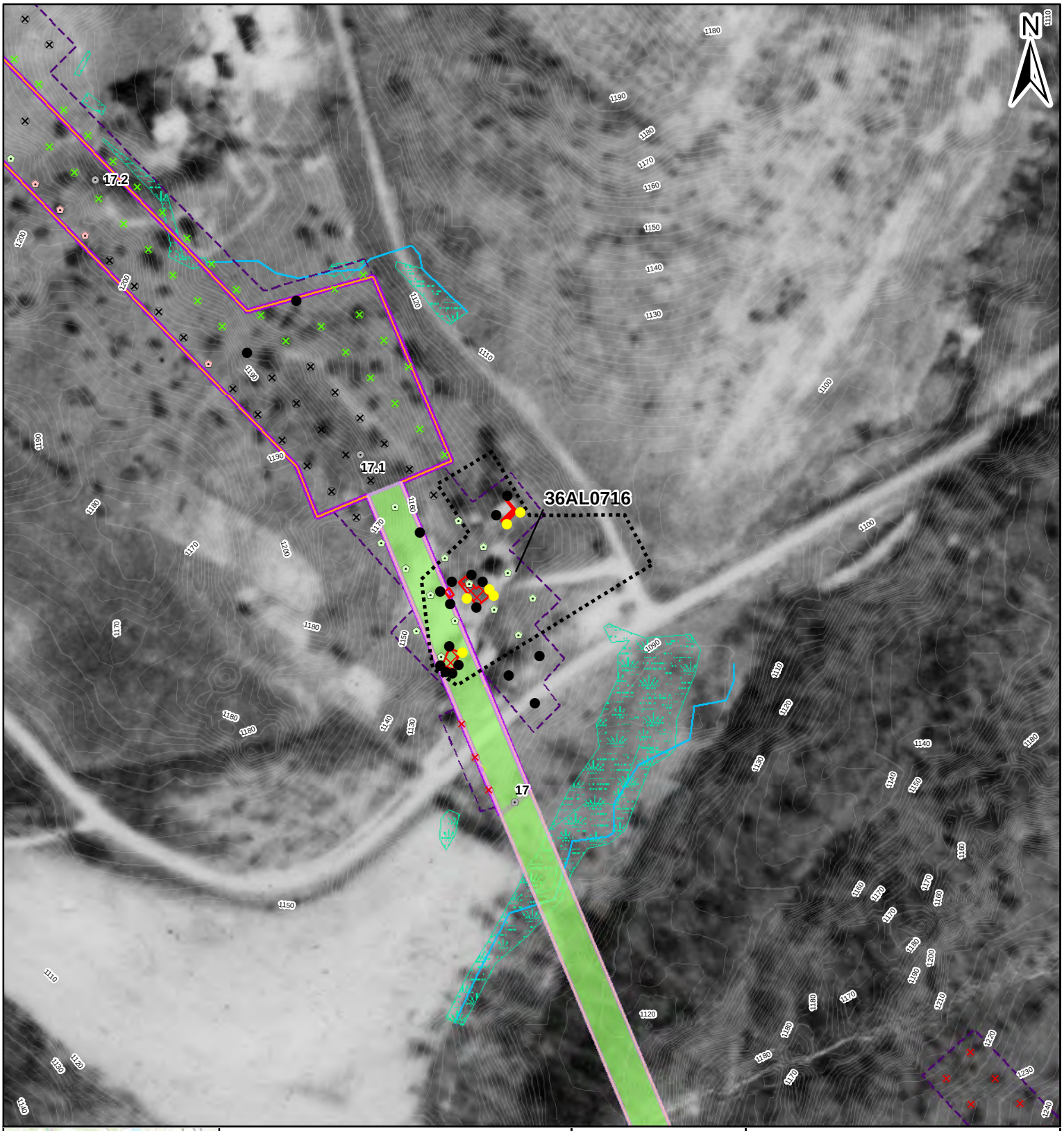
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.81

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0716
SITE MAP: 1939 AERIAL

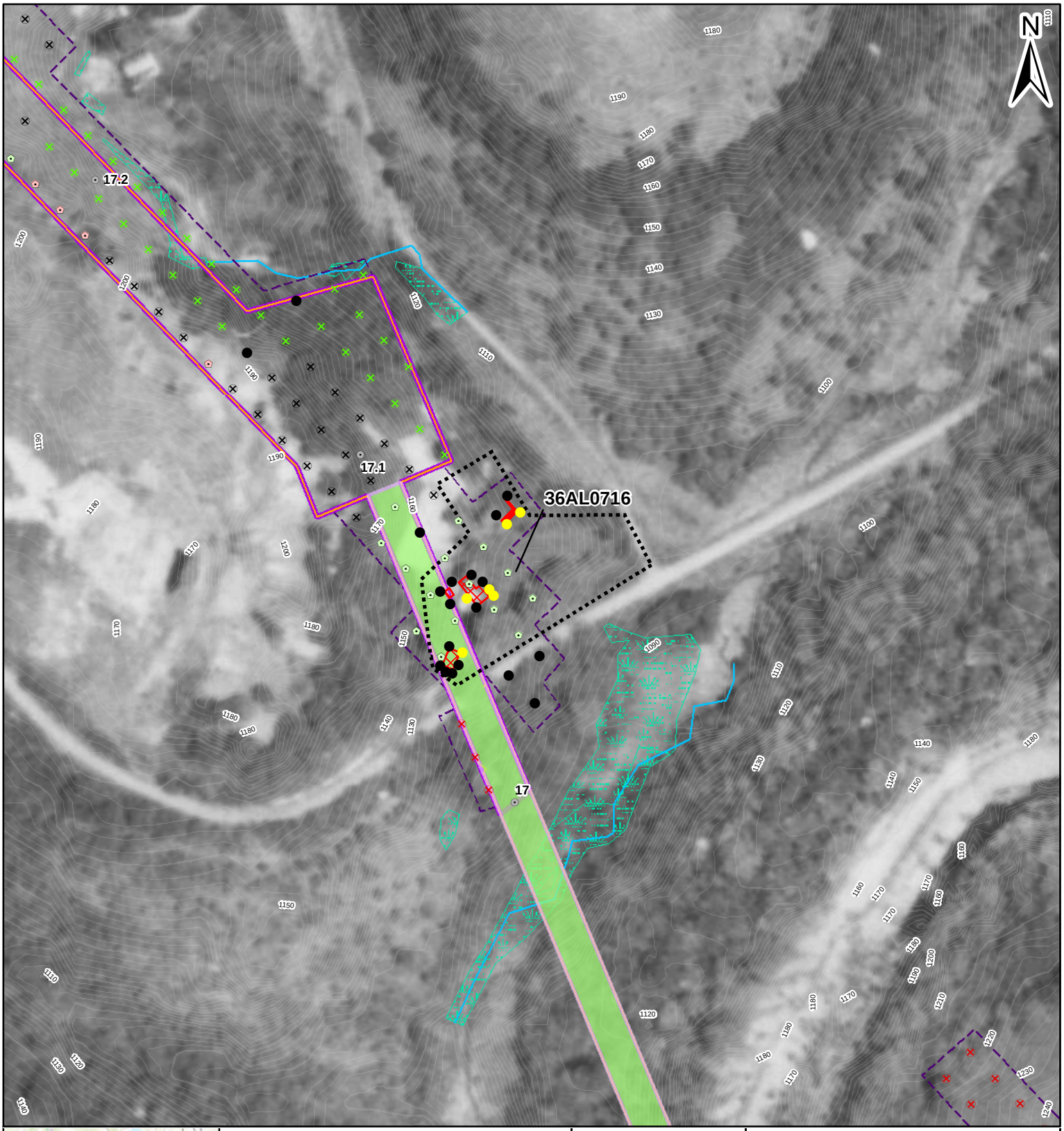
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #56, Photograph #67. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Strip Mine
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.82

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0716
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #4hh, Photograph #39. May 23, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd

Legend

Archaeological Data
- 36AL0715
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.83

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0715
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

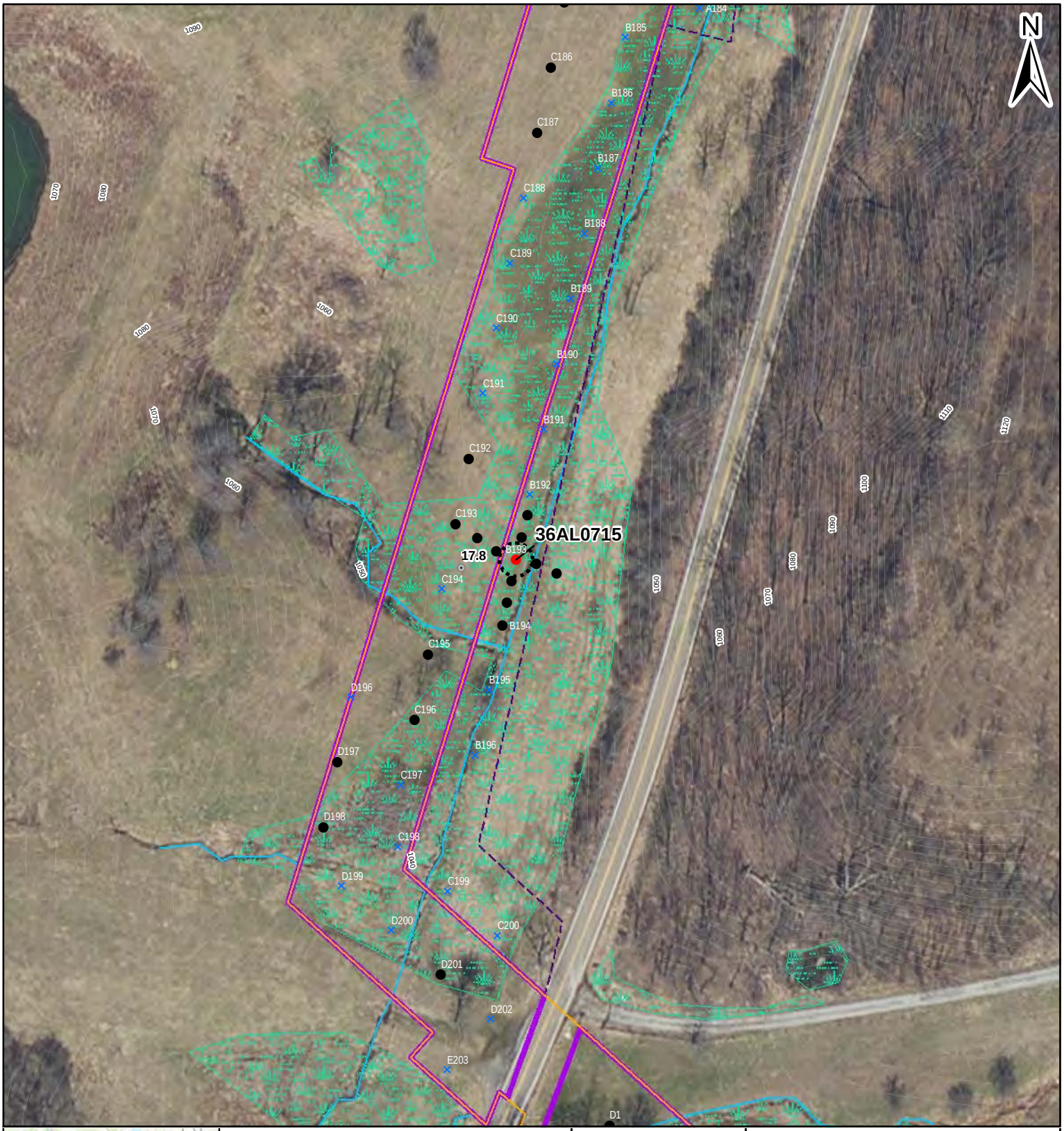
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.84

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0715
SITE MAP: MODERN AERIAL

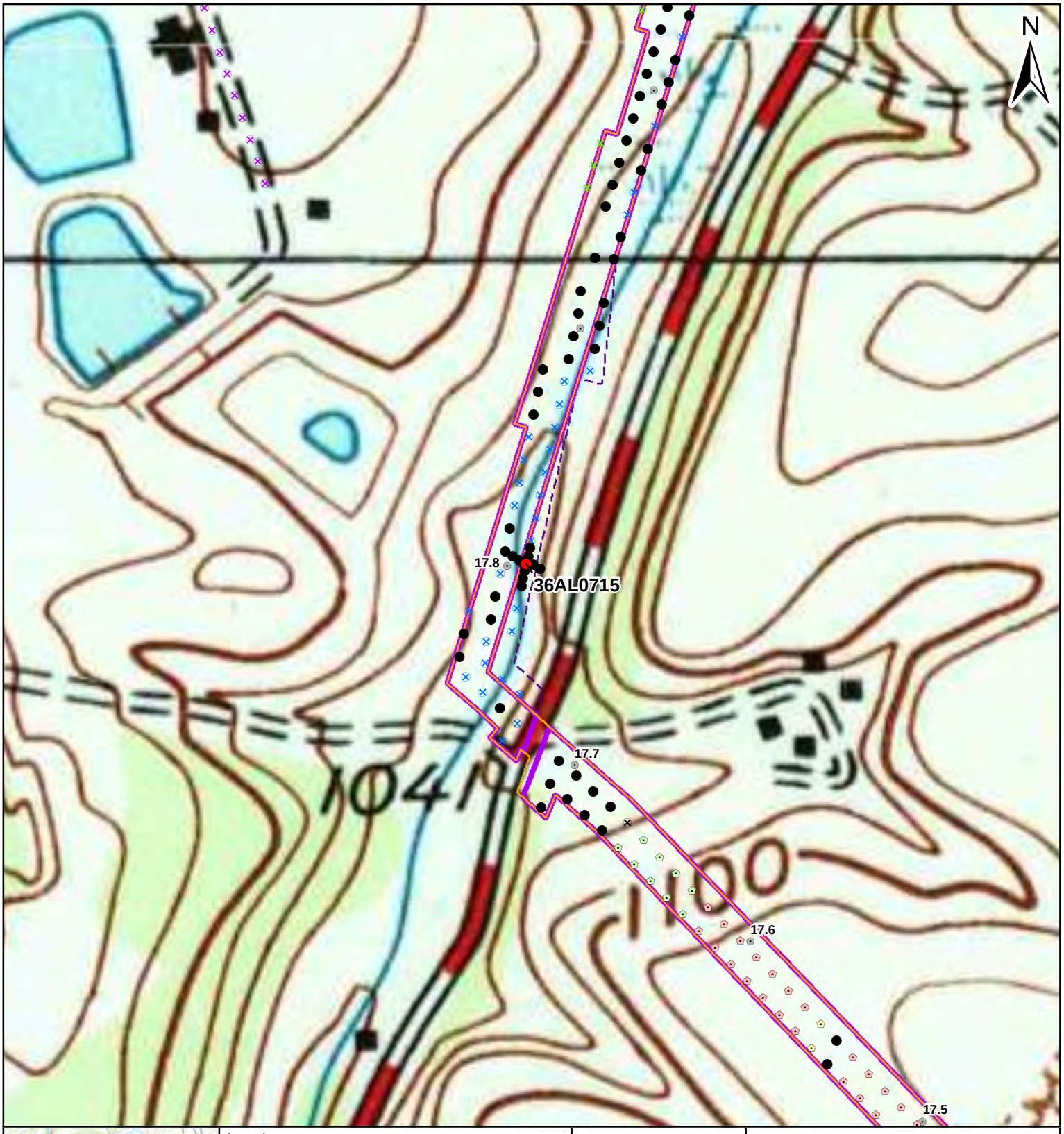
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.85

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36AL0715
SITE MAP: MODERN TOPO

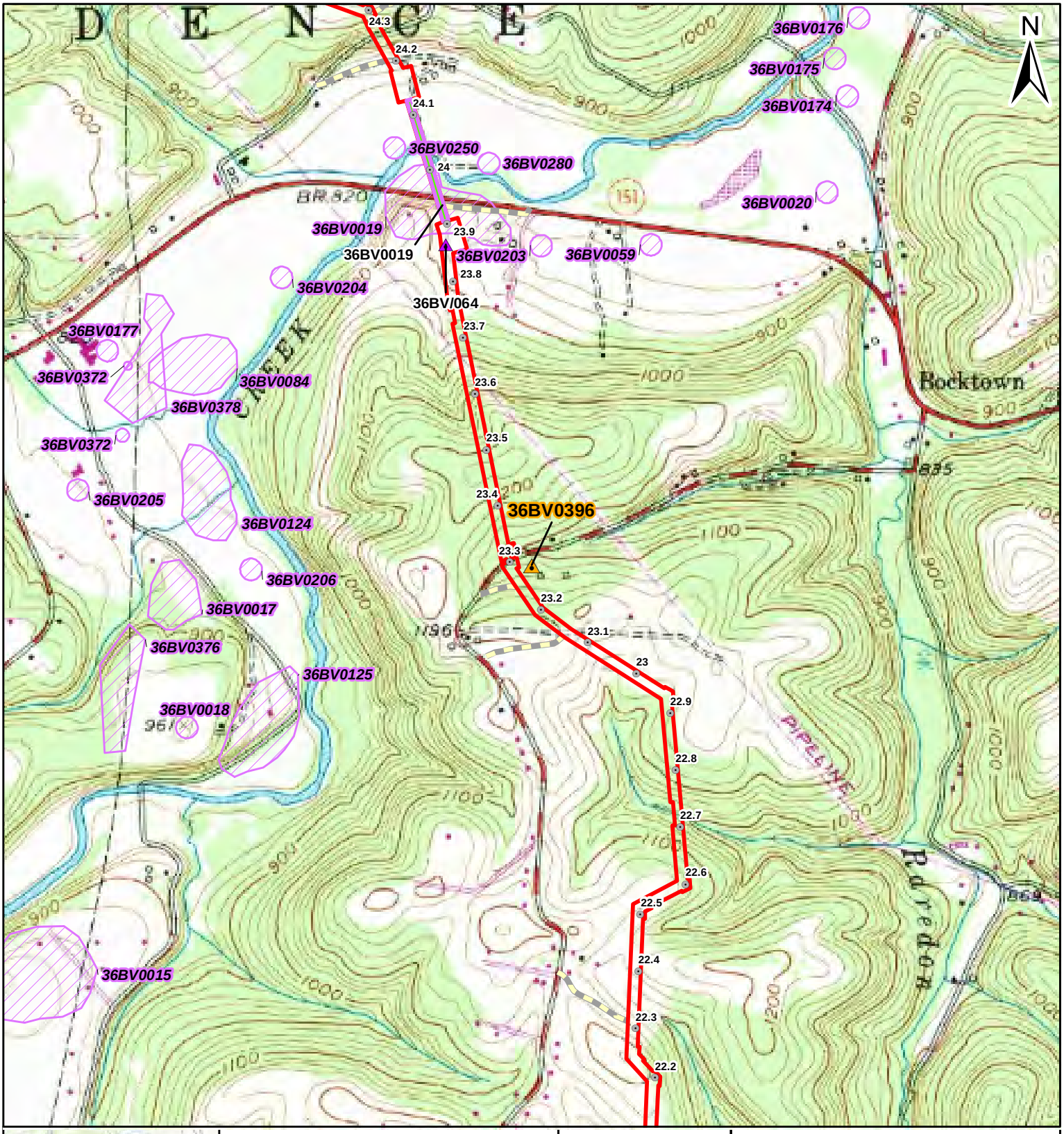
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1998 Clinton, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0396
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.86

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0396
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

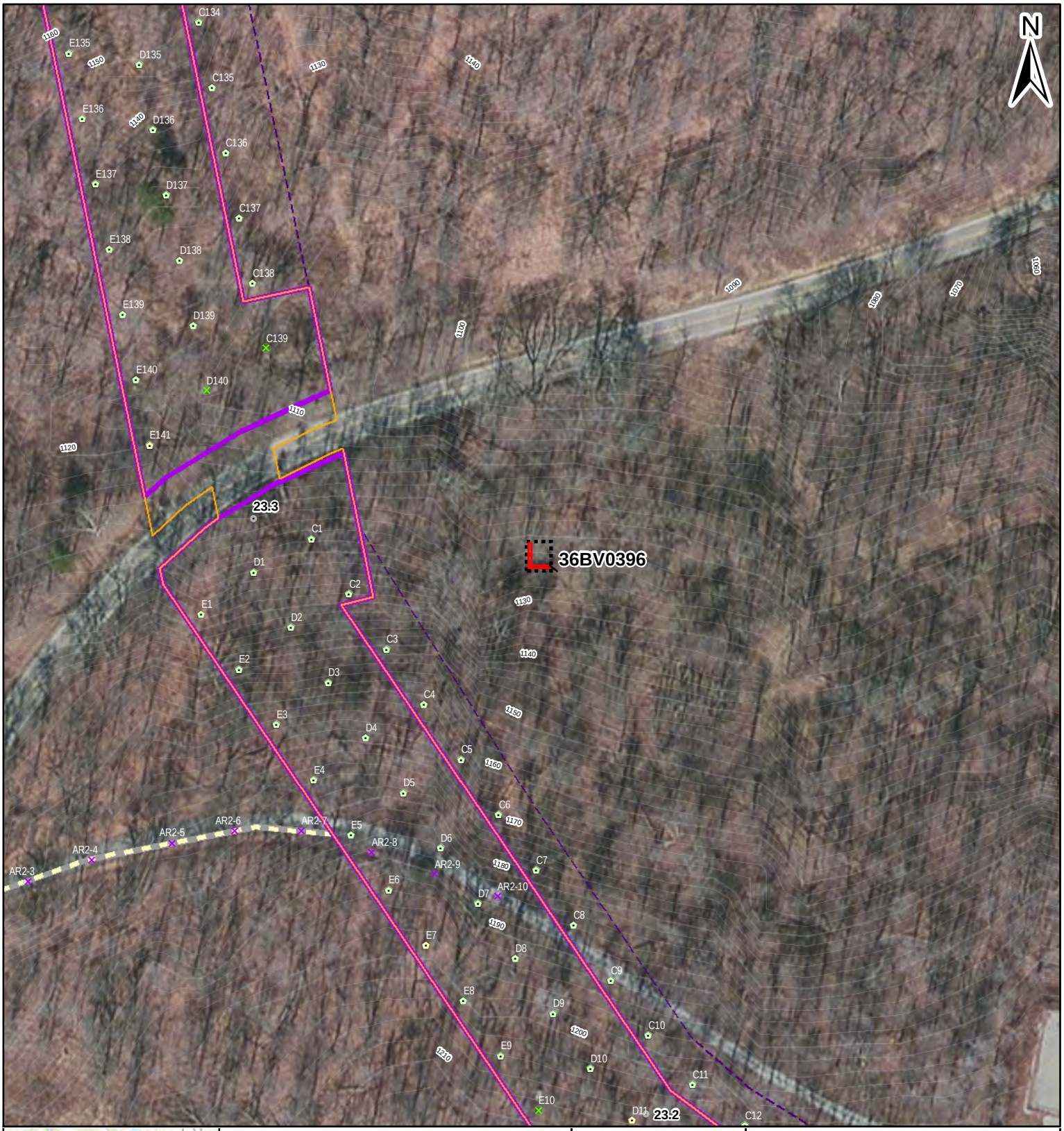
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

Figure 7.87

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

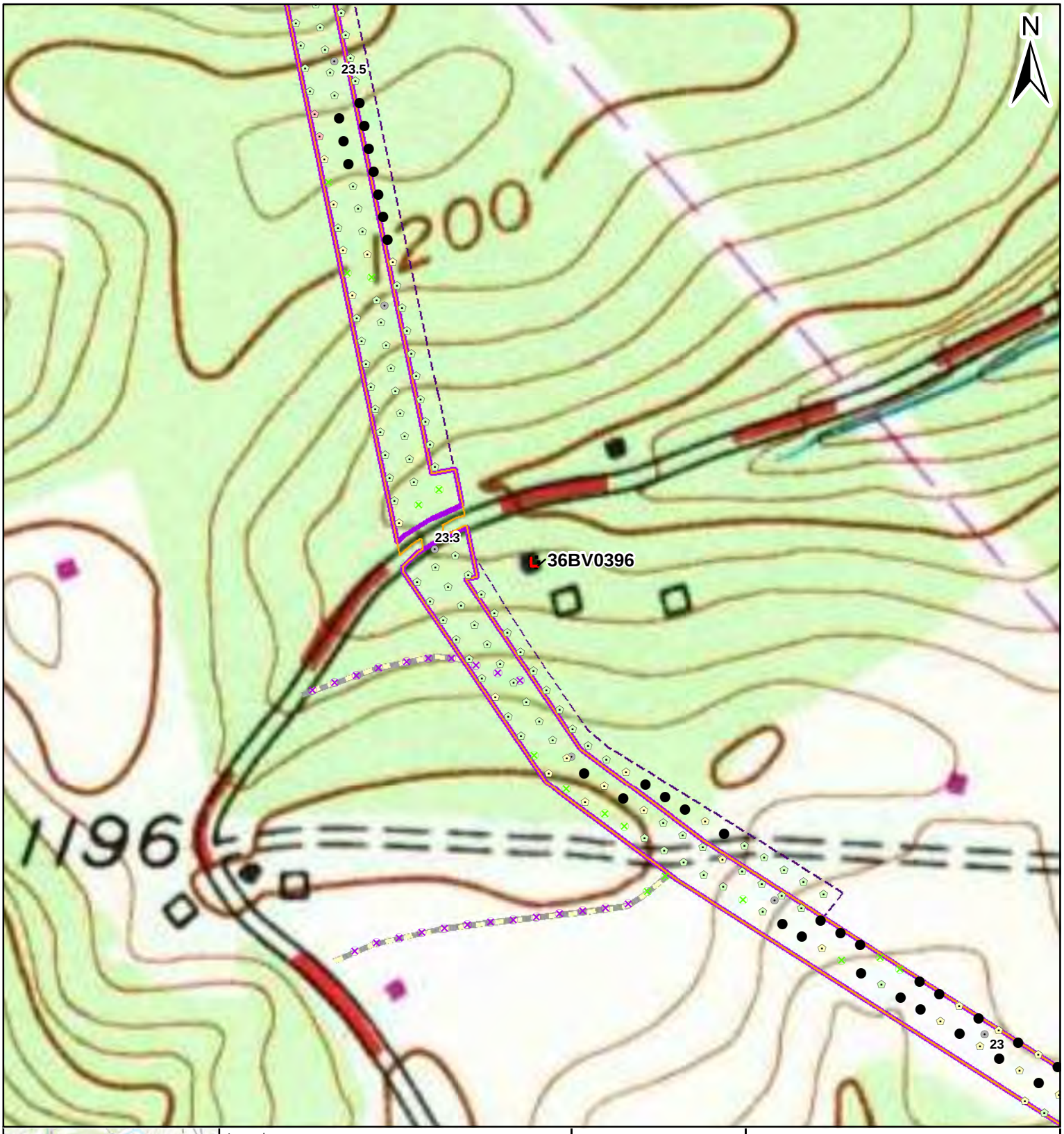
36BV0396
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.88

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0396
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

0 90 180 Feet

Figure 7.89

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0396
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #56, Photograph #59. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd

Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

0 90 180 Feet

Figure 7.90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0396
SITE MAP: 1967 AERIAL

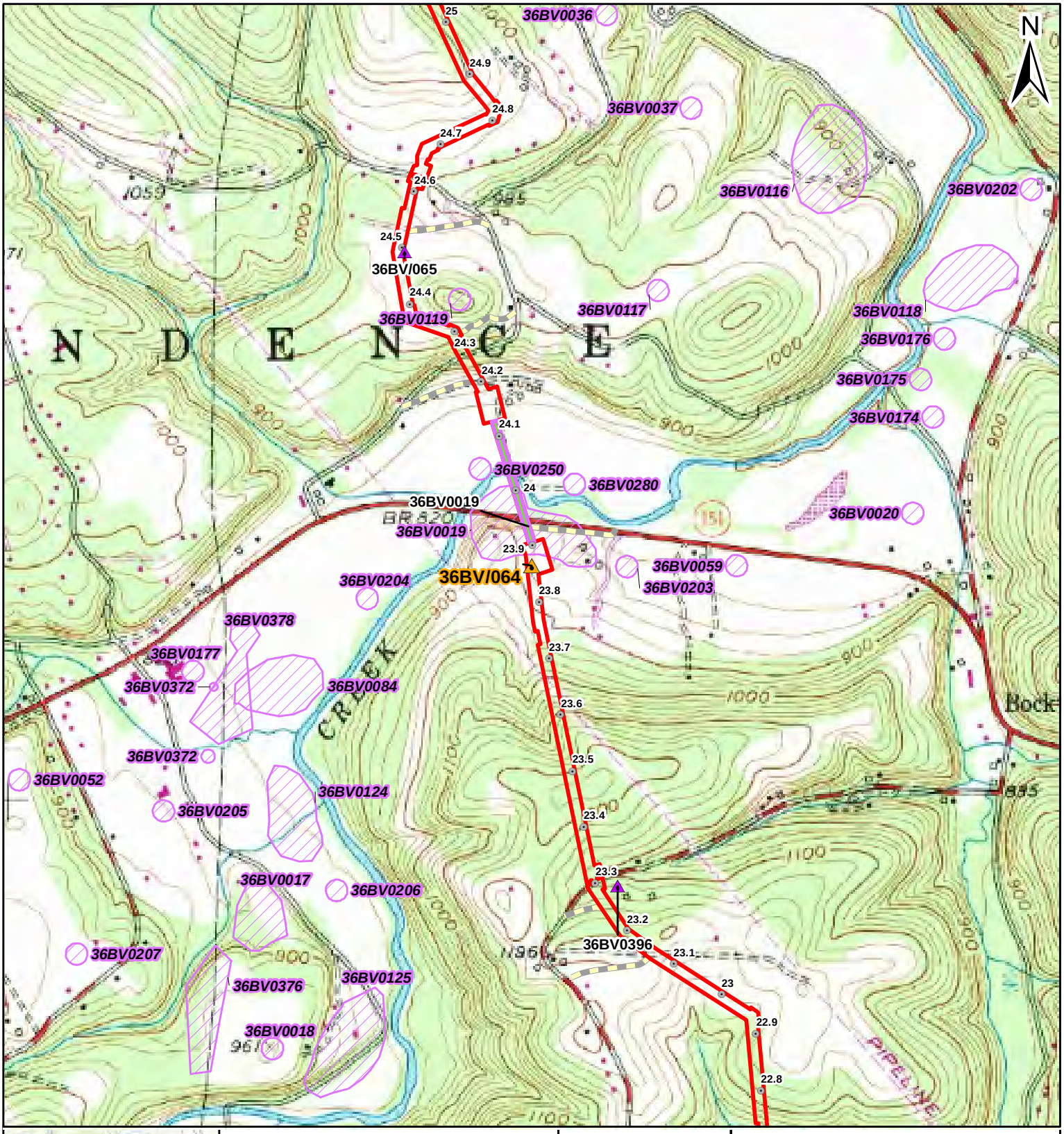
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #122. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV/064
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.91

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/064
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.92

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/064
SITE MAP: MODERN AERIAL

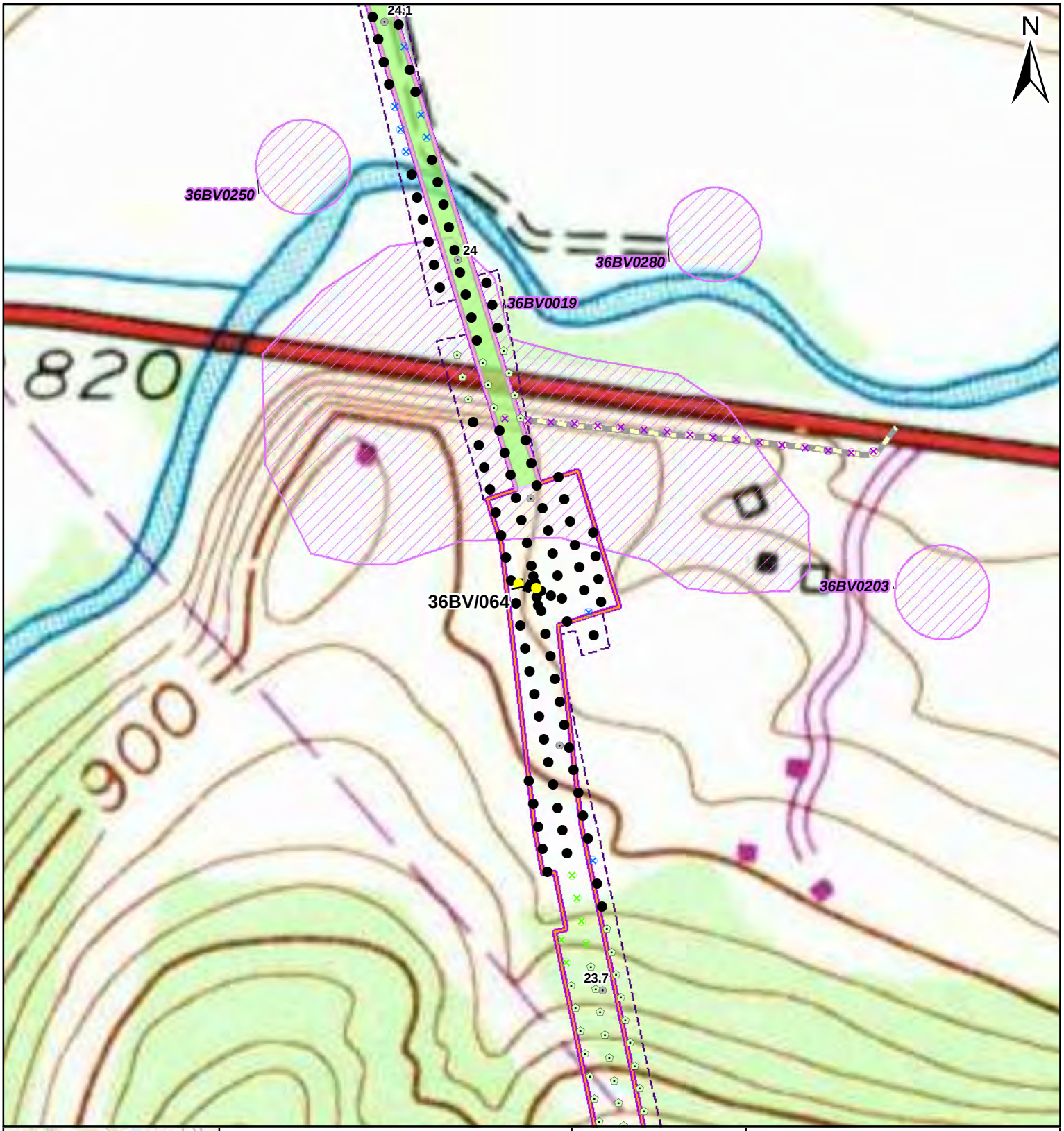
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.93

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/064
SITE MAP: MODERN TOPO

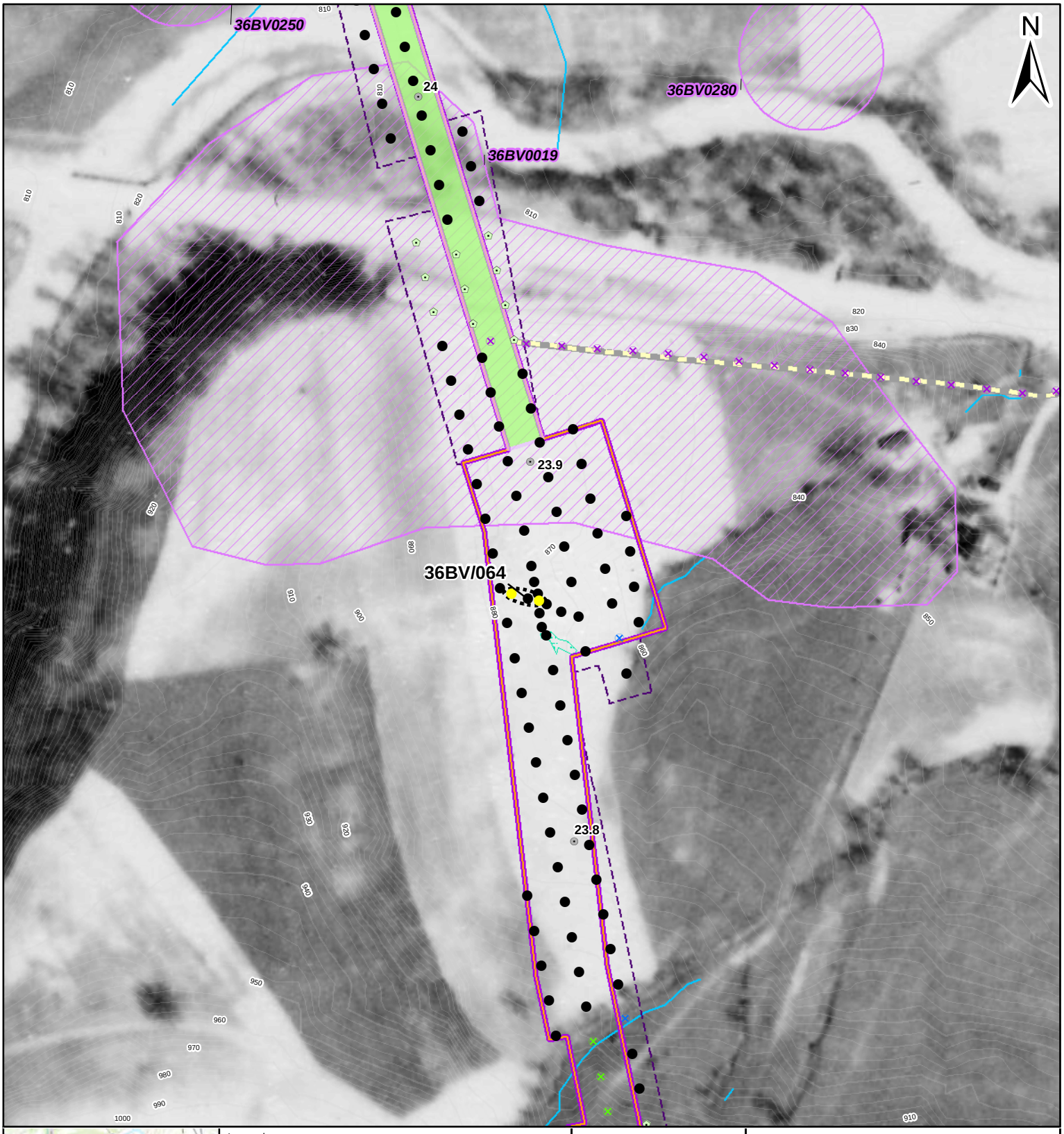
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.94

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/064
SITE MAP: 1939 AERIAL

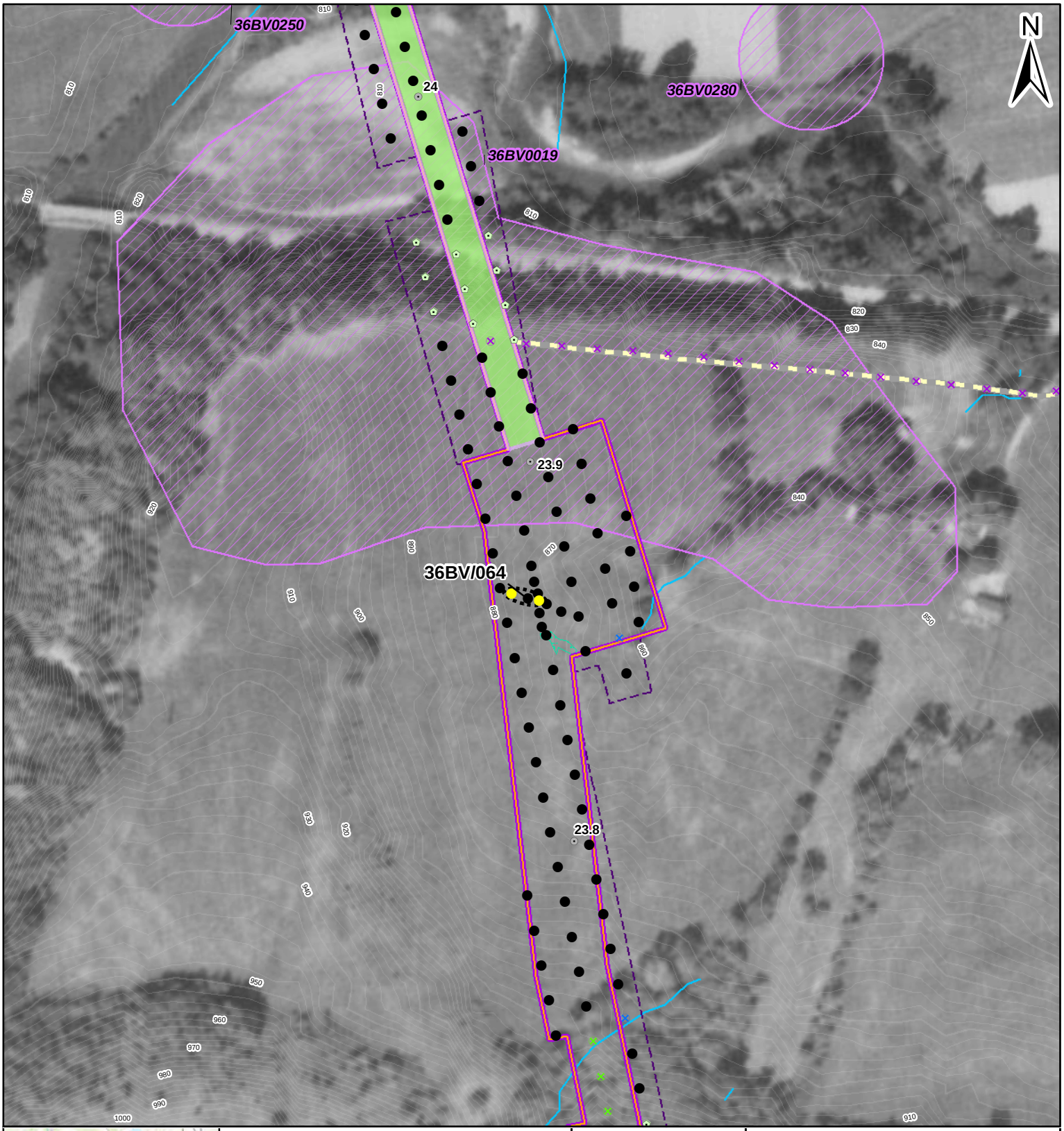
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #56, Photograph #59. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.95

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/064
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #122. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd

Legend

Archaeological Data

- 36BV0019
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features

- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.96

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0019
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

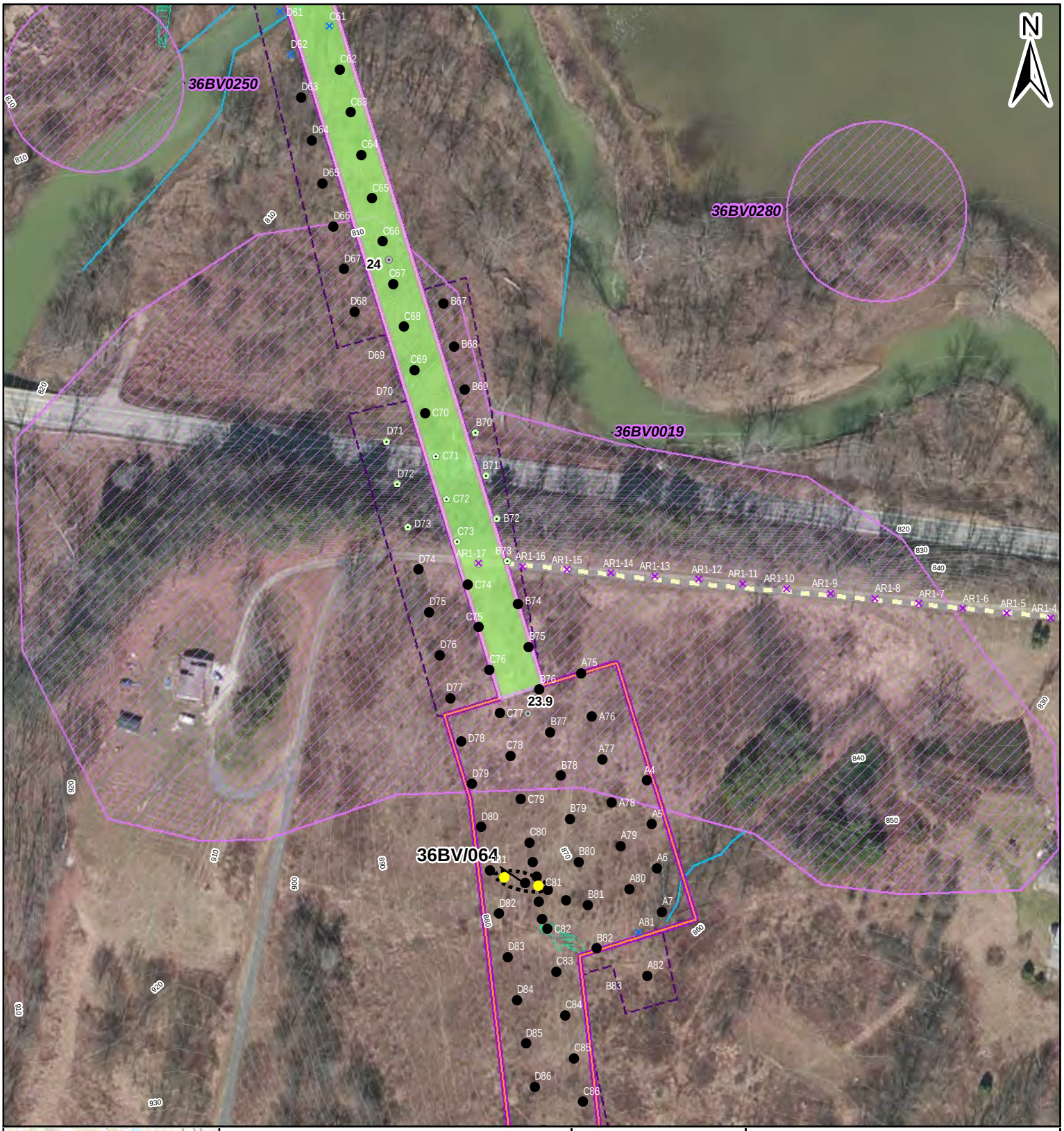
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 70 140 Feet

Figure 7.97

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

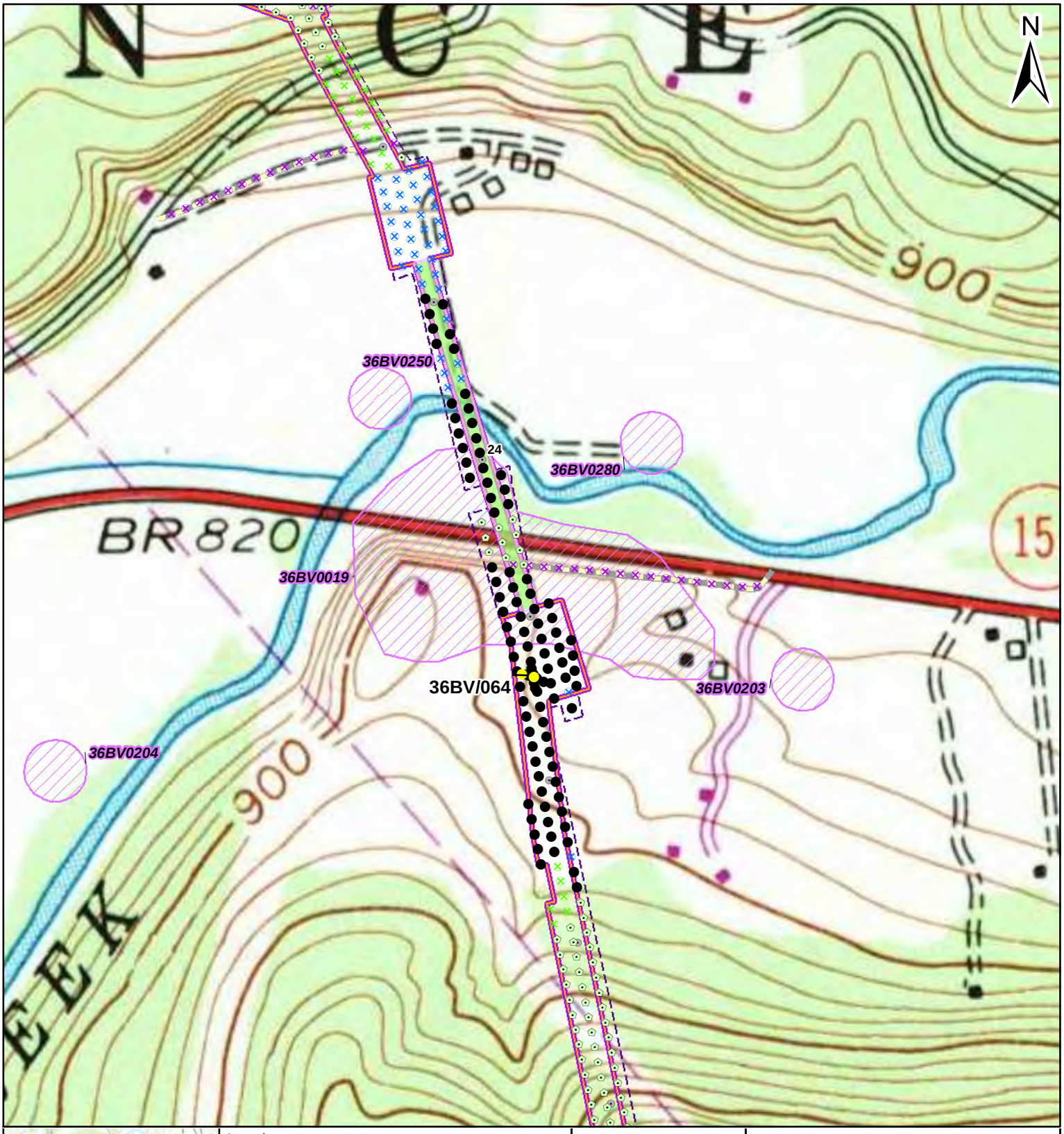
36BV0019
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 210 420 Feet

Figure 7.98

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0019
SITE MAP: MODERN TOPO

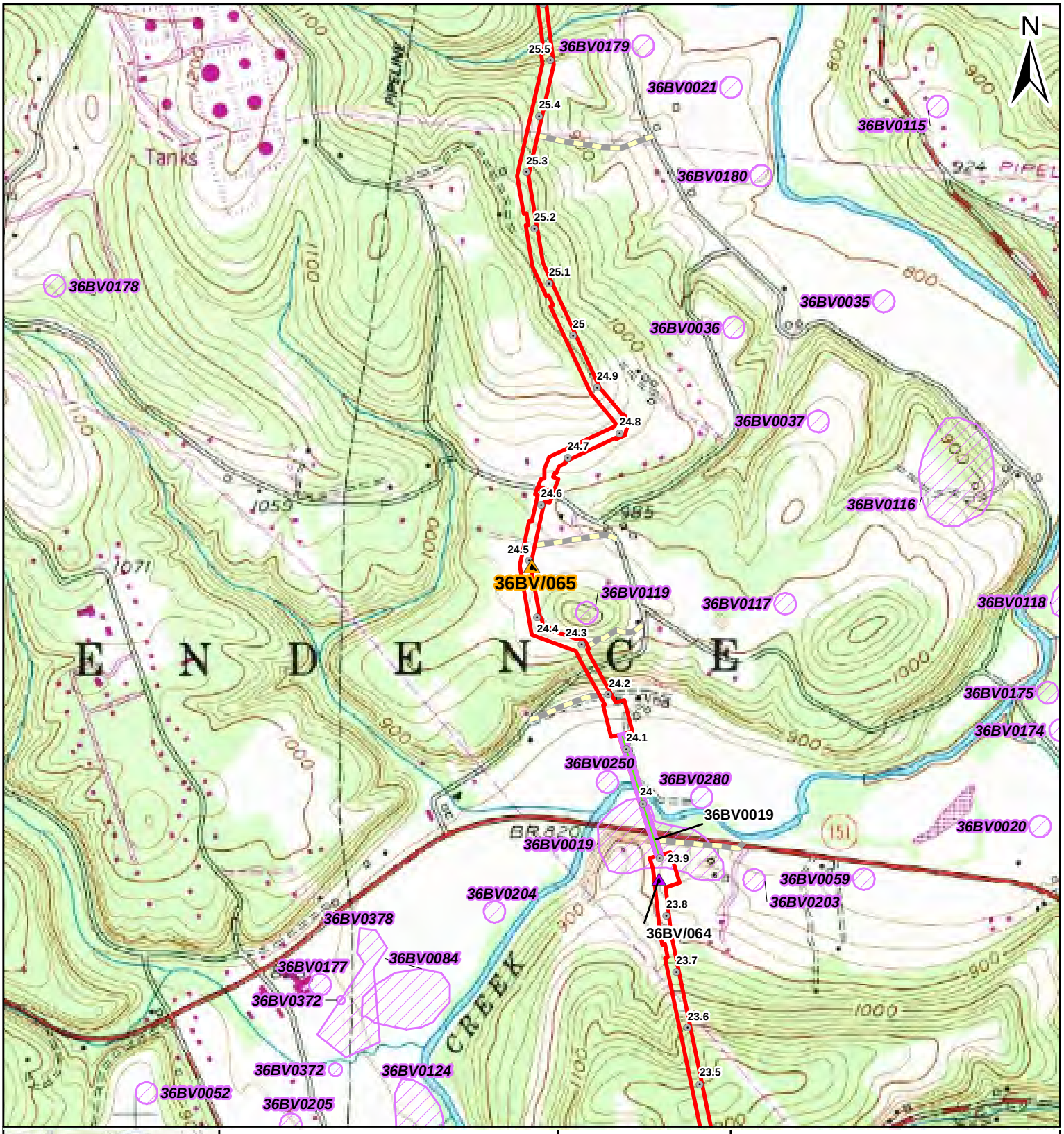
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV/065
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.99

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/065
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

Feet
0 45 90

Figure 7.100

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

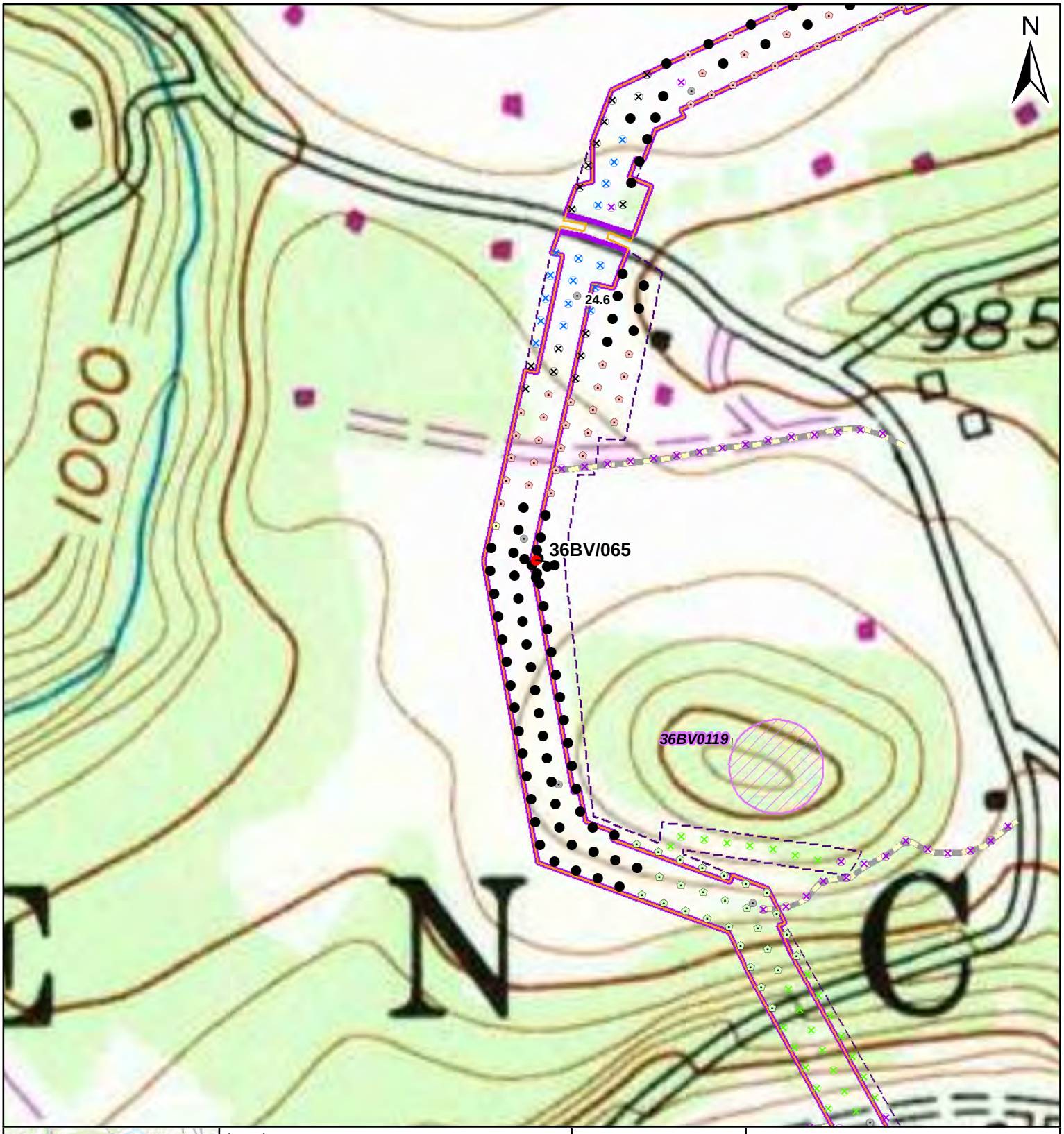
36BV/065
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Not Excavated: ROW/Transportation
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.101

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/065
SITE MAP: MODERN TOPO

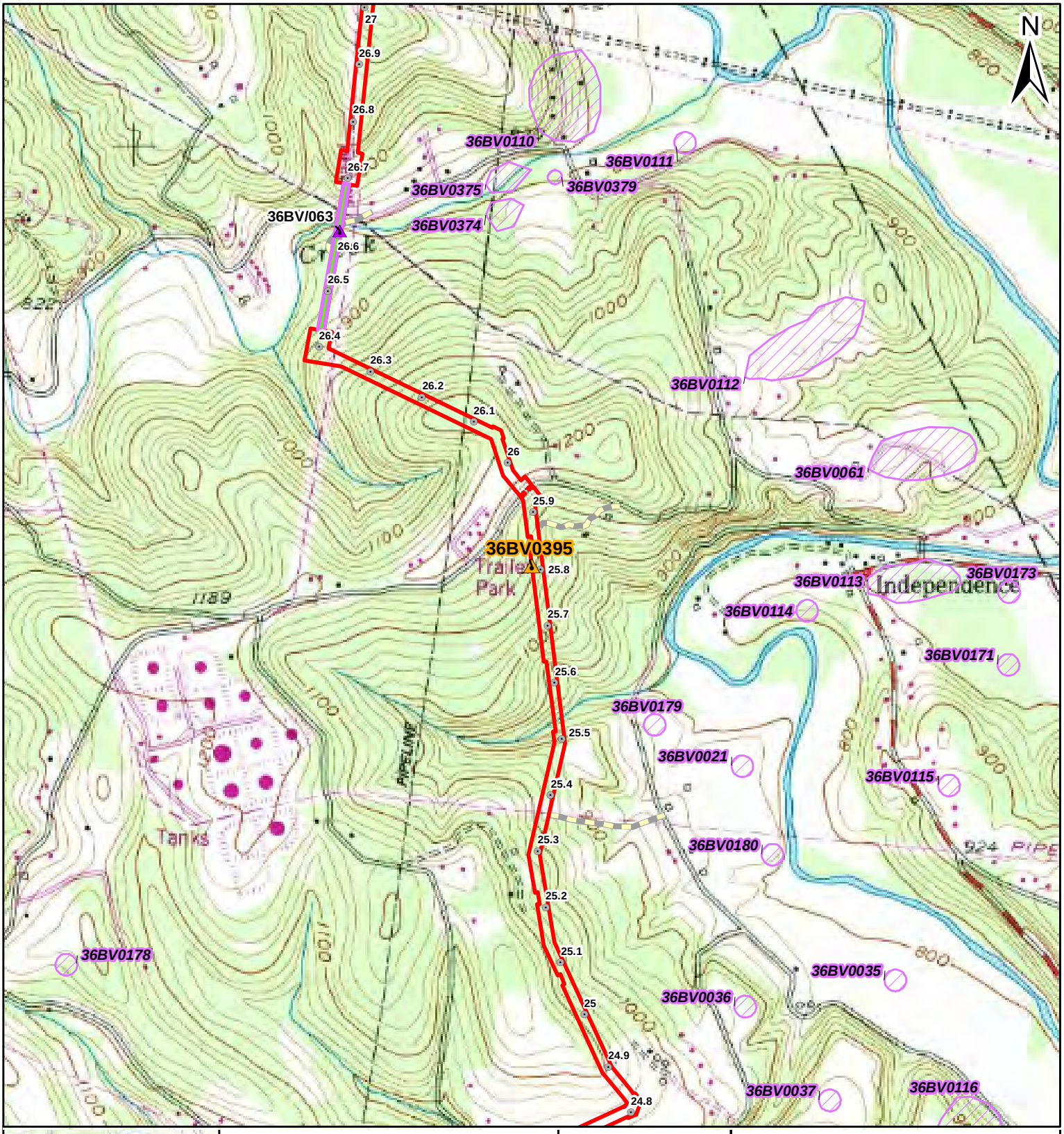
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0395
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.102

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0395
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

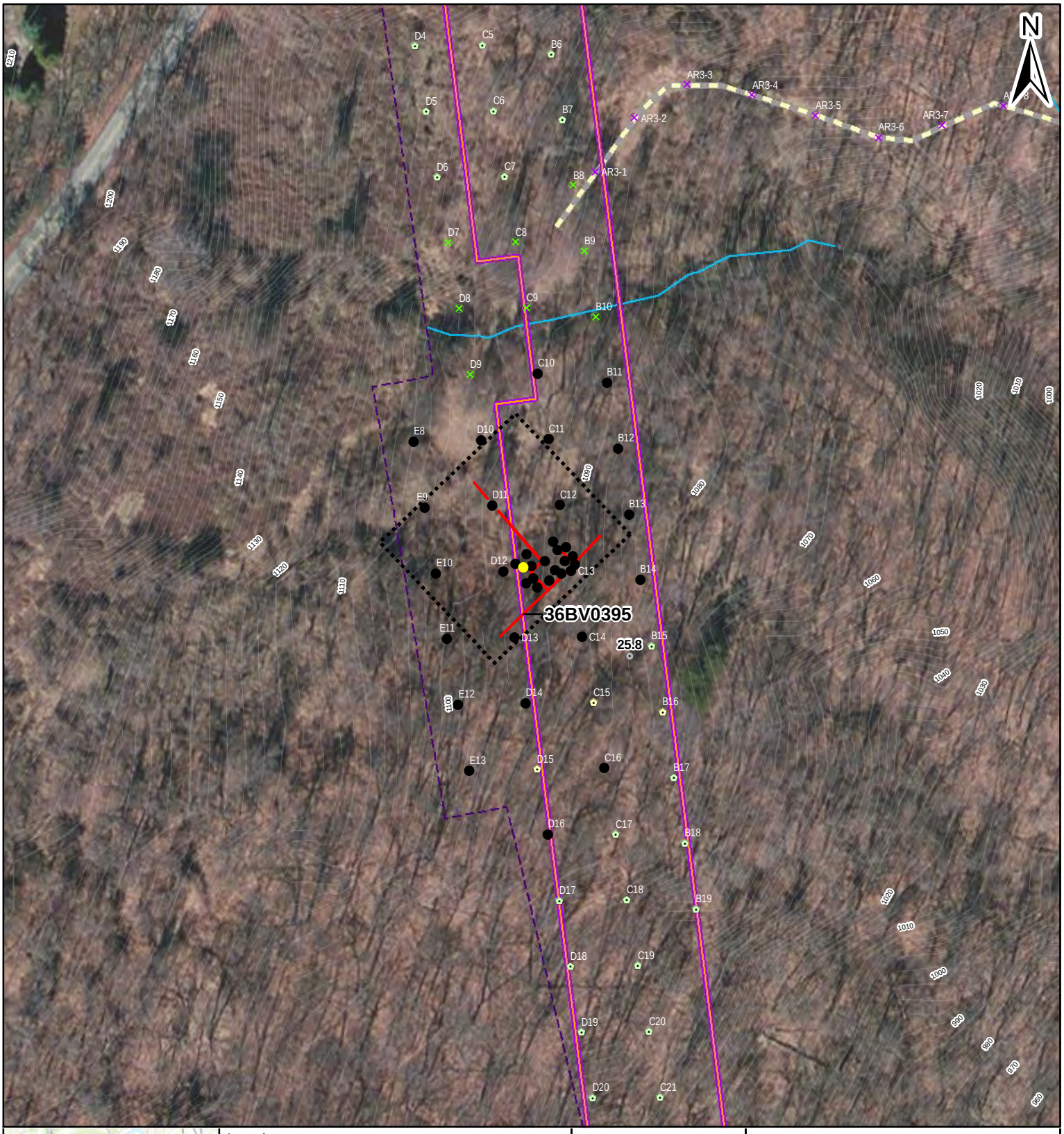
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 45 90

Figure 7.103

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

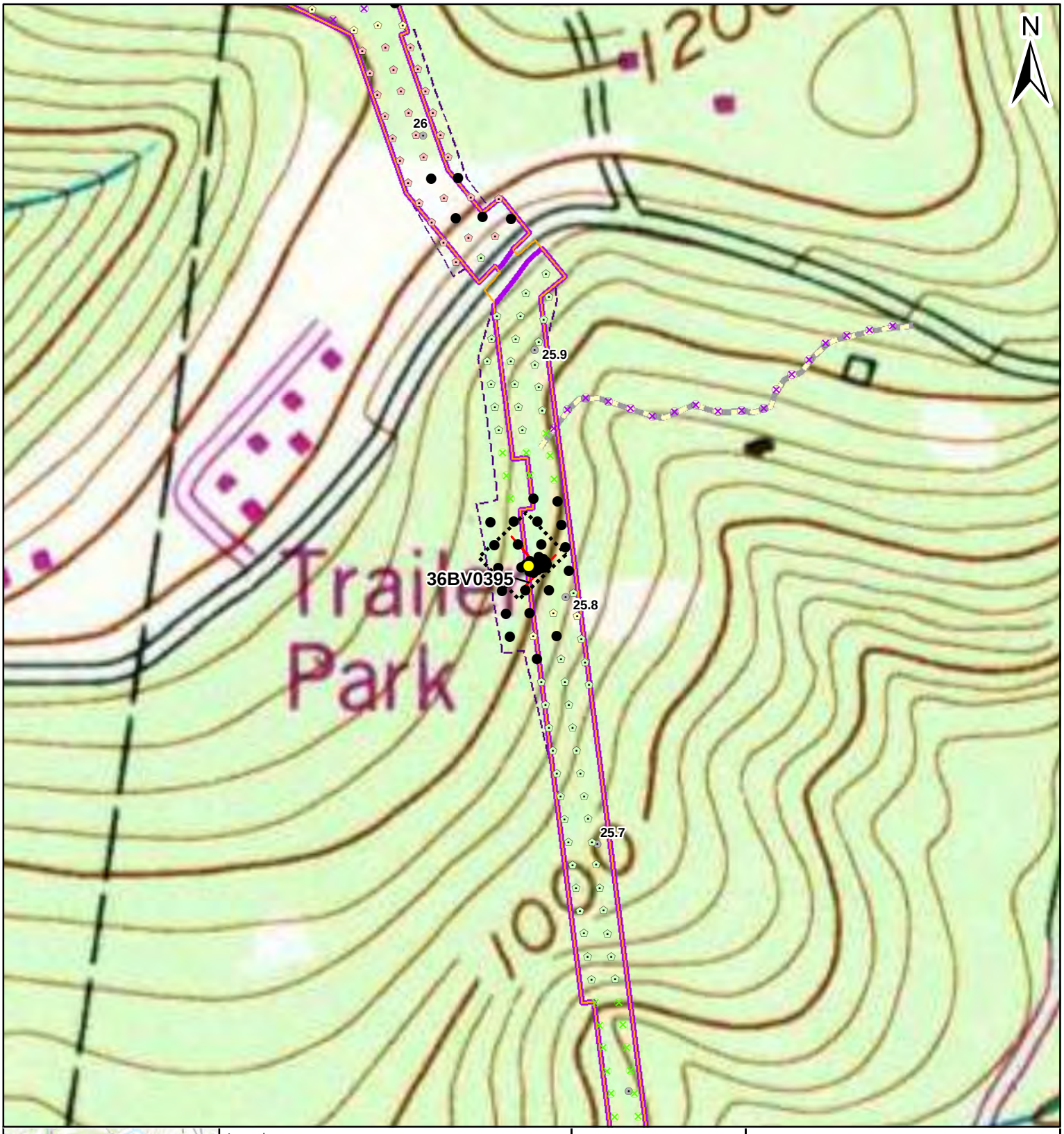
36BV0395
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.104

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0395
SITE MAP: MODERN TOPO

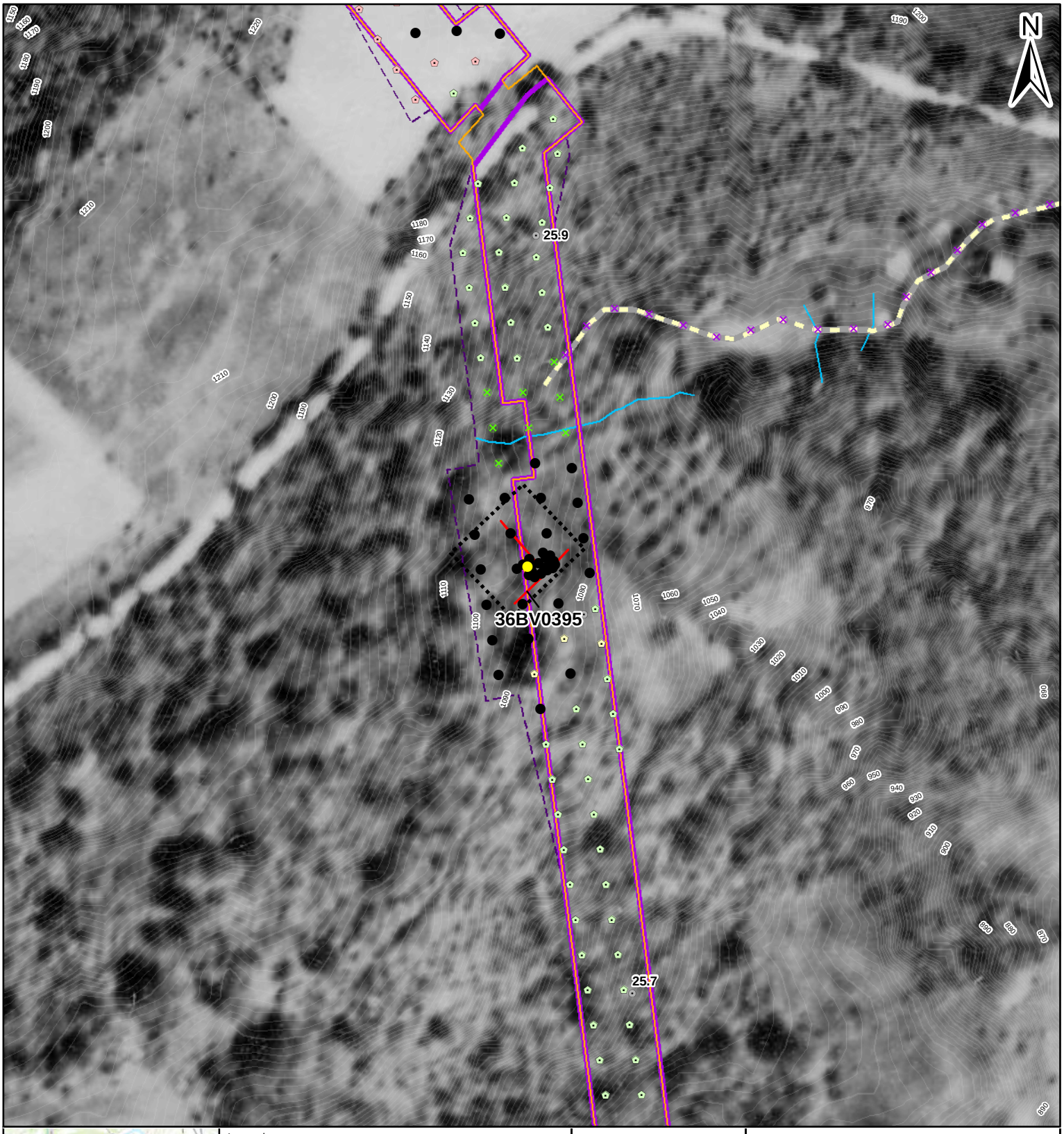
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.105

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0395
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #74, Photograph #40. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

Feet
0 90 180

Figure 7.106

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0395
SITE MAP: 1967 AERIAL

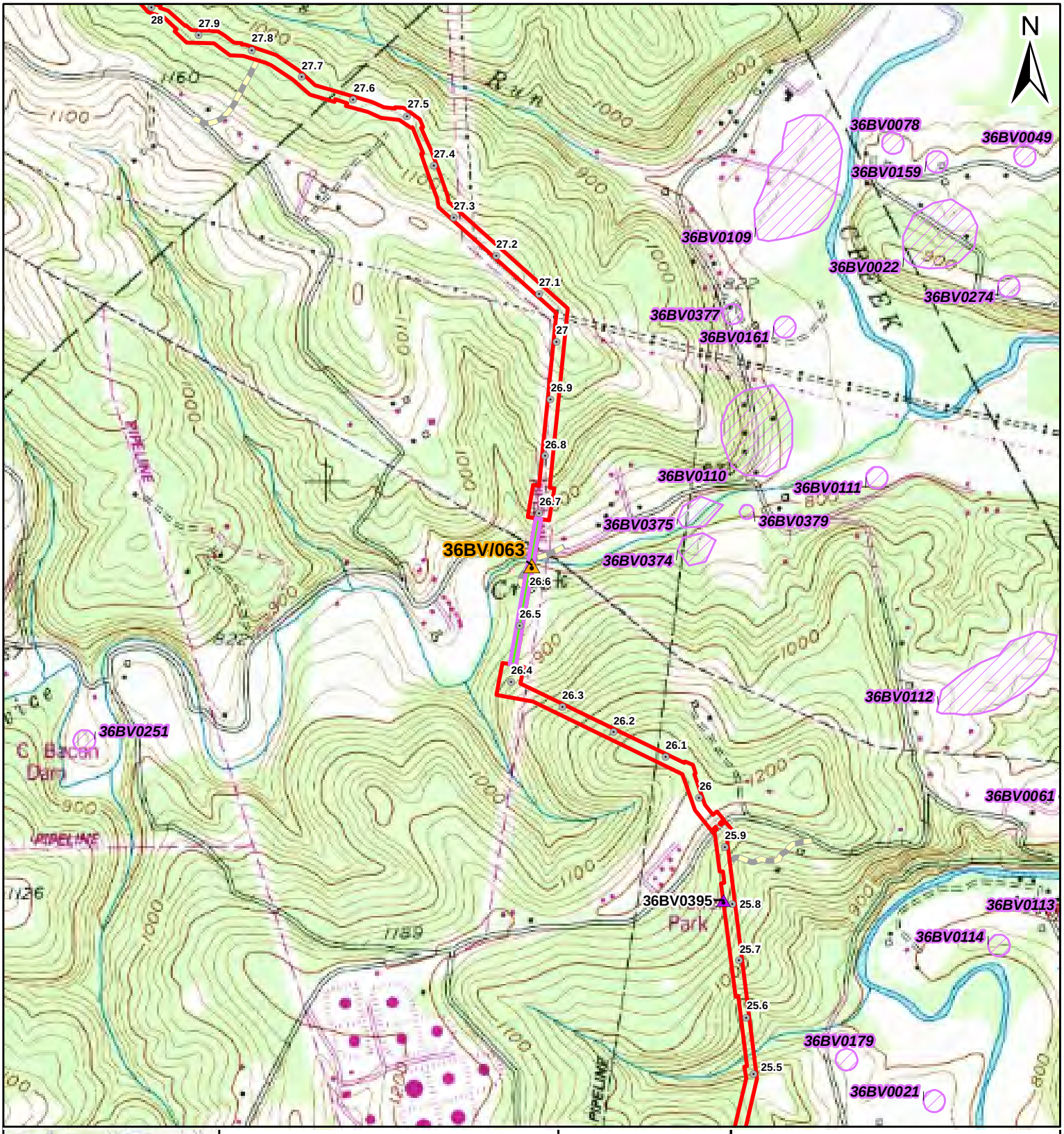
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #124. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV/063
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.107

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/063
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 45 90 Feet

Figure 7.108

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/063
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

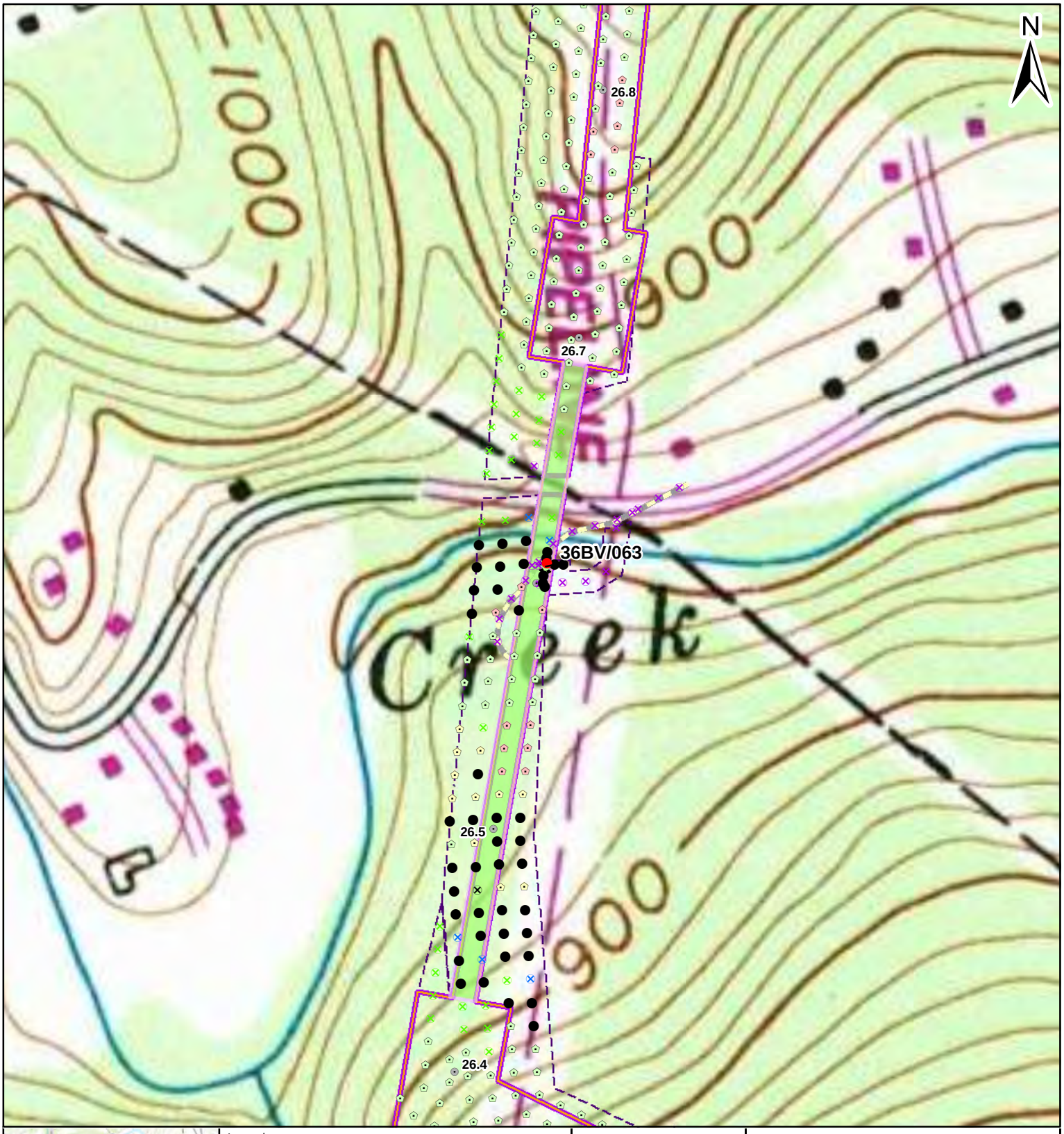
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.109

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/063
SITE MAP: MODERN TOPO

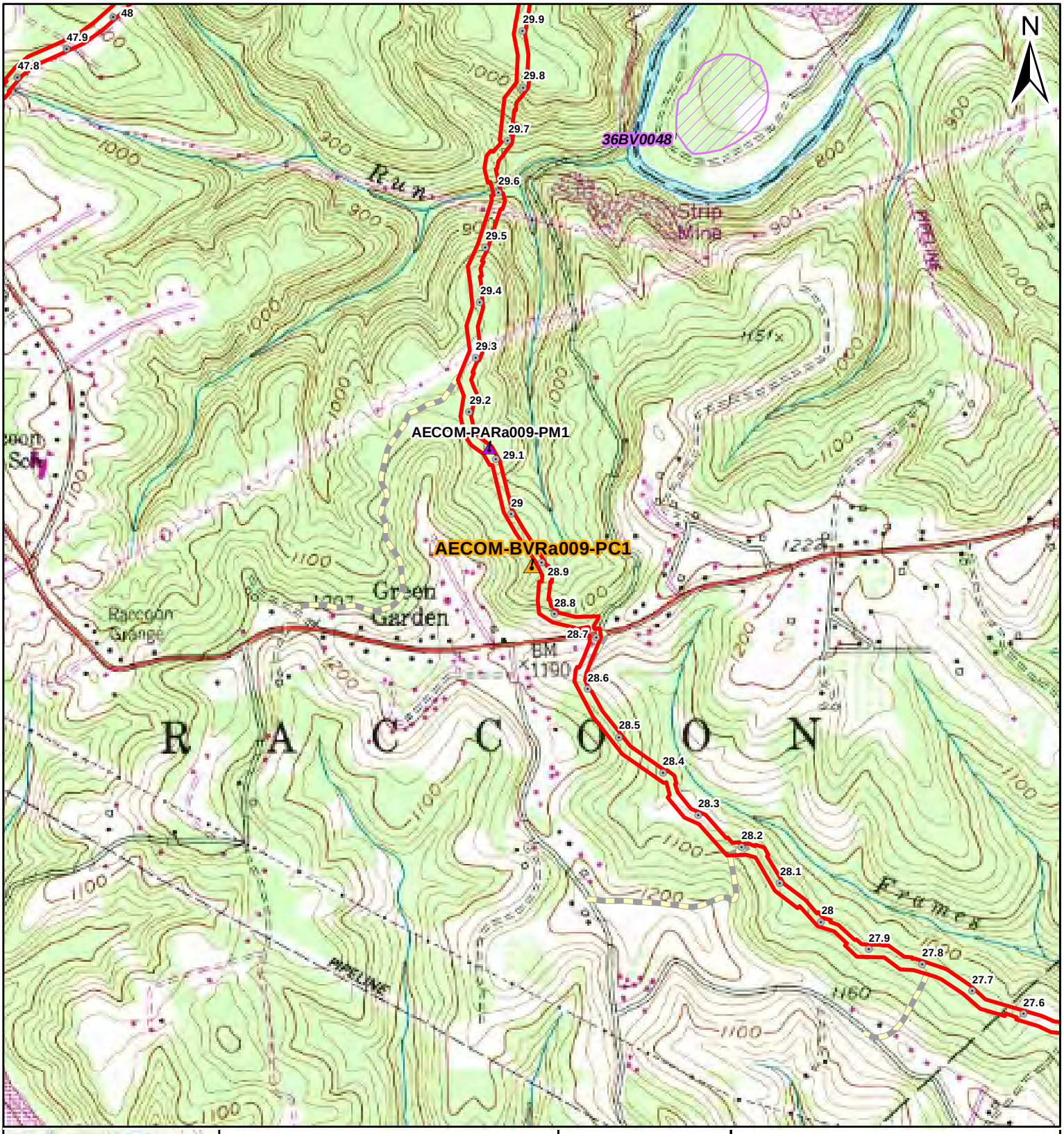
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

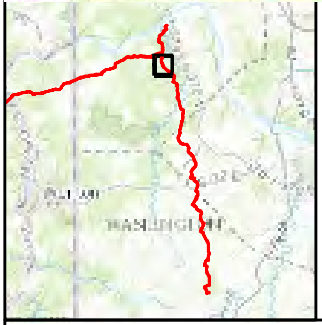
Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd





Legend

Archaeological Data
- AECOM-BVRa009-PC1
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

Figure 7.110

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PC1
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

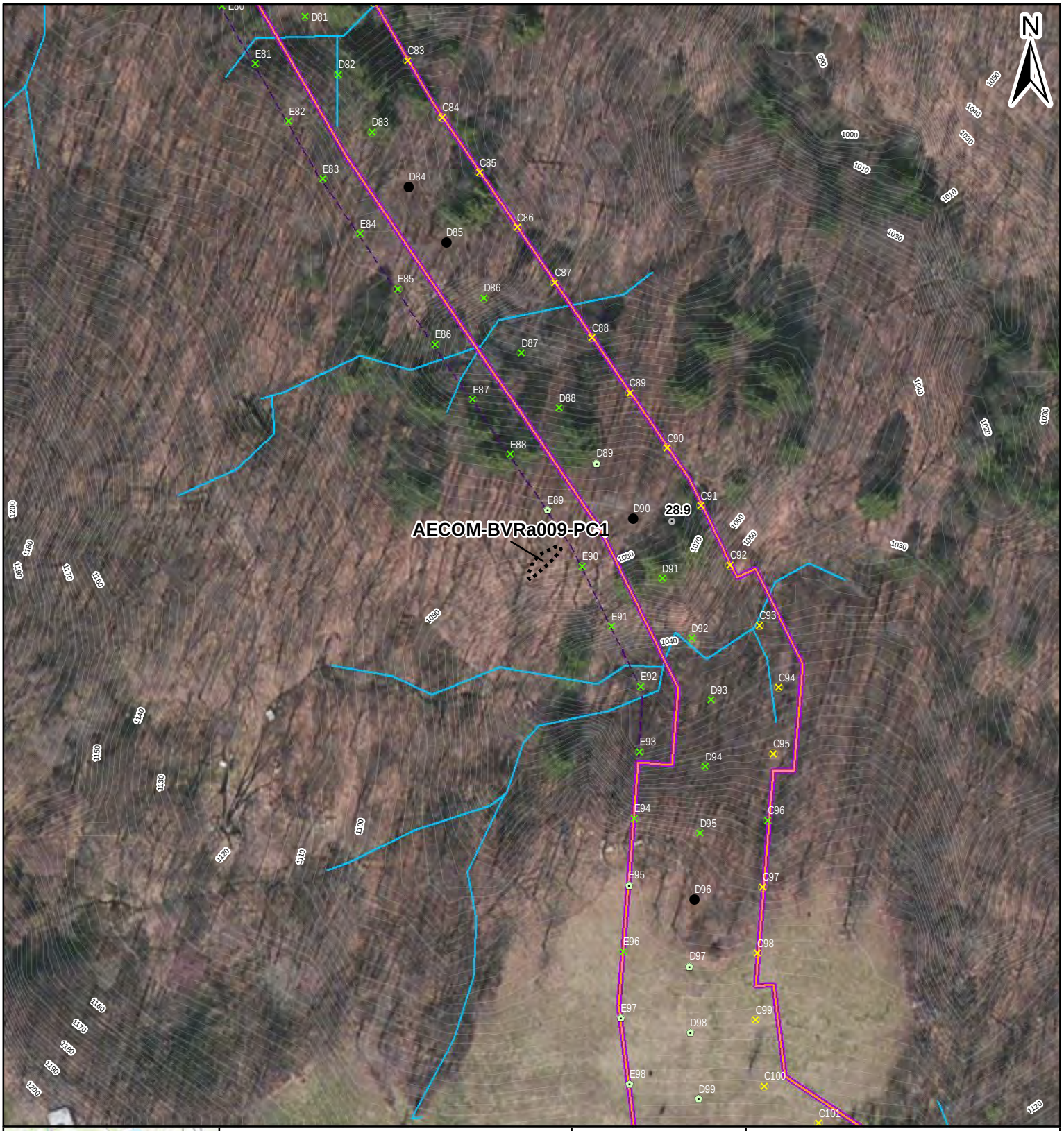
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 45 90 Feet

Figure 7.111

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PC1
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

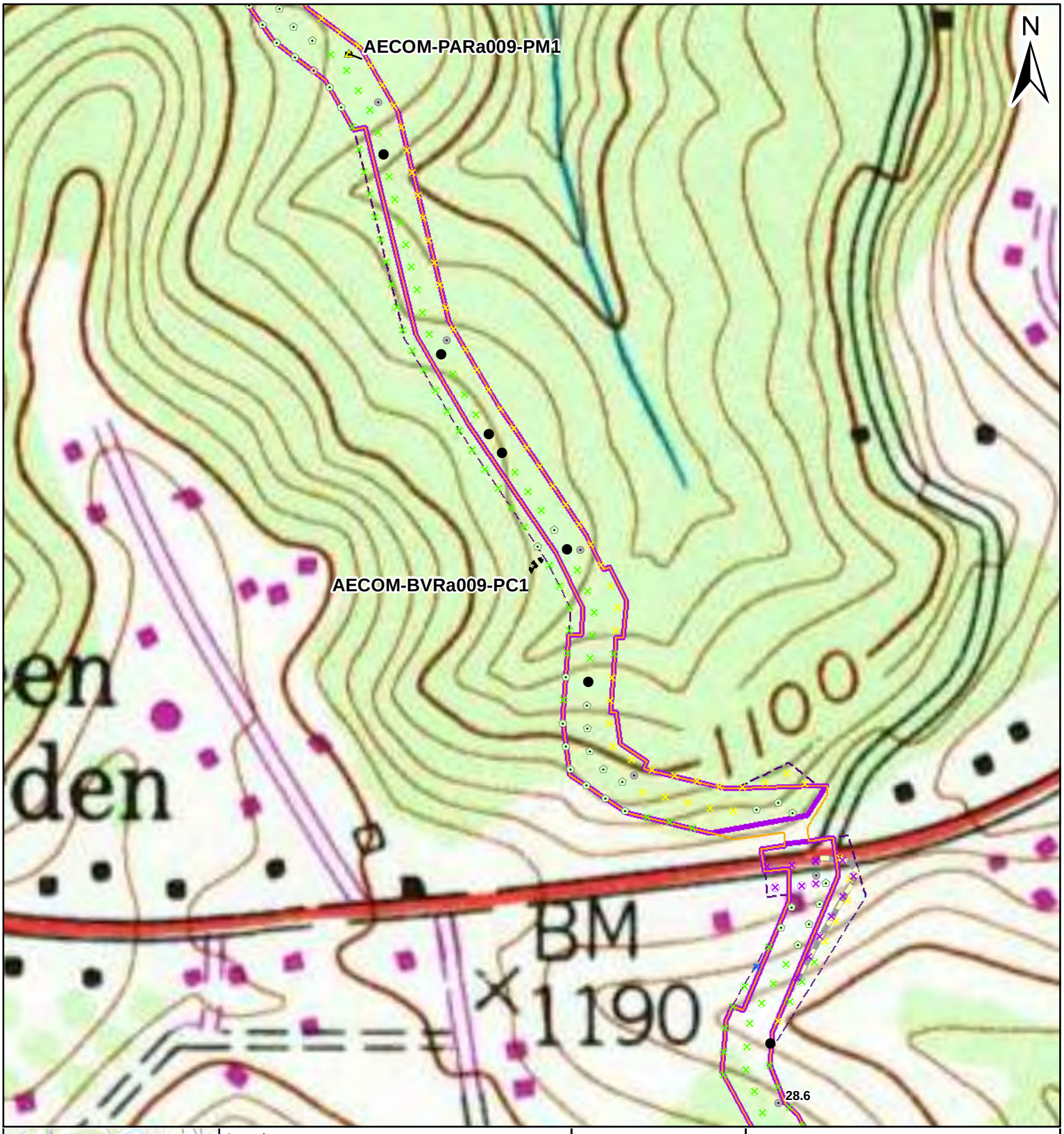
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.112

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PC1
SITE MAP: MODERN TOPO

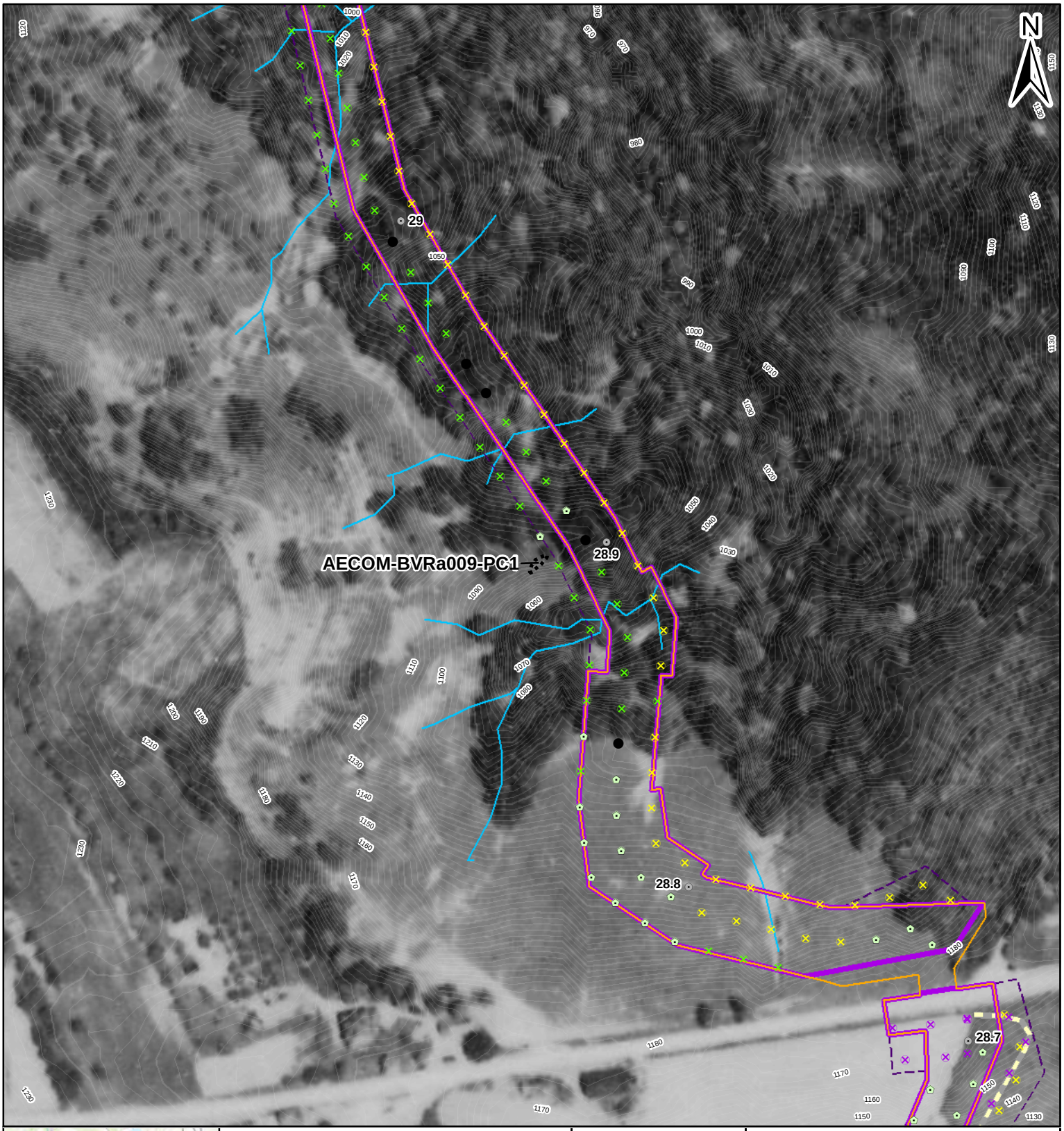
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Figure 7.113

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PC1
SITE MAP: 1939 AERIAL

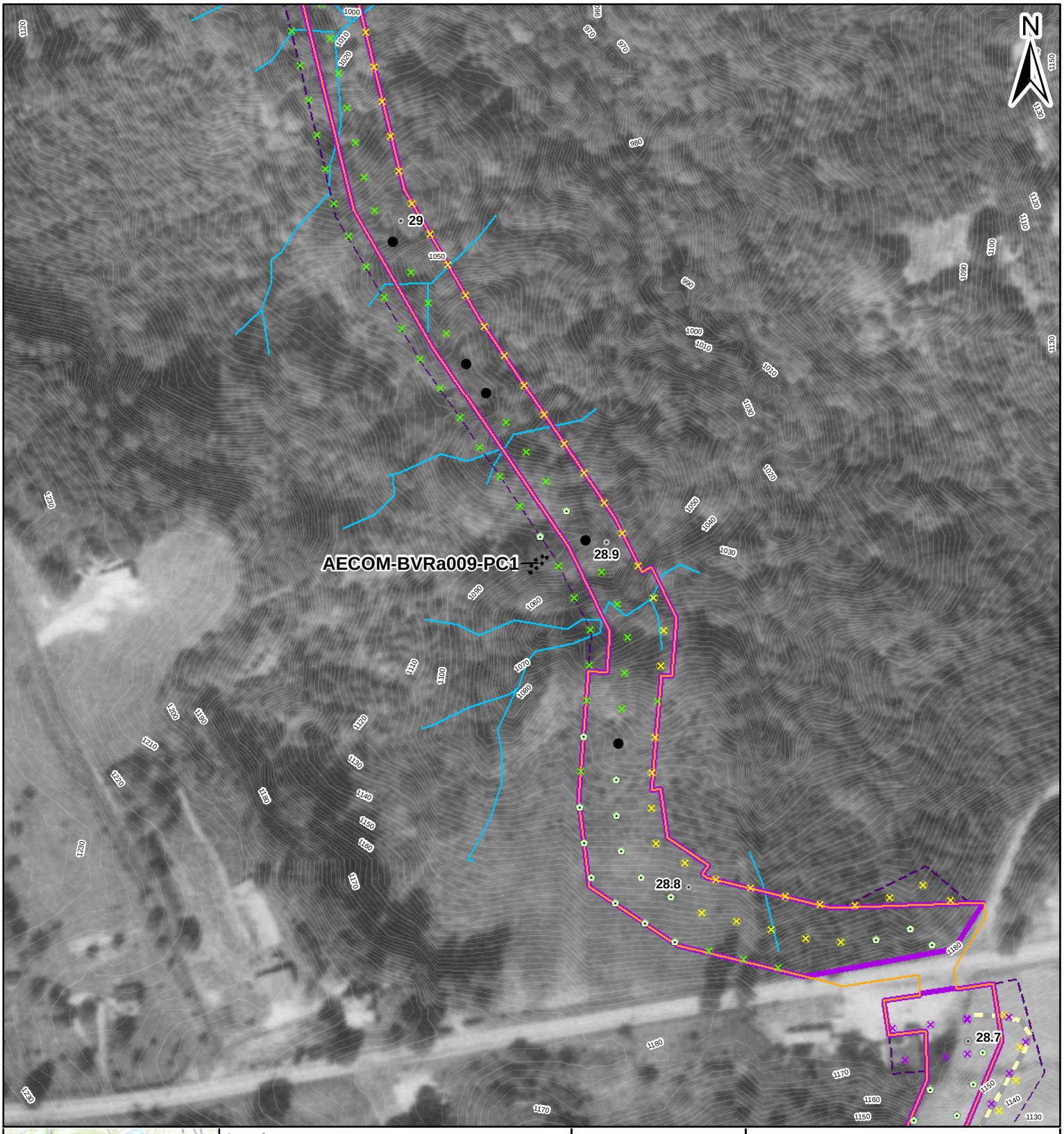
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #88, Photograph #27. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream

0 90 180 Feet

Reference:
Roll #2hh, Photograph #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

Figure 7.114

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

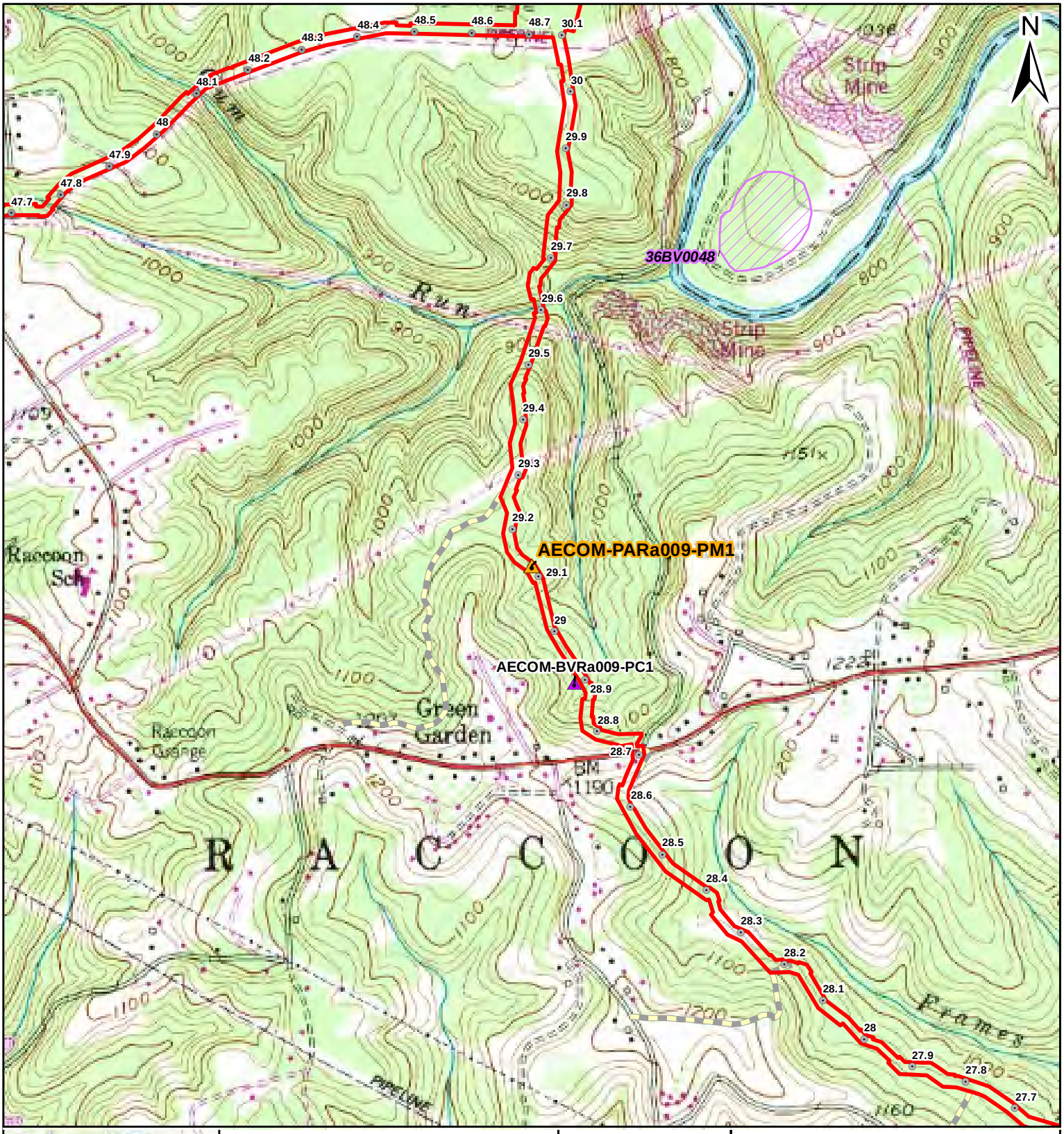
AECOM-BVRa009-PC1
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- AECOM-BVRa009-PM1
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.115

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

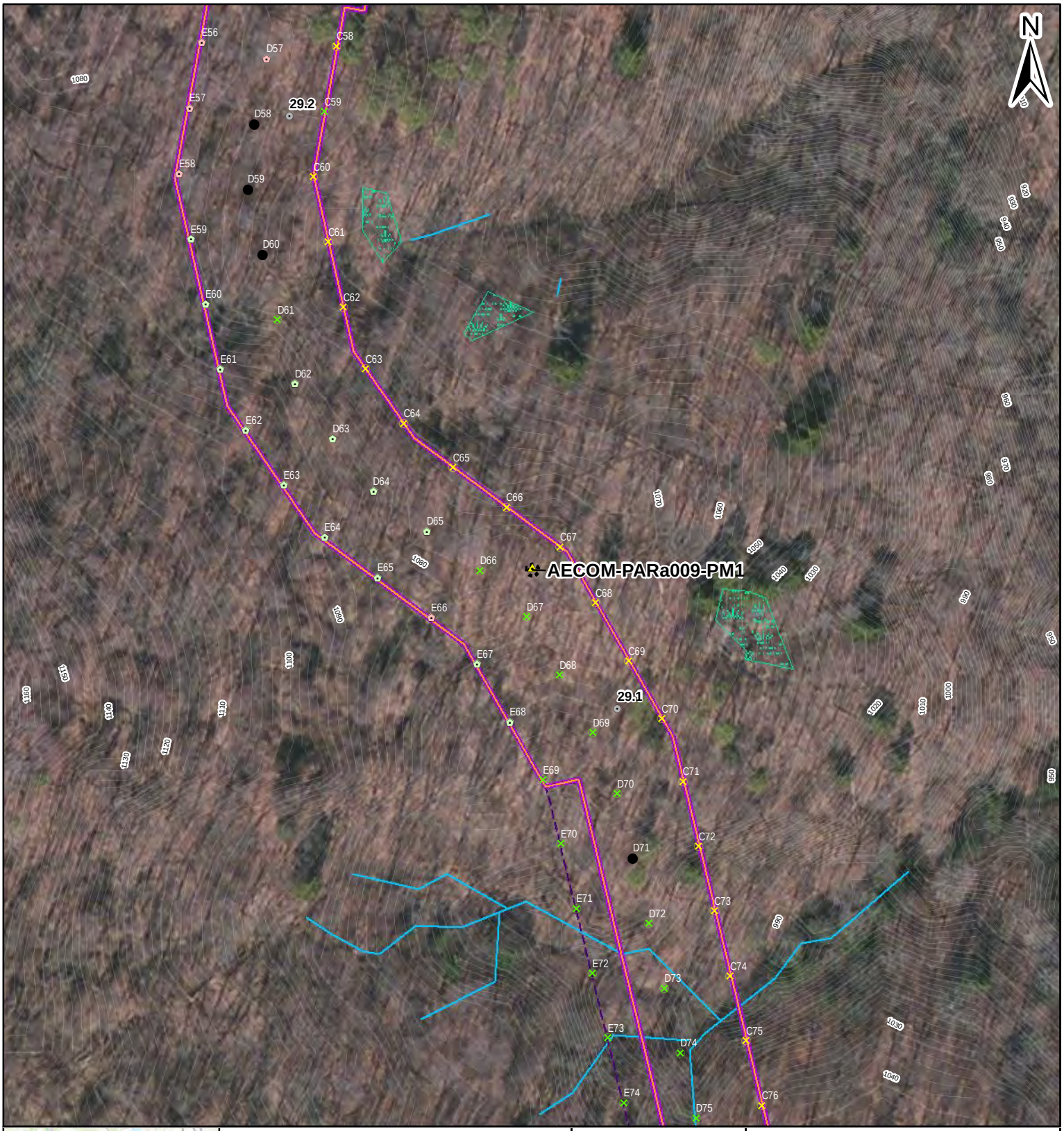
AECOM-BVRa009-PM1
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- Headstone

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.116

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PM1
SITE MAP: MODERN AERIAL

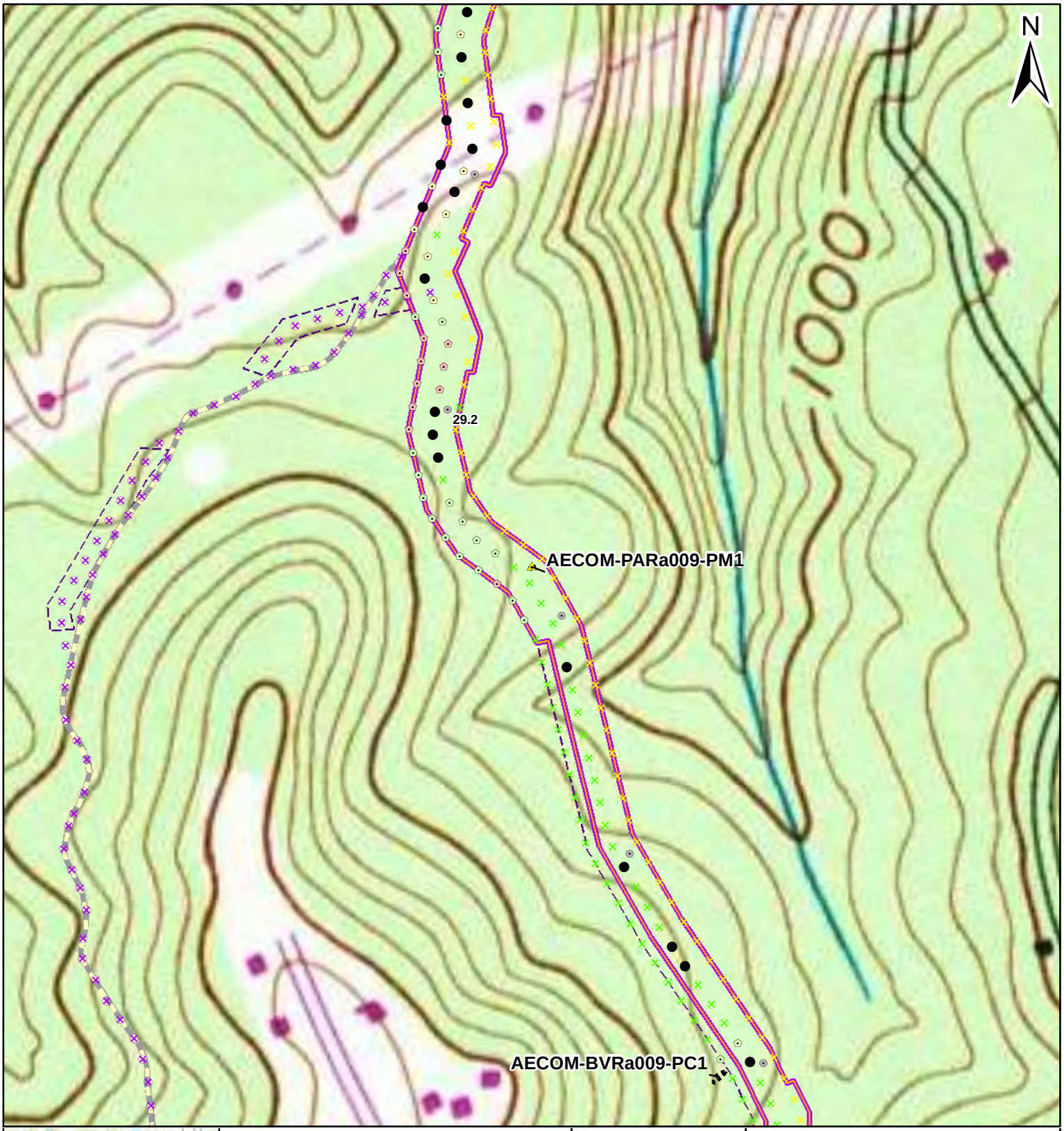
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- Headstone

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.117

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PM1
SITE MAP: MODERN TOPO

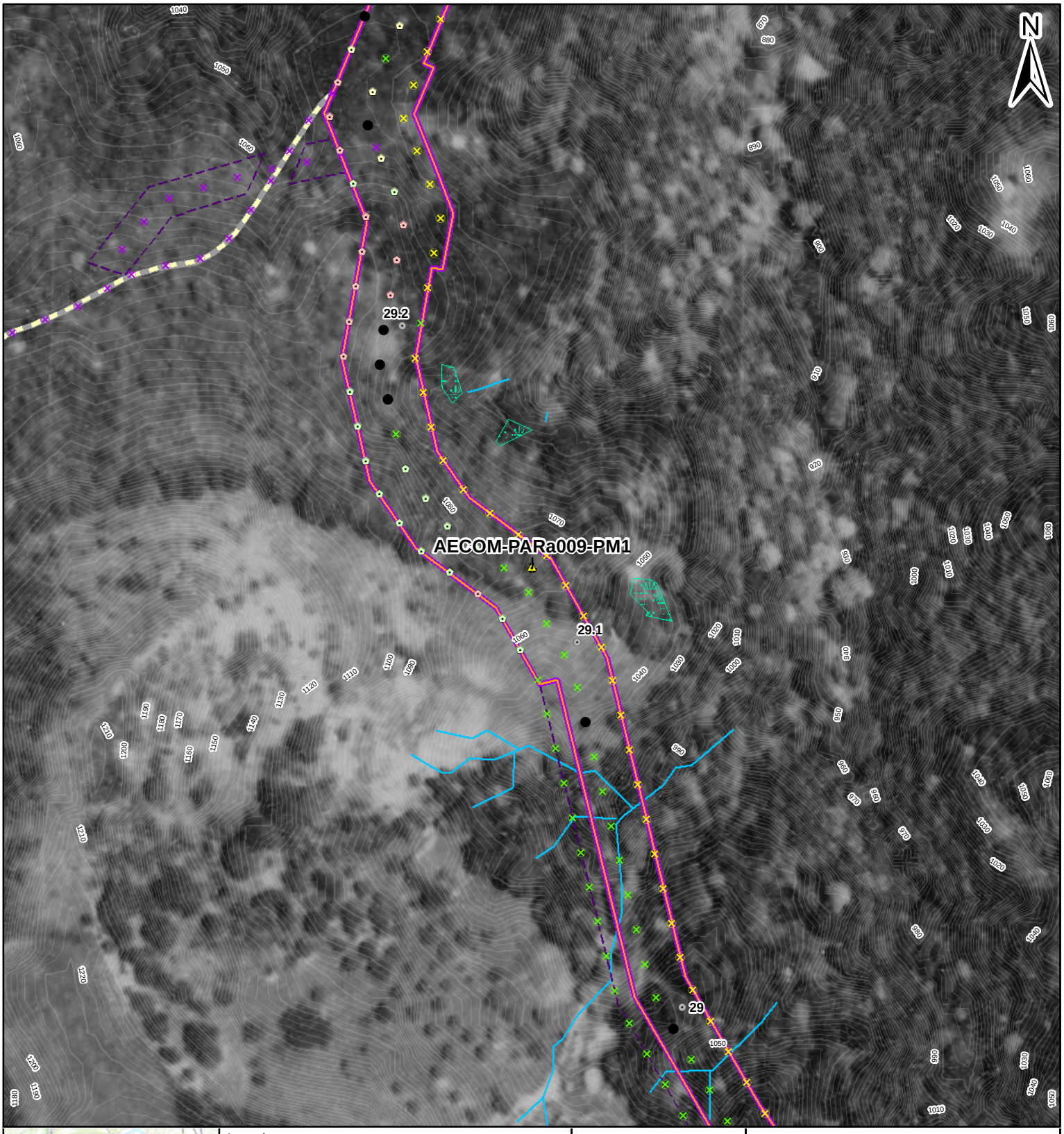
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1990 Aliquippa, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- Headstone

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.118

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PM1
SITE MAP: 1939 AERIAL

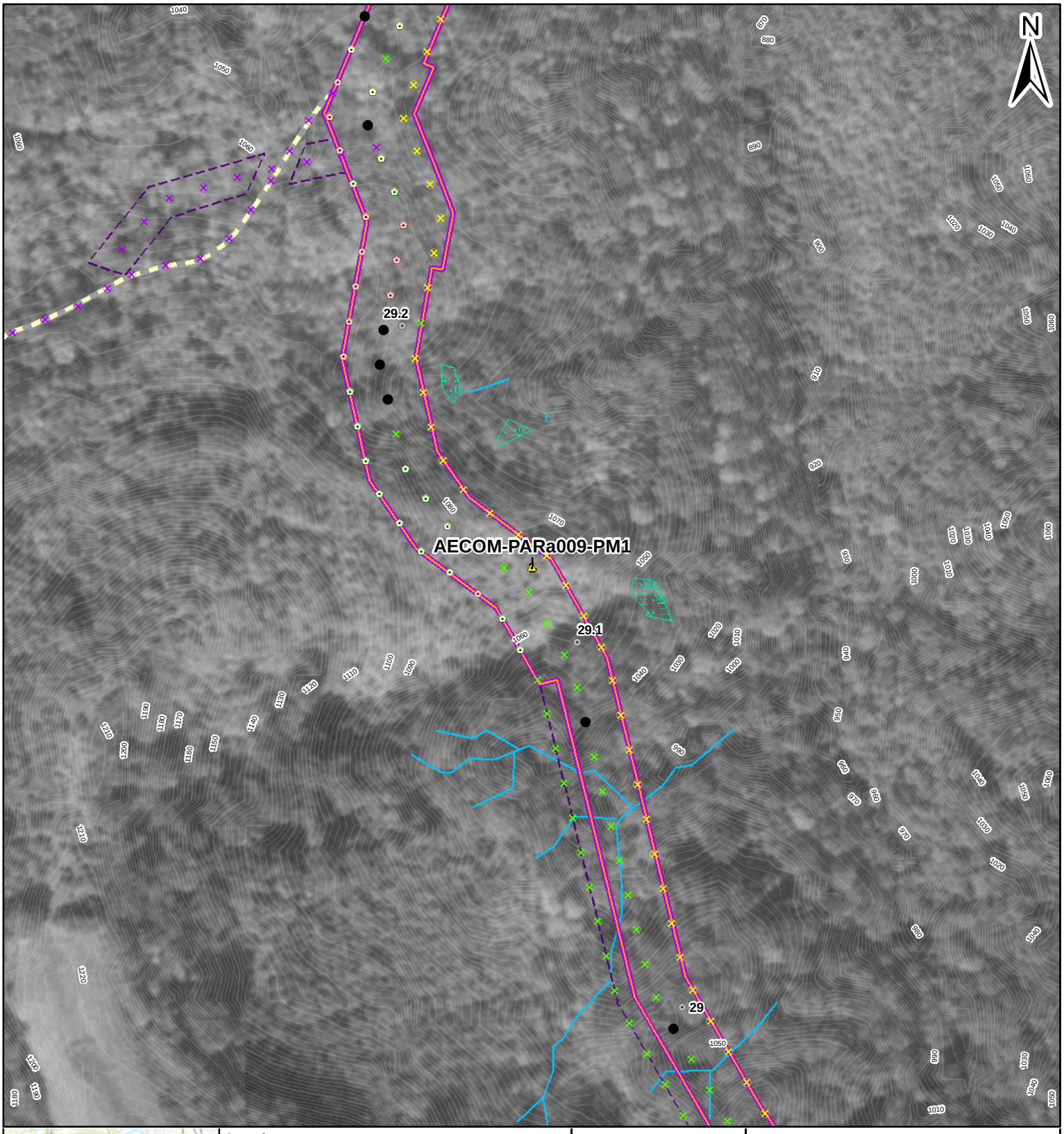
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #88, Photograph #27. May 31, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- Headstone

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.119

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

AECOM-BVRa009-PM1
SITE MAP: 1967 AERIAL

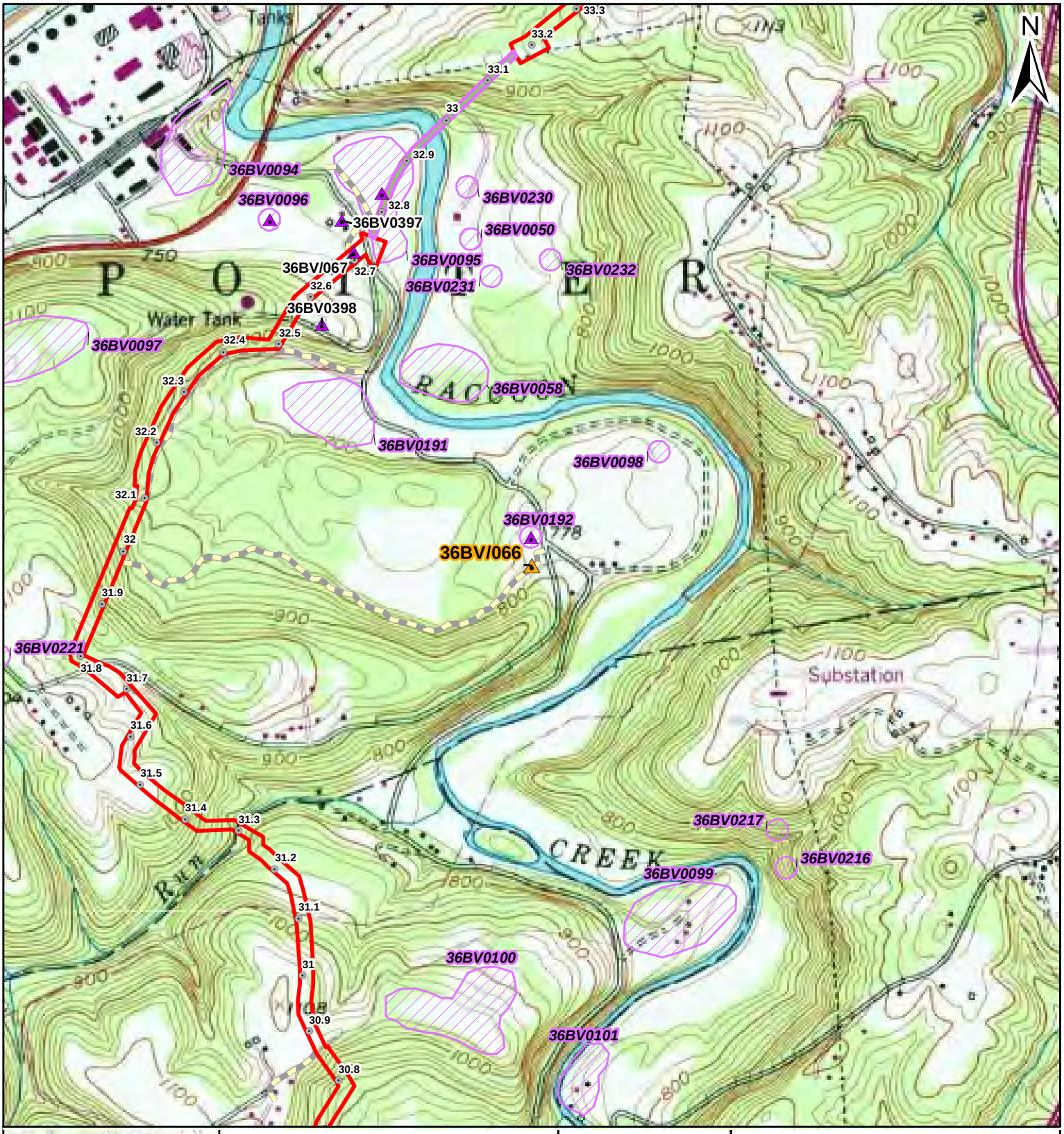
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #194. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV/066
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.120

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/066
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

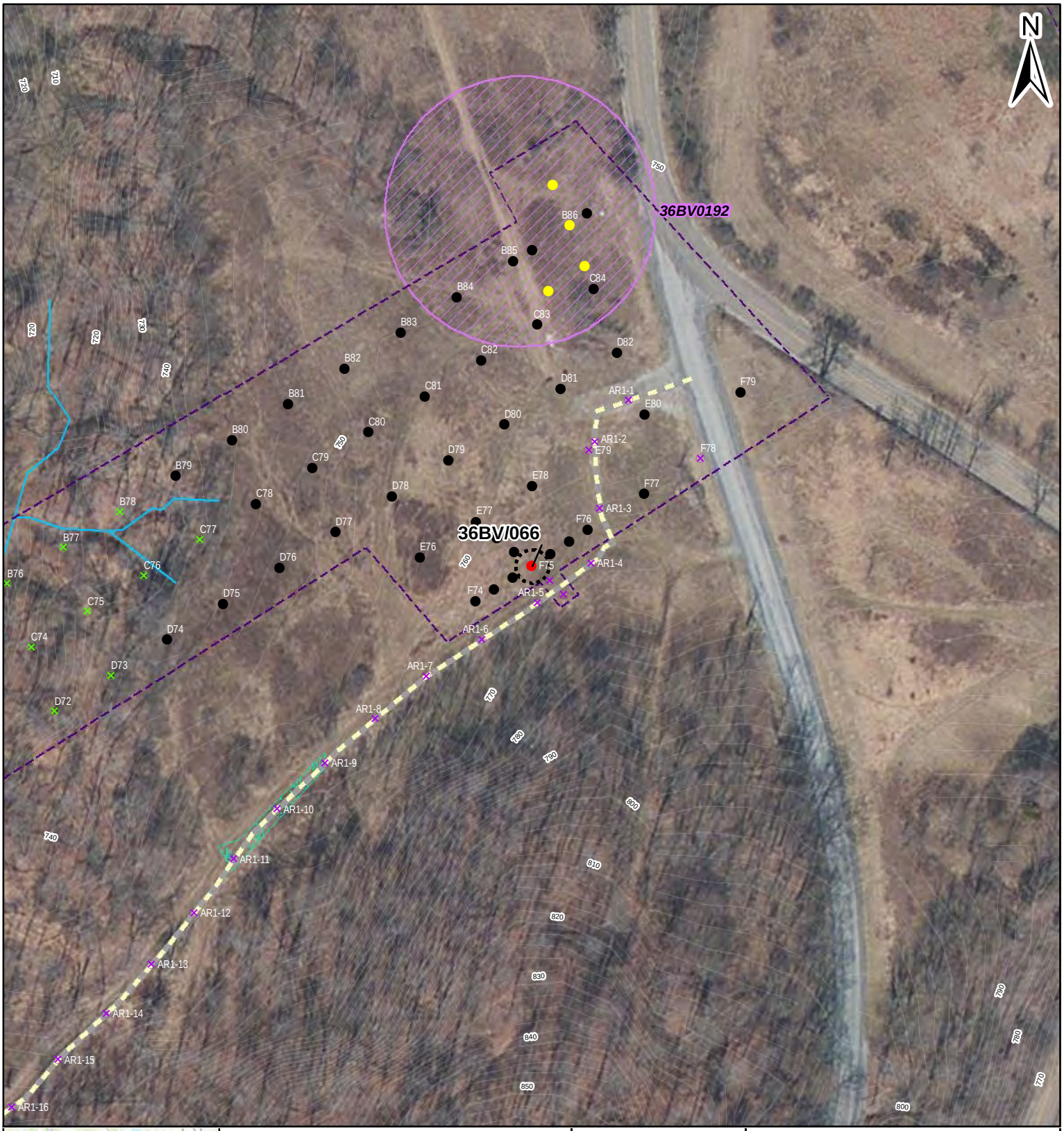
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 45 90 Feet

Figure 7.121

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/066
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.122

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/066
SITE MAP: MODERN TOPO

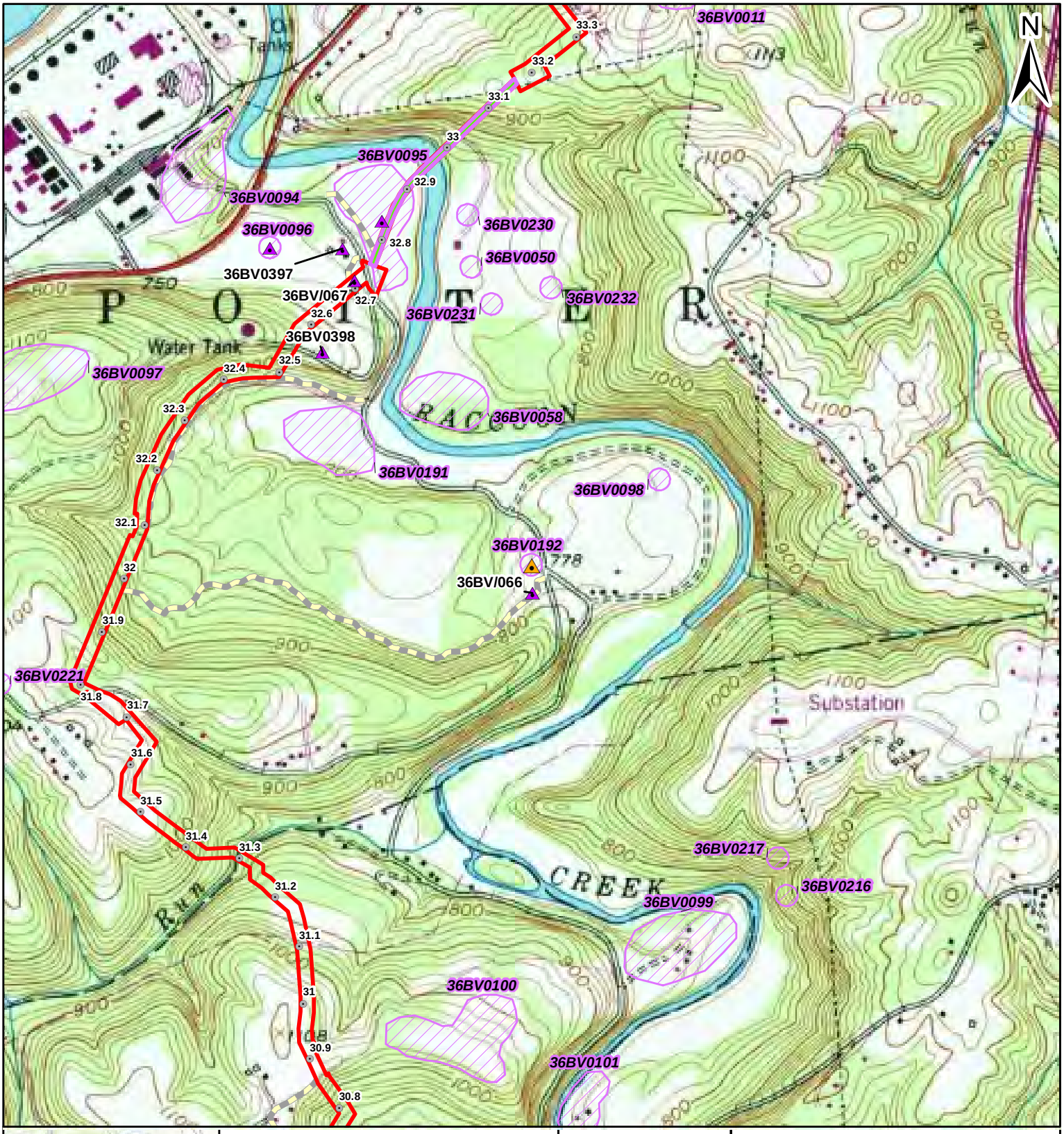
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0192
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.123

Mowrey Road
36BV0192
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

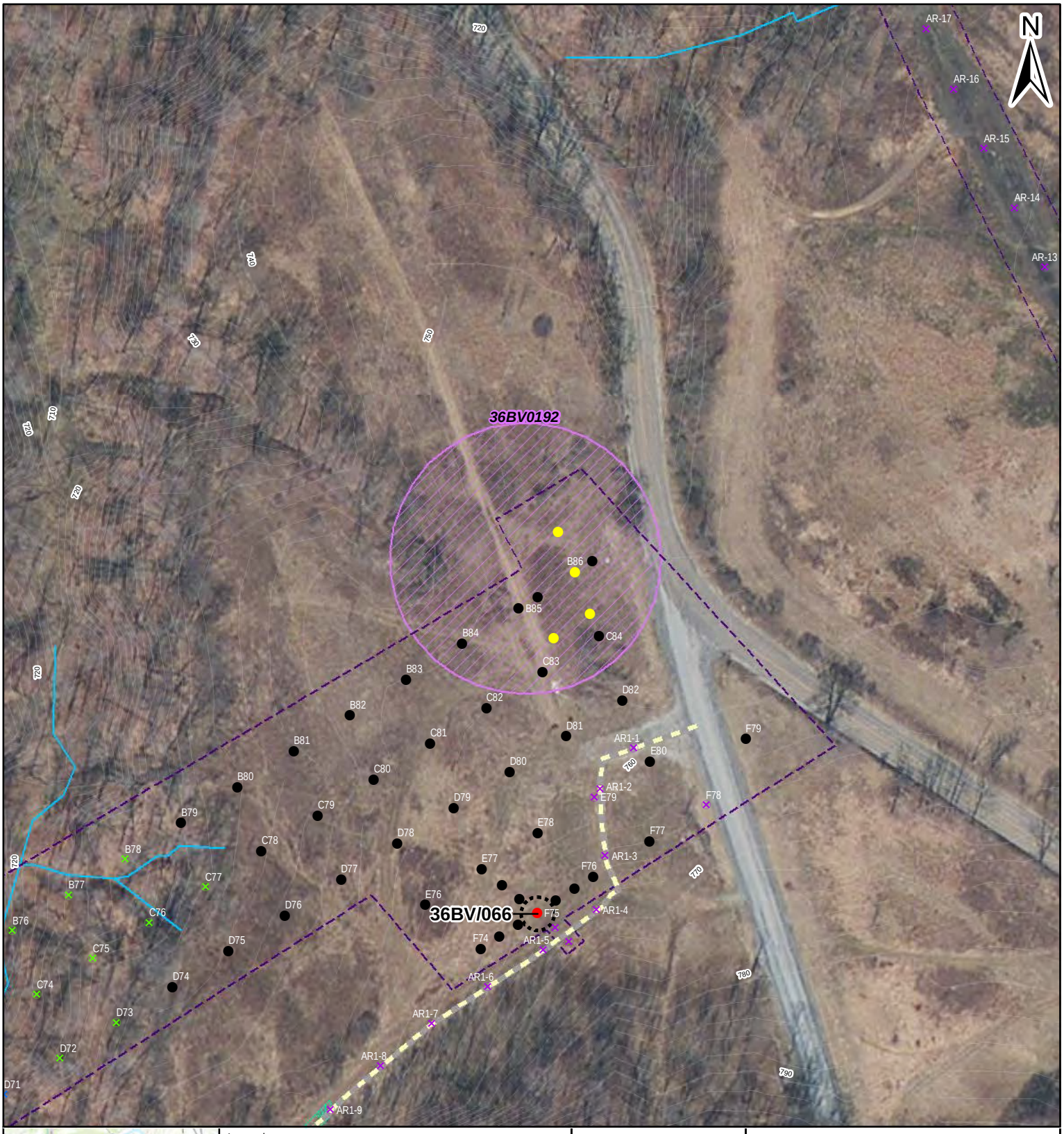
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 45 90 Feet

Figure 7.124

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Mowrey Road
36BV0192
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.125

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Mowrey Road
36BV0192
SITE MAP: MODERN TOPO

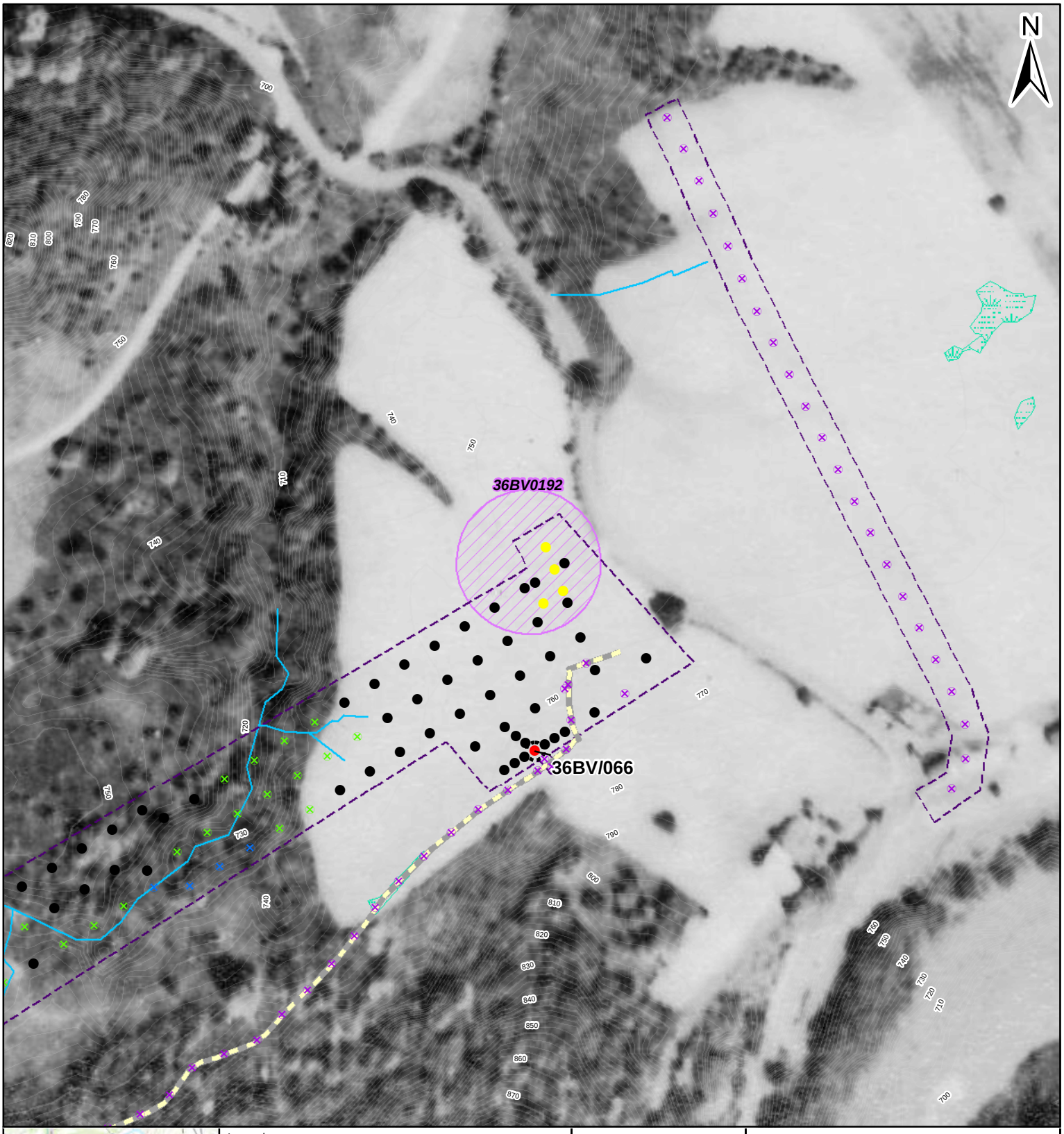
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.126

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Mowrey Road
36BV0192
SITE MAP: 1939 AERIAL

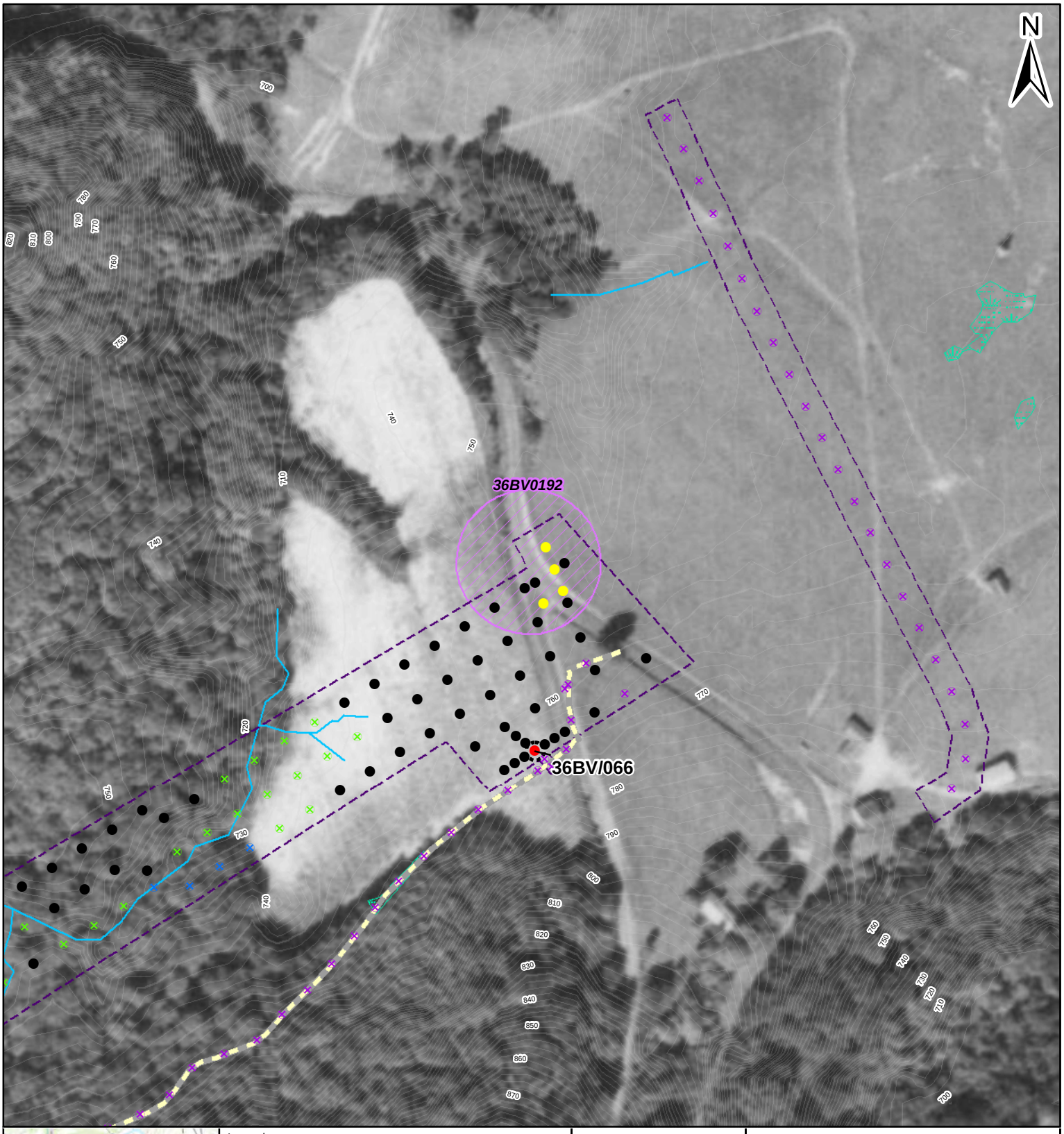
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #74, Photograph #34. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.127

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Mowrey Road
36BV0192
SITE MAP: 1967 AERIAL

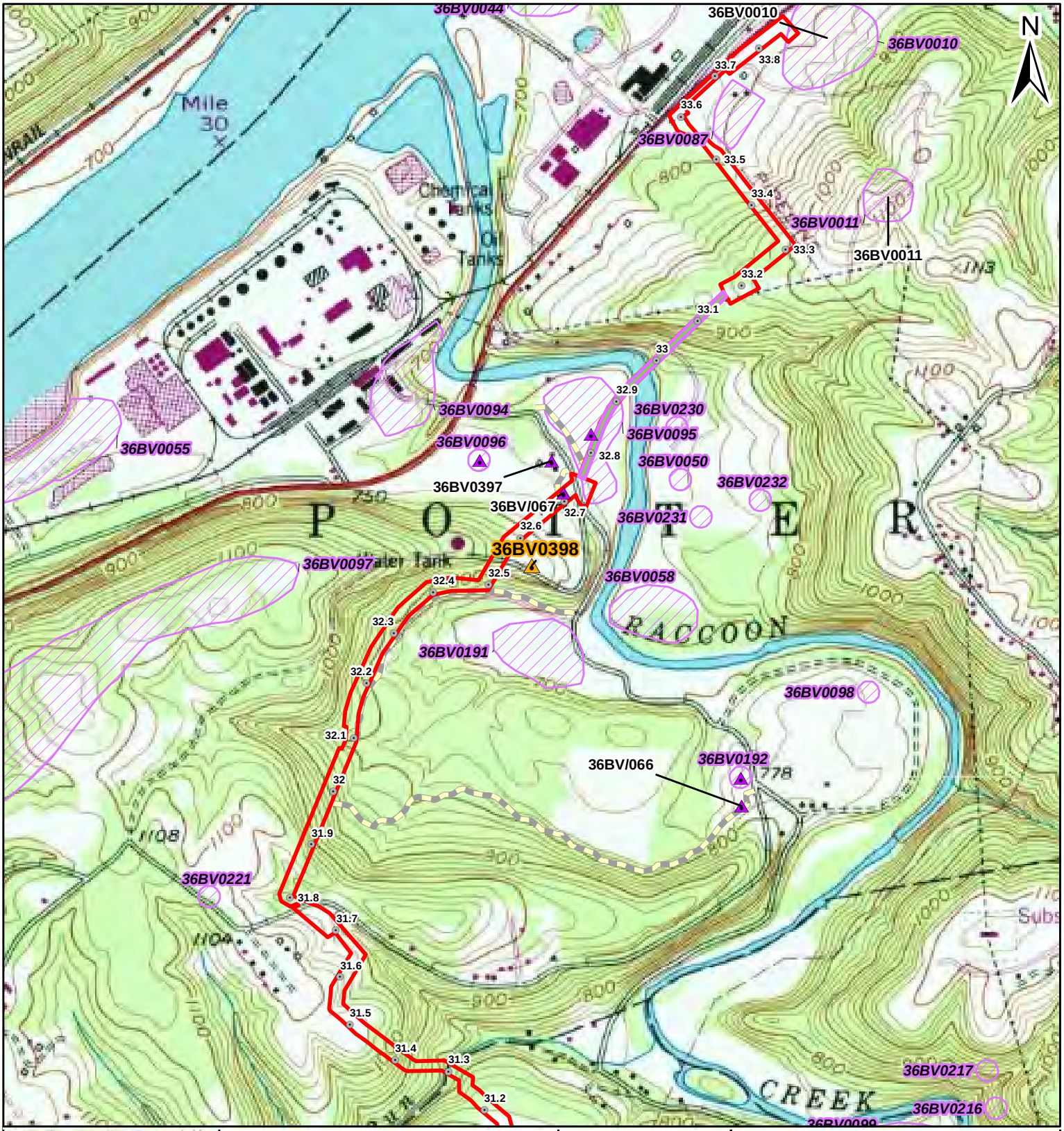
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #192. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV0398
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.128

Raccoon Ridge
36BV0398
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

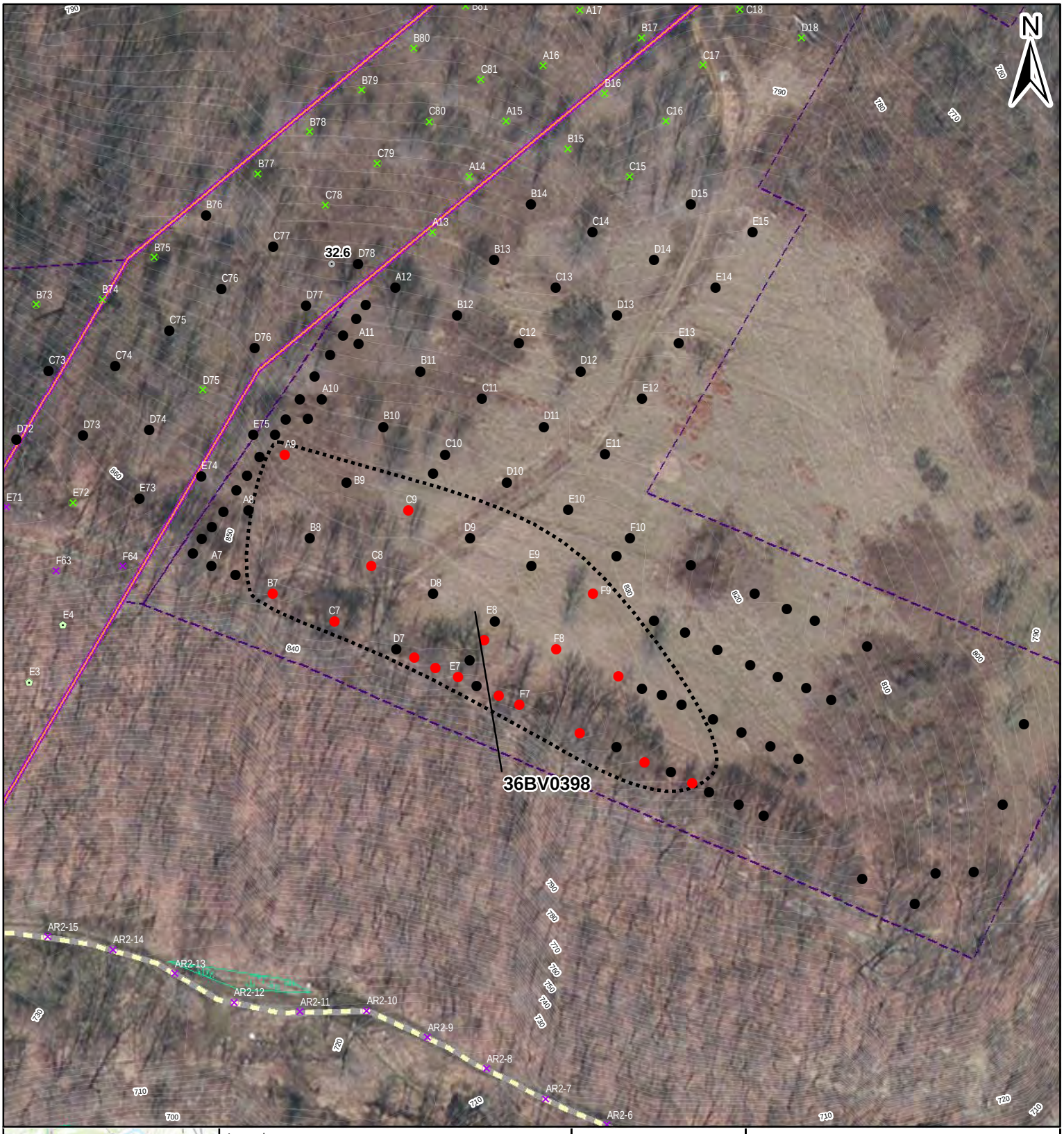
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.129

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

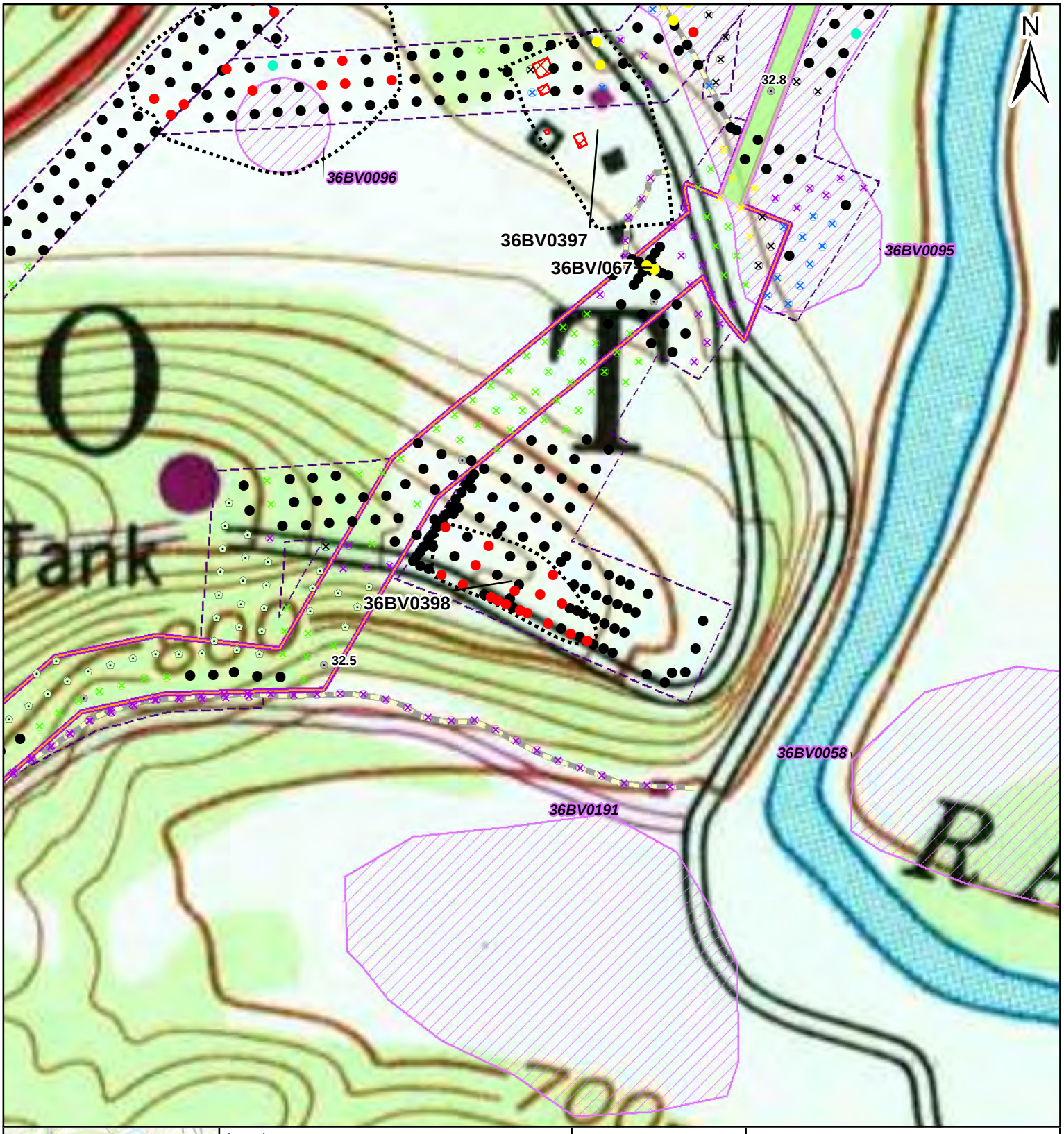
Raccoon Ridge
36BV0398
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.130

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Raccoon Ridge
36BV0398
SITE MAP: MODERN TOPO

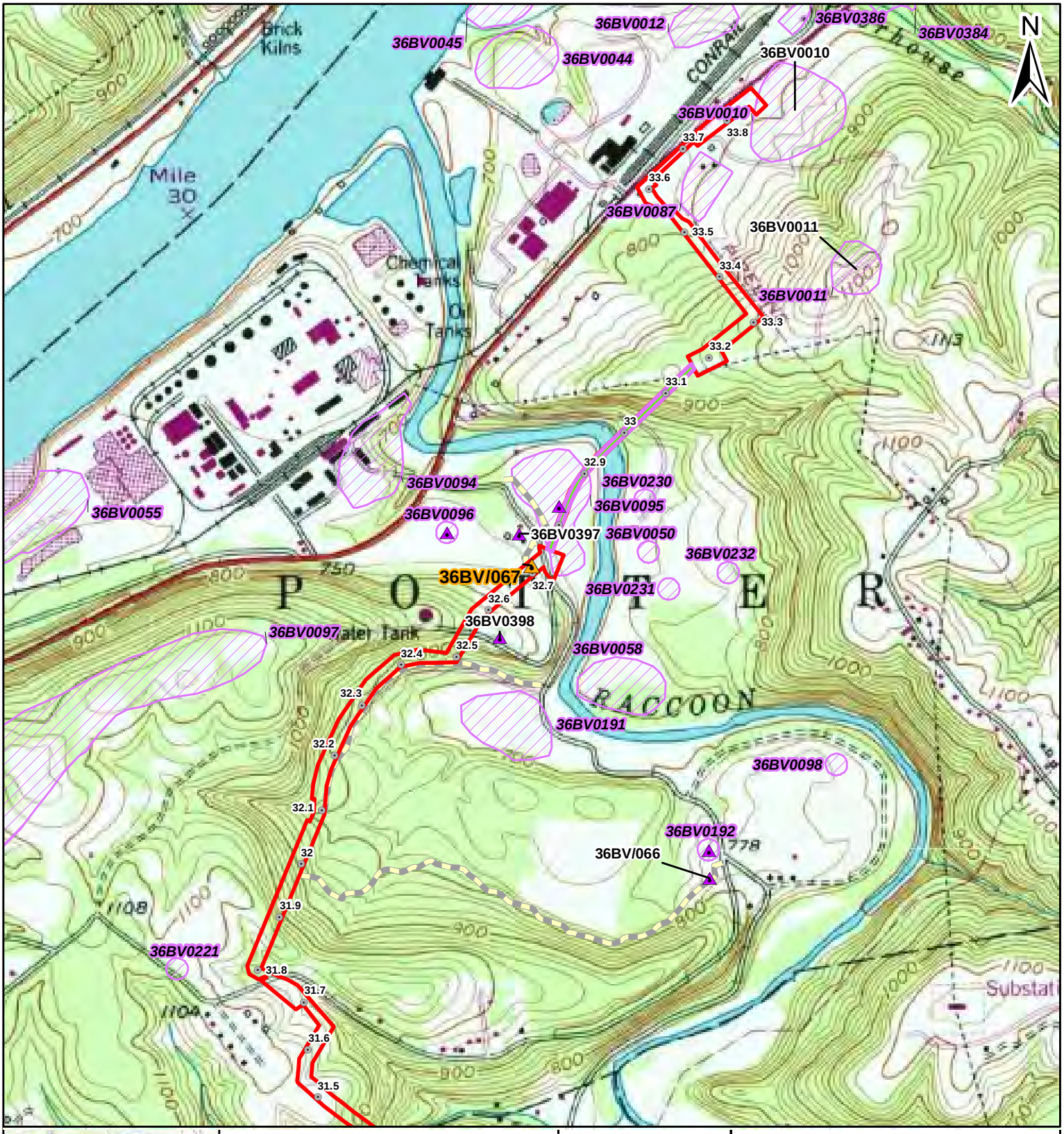
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV/067
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.131

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/067
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

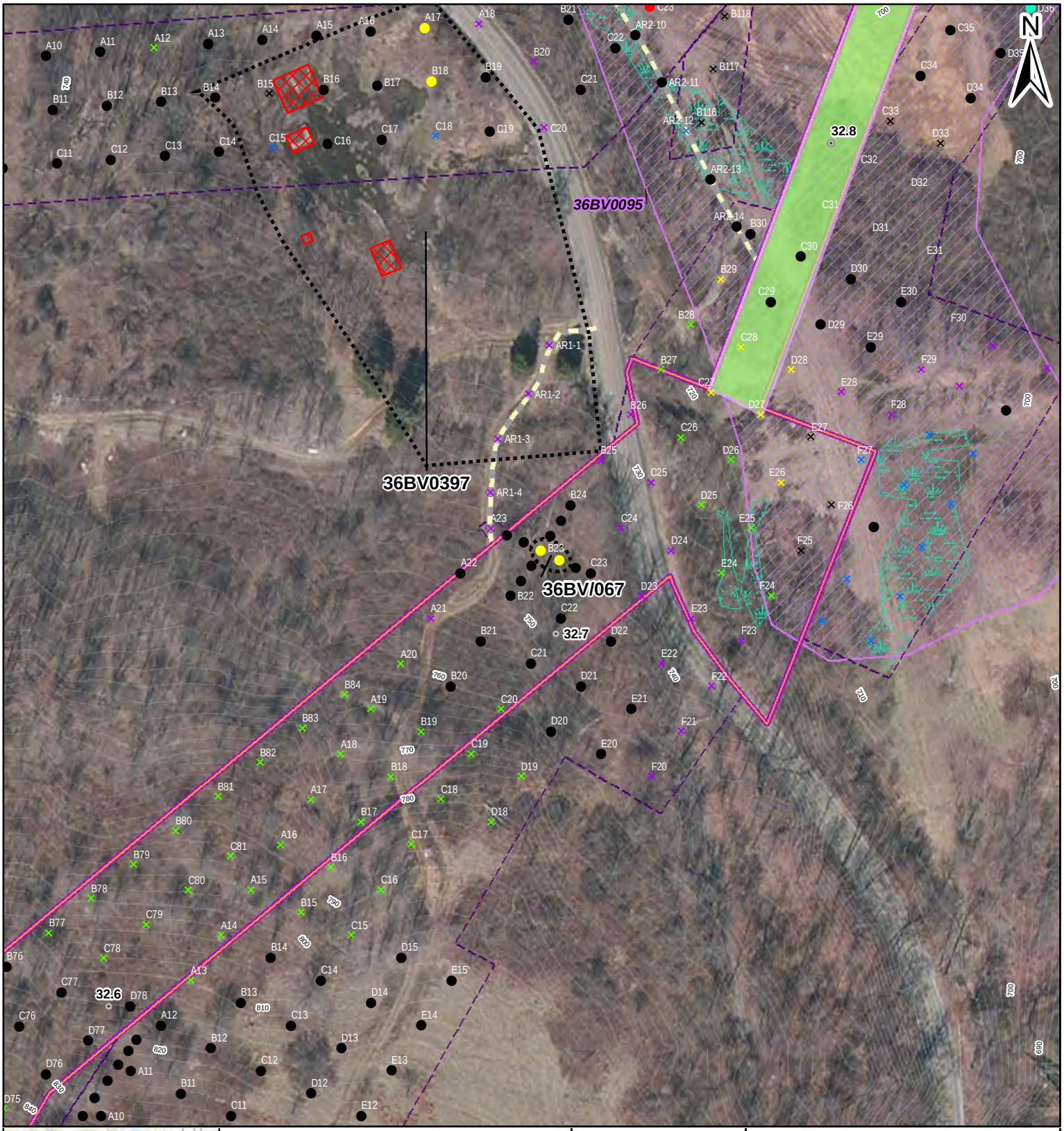
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 60 120 Feet

Figure 7.132

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

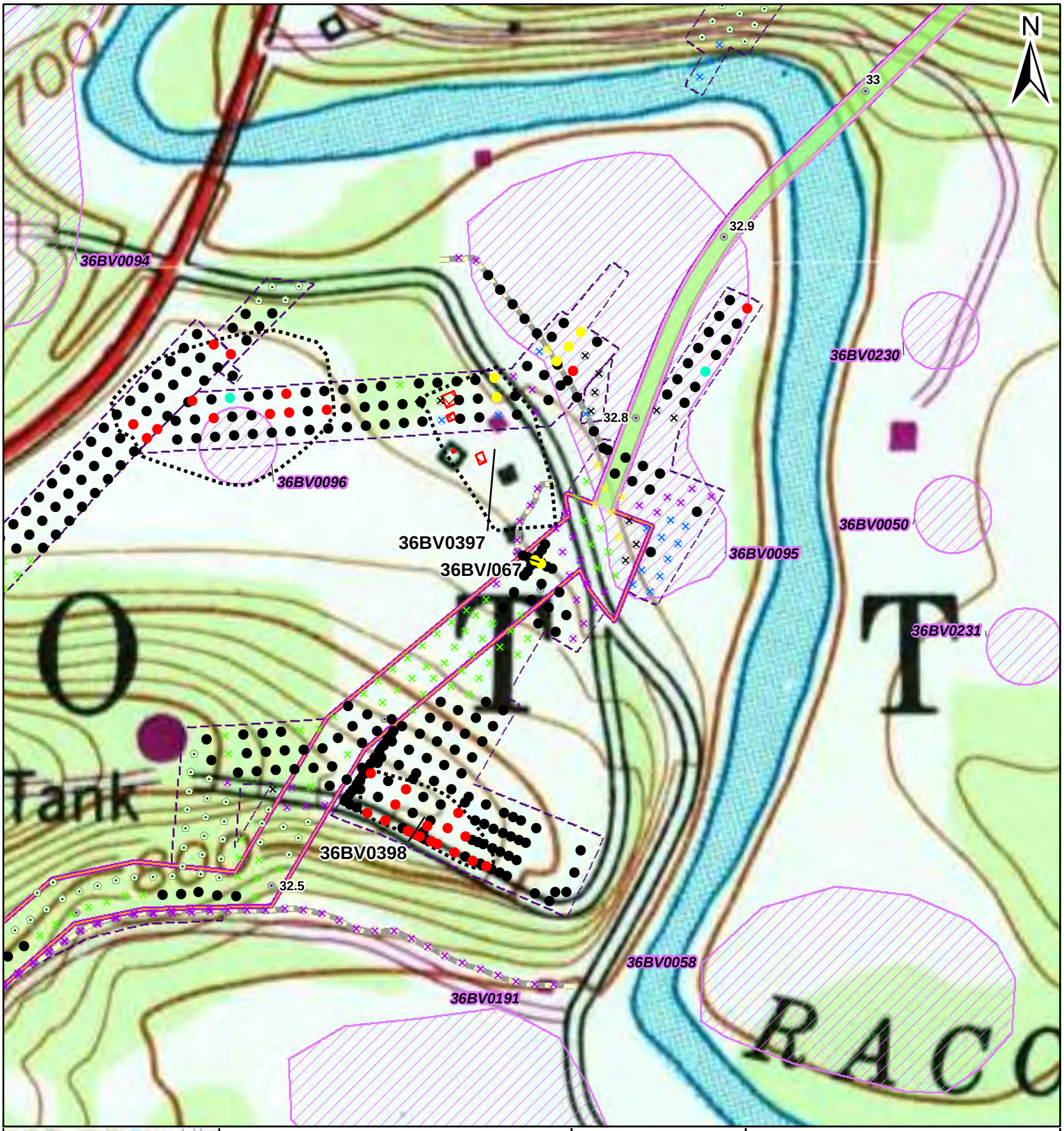
36BV/067
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 170 340

Figure 7.133

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/067
SITE MAP: MODERN TOPO

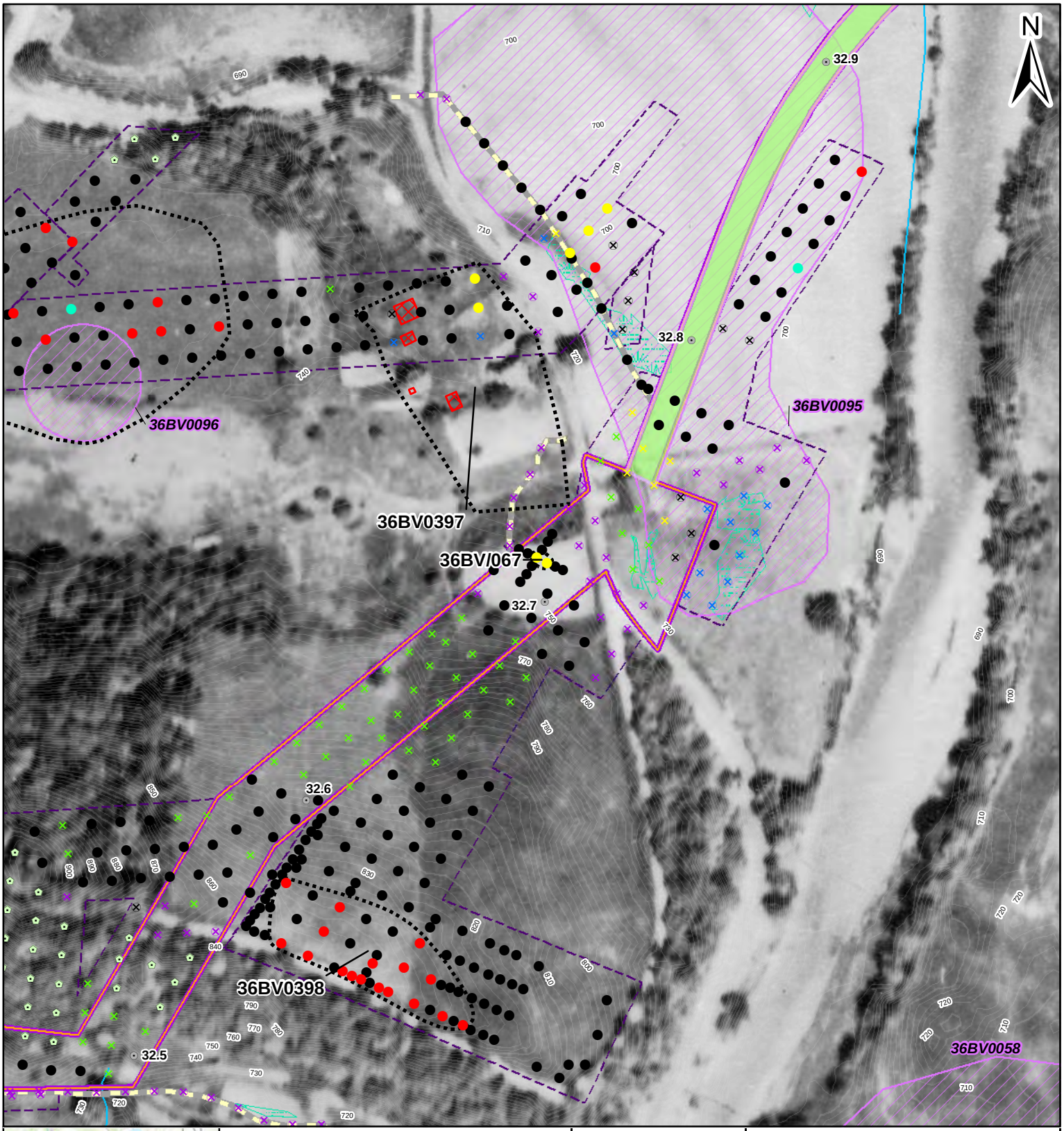
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 112.5 225 Feet

Figure 7.134

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/067
SITE MAP: 1939 AERIAL

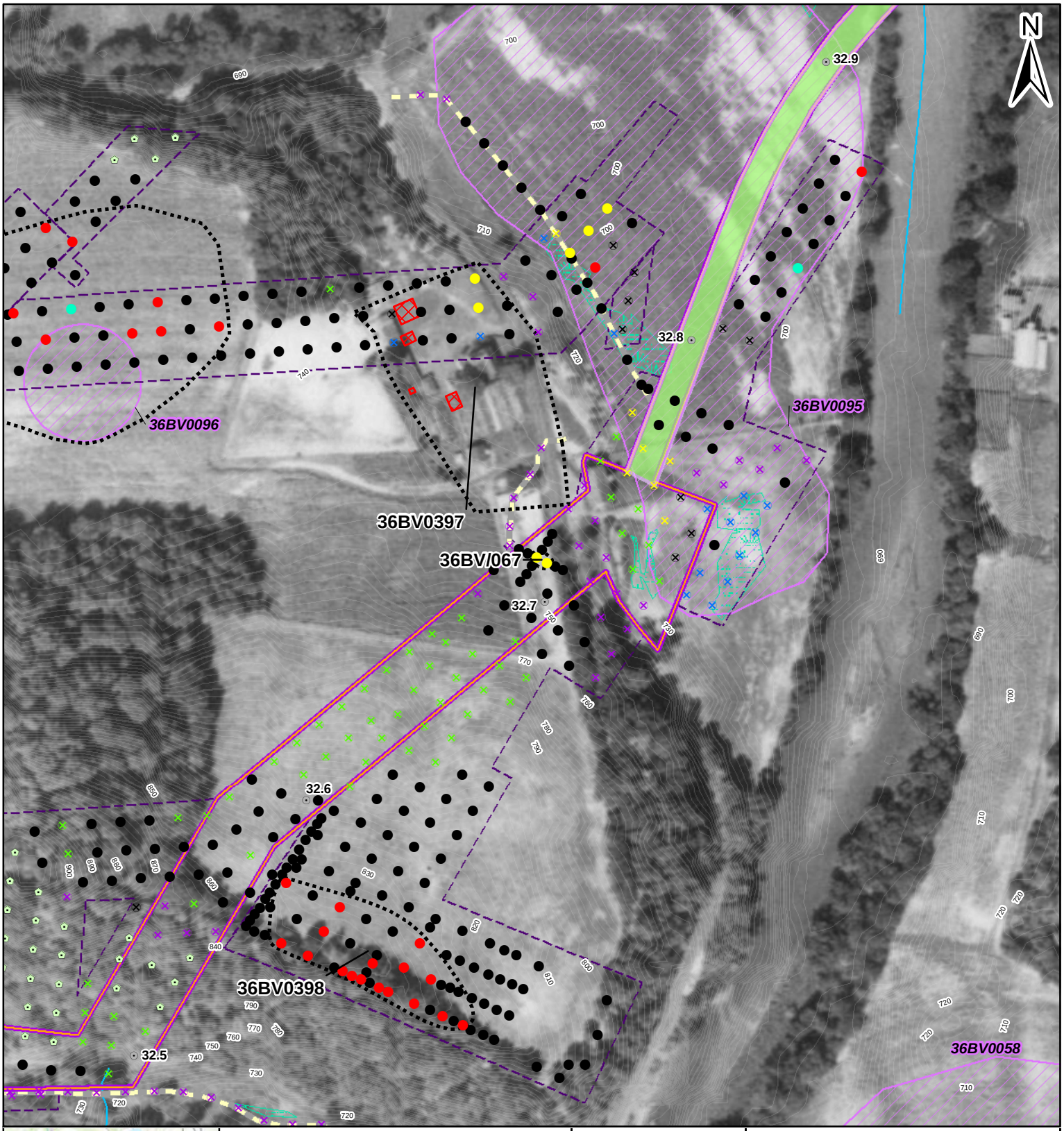
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #74, Photograph #34. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 112.5 225 Feet

Figure 7.135

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/067
SITE MAP: 1967 AERIAL

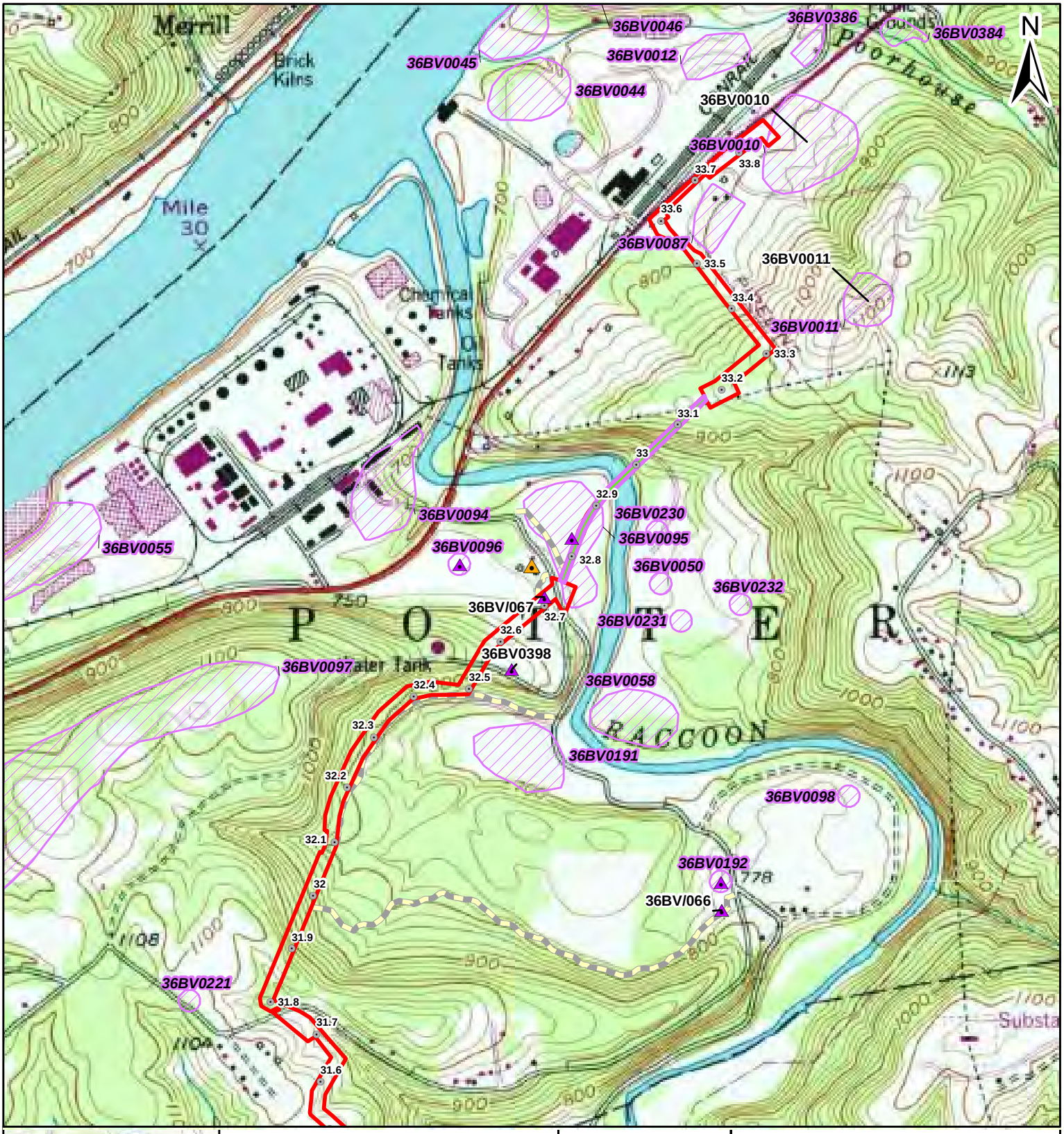
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #192. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV0397
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.136

St. Joseph Farm Complex
36BV0397
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

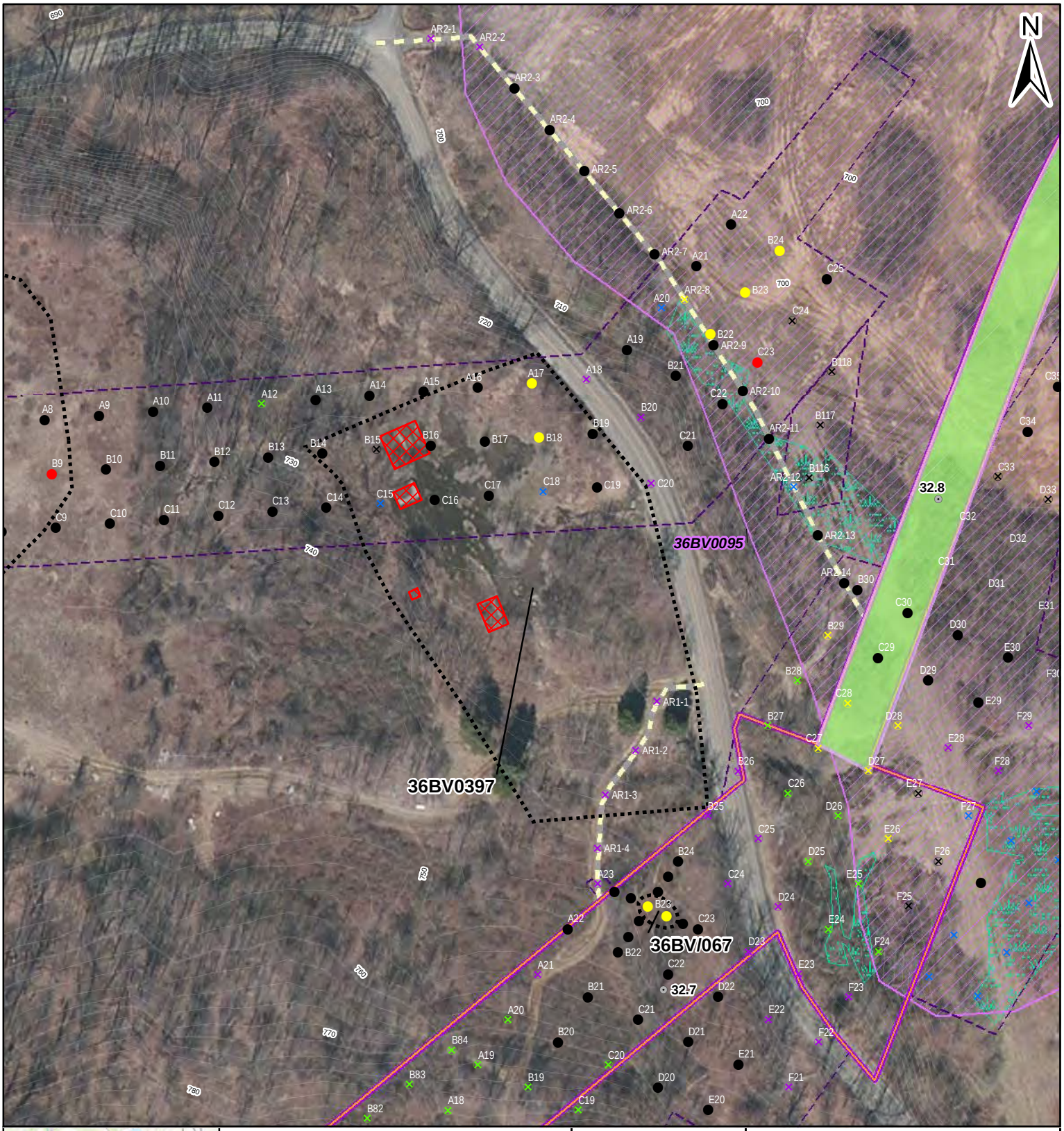
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 60 120 Feet

Figure 7.137

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

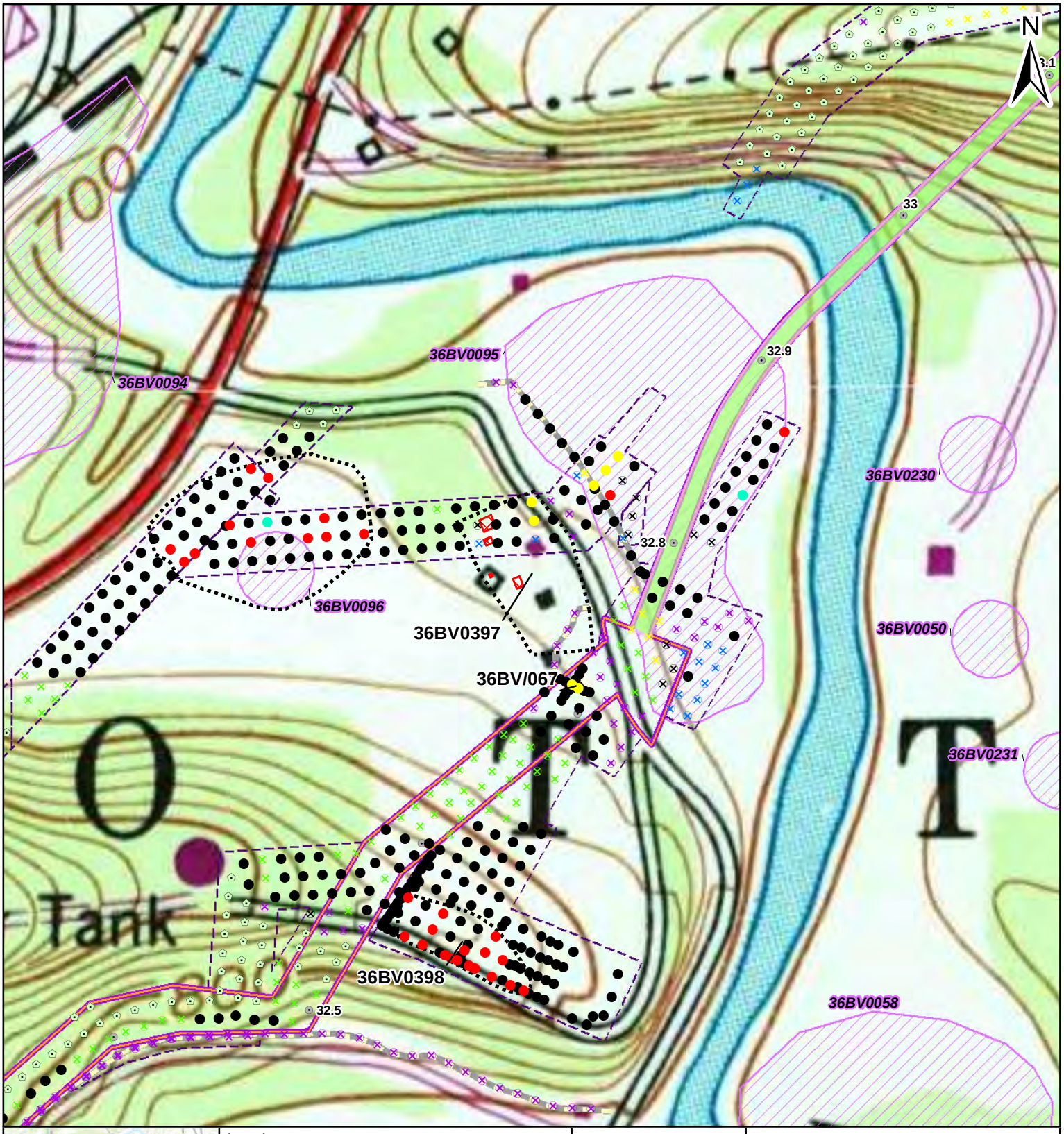
St. Joseph Farm Complex
36BV0397
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Feet
0 170 340

Figure 7.138

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

St. Joseph Farm Complex
36BV0397
SITE MAP: MODERN TOPO

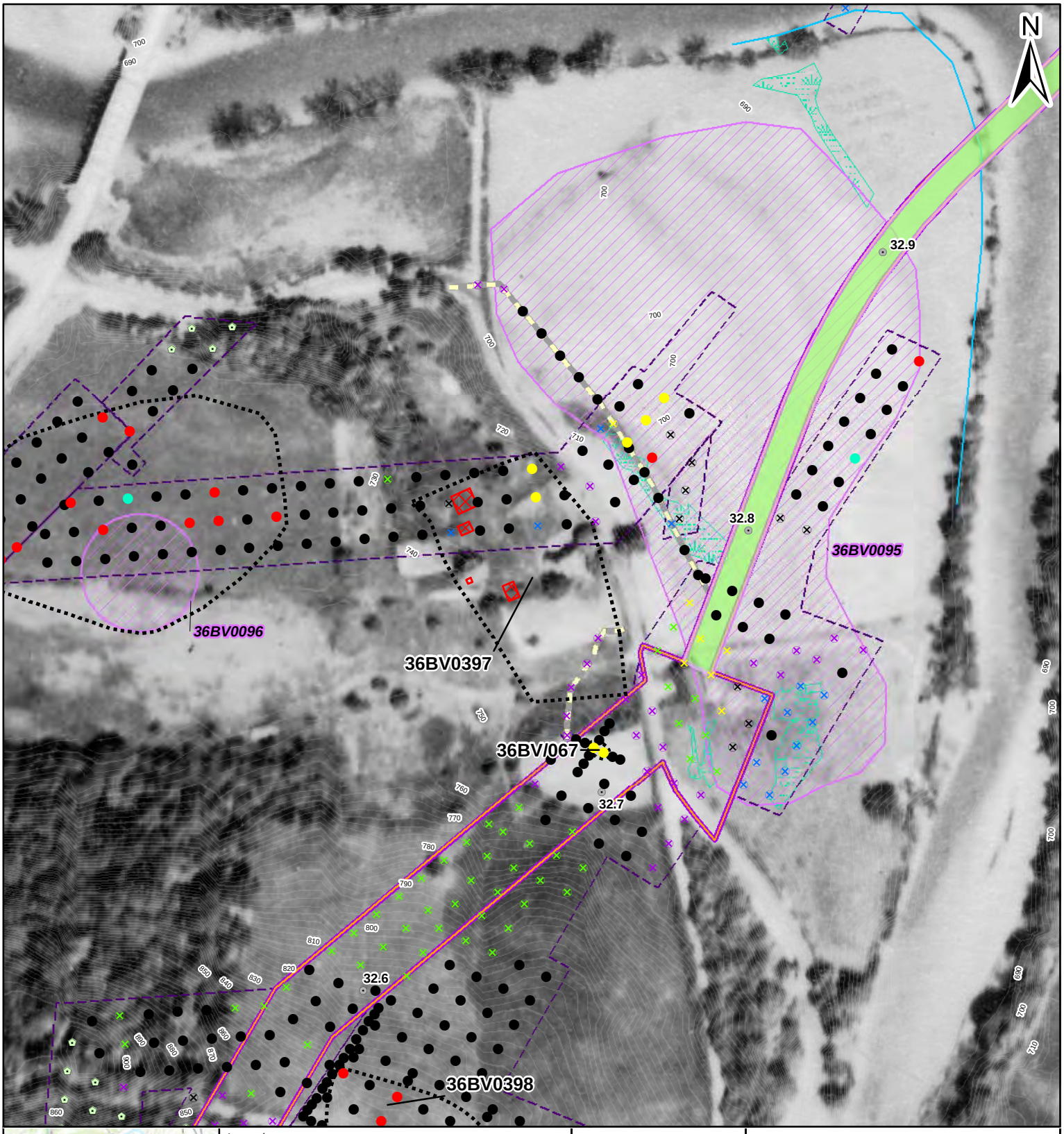
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 112.5 225 Feet

Figure 7.139

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

St. Joseph Farm Complex
36BV0397
SITE MAP: 1939 AERIAL

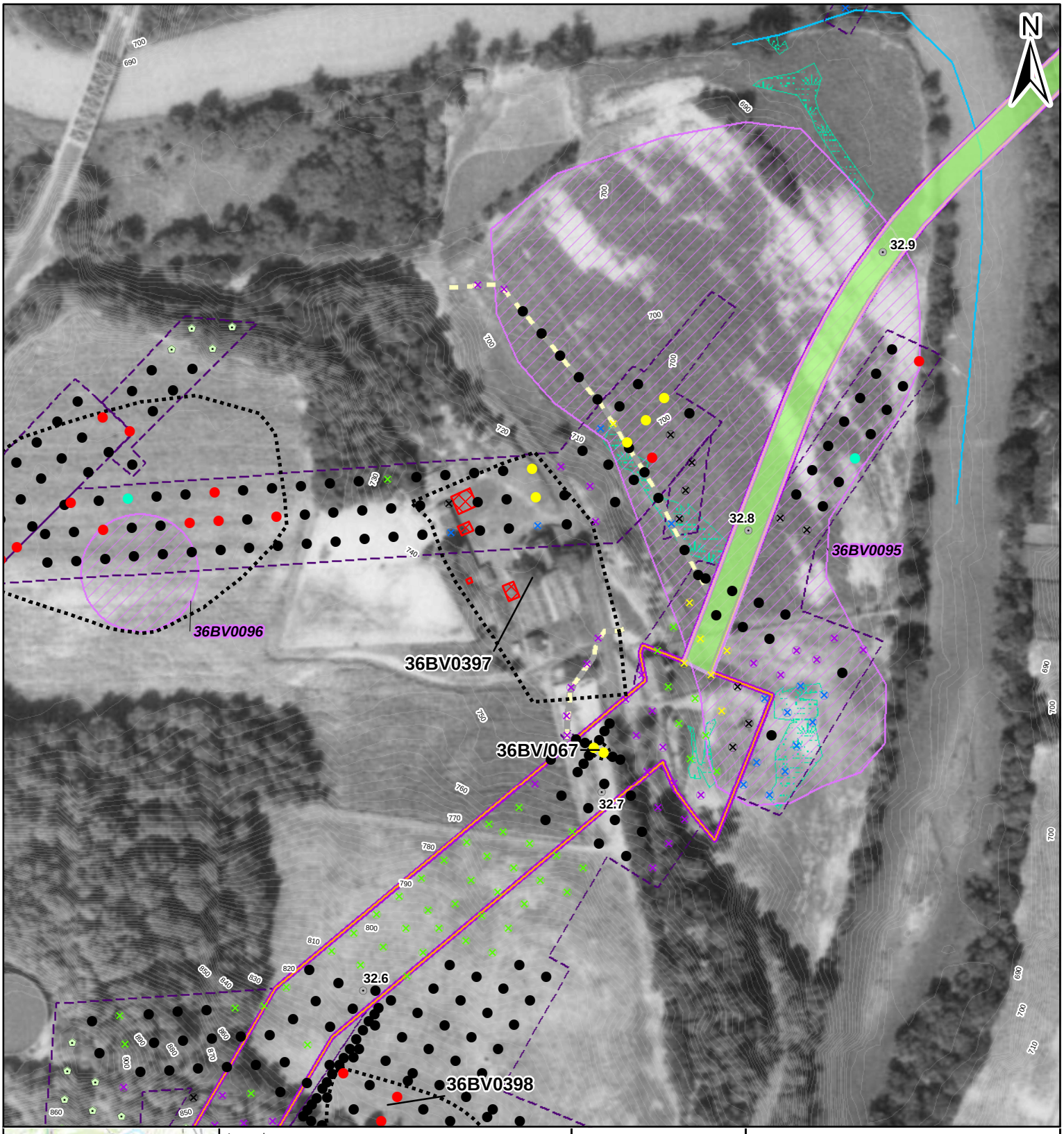
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #74, Photograph #34. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Wetland

0 112.5 225 Feet

Figure 7.140

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

St. Joseph Farm Complex
36BV0397
SITE MAP: 1967 AERIAL

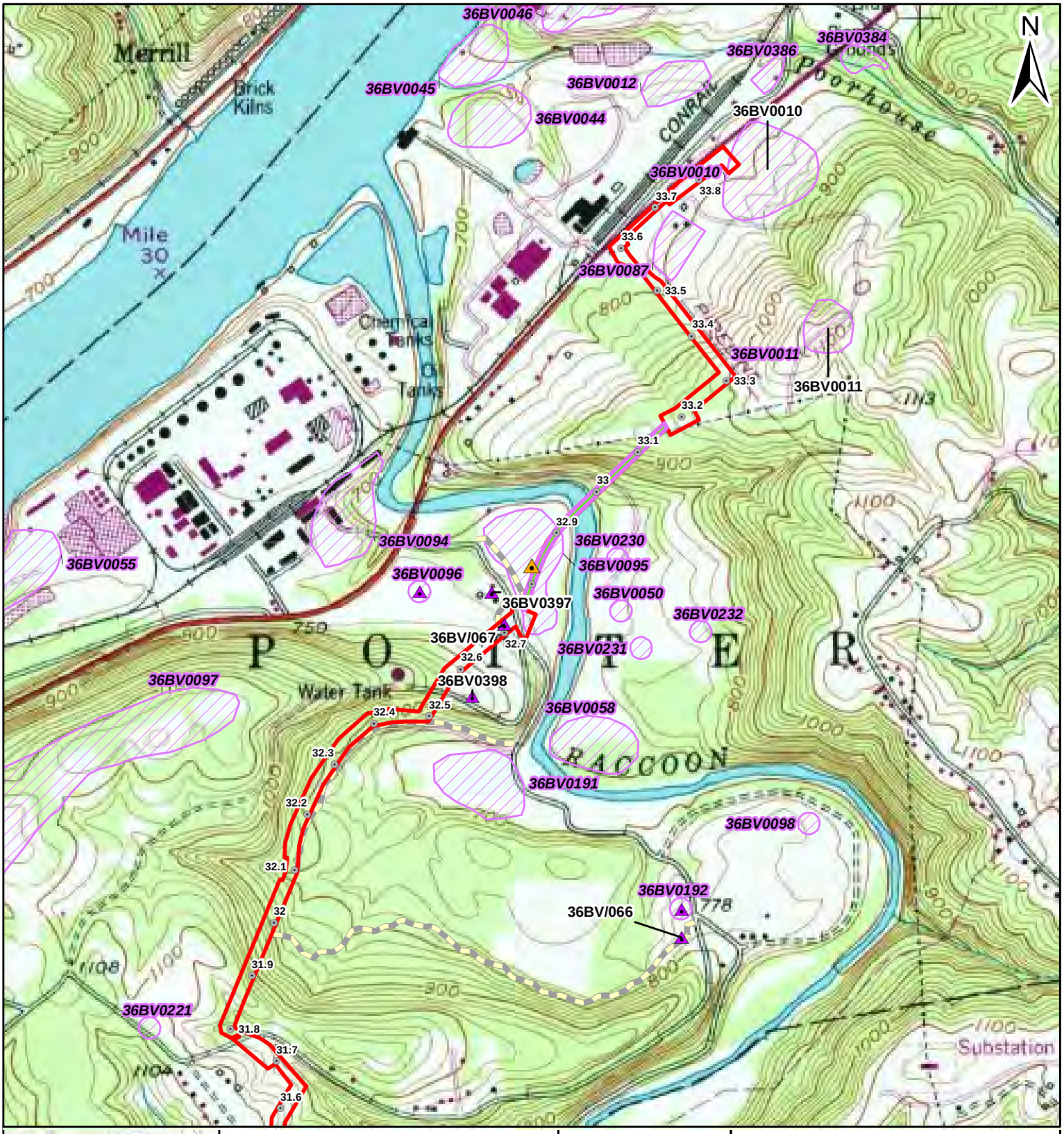
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #2hh, Photograph #192. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV0095
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.141

Potters Bridge
36BV0095
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

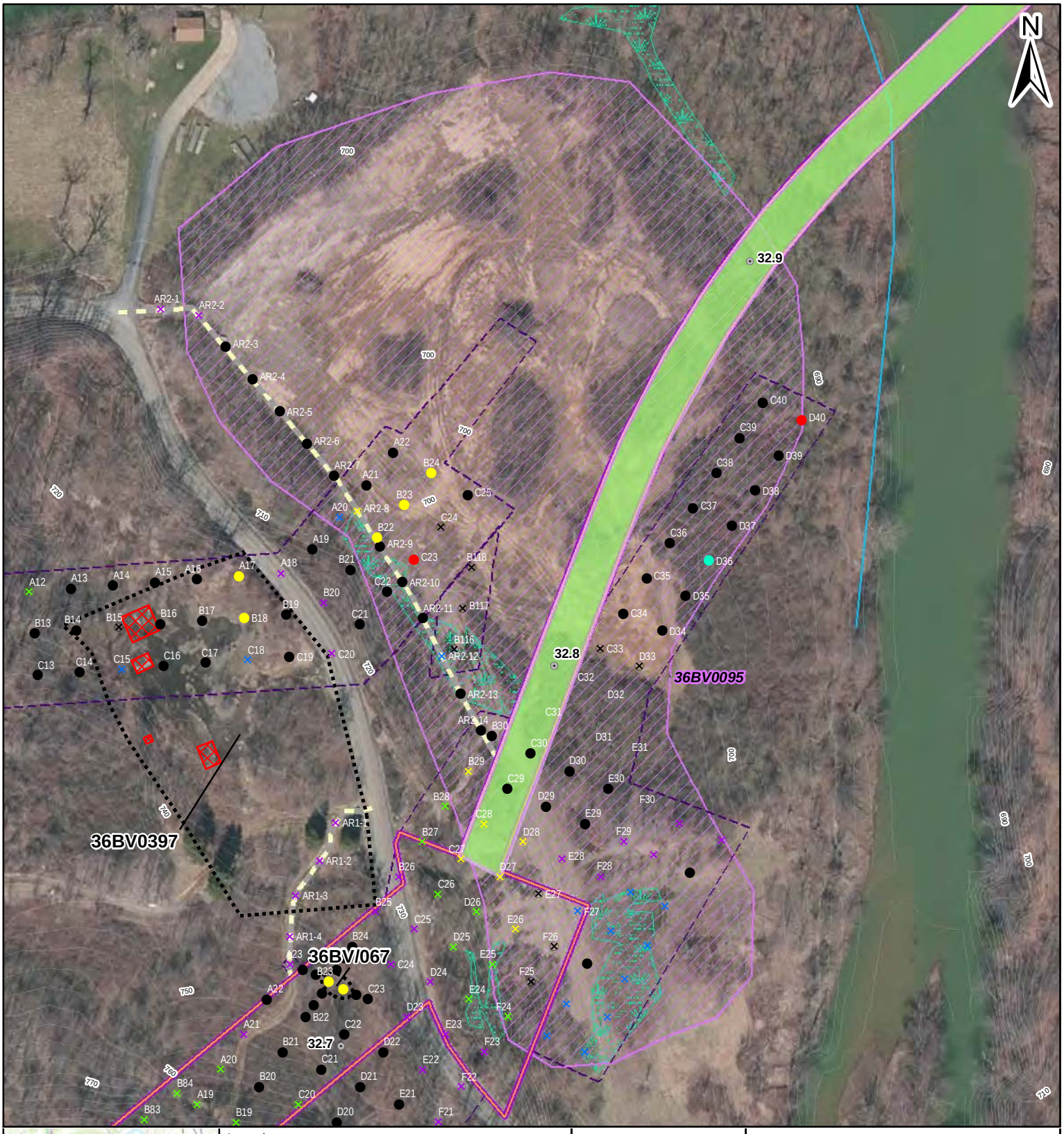
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 75 150

Figure 7.142

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Potters Bridge
36BV0095
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 220 440

Figure 7.143

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Potters Bridge
36BV0095
SITE MAP: MODERN TOPO

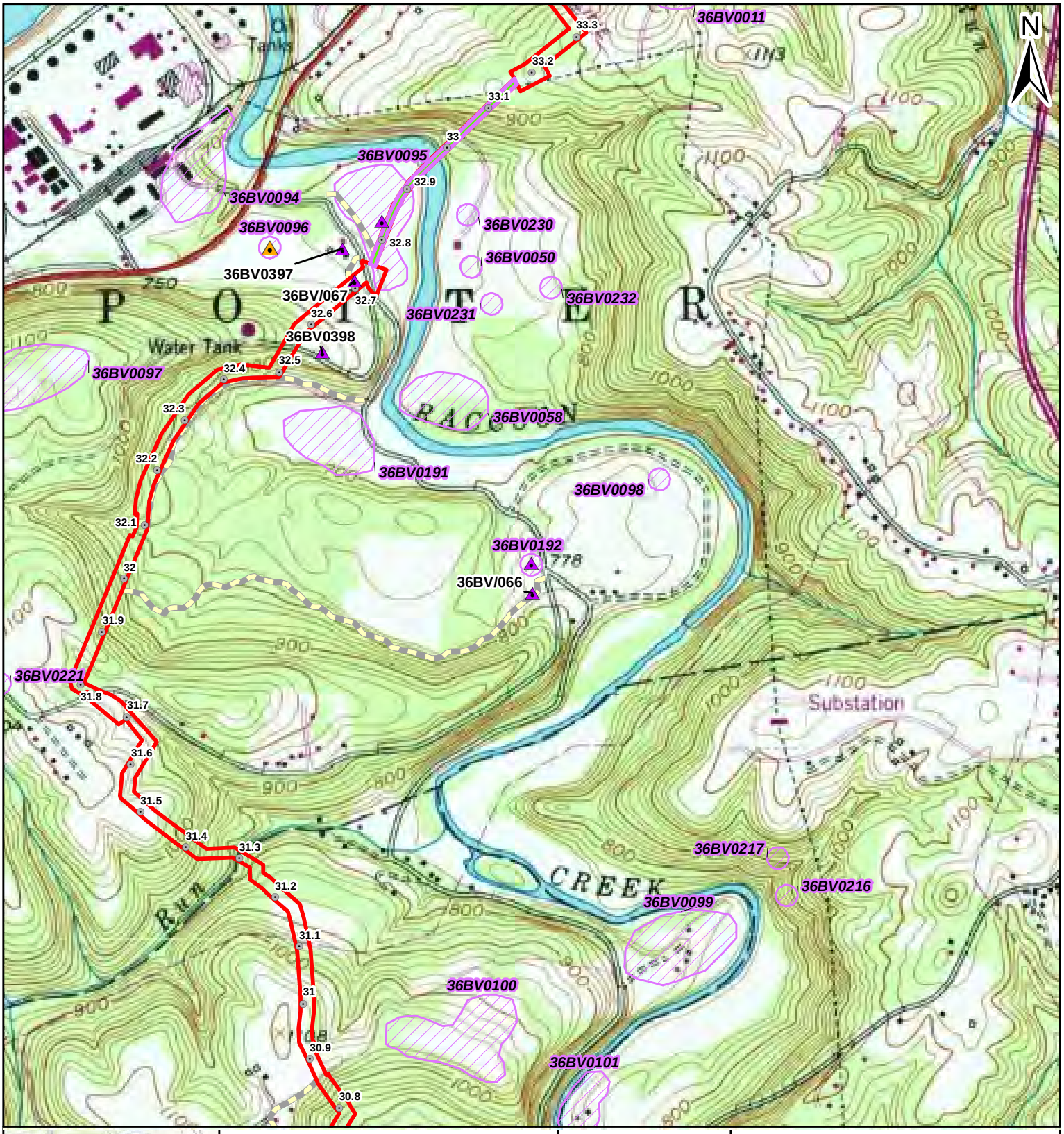
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0096
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.144

St. Joseph Hog Pen
36BV0096
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

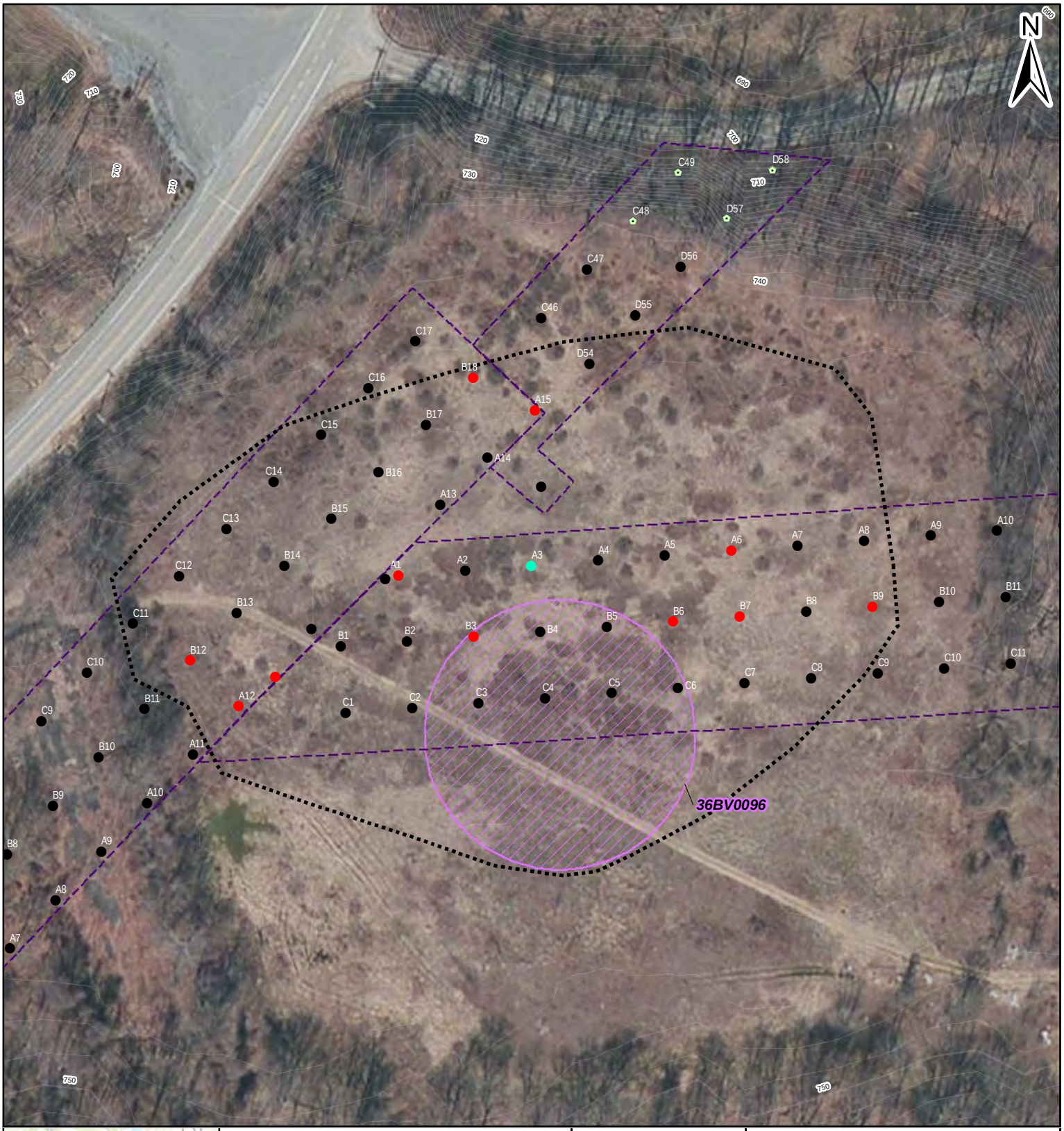
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

Figure 7.145

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

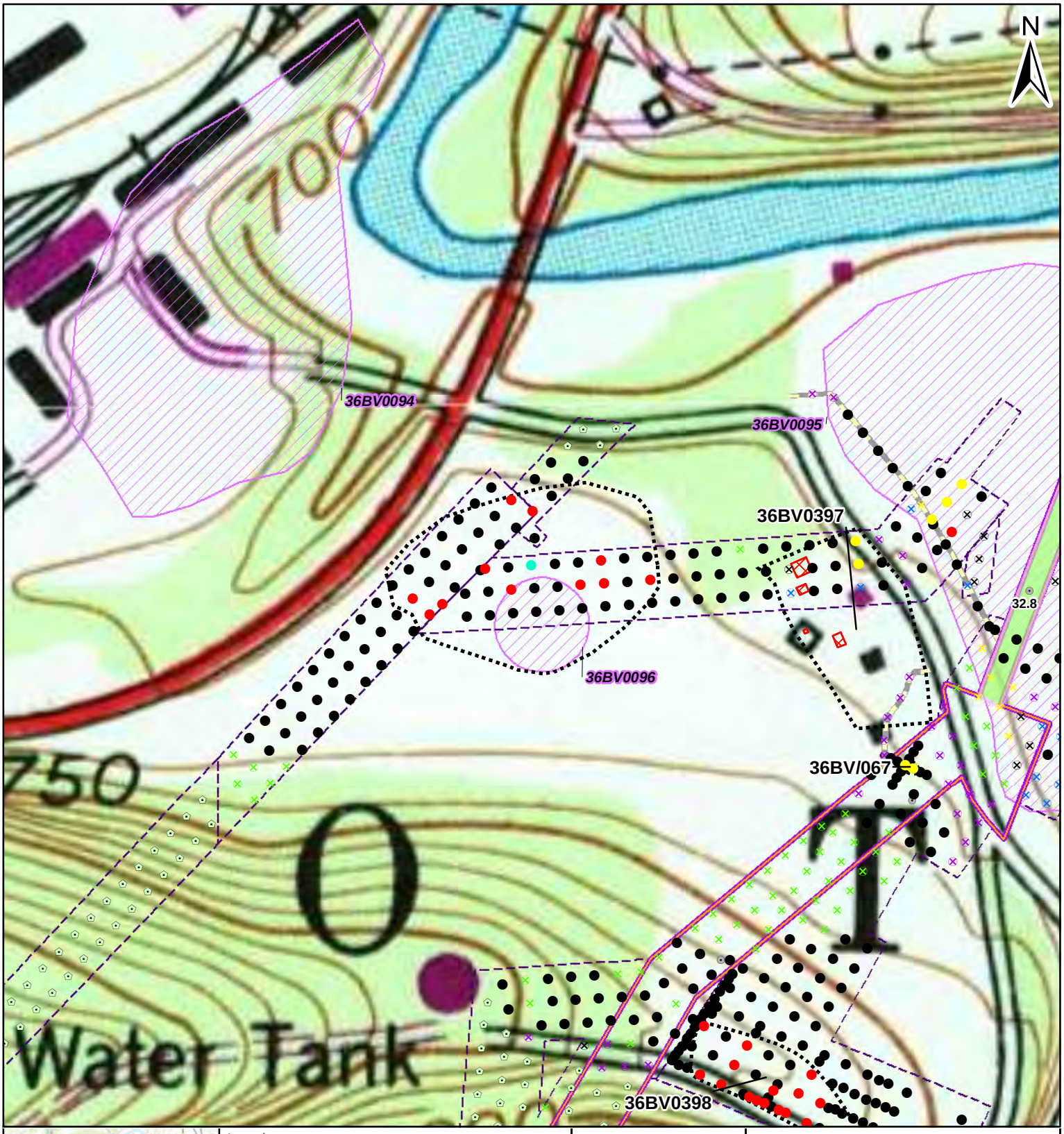
St. Joseph Hog Pen
36BV0096
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Prehistoric/Historic
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.146

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

St. Joseph Hog Pen
36BV0096
SITE MAP: MODERN TOPO

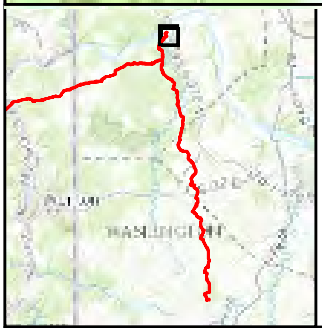
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0011
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.147

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0011
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

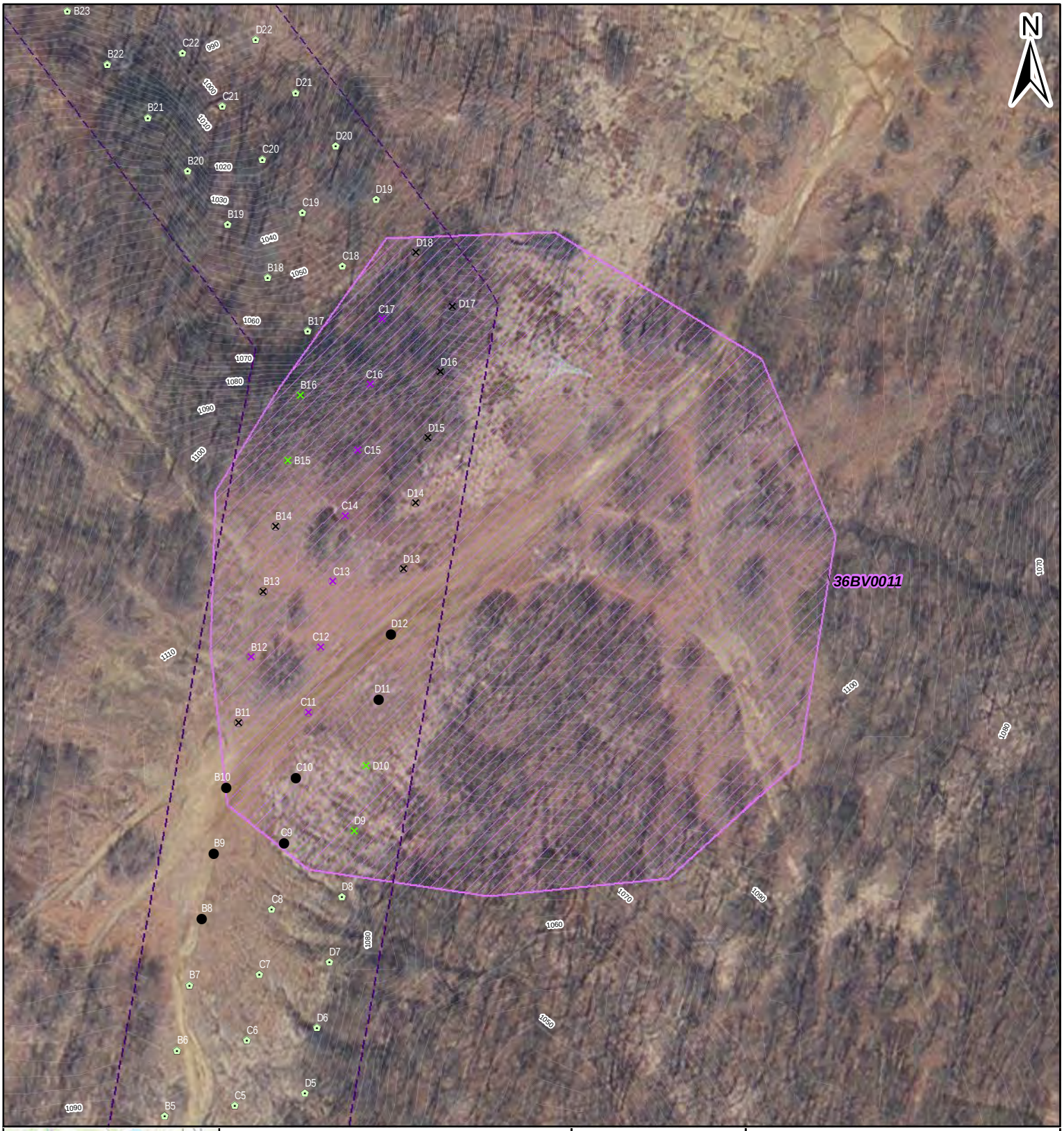
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.148

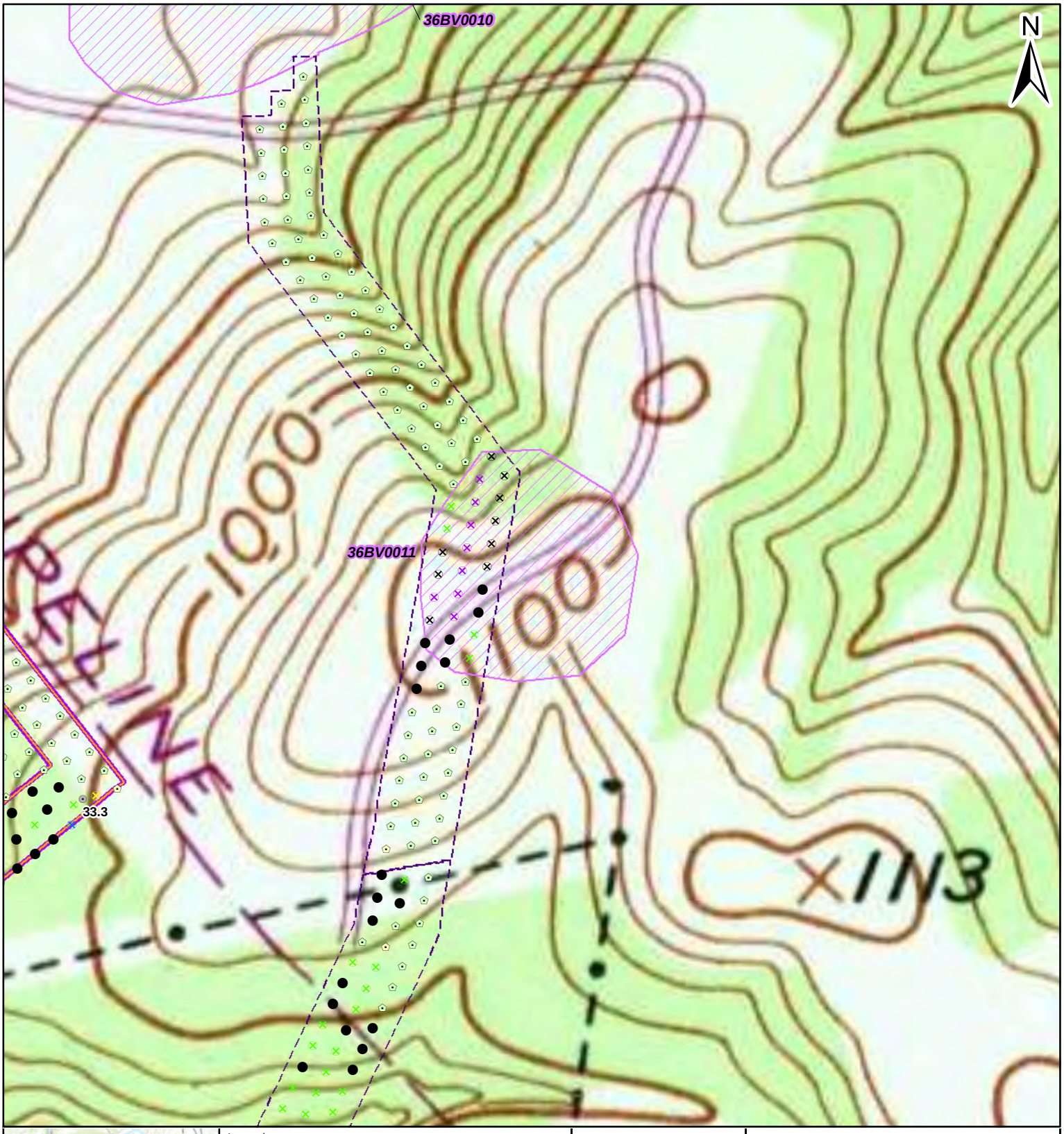
36BV0011
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Sterile
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.149

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0011
SITE MAP: MODERN TOPO

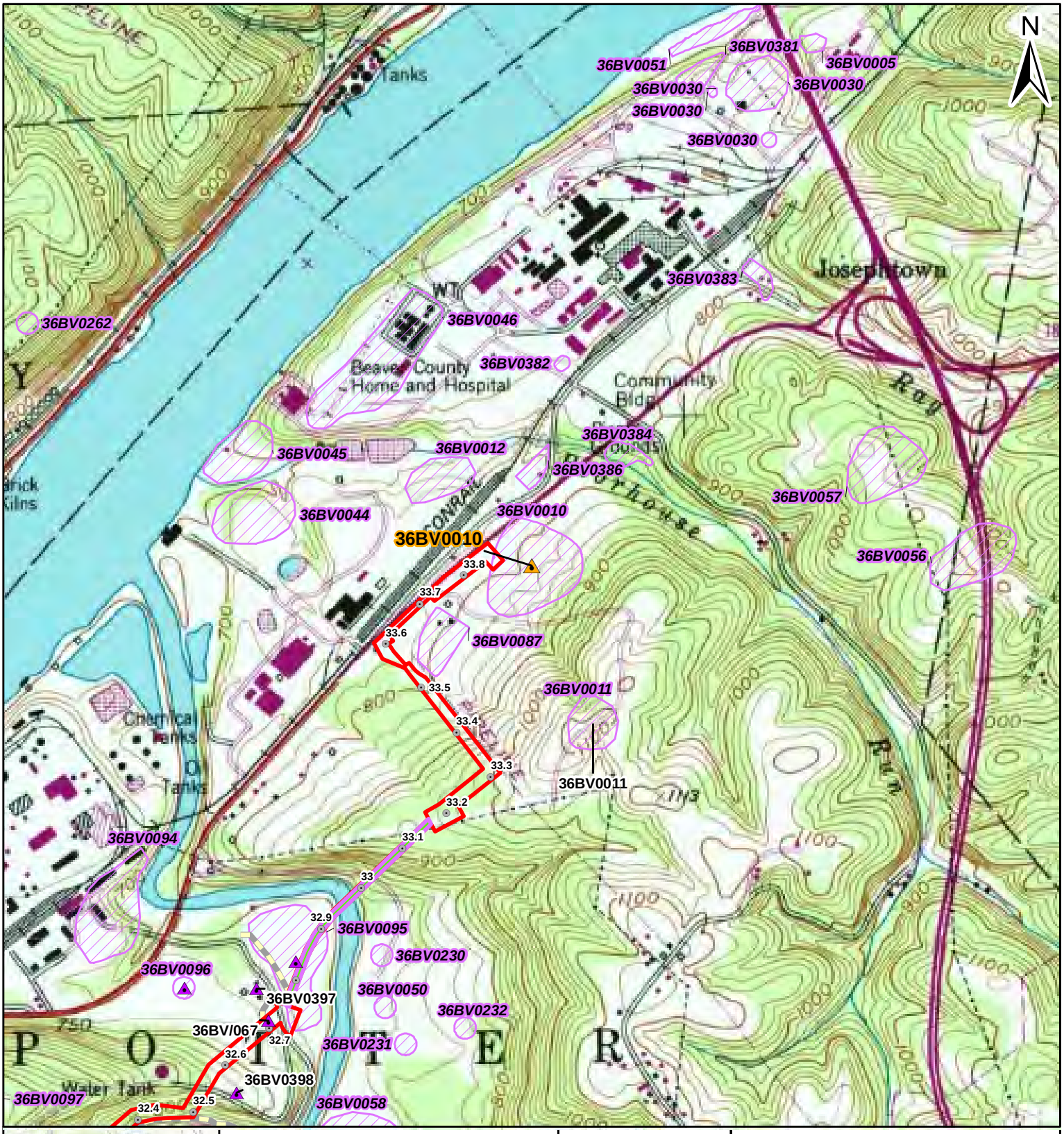
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

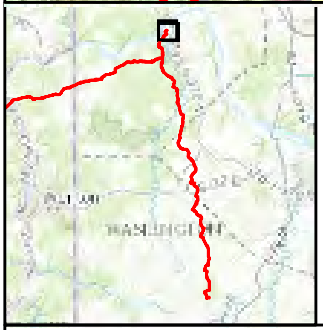
Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd





Legend

Archaeological Data
- 36BV0010
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.150

Bald Head Mtn
36BV0010
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 55 110

Figure 7.151

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Bald Head Mtn
36BV0010
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 165 330

Figure 7.152

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Bald Head Mtn
36BV0010
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Beaver, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd

Legend

Archaeological Data
- 36BV/059
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.153

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/059
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

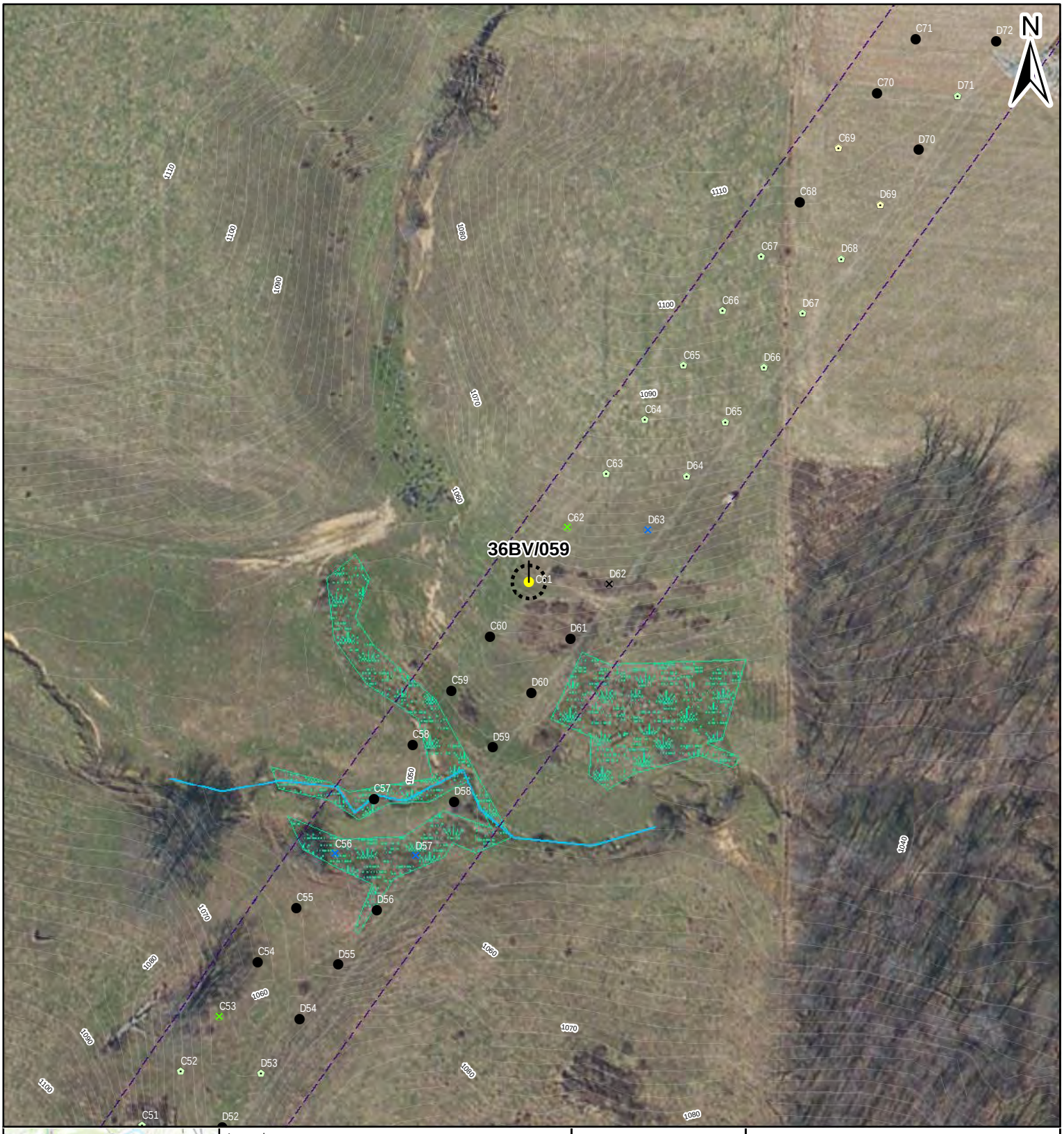
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.154

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/059
SITE MAP: MODERN AERIAL

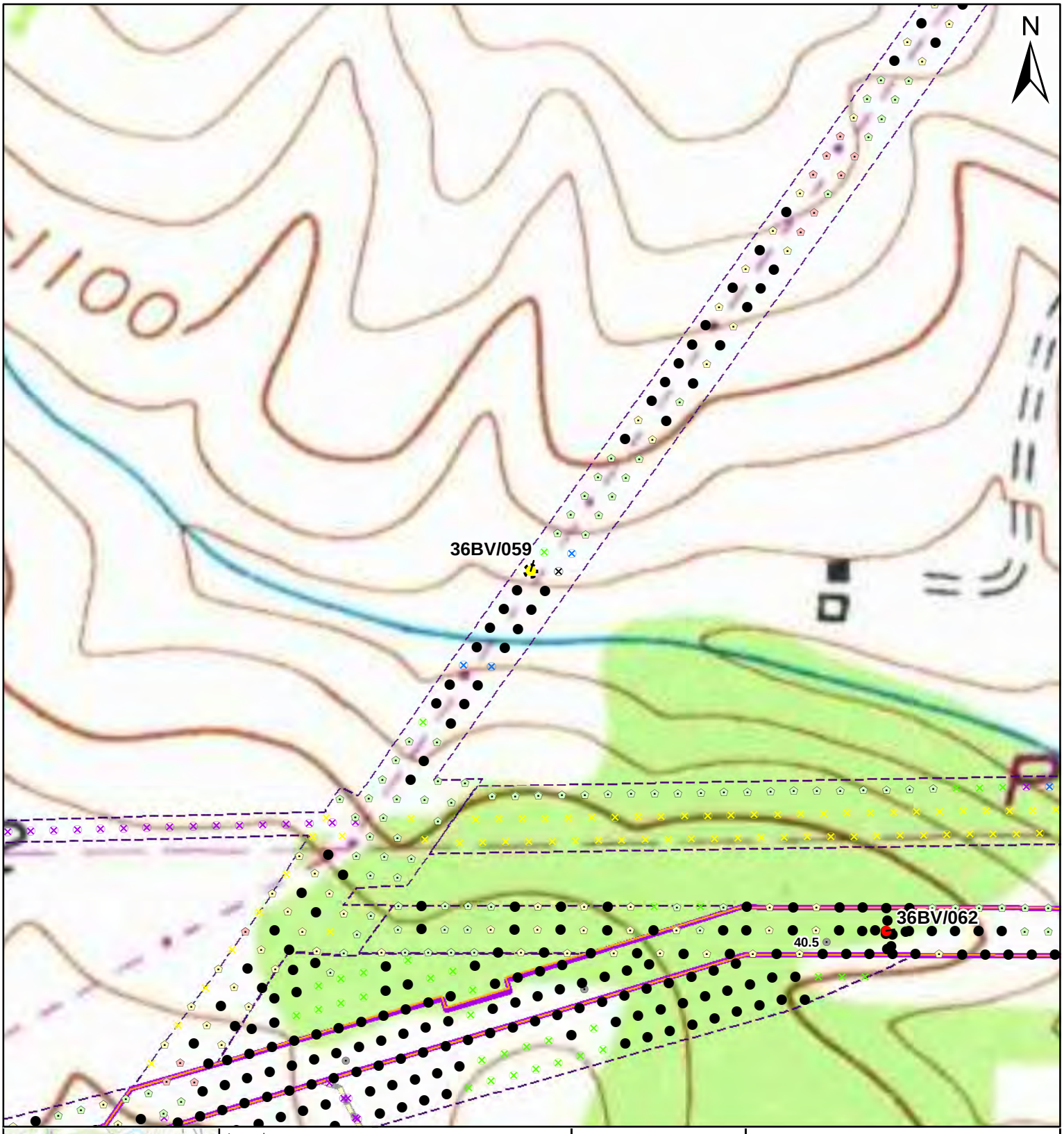
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.155

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/059
SITE MAP: MODERN TOPO

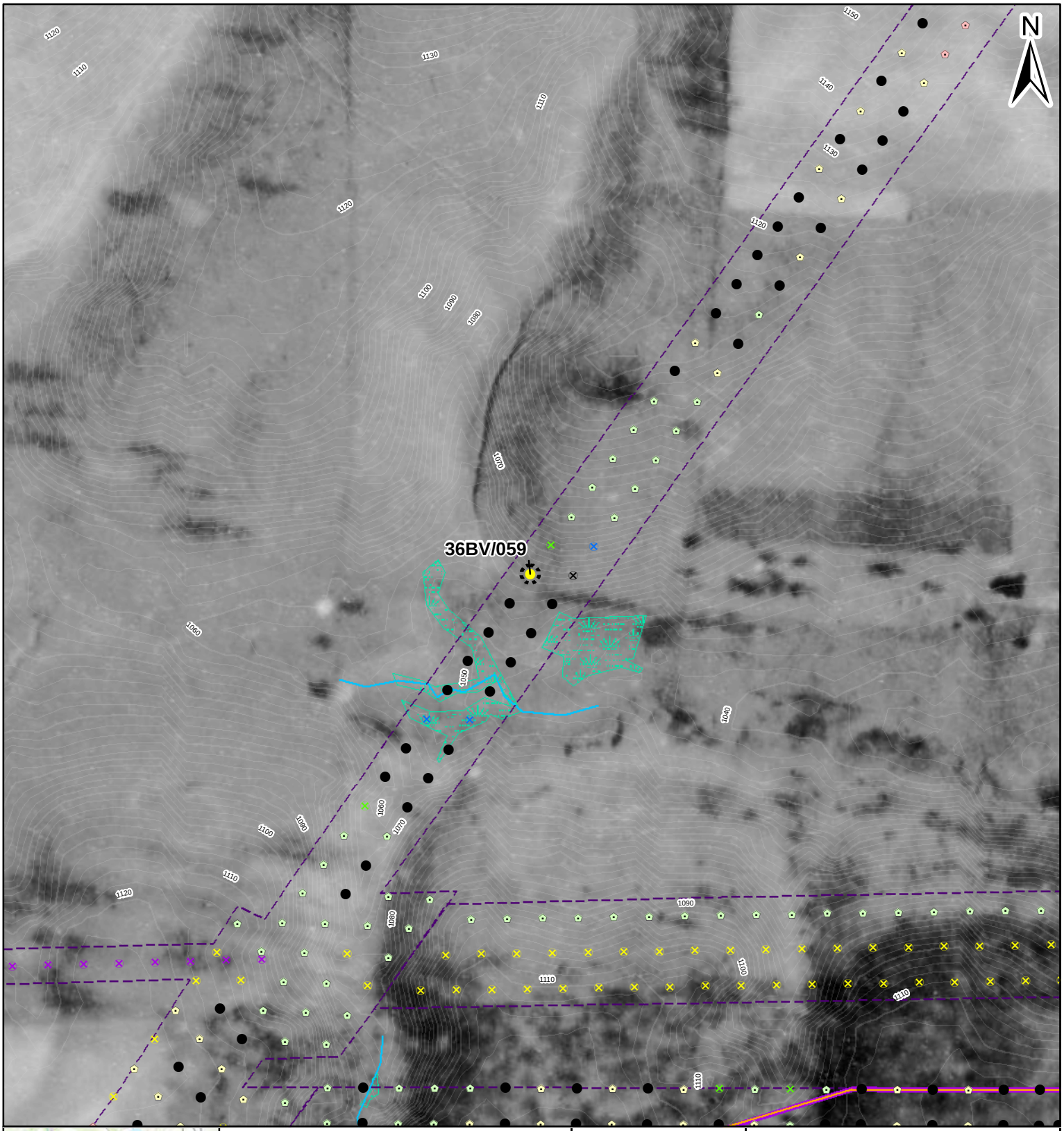
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.156

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/059
SITE MAP: 1939 AERIAL

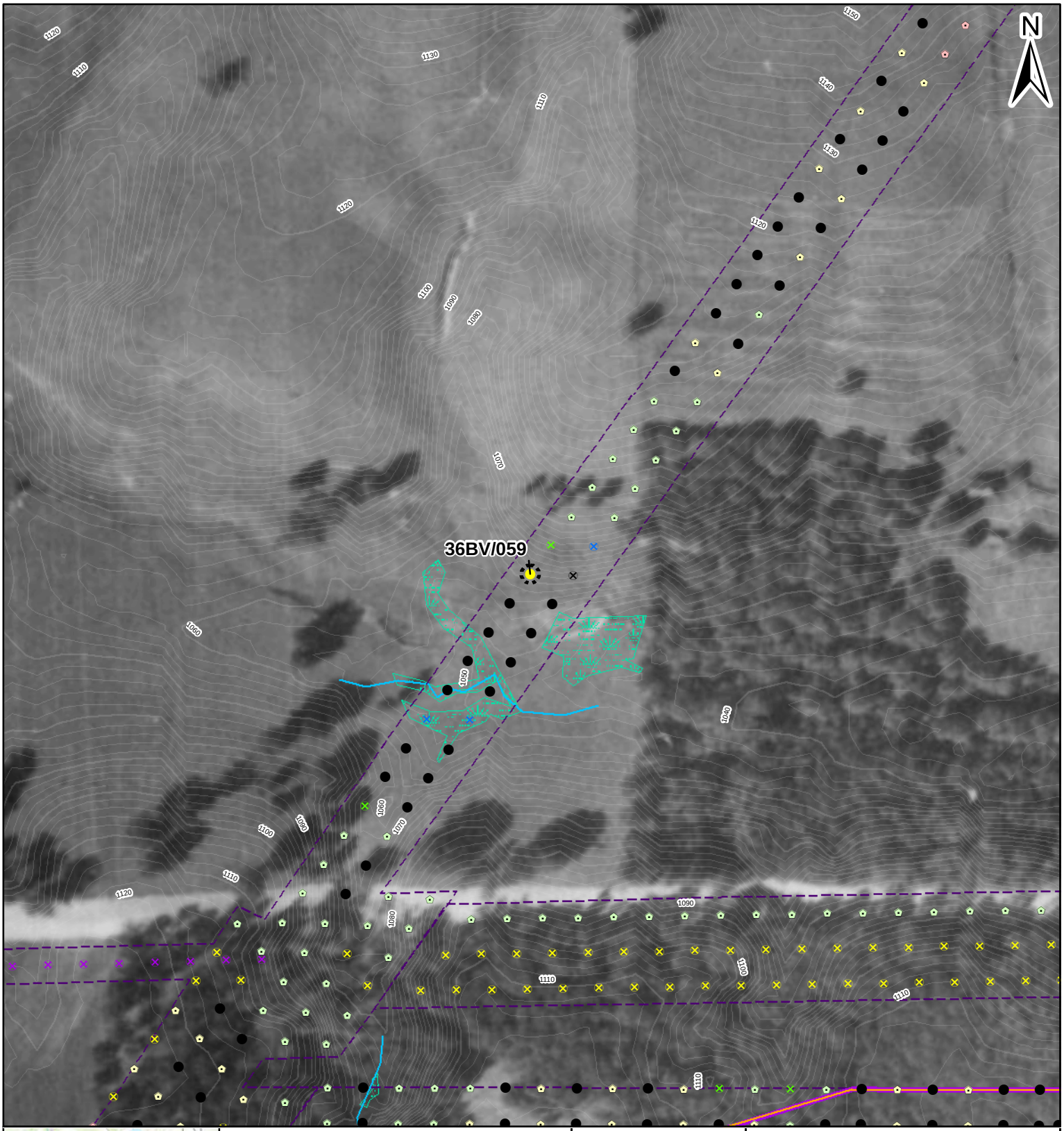
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #55, Photograph #31. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 90 180

Figure 7.157

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/059
SITE MAP: 1967 AERIAL

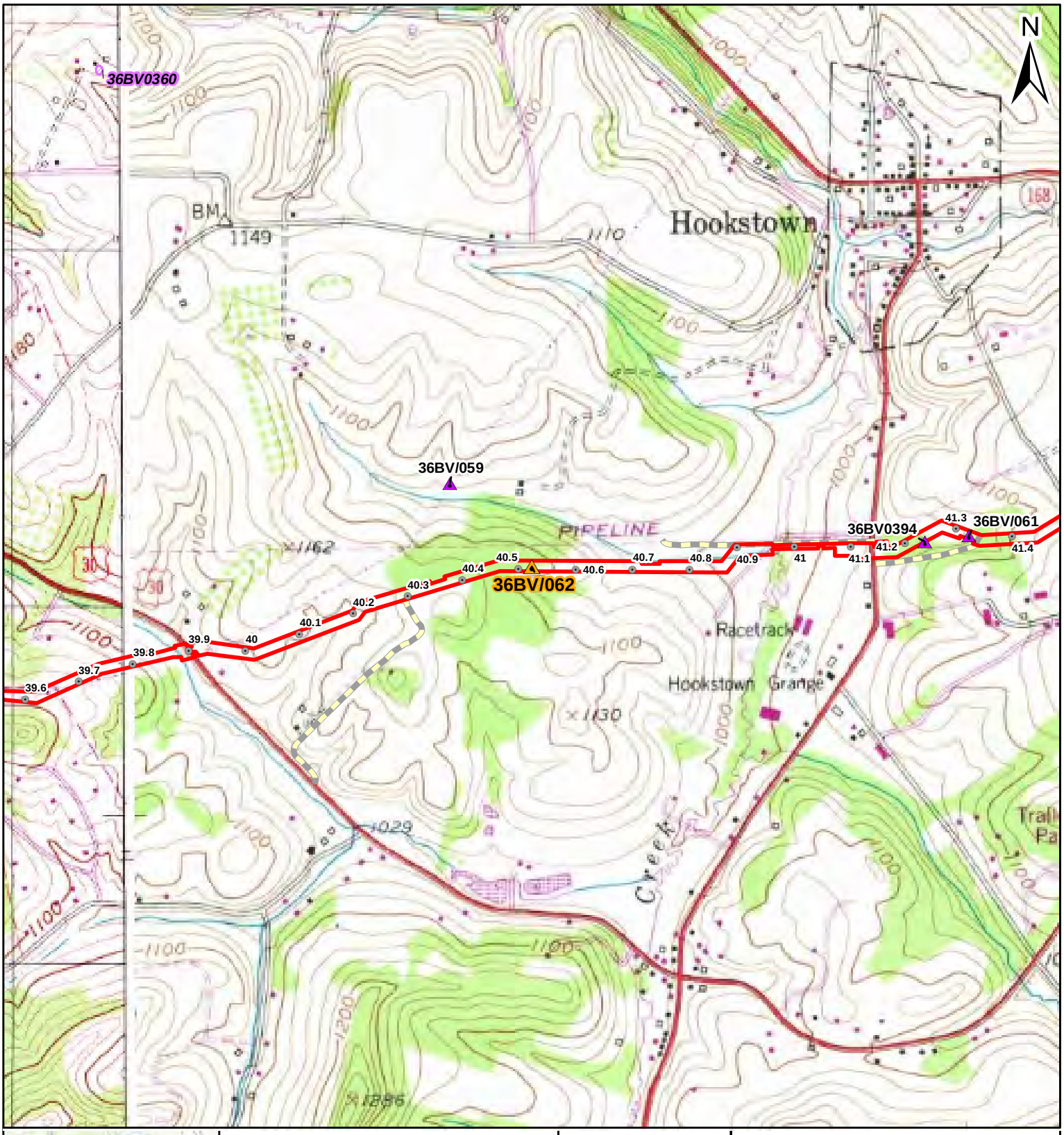
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #3hh, Photograph #36. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV/062
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.158

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/062
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

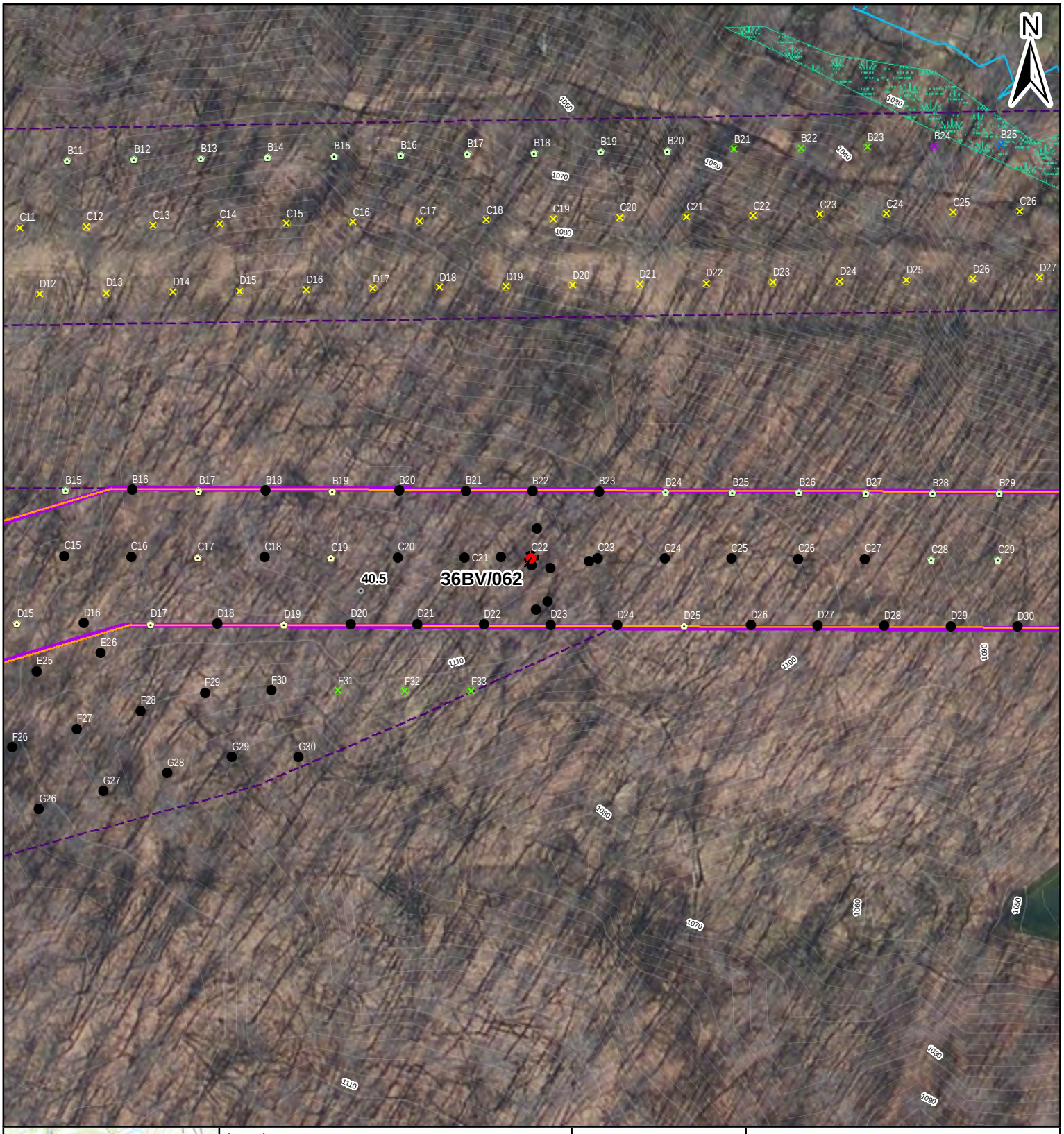
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\17475\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 45 90 Feet

Figure 7.159

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/062
SITE MAP: MODERN AERIAL

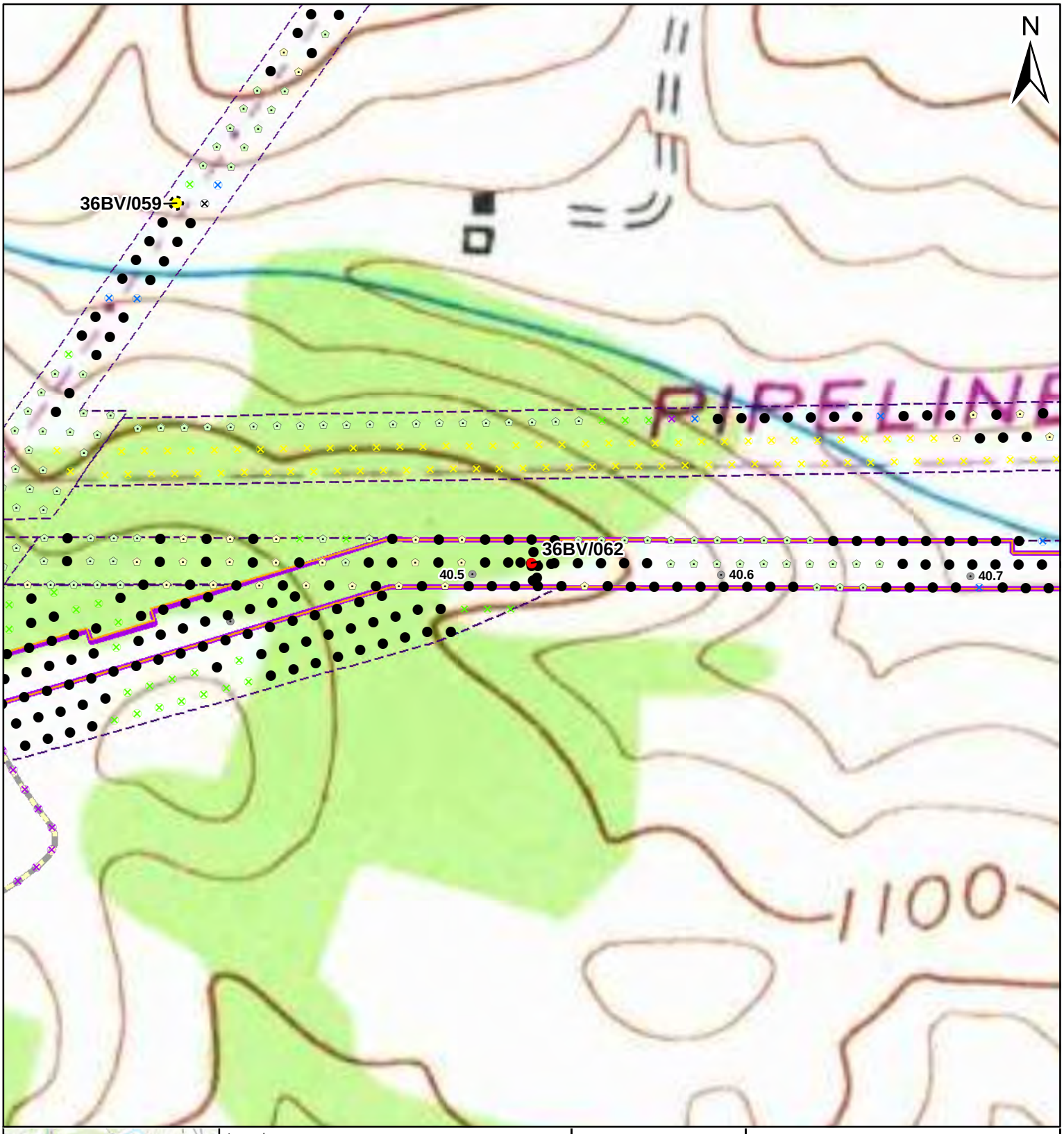
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.160

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/062
SITE MAP: MODERN TOPO

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd

Legend

Archaeological Data
- 36BV/060
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

0 0.1 0.2 Miles

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.161

36BV/060
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.162

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/060
SITE MAP: MODERN AERIAL

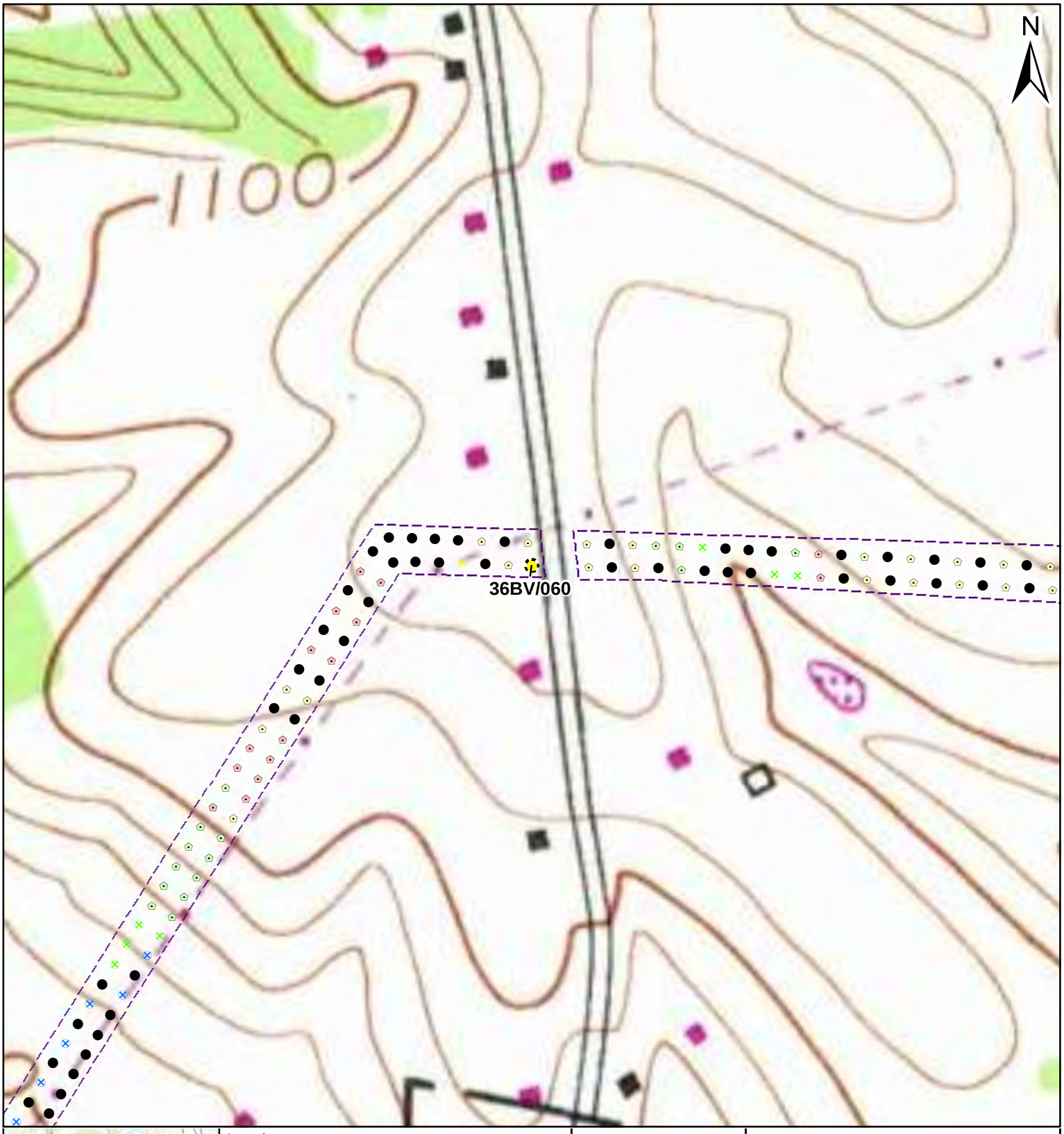
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.163

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/060
SITE MAP: MODERN TOPO

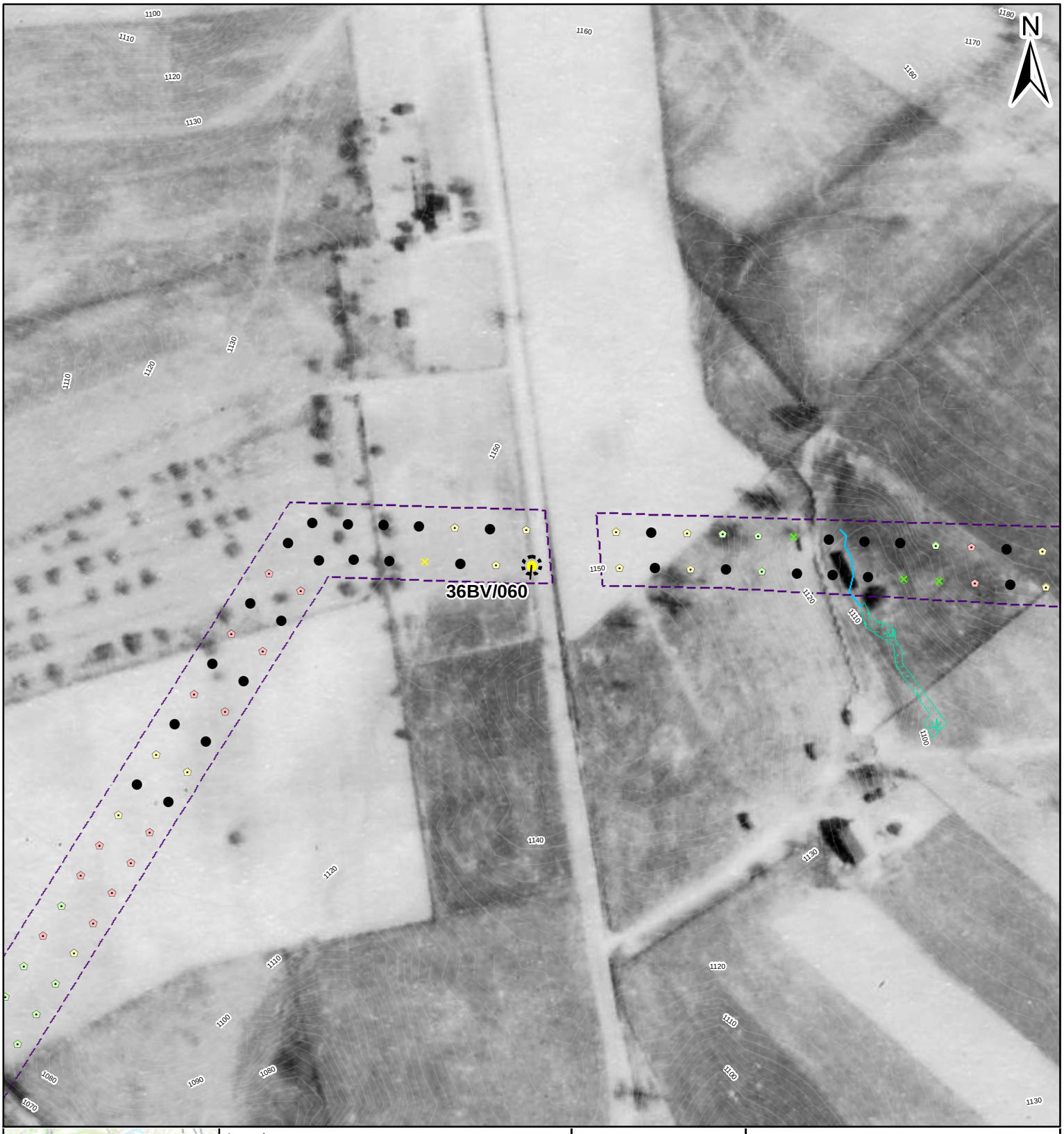
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.164

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/060
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #55, Photograph #78. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1939_Mapbook.mxd

Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Utility
- Not Excavated: Slope

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.165

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/060
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #3hh, Photograph #36. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd

Legend

Archaeological Data
- 36BV0394
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Figure 7.166

Hookstown Grange Fairgrounds
36BV0394
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

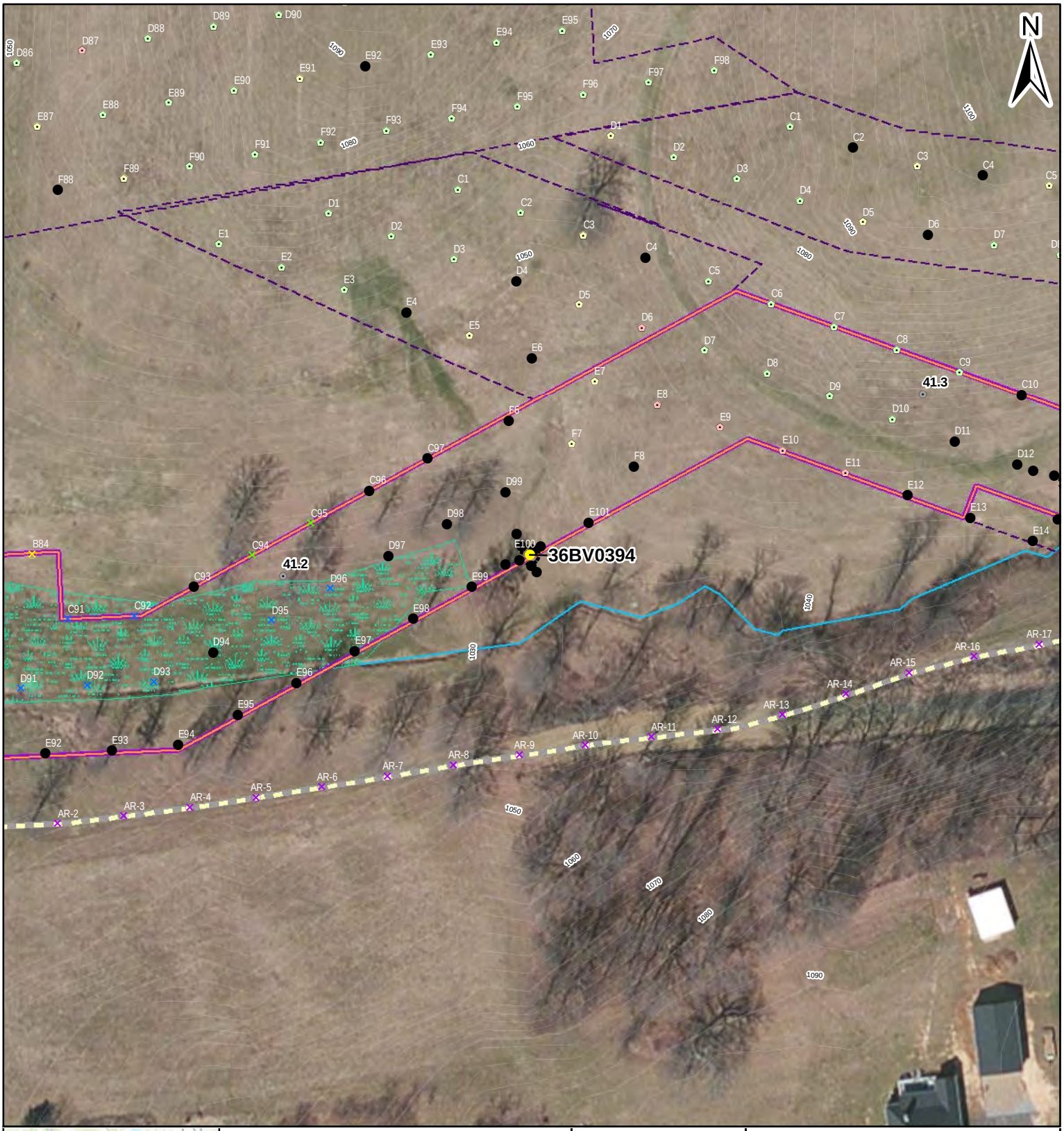
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 45 90 Feet

Figure 7.167

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

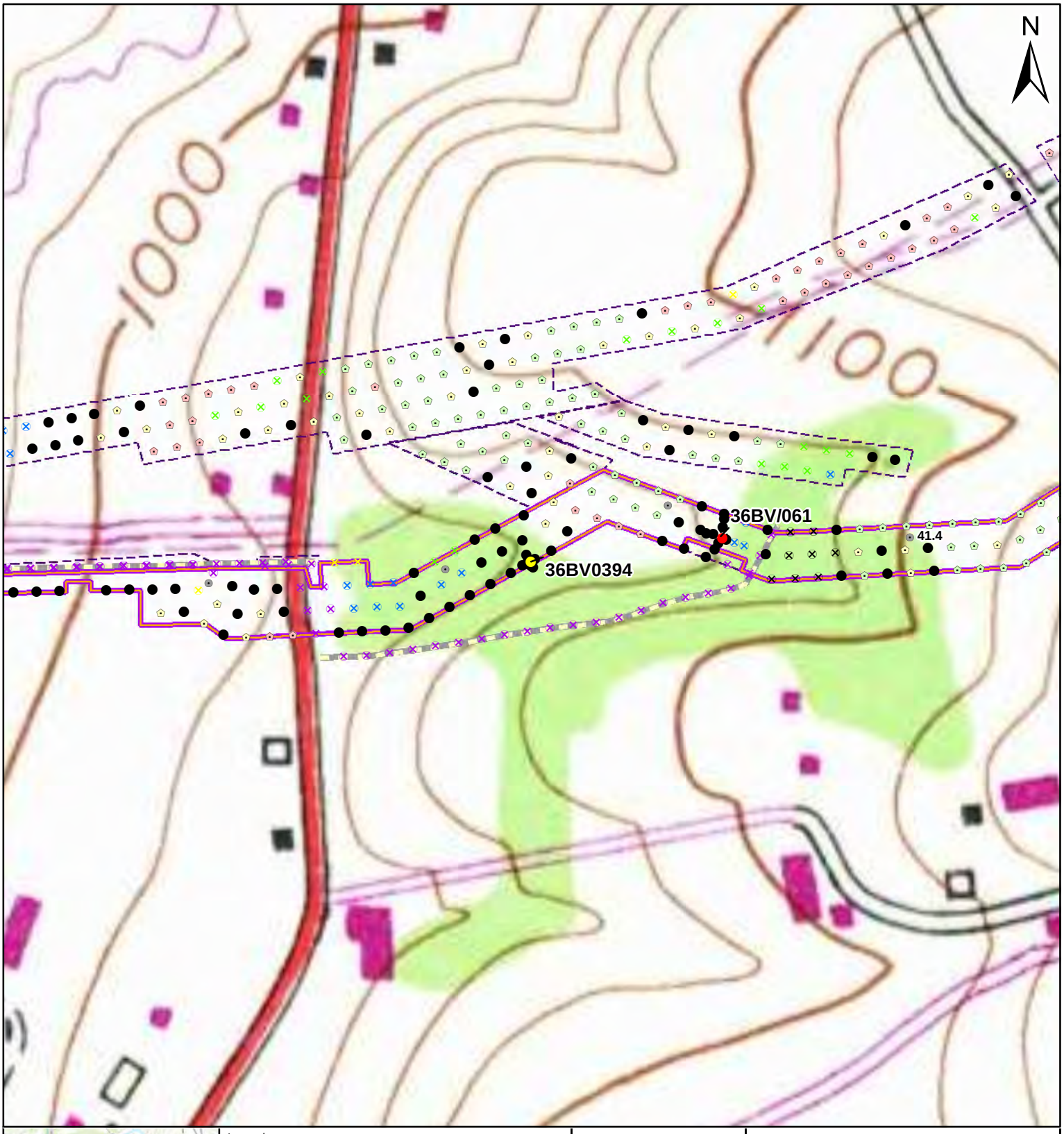
Hookstown Grange Fairgrounds
36BV0394
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.168

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Hookstown Grange Fairgrounds
36BV0394
SITE MAP: MODERN TOPO

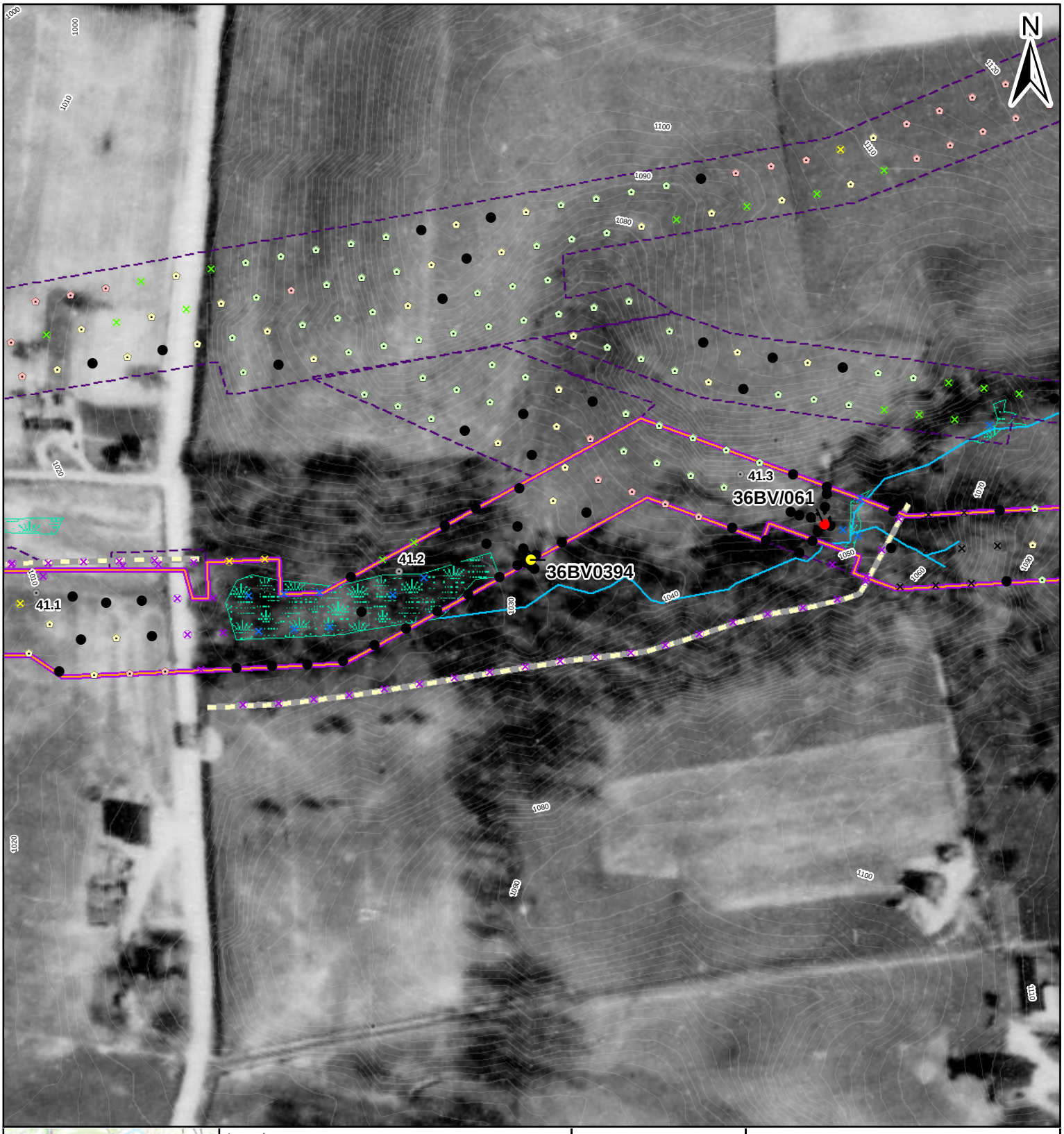
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Reference:
Roll #55, Photograph #78. May 3, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

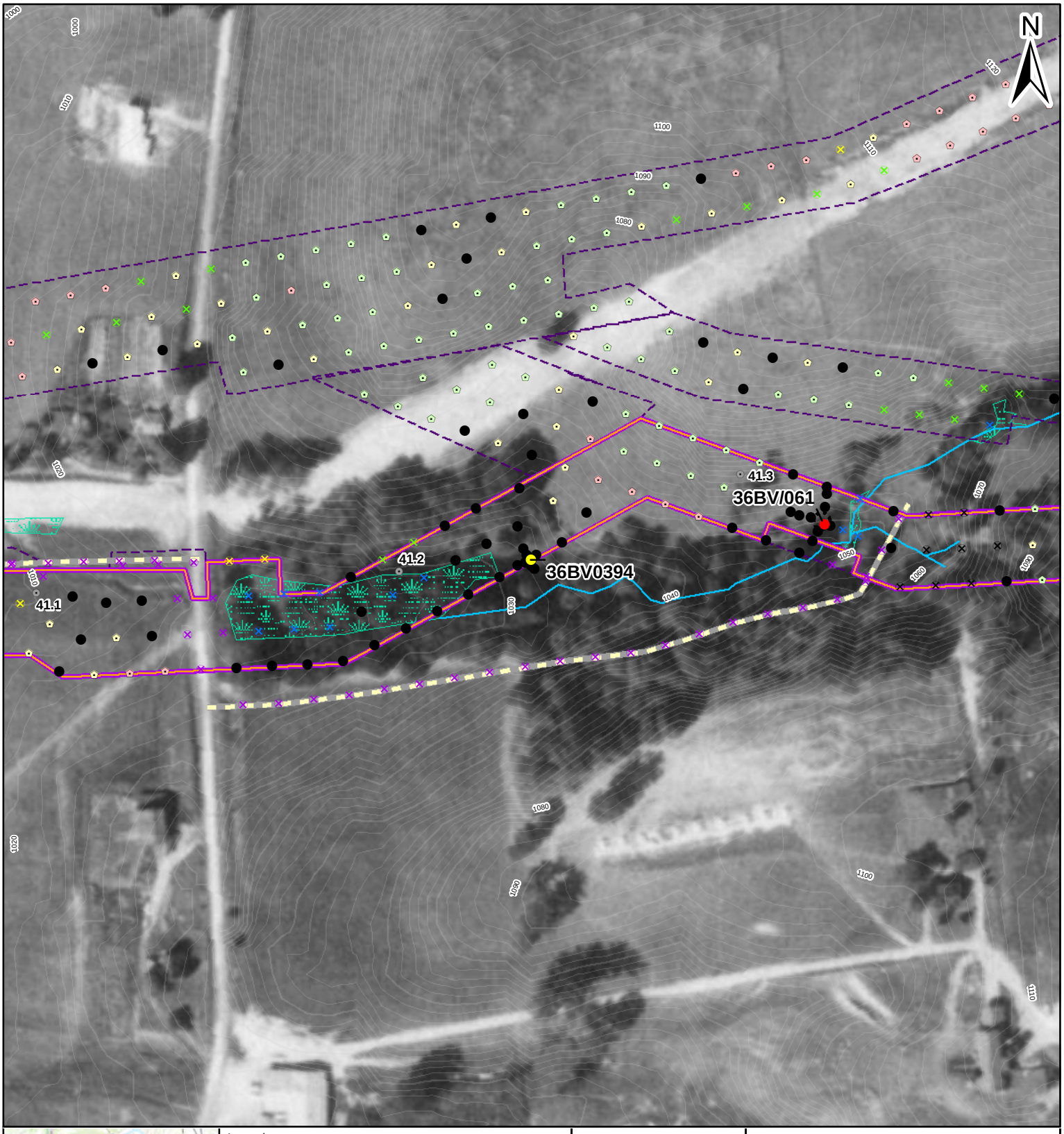
Figure 7.169

Hookstown Grange Fairgrounds
36BV0394
SITE MAP: 1939 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.170

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

Hookstown Grange Fairgrounds
36BV0394
SITE MAP: 1967 AERIAL

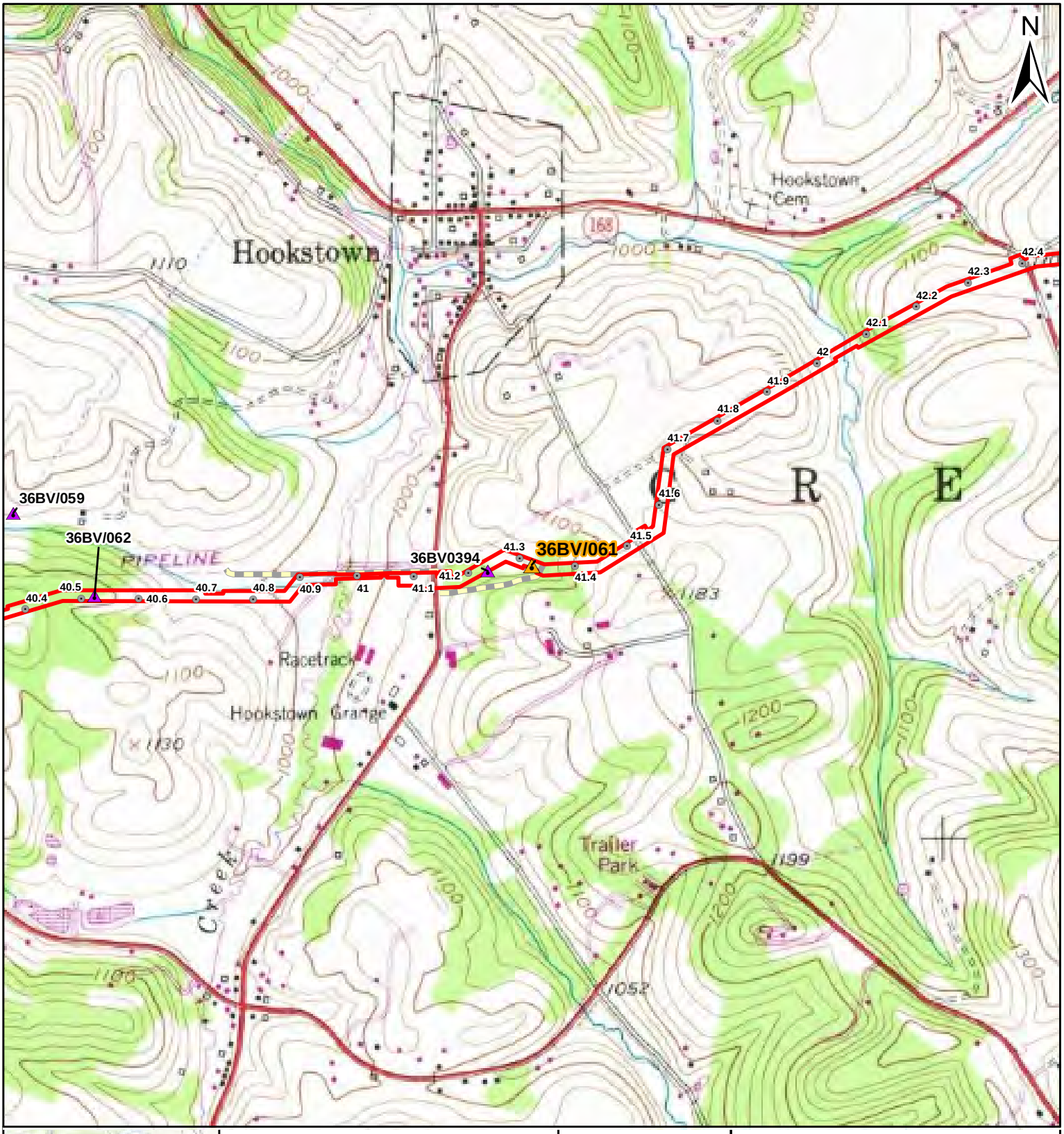
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #3hh, Photograph #36. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_1967_Mapbook.mxd



Legend

Archaeological Data
- 36BV/061
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.171

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/061
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

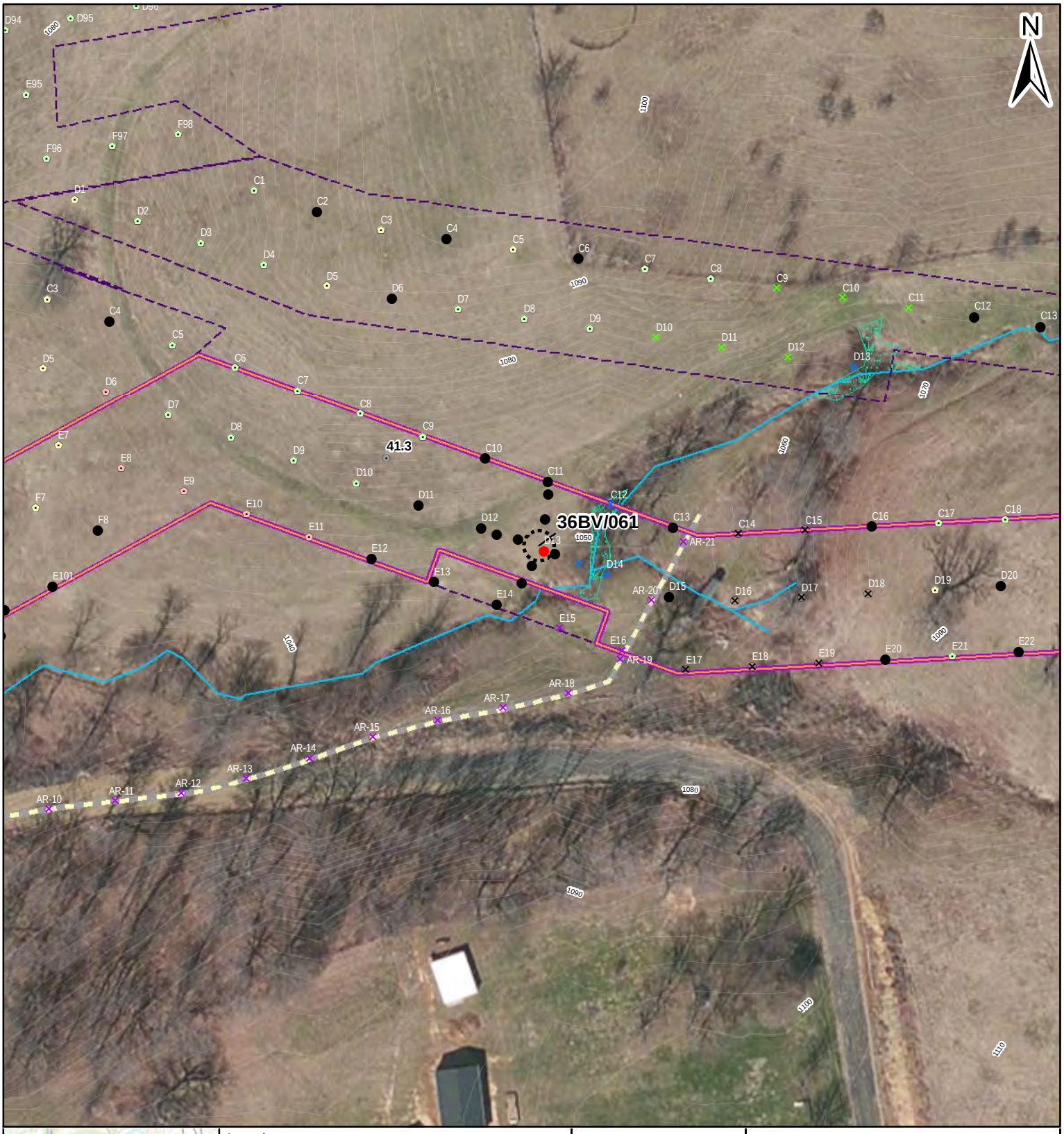
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.172

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/061
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.173

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/061
SITE MAP: MODERN TOPO

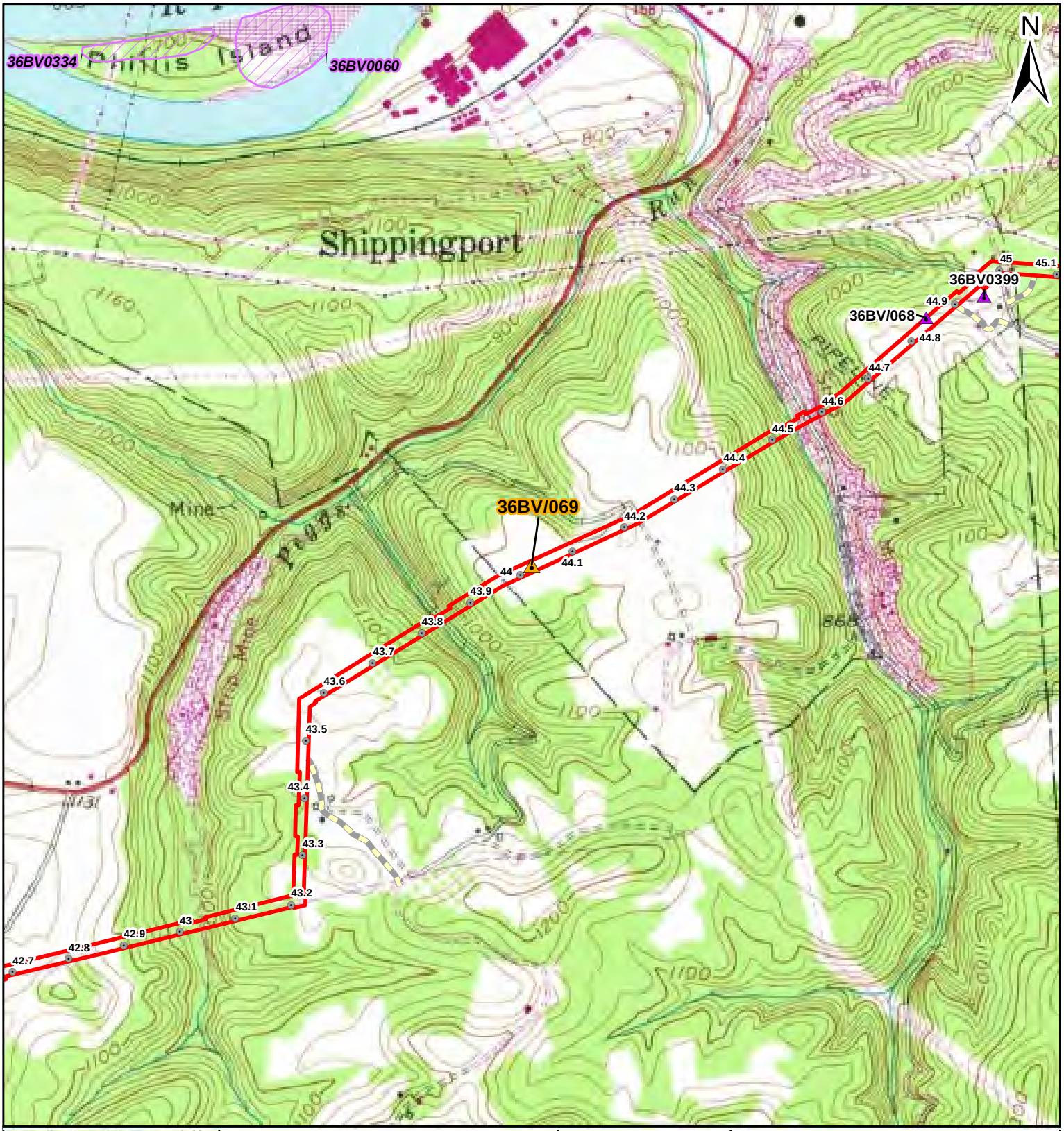
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV/069
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.174

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/069
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

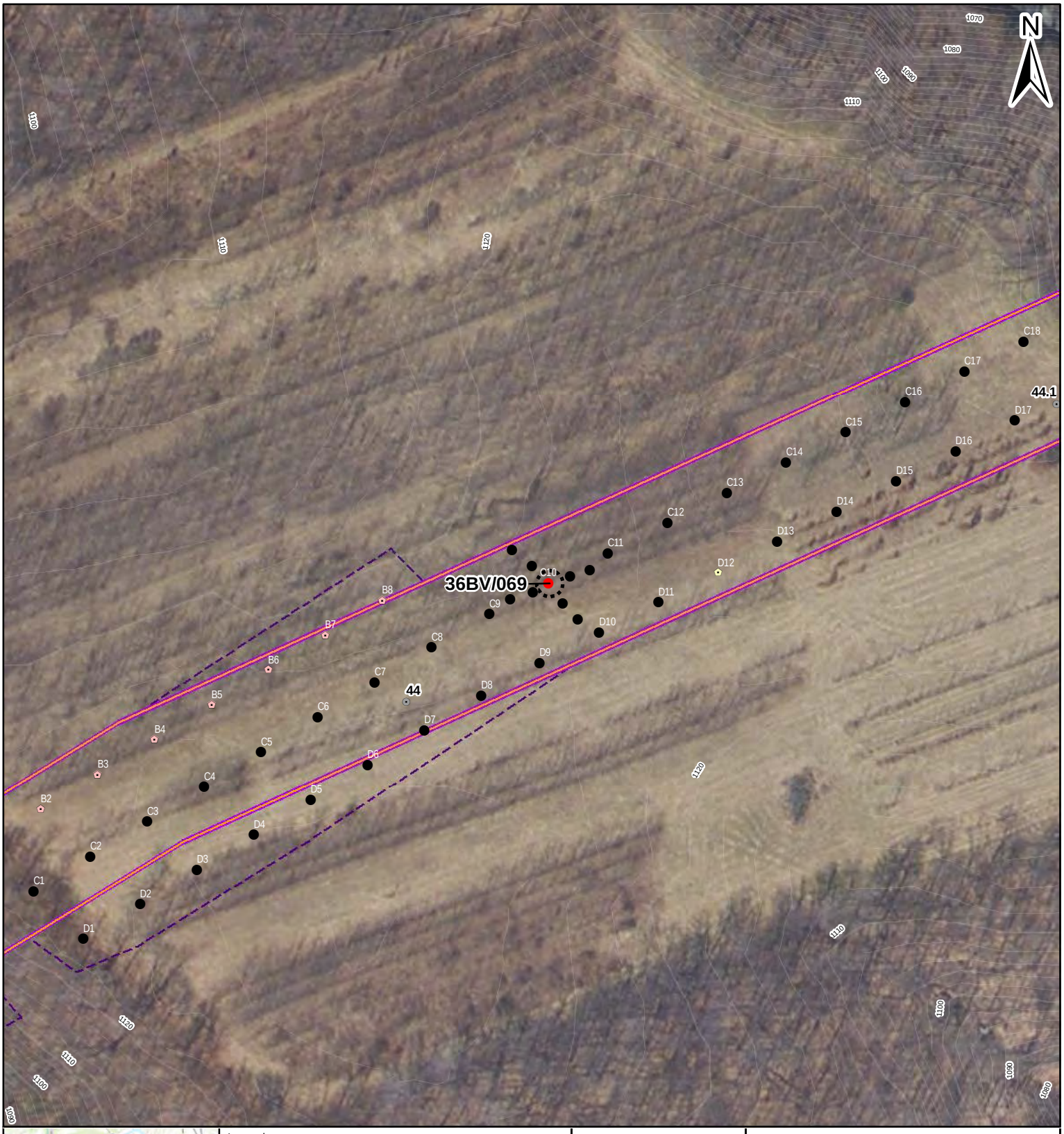
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)

Feet
0 45 90

Figure 7.175

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/069
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd

Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.176

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/069
SITE MAP: MODERN TOPO

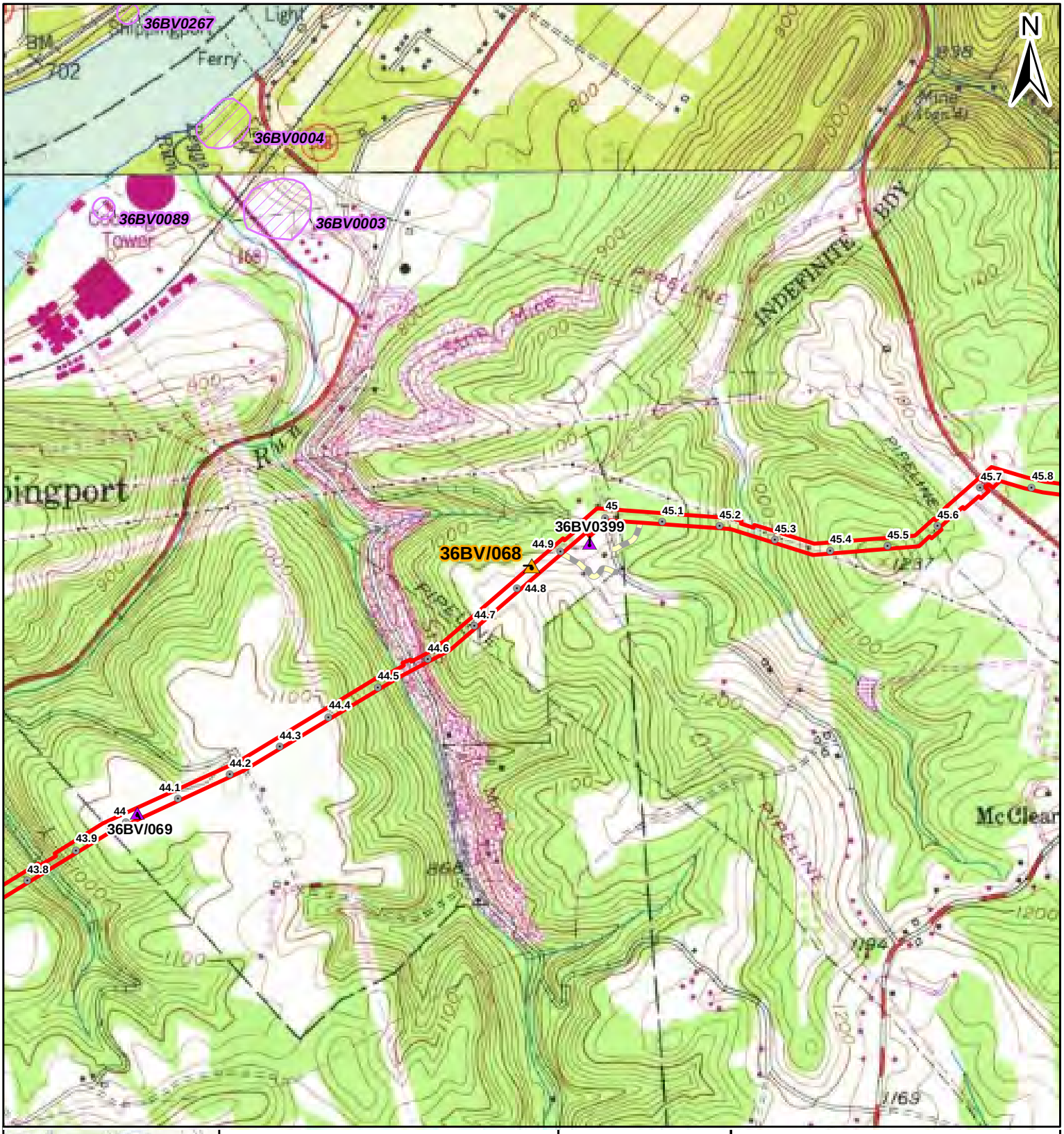
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV/068
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.177

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/068
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

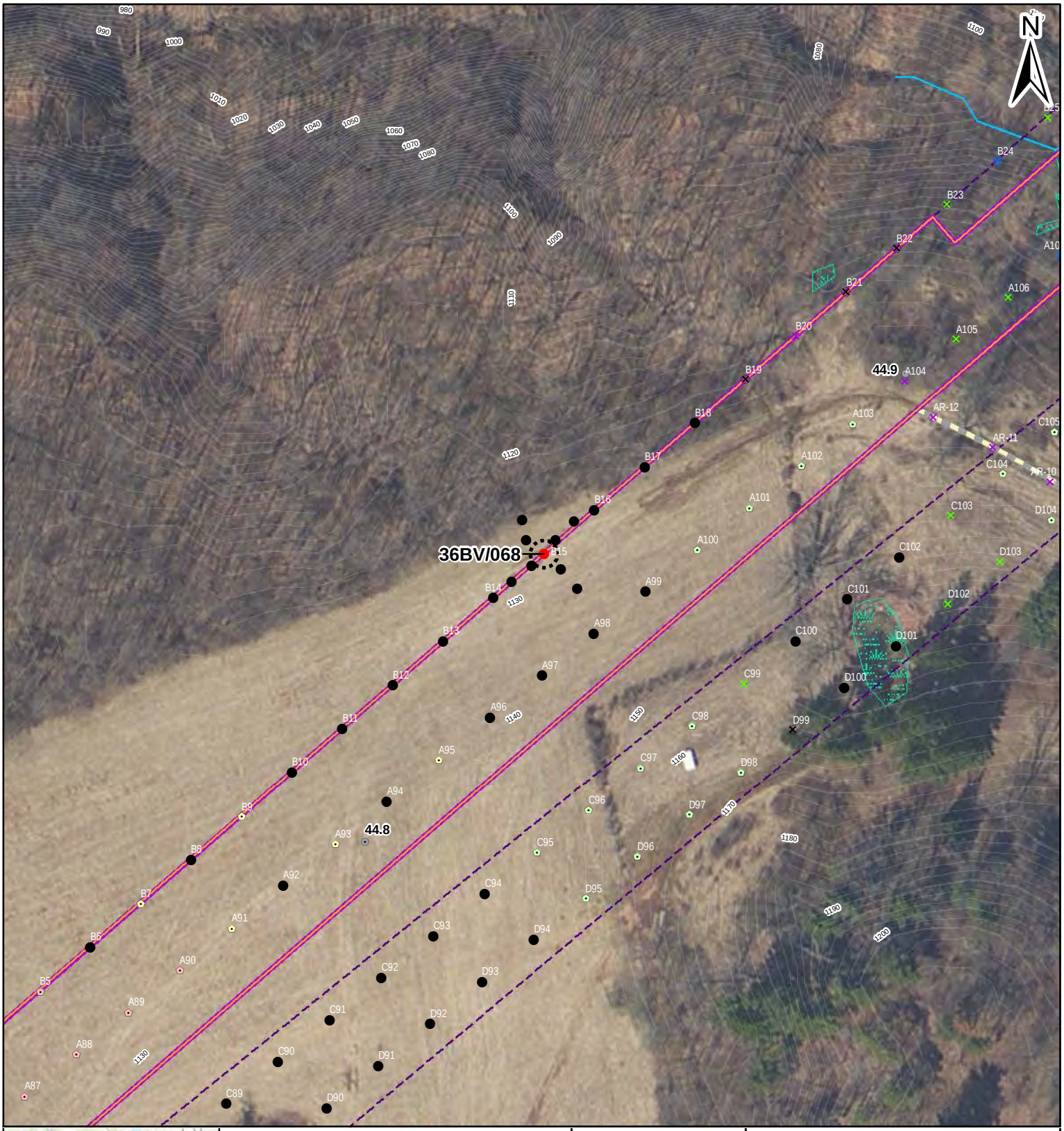
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.178

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/068
SITE MAP: MODERN AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

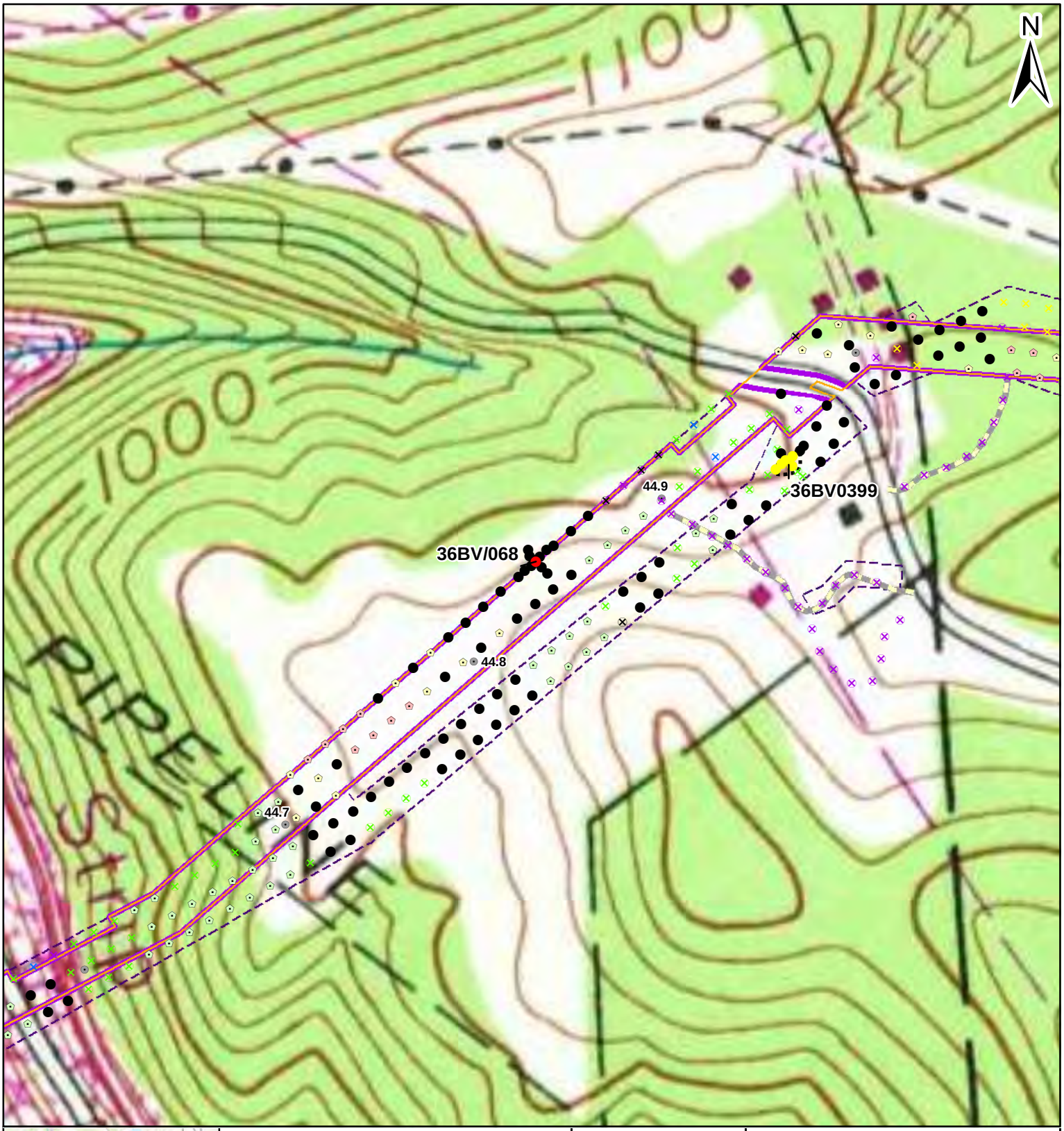
Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016

APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive:Prehistoric
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Feet
0 140 280

Figure 7.179

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV/068
SITE MAP: MODERN TOPO

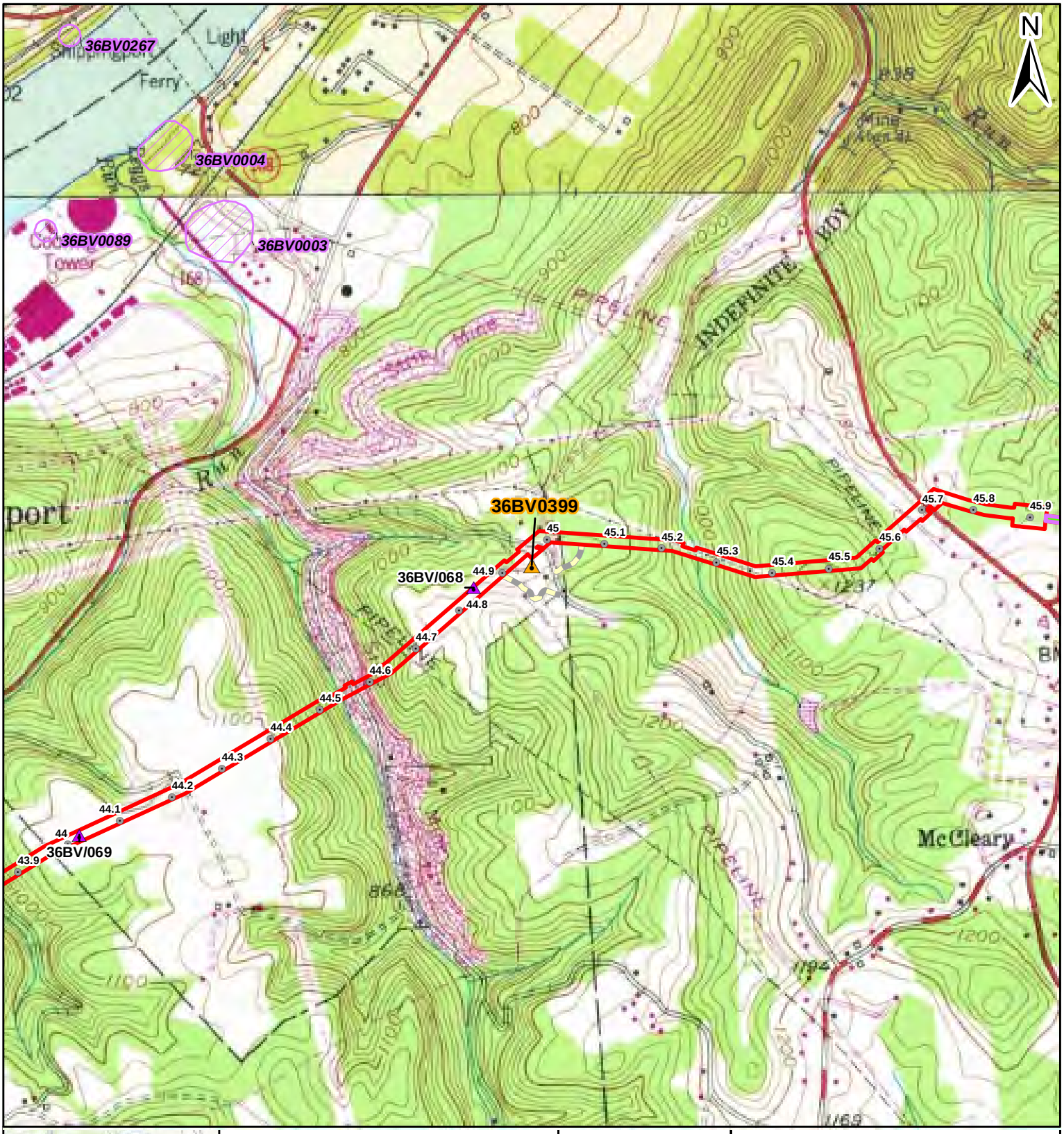
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Sites_Topo_Mapbook.mxd



Legend

Archaeological Data
- 36BV0399
- AECOM Archaeological Resource
- PHMC Archaeological Site

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road

Miles
0 0.1 0.2

Figure 7.180

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: USGS TOPOGRAPHIC OVERVIEW

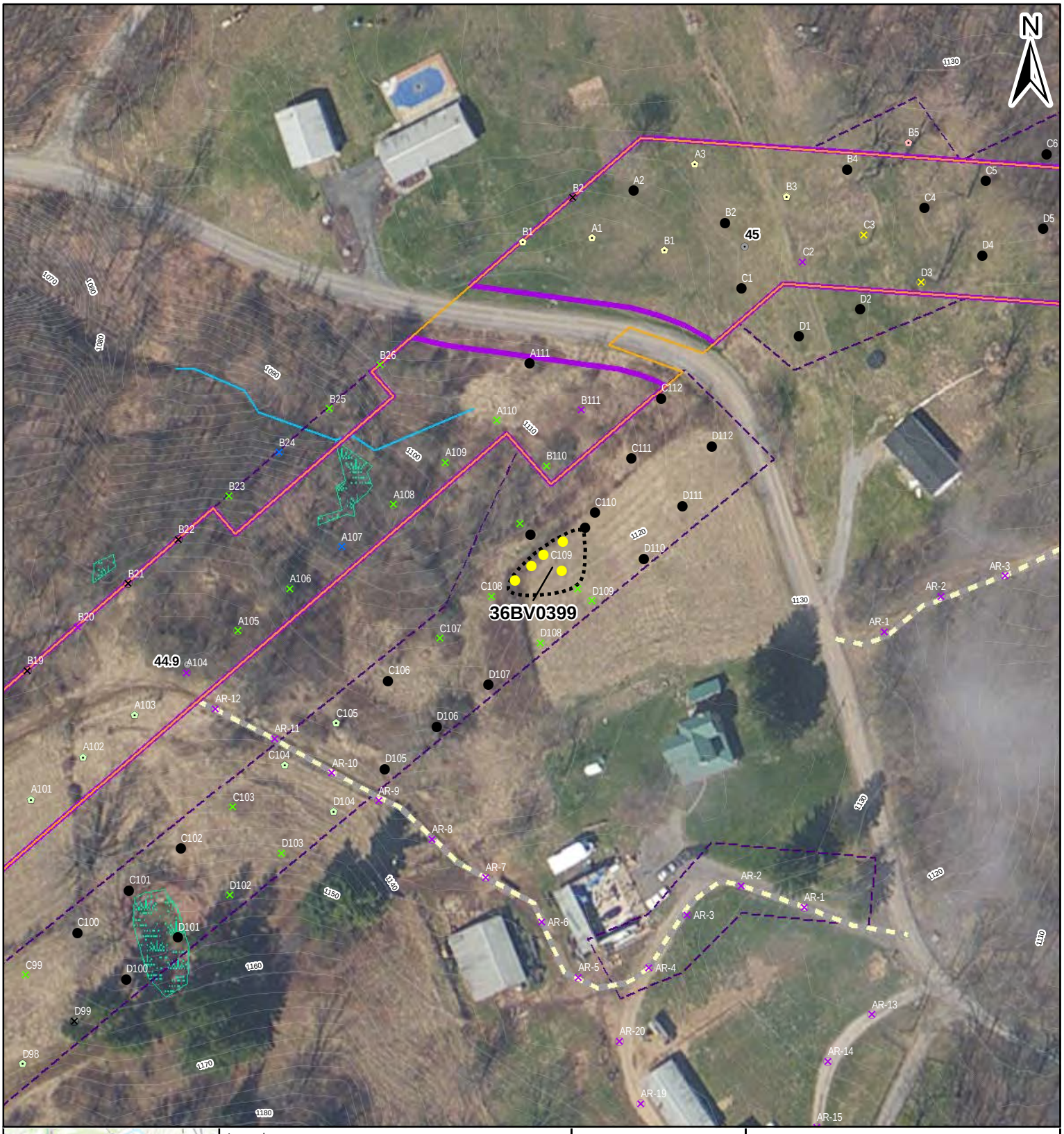
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PA Quadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7.xx_Topo-Overview_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

Feet
0 45 90

Figure 7.181

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: MODERN AERIAL

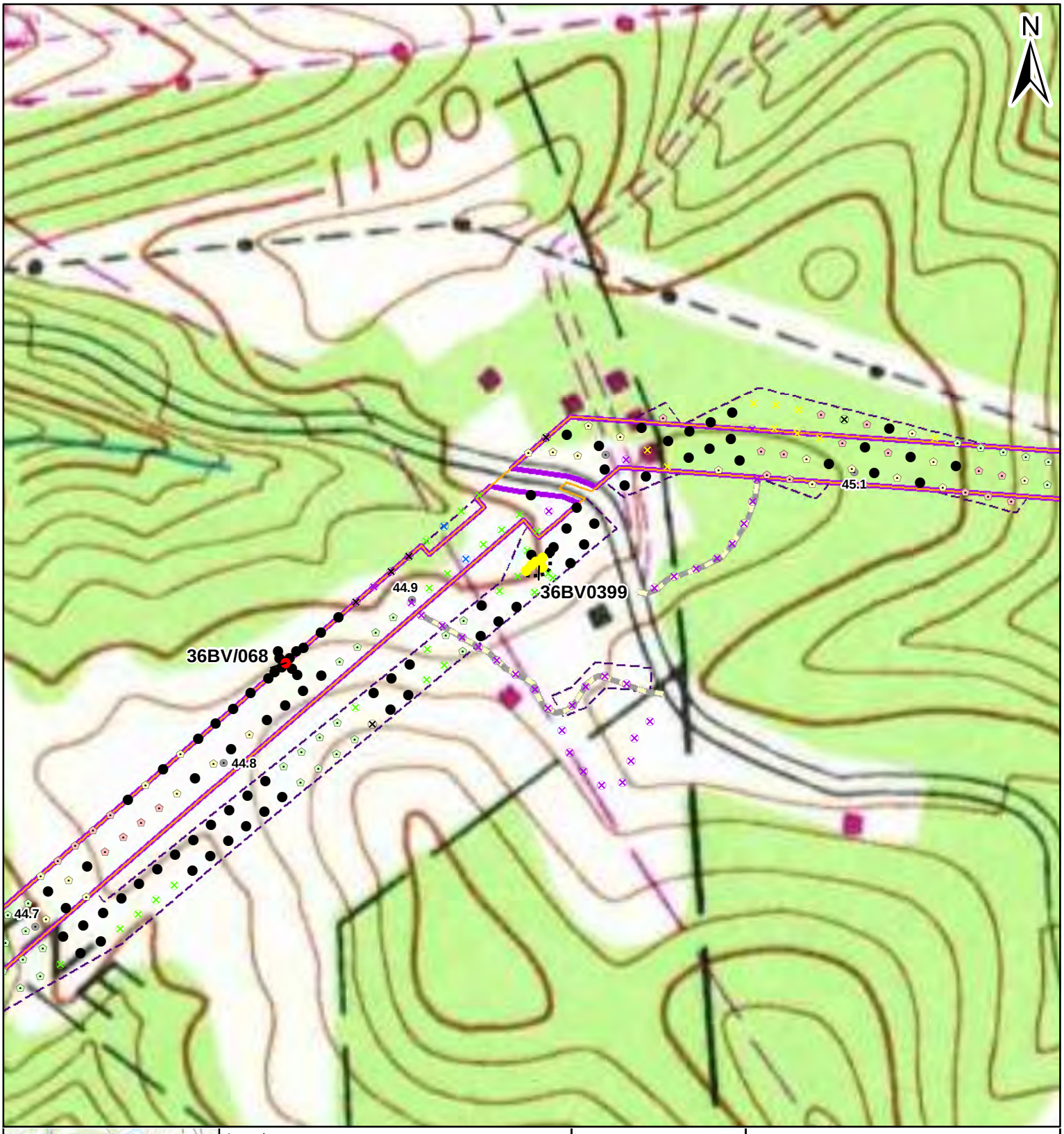
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\ShellNortheast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Aerial_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

0 140 280 Feet

Figure 7.182

AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: MODERN TOPO

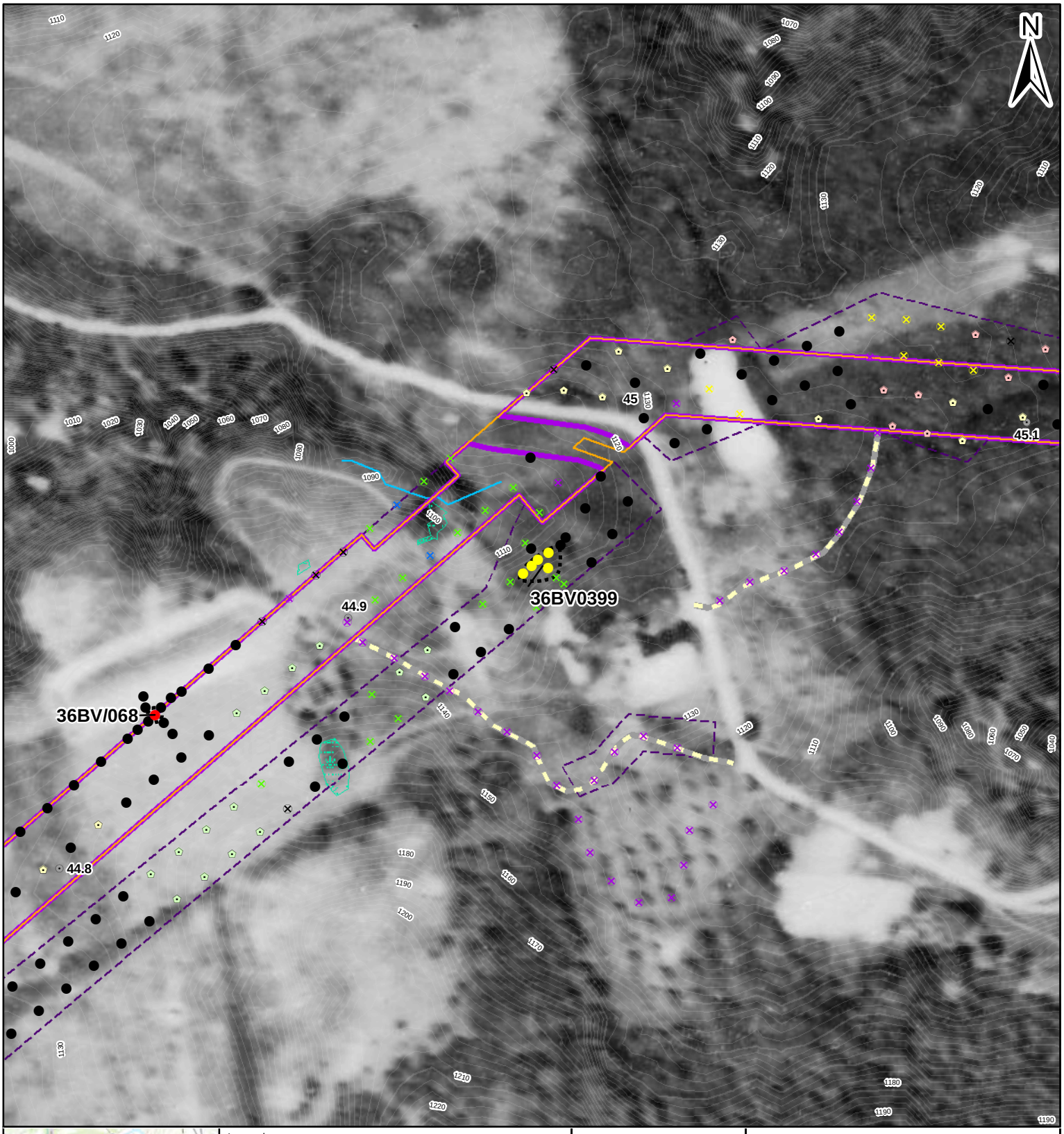
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
USGS 1979 Hookstown, PAQuadrangle. 1:24,000.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_Topo_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.183

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: 1939 AERIAL

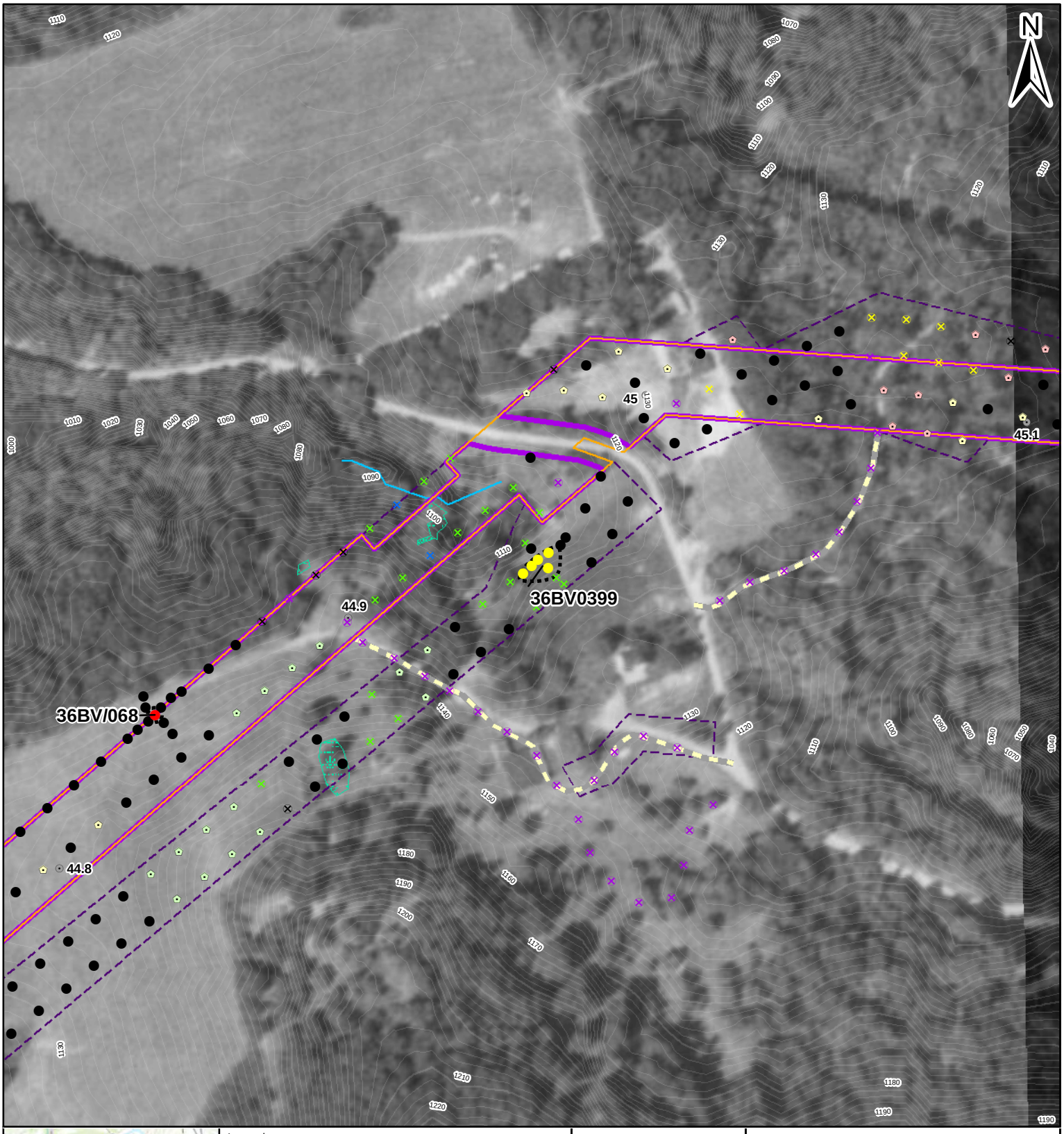
SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #75, Photograph #27. May 24, 1939.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1939_Mapbook.mxd



Legend

Shovel Test Units
- Positive: Historic
- Sterile
- Pedestrian Survey: Medium Sensitivity
- Pedstrian Survey: Low Sensitivity
- Pedestrian Survey: Steep
- Not Excavated: ROW/Transportation
- Not Excavated: ROW/Utility
- Not Excavated: Slope
- Not Excavated: Water/Saturated
- Not Excavated: Other Disturbance

Archaeological Data
- Resource Boundary
- Structure

Project Features
- Milepost
- Proposed Limits of Disturbance
- Proposed HDD Location
- Proposed Access Road
- Surveyed Area: Current Alignment
- Surveyed Area: Former Alignment

Environmental Data
- Topographic contour (2 ft)
- Topographic contour (10 ft)
- Stream
- Wetland

0 90 180 Feet

Figure 7.184

AECOM
FOSTER PLAZA 6
681 ANDERSEN DRIVE,
SUITE 400
PITTSBURGH, PA 15220
412-503-4700

36BV0399
SITE MAP: 1967 AERIAL

SHELL PIPELINE COMPANY LP
FALCON ETHANE
PIPELINE PROJECT

Reference:
Roll #3hh, Photograph #58. Sept 15, 1967.

Coordinate System: NAD 1983 UTM Zone 17N Foot Projection: Transverse Mercator

DRAWN BY: LCC DATE: 12/21/2016
APPROVED: JCR PROJECT #: 60487539

Y:\Projects\1747\Shell\Northeast Ethane Pipeline\CULTURAL\GIS\7.1-7-xx_Sites_1967_Mapbook.mxd