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EARTHRES
ENGINEERING FOR SUCCESS™

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October 25, 2018

Mr. Richard E. Tallman, E.I.T.
Civil Engineer
Bureau of District Mining Operations
PA Department of Environmental Protection
5 West Laurel Boulevard
Pottsville, PA 17901-2454

SUBJECT: **Permit Update – Response to Comments**
Hanson Aggregates Pennsylvania LLC – Rock Hill Quarry
SMP No. 7974SM1
East Rockhill Township, Bucks County, PA
EarthRes Project No.: 061003.052

Dear Mr. Tallman:

On behalf of Hanson Aggregates Pennsylvania, LLC (Hanson), Earthres Group, Inc. (EARTHRES) is hereby submitting the response to your comments dated September 6, 2018 and October 3, 2018. Please find enclosed the following items for your review:

- One (1) copy of Exhibit 6.2;
- One (1) copy of Module 8: Hydrology;
- One (1) copy of Groundwater Pumping Evaluation (GPE) replacement pages;
- One (1) copy of Exhibit 9;
- One (1) copy of Module 9: Operations Map;
- One (1) copy of Module 10: Operational Information;
- One (1) copy of Module 12: Erosion and Sediment Control Plan;
- One (1) copy of Module 13: Impoundments and Treatment Facilities;
- One (1) copy of Module 17: Air Pollution and Noise Control.

For ease of reference your comments are listed below and italicized with our responses included in **bold.**

Response to September 6, 2018 comments:

1. *Module 6.2 Map:*
   a. Please show background monitoring points SW-1 and SW-2 and provide permit and limit of mining acreages.

Response: SW-1 and SW-2 are shown on the inset map included on Exhibit 6.2. The permit and limit of mining acreages have been added to the map.

b. Please delineate the zone of influence as indicated in 8.6b. See Item 3. e. (77.410)

Response: Exhibit 6.2 has been updated to depict the projected zone of influence.

2. *Module 8:*

a. Please explain the high pH results of groundwater samples from MW-1 and MW-2 and the impact the intercepted groundwater discharged during mining operations may have on the receiving water. (77.405)

Response: EARTHRES was onsite on October 4, 2018 to purge and resample MW-1 and MW-2. EARTHRES utilized a submersible pump set at a depth of approximately 100 feet and purged one (1) well volume from each well prior to sampling. Field monitoring during well purging indicated pH levels between 6.0 and 7.0, with final readings of 6.23 and 6.78 std. units for wells MW-1 and MW-2, respectively. Samples were collected for laboratory analysis and submitted under chain of custody to Test America Laboratories Inc. The laboratory results showed pH readings of 7.3 and 7.1 std. units for wells MW-1 and MW-2, respectively. The laboratory analytical results are included in Attachment 2A. The field and lab readings demonstrate that groundwater in MW-1 and MW-2 has a near neutral pH and therefore no adverse impacts will occur.

The previously observed high pH result is indicated to be related to grout used in well construction and completion.

b. The monitoring plan (8.2b) proposes to conduct monthly monitoring of groundwater elevations in monitoring wells MW-1, 2, 3 & 4, however given the proximity of Perkasie Regional Authority water supply wells to the Rock Hill Quarry, monitoring should be conducted twice monthly when quarry pumping is initiated. Monitoring results should be compared to groundwater elevations predicted by the groundwater model at full expansion of the quarry as discussed in the GPE. (77.405)

Response: Module 8.2b has been updated to include bi-monthly sampling after quarry pumping is initiated. Monitoring results will be compared to groundwater elevations predicted by the groundwater model. Please find the replacement Module 8 (attached). The monitoring plan has also been updated in the GPE. Please find the replacement page 3-2 for the GPE (Attached).

Additional background monitoring results obtained since the July Permit Update submittal are included in Attachment 2B.

3. *GPE:*

a. The StreamStats statistics "Harmonic Mean Streamflow" results are less than the "Base Flow x-Year Recurrence Interval" results for the drainage basins of SW-1, 2 & 3. Please explain this apparent discrepancy.

Response: The fact that the harmonic mean streamflow is less than baseflow statistics is not a discrepancy. StreamStats statistical data is generated and provided by the USGS. The methodology employed by the USGS in generating this data is standardized. Harmonic mean streamflow is a statistical mean that gives greater weight towards zero and low flow events than to high flow events. Harmonic mean stream flow is usually a value that is less than both mean annual streamflow and baseflow values.

b. Attachment B provides a saturated thickness (b) of 155 feet for the calculation of hydraulic conductivity (K) at MW-3, however based on static water level measurements given in Module 8. 1(A) saturated thickness ranged from 54 - 102 feet. Please explain the saturated thickness determination for MW-3 in Attachment B.

Response: At the time of slug testing, the water level in MW-3 had not yet equilibrated with the aquifer; therefore an estimated depth to water of 20 feet was utilized in the calculation of saturated aquifer thickness (based on the approximate depth to water in MW-2). The water level in MW-3 has continued to rise during background monitoring. On 9/26/2018, the level was at 41.52 feet (up from the maximum depth of 123.25 feet of 5/30/2018) and is expected to continue to rise before reaching its natural equilibrium level. Given the extremely low hydraulic conductivity near the well, use of an estimate for saturated thickness will have negligible impact to the model. For example, if the saturated thickness is adjusted from 155 feet to 54 feet the hydraulic conductivity increases from 2.39x10^-5 ft/day to 6.74x10^-5 ft/day (see Attachment 3B). Both estimates are within the same order of magnitude and indicative of a very low permeability.

c. Table 6: Please explain the hydraulic conductivity value of 0.1 ft/day for "Layer 2 & 3 Diabase North" given the K values for "Layer 2 Diabase South" (0.015 ft/d) and "Layer 3 Diabase South" (0.00001 ft/d).

Response: The diabase area to the north (diabase north) has significantly less topographic relief than the ridge (diabase south) where the quarry is located (see Attachment 3C). This suggests the diabase north area is more weathered than the ridge and likely has different hydrogeologic properties.

In the model, the north area was parameterized separately from the ridge. During calibration, different K values were obtained as expected based on the topography/geomorphology. The reduction of K with depth in Layer 3 of the diabase north zone was not applied. This adjustment could have been completed for consistency; however, the change has no effect on the quarry pumping results as the quarry does not directly encounter this unit.

d. Please correct formation names in the hydraulic conductivity section of the table under comments.

Response: Table 6 of the GPE has been revised to correct the formation names in the hydraulic conductivity section of the table. See replacement pages 2-4 and 2-5 (attached).

e. Please modify the groundwater model to show the predicted zone of influence for a total drawdown of 130 feet as it would occur across the entire pit floor at full expansion.

Response: Figure 3 has been revised to depict the maximum drawdown under full quarry expansion conditions. The revised Figure 3 is attached. The model does not simulate uniform drawdown across the entire pit floor because drawdown is calculated from the pre-quarry water table which has a natural slope under pre-pumping conditions.

Response to October 3, 2018 comments:

1. *Please provide an updated Module 9: Operations Map [§77.454]*
    a. *With updates to but not limited to:*
        i. *Module 9f) – Changes to or locations of new man-made features.*
        ii. *Module 9n) – Changes to or new water treatment facilities specifically the Oil/Water Separator*
        iii. *Module 9o) – Changes to or new surface water diversions from the rock processing or asphalt plant areas*
        iv. *Module 9p) – Changes to or locations of new erosion and sedimentation facilities*
        v. *Module 9v) – Changes to or locations of new processing facilities and stockpile areas*
            1. *Show RAP storage areas and Volumes*
        vi. *Module 9w) – Changes to or locations of new air pollution or sound pollution control facilities*

Response: Exhibit 9 has been updated to show proposed locations of the Processing Plant, Hot Mix Asphalt Plant and associated stockpile areas, E&S control devices and treatment facilities.

2. *Please provide an updated Module 10: Operational Information [§77.452/77.456/77.563/77.564]:*
    a. *With updates to but not limited to:*
        i. *Module 10.1 – Changes to the Equipment and Operation Plan*
            1. *Include Rap in the Operation Plan*
                a. *Volumes*
        ii. *Module 10.3 – Changes to or new structures*
        iii. *Module 10.15 – Changes to the Bonding Calculations to reflect the rock processing or asphalt plant*
            1. *Include RAP in bonding calculations*

Response: Module 10.1 has been updated to include the operational information regarding the proposed Processing Plant, Hot Mix Asphalt Plant and RAP stockpile area.

Bonding Calculations (Section 10.15) will be provided upon completion of the as-built survey following construction of the proposed facilities.

3. *Please provide an updated Module 12: Erosion and Sediment Control Plan [§77.458/77.461/77.466/77.525/77.527/77.531/Chapter 102]*
    a. *With updates to but not limited to:*
        i. *12.2 Erosion and Sediment Control of runoff from the rock processing and asphalt plant areas*
            1. *Berms*
            2. *Sedimentation Traps*
            3. *RAP storage areas*

Response: Module 12 has been updated to include a Schedule of Implementation for the Hot Mix Asphalt Plant and RAP Stockpile areas.

In addition, a revised copy of the drainage area map has been provided to include the updated topographical information for the proposed Processing Plant and Asphalt Plant Area and to include revisions to the stormwater handling plan for these areas. The drainage areas were reviewed to confirm if changes were needed to downstream treatment facilities. Following review, it was determined that the existing controls provide sufficient capacity to manage the change. Updated volume calculations for Sediment Basin 2 are included as an attachment to Module 12.

4. *Please provide an updated Module 13: Impoundments and Treatment Facilities [§77.457/77.461/77.526/77.531/Chapter 105]*
    a. *With updates to but not limited to:*
        i. *13.1 – Treatment (Oil/Water Separator)*

Response: Module 13 has been revised to include the installation of an Oil Containment Boom to isolate runoff from the proposed Asphalt Plant area.

5. *Please provide an updated Module 17: Air Pollution and Noise Control Plan [Chapters 121, 123, 127, 129/NSMCRA 3323(a)(3)§77.455/77.575]*
    a. *With updates to but not limited to:*
        i. *17.1 – Processing Facilities*
            1. *Crushing*
            2. *Asphalt Plant*
        ii. *17.2 – Air Pollution Control Plan*
            1. *Permits*
        iii. *17.3 – Noise Control Plan*
            1. *"Township" plan*

Response: Module 17 has been updated to include the above requested information as currently available.

If you have any questions or require additional information, please contact us at (215) 766-1211.

Sincerely,
Earthres Group, Inc.

Michael D. Fling, P.E.
Project Manager

Louis F. Vittorio, Jr., P.G.
Vice President

Enclosures: As stated

Cc: Mark Kendrick, Hanson (Letter only)
Andrew Gutshall, Hanson
Bill Bowling, R.E. Pierson

Module 6

Environmental Resources Maps

Module 6: Environmental Resources Maps

6.1 U.S.G.S. Map. [§77.104]

Provide a 7 1/2 minute U.S.G.S. topographic map (latest edition) delineating the proposed surface mine permit area and NPDES discharge points. Identify the map as Exhibit 6.1. (Note: Reproductions or maps obscured by identification keys will not be accepted.) **See Exhibit 6.1: Site Location Map.**

6.2 Environmental Resource *Map. [§77.410]*

Provide a map or plan that includes the permit area and the area within 1000 feet of the permit area. The map or plan shall be clear, accurate, easily read and on a scale of no smaller than 1 inch 400 feet. Maps on the scale of 1 inch = 200 feet for permit areas of 100 acres or less and 1 inch = 400 feet for permit areas larger than 100 acres are preferred. Use the same scale as used for Modules 9 and 18. Identify the map plan as Exhibit 6.2 Environmental Resources Map. Each map or plan must bear the seal or facsimile imprint of a registered professional engineer; or the seal or facsimile imprint of a registered professional land surveyor. A registered professional geologist must certify the geology-related information of items m), n), o), and p). Show all the following information within the permit area and for a distance of 1000 feet from the permit area, unless specified otherwise. Include an appropriate legend on the map. Indicate which items are present by placing a check mark in the box before this item. Please provide the permit number (if it has been assigned) or a space for it in the title block.

☒ a) topographic contours (contour intervals of 20 feet or less)

☒ b) proposed permit area

☒ c) surface water bodies such as streams, lakes, ponds, springs, wetlands, mine discharges and constructed or natural drains (include restricted and variance areas, and names of streams and lakes/use a unique label for each unnamed tributary)

☒ d) property lines (key ownership to Module 5)

☒ e) buildings (include names of the owners and present occupants, and the current use. Show restricted or variance areas)

☒ f) man-made features such as public highways, railroads, utility lines including right-of-ways or easements and other surface and subsurface manmade features (include the name of the highway, railroad and utility and the restricted or variance areas)

☐ g) oil and gas wells in and within 125 feet of the proposed permit area (include the name of the well owner/operator and well permit number. Show restricted or variance areas.) **N/A**

☐ h) public or private cemeteries or Indian burial grounds (include restricted areas)

☒ i) existing or previously surface-mined areas, and existing areas of spoil, waste, and processing waste disposal (key to Module 7.4 and show permit name on map)

☐ j) areal extent of active and abandoned underground mines and entries (Key to Module 7.4) **N/A**

☐ k) solid waste disposal areas **N/A**

☐ l) test hole locations (key to 7.1 b data) **N/A**

☒ m) strata strike and dip or structure contours

☐ n) geologic faults **N/A**

☒ o) formation contacts and coal croplines (when applicable)

☒ p) direction(s) of groundwater flow (local and regional)

☒ q) public and private water supplies (include type, elevation of all springs, and key to Module 8.2(a)(8))

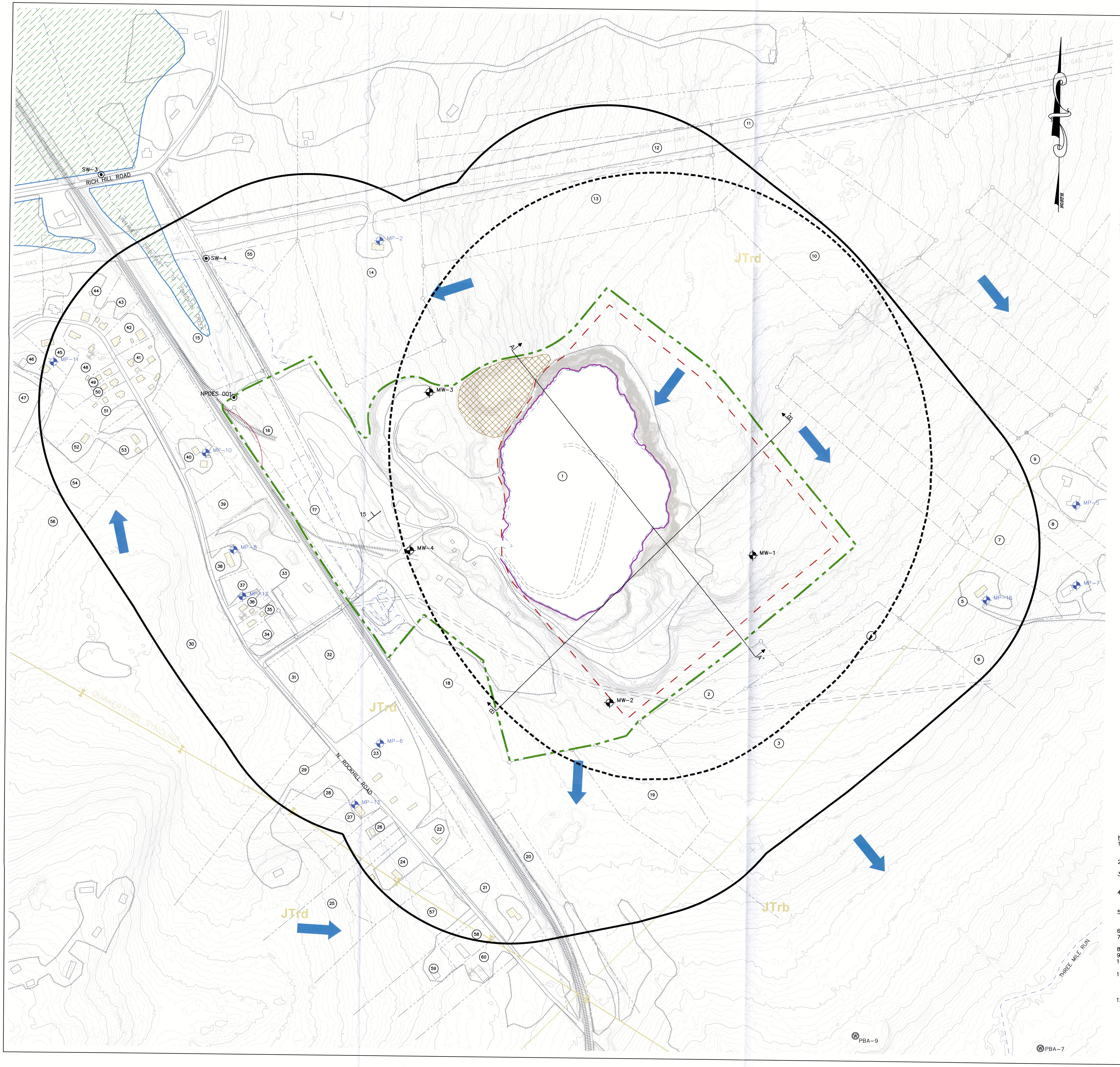
☒ r) public water supplies within ½ mile of the permit area and those with Wellhead Protection Zone extending to the permit area. Show on Exhibit 6.1 if outside limits of Exhibit 6.2.

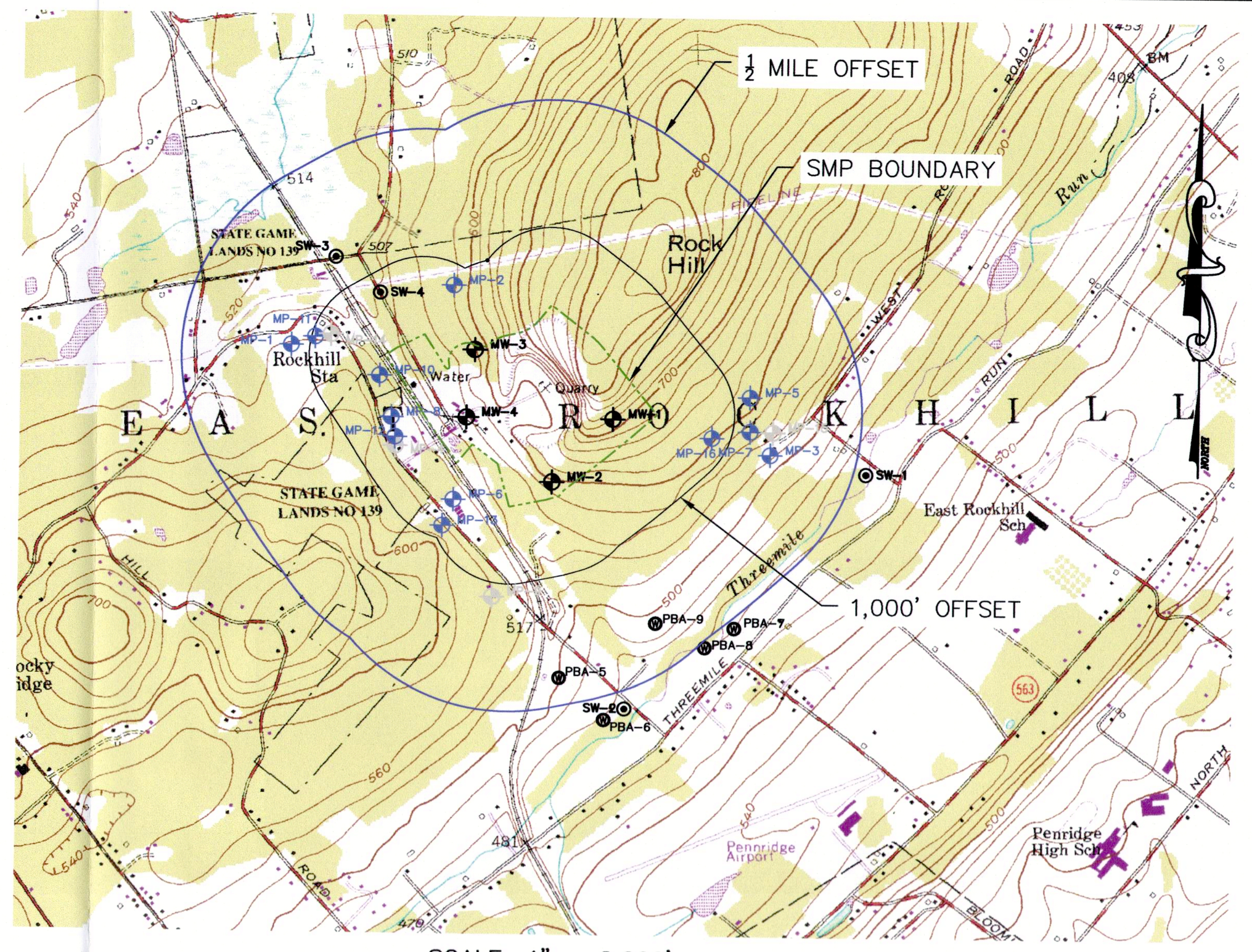
☒ s) background and proposed monitoring points (key to Module 8. 1A)

☒ t) NPDES discharge points

☐ u) landslide prone areas **N/A**

☐ v) sinkhole development and known cave systems **N/A**




SCALE: 1" = 2,000'

LEGEND

- EXISTING GRADE CONTOUR (2-FT INTERVAL)
- PARCEL BOUNDARY
- SMP BOUNDARY (109.8 ACRES)
- EXISTING LIMIT OF MINING (55.0 ACRES)
- 1,000' SMP OFFSET
- PRE-ACT HIGHWALL
- 300' DWELLING SETBACK
- EXISTING EDGE OF ROAD (PAVED)
- EXISTING EDGE OF ROAD (UNPAVED)
- EXISTING SURFACE WATER
- EXISTING RAILROAD
- TREELINE
- GAS PIPELINE
- ZONE OF INFLUENCE (10 FT. DRAWDOWN)
- BUILDING – RESIDENTIAL DWELLING
- NPDES 001 — NPDES DISCHARGE POINT
- OVERBURDEN STOCKPILE
- WETLAND (NATIONAL WETLANDS INVENTORY)
- 15 — STRIKE AND DIP OF BEDS (SEE NOTE 11)
- MW-1 — MONITORING WELL
- MP-1 — RESIDENTIAL WELL (INCLUDED IN BACKGROUND MONITORING)
- MP-1 — RESIDENTIAL WELL (NOT MONITORED)
- SW-3 — SURFACE WATER MONITORING POINT
- PUBLIC WATER SUPPLY WELL
- 21 — PROPERTY ID (SEE NOTE 8)
- GROUNDWATER FLOW DIRECTION

GEOLOGIC LEGEND

- GEOLOGIC CONTACT
- QUAKERTOWN SYNCLINE
- JTrb — BRUNSWICK FORMATION
- JTrd — DIABASE

NOTES:

1. EXISTING GRADE TOPOGRAPHY COMPILED BY PAMAP PROGRAM, PA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES, BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY, DATED JUNE 2010.
2. TOPOGRAPHY AND SITE FEATURES IN WESTERN PERMIT AREA WERE SURVEYED BY EARTHRES GROUP, INC. PERSONNEL, JANUARY 2017.
3. BASEMAP FEATURES INCLUDING BUILDINGS, ROADS, UTILITIES, WATER FEATURES, AND TREELINES RETRACED FROM AERIAL PHOTOGRAPHY DATED 2015, PUBLISHED BY THE DELAWARE VALLEY REGIONAL PLANNING COMMISSION.
4. EXISTING PERMIT INFORMATION INCLUDING PERMIT BOUNDARY, MINING LIMIT, DEPTH OF MINING, AND PRE-ACT HIGHWALLS ARE REFERENCED TO THE PERMIT DRAWING "MINING PLAN, SHEET 3 OF 6" PREPARED BY SKELLY AND LOY, DATED MARCH 18, 1980.
5. HANSON PROPERTY BOUNDARY PROVIDED BY VAN CLEEF ENGINEERING ASSOCIATES VIA MAP TITLED "PLAT OF SURVEY OF LANDS OF GENERAL CRUSHED STONE", ORIGINALLY PREPARED BY ORANGEVILLE SURVEYING CONSULTANTS, INC., DATED MAY 7, 2001.
6. ADJACENT PARCEL BOUNDARIES ARE REFERENCED TO THE BUCKS COUNTY GIS RECORDS.
7. WETLANDS REFLECT THOSE DEPICTED IN THE NATIONAL WETLANDS INVENTORY FWS WETLANDS MAPPER.
8. PROPERTY OWNERSHIP INFORMATION REFERENCED TO MODULE 5 OF THE PERMIT APPLICATION.
9. STREAM INFORMATION IS REFERENCED TO THE PA DEP eMAPPA ONLINE RECORDS.
10. GEOLOGY OBTAINED FROM PAGEODE, PA GEOLOGIC DATA EXPLORATION, WWW.GIS.DCNR.STATE.PA.US/GEOLOGY/(2018).
11. STRIKE AND DIP OF BEDS WAS NOT SPECIFICALLY TAKEN ON DIABASE. THE MAPPED LOCATION OF THE SHOWN MEASUREMENT IS FROM "GEOLOGY MAP OF BUCKS COUNTY PENNSYLVANIA" BY B. WILLARD, D. B. MCLAUGHLIN, E. H. WATSON AND OTHERS DATED 1950, AND IS REPRESENTATIVE OF REGIONAL STRIKE AND DIP OF TRIASSIC SEDIMENTARY FORMATIONS.
12. PUBLIC SUPPLY WELL LOCATIONS BASED ON "HYDROGEOLOGIC ANALYSIS OF PERKASIE WATER SUPPLY WELLS AND CONSULTANT'S REPORT FOR THE YEAR 2017" PREPARED BY MERCURI AND ASSOCIATES, INC., DATED JUNE 2018.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

NO.	DATE	BY	REVISIONS
1	10/16/18	JTK	REVISED PER DEP COMMENTS

MICHAEL D. FLING, P.E. LICENSE NO. PE080620

LOUIS F. VITTORIO JR., P.G. LICENSE NO. PG001394G

PROJECT SITE:
HANSON AGGREGATES PENNSYLVANIA LLC
SMP NO. 7974SM1
EAST ROCKHILL TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

PREPARED BY:
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EXHIBIT 6.2
ENVIRONMENTAL RESOURCES MAP

HANSON AGGREGATES PENNSYLVANIA LLC
ROCK HILL QUARRY

DRAWN BY: JJB
CHECKED BY: MDF
DATE: 7/18/18
PROJECT NO: 061003.052
DRAWING NUMBER: R-002
SHEET 2 OF 6

Module 8

Hydrology

Module 8: Hydrology
[§§77.405/77.406/77.407]

8.1 Chemical Analysis.

Provide the following data, in accordance with 8.2 for each point in the background sampling and monitoring program and report on Module 8.1(A).

a) pH (field & laboratory) **See Attachment 8.1(A)**

b) Total Suspended Solids (mg/l) **See Attachment 8.1(A)**

c) Total Dissolved Solids (mg/l) or Specific Conductance ($\mu S/_{cm}$ at 25°C) **See Attachment 8.1(A)**

d) Field temperature at sample source (°C).

See Attachment 8.1(A)

e) Provide the following in addition to a) through d) above, if requested by the Department. *

Total Alkalinity (mg/l)
Total Acidity (mg/l)
Total Iron (Fe) (mg/l)
Total Manganese (Mn) (mg/l)
Sulfates ($S0_4$) (mg/l)

*If the proposed noncoal minerals to be mined are located within the coal fields or other known acid producing areas or a watershed sensitive to mining impacts, additional parameters may be required by the Department. Contact the appropriate District Mining Office prior to beginning sampling to determine if these parameters are needed.

N/A – The Site is not located in a watershed sensitive to mining impacts.

f) Flows of perennial streams above and below the operation and surface and underground mine discharges must be measured by approved methods. In addition, other flows from springs, streams, seeps or other discharge points in the representative monitoring program should be measured to reflect seasonal variations. (The Department may waive sampling points if there is a representative sampling of the requested points.) The elevations and flows of springs, seeps, and mine discharges are required.

See Attachment 8.1(A)

g) Provide a description of the type of sample point (e.g. well, spring, etc.) and its relationship to the mine site (e.g. up-gradient, perched aquifer, down-gradient).

See Attachment 8.1(A)

h) Provide the name(s), address(es) and telephone number(s) of the individual(s) responsible for the collection and analysis of this data.

EarthRes Group, Inc.
6912 Old Easton Road
Pipersville, PA 18947
(215) 766 - 1211

Test America Laboratories, Inc.
1010 W. Ninth Avenue, Suite 50
King of Prussia, PA 198406
(484) 685 - 0871

i) Provide a description of the methodology used to collect and analyze this data.

Disposable bailers were used to collect samples that were collected from monitoring wells, MW-1, MW-2, and MW-3. Residential well samples were collected by running an interal faucet or external spigot until the sample was visibly clear. If possible, sample locations installed before any filtration or treatment equipment were chosen. The static depth to water was measured using an electronic water level meter prior to sampling. The static water level of MW-4 was moniored with a sonic water level meter.

Stream samples SW-1, SW-2, SW-3, and SW-4 were collected directly as grab samples. Surface water flows were measured using a Global Flow Probe to record flow velocity and flow depth at several stations across the channel using the USGS "6 tens method". In instances where the flow was too low to register on the probe, flow was estimated.

Field parameters consisting of temperature, pH, total dissolved solids, specific conductivity, and oxidation reduction potential

were measured during sampling using a calibrated Myron II ultrameter.
Water samples were packed on ice and transported under chain of custody to Test America Laboratories, Inc. for water quality analysis.

8.2 Background Sampling and Monitoring.

a) Background Sampling

Provide the results of the chemical analyses, as required by the Department, that characterize the water quality of sample points listed in 1) through 8). Background sampling points must have at least two (2) complete chemical analyses, at monthly intervals. All sampling points must be keyed to Exhibit 6.2 and identified in Module 8.1(A).

Note: *Include sample(s) from a low flow period.*

1) each stream that receives discharge, runoff or drainage from the operation.

Three Mile Run: SW-1 and SW-2; and
Unnamed Tributary to Tohickon Creek: SW-3 and SW-4

2) streams, springs or wetlands that are representative of the surface and groundwater system of the general area.

Three Mile Run: SW-1 and SW-2; and
Unnamed Tributary to Tohickon Creek: SW-3 and SW-4

3) springs, seeps and wetlands within the permit area and springs, seeps and wetlands within 1,000 feet of the permit area.

N/A

4) impoundments within the permit area and impoundments within 1000 feet of the permit area.

Sump

5) impoundments, impoundment discharges, and discharges from backfilled areas associated with previous or current underground or surface coal mines within the permit area and within 1,000 feet of the permit area.

N/A

6) discharges within the permit area resulting from underground mines and discharges resulting from underground mines that are within the permit area but discharge outside the permit area.

N/A

7) any monitoring wells developed to determine the characteristics of the groundwater. (The Department may require additional monitoring wells.)

Monitoring Wells MW-1, MW-2, and MW-3 were installed during this investigation to determine the characteristics of groundwater. Monitoring well MW-4 has been in existence at the Site previous to the permit update and was used to collect groundwater levels during this monitoring period. Additional information regarding groundwater is found in the Groundwater Pumping Evaluation dated July, 2018.

8) private water supplies and water supplies abandoned because of degradation or pollution from mining, within the permit area and within 1,000 feet of the permit area. For each water supply sampled, provide the data required on the Private Water Supply Information Exhibit 8.2(A)(8) and indicate the source of the information (e.g. owner interview, survey by operator, P.E. etc.). (Provide driller logs if available.) (The Department may require additional water supply information on a case-by-case basis.)

MP-1, MP-2, MP-3, MP-5, MP-6, MP-7, MP-8, MP-10, MP-11, MP-12, MP-13, MP-16, and MP-17.

b) Monitoring Program

Describe the proposed surface and groundwater monitoring plan that will be conducted. The monitoring plan shall include quantity and quality measurements of discharges from the operation; points that will show any effect of the discharge on the receiving stream; and points that will show any effect on the groundwater system. Unless otherwise approved by the District Mining Office prior to permit application submittal, monitoring points must have a minimum series of six (6) complete chemical analyses collected at monthly intervals and should include the month of August, September or October to reflect low flow conditions.

Points to be included in the Monitoring Program are provided in the tables below. Static water elevations in monitoring wells (MW-1, MW-2, MW-3, and MW-4) will be recorded monthly. When pumping is initiated monitoring frequency will increase to bi-monthly (at least 20 days apart). Surface water sampling of NPDES Point 001 will be conducted as required by the NPDES Permit.

All monitoring points must be keyed to Exhibit 6.2. Monitoring plans must provide for collection and monitoring on a quarterly basis unless otherwise specified by the Department. All monitoring data must be compiled on Module 8.1(A) or equivalent facsimile. All monitoring points should be identified in the field with durable markers that can be maintained (wooden stakes, metal or plastic tags, etc.; not just plastic flagging).

If monitoring Points are added during the pre-application field meeting, the Department will accept the application with three (3) months of sampling results for those points only.

The following monitoring locations should be included in the monitoring program:

The permanent monitoring point locations for the Quarry are shown on Exhibit 6.2. Monitoring locations are summarized below and discussed in further detail in the Groundwater Pumping Evaluation.

		Monitoring Points (Key to Exhibit 6.2)
1)	receiving streams above proposed discharge points	**N/A**
2)	receiving streams below proposed discharge points	**N/A**
3)	abandoned underground or surface mine discharges that are hydrologically connected and may be impacted by the proposed mining	**N/A**
4)	representative springs and seeps within the permit area and within 1,000 feet of the permit area	**N/A**
5)	representative wetlands with **defined discharge points** within the permit area and wetlands within 1,000 feet of the permit area that may be impacted by the proposed mining,	**N/A**
6)	water supplies	**N/A**
7)	cased boreholes/piezometers	**N/A**
8)	point source discharges	**001**
9)	treatment pond discharges	**N/A**
10)	sedimentation pond discharges	**001 (collected per NPDES permit)**
11)	pit water during active mining (identify by mineral being mined)	**N/A**
12)	each monitoring well developed to determine the characteristics of the groundwater	**MW-1, MW-2, MW-3, MW-4 (Water Level Only)**

Note: In cases where cased boreholes/ piezometers or monitoring wells are not necessary, insert NA above and provide an explanation.

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: _____ Monitoring Point I.D.: _____ Description of Sample Point**: _____
Operation Name: _____ Latitude: ____° ____' ____."N and _____
Permit No.: _____ Longitude: ____° ____' ____."W _____
Township: _____ Surface Elevation (MSL): _____ _____
County: _____

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) or Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or Specific Conductance $\mu S/_{cm}$ @25°C	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		**Laboratory and Name of Sampler**
								Submit above as requested by the Department							

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

8.2(A)(8) PRIVATE WATER SUPPLY INFORMATION (key to Module 6.2)

Sample Point No	Owner	Type of Supply (Dug or Drilled Well, Spring)	Use	Surface Elevation (MSL)	Depth of Casing	Diameter of Well	Static Water Elevation (MSL) or Flow, Date of Measurement	Depth of Well	Type of Treatement If Any (iron filter, etc.)
MP-1	Salvatore and Janice Galluppi	Drilled	Domestic	543	Unknown	6”	535.08	150’	None
MP-2	Michael Wilder and Eileen Koolpe	Drilled	Domestic	592	Unknown	6”	580.58	400’	Filtered
MP-3	Robert Silber	Drilled	Domestic	511	Unknown	Unknown	469.50	Unknown	No
MP-4	Donald G. Thomas Sr.	Drilled	Domestic	548	Unknown	Unknown	Unknown	Unknown	No
MP-5	Steven and Deborah Conolly	Drilled	Domestic	585	65’	Unknown	535.70’	200’	No
MP-6	Terry DeGroot	Drilled	Domestic	538	Unknown	Unknown	Unknown	Unknown	No
MP-7	Bruce Costa	Drilled	Domestic	556	Unknown	Unknown	Unknown	Unknown	No
MP-8	David S. Fitzgerald	Drilled	Domestic	542	Unknown	Unknown	526.8’	Unknown	Unknown
MP-9	Howard F. Bryan Jr.	Drilled	Domestic	556	Unknown	Unknown	Unknown	79’	Filtered
MP-10	Ryan and Kimberly Gottshall	Drilled	Domestic	534	100’	6”	526.17	500’	No

8.2(A)(8) PRIVATE WATER SUPPLY INFORMATION (key to Module 6.2)

Sample Point No	Owner	Type of Supply (Dug or Drilled Well, Spring)	Use	Surface Elevation (MSL)	Depth of Casing	Diameter of Well	Static Water Elevation (MSL) or Flow, Date of Measurement	Depth of Well	Type of Treatement If Any (iron filter, etc.)
MP-11	Steven Benner	Drilled	Domestic	534	Unknown	Unknown	510.6	180’	Filtered
MP-12	Michael Maier	Dug	Domestic	544	Unknown	Unknown	531.6	Unknown	Filtered
MP-13	Gene and Donna Herdon	Drilled	Domestic	560	45’	6”	542.2	420’	Filtered
MP-14	M. Arthur Halllett	Drilled	Domestic	Unknown	Unknown	Unknown	Unknown	Unknown	Filtered
MP-15	William S. Seachrist	Drilled	Domestic	Unknown	40’ 4”	6”	Unknown	140’	No
MP-16	Andrew Wright and Sandra Lehrman	Drilled	Domestic	Unknown	Unknown	Unknown	Unknown	Unknown	No
MP-17	Gary and Beth Gotwals	Drilled	Domestic	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

8.3 Groundwater Information.

a) State if and when groundwater will be intercepted (e.g., mining below the water table, installation of a production well for support or processing facilities) and describe the groundwater system that exists within the permit and adjacent area. If pumping of groundwater is planned, indicate the estimated gallons/day to be pumped. Include the depth to groundwater and the water table conditions present (artesian, regional, perched, etc.), the relationship to the mineral to be mined, known groundwater problems, and the data and references used to establish the description. Groundwater modeling may be required if the pumping has the potential to adversely impact water supplies, wetlands and other water resources and their affiliated uses. (Key groundwater elevations to cross-sections in 7.1 (c).)

Groundwater conditions at Rock Hill Quarry (Quarry) are described in detail within the Groundwater Pumping Evaluation (GPE) submitted as a supplement to this application in Attachment 8.6 (d). The groundwater potentiometric surface ranges from a high of 598.05 feet above mean sea level (amsl) on the east side of the quarry (MW-1) to a low of 524.5 feet amsl (MW-3). The water in the quarry sump is at a level of approximately 598 feet amsl. The active face currently being mined is higher in elevation than the current groundwater level. Under the current NPDES permit, the Quarry is allowed to pump up to 0.23 MGD. The calibrated numerical model for the Quarry described in the GPE indicated an average groundwater inflow of 0.034 MGD at the maximum extent of mining (See GPE Section 3.1). Precipitation that falls over the permit area is estimated to collect an additional 0.035 MGD. At the proposed final depth of 464 feet amsl, the total steady-state pumping rate is projected to be 0.069 MGD (refer to the GPE). The data collected for the GPE indicates that potential hydrologic impacts due to the continued mining of the Quarry are minimal. The hydrologic balance will continue to be assessed through the implementation of the monitoring plan in conjunction with the Quarry's pumping records.

b) Describe the groundwater movement of the area and the conditions that control and influence the movement and infiltration. Include the influence of any underground mines, cave systems or other karst features.

Groundwater movement in the area is described within the GPE. Most groundwater movement in the local area occurs in the interconnected fracture network that includes joints and faults. Fracture networks within the diabase are often discontinuous over moderate to large distances, resulting in development of local groundwater flow systems. The water table is generally a subdued reflection of topography, and groundwater typically flows downhill discharging to local streams. A simulated groundwater map for the current unconfined aquifer is included as Figure 2 of the GPE. No underground mines or cave systems were identified in or adjacent to the quarry.

c) Identify all aquifers above the lowest mineral to be mined and the first aquifer below the lowest mineral to be mined and the presence of any underground mine or cave system. Include stratigraphic units, depths, and any current use.

The Quarry is located within the Haycock/Rockhill Diabase. The diabase intrudes into native sedimentary rock of the Brunswick and Lockatong Formations (See Greenman, D., 1955 Plate 1). The Brunswick Formation is a sequence of sedimentary rock from shale to siltstone with interbedded sandstone. The Locatong Formation is also a sedimentary sequence with laminated beds of siltstone and shale or argillite. The intrusion of diabase has created a metamorphosed zone of baked Brunswick Formation surrounding the diabase. Mining will occur solely within the diabase. Groundwater within the diabase is stored exclusively in fractures because the crystalline rock has no primary porosity (see GPE for additional information).

There are no known underground mines or cave systems in the vicinity of the Quarry.

d) Identify the effects which any previous mining has had on the quantity and quality of the groundwater in the area, including impacts from increased turbidity, suspended solids or settleable solids. Include the source, rock unit involved and the reasons for the effect.

There are no known effects from previous mining on the quantity or quality of groundwater in the vicinity of the Quarry.

e) Identify any other (i.e. non-mining) existing effects on the quantity and quality of the groundwater in the area. Include the source, involved and the reasons for the effect.

☒ Not Applicable

8.4 Surface Water Information.

a) Identify each stream receiving drainage from the proposed operation and the 25 Pa Code Chapter 93 projected water use classification.

Stream	***Classification***
Unnamed Tributary to Tohickon Creek	**TSF, MF**

b) Identify the effects which previous mining has had on the quantity and quality of the surface waters in this area, including impacts from increased turbidity, suspended solids or settleable solids. Include the source, rock unit involved, and reasons for the effect.

There are no known effects from previous mining on the quantity or quality of groundwater in the vicinity of the Quarry.

8.5 Public Water Supply Information.

Provide the name, type, and location of all current public (community and non-community) surface water supplies that have intakes on the receiving stream within 10 miles downstream of the proposed permit area; public (community and non-community) water supplies (wells or springs) in or within one half mile of the proposed permit area; and public water supply wells for which any part of the permit area is within the Wellhead Protection Zone. Show the location of these supplies on Exhibit 6.1 or 6.2.

Based on the information obtained from Hydrogeologic Analysis of Perkasie Water Supply Wells and Consultants Report for the Year 2017, prepared by Mercuri and Associates. Inc. June 2018, there are two wells (PBA-5 and PBA-9) within ½ mile of the Quarry. Three additional wells (PBA-6, PBA-7, and PBA-8) are located just outside of the ½ mile boundary. See additional information in Attachment 8.5. All of these wells are keyed to Exhibit 6.2.

There are no known surface water intakes for a Public Water Supply ("PWS") within 10 miles downstream of the Quarry discharge. Two (2) groundwater withdrawals within one half mile of the permit area were located through a a search of the Department's eMapPA website, and the results are provided in Attachment 8.5.

8.6 Hydrologic Assessment

a) Describe the groundwater hydrology in relation to the proposed mining operation (at maximum depth and lateral development) - i.e. - intercept regional water table, above regional water table, intercept perched water table, etc.

The Quarry has already intercepted the water table within the diabase rock. Progressive dewatering of the Quarry will result in a limited cone of depression surrounding the Quarry.

8.6 Hydrologic Assessment (continued)

Identify water supply sources that may be contaminated, diminished or interrupted by the mining operation and the means to restore or replace the affected supply. Include a demonstration that the quantity of the water supply will be sufficient to meet the needs of the water supply use. Note why other water supplies will not be affected. Provide a specific capacity, step-drawdown, or other approved yield test for all water supplies that may be impacted by mining and for each proposed replacement supply source. Yield tests on other wells are at the discretion of the applicant or as requested by the Department. Provide specific capacity data on Module 8.6(A). Please refer to the guidance document, " Procedures for Establishing the Quantity of Water in Low-Yield Wells" for methods.

There are no water supply sources that are anticipated to be contaminated, diminished or interrupted by the mining operation. A numerical groundwater model of the continued mining of the Quarry was developed and the results are provided in the Groundwater Pumping Evaluation (GPE) (Attachment 8.6d). The results of the model indicate that the aquifer has low hydraulic conductivity, resulting in a steep cone of depression with limited aerial extent. There are no wells located within the modeled 10-foot drawdown contour zone of influence for the quarry area at the proposed final depth and areal extent of mining.

1) Provide the existing operation and maintenance costs for each water supply that may be contaminated, diminished or interrupted by the mining operation and the projected operation and maintenance costs for the proposed replacement supply.

N/A - there are no water supplies that are anticipated to be affected by mining.

aa) If the operation and maintenance costs for the proposed replacement water supply will be more than for the existing water supply, identify the provisions for compensating the water supply owner for the increased costs or provide the consent to Lesser Water Supply Agreement Form 5600-FM-BMP0110 for the increased operation/maintenance costs.

N/A - there are no water supplies that are anticipated to be affected by mining.

b) Describe the probable hydrologic consequences of the proposed noncoal surface mining activities on the hydrologic system of the permit area and adjacent area both during and after the operation. Describe the impact, during and after mining, on existing quantity and quality of the surface and groundwater.

A numerical groundwater model of the Quarry was developed and the results are provided in the Groundwater Pumping Evaluation (Attachment 8.6d). The investigation results indicate that the aquifer has low hydraulic conductivity, which will result in a steep cone of depression with limited aerial extent. There are two (2) wells located within the modeled 10-foot drawdown contour (zone of influence) for the quarry area at the proposed final depth and areal extent of mining (discussed above). During mining, minor drawdown may occur as a result of groundwater discharge to the quarry. The volumetric discharge and drawdown are expected to be minimal. The zone of influence extends a limited extend beyond the property boundary as shown on Figure 3 of the GPE and Exhibit 6.2. Based on the background sampling conducted, the water quality is not expected to be impacted as a result of quarry development. After conclusion of mining activities the water levels in the pit will recover to an approximate level of 590 amsl and the water table will return to pre-pumping levels.

There are no anticipated impacts to the quantity or quality of surface water in the vicinity of the Quarry.

c) Is there evidence of sinkhole or cavern development in or within 1,000 feet of the proposed permit area? ☐ Yes ☒ No

If "yes" is checked, describe the effects mining will have on sinkhole or cavern development and the steps that will be taken to repair or alleviate sinkholes.

N/A

d) Has groundwater modeling been conducted? ☒ Yes ☐ No

If "yes" is checked provide documentation for the modeling and the results.

See Groundwater Pumping Evaluation provided as Attachment 8.6d.

References for Module 8 are provided in the Groundwater Pumping Evaluation.

Groundwater Pumping Evaluation

Replacement Pages

Table 6 Model Parameters		
Parameter	**Calibrated Value**	**Comment**
Aquifer Thickness (feet)	500	Thickness is constant, equal to ground surface minus 500 ft.
Layer 1-Vertical Anisotropy Ratio	1	Indicates horizontal conductivity equal to vertical conductivity.
Layer 2&3-Vertical Anisotropy Ratio	10	Indicates horizontal conductivity greater than vertical conductivity by a factor of 10 to 1.
Horizontal Anisotropy Ratio	1	No anisotropy indicated.
River Conductance (feet/day/foot)	1	Conductance = Streambed Hydraulic Conductivity * Width / Thickness
Drain Conductance (feet/day/foot)	1	Conductance = Drain Hydraulic Conductivity * Width / Thickness
Hydraulic Conductivity (feet per day)		
Layer 1-Overburden/Weathered Bedrock	2	Representative value for unconsolidated overburden
Layer 1-Overburden/Weathered Bedrock along Ridge	1	Representative value for unconsolidated overburden
Layer 2&3-Brunswick Formation (Trb)	0.5	Value is in agreement with published range of 0.22-16 ft/day for Brunswick Formation (Low, et al., 2002)
Layer 2&3-Metamorphosed Brunswick Formation (Trb)	0.1	Value is estimated to be reduced from typical hydraulic conductivity for the Brunswick Formation due to metamorphic alteration.
Layer 2&3-Diabase North(Jd)	0.1	Value is in agreement with published range of 0.01-2.7 ft/day for Diabase (Low, et al., 2002)
Layer 2-Diabase South(Jd)	0.015	Value is in agreement with published range of 0.01-2.7 ft/day for Diabase (Low, et al., 2002)

Table 6 (Continued)

Parameter	Calibrated Value	Comment
Hydraulic Conductivity (feet per day) Continued		
Layer 2&3-Lockatong Formation (Trl)	0.5	Value is in agreement with published range of 0.04-48 ft/day for Lockatong Formation (Low, et al., 2002)
Layer 3-Diabase South(Jd)	0.00001	Value is assumed to be reduced from typical hydraulic conductivity for the Diabase with depth.
Recharge (inches per year)		
Brunswick Formation (Trb)	7.9	Regional average reported in Reese & Risser (2010) is 10-14 inches per year for Bucks County. Value reduced to represent portion of recharge to enter bedrock.
Metamorphosed Brunswick Formation (Trb)	9.2	Regional average reported in Reese & Risser (2010) is 10-14 inches per year for Bucks County. Value reduced to represent portion of recharge to enter bedrock.
Diabase North(Jd)	7.9	Regional average reported in Reese & Risser (2010) is 10-14 inches per year for Bucks County. Value reduced to represent portion of recharge to enter bedrock.
Diabase South (Jd)	8.8	Regional average reported in Reese & Risser (2010) is 10-14 inches per year for Bucks County. Value reduced to represent portion of recharge to enter bedrock.
Lockatong Formation (Trl)	7.9	Regional average reported in Reese & Risser (2010) is 10-14 inches per year for Bucks County. Value reduced to represent portion of recharge to enter bedrock.

A sensitivity analysis was completed for the model and indicated the hydraulic conductivity of the diabase in Layers 2 and 3 and recharge over the diabase to be the most sensitive parameters to predicting groundwater levels at the Quarry.

total StreamStats baseflow, respectively. Based on these considerations, no adverse impacts will occur to surface water and the hydrologic balance will be maintained.

3.4 Protection of the Hydrogeologic Balance

Based on the model and the prevailing hydrologic conditions, impacts from continued mining are not anticipated. The diabase along the ridge is a minimally productive aquifer of large extent and thickness and will undergo no long-term impacts from quarry dewatering.

From a water budget standpoint, approximately 45.0 inches of average annual rainfall occur in the region of the Quarry. This amounts to 3.15 billion gallons of rainfall annually over the 4.0 square mile watershed of Three Mile Run Creek and Unnamed Tributary to Tochickon Creek. Estimating that 60% of the average annual rainfall is evapotranspirated (vegetative uptake and evaporation), approximately 1.26 billion gallons per year or 3.5 MGD remain available for groundwater recharge and surface water runoff. The estimated quarry pumping rate calculated herein is approximately 0.069 MGD. This number constitutes the average daily amount of groundwater and surface water that will be pumped by the Quarry and is significantly less than the calculated available volume of water. With 3.5 MGD present in the streams and aquifer, the Quarry will pump about 2.0% of the available water, and the hydrogeological balance will be maintained.

In addition, the above calculation assumes that quarry pumping is consumptive. It is well-documented that quarry pumping operations do not constitute a significant consumptive water use. During pumping, surface and groundwater elements of the water budget are rerouted to a downgradient location, where discharge would eventually occur naturally. Therefore, total consumptive use of basin surface and groundwater will be minimal, most likely less than 0.1 MGD.

3.5 Discussion and Future Monitoring

The hydrologic balance will be assessed through implementation of the Monitoring Plan, see Module 8.2(b), in conjunction with the record of Quarry pumping. (to be documented and reported to the PA DEP). The proposed monitoring network will include bi-monthly levels at MW-1, MW-2, MW-3, and MW-4 following initiation of pumping in addition to the Quarry's discharge rate. Data from the monitoring network will record the effects from quarrying and will allow for determination of any realized impacts to surface water and groundwater.

LEGEND

- PUBLIC WATER SUPPLY WELL
- MONITORING WELL
- RESIDENTIAL WELL (INCLUDED IN BACKGROUND MONITORING)
- RESIDENTIAL WELL (NOT MONITORED)
- SURFACE WATER MONITORING POINT
- 10 FT Z.O.I.
- GROUNDWATER DRAWDOWN CONTOUR
- LIMIT OF MINING
- SMP BOUNDARY
- SURFACE WATER

NOTES:

1. SMP BOUNDARY AND LIMIT OF MINING PROVIDED BY HANSON AGGREGATES PENNSYLVANIA LLC – ROCK HILL QUARRY FROM EXISTING SITE MAP, EXHIBIT 9. (2/20/18).
2. SITE IMAGERY OBTAINED FROM PASDA, 2017 STATEWIDE COLOR.
3. GROUNDWATER CONTOURS FROM LAYER 3 OF THE MODEL. (150' – 500')

FIGURE 3
FULL EXPANSION DRAWDOWN MAP

ROCK HILL QUARRY
HANSON AGGREGATES PENNSYLVANIA LLC
EAST ROCKHILL TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

DRAWN BY:	CHECKED BY:	PROJECT NO:
JJB	MSW	061003.052
DATE: 6/22/2018	DRAWING SCALE: 1" = 1,000'	

EarthRes
ENGINEERING AND SCIENCE
6912 Old Easton Road
Pipersville, PA 18947 USA
8000 Combs Farm Drive
Morgantown, WV 26508
www.earthres.com
PA office 215.766.1211
WV office 304.212.6866
toll free 800.264.4553

F:\PROJECTS\Hanson\061003.052 Rock Hill Permit Update\CAD\Drawings\Rev 4\GPE FIGURES.dwg Layout: B SIZE LAND User: mfling 10/23/2018 19:25

Attachment 2A

MW-1 & MW-2 Analytical Report

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-166127-1
Client Project/Site: Rock Hill

For:
Hanson Aggregates PA LLC
7660 Imperial Way
Allentown, Pennsylvania 18195

Attn: Andrew Gutshall

Jill Miller

Authorized for release by:
10/12/2018 4:18:52 PM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-166127-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-166127-1

Comments
No additional comments.

Receipt
The samples were received on 10/5/2018 12:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

Receipt Exceptions
The method detection limit (MDL) is the lowest value detectable by the laboratory for a given analyte as determined by the MDL procedure detailed in EPA 40 CFR 136. Reported MDL values are adjusted for any dilutions and percent moisture (as applicable). The lab is unable to report values below the MDL.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Client Sample ID: MW-1

Lab Sample ID: 460-166127-1

Date Collected: 10/04/18 15:00
Matrix: Water
Date Received: 10/05/18 12:05

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	131		10.0	10.0	mg/L			10/11/18 13:45	1
Total Suspended Solids	17.9		1.0	1.0	mg/L			10/11/18 10:46	1
pH	7.3	HF			SU			10/06/18 10:27	1

Client Sample ID: MW-2

Lab Sample ID: 460-166127-2

Date Collected: 10/04/18 12:15
Matrix: Water
Date Received: 10/05/18 12:05

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	182		10.0	10.0	mg/L			10/11/18 13:45	1
Total Suspended Solids	8.3		1.0	1.0	mg/L			10/11/18 10:46	1
pH	7.1	HF			SU			10/06/18 10:31	1

Lab Chronicle

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Client Sample ID: MW-1

Lab Sample ID: 460-166127-1

Date Collected: 10/04/18 15:00

Matrix: Water

Date Received: 10/05/18 12:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	559386	10/11/18 13:45	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	559329	10/11/18 10:46	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	558000	10/06/18 10:27	JDL	TAL EDI

Client Sample ID: MW-2

Lab Sample ID: 460-166127-2

Date Collected: 10/04/18 12:15

Matrix: Water

Date Received: 10/05/18 12:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	559386	10/11/18 13:45	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	559329	10/11/18 10:46	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	558000	10/06/18 10:31	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-20
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-166127-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-166127-1	MW-1	Water	10/04/18 15:00	10/05/18 12:05
460-166127-2	MW-2	Water	10/04/18 12:15	10/05/18 12:05

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

22 KQP1

Page ___ of ___

Name (for report and invoice) Andrew Gutshall	Samplers Name (Printed) Chris DeMarco	Site/Project Identification Rock Hill
Company EarthRes Group	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
		Regulatory Program: DKQP: ☐
Address 6912 Old Easton Rd	Analysis Turnaround Time: Standard ☒	LAB USE ONLY Project No:
City Piersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	Job No: ~~163452~~ 166127
Phone 215-766-1711 Fax 215-766-1245		Sample Numbers

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PH	TDS	TSS
MW-1	10/4/18	1500	GW	3	1	1	1
MW-2	10/4/18	1215	GW	3	1	1	1

460-166127 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH Soil:
none 6 = Other _____, 7 = Other _____ Water: X X X

Special Instructions Bill to Andrew Gutshall@Hanson; Report to EarthRes Water Metals Filtered (Yes/No)? NO

Relinquished by	Company	Date / Time	Received by	Company
1)	EarthRes	10/5/18 1205	1)	KQP
Relinquished by 2)	Company KQP	Date / Time 10/5/18 1500	Received by 2)	Company TA
Relinquished by 3)	Company TA	Date / Time 10/5/18 1600	Received by 3)	Company TAEdi
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).
Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0715)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 1606127

Number of Coolers: 1 IR Gun #: KQ91

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG Date: 10/5

Login Sample Receipt Checklist

Client: Hanson Aggregates PA LLC

Job Number: 460-166127-1

Login Number: 166127
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment 2B

Background Monitoring Reports

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MW-1
Latitude: 40° 24' 12.7" N and
Longitude: 75° 17' 38.3" W
Surface Elevation (MSL): 717'

Description of Sample Point**: Monitoring Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance $\mu S/_{cm}$ @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Water Level Probe**	**598.05'**	**7.0**	**7.8**	**21**	**141.5**	**11.3**	---	---	---	---	---	---		**Test America CJS, Earthres**
6/20/2018	**Water Level Probe**	**596.52'**	**9.35**	**9.6**	**23**	**145.1**	**24.3**	---	---	---	---	---	---		**Test America CJS, Earthres**
7/11/2018	**Water Level Probe**	**597.88'**	**9.81**	**9.2**	**14**	**150.2**	**12.1**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/2/2018	**Water Level Probe**	**602.15'**	**10.47**	**10.2**	**14.6**	**173.6**	**12.2**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/28/2018	**Water Level Probe**	**609.76'**	**10.58**	**7.1**	**7.1**	**185.6**	**13.1**	---	---	---	---	---	---		**Test America CJS, Earthres**
9/26/2018	**Water Level Probe**	**617.28'**	**9.45**	**10.4**	**3.4**	**166.3**	**12.1**	---	---	---	---	---	---		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MW-2
Latitude: 40° 24' 5.7" N and
Longitude: 75° 17' 53.8" W
Surface Elevation (MSL): 593'

Description of Sample Point**: Monitoring Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Water Level Probe	576.95'	7.0	10.0	20	126.4	12.6	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Water Level Probe	574.46'	10.30	10.70	1.1	219.3	13.0	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Water Level Probe	573.55'	10.61	10.40	1.8	237.7	12.2	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Water Level Probe	573.40'	10.50	10.50	4.5	211.6	13.6	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Water Level Probe	574.10'	10.30	10.20	2.2	194.8	14.1	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Water Level Probe	575.65'	9.57	10.40	6.2	163.2	13.0	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MW-3
Latitude: 40° 24' 22.6" N and
Longitude: 75° 18' 5.8" W
Surface Elevation (MSL): 600'

Description of Sample Point**: Monitoring Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Water Level Probe	476.80	7.0	8.3	1.1	93.3	12.9	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Water Level Probe	503.84	8.31	8.8	5.4	96.5	11.4	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Water Level Probe	524.45	8.33	8.7	5.9	101.3	11.9	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Water Level Probe	538.76	8.02	8.8	3.5	99.8	12.4	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Water Level Probe	550.53	7.92	8.4	1.7	90.7	12.7	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Water Level Probe	558.53	7.38	8.5	4.4	100.3	12.2	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-1
Latitude: 40° 24' 22.9" N and
Longitude: 75° 18' 37.2" W
Surface Elevation (MSL): 543'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Water Level Probe**	**535.08**	**7.0**	**7.1**	**<1.0**	**114.6**	**14.8**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-2
Latitude: 40° 24' 30.7" N and
Longitude: 75° 18' 10.0" W
Surface Elevation (MSL): 592'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) or Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or Specific Conductance µS/cm @25°C	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Water Level Probe	580.58	7.0	7.4	7.2	106.4	20.1	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Water Level Probe	574.04	7.25	7.5	1.3	108.8	18.1	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Water Level Probe	576.13	6.58	7.4	5.8	98.52	17.7	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Water Level Probe	579.20	6.72	7.8	4.3	107.4	23.8	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Water Level Probe	580.40	6.70	7.2	3.4	110.1	29.1	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Water Level Probe	580.40	7.81	7.5	2.8	106.9	23.2	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-3
Latitude: 40° 24' 9.6" N and
Longitude: 75° 17' 16.8" W
Surface Elevation (MSL): 511'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Water Level Probe**	**469.5**	**7.0**	**7.8**	**<1.0**	**253.7**	**15.9**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-5
Latitude: 40° 24' 16.9" N and
Longitude: 75° 17' 20.6" W
Surface Elevation (MSL): 585'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
6/20/2018	Water Level Probe	535.7	6.6	7.3	<1.0	172.7	13.6	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-6
Latitude: 40° 24' 3.38" N and
Longitude: 75° 18' 9.69" W
Surface Elevation (MSL): 539'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	**Water Level Probe**	**536.1**	**6.09**	**7.4**	**<1.0**	**212.2**	**14.4**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-7
Latitude: 40° 24' 11.42" N and
Longitude: 75° 17' 20.77" W
Surface Elevation (MSL): 561'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	**Water Level Probe**	**NA**	**6.81**	**7.8**	**8.2**	**182.6**	**15.7**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-8
Latitude: 40° 24' 13.86" N and
Longitude: 75° 18' 20.22" W
Surface Elevation (MSL): 547'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	Water Level Probe	531.8	6.52	7.7	2.5	124.1	18.8	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-10
Latitude: 40° 24' 19.1" N and
Longitude: 75° 18' 22.3" W
Surface Elevation (MSL): 534'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
6/20/2018	Water Level Probe	526.20	6.8	7.8	6.9	178.6	12.3	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Water Level Probe	525.93	6.38	7.5	<1.0	118.1	13.5	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Water Level Probe	527.30	6.39	7.7	1.0	116.8	13.1	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Water Level Probe	527.50	6.37	5.3	1.0	119.9	18.5	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Water Level Probe	528.80	7.85	7.2	7.1	115.6	12.5	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-11
Latitude: 40° 24' 24.11" N and
Longitude: 75° 18' 33.21" W
Surface Elevation (MSL): 536'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	**Water Level Probe**	**518.6**	**7.01**	**8.1**	**1.1**	**171**	**18.9**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-12
Latitude: 40° 24' 11.2" N and
Longitude: 75° 18' 19.6" W
Surface Elevation (MSL): 544'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) or Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or Specific Conductance µS/cm @25°C	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
6/20/2018	Water Level Probe	531.6	6.65	7.3	<1.0	370	17.1	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-13
Latitude: 40° 24' 0.13" N and
Longitude: 75° 18' 11.46"W
Surface Elevation (MSL): 565'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	Water Level Probe	542.2	6.58	8.1	1.4	233.1	19.3	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-14
Latitude: 40° 24' 25.48" N and
Longitude: 75° 18' 29.90" W
Surface Elevation (MSL): 532'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
8/2/2018	**Water Level Probe**	**528.63**	**6.21**	**7.7**	**1.0**	**119.1**	**19.3**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-16
Latitude: 40° 24' 10.89"N and
Longitude: 75° 17' 26.87" W
Surface Elevation (MSL): 586'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	Water Level Probe	535.2	6.53	7.6	<1.0	183.5	15.1	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-17
Latitude: 40° 23' 54.19" N and
Longitude: 75° 18' 1.36" W
Surface Elevation (MSL): 549'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM) or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
7/11/2018	Water Level Probe	529.95	7.23	7.9	<1.0	152.8	20.1	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: MP-18
Latitude: 40° 24' 20.06" N and
Longitude: 75° 18' 26.72" W
Surface Elevation (MSL): 553'

Description of Sample Point**: Residential Well

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	~~Flow (GPM)~~ ~~or~~ Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
8/2/2018	**Water Level Probe**	**536.75**	**7.61**	**8.4**	**1.0**	**146.0**	**19.0**	**---**	**---**	**---**	**---**	**---**	**---**		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: SW-1
Latitude: 40° 24' 7.3" N and
Longitude: 75° 17' 1.1" W
Surface Elevation (MSL): 433'

Description of Sample Point**: Surface water monitoring point on Three Mile Run, downstream of site runoff.

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) ~~or Static Water Elevation~~	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Flo Probe**	**1874**	**7.0**	**8.1**	**9.20**	**207.0**	**20.2**	---	---	---	---	---	---		**Test America CJS, Earthres**
6/20/2018	**Flo Probe**	**819**	**7.35**	**8.3**	**3.70**	**233.9**	**23.6**	---	---	---	---	---	---		**Test America CJS, Earthres**
7/11/2018	**Flo Probe**	**516**	**7.64**	**8.2**	**4.70**	**200.3**	**23.7**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/2/2018	**Flo Probe**	**1986**	**7.87**	**8.5**	**4.90**	**189.2**	**25.1**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/28/2018	**Flo Probe**	**1537**	**7.70**	**8.1**	**3.60**	**211.3**	**25.8**	---	---	---	---	---	---		**Test America CJS, Earthres**
9/26/2018	**Flo Probe**	**5274**	**7.75**	**8.0**	**10.30**	**140.5**	**20.5**	---	---	---	---	---	---		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: SW-2
Latitude: 40° 23' 36.7" N and
Longitude: 75° 17' 40.1" W
Surface Elevation (MSL): 454'

Description of Sample Point**: Surface water monitoring point on Three Mile Run, upstream of site runoff.

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) ~~or Static Water Elevation~~	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Flo Probe**	**1975**	**7.0**	**8.0**	**9.9**	**221.4**	**20.4**	---	---	---	---	---	---		**Test America CJS, Earthres**
6/20/2018	**Flo Probe**	**314**	**7.65**	**8.3**	**6.2**	**244.2**	**22.9**	---	---	---	---	---	---		**Test America CJS, Earthres**
7/11/2018	**Flo Probe**	**180**	**7.61**	**8.3**	**19.0**	**226.9**	**23.5**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/2/2018	**Flo Probe**	**931**	**7.73**	**8.3**	**7.0**	**215.8**	**25.3**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/28/2018	**Flo Probe**	**483**	**7.64**	**8.2**	**4.1**	**220.0**	**25.8**	---	---	---	---	---	---		**Test America CJS, Earthres**
9/26/2018	**Flo Probe**	**6396**	**7.75**	**7.8**	**25.4**	**150.1**	**20.5**	---	---	---	---	---	---		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: SW-3
Latitude: 40° 24' 34.3" N and
Longitude: 75° 18' 30.2" W
Surface Elevation (MSL): 507'

Description of Sample Point**: Surface water monitoring point on Unnamed Tributary to Tohickon Creek, downstream of site runoff.

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) ~~or Static Water Elevation~~	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	**Flo Probe**	**393**	**7.0**	**8.1**	**6.2**	**163.0**	**20.2**	---	---	---	---	---	---		**Test America CJS, Earthres**
6/20/2018	**Flo Probe**	**943**	**7.18**	**8.1**	**27.0**	**115.3**	**23.0**	---	---	---	---	---	---		**Test America CJS, Earthres**
7/11/2018	**Flo Probe**	**862**	**7.16**	**8.1**	**5.2**	**99.29**	**24.3**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/2/2018	**Flo Probe**	**485**	**7.03**	**8.2**	**4.5**	**141.0**	**24**	---	---	---	---	---	---		**Test America CJS, Earthres**
8/28/2018	**Flo Probe**	**539**	**7.13**	**7.8**	**2.9**	**125.3**	**25.8**	---	---	---	---	---	---		**Test America CJS, Earthres**
9/26/2018	**Flo Probe**	**1984**	**7.77**	**7.8**	**4.8**	**143.5**	**20.5**	---	---	---	---	---	---		**Test America CJS, Earthres**

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: SW-4
Latitude: 40° 24' 30.3" N and
Longitude: 75° 18' 21.4" W
Surface Elevation (MSL): 517'

Description of Sample Point**: Surface water monitoring point on Unnamed Tributary to Tohickon Creek, upstream of site runoff.

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) ~~or Static Water Elevation~~	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Flo Probe	68.7	7.0	8.0	23	110.4	18.8	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Flo Probe	Dry, No Sample Obtained.													CJS, Earthres
7/11/2018	Flo Probe	Dry, No Sample Obtained.													CJS, Earthres
8/2/2018	Flo Probe	Dry, No Sample Obtained.													CJS, Earthres
8/28/2018	Flo Probe	67.3	7.56	8.0	8.9	126.4	25.0	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Flo Probe	251.8	8.41	7.9	5.7	112.8	20.0	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: Quarry Sump
Latitude: 40° 24' 14.0" N and
Longitude: 75° 18' 1.4" W
Surface Elevation (MSL): 598'

Description of Sample Point**:Surface water in quarry pit

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) or Static Water Elevation	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Flo Probe	NA	7.0	8.3	4.5	86.99	22.7	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Flo Probe	NA	7.7	8.4	3.0	88.16	25.1	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Flo Probe	NA	7.6	8.2	5.9	88.67	27.5	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Flo Probe	NA	7.46	8.5	2.6	85.48	27.3	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Flo Probe	NA	7.68	8.2	4.8	76.06	29.1	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Flo Probe	NA	7.78	8.1	1.7	86.65	21.6	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Module 8.1(A)
BACKGROUND (check appropriate block)

Operator: Hanson Aggregates Pennsylvania, LLC
Operation Name: Rock Hill Quarry
Permit No.: 7974SM1
Township: East Rockhill
County: Bucks

Monitoring Point I.D.: 001
Latitude: 40° 24' 22.5" N and
Longitude: 75° 18' 19.4" W
Surface Elevation (MSL): 598'

Description of Sample Point**:NPDES discharge point

Instructions: Use a separate sheet for each sample point and list results consecutively by date.

Date Sampled	Method of Flow Measurement	Flow (GPM) ~~or Static Water Elevation~~	Field pH	Laboratory pH	Suspended Solids mg/l	Total Dissolved Solids mg/l or ~~Specific Conductance µS/cm @25°C~~	Field Temp. °C	Alkalinity mg/l	Acidity mg/l	Iron Mg/l	Manganese mg/l	Aluminum mg/l	Sulfate mg/l		Laboratory and Name of Sampler
								Submit above as requested by the Department							
5/30/2018	Flo Probe	374	7.0	8.0	8.0	170.6	21.8	---	---	---	---	---	---		Test America CJS, Earthres
6/20/2018	Flo Probe	750	6.39	8.0	7.0	113.2	22.2	---	---	---	---	---	---		Test America CJS, Earthres
7/11/2018	Flo Probe	819	7.71	8.2	5.7	99.57	25.5	---	---	---	---	---	---		Test America CJS, Earthres
8/2/2018	Flo Probe	446	7.99	8.4	4.8	135.2	26.5	---	---	---	---	---	---		Test America CJS, Earthres
8/28/2018	Flo Probe	459	8.04	7.9	4.7	106.9	30.1	---	---	---	---	---	---		Test America CJS, Earthres
9/26/2018	Flo Probe	678	6.6	7.7	10.9	143.8	19.4	---	---	---	---	---	---		Test America CJS, Earthres

Signature of Permittee or Responsible Official or Authorized Representative Date _____

**Description should include type of sample point, relation to mine site, treatment and other comments (such as odor, color, etc.)

Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-161824-1
Client Project/Site: Rock Hill

For:
EarthRes Group, Inc.
PO BOX 468
Pipersville, Pennsylvania 18947

Attn: Mr. Craig Sinkler

Jill Miller

Authorized for release by:
8/9/2018 9:46:00 AM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.
Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Job ID: 460-161824-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-161824-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2018 11:27 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Client Sample ID: MP-2

Lab Sample ID: 460-161824-1
Date Collected: 08/02/18 13:00
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**149**		10.0	10.0	mg/L			08/06/18 15:12	1
Total Suspended Solids	**4.3**		1.0	1.0	mg/L			08/08/18 08:29	1
pH	**7.8**	**HF**			SU			08/07/18 17:39	1

Client Sample ID: MP-10

Lab Sample ID: 460-161824-2
Date Collected: 08/02/18 13:55
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**148**		10.0	10.0	mg/L			08/06/18 15:12	1
Total Suspended Solids	1.0	U	1.0	1.0	mg/L			08/08/18 08:29	1
pH	**7.7**	**HF**			SU			08/07/18 17:42	1

Client Sample ID: MP-14

Lab Sample ID: 460-161824-3
Date Collected: 08/02/18 14:10
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**151**		10.0	10.0	mg/L			08/06/18 15:12	1
Total Suspended Solids	1.0	U	1.0	1.0	mg/L			08/08/18 08:29	1
pH	**7.7**	**HF**			SU			08/07/18 17:48	1

Client Sample ID: MP-18

Lab Sample ID: 460-161824-4
Date Collected: 08/02/18 14:20
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**175**		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	1.0	U	1.0	1.0	mg/L			08/08/18 08:29	1
pH	**8.4**	**HF**			SU			08/07/18 17:51	1

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Client Sample ID: MP-2
Date Collected: 08/02/18 13:00
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161824-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542555	08/06/18 15:12	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:39	JDL	TAL EDI

Client Sample ID: MP-10
Date Collected: 08/02/18 13:55
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161824-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542555	08/06/18 15:12	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:42	JDL	TAL EDI

Client Sample ID: MP-14
Date Collected: 08/02/18 14:10
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161824-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542555	08/06/18 15:12	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:48	JDL	TAL EDI

Client Sample ID: MP-18
Date Collected: 08/02/18 14:20
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161824-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:51	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-18
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161824-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-161824-1	MP-2	Water	08/02/18 13:00	08/03/18 11:27
460-161824-2	MP-10	Water	08/02/18 13:55	08/03/18 11:27
460-161824-3	MP-14	Water	08/02/18 14:10	08/03/18 11:27
460-161824-4	MP-18	Water	08/02/18 14:20	08/03/18 11:27

1.0 KQP1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ____ of ____

Name (for report and invoice) Andrew Gutshall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill	
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA	
		Regulatory Program:	DKQP: ☐
Address 6912 Old Easton Rd.	Analysis Turnaround Time: Standard ☒	ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)	LAB USE ONLY Project No:
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐		Job No: 161824
Phone 215-766-1211 Fax 215-766-1245			

Sample Identification	Date	Time	Matrix	No. of Cont.	TSS	TDS	pH	Sample Numbers
MP-2	8/2/18	1300	GW	3	1	1	1	
MP-10	"	1355	GW	3	1	1	1	
MP-14	"	1410	GW	3	1	1	1	
MP-18	"	1420	GW	3	1	1	1	

460-161824 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____

Soil: | Water: X X X

Special Instructions: Bill to Andrew Gutshall @ Hanson; Report to EarthRes

Water Metals Filtered (Yes/No)? No

Relinquished by	Company	Date / Time	Received by	Company
1)	EarthRes	8/3/18 | 0745	1)	TAKQP 8/3/18 1127
Relinquished by 2)	TAKQP	8/3/18 | 1800	Received by 2)	TA
Relinquished by 3)	TA	8-3-18 | 2030	Received by 3)	TAEDX
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).
Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0715)

8/9/2018

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 161824

Number of Coolers: ______ IR Gun#: KOR1

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: ____________________

Preservative Name/Conc.: ____________________ Volume of Preservative used (ml): ____________

Lot # of Preservative(s): ____________________ Expiration Date: ____________

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

**Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

EDS-WI-038, Rev 4, 06/09/2014 **Initials:** JG **Date:** 8/3

Login Sample Receipt Checklist

Client: EarthRes Group, Inc.

Job Number: 460-161824-1

Login Number: 161824
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-161827-1
Client Project/Site: Rock Hill

For:
EarthRes Group, Inc.
PO BOX 468
Pipersville, Pennsylvania 18947

Attn: Mr. Craig Sinkler

Jill Miller

Authorized for release by:
8/10/2018 9:53:50 AM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.
Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Job ID: 460-161827-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-161827-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2018 11:27 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: 001

Lab Sample ID: 460-161827-1
Date Collected: 08/02/18 11:30
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	145		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	4.8		1.0	1.0	mg/L			08/08/18 08:29	1
pH	8.4	HF			SU			08/07/18 17:54	1

Client Sample ID: Sump

Lab Sample ID: 460-161827-2
Date Collected: 08/02/18 12:00
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	87.0		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	2.6		1.0	1.0	mg/L			08/08/18 08:29	1
pH	8.5	HF			SU			08/07/18 17:57	1

Client Sample ID: MW-1

Lab Sample ID: 460-161827-3
Date Collected: 08/02/18 12:15
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	148		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	14.6		2.0	2.0	mg/L			08/08/18 08:29	1
pH	10.2	HF			SU			08/07/18 18:03	1

Client Sample ID: MW-2

Lab Sample ID: 460-161827-4
Date Collected: 08/02/18 12:30
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	171		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	4.5		1.0	1.0	mg/L			08/08/18 08:29	1
pH	10.5	HF			SU			08/07/18 18:06	1

Client Sample ID: MW-3

Lab Sample ID: 460-161827-5
Date Collected: 08/02/18 11:50
Matrix: Water
Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	133		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	3.5		1.0	1.0	mg/L			08/08/18 09:33	1
pH	8.8	HF			SU			08/07/18 18:10	1

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Client Sample ID: SW-1

Lab Sample ID: 460-161827-6

Date Collected: 08/02/18 15:15

Matrix: Water

Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	183		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	4.9		1.0	1.0	mg/L			08/08/18 09:33	1
pH	8.5	HF			SU			08/07/18 18:13	1

Client Sample ID: SW-2

Lab Sample ID: 460-161827-7

Date Collected: 08/02/18 15:10

Matrix: Water

Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	215		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	7.0		1.0	1.0	mg/L			08/09/18 08:23	1
pH	8.3	HF			SU			08/07/18 18:16	1

Client Sample ID: SW-3

Lab Sample ID: 460-161827-8

Date Collected: 08/02/18 13:20

Matrix: Water

Date Received: 08/03/18 11:27

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	149		10.0	10.0	mg/L			08/07/18 09:05	1
Total Suspended Solids	4.5		1.0	1.0	mg/L			08/08/18 16:09	1
pH	8.2	HF			SU			08/07/18 18:19	1

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Client Sample ID: 001
Date Collected: 08/02/18 11:30
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161827-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:54	JDL	TAL EDI

Client Sample ID: Sump
Date Collected: 08/02/18 12:00
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161827-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 17:57	JDL	TAL EDI

Client Sample ID: MW-1
Date Collected: 08/02/18 12:15
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161827-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:03	JDL	TAL EDI

Client Sample ID: MW-2
Date Collected: 08/02/18 12:30
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161827-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 08:29	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:06	JDL	TAL EDI

Client Sample ID: MW-3
Date Collected: 08/02/18 11:50
Date Received: 08/03/18 11:27

Lab Sample ID: 460-161827-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 09:33	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:10	JDL	TAL EDI

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Client Sample ID: SW-1

Lab Sample ID: 460-161827-6

Date Collected: 08/02/18 15:15
Matrix: Water
Date Received: 08/03/18 11:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543074	08/08/18 09:33	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:13	JDL	TAL EDI

Client Sample ID: SW-2

Lab Sample ID: 460-161827-7

Date Collected: 08/02/18 15:10
Matrix: Water
Date Received: 08/03/18 11:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543349	08/09/18 08:23	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:16	JDL	TAL EDI

Client Sample ID: SW-3

Lab Sample ID: 460-161827-8

Date Collected: 08/02/18 13:20
Matrix: Water
Date Received: 08/03/18 11:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	542751	08/07/18 09:05	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	543189	08/08/18 16:09	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	542916	08/07/18 18:19	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-18
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-161827-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-161827-1	001	Water	08/02/18 11:30	08/03/18 11:27
460-161827-2	Sump	Water	08/02/18 12:00	08/03/18 11:27
460-161827-3	MW-1	Water	08/02/18 12:15	08/03/18 11:27
460-161827-4	MW-2	Water	08/02/18 12:30	08/03/18 11:27
460-161827-5	MW-3	Water	08/02/18 11:50	08/03/18 11:27
460-161827-6	SW-1	Water	08/02/18 15:15	08/03/18 11:27
460-161827-7	SW-2	Water	08/02/18 15:10	08/03/18 11:27
460-161827-8	SW-3	Water	08/02/18 13:20	08/03/18 11:27

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

1.0 KQP1

8/10/2018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ____ of ____

Name (for report and invoice) Andrew Gutshall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
		Regulatory Program: DKQP: ☐
Address 6912 Old Easton Rd.	Analysis Turnaround Time: Standard ☒	LAB USE ONLY Project No:
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	Job No: 161827
Phone 215-766-1211 Fax 215-766-1245		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	TSS	TDS	pH	Sample Numbers
001	8/2/18	1130	SW	3	1	1	1	
Sump		1200	SW	3	1	1	1	
MW-1		1215	GW	3	1	1	1	
MW-2		1230	GW	3	1	1	1	
MW-3		1150	GW	3	1	1	1	
SW-1		1515	SW	3	1	1	1	
SW-2		1510	SW	3	1	1	1	
SW-3		1320	SW	3	1	1	1	

460-161827 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____

Soil: | Water: X X X

Special Instructions Bill to Andrew Gutshall @ Hanson; Report to EarthRes

Water Metals Filtered (Yes/No)? No

Relinquished by 1)	Company EarthRes	Date / Time 8/3/18 | 0745	Received by 1)	Company DAKOF	8/3/18 1127
Relinquished by 2)	Company DAKOF	Date / Time 8/3/18 | 1800	Received by 2)	Company TA	
Relinquished by 3)	Company TA	Date / Time 8-3-18 | 2030	Received by 3)	Company TAMDX	
Relinquished by 4)	Company	Date / Time |	Received by 4)	Company	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 161827

Number of Coolers: 1 IR Gun #: K02

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

* *Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG **Date:** 8/3

Login Sample Receipt Checklist

Client: EarthRes Group, Inc.

Job Number: 460-161827-1

Login Number: 161827
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-163453-1
Client Project/Site: Rock Hill

For:
EarthRes Group, Inc.
PO BOX 468
Pipersville, Pennsylvania 18947

Attn: Mr. Craig Sinkler

Authorized for release by:
9/6/2018 9:55:39 AM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

Links

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Job ID: 460-163453-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-163453-1

Comments
The method detection limit (MDL) is the lowest value detectable by the laboratory for a given analyte as determined by the MDL procedure detailed in EPA 40 CFR 136. Reported MDL values are adjusted for any dilutions and percent moisture (as applicable). The lab is unable to report values below the MDL.

Receipt
The samples were received on 8/29/2018 11:38 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Client Sample ID: SW-1

Lab Sample ID: 460-163453-1
Date Collected: 08/28/18 15:30
Matrix: Water
Date Received: 08/29/18 11:38

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	169		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	3.6		1.0	1.0	mg/L			08/31/18 08:19	1
pH	8.1	HF			SU			09/05/18 11:23	1

Client Sample ID: MP-2

Lab Sample ID: 460-163453-2
Date Collected: 08/28/18 14:00
Matrix: Water
Date Received: 08/29/18 11:38

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	118		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	3.4		1.0	1.0	mg/L			08/31/18 08:19	1
pH	7.2	HF			SU			09/05/18 11:26	1

Client Sample ID: MP-10

Lab Sample ID: 460-163453-3
Date Collected: 08/28/18 14:15
Matrix: Water
Date Received: 08/29/18 11:38

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	137		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	1.0	U	1.0	1.0	mg/L			08/31/18 08:19	1
pH	5.3	HF			SU			09/05/18 16:01	1

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Client Sample ID: SW-1
Date Collected: 08/28/18 15:30
Date Received: 08/29/18 11:38

Lab Sample ID: 460-163453-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:23	JDL	TAL EDI

Client Sample ID: MP-2
Date Collected: 08/28/18 14:00
Date Received: 08/29/18 11:38

Lab Sample ID: 460-163453-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:26	JDL	TAL EDI

Client Sample ID: MP-10
Date Collected: 08/28/18 14:15
Date Received: 08/29/18 11:38

Lab Sample ID: 460-163453-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549861	09/05/18 16:01	AXR	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-18
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163453-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-163453-1	SW-1	Water	08/28/18 15:30	08/29/18 11:38
460-163453-2	MP-2	Water	08/28/18 14:00	08/29/18 11:38
460-163453-3	MP-10	Water	08/28/18 14:15	08/29/18 11:38

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

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CHAIN OF CUSTODY / ANALYSIS REQUEST

1.2 KQ1

Page ____ of ____

Name (for report and invoice) Andrew Guthall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill	
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA	
		Regulatory Program:	DKQP: ☐
Address 6912 Old Easton Rd	Analysis Turnaround Time: Standard ☒		
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐		
Phone 215-766-1211 Fax 215-766-1245			

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: 163453

Sample Identification	Date	Time	Matrix	No. of Cont.	1,4-D	PAH	TSS	Sample Numbers
SW-1	8/28/18	1530	SW	3	1	1	1	
MP-2	1	1400	GW	3	1	1	1	
MP-10	1	1415	GW	3	1	1	1	

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____

Soil: | Water: X X X

460-163453 Chain of Custody

Special Instructions Bill to Andrew Guthall @ Hanson; Report to EarthRes

Water Metals Filtered (Yes/No)? No

Relinquished by	Company	Date / Time	Received by	Company	Date / Time
1)	EarthRes	8/29/18 0730	1)	TAKQP	8/29/18 1139
2)	TAKQP	8-29-18 1800	2)	TestA	
3)	TestA	8-29-18 2110	3)	TAEd	8/29/18 21:10
4)			4)		

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0715)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 163453

Number of Coolers: 1 IR Gun #: K091

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG Date: 8/29

Login Sample Receipt Checklist

Client: EarthRes Group, Inc.

Job Number: 460-163453-1

Login Number: 163453
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-163452-1
Client Project/Site: Rock Hill

For:
EarthRes Group, Inc.
PO BOX 468
Pipersville, Pennsylvania 18947

Attn: Mr. Craig Sinkler

Jill Miller

Authorized for release by:
9/5/2018 1:43:45 PM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Job ID: 460-163452-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-163452-1

Comments
No additional comments.

Receipt
The samples were received on 8/29/2018 11:36 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: 001
Lab Sample ID: 460-163452-1
Date Collected: 08/28/18 13:25
Matrix: Water
Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	75.0		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	4.7		1.0	1.0	mg/L			08/31/18 08:19	1
pH	7.9	HF			SU			09/05/18 10:48	1

Client Sample ID: Sump
Lab Sample ID: 460-163452-2
Date Collected: 08/28/18 12:40
Matrix: Water
Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	77.0		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	4.8		1.0	1.0	mg/L			08/31/18 08:19	1
pH	8.2	HF			SU			09/05/18 10:52	1

Client Sample ID: SW-2
Lab Sample ID: 460-163452-3
Date Collected: 08/28/18 15:10
Matrix: Water
Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	180		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	4.1		1.0	1.0	mg/L			08/31/18 08:19	1
pH	8.2	HF			SU			09/05/18 10:55	1

Client Sample ID: SW-3
Lab Sample ID: 460-163452-4
Date Collected: 08/28/18 12:15
Matrix: Water
Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	112		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	2.9		1.0	1.0	mg/L			08/31/18 08:19	1
pH	7.8	HF			SU			09/05/18 10:59	1

Client Sample ID: SW-4
Lab Sample ID: 460-163452-5
Date Collected: 08/28/18 13:45
Matrix: Water
Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	139		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	8.9		1.0	1.0	mg/L			08/31/18 08:19	1
pH	8.0	HF			SU			09/05/18 11:03	1

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Client Sample ID: MW-1

Lab Sample ID: 460-163452-6

Date Collected: 08/28/18 12:50

Matrix: Water

Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	81.0		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	7.1		1.0	1.0	mg/L			08/31/18 08:19	1
pH	10.3	HF			SU			09/05/18 11:11	1

Client Sample ID: MW-2

Lab Sample ID: 460-163452-7

Date Collected: 08/28/18 13:10

Matrix: Water

Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	158		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	2.2		1.0	1.0	mg/L			08/31/18 08:19	1
pH	10.2	HF			SU			09/05/18 11:15	1

Client Sample ID: MW-3

Lab Sample ID: 460-163452-8

Date Collected: 08/28/18 12:20

Matrix: Water

Date Received: 08/29/18 11:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	99.0		10.0	10.0	mg/L			08/30/18 13:24	1
Total Suspended Solids	1.7		1.0	1.0	mg/L			08/31/18 08:19	1
pH	8.4	HF			SU			09/05/18 11:19	1

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Client Sample ID: 001
Date Collected: 08/28/18 13:25
Date Received: 08/29/18 11:36

Lab Sample ID: 460-163452-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 10:48	JDL	TAL EDI

Client Sample ID: Sump
Date Collected: 08/28/18 12:40
Date Received: 08/29/18 11:36

Lab Sample ID: 460-163452-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 10:52	JDL	TAL EDI

Client Sample ID: SW-2
Date Collected: 08/28/18 15:10
Date Received: 08/29/18 11:36

Lab Sample ID: 460-163452-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 10:55	JDL	TAL EDI

Client Sample ID: SW-3
Date Collected: 08/28/18 12:15
Date Received: 08/29/18 11:36

Lab Sample ID: 460-163452-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 10:59	JDL	TAL EDI

Client Sample ID: SW-4
Date Collected: 08/28/18 13:45
Date Received: 08/29/18 11:36

Lab Sample ID: 460-163452-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:03	JDL	TAL EDI

Lab Chronicle

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Client Sample ID: MW-1

Lab Sample ID: 460-163452-6

Date Collected: 08/28/18 12:50
Matrix: Water
Date Received: 08/29/18 11:36

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:11	JDL	TAL EDI

Client Sample ID: MW-2

Lab Sample ID: 460-163452-7

Date Collected: 08/28/18 13:10
Matrix: Water
Date Received: 08/29/18 11:36

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:15	JDL	TAL EDI

Client Sample ID: MW-3

Lab Sample ID: 460-163452-8

Date Collected: 08/28/18 12:20
Matrix: Water
Date Received: 08/29/18 11:36

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	548644	08/30/18 13:24	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	548889	08/31/18 08:19	PLS	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	549812	09/05/18 11:19	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-18
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: EarthRes Group, Inc.
Project/Site: Rock Hill

TestAmerica Job ID: 460-163452-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-163452-1	001	Water	08/28/18 13:25	08/29/18 11:36
460-163452-2	Sump	Water	08/28/18 12:40	08/29/18 11:36
460-163452-3	SW-2	Water	08/28/18 15:10	08/29/18 11:36
460-163452-4	SW-3	Water	08/28/18 12:15	08/29/18 11:36
460-163452-5	SW-4	Water	08/28/18 13:45	08/29/18 11:36
460-163452-6	MW-1	Water	08/28/18 12:50	08/29/18 11:36
460-163452-7	MW-2	Water	08/28/18 13:10	08/29/18 11:36
460-163452-8	MW-3	Water	08/28/18 12:20	08/29/18 11:36

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

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THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

1.2 KQP

Page ____ of ____

Name (for report and invoice) Andrew Gutshall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill	
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA	
		Regulatory Program:	DKQP: ☐
Address 6912 Old Easton Rd	Analysis Turnaround Time: Standard ☒		LAB USE ONLY Project No:
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐		Job No: 163452
Phone 215-766-1211 Fax 215-766-1245			Sample Numbers

Sample Identification	Date	Time	Matrix	No. of Cont.	TAL	TAL	TSS								
001	8/28/18	1325	SW	3	1	1	1								
Sump		1240	SW	3	1	1	1								
SW-2		1510	SW	3	1	1	1								
SW-3		1415	SW	3	1	1	1								
SW-4		1345	SW	3	1	1	1								
MW-1		1250	GW	3	1	1	1								
MW-2		1310	GW	3	1	1	1								
MW-3		1220	GW	3	1	1	1								

460-163452 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____

Soil: | Water: X X X

Special Instructions Bill to Andrew Gutshall @ Hanson; Report to EarthRes

Water Metals Filtered (Yes/No)? No

Relinquished by	Company	Date / Time	Received by	Company
1)	EarthRes	8/29/18 0730	1)	KQP 8/29/18 1136
2)	KQP	8-29-18 1800	2)	Test A
3)	Test A	8-29-18 2110	3) Joseph Sigan	TAL 8/29/18 2110
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 163452

Number of Coolers: 1 IR Gun # KED1

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG Date: 8/29

Login Sample Receipt Checklist

Client: EarthRes Group, Inc.

Job Number: 460-163452-1

Login Number: 163452
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-165505-1
Client Project/Site: Rock Hill

For:
Hanson Aggregates PA LLC
7660 Imperial Way
Allentown, Pennsylvania 18195

Attn: Andrew Gutshall

Jill Miller

Authorized for release by:
10/4/2018 4:27:16 PM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-165505-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-165505-1

Comments
No additional comments.

Receipt
The samples were received on 9/27/2018 12:54 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

Receipt Exceptions
The method detection limit (MDL) is the lowest value detectable by the laboratory for a given analyte as determined by the MDL procedure detailed in EPA 40 CFR 136. Reported MDL values are adjusted for any dilutions and percent moisture (as applicable). The lab is unable to report values below the MDL.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Client Sample ID: MW-1

Lab Sample ID: 460-165505-1

Date Collected: 09/26/18 10:00
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	47.0		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	3.4		1.0	1.0	mg/L			10/03/18 09:15	1
pH	10.4	HF			SU			09/29/18 12:58	1

Client Sample ID: MW-2

Lab Sample ID: 460-165505-2

Date Collected: 09/26/18 10:35
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	186		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	6.2		1.0	1.0	mg/L			10/03/18 09:15	1
pH	10.4	HF			SU			09/29/18 13:02	1

Client Sample ID: MW-3

Lab Sample ID: 460-165505-3

Date Collected: 09/26/18 09:30
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	118		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	4.4		1.0	1.0	mg/L			10/03/18 09:15	1
pH	8.5	HF			SU			09/29/18 13:06	1

Lab Chronicle

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Client Sample ID: MW-1

Lab Sample ID: 460-165505-1

Date Collected: 09/26/18 10:00

Matrix: Water

Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:58	JDL	TAL EDI

Client Sample ID: MW-2

Lab Sample ID: 460-165505-2

Date Collected: 09/26/18 10:35

Matrix: Water

Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 13:02	JDL	TAL EDI

Client Sample ID: MW-3

Lab Sample ID: 460-165505-3

Date Collected: 09/26/18 09:30

Matrix: Water

Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 13:06	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165505-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-165505-1	MW-1	Water	09/26/18 10:00	09/27/18 12:54
460-165505-2	MW-2	Water	09/26/18 10:35	09/27/18 12:54
460-165505-3	MW-3	Water	09/26/18 09:30	09/27/18 12:54

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

0.7 KPL

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CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice) Andrew Gutshall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
		Regulatory Program: DKQP: ☐
Address 6912 Old Easton Road	Analysis Turnaround Time: Standard ☒	
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 215-766-1211 Fax 215-766-1245		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: 165505

Sample Identification	Date	Time	Matrix	No. of Cont.	TCL	PCB	TAL	Sample Numbers
MW-1	9/26/18	1000	GW	3	1	1	1	
MW-2	1	1035	GW	3	1	1	1	
MW-3	1	0930	GW	3	1	1	1	

460-165505 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____

Soil: | Water: X | X | X

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1)	EarthRes	9/27/18 0715	1)	DKQP 9/27/18 1254
2)	DKQP	9/27/18 1800	2)	TestAm
3)	TestAm	9/27/18 2040	3)	FAEdi 9/27/18 2040
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 165505

Number of Coolers: 1 IR Gun # IR001

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

**Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG Date: 9/27

Login Sample Receipt Checklist

Client: Hanson Aggregates PA LLC

Job Number: 460-165505-1

Login Number: 165505
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

TestAmerica Job ID: 460-165503-1
Client Project/Site: Rock Hill

For:
Hanson Aggregates PA LLC
7660 Imperial Way
Allentown, Pennsylvania 18195

Attn: Andrew Gutshall

Jill Miller

Authorized for release by:
10/4/2018 4:27:25 PM

Jill Miller, Project Manager II
(484)685-0871
jill.miller@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 460-165503-1

Laboratory: TestAmerica Edison

Narrative

Job Narrative
460-165503-1

Comments
No additional comments.

Receipt
The samples were received on 9/27/2018 12:54 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

Receipt Exceptions
The method detection limit (MDL) is the lowest value detectable by the laboratory for a given analyte as determined by the MDL procedure detailed in EPA 40 CFR 136. Reported MDL values are adjusted for any dilutions and percent moisture (as applicable). The lab is unable to report values below the MDL.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: 001
Lab Sample ID: 460-165503-1
Date Collected: 09/26/18 09:00
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	156		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	10.9		1.0	1.0	mg/L			10/03/18 09:15	1
pH	7.7	HF			SU			09/29/18 12:23	1

Client Sample ID: Sump
Lab Sample ID: 460-165503-2
Date Collected: 09/26/18 09:45
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	83.0		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	1.7		1.0	1.0	mg/L			10/03/18 09:15	1
pH	8.1	HF			SU			09/29/18 12:27	1

Client Sample ID: SW-1
Lab Sample ID: 460-165503-3
Date Collected: 09/26/18 13:20
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	157		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	10.3		1.0	1.0	mg/L			10/03/18 09:15	1
pH	8.0	HF			SU			09/29/18 12:31	1

Client Sample ID: SW-2
Lab Sample ID: 460-165503-4
Date Collected: 09/26/18 13:05
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	186		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	25.4		2.0	2.0	mg/L			10/03/18 09:15	1
pH	7.8	HF			SU			09/29/18 12:38	1

Client Sample ID: SW-3
Lab Sample ID: 460-165503-5
Date Collected: 09/26/18 12:30
Matrix: Water
Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	158		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	4.8		1.3	1.3	mg/L			10/03/18 09:15	1
pH	7.8	HF			SU			09/29/18 12:42	1

Client Sample ID: SW-4

Lab Sample ID: 460-165503-6

Date Collected: 09/26/18 11:45

Matrix: Water

Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	140		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	5.7		1.0	1.0	mg/L			10/03/18 09:15	1
pH	7.9	HF			SU			09/29/18 12:46	1

Client Sample ID: MP-2

Lab Sample ID: 460-165503-7

Date Collected: 09/26/18 12:00

Matrix: Water

Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	135		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	2.8		1.0	1.0	mg/L			10/03/18 09:15	1
pH	7.5	HF			SU			09/29/18 12:50	1

Client Sample ID: MP-10

Lab Sample ID: 460-165503-8

Date Collected: 09/26/18 12:50

Matrix: Water

Date Received: 09/27/18 12:54

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	125		10.0	10.0	mg/L			10/03/18 13:39	1
Total Suspended Solids	7.1		1.3	1.3	mg/L			10/03/18 11:54	1
pH	7.2	HF			SU			09/29/18 12:54	1

Lab Chronicle

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Client Sample ID: 001
Date Collected: 09/26/18 09:00
Date Received: 09/27/18 12:54

Lab Sample ID: 460-165503-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:23	JDL	TAL EDI

Client Sample ID: Sump
Date Collected: 09/26/18 09:45
Date Received: 09/27/18 12:54

Lab Sample ID: 460-165503-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:27	JDL	TAL EDI

Client Sample ID: SW-1
Date Collected: 09/26/18 13:20
Date Received: 09/27/18 12:54

Lab Sample ID: 460-165503-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:31	JDL	TAL EDI

Client Sample ID: SW-2
Date Collected: 09/26/18 13:05
Date Received: 09/27/18 12:54

Lab Sample ID: 460-165503-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:38	JDL	TAL EDI

Client Sample ID: SW-3
Date Collected: 09/26/18 12:30
Date Received: 09/27/18 12:54

Lab Sample ID: 460-165503-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:42	JDL	TAL EDI

Lab Chronicle

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Client Sample ID: SW-4

Lab Sample ID: 460-165503-6

Date Collected: 09/26/18 11:45
Matrix: Water
Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:46	JDL	TAL EDI

Client Sample ID: MP-2

Lab Sample ID: 460-165503-7

Date Collected: 09/26/18 12:00
Matrix: Water
Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557004	10/03/18 09:15	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:50	JDL	TAL EDI

Client Sample ID: MP-10

Lab Sample ID: 460-165503-8

Date Collected: 09/26/18 12:50
Matrix: Water
Date Received: 09/27/18 12:54

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	557086	10/03/18 13:39	PLS	TAL EDI
Total/NA	Analysis	SM 2540D		1	557056	10/03/18 11:54	AXR	TAL EDI
Total/NA	Analysis	SM 4500 H+ B		1	556156	09/29/18 12:54	JDL	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Laboratory: TestAmerica Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-18
New Jersey	NELAP	2	12028	06-30-19
New York	NELAP	2	11452	04-01-19
Pennsylvania	NELAP	3	68-00522	02-28-19
Rhode Island	State Program	1	LAO00132	12-30-18
USDA	Federal		NJCA-003-08	06-13-20

Method Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL EDI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL EDI
SM 4500 H+ B	pH	SM	TAL EDI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Hanson Aggregates PA LLC
Project/Site: Rock Hill

TestAmerica Job ID: 460-165503-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-165503-1	001	Water	09/26/18 09:00	09/27/18 12:54
460-165503-2	Sump	Water	09/26/18 09:45	09/27/18 12:54
460-165503-3	SW-1	Water	09/26/18 13:20	09/27/18 12:54
460-165503-4	SW-2	Water	09/26/18 13:05	09/27/18 12:54
460-165503-5	SW-3	Water	09/26/18 12:30	09/27/18 12:54
460-165503-6	SW-4	Water	09/26/18 11:45	09/27/18 12:54
460-165503-7	MP-2	Water	09/26/18 12:00	09/27/18 12:54
460-165503-8	MP-10	Water	09/26/18 12:50	09/27/18 12:54

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

0.7 KQPI

10/4/2018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ____ of ____

Name (for report and invoice) Andrew Gutshall (Hanson)	Samplers Name (Printed) Craig Sinkler	Site/Project Identification Rock Hill
Company EarthRes	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other: PA
		Regulatory Program: DKQP: ☐
Address 6912 Old Easton Road	Analysis Turnaround Time: Standard ☒	LAB USE ONLY Project No:
City Pipersville State PA	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	Job No: 165503
Phone 215-766-1211 Fax 215-766-1245		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	pH	TDS	TSS	Sample Numbers
001	9/26/18	0900	SW	3	1	1	1	
Sump		0945	SW	3	1	1	1	
SW-1		1320	SW	3	1	1	1	
SW-2		1305	SW	3	1	1	1	
SW-3		1230	SW	3	1	1	1	
SW-4		1145	SW	3	1	1	1	
MP-2		1200	GW	3	1	1	1	
MP-10		1250	GW	3	1	1	1	
Soil:								
Water:					X	X	X	

460-165503 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1)	EarthRes	9/27/18 0715	1)	TALOR 9/27/18 1254
2) Julie Gutshall	PANCP	9/27/18 1800	2)	Test
3)	Test	9-27-18 2040	3)	TAEdi 9/27/18 2040
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 165503

Number of Coolers: 1 IR Gun # KQ01

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	°C	°C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

**Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JG **Date:** 9/27

Login Sample Receipt Checklist

Client: Hanson Aggregates PA LLC

Job Number: 460-165503-1

Login Number: 165503
List Number: 1
Creator: Gilmore, Julie L

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR KOP#1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment 3B

Supplemental Slug Test Data & Analysis

Constant Rate Pumping Test & Recovery Test Data Calculations

Rock Hill Quarry

Pumping Well: MW-3

May 22, 2018

Cooper-Jacob Straight Line Method

Well	Q (gpm)	r (feet)	delta s (feet)	t_o (min)	T (gpd/ft)	T (ft^2/day)	K (b=55 ft) (ft/day)	K (gpd/ft^2)
MW-3	0.0021	0	20	14000.0	2.77E-02	3.71E-03	6.74E-05	5.04E-04

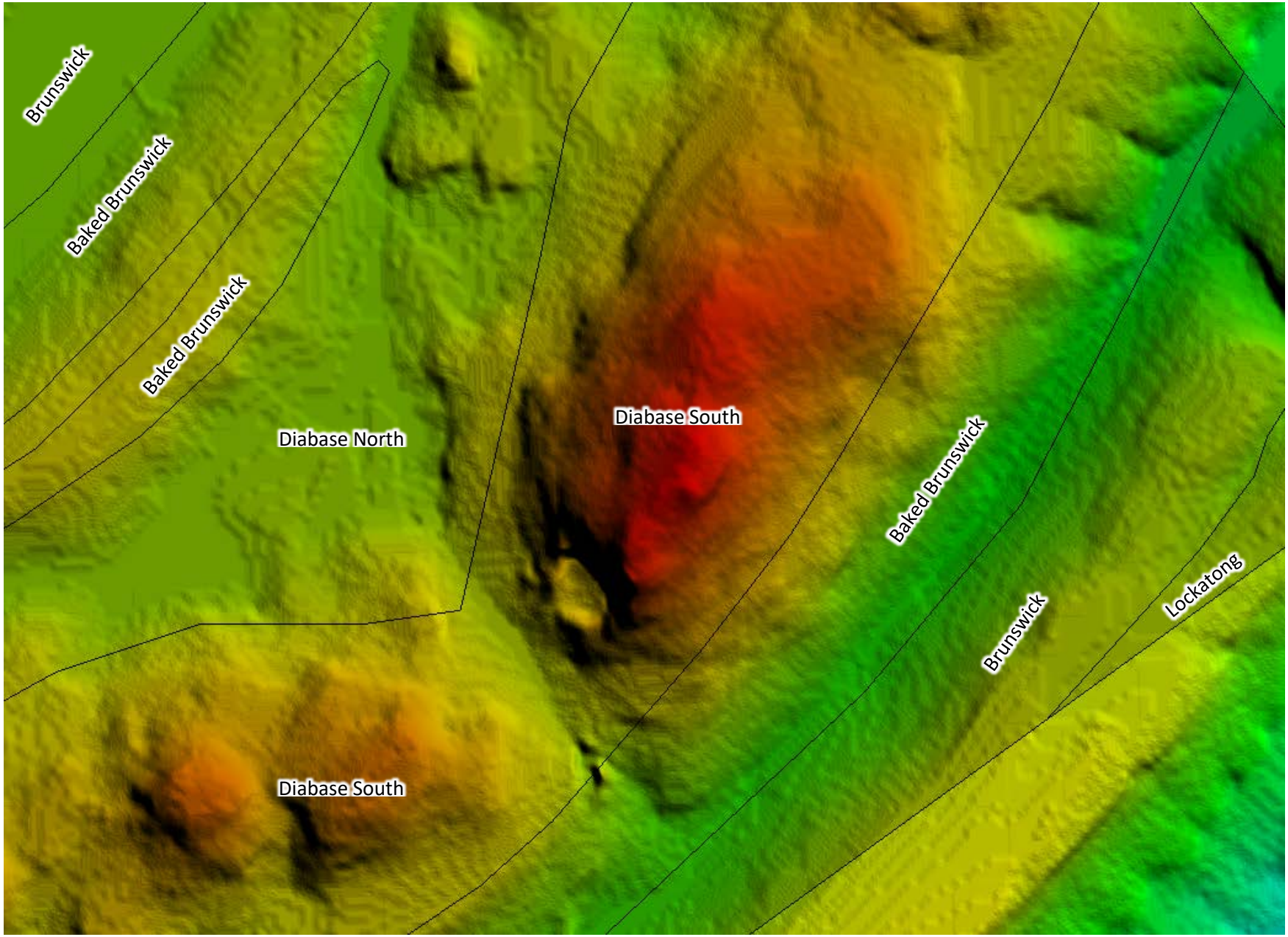
Variables:

Q = Pumping Flow Rate (gpm)
r = distance from pumping well (feet)
delta s = Head increase over 1 log cycle of time (feet)
t_o = time intercept at 0 drawdown
S = Aquifer storage coefficient
T = Transmissivity (gpd/ft or ft^2/day)
K = Hydraulic conductivity (ft/day)

Attachment 3C

Geology & Topographic Relief Map

ATTACHMENT 3c
Geology & Shaded Topographic Relief



Module 9

Operations Map

Module 9: Operations Map

[§77.454]

Provide a map or plan that includes the permit area and the area within 1,000 feet of the permit area. The map or plan shall be clear, accurate, easily read and on a scale of no smaller than 1 inch = 400 feet. Maps on the scale of 1 inch = 200 feet for permit areas of 100 acres or less and 1 inch = 400 feet for permit areas larger than 100 acres are preferred. Use the same scale as used for Exhibits 6.2 and 18. Identify the map or plan as Exhibit 9 Operations Map. Each map or plan must bear the seal or facsimile imprint of a registered professional engineer; or the seal or facsimile imprint of a registered professional land surveyor. Show all the following information within the permit area and for a distance of 1000 feet from the permit area, unless specified otherwise. Include an appropriate legend on the map. Indicate which items are present by placing a check mark in the box before the item. Please provide the permit number (if is has been assigned) or a space for it in the title block. Please also include the acreage of the total permit area.

☒ a) topographic contours (contour intervals of 20 feet or less);

☒ b) proposed surface mine permit area, and initial bond increment;

☒ c) surface water bodies such as streams, lakes, ponds, springs, wetlands, mine discharges and constructed or natural drains (include restricted or variance areas, and names of streams and lakes/use a unique label for each unnamed tributary);

☒ d) property lines (key ownership to Module 5);

☒ e) buildings (include current use and restricted or variance areas);

☒ f) man-made features such as public highways, railroads, utility lines including right-of-ways or easements, and other man-made features (include the name of the highway, railroad and utility and the restricted or variance areas);

☐ g) oil and gas wells in and within 125 feet of the permit area (include restricted or variance areas);

☐ h) public or private cemeteries or Indian burial grounds (include restricted areas); **N/A**

☒ i) existing or previously surface-mined areas, preact highwalls, existing structures and existing areas of refuse, spoil, waste, and processing waste disposal;

☐ j) areal extent of active and abandoned underground mines if mining above or through; **N/A**

☐ k) solid waste disposal areas; **N/A**

☒ l) final working face limit for mineral to be mined (i.e., maximum lateral extent of mineral extraction prior to final postmining slope development);

☒ m) phases of mining (indicate initial phase, sequence, and direction of mining);

☒ n) water treatment facilities;

☒ o) surface water diversions;

☒ p) erosion and sedimentation control facilities, including location and size of existing structures, road culverts and drainage ways;

☒ q) dams and impoundments;

☒ r) berms and spoil storage areas;

☒ s) topsoil storage areas;

☒ t) haul roads (outside of area being mined);

☐ u) refuse disposal areas (indicate any material in the refuse which may be acid forming); **N/A**

☒ v) processing facilities and stockpile areas;

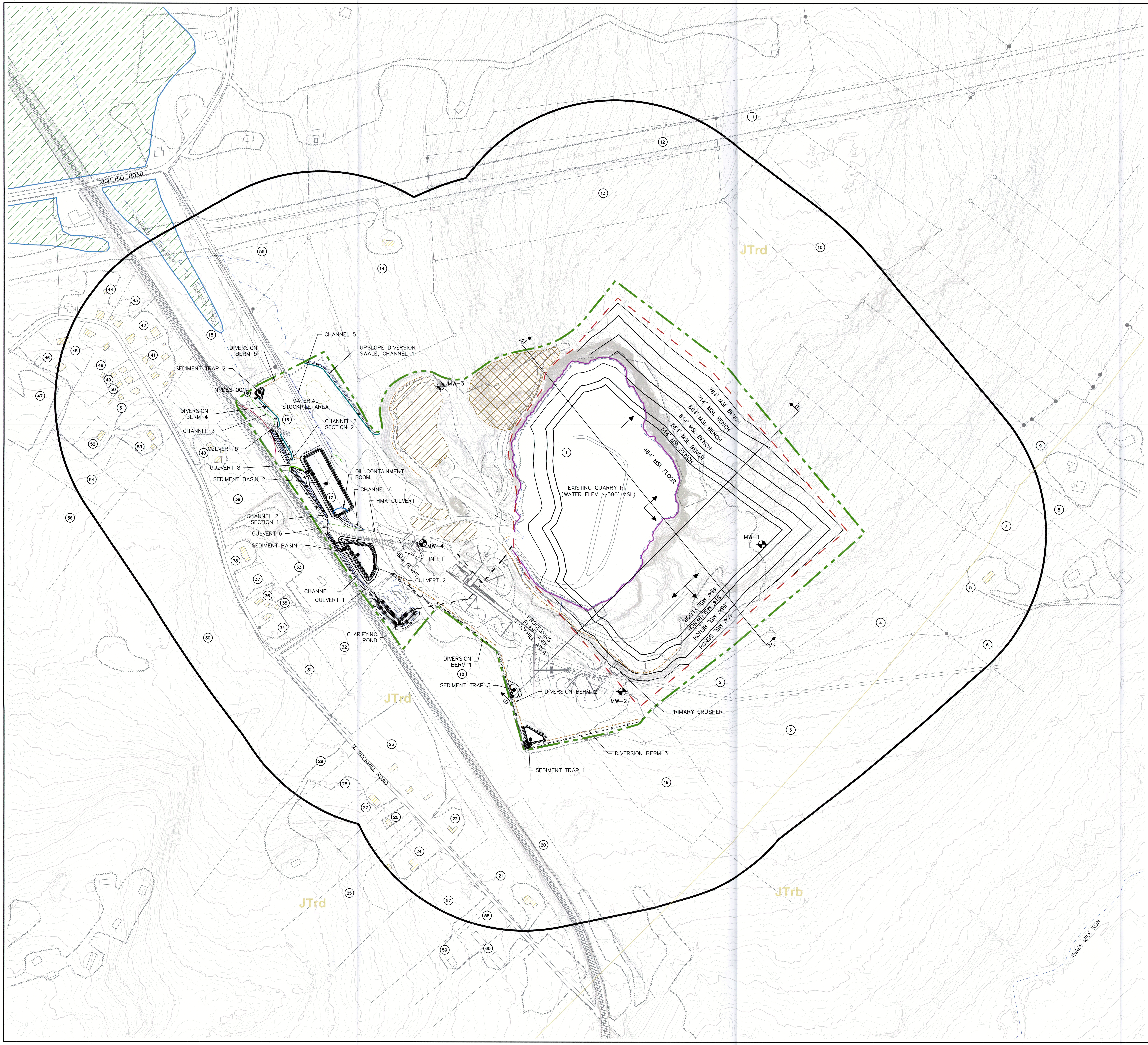
☐ w) air pollution control facilities; **N/A – contained within equipment**

☐ x) explosives storage areas; **N/A**

☒ y) formation contacts and coal croplines (where applicable);

☒ z) test hole locations (key to 7.1 b data).

☐ aa) incidental coal extraction areas **N/A**



LEGEND

- EXISTING GRADE CONTOUR (2' INTERVAL)
- EXISTING SMP BOUNDARY
- LIMIT OF MINING
- 1,000' SMP OFFSET
- PRE–ACT HIGHWALL
- PROPOSED BENCHING
- 300' BUILDING SETBACK
- LIMIT OF HANSON SURVEY
- LIMIT OF EARTHRES SURVEY
- EXISTING RIGHT OF WAY
- PROPERTY BOUNDARY
- PROPOSED QUARRY PIT DEWATERING/INTERCEPTOR PIPE
- EXISTING SURFACE WATER
- EXISTING RAILROAD
- EXISTING TREELINE
- EXISTING GAS PIPELINE
- EXISTING DRAINAGE CHANNEL
- PROPOSED DRAINAGE CHANNEL
- PROPOSED DIVERSION BERM
- PROPOSED PERIMETER BERM (PRECAST CONCRETE BLOCKS)
- PROPOSED FILTER BERM
- PROPOSED COMPOST FILTER SOCK
- EXISTING BUILDING – RESIDENTIAL
- NPDES 001 — NPDES DISCHARGE POINT
- PROPOSED RAP STORAGE AREAS (250,000 TONS)
- OVERBURDEN/TOPSOIL STORAGE
- NWI WETLANDS
- DIRECTION OF MINING
- (21) — PROPERTY ID
- MW–1 — MONITORING WELL (TEST HOLE)

GEOLOGIC LEGEND

- GEOLOGIC CONTACT
- JTrb — BRUNSWICK FORMATION
- JTrd — DIABASE

NOTES:

1. EXISTING GRADE TOPOGRAPHY COMPILED BY PAMAP PROGRAM, PA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES, BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY, DATED JUNE 2010.
2. TOPOGRAPHY AND SITE FEATURES IN WESTERN PERMIT AREA WERE SURVEYED BY EARTHRES GROUP, INC. PERSONNEL, JANUARY 2017.
3. TOPOGRAPHY AROUND THE PROPOSED HOT MIX ASPHALT PLANT AND PROCESSING FACILITY WERE SURVEYED BY HANSON PERSONNEL, SEPTEMBER 2018.
4. BASEMAP FEATURES INCLUDING BUILDINGS, ROADS, UTILITIES, WATER FEATURES, AND TREELINES RETRACED FROM AERIAL PHOTOGRAPHY DATED 9/12/2018, PUBLISHED BY THE DELAWARE VALLEY REGIONAL PLANNING COMMISSION.
5. EXISTING PERMIT INFORMATION INCLUDING PERMIT BOUNDARY, MINING LIMIT, DEPTH OF MINING, AND PRE–ACT HIGHWALLS ARE REFERENCED TO THE PERMIT DRAWING "MINING PLAN, SHEET 3 OF 6" PREPARED BY SKELLY AND LOY, DATED MARCH 18, 1980.
6. HANSON PROPERTY BOUNDARY PROVIDED BY VAN CLEEF ENGINEERING ASSOCIATES VIA MAP TITLED "PLAT OF SURVEY OF LANDS OF GENERAL CRUSHED STONE", PREPARED BY ORANGEVILLE SURVEYING CONSULTANTS, INC., DATED MAY 7, 2001.
7. ADJACENT PARCEL BOUNDARIES ARE REFERENCED TO THE BUCKS COUNTY GIS RECORDS.
8. WETLANDS REFLECT THOSE DEPICTED IN THE NATIONAL WETLANDS INVENTORY FWS WETLANDS MAPPER.
9. PROPERTY OWNERSHIP INFORMATION IS REFERENCED TO MODULE 5 OF THE PERMIT APPLICATION.
10. STREAM INFORMATION IS REFERENCED TO THE PA DEP eMAPPA ONLINE RECORDS.
9. REFER TO THE E&S PLAN DRAWINGS FOR LOCATION OF ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES.
10. GEOLOGY OBTAINED FROM PAGEODE, PA GEOLOGIC DATA EXPLORATION, WWW.GIS.DCNR.STATE.PA.US/GEOLOGY/(2018).

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

NO.	DATE	BY	REVISIONS
3	10/16/18	JTK	REVISED PER DEP COMMENTS
2	07/18/18	JTK	REVISED PER DEP COMMENTS
1	5/21/18	JTK	REVISED PER DEP COMMENTS

MICHAEL D. FENG, P.E.
LICENSE NO. PE080503

PROJECT SITE:
HANSON AGGREGATES PENNSYLVANIA LLC
SMP NO. 7974SM1
EAST ROCKHILL TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

PREPARED FOR:
Hanson
HEIDELBERGCEMENT Group

PREPARED BY:
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WV office 304.212.6866
toll free 800.264.4553

EXHIBIT 9
OPERATIONS MAP

HANSON AGGREGATES PENNSYLVANIA LLC
ROCK HILL QUARRY

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO:	DRAWING NUMBER:	
JTK	MDF	02/20/18	061003.052	R–003	SHEET 3 OF 6

Module 10

Operational Information

Module 10: Operational Information [§§77.452/77.456/77.563/77.564]

10.1 Equipment and Operation Plan

For each phase of mining, identify the type and method of mining; engineering techniques; major equipment to be used; starting point; and the anticipated sequence in which the phases are to be mined.

Mining of the Rock Hill Quarry is proposed in a single phase. As proposed, bulldozers or track loaders, excavators, and haul trucks will be used to remove and stockpile topsoil and overburden from the mining area. Overburden will be hauled to and stored in the designated overburden material stockpile. The underlying rock will then be drilled and blasted to facilitate its removal. The shot rock will be excavated by front-end loader, track loader, or excavator.

The excavated material will then be loaded into a haul truck and transported to the Stationary Processing Plant, located southwest of the quarry pit, to be processed and stockpiled as shown in Exhibit 9. The processed material may be staged for sale or be utilized at the Hot Mix Asphalt Plant, located northwest of the processing plant in front of the main entrance of the quarry. Additional laydown area in the northwest corner of the permitted area will be used to stockpile excess material.

The area immediately north of the Quarry Pit will be utilized for stockpiling Recycled Asphalt Pavement (RAP). Additional RAP storage area will be provided adjacent the quarry access road immediately northeast of the Hot Mix Asphalt Plant. No more than 250,000 tons of RAP will be stored at any one time pursuant to the approved air quality permit.

10.2 Pit Configuration

a) Identify the maximum depth of mining and the elevation of the pit floor at the maximum depth of mining for each mining phase.

The maximum depth of mining is approximately 330 feet at a pit floor elevation of 464' MSL.

b) If mining consolidated rock, identify the maximum highwall height and the benching interval to include the distance between the benches measured vertically (i.e. height of the working face of the bench) and the width of the benches.

A maximum highwall height of 50 feet will be maintained, with the exception of the uppermost level, where the maximum highwall height may reach 65 feet to account for variations in the surface topography. A minimum bench width of 25 feet will be maintained between operating levels at all times. A 71.4-foot bench will be utilized in areas where blast to grade reclamation is proposed. The proposed benching and final highwall positions are shown on Exhibit 9: Operations Map.

c) If mining consolidated rock and the reclamation plan is an alternative to approximate original contour involving restoration of the pit floor and final working face, identify the total acreage of pit floor and final graded slopes.

Reclamation of the proposed mining area will be an alternative to approximate original contour, as grades across the site will be lowered by as much as 330 feet. The final configuration will form a water impoundment area, which will be surrounded by unmanaged natural habitat. The final highwalls along the perimeter edge will be reduced by blasting to achieve the maximum 35º final slopes, merging the surrounding rim elevation with the slope. The proposed water impoundment area will be approximately 39.1 acres, and the final graded perimeter slope areas total approximately 22.4 acres.

10.3 Existing Structures

Identify and describe the intended use of all existing structures or facilities to be used in connection with or to facilitate mineral removal activities. (Common existing structures include impoundments, stream crossing facilities, water obstructions and processing waste dams.)

Previous site activities included the installation of multiple structures. Existing structures include processing plant foundations, processing plant settling ponds, stormwater culverts and channels, and sediment ponds. These structures are to be maintained in place and utilized for the current operation. Structures will be rehabbed and/or upgraded as needed.

10.4 Overburden Piles

Provide a narrative plan for reclamation of overburden piles specifying the timing and extent of overburden piles returned to the pit and final grading of the overburden pile areas for blending into existing contours.

Overburden is proposed to be placed in the overburden storage area. Upon completion of mining activities, overburden will be returned to the mining area for use in final reclamation and for the establishment of vegetative cover. Material will be placed to achieve the desired reclamation subgrade elevation and to blend into the sloped highwalls (blast-to-grade) and existing perimeter grades. Site topsoil will then be spread over the overburden to provide a base for revegetation.

As piles and berms are removed, the areas impacted by topsoil/overburden storage will be scarified and prepared for final revegetation. Materials will be spread in advance of revegetation when it is a suitable time for planting as noted in Module 23.

10.5 Final Grade and Drainage

Identify the final grading and drainage pattern, including topographic contours on Exhibit 18 and a description of compaction and stabilization techniques. Provide cross-sections or a contour map showing permit line setback(s), final postmining slopes, postmining watertable and safety benches.

The final reclamation configuration for the Rock Hill Quarry will be a water impoundment, and the post-mining land use will be unmanaged natural habitat. As mining reaches its vertical and horizontal extent, concurrent reclamation will be undertaken. The final perimeter highwalls will be reduced to a maximum 35-degree reclamation configuration by blasting to grade. Overburden materials will be placed over the shot rock. The surface will drain directly to the water-filled-impoundment. The proposed reclamation grading, drainage pattern, and associated stormwater controls are presented on Exhibit 18: Land Use and Reclamation Map.

10.6 Reclamation Timetable

Provide a sequence of operations for the accomplishment of major stages in the reclamation plan demonstrating compliance with the concurrent reclamation requirements in 25 Pa Code 77.595. Include an estimated timetable for reclamation which is tied to the mining phases and the termination of mineral extraction.

Stages of reclamation will include 1) a reduction of perimeter highwalls; 2) spreading and grading of overburden materials on slopes; 3) final grading; 4) revegetation; and 5) filling of the water impoundment. To the extent practical, reclamation will be completed concurrent with mine development, except where access cannot be eliminated. Reclamation will be completed according to the concurrent reclamation requirements set forth in 25 PA Code § 77.595.

10.7 Identification of Toxic Materials

When applicable (e.g., noncoal operation in coal measures) provide a detailed description of the methods used in the identification of potentially acid and toxic forming materials (boney, rooster, blossom or other inferior coal and noncoal strata) which will be encountered and separately handled. Correlate and identify these strata in the test hole data.

N/A

10.8 Special Handling of Toxic Material

When applicable (e.g. noncoal operation in coal measures) provide a detailed description of the methods to be used in the separation and handling of acid and toxic forming materials. Include transportation, storage, treatment and return of the material to the backfill. Identify the amount and source of clean fill to be placed above and below the material and the compaction and other methods to preclude combustion of the material and prevent groundwater contamination. Indicate all disposal areas on Exhibits 9 and 18.

N/A

10.9 Oil and Gas Wells

Where mining activities are proposed to be conducted within 125 feet of any oil or gas well, identify the location on Exhibits 6, 9 and 18 and provide a description of the activity. Provide a demonstration that the well has been sealed; or describe the measures to be taken to insure the integrity of the well, access to the well at all times and the well operator's consent to the proposed activity.

There are no known oil or gas wells within 125 feet of the mining operation.

10.10 Wells, Exploration Holes and Bore Holes

Identify the type and location of wells, exploration holes, bore holes and monitoring wells and provide a description of the manner in which each will be cased, sealed or otherwise managed.

Any well developed at the Site will be sealed at the close of site mining. The well will be grouted from its base to the surface in accordance with State requirements for well closure. A licensed well driller will be contracted to complete the closure.

10.11 Underground Mines

Where proposed surface mining activities will be conducted within 500 feet of any point of either an active or abandoned underground mine (coal or noncoal), provide a description of the nature, timing, and sequence of the operation. Identify the location of each underground mine opening and the manner in which the opening will be sealed or otherwise managed including appropriate cross sections and design specifications for mine seals. Provide a description of the potential hydrologic impacts of the proposed activities, the effects on the existing groundwater system, and the effect the proposed activities will have upon abatement of pollution or the elimination of hazards to the health and safety of the public.

There are no known underground mines within 500 feet of the mining operation.

10.12 Public Highways

Where opening or expansion of pits are proposed within 100 feet of the outside right-of-way of a public highway, or a relocation of a public highway is proposed, identify the name and section of the public highway involved, a description of the activities to be conducted and detailed plans and cross-sections of the proposed activities. Include the written approval of the government agency having jurisdiction over the highway.

(**Note:** If the initial public notice advertisement does not contain a notice of the variance request, attach the proof of publication for advertisement of the variance.)

The proposed mining area is not within the 100-foot right-of-way setback for any public road.

10.13 Public Parks and Historic Places

Where the proposed mining activities may affect any public park or historic place, provide a demonstration of the measures which will be taken to minimize or prevent adverse impacts.

N/A

10.14 Utilities

Where the proposed mining activities may adversely affect services provided by oil, gas, and water wells; oil and gas pipelines; railroads; utility lines; and water and sewage lines, provide a demonstration of the measures which will be taken to minimize or prevent these impacts.

No services are anticipated to be adversely affected by mining activities. Agreements are in place with SEPTA for the site access road crossing of the railroad.

10.15 Bonding Calculations

Attach a completed Bond Calculation Summary-Noncoal for consolidated (5600-FM-BMP0474) or unconsolidated (5600-FM-BMP0473) material (sand, gravel, shale, soil). Complete a Bonding Increment Application and Authorization To Conduct Noncoal Mining Activities (5600-FM-BMP0304).

A Bonding Increment Application, Bonding Calculations, and a Bonding Map have been included as an attachment to this Application.

Module 12

Erosion and Sedimentation Controls

Module 12: Erosion and Sedimentation Controls
[§§77.458/77.461/77.466/77.525/77.527/77.531/Chapter 102]

12.1 Diversion Controls

Provide a plan for the collection and conveyance to a natural drainageway of the runoff from upslope undisturbed areas. Provide a separate general design for a temporary highwall diversion which limits the amount of runoff which can enter the pit (where applicable). Include design criteria, capacity calculations, profile of proposed channel slopes, typical cross-sections, required channel linings and applicable details on 12.1 Data Sheet.

Runoff is to be diverted through the use of diversion swales and diversion berms at the Site. Upslope diversions are proposed along the upslope limits of the Quarry to divert surface water from unaffected areas around the Site and to existing drainage networks.

Runoff from the affected area will be collected by diversion controls, rock lined channels and diversion berms, and directed to sediment basins for settlement of solids prior to discharge at Outfall 001. Design calculations, cross sections and details for each proposed device are included in the attachments to this Module.

12.2 Erosion and Sediment Control

Provide a plan for the control of erosion and sedimentation for lands within the permit area to be disturbed by mining activities. Include a narrative describing the implementation of the plan, and detailed design and construction plans and specifications for structures or facilities used in the plan. The plan must include each phase or phases of mining. Include design criteria, capacity calculations, profile of proposed channel slopes, typical cross-sections, required channel linings and applicable details on 12.1 Diversion/Collection Ditch Data Sheet for collection and interceptor ditches. Provide documentation of the capacity of the existing drainage system and the effect proposed mining activities will have on the drainage. Show discharge points to natural drainageways and culverts that intercept upslope drainage or carry drainage away from the site. Show facilities to scale on Modules 9 and 16 as appropriate.

12.2.1 Site Location and Permit Area Description

The Rock Hill Quarry is located along the east of North Rockhill Road in East Rockhill Township, Bucks County, PA. The Site is situated within the Tohickon Creek Watershed. Per Title 25, Chapter 93, the Tohickon Creek has a designated use of Trout Stocking, Migratory Fishes (TSF, MF). Topography rises from a low of approximately 525' MSL in the northwest to a high of 815' MSL along the eastern boundary. A quarry pit has been established onsite and encompasses a large portion of the eastern permit area. Support areas, including the processing plant and stockpile area as well as the maintenance shop, scalehouse and scales are located within the western portion of the permit. Topography drops from east to west; therefore, the erosion and sedimentation controls, including sediment basins, sediment traps, rock-lined channels, diversion berms and perimeter controls (filter sock), are to be located along the Site's western boundary. A diversion channel runs along the western boundary from south to north and directs drainage from the proposed controls to the Site's existing NPDES discharge point, Outfall 001, along the northwesterly limit of the permit. Discharge flows to the north offsite and enters an Unnamed Tributary to the Tohickon Creek.

12.2.2 Erosion and Sediment Control Facilities

Proposed controls include: sediment basins, diversion channels, diversion berms, culverts, sediment traps, and compost filter socks.

In addition groundwater seep interceptors, a clarifying pond, and pit dewatering pipe are proposed during initial site operations to collect and divert shallow groundwater flow away from the surface controls and into a separate collection and discharge system.

DESIGN CRITERIA

The following criteria have been used as a basis for the design of the erosion and sedimentation control facilities.

Sediment Ponds:

- **The impoundment capacity shall be based on a minimum of 7,000 cf/acre of storage.**
- **The settling storage portion of the impoundment volume shall be 5,000 cf/acre, and the sediment storage portion shall be 2,000 cf/acre.**
- **The impoundment shall be designed with a pipe outlet with perforations at the sediment storage elevation to provide controlled release of detained water (settling storage portion).**
- **The primary spillway shall be capable of dewatering the impoundment's settling storage volume to the sediment storage**

level within 2 to 7 days.

- **The discharge from the impoundment shall be designed with outlet into a proposed rock-lined channel to protect against excessive erosion.**
- **The impoundment shall be constructed with an emergency spillway set 0.5 feet above the settling storage capacity elevation.**
- **The emergency spillway shall be designed to safely pass the peak flow from 2 cfs/acre of contributing drainage area. The emergency spillway shall be constructed in original ground wherever possible and protected with an appropriate channel lining.**
- **The impoundment shall be cleaned when the storage capacity is reduced to 5,000 cf/acre. The cleanout elevation shall be clearly marked via a cleanout marker to be set in each impoundment.**
- **The impoundment shall be provided with 2 feet of freeboard above the maximum water level elevation at the emergency spillway required to safely pass the peak flow of the design storm event.**
- **Drainage channel and culvert outfalls entering impoundments shall be protected against excessive erosion by the use of rip-rap lining.**
- **Impoundments shall be designed with a minimum embankment top width of 10 feet and a minimum combined embankment side slope of 5:1.**
- **Impoundments shall have a minimum length to width ratio of 2:1.**
- **Impoundment slopes and floor shall be stabilized with vegetation.**

Sediment Trap:

- **The trap capacity shall be based on a minimum of 2,000 cf/acre of storage.**
- **The contributing drainage area shall be no larger than 5 acres.**
- **The dewatering zone portion of the impoundment volume shall be 1,300 cf/acre, and the sediment storage portion shall be 700 cf/acre.**
- **The trap shall be constructed with a spillway width 3 times the contributing drainage area.**
- **The spillway shall be constructed in original ground wherever possible and protected with an appropriate channel lining.**
- **The trap shall be cleaned when the storage capacity is reduced to 1,300 cf/acre. The cleanout elevation shall be clearly marked via a cleanout marker to be set in each impoundment.**
- **Trap shall be designed with a minimum embankment top width of 5 feet.**
- **Trap shall have a minimum length to width ratio of 2:1.**

Channels (Diversion and Collection):

- **All channels shall be designed to convey the peak flow from the 10-year/24-hour storm with a minimum 0.5 feet of freeboard.**

Diversion Berms:

- **Berms shall be constructed of earthen materials and shall be compacted for stability during construction.**
- **The proposed berms will serve as a diversion or containment structure in the management of runoff.**
- **The upslope side of the berm shall be lined with the appropriate rock-lining to protect against excessive erosion.**
- **Perimeter berms shall be constructed from precast concrete blocks.**

Culverts:

- **Culverts shall be designed to convey the peak flow from the 10-year/24-hour storm from the contributing drainage area.**

Compost Filter Sock:

- **Compost filter sock will be used as a temporary erosion and sedimentation control measure as needed throughout the Site.**
- **Installation will be in accordance with standard E&S control requirements and accompanying standard details. Compost Filter Sock, Filtrexx Siltsoxx^{TM} 12" barrier or equal, unless another size is specifically noted on plan.**

Clarifying Pond:

- **The pond shall be designed to provide a detention volume for groundwater diversions and quarry impoundment/sump discharge providing greater than 6 hours of detention time at the high flow design rate; however, it is anticipated that the long term average flow shall be below this rate, providing greater detention time. The Pond volume shall also include a sludge storage factor of 1.33 times the detention volume.**
- **The pond shall be outfitted with a v-notch weir overflow outlet designed to provide one-foot of freeboard at the maximum design flow rate. (Contractor may substitute a rectangular weir with Engineer's approval).**

Interceptor Pipe:

- **Pipes have been designed to provide capacity for high flow conditions from the contributing groundwater seeps to the clarifying pond. The long term average flow rate through the interceptor pipes is anticipated to be below the monthly NPDES rate.**

Quarry Pit Impoundment Dewatering Pipe:

- **A dewatering pipe shall be installed to allow for dewatering of the Quarry Pit. The pipe shall be outfitted with a manually controlled valve to control and/or prevent flow through the pipe. Initially dewatering shall be achieved by gravity flow and eventually be accomplished through pumping or via syphon. Flow through the dewatering pipe shall be monitored and adjusted so as to maintain site discharge rates consistent with the current approved NPDES discharge rate.**

The location of the proposed E&S controls is depicted on Exhibit 9: Operations Map and the Erosion and Sediment Control Plans. Design details are presented on the Erosion and Sediment Control Details drawing. The following sections address their operation and maintenance, the proposed schedule of implementation, and a description of the E&S structures.

12.2.3 Operation and Maintenance of Control Facilities

Operation, maintenance, inspection, and repair of all sedimentation control facilities will be the responsibility of the Site Operator. All erosion and sediment controls shall be inspected after each runoff event and on a weekly basis during dry periods. The permittee shall be responsible for the structural stability of the proposed facilities and their protection against unauthorized acts of third parties.

MAINTENANCE PROGRAM

The following long-term maintenance schedule and procedures are proposed with regard to erosion and sedimentation control features for this project (refer to Exhibit 9). During quarry operations at the Site, E&S control features shall be inspected at least once a week, or more frequently as may be required to comply with this Erosion and Sedimentation Control Plan. Long-term maintenance should not be required after cessation of mining operations and stabilization of the Site.

MAINTENANCE AND REPAIR OF E&SCP FACILITIES

- **Where dust or wind erosion is a problem, the unstable surface(s) shall be sprayed with water or other suitable dust suppressor.**
- **Operator shall employ measures during quarry operations to prevent spills of fuels or lubricants. If a spill occurs, it shall be controlled immediately to prevent its entry into nearby waterways.**
- **Any temporary erosion control measure applied to exposed soil surfaces shall remain functional until vegetative cover is sufficiently established.**
- **Permanent soil protection will be completed as early as practical.**
- **Any debris accumulated at filter sock shall be removed and properly disposed. These temporary barriers shall be checked daily and realigned or reset as required. Sediment shall be removed when it reaches one-half of the fence height.**
- **Until the Site is stabilized, all erosion and sediment Best Management Practices (BMPs) must be maintained properly. All preventive and remedial maintenance work, including clean-out, repair, replacement, regrading, reseeding, re-mulching, and renetting, must be performed immediately. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs or modifications to what is installed will be required.**
- **Miscellaneous additions, adjustments or corrections shall be made to any erosion control structure as deemed necessary by the engineer, PA DEP, or County representative in order to correct problems unforeseen or problems caused by storms prior to stabilization.**
- **All E&SCP measures shall remain in place until the Site has been stabilized. The Site shall be considered stabilized when the entire disturbed area has a minimum, uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements. Only upon reaching stabilization and following PA DEP approval may the E&SCP features be removed.**
- **Sediment removed from BMPs shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage channels, and shall be immediately stabilized or placed in topsoil stockpiles.**

12.2.4 Schedule of Implementation

The following sequence is proposed for installation of the E&S Controls measures at the Site.

Northwestern Support Areas

1. **Downslope perimeter controls, including compost filter sock, shall be installed below all areas to be affected prior to initiation of upslope disturbance;**
2. **The upslope diversion swale, Channel 4, shall be installed to divert drainage from upslope unaffected areas around the proposed limit of disturbance. The channel shall outlet to the existing ephemeral ditch along the northern boundary of the permit and directed along the northern access road. The channel shall be excavated working from downstream to upstream. Excavated material shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical;**
3. **Following installation of downslope and upslope controls, construction/installation of the E&S Control Devices may commence. The initial control device to be installed is Channel 3, located immediately upstream of the NPDES Point. The channel shall be excavated working from the NPDES Point toward Culvert 5. Excavated materials shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical;**
4. **Upon reaching the channel grade and geometry proposed in these plans, the rock channel lining shall be installed for stabilization;**
5. **Following installation of the channel, Culvert 5 shall be installed. Material shall be excavated from under the existing rail bed and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
6. **Following excavation, Culvert 5 shall be installed and backfilled as proposed;**
7. **The next section of channel, Channel 2, Section 2, shall be installed working from Culvert 5 to Culvert 8. Excavated materials shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical;**
8. **Upon reaching the channel grade and geometry proposed in these plans, the rock channel lining shall be installed for stabilization;**
9. **Following installation of the channel, Culvert 8 shall be installed. Material shall be excavated and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
10. **Following excavation, Culvert 8 shall be installed and backfilled as proposed;**
11. **Following and/or in conjunction with the installation of Culvert 8, precast concrete block containment berms will be installed immediately upslope of Channel 3 and Channel 2, Section 2.**
12. **Sediment Trap 2 shall be installed just upslope of Channel 3. Material shall be excavated from the trap and utilized for construction of its downslope embankment. Excess material shall be hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical. The sediment trap shall be outfitted with a filter berm at its base for dewatering into Channel 3. The trap slopes and floor shall be stabilized with vegetation;**
13. **Following trap installation, the diversion berms, Diversion Berms 4 and 5 shall be installed. Material shall be placed in the footprint of the berms to promote positive drainage to the trap. The base of the diversion berms shall be rock-lined to prevent erosion at the toe of the slope;**
14. **The next section of channel, Channel 2, Section 2, shall be installed working from Culvert 8 to Culvert 6. Prior to completing this channel work, the existing pond and channel shall be dewatered via pumping to the Quarry Pit Impoundment or Sediment Trap 1 to allow for access and inspection during construction. Once dewatered, channel excavation shall progress. Excavated materials shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical;**
15. **Upon reaching the channel grade and geometry proposed in these plans, the rock channel lining shall be installed for stabilization;**
16. **Following installation of the channel, Culvert 6 shall be installed. Prior to completing the work, the existing upstream channel shall be dewatered via pumping to the Quarry Pit Impoundment or Sediment Trap 1 to allow for access and inspection during construction. Once dewatered, culvert installation shall progress. Material shall be excavated from under the existing rail bed and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
17. **Following excavation, Culvert 6 shall be installed and backfilled as proposed;**
18. **The next section of channel, Channel 1, shall then be installed. Material shall be excavated from the channel and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
19. **Upon reaching the channel grade and geometry proposed in these plans, the rock channel lining shall be installed for stabilization;**
20. **Following installation of the channel, Culvert 1 shall be replaced/installed. Material shall be excavated across the western access road to allow for installation of a replacement culvert. Excavated materials shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical;**
21. **Following excavation, Culvert 1 shall be installed and backfilled as proposed;**
22. **Following installation of the culvert, the western conveyance system shall be completed allowing for installation of upslope detention and treatment controls;**

23. **Following and/or in conjunction with the installation of Sediment Basin 2 and 1, construction/installation of the Clarifying Pond shall commence. Prior to completing the construction work, the existing clarifying pond shall be dewatered via pumping to the Quarry Pit Impoundment, Sediment Trap 1 or the sediment basins to allow for access and inspection during construction. Once dewatered, construction of the Clarifying Pond shall progress. Material excavated from the pond shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical. The primary spillway, consisting of a v-notch overflow weir, shall be installed in the northwestern edge of the Pond and connected to a channel leading to Culvert 1. The Pond slopes and floor shall be stabilized with vegetation;**
24. **Following the installation of the Clarifying Pond, Interceptor Pipe 1, 2 and Pit Impoundment Dewatering Pipe System shall be installed. Material shall be excavated along the pipe locations and hauled and stored in designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
25. **Following the excavation, the interceptor pipes and dewatering pipe system shall be installed and backfilled as proposed.**
26. **Sediment Basin 2 shall be installed along with the associated primary and emergency spillways. Material excavated from the basin shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical. The primary spillway, consisting of a 24" perforated riser pipe and 18" outlet barrel shall be installed in the northwest corner of the basin and connected directly into Channel 2, Section 1. The emergency spillway shall be installed along the basin's western embankment, lined with rip-rap and connected to Channel 2, Section 1. The basin slopes and floor shall be stabilized with vegetation;**
27. **Following the installation of Sediment Basin 2, Culvert 7 and Diversion Swale, Channel 5 shall be installed along the northern side of the existing access road. Material shall be excavated along the culvert and channel location and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical. Channel 5 shall be rock-lined to prevent erosion;**
28. **Following and/or in conjunction with the installation of Sediment Basin 2, construction/installation of Sediment Basin 1 shall commence. Similar to above, material excavated from the basin shall be hauled to and stored in the designated overburden storage area and stabilized with vegetation as soon as it is practical. The primary spillway, consisting of a 24" perforated riser and 18" outlet barrel shall be installed in the northwest corner of the basin and connected directly to Channel 1. The emergency spillway shall be installed on the basin's western embankment, lined with rip-rap and connected to Channel 1. The basin slopes and floor shall be stabilized with vegetation;**
29. **Following installation of Basin 1, and/or in conjunction with the installation of the Clarifying Pond and associated interceptor pipes and dewatering pipe, Culvert 2 shall be installed under the site access road. Material shall be excavated along the culvert location and hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical;**
30. **Following excavation, Culvert 2 shall be installed and backfilled as proposed. The upslope end of Culvert 2 shall be located in an excavated depression along the south of the access road. The upslope diversions shall direct runoff into the depressed inlet to allow for entry into the culvert;**
31. **The upslope diversion berm, Diversion Berm 1, Sections 1 and 2 shall be installed. Material shall be placed along the western boundary of the Processing Plant and Stockpile Area to promote positive drainage from south to north toward Culvert 2. The base of the diversion berm shall be rock-lined to prevent erosion at the toe of slope;**
32. **Installation of the above provides for downslope control and treatment of the Site's access, maintenance, processing, and support areas in the northwest of the Permit.**

Processing Plant and Stockpile Area – South End

The following E&S Plan has been included for control and treatment of the five-acre area located at the southern end of the Plant/Stockpile Area:

1. **Downslope perimeter controls, including compost filter sock, shall be installed along the base of the area prior to affecting upslope areas;**
2. **Following installation of the perimeter controls, Sediment Trap 1 shall be installed in the southwest corner. Material shall be excavated from the trap and utilized for construction of its downslope embankment. Excess material shall be hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical. The sediment trap shall be outfitted with a filter berm and infiltration trench at its base for dewatering. The trap slopes and floor shall be stabilized with vegetation;**
3. **Following trap installation, the diversion berms, Diversion Berms 2 and 3 shall be installed. Material shall be placed in the footprint of the berms to promote positive drainage to the Trap. The base of the diversion berms shall be rock-lined to prevent erosion at the toe of slope;**
4. **Following installation of the berms, upslope areas may be affected for installation of the Processing Plant and Stockpile Area.**

Hot Mix Asphalt Plant

The following E&S Plan has been included for control and treatment of the Hot Mix Asphalt Plant and supporting areas.

1. **The HMA plant is located upslope of existing treatment facilities and therefore additional downslope controls are not needed. A level pad shall be built for installation of the HMA Plant.**

2. **Following the installation of the pad, the existing 18" concrete culvert running under the access road (Culvert 3) will be extended below the pad and connected with two (2) inlets to provide stormwater conveyance from the area.**
3. **Prior to installation and operation of the HMA Plant, an oil containment boom shall be installed within Sediment Basin 2, spanning from bank to bank across the discharge from Channel 6.**

RAP Storage Areas

Prior to initiating RAP storage onsite the following shall be completed.

1. **For the RAP storage area located to the north of the Quarry Pit, diversion berms shall be maintained or installed to divert surface drainage to Sediment Basin 2.**
2. **For RAP storage areas adjacent to the quarry access road, the areas shall be inspected and regraded as needed to divert drainage to controls leading to Sediment Basin 2.**
3. **Following confirmation of drainage to the sediment basin, RAP stockpiling shall commence.**

Quarry Pit

The following E&S Plan has been included for control and treatment of runoff within the Quarry Pit and upslope drainage areas:

1. **The Quarry Pit is self-contained with a large portion of the Site draining directly to the existing open water feature. The water impoundment maintains a water level at approximately elevation 590' MSL and the downslope highwall of the Pit is maintained at an elevation just above this point.**
2. **Downslope diversions will be installed at the base of the Overburden Storage Areas and haul roads to direct surface water into the western edge of the pit at the downslope highwall. Cross slope diversions shall be installed along the haul road to divert water into the Pit at multiple locations and limit the amount of water draining to the base of the road;**
3. **Water levels will be monitored to review conditions at the downslope highwall to determine if modification of the crest elevation is needed. Modifications will be proposed if increased containment is needed.**
4. **Installation of the above diversions will allow for surface waters from the Mining and Overburden Storage Areas to be segregated from other Site waters to allow for increased settling within the Pit and eventually the Pit Sump;**
5. **In conjunction with the installation of the interceptor pipes outlined above, a Quarry Pit dewatering pipe shall be installed to allow for dewatering of the pit. The pipe will begin at the low point of the downslope highwall and travel to the west where it will be tied in with a fitting to connect with Interceptor Pipe 1. The dewatering pipe will be outfitted with a valve to provide for manual control of dewatering. Flow through the dewatering pipe shall initially be provided by gravity flow. Eventually a pump and/or syphon discharge will be utilized for dewatering. Dewatering flows shall be monitored and maintained at a level at or below the current permitted NPDES discharge rate for the site.**

Quarry Pit Expansion

1. **The Northeast portion of the proposed mining area naturally drains directly into the existing quarry pit and/or existing diversion structures. Refer to the figure Northeast Mining Area: E&S Plan for areas associated with this expansion area.**
2. **The Southeast portion of the proposed mining area has been broken into three stripping phases, each including perimeter diversion berms draining to a typical 5-acre sediment trap.**
3. **Typical expansion into each phase in the southeast mining area will occur as follows:**
4. **Downslope perimeter controls, including compost filter sock shall be installed.**
5. **Following installation of the perimeter controls a typical 5-acre sediment trap shall be installed at the base of the phase. Material shall be excavated from the trap and utilized for construction of its downslope embankment. Excess material shall be hauled to and stored in the designated overburden storage area. Material shall be stabilized with vegetation as soon as it is practical. The sediment trap shall be outfitted with a filter berm and infiltration trench at its base for dewatering.**
6. **Following trap installation, diversion berms shall be installed along the downslope perimeter of the phase to divert surface drainage into the trap.**
7. **Following installation of the berms, upslope areas may be cleared of vegetation, grubbed, and stripped of topsoil to prepare the area for mining.**

12.2.5 Plan for Reclamation

Upon completion of Site mining operations, reclamation grades will be achieved as depicted on Exhibit 18: Land Use and Reclamation Map. Topsoil (including subsoil) will be spread as needed across the reclaimed area to establish vegetation according to the approved Revegetation Plan.

12.2.6 Construction Specifications and Typical Facility Illustrations

Specifications and illustrations of the proposed facilities are presented in this Module and attachments, and on the Erosion and

Sediment Control Plan and Details drawings, Sheets ES-001 through ES-004.

CONSTRUCTION SPECIFICATIONS

- **All erosion and sedimentation control measures shall meet the requirements set forth in DEP's Technical Guidance Document titled "DEP Engineering Manual for Mining Operations," Document No. 563-0300-101 and Chapter 77.**
- **For the duration of Site activities, the Site Operator is responsible for maintaining all erosion and sediment control measures until all disturbed areas have been permanently stabilized in accordance with the approved Reclamation Plan on file with the Department.**
- **All structures, including sediment ponds, channels, diversion berms, and stockpiles, shall be stabilized immediately upon completion.**
- **All areas where activities have or will cease for more than twenty (20) days shall be stabilized with temporary vegetative cover in accordance with the approved Revegetation Plan in Module 23.**

12.2.7 Supporting Design Computations and Data

Design calculations and construction details for the sediment basins, sediment trap, diversion channels, diversion berms, and culverts described in this Erosion and Sedimentation Control Plan are presented as attachments to this Module.

12.3 Haul Roads

Provide the following information for each haul road to be constructed, reconstructed or used in the operation:

Note: Activities proposed to be conducted under General permit for Temporary Road Crossings (BMR-GP-101) and General Permit for Access Road Crossings (BMR-GP-102) must include a completed Notification Form, with attachments, for the respective General Permit (i.e., Form 5600-FM-MR0054 for BMR-GP-101 and Form 5600-FM-MR0059 for BMR-GP-102). BMR-GP-102 may not be used for haul roads.

a) Location; show on Exhibit 9 (and Exhibit 18 if road will remain as part of postmining land use);

See Exhibit 9 for the location of haul roads.

b) Description and typical cross-sections showing the construction of the haul road including existing ground, grades, slopes, culvert locations, outlet protection and other drainage control;

Haul roads are to be installed and/or maintained as outlined in the cross section included on the E&S Details drawing.

c) Measures to control and prevent erosion and sedimentation; include proposed spacing of sediment traps, turnouts, culverts, check dams, etc.;

All haul roads are to drain to proposed E&S Controls as depicted on the Site Plans.

d) Plan for reclamation after mining is completed;

Haul roads are to be removed during the reclamation process. Roads will be regraded as needed and revegetated per the approved Revegetation Plan.

e) If the haul road involves the crossing of any intermittent or perennial stream or wetland include Module 14 Streams/Wetlands;

N/A

f) Will a PennDOT highway occupancy permit be needed? ☐ Yes ☒ No

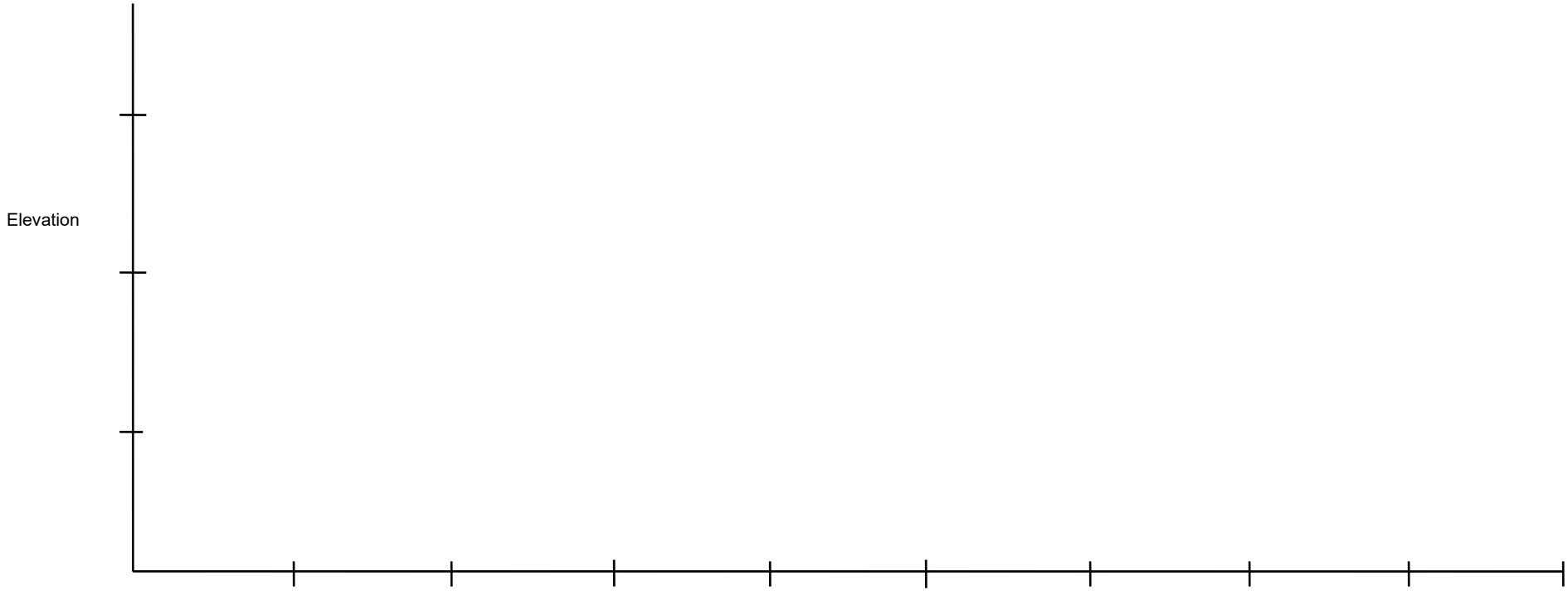
If yes, PennDOT Occupancy Permit number must be submitted prior to permit activation.

12.1 Diversion/Collection Ditch Data Sheet

Title:	Site:	Company:	Permit Number:
Prepared by:	Telephone Number:	Date:	Sheet _____ of _____

Design Calculations:

Station		Drainage Area acres	Design Storm (yrs.)	Average Watershed Slope (%)	Curve Number	Peak Discharge Q cfs	Channel Bed Slope (%)	Freeboafd (ft.)	Channel Lining	Manning's Coefficient (n)	Channel Bottom Width (ft)	Channel Side Slopes	Flow Area (sq.ft.)	Flow Depth (ft.)	Top Flow Width (ft.)	Flow Velocity (ft/sec)	Q Available cfs	With Freeboard		
Start / End	Elevation																	Channel Depth (ft.)	Top Channel Width (ft.)	Q Available cfs



PROFILE

Vertical Scale 1" = ____
Horizontal Scale 1" _____

Drainage Area Map

DRAINAGE AREAS KEY

- UPSLOPE PAD AREA DA (9.74 ACRES)
- CHANNEL 4 DA (10.99 ACRES)
- CULVERT 4 DA (3.70 ACRES)
- BERM 4 AND 5 DA (1.42 ACRES)
- CHANNEL 3 DA (1.92 ACRES)
- CHANNEL 2 SECTION 2 DA (0.81 ACRES)
- CHANNEL 2 SECTION 1 DA (1.04 ACRES)
- BASIN 2 DA (4.62 ACRES)
- CULVERT 3 DA (3.52 ACRES)
- BASIN 1 DA (0.99 ACRES)
- CHANNEL 1 DA (0.54 ACRES)
- CULVERT 2 & BERM 1 DA (7.30 ACRES)
- BERM 2 AND 3 DA (4.67 ACRES)
- SEDIMENT TRAP 3 DA (3.73 ACRES)

LEGEND

- EXISTING SMP BOUNDARY
- EXISTING SURFACE WATER
- LIMIT OF HANSON SURVEY
- LIMIT OF EARTHRES SURVEY
- EXISTING RAILROAD
- EXISTING TREELINE
- PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARIES
- EXISTING DRAINAGE CHANNEL
- PROPOSED DRAINAGE CHANNEL
- PROPOSED DIVERSION BERM
- NPDES 001 — NPDES DISCHARGE POINT

NOTES:
1. EXISTING GRADE TOPOGRAPHY COMPILED BY PAMAP PROGRAM, PA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES, BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY, DATED JUNE 2010.
2. TOPOGRAPHY AND SITE FEATURES IN WESTERN PERMIT AREA WERE SURVEYED BY EARTHRES GROUP, INC. PERSONNEL, JANUARY 2017.
3. TOPOGRAPHY AROUND THE PROPOSED HOT MIX ASPHALT PLANT AND PROCESSING FACILITY WERE SURVEYED BY HANSON PERSONNEL, SEPTEMBER 2018.
4. BASEMAP FEATURES INCLUDING BUILDINGS, ROADS, UTILITIES, WATER FEATURES, AND TREELINES RETRACED FROM AERIAL PHOTOGRAPHY DATED 2015, PUBLISHED BY THE DELAWARE VALLEY REGIONAL PLANNING COMMISSION.
5. EXISTING PERMIT INFORMATION INCLUDING PERMIT BOUNDARY, MINING LIMIT, DEPTH OF MINING, AND PRE-ACT HIGHWALLS ARE REFERENCED TO THE PERMIT DRAWING "MINING PLAN, SHEET 3 OF 6" PREPARED BY SKELLY AND LOY, DATED MARCH 18, 1980.
6. HANSON PROPERTY BOUNDARY PROVIDED BY MAP TITLED "PLAT OF SURVEY OF LANDS OF GENERAL CRUSHED STONE", PREPARED BY ORANGEVILLE SURVEYING CONSULTANTS, INC., DATED MAY 7, 2001.
7. ADJACENT PARCEL BOUNDARIES ARE REFERENCED TO THE BUCKS COUNTY GIS RECORDS.
8. STREAM INFORMATION IS REFERENCED TO THE PA DEP eMAPPA ONLINE RECORDS.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

NO.	DATE	BY	REVISIONS
1	10/16/18	JTK	REVISED PER DEP COMMENTS

COMMONWEALTH OF PENNSYLVANIA — Registered Professional Engineer — MICHAEL D. LONG
MICHAEL D. LONG P.E.
LICENSE NO. PE060620

PREPARED FOR: Hanson HEIDELBERGCEMENT Group

PREPARED BY: EarthRes ENGINEERING AND SCIENCE
6912 Old Easton Road, Pipersville, PA 18947 USA
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toll free 800.264.4553

HYDRAFLOW DRAINAGE AREAS

HANSON AGGREGATES PENNSYLVANIA LLC
ROCK HILL QUARRY
EAST ROCKHILL TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

DRAWN BY:	CHECKED BY:	PROJECT NO:	DRAWING NUMBER:
JTK	MDF	061003.052	FIGURE 1
DATE: 5/3/18			SHEET 1 OF 1

F:\PROJECTS\Hanson\061003.052 Rock Hill Permit Update\CAD\Drawings\Rev 4\PROPOSED DRAINAGE AREA.dwg Layout: E&S SITE PLAN User: mfling 10/23/2018 19:14

Sediment Basin 2 Volume Calculations

HANSON AGGREGATES - ROCK HILL QUARRY

SEDIMENTATION BASIN NO. 2

Sedimentation Basin Storage Volume Check

Elevation ft.	Plan Area sf	Average Area sf	Elevation Difference ft.	Incremental Volume cf	Incremental Volume acre-ft	Cummulative Volume cf	Cummulative Volume acre-ft
525	13,264						
526	31,651	21,801	1	21,801	0.500	21,801	0.500
527	34,422	33,027	1	33,027	0.758	54,828	1.259
528	36,590	35,500	1	35,500	0.815	90,329	2.074
529	38,626	37,603	1	37,603	0.863	127,932	2.937
530	40,670	39,644	1	39,644	0.910	167,576	3.847
531	42,718	41,690	1	41,690	0.957	209,266	4.804
532	44,777	43,743	1	43,743	1.004	253,009	5.808
533	46,859	45,814	1	45,814	1.052	298,823	6.860

Design:

Sediment Storage Volume =	46,900	CF
Sediment Storage Volume Elevation =	526.76	ft.
Settling Storage Volume =	155,700	CF
Settling Storage Volume Elevation =	529.70	ft.

Requirements:

Sediment Storage Volume (2,000 CF/disturbed area acres) =	43,160	CF
Settling Storage Volume (5,000 CF/drainage area acres) =	107,900	CF
Drainage Area (acres) =	21.58	acres

Average area calculated as follows: [A+B+sqrt(A*B)]/3

By:	JTK
Date:	6/7/2018
Chk'd:	MDF
Date:	6/7/2018
Rev'd:	JTK
Date:	10/16/2018
Chk'd:	MDF
Date:	10/23/2013

Module 13

Impoundments/Treatment Facilities

Module 13: Impoundments/Treatment Facilities

[§§77.457/77.461/77.526/77.531/Chapter 105]

13.1 Treatment

Provide a plan for the treatment of surface and groundwater drainage from the areas disturbed by the mining activities. Include a construction and treatment narrative, flow diagram, design criteria, and design calculations (which include the proposed capacity) of the treatment facilities. Identify treatment chemicals to be used. Do not include any facilities included in Module 12.

Stormwater and groundwater from the mining area is currently collected in the existing quarry pit and is detained for settlement of suspended solids. The quarry pit is outfitted with a valve controlled overflow structure which discharges to the Clarifying Pond for polishing prior to discharge from the site.

In the future the pit sump will be utilized to handle stormwater and groundwater from the mining area and immediate surrounding area. The treated collected waters will be detained for settlement of solids and then pumped to the existing Clarifying Pond for secondary settling and polishing prior to discharging.

Approved flocculants by DEP can be added to any of the ponds or sumps if needed to meet certain water standards set forth by PA DEP. See Attachment 13.1 for a list of approved flocculants.

An Oil Containment Boom will be installed prior to operation of the proposed Asphalt Plant. The Asphalt Plant and the immediate surrounding areas will be leveled for construction. Stormwater will drain through two (2) open grate inlets and conveyed to Sediment Basin 2 via the extended Culvert 3 and Channel 6. The Oil Containment Boom shall be installed within Sediment Basin 2, spanning bank to bank across the discharge of Channel 6. The Oil Containment Boom shall be installed per the manufacturer specifications. The site operator will be responsible for inspecting the containment area for oil sheen. If oil is detected it shall be removed and disposed of per PA DEP standards.

13.2 Quarry/Pit Sump

Provide a description of the sump including size, location, depth, method of pumping, etc. (Key location to Exhibits 6.2 and 9).

The pit sump will be located in the lowest level in the quarry pit with minimum dimensions of 170' x 170' x 25' and may be relocated as needed throughout the life of the mine. The proposed sump has been designed to retain the 10-year, 24-hour storm of the entire mining area and immediate surrounding areas (56.7 acres). The sump will be dewatered by pumping to the Clarifying Pond for secondary settling and polishing. The Site has capabilities as needed to treat with flocculent prior to discharging at NPDES 001.

Refer to Attachment 13.2 for the Sump Design Information.

13.3 Dams and Impoundments (General) Do not include any facilities included in Module 12

Existing impoundments include the Clarifying Pond and Sediment Basins 1 and 2, which are located along the western limits of the permit area. All existing impoundment design information has been included in Module 12. These impoundments will be maintained in their current condition for the life of the mine to treat collected waters.

a) Proposed use. **N/A – Refer to Module 12**

b) Map and location (key to maps). **Refer to Exhibit 9**

c) Provide a design report and construction plans and specifications to include detailed cross-sections and plan view scale drawings of the proposed structure which show: principal spillway, dewatering devices, embankment details (including maximum height, top width, and cutoff trench), crest of emergency spillway and existing ground.
N/A – Refer to Exhibit 12

d) If the impoundment is located outside of the area covered by the geology and hydrology description contained in Modules 7 and 8, include a preliminary geology and hydrology report.
N/A

e) Describe the potential effect on the structure from subsidence from underground mining when applicable.
N/A

f) If the detailed design plans are not included with the initial submittal of this application, identify when the detailed design plans will be submitted. (**Note:** The detailed design plans must be approved by the Department before construction of the structure begins.) **N/A – Refer to Module 12**

13.4 Class C Dams

A separate permit is required for impoundments that meet one or more of the following:

1) a contributory drainage area exceeding 100 acres; **N/A.**

2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 ft; **N/A.**

3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet. **N/A.**

(**Note:** A permit processing fee of $1500 should be included for structures that meet the above criteria. Permits for impoundments that meet the above mentioned criteria and are to be left in place after mining will be submitted to the Division of Dams Safety, Bureau of Waterways Engineering for their review and approval.)

13.5 Operation and Maintenance Requirements

Describe the operation and maintenance requirements for the structure, including dewatering of the impoundments following storm events.

The Sediment Basins and Clarifying Pond will be inspected weekly and after storm events for sediment build-up, excessive erosion, and the general condition of overflow/drain structures. The ponds will be cleaned as needed. Vegetation will be replaced as needed. Unless a situation dictates that immediate repair is necessary, all repairs, maintenance and sediment removal will be scheduled during dry periods to ensure that the treatment capacity is not compromised.

Operation, maintenance, inspection and repair of the quarry sumps shall be the responsibility of the Site Operator.

The Sump and corresponding pump and outlet shall be inspected by a qualified person designated by the permittee.

Any change to the current dewatering system or pit water treatment system (ponds, pumps, clarifying pond etc.) must be submitted to the Department for approval. The Department must issue written approval for any major change prior to any change taking place at the site. However, for a minor change or in an emergency situation, the permittee shall notify the inspector and/or the Pottsville District Office of the immediate change for verbal confirmation.

13.6 Removal

Describe the timetable and plans for removal of the impoundment and reclamation of the area.

The proposed sump is located within the Quarry Pit. During reclamation, the sump will remain in the floor as pumping ceases and groundwater filling commences.

Following reclamation of upslope areas, the sediment basins and clarifying pond will be backfilled and graded to match the surrounding area. Disturbed areas will then be stabilized with vegetation.

Module 17

Air Pollution and Noise Control

Module 17: Air Pollution and Noise Control Plan

[Chapters 121,123,127,129/NSMCRA 3323(a)(3)/§§ 77.455/77.575]

17.1 Processing Facilities

a) Indicate whether or not there are any processing facilities in the permit area. (Key to Exhibit 9) and specify the mineral(s) to be processed.

Type of Processing Facility	YES	NO	If YES: DRY	WET	Minerals/Product
Crushing	☒	☐	☒	☐	**Diabase**
Screening	☒	☐	☒	☐	**Diabase**
Cleaning	☒	☐	☒	☒	**Diabase**
Stockpiling	☒	☐	☒	☒	**Diabase**

b) Describe the processing facilities and the amount of minerals to be processed.

The initial phase of aggregate production will utilize portable non-metallic processing units operating under GP-3/GP-9 authorization from the Pennsylvania Department of Environmental Protection - Southeast Regional Office dated 12/27/2017.

A fixed aggregate plant is planned for the site with minimum production targeted for 300,000 tons per year. The aggregate plant will likely include a primary jaw crusher, scalping screens, secondary gyratory cone crusher, finishing screens, a tertiary cone crusher, and a quaternary cone crusher. A State Only Operating Permit will be secured from the Pennsylvania Department of Protection - Southeast Regional Office.

A hot mix asphalt plant will be installed with a targeted production of 500,000 tons per year. Permits have been secured and are attached.

c) Provide the date that the DEP Regional Air Quality Office was contacted or, if applicable, provide a copy of the DEP Air Quality Program's determination to grant an exemption from the Air Quality Permit requirements and of any authorizations granted under the Air Quality General Permit for Portable Nonmetallic Mineral Processing Plants (BAQ-GPA/GP-3).

GP3-03-0153 issued on 12/27/2017 - expires 12/27/2022
GP9-09-0080 issued on 12/27/2017 - expires 12/27/2022
GP9-09-0084 issued on 9/7/2018 - expires 9/7/2023
GP13-09-0001 issued on 9/7/2018 - expires 9/7/2023
DEP Air Quality Permits attached

Note: All crushing and screening of noncoal minerals other than sand and gravel will require a separate Air Quality Permit from the DEP Regional Office Air Quality Program unless that Program makes a determination to grant an exemption. Crushing and/or screening of sand and gravel will require a separate Air Quality Permit from the DEP Regional Office Air Quality Program except for wet sand and gravel operations (screening only) and wet or dry sand and gravel operations (crushing and/or screening) unconsolidated material with a rated capacity of processing less than 150 tons per hour unless that Program makes a determination to grant an exemption. BAQ-GPA/GP-3 may be used for authorizing the construction, operation, and modification of portable nonmetallic mineral processing plants that will be located at the mine site.

d) Is the processing facility to be operated by the mining permittee? Yes ☐ No ☒
If so, will the Air Quality permit be held by the mining permittee or a third party? Permittee ☐ Third Party ☒

17.2 Air Pollution Control Plan

Provide a description of the air pollution control plan including what measures will be taken to reduce dust from the following activities:

a) Access roads, haul roads and adjoining portions of the public road

Dust will be controlled with water or calcium chloride.

b) Truck traffic (including fugitive particulate material from truck loads).

All trucks carrying products from the site are required to tarp their loads prior to exiting the site.

c) Drilling operation.

To control dust, drill rigs will either add water during the drilling process or vent the exhaust through the drill rig's baghouse to minimize fugitive dust emissions.

d) Overburden removal and mineral extraction

Overburden will be removed using heavy construction equipment and be placed in stockpiles. Upon placement, the material will be stabilized with vegetation to prevent erosion by wind or water.

A water truck will be used to wet non-paved road surfaces to minimize fugitive emissions from the active mining and support areas. If water applications alone are not effective in controlling dust from the internal unpaved roads, calcium chloride may be applied with water. Calcium chloride retains moisture for prolonged periods, which prevents fugitive dust emissions.

e) Stockpiles (overburden, topsoil, product).

Overburden materials will be stabilized with vegetation to prevent erosion by wind or water. In accordance with the Pennsylvania Department of Environmental Protection Air Quality Permits, wet suppression (water sprays, etc.) methods will be used to control dust associated with the production of aggregate products. Sufficient moisture should be applied to the aggregate product during production to control dust emissions during stockpiling.

f) Loading and unloading areas.

Sufficient moisture should exist in the stockpiled aggregate products to control dust emissions during loadout. Water should also be applied to the surfaces in the loading and unloading areas as needed.

g) Crushing and other processing equipment.

The processing equipment approved under the GP-3 Air Quality Permit employs wet suppression to reduce fugitive emissions during material processing. Should a fixed aggregate plant be installed at the site, a combination of wet suppression and / or baghouse(s) will be used to control dust emissions. Wet suppression systems typically consist of high pressure water pumps supplying multiple manifold spray bars positioned at transfer points, outlets of crushers and the primary dump hopper.

h) Conveyors.

Conveyors associated with the processing equipment will use wet suppression to control fugitive emissions.

Activities under 17.2 a) through h) which are addressed and regulated as part of a separate Air Quality Permit do not need to be included in this module. Indicate which activities (or specific aspects of an activity) are addressed under a separate Air Quality Permit.

Site processing activities of bedrock material and production of asphalt are addressed under separate Air Quality Permits. See attached.

17.3 Noise Control

Describe the measures that will be taken to prevent noise from becoming a public nuisance.

The area between the quarry permit area and all surrounding residences is wooded, consisting of mostly deciduous vegetation. The trees and other vegetation assist in defusing sound.

Aggregate product stockpiles and berms may also shield residences from noise.

The site operator may potentially utilize an acceptable alternative to standard backup alarms (i.e. multi-frequency, white noise, etc.) if allowable under MSHA regulations.

Additional noise control measures will be implemented as agreed to with East Rockhill Township.

Regardless of township agreements, noise levels will be maintained at or below PA DEP standard limits.

Air Quality Permits
HMA Plant

BAQ-GPA-GP/9
GP9-09-0084

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FIELD OPERATIONS - BUREAU OF AIR QUALITY

GENERAL PLAN APPROVAL AND GENERAL OPERATING PERMIT (BAQ-GPA/GP-9)

In accordance with provisions of the Air Pollution Control Act, the act of January 8, 1960, P.L. 2119, as amended, and after due consideration of an application received under Chapter 127 of the Rules and Regulations of the Department of Environmental Protection, the Department hereby issues this permit for the operation of the air contamination source(s) described below:

Permit No.	GP9-09-0084	**Source(s)**	1-Caterpiler C27 diesel engine, 1,071-bhp 1-Caterpillar C7.1 diesel engine, 268-bhp 1-John Deere 4045HFG93 diesel engine, 134-bhp
Owner	Richard E. Pierson Materials Corporation	**Air**	
Address	426 Swedesboro Rd.	**Cleaning**	
	Pillesgrove, NJ 08098	**Device**	
Attention	Curt Mitchell	**Location**	East Rockhill Quarry
	Facility Director		2055 N. Rockhill Road
			Sellersville (E. Rockhill Twp.), Bucks County

This general Plan Approval and general permit is subject to the attached conditions for Diesel or No. 2 Fuel-Fired Combustion Engine(s) (BAQ-GPA/GP-9): and shall include the following:

a. Operation for each of the diesel fired engines shall not exceed 1,040 hours per year.

b. The sulfur content of the fuel oil shall not exceed 0.0015% (by weight) or 15 ppm.

(SEE CONDITIONS ATTACHED)

Failure to comply with the conditions placed on this permit is a violation of Section 127.444. Violation of this or any other provision of Article III of the Rules and Regulations of the Department of Environmental Protection will result in suspension or revocation of this permit and/or prosecution under Section 9 of the Air Pollution Control Act.

Issued September 7th, 2018

Expires September 7th, 2023

James D. Rebarchak
Regional Manager
Air Quality

cc: Central Office
Administration
SERO
Re 30

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

GENERAL PLAN APPROVAL AND/OR GENERAL OPERATING PERMIT (BAQ-GPA/GP 9)

Diesel or No. 2 Fuel-fired Internal Combustion Engines

1. Statutory Authority and General Description:

In accordance with Section 6.1(f) and (g) of the Air Pollution Control Act, 35 P.S. §4006.1, and 25 *Pa. Code* §§127.611 and 127.631, the Department of Environmental Protection ("Department") hereby issues this general plan approval and/or general operating permit for diesel or No. 2 fuel-fired engine(s) (hereinafter referred to as "Diesel Engine(s) General Permit").

2. Applicability/Source Coverage Limitations:

This Diesel Engine(s) General Permit authorizes construction and/or operation of diesel engine(s) including, but not limited to, electrical power generation, rock crushing operation, portable non-metallic processing plants, and those engine(s) used in other processes, which are not covered by other General Permits. GP-11 and GP-12 shall be used for Non-road engines and engines located at coal or coal refuse mining sites respectively.

This Diesel Engine(s) General Permit has been established in accordance with the provisions described in 25 *Pa. Code* Chapter 127, Subchapter H (relating to general plan approvals and general operating permits). If the diesel or No. 2 oil-fired engine(s) at the facility cannot be regulated by the requirements of this General Permit, a plan approval and/or an operating permit issued in accordance with 25 *Pa. Code* Chapter 127, Subchapters B (relating to plan approval requirements) and/or Subchapter F (relating to operating permit requirements) will be required, or if the facility is a Title V facility, a Title V operating permit issued in accordance with Subchapters F and G (relating to Title V Operating Permits) will be required.

Plan Approval:

This Diesel Engine(s) General Permit authorizes the construction of internal combustion engine(s) that meet the best available technology (BAT) required under 25 *Pa. Code* §§127.1 and 127.12(a)(5). For purposes of this Diesel Engine(s) General Permit, BAT for any diesel-fired engine shall include the installation and operation of available control measures that reduce emissions to the limitations described in Condition 7.

Operating Permit:

Once authorization to use this Diesel Engine(s) General Permit is granted, operation may proceed provided that the permittee notifies the Department in accordance with condition 6.

Any diesel-fired engine(s) located at a "Title V facility" as defined in 25 Pa. Code §121.1, shall comply with the requirements of 25 *Pa. Code* §127.514 (relating to general operating permits at Title V facilities).

3. Application for Use:

Any person proposing to operate or construct under this Diesel Engine(s) General Permit shall notify the Department using the Diesel Engine(s) General Permit Application provided by the Department and shall receive prior written approval from the Department as required under 25 *Pa. Code* §127.621 (relating to application for use of general plan approvals and general operating permits). The Department will take action on the application within 30 days of receipt.

4. Compliance:

Any applicant authorized to operate a diesel-fired internal combustion engine(s) under this Diesel Engine(s) General Permit must comply with the terms and conditions of the general permit. The diesel-fired internal combustion engine(s) shall be:

a. operated in such a manner as not to cause air pollution, as defined in 25 Pa. Code §121.1;

b. operated and maintained in a manner consistent with good operating and maintenance practices; and

c. operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this General Permit.

5. Permit Modification, Suspension, and Revocation:

This Diesel Engine(s) General Permit may be modified, suspended, or revoked if the Department determines that the affected diesel-fired internal combustion engines cannot be regulated under this general permit. Authorization to use this Diesel Engine(s) General Permit shall be suspended or revoked if the permittee fails to comply with the applicable terms and conditions of the Diesel Engine(s) General Permit.

The approval herein granted to operate the Diesel Engine(s) General Permit shall be suspended, if, at any time, the permittee causes, permits or allows any modification (as defined in 25 *Pa. Code* §121.1) without Department approval of the internal combustion engine(s) covered by this General Permit. Upon suspension of the General Permit, the permittee may not continue to operate or use the diesel-fired internal combustion engines. If warranted, the Department will require that the diesel-fired internal combustion engine(s) be permitted under the State Operating Permit and/or Title V Operating Permit requirements in 25 *Pa. Code* Chapter 127, if appropriate.

6. Notice Requirements:

The applications and notifications required by 25 *Pa. Code* §127.621 shall be submitted to the appropriate Regional Office responsible for issuing general permits in the county in which the diesel-fired internal combustion engine is, or will be, located. As required under 25 *Pa. Code* §127.621(b), the application shall be either hand delivered or transmitted by certified mail return receipt requested.

The permittee shall not construct a new source under the Diesel Engine(s) General Permit until and unless the appropriate Regional Office is notified that construction is to be conducted and written authorization to construct is received. The fees described in Condition 13 shall accompany the notification of construction.

This Diesel Engine(s) General Permit may be used by a new source owner or operator to authorize operation provided that the Department receives written notice from the permittee of the completion of construction and the intent to commence operation at least five (5) working days prior to completion of construction.

The permittee shall notify the Department, in writing, within 24 hours of the discovery of any malfunction during a business day or by 5:00 p.m. on the first business day after a weekend or holiday of any malfunction of the diesel-fired internal combustion engine(s) which results in, or may result in, the emission of air contaminants in excess of the limitations specified in, or established pursuant to, any applicable rule or regulation contained in 25 *Pa. Code*, Subpart C, Article III (relating to air resources).

7. Emissions Limits for Diesel Engines:

a. Any diesel engine for which construction commenced prior to July 1, 1972: any diesel engine(s) operated under this general permit may not, at any time, result in the emission of:

i. Visible emissions in excess of the limitations specified in 25 *Pa. Code* §123.41 (relating to limitations) as follows:

A. Equal to or greater than 20% for a period or periods aggregating more than three (3) minutes in any one (1) hour; and

B. Equal to or greater than 60% at any time.

ii. Particulate matter in excess of 0.04 grain per dry standard cubic foot (dscf), when the effluent gas volume is less than 150,000 dry standard cubic feet per minute as specified in 25 *Pa. Code* §123.13 (c)(1)(i). Compliance with Condition 7.a.i. will be considered demonstration of compliance with the above particulate matter emission requirement of 0.04 grain per dscf.

iii. Sulfur oxides in such a manner that the concentration of sulfur oxides, expressed as SO_2, in the effluent gas exceeds 500 parts per million by volume, dry basis. Compliance with sulfur content of the diesel fuel of 0.3% (by weight) or less would ensure compliance with this requirement.

iv. Odor emissions in such a manner that the malodors are detectable outside the property of the permittee as specified in 25 *Pa. Code* §123.31.

b. Any diesel engine for which construction commenced on or after July 1, 1972 and best available technology requirements have not been previously established:

i. If the diesel-fired internal combustion engine has an engine rating greater than 100 brake horsepower, the engine shall, at a minimum, comply with a Total Hydrocarbon (THC) emission standard of 1.0 gm/bhp-hr.

ii. If the diesel-fired internal combustion engine is equal to or greater than 200 brake horsepower and number of hours of operation of engine are equal to or greater than the hours per year listed in the following table, then the engine shall be installed with NO_x control device with a minimum of 80% NO_x control efficiency.

Facilities Located in the "Severe" Ozone Non-Attainment Area

Engine Rating (BHP) >	Engine Rating (BHP) ≤	Actual Annual Operating Hours ≥
200	500	2,000
500	1,000	700
1,000	-----	500

Facilities Located in "Moderate" (or lower classified) Ozone Non-Attainment Areas

Engine Rating (BHP) >	Engine Rating (BHP) ≤	Actual Annual Operating Hours ≥
200	250	7,000
250	500	4,000
500	750	1,700
750	1,000	1,500
1,000	1,500	1,100
1,500	2,000	750
2,000	-----	500

If NO_x emissions from engine(s) are controlled using control technology that uses ammonia or urea as a reagent, then the company shall limit the exhaust ammonia slip at 10 ppmvd, or less corrected at 15% O_2.

All other diesel engines shall at a minimum comply with the NO_x emission standard of 6.9 gms/hp-hr.

iii. If the diesel-fired engine is equal to or greater than 100 brake horsepower and number of hours of operation of engine are equal to or greater than the hours per year listed in the following table, then the engine shall be installed with CO Oxidation Catalyst control device with a minimum of 90% control efficiency.

Engine Rating (BHP) >	Engine Rating (BHP) ≤	Actual Annual Operating Hours ≥
100	150	4,800
150	250	2,800
250	500	1,850
500	750	1,200
750	1,000	950
1,000	1,500	700
1,500	2,000	670
2,000	2,500	500
2,500	-----	100

All other diesel engines shall at a minimum comply with CO emission standard of 2.0 gms/bhp-hr.

iv. The sulfur content in diesel fuel shall not, at any time exceed 0.3 percent (by weight).

v. The particulate matter emissions from each engine shall not exceed 0.4 gms/bhp-hr.

vi. Visible emissions from diesel engine(s) stacks shall not exceed the following limitations:

A. Equal to or greater than 10% for a period or periods aggregating more than three (3) minutes in any one (1) hour; and

B. Equal to or greater than 30% at any time.

vii. Odor emissions in such a manner that the malodors are detectable outside the property of the permittee as specified in 25 *Pa. Code* §123.31.

8. Performance Testing:

a. For a new diesel-fired internal combustion engine installed in accordance with Conditions 2 and 7.b. and which has a rated capacity equal to or less than 500 brake horsepower, vendor guarantees shall be sufficient to fulfill this requirement. However, the Department reserves the right to require an additional verification of emission rates which may include source testing in accordance with applicable provisions of 25 *Pa. Code* Chapter 139 (relating to sampling and testing) or portable exhaust gas analyzers approved by the Department if the NO_x emissions from the facility including the proposed diesel engines are equal to or greater than:

i. 22.5 tons per year if the facility is located in severe ozone non-attainment areas; and

ii. 90 tons per year if the facility is located in any other area than those listed above in 8.a.i.

b. For a new internal combustion engine installed in accordance with Conditions 2 and 7.b. and which has a rated capacity greater than 500 brake horsepower, within 180 days of receiving authority to construct under this general permit, the permittee shall perform stack testing in accordance with 25 *Pa. Code* Chapter 139.

c. In addition to the stack testing required by this condition, within 12 months after the initial stack testing, and annually thereafter, the permittee shall perform NO_x emissions tests upon each of the respective engines subjected to the BAT as stated in Condition 7.b. herein using a portable analyzer approved by the Department. The Department may alter the frequency of annual portable analyzer tests based on the results. The Department may also waive all or parts of this requirement if the permittee demonstrates compliance, in lieu of testing, through alternate means satisfactory to the Department.

d. The Department reserves the right to require stack tests in accordance with EPA reference methods should the data from the portable analyzer warrant such tests. The purpose of this testing is to demonstrate compliance with the emission limitations required for new engines.

e. The Department may accept the vendor guarantees or recent on-site test data on similar engines, or any other means approved by the Department as a verification of NO_x emission if the NO_x emissions from a diesel engine located in severe non-attainment area for ozone are less than 2.5 tons per year or 10 tons per year if a diesel engine is located in areas other than severe non-attainment for ozone.

f. If performance stack tests are required for the demonstration of compliance with applicable emissions limits, the owner or operator of the affected facility shall comply with the following requirements:

i. Within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but no later than one hundred eighty (180) days after the initial startup of the source and the owner or operator shall demonstrate compliance with the applicable emission limits.

ii. At least sixty (60) days prior to the test, the company shall submit to the Department for approval the procedures for the test and a sketch with dimensions indicating the location of sampling ports and other data to ensure the collection of representative samples.

iii. At least thirty (30) days prior to the test, the Department shall be informed of the date and time of the test.

iv. Within sixty (60) days after the source test(s), two copies of the complete test report, including all operating conditions, shall be submitted to the Department.

9. Monitoring, Recordkeeping and Reporting:

a. The permittee shall maintain accurate records, which, at a minimum, shall include:

i. The number of hours per calendar year that each engine or piece of equipment operated using non-resettable hour meter.

ii. The amount of fuel used per calendar year in each engine or piece of equipment.

b. When a new diesel-fired internal combustion engine is installed in accordance with Conditions 2 and 7.b and is required to conduct a performance test, the permittee shall maintain records or report the following:

i. Records including a description of testing methods, results, all engine operating data collected during the tests and a copy of the calculations performed to determine compliance with emission standards.

ii. Copies of the report that demonstrates that the engines were operating at rated brake horsepower and rated speed conditions during performance testing.

iii. Submittal of reports in accordance with the requirements and schedules outlined in this Diesel Engine(s) General Permit.

c. These records shall be retained for a minimum of five (5) years and shall be made available to the Department upon request. The Department reserves the right to expand the list contained in this condition as it may reasonably prescribe pursuant to the provisions of Section 4 of the Pennsylvania Air Pollution Control Act (35 P. S. §§4004), and as it may deem necessary to determine compliance with any condition contained herein.

10. Small Sources of NO_x requirements:

Each diesel engine rated at greater than 1,000 brake horsepower and located in severe non-attainment area for ozone shall comply with small sources of NO_x requirements as established in 25 *Pa. Code* §§129.203 through 129.205.

11. Interstate Pollution Transport Reduction Requirements:

Each diesel engine rated equal to or greater than 3,000 brake horsepower that emitted greater or equal to 153 tons of NO_x from May 1 through September 30 in 1995 or from May 1 through September 30 of any year thereafter shall comply with the applicable requirements as established in 25 *Pa. Code* §§145.11 through 145.115.

12. Term of Authorization to Use Diesel Engine(s) General Permit:

Authority to operate under this Diesel Engine(s) General Permit is granted for a fixed term of five (5) years. The Department will notify each applicant, by letter, when authority to operate under this general permit is granted.

Authority to operate Diesel Fired Engine(s) required to operate any portable nonmetallic mineral processing plants under this Diesel Engine(s) General Permit is granted for no longer than 24 months if it is temporarily located at construction sites. Authority to operate the same plant beyond 24 months would require a new authorization, in writing, from the Department.

13. Permit Fees:

The Diesel Engine(s) General Permit establishes the following application and renewal fees payable every five (5) years if no equipment changes occur:

Three hundred seventy five dollars.

An additional application fee as indicated above is required each time the permittee installs or modifies a diesel-fired internal combustion engine. The installation or modification of a diesel-fired internal combustion engine must be conducted according to the terms and conditions of this general permit. Two (2) or more diesel-fired engines may be installed under a single plan approval fee.

14. Expiration and Renewal of Authorization to Use Diesel Engine(s) General Permit:

The permittee's right to operate under this Diesel Engine(s) General Permit terminates on the date of expiration of the authorization to operate under this permit unless a timely and complete renewal application is submitted to the Department 30 days prior to the permit expiration date.

Upon receipt of a complete and timely application for renewal, the diesel-fired internal combustion engines may continue to operate subject to final action by the Department on the renewal application. This protection shall cease to exist if, subsequent to a completeness determination, the applicant fails to submit by the deadline specified in writing by the Department any additional information required by the Department to process the renewal application.

The Diesel Engine(s) General Permit application for renewal shall include: the identity of the owner or operator; location of the diesel-fired internal combustion engines; current permit number; description of the engines and equipment located at the facility; information regarding previously imposed limitations; the appropriate renewal fee listed in Condition 13; and, any other information requested by the Department. At a minimum, the permit renewal fee shall be submitted to the Department at least 30 days prior to the expiration of the Diesel Engine(s) General Permit.

15. Applicable Laws:

Nothing in this Diesel Engine(s) General Permit relieves the permittee of its obligation to comply with all applicable Federal, state, and local laws and regulations.

16. Prohibited Use:

Any stationary air contamination source that is subject to the requirements of 25 *Pa. Code* Chapter 127, Subchapter D (relating to prevention of significant deterioration), 25 *Pa. Code* Chapter 127, Subchapter E (relating to new source review), 25 Pa. *Code Chapter* 127, Subchapter G (relating to Title V operating permits), or 25 *Pa. Code* §129.91 (relating to control of major sources of NO_x and VOCs) may not operate a diesel-fired internal combustion engines under this Diesel Engine(s) General Permit. Title V facilities may use this Diesel Engine(s) General Permit as a plan approval when the major new source review and prevention of significant deterioration review requirements are not applicable.

17. Transfer of Ownership or Operation:

The permittee may not transfer the authorization to operate diesel engine(s). New owners or operators shall submit a new application and fees as described in Condition 13.

18. Department and Municipality Notification:

The permittee shall notify the Department and the municipality prior to relocation of any diesel-fired engine(s) used for operating a portable nonmetallic mineral processing plant as required under 25 *Pa. Code* §127.641(b)(2). The notification for relocation of any diesel-fired engine(s) to the Department and the municipality shall be either hand delivered or transmitted by certified mail return receipt requested as required under 25 *Pa. Code* §127.641(c).

19. Start-up and Shut-down Exclusion:

The emission limitations stated in Condition 7 of this General Permit shall apply at all times except during periods of start-up and shut-down, provided, however, that the duration of start-up and shut-down do not exceed one hour per occurrence.

20. Emission Limitations and/or Operating Requirements Previously Established Pursuant to Best Available Technology and/or Imposed to Give Synthetic Minor Status:

This Diesel Engine(s) General Permit cannot be used to vacate or reestablish best available technology or other emission limitations or requirements established through the air quality permitting process. Also, this General Permit was not intended to establish a new best available technology or other emissions limitations previously established through the air quality permitting process. The Department shall memorialize these limitations in the letter of authorization granted in accordance with Condition 2.

Note: A permittee may choose to apply for a plan approval for an engine in lieu of this general plan approval. If this option is chosen the applicable requirements shall be determined on a case-by-case basis.

Approved by: _____

Joyce E. Epps
Director
Bureau of Air Quality

Date Approved: March 17, 2005

BAQ-GPA/GP-13
GP13-09-0001

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FIELD OPERATIONS - BUREAU OF AIR QUALITY

GENERAL PLAN APPROVAL AND GENERAL OPERATING PERMIT (BAQ-GPA/GP-13)

In accordance with provisions of the Air Pollution Control Act, the act of January 8, 1960, P.L. 2119, as amended, and after due consideration of an application received under Chapter 127 of the Rules and Regulations of the Department of Environmental Protection, the Department hereby issues this permit for the operation of the air contamination source(s) described below:

Permit No.	GP13-09-0001	**Source(s)**	1-Dillman Unified Counterflow Drum equipped with Phoenix Talon II Dryer/Burner 1-Dillman Baghouse, Model D-PRPBH-80-498 1-Aspahlt Storage Tanks, Model H-30BPAA5
Owner	Richard E. Pierson Materials Corporation	**Air**	
Address	426 Swedesboro Rd.	**Cleaning**	
	Pilesgrove, NJ 08098	**Device**	
Attention	Curt Mitchell	**Location**	Hanson Quarry (East Rock Hill Plant)
	Facility Director		2055 N. Rockhill Road
			Sellersville (E. Rockhill Twp.), Bucks County

This general Plan Approval and general permit is subject to the attached conditions for Portable Hot Mix Asphalt Plants (BAQ-GPA/GP-13): and shall include the following:

The operating hours shall not exceed 2000 hours per year and the production shall not 500,000 tons per year.

(SEE CONDITIONS ATTACHED)

Failure to comply with the conditions placed on this permit is a violation of Section 127.444. Violation of this or any other provision of Article III of the Rules and Regulations of the Department of Environmental Protection will result in suspension or revocation of this permit and/or prosecution under Section 9 of the Air Pollution Control Act.

Issued September 7th, 2018

Expires September 7th, 2023

James D. Rebarchak
Regional Manager
Air Quality

cc: Central Office
Administration
SERO
Re 30

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Air Quality

GENERAL PLAN APPROVAL AND/OR GENERAL OPERATING PERMIT
BAQ-GPA/GP-13

HOT MIX ASPHALT PLANTS

1. Statutory Authority and General Description

In accordance with Section 6.1(f) of the Pennsylvania Air Pollution Control Act (APCA), 35 P.S § 4006.1(f), 25 *Pa. Code* §§ 127.514 (relating to general operating permits at Title V facilities) and 127.611 (relating to general plan approvals and general operating permits), the Pennsylvania Department of Environmental Protection ("Department") hereby issues this General Plan Approval and General Operating Permit ("General Permit") for Hot Mix Asphalt plants ("HMA plants"), BAQ-GPA/GP-13.

2. Applicability/Source Coverage Limitations

BAQ-GPA/GP-13 applies to HMA plants which produce asphaltic concrete through batch, continuous mix, counter-flow drum-mix, or drum methods. This General Permit authorizes the construction, modification and operation of any HMA plant that is typically comprised of a combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for crushing, screening, handling, storing, and weighing recycled asphalt pavement; systems for loading, transferring, and storing mineral filler, asphalt heaters; systems for mixing, transferring, storing and loading hot mix asphalt into trucks, and the associated emission control systems.

This General Permit is limited to the construction, modification and/or operation of HMA plants that are located at facilities for which a valid mining permit or an air quality operating permit has been issued by the Department.

If an exemption is applicable under 25 *Pa. Code* §§127.14 (relating to exemptions) or 127.449 (relating to de minimis emission increases), the use of this General Permit to authorize construction, modification, and/or operation of HMA plants is not necessary.

If any HMA plant cannot be regulated by the requirements of this General Permit, a plan approval issued in accordance with 25 *Pa. Code*, Chapter 127, Subchapter B (relating to plan approval requirements), operating permit issued in accordance with Subchapter F (relating to operating permit requirements or 25 *Pa. Code*, Chapter 127, Subchapters F and G (relating to Title V operating permits) will be required, if applicable.

Prohibited Use

This General Permit has been established in accordance with 25 *Pa. Code* Chapter 127, Subchapter H (relating to general plan approvals and general operating permits) and is not applicable to:

a. Any stationary air contamination source that is subject to 25 *Pa. Code* Chapter 127, Subchapter D (relating to prevention of significant deterioration);

b. Any stationary air contamination source that is subject to 25 *Pa. Code* Chapter 127, Subchapter E (relating to new source review); and

c. Any stationary air contamination source that is subject to 25 *Pa. Code* Chapter 127, Subchapters F and G (relating to operating permit requirements and Title V operating permits).

Plan Approval

This General Permit establishes best available technology (BAT) requirements and authorizes the construction or modification of HMA plants that are subject to the BAT requirements of 25 *Pa. Code* §§ 127.1 and 127.12(a)(5).

Operating Permit

This General Permit authorizes the operation of a HMA plant unless the respective operation is located in a facility that has or is required to have an operating permit pursuant to 25 *Pa. Code*, Chapter 127, Subchapter F, or 25 *Pa. Code* Chapter 127, Subchapters F and G. The HMA plant that is constructed or modified under this General Permit and located in a facility that is subject to 25 *Pa. Code*, Chapter 127, Subchapter F, or Subchapters F and G, may, however, be operated under this General Permit on a temporary basis until such time as the operating permit required pursuant to 25 *Pa. Code*, Chapter 127, Subchapter F, or Subchapters F and G, has been obtained or amended by the Department to include the terms and conditions of this General Permit.

Once authorization to use this General Permit is granted by the Department, operation may proceed provided that the owner or operator notifies the Department in accordance with Condition 7 of the General Permit.

3. Municipal Notifications

As required under section 1905-A of the Administrative Code of 1929 (71 P.S. § 510-5), a facility owner or operator proposing to use the General Plan Approval/ General Permit shall submit a copy of the application to each municipality in which the sources will be constructed, modified or operated under BAQ-GPA/GP-13. The notice to municipalities shall be provided at least 15 working days prior to submitting the application to the Department.

4. Application for Use

Pursuant to 25 *Pa. Code* § 127.621 (relating to application for use of general plan approvals and general operating permits), any person proposing to construct, operate or modify a HMA Plant under the General Permit shall notify the Department using the BAQ-GPA/GP-13 application and shall receive prior written approval from the Department before construction or modification may commence. This application shall be accompanied by the appropriate application fee, proof of municipal notification and any additional forms and information requested by the Department. The Department will take action on the complete application within thirty (30) days of receipt.

This General Permit authorizes the specific source and the specific location of the source as described in the application.

Words and terms that are not otherwise defined in this General Permit shall have the meanings set forth in Section 3 of the Air Pollution Control Act (35 P.S. §4003) and 25 *Pa. Code* §121.1.

5. Compliance

The owner or operator authorized to use BAQ-GPA/GP-13 shall comply with the specifications in the application and terms and conditions of the General Permit. The HMA plant owner or operator shall keep copies of the General Permit and application at the facility and shall make them available to the Department upon request.

The potential to emit of any HMA plant proposing to operate under this General Permit shall be limited by hours of operation, production rate and other relevant specifications in the application. The HMA plant shall be:

a. Operated in such a manner as not to cause air pollution as that term is defined in 25 *Pa. Code* § 121.1;

b. Operated and maintained in a manner consistent with good operating and maintenance practices;

c. Operated and maintained in accordance with practices based on the "manufacturer's specifications;" and

d. Operated and maintained in such a manner that no owner or operator may permit the emission into the outdoor atmosphere of any malodorous air contaminants from any source that the malodors are detectable outside the property of the owner or operator on whose land the facility is being operated in accordance with 25 *Pa. Code* §123.31 (relating to limitations).

6. Modification, Suspension and Revocation

This General Permit may be terminated, modified, suspended or revoked if the Department determines that the HMA plant cannot be adequately regulated under this General Permit.

Any authorization to construct and/or operate an HMA plant under this General Permit may be suspended or revoked if the Department determines that, at any time, the owner or operator has failed to construct and/or operate the HMA plant in compliance with the terms and conditions of this General Permit or information identified in the application. Upon receipt of written notification by the Department of the suspension, termination or revocation of authorization to construct and/or operate the HMA plant under this General Permit, the owner or operator shall immediately cease construction or cease operation of the HMA plant until the Department grants approval, in writing.

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7. Notice requirements

The applications and notifications required by 25 *Pa. Code* § 127.621 and Condition 4 of this General Permit shall be submitted to the appropriate Department Regional Office responsible for issuing general permits in the county in which the HMA plant is or will be located. As required under § 127.621(b), the application shall be either hand delivered or sent by certified mail, return receipt requested.

The owner or operator shall notify the Department, in writing, of the owner's or operator's intent to commence operation of the HMA plant or any activity authorized by this General Permit at least five (5) business days prior to commencement of operation. When the HMA plant involves multiple sources on different time schedules, notice is required for the commencement of operation of each source.

Malfunctions: The owner or operator shall notify the Department by telephone within twenty-four (24) hours of the discovery of any malfunction of any HMA plant operating pursuant to this General Permit, or any malfunction of an associated fabric collector (baghouse), which results in, or may possibly be resulting in, the emission of air contaminants in excess of any applicable limitation specified herein or in excess of the limitations specified in any applicable rule or regulation contained in 25 *Pa. Code*, Chapters 121 through 145, or which otherwise results in, or may possibly be resulting in, noncompliance with the requirements specified in any applicable condition of this General Permit. If the owner or operator is unable to provide notification to the appropriate Regional Office within twenty-four (24) hours of discovery of a malfunction due to a weekend or holiday, the notification shall be made to the Department by no later than 4 p.m. on the first business day for the Department following the weekend or holiday. In addition, the owner or operator shall provide subsequent written reports regarding any reported malfunction, as requested by the Department.

8. Terms of Authorization to Use General Permit

The authorization to construct and/or operate any HMA plant under this General Permit is granted for a fixed period of five (5) years except that the authorization to construct the HMA plant will expire eighteen (18) months from the date of Department authorization if the owner or operator fails to commence construction. If construction commences (as defined in 25 Pa. Code Section 121.1) within eighteen (18) months of the date of receipt of authorization to use this General Permit, but it is not yet completed, the authorization to construct the HMA plant under this General Permit is automatically extended, provided there is no subsequent lapse in construction activity of eighteen (18) months or more.

The Department will notify the owner or operator, in writing, when authority to construct and/or operate under this General Permit is granted.

9. Fees

BAQ-GPA/GP-13 establishes the following plan approval and operating permit fee schedule:

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

a. General Plan Approval application fee:

One thousand dollars ($1,000)

A new application with fee as indicated above is required each time the owner or operator installs or modifies the HMA plant. The installation or modification of any HMA plant must be conducted according to the terms and conditions of this General Permit.

b. General Operating Permit fee:

Three hundred seventy-five dollars ($375)

The general operating permit fee shall be included in the total amount of the fees submitted to the Department when requesting authorization to use this General Permit.

c. Annual operating permit administration fee, payable on an annual basis:

Three hundred seventy-five dollars ($375)

d. General Operating Permit renewal fee payable every five years:

Three hundred seventy-five dollars ($375)

10. Expiration and Renewal of Authorization

Authorization to construct and/or operate under this General Permit shall terminate on the date of expiration of the authorization granted by the Department to construct and/or operate under this General Permit unless a complete renewal application is submitted to the Department at least thirty (30) days prior to the expiration date of the authorization.

Upon receipt by the Department of a timely and complete application for renewal to operate under this General Permit, the owner or operator may continue to operate the respective HMA plant subject to final action by the Department on the renewal application provided that the HMA plant is operated in compliance with all terms and conditions of this General Permit. However, this authorization shall terminate if the owner or operator fails to submit, by the deadline specified by the Department, any information required by the Department to process the renewal application.

11. Applicable Laws

Nothing in this General Permit relieves the owner or operator from the obligation to comply with all applicable federal, state and local laws, ordinances and regulations. The issuance of this General Permit does not prevent the future adoption by the Department of any rules, regulations or standards, or the issuance of orders necessary to comply with the requirements of the federal Clean Air Act, the APCA or regulations adopted under the

acts. The issuance of this General Permit shall not be construed to limit the Department's enforcement authority.

Wherever a conflict occurs between this General Permit and any applicable federal and state regulations, the owner or operator shall, in all cases, meet the more stringent requirements.

12. Public Records and Confidential Information

a. The records, reports or information obtained by the Department under this General Permit shall be available to the public, except as provided in paragraph (b) of this condition.

b. Upon cause shown by the owner or operator that the records, reports or information, or a particular portion thereof, but not emission data, to which the Department has access under the APCA, if made public, would divulge production or sales figures or methods, processes or production unique to that person or would otherwise tend to affect adversely the competitive position of that person by revealing trade secrets, including intellectual property rights, the Department will consider the record, report or information, or particular portion thereof confidential in the administration of the APCA. The Department will implement this section consistent with sections 112(d) and 114(c) of the federal Clean Air Act (42 U.S.C.A. §§ 7412(d) and 7414(c)). Nothing in this section prevents disclosure of the report, record or information to federal, state or local representatives as necessary for purposes of administration of federal, state or local air pollution control laws, or when relevant in a proceeding under the APCA.

13. Transfer of Ownership

The owner or operator may not transfer the authorization to construct and/or operate any HMA plant under this General Permit to another owner or operator. Any subsequent owner or operator must submit a new General Permit application and fee in accordance with Conditions 4 and 9 of this General Permit.

14. Limitations and Requirements (Including Best Available Technology)

a. The owner or operator of any HMA plant for which a plan approval was previously issued pursuant to 25 *Pa. Code* §127.11 (relating to plan approval requirements) shall comply with the applicable air contaminant emission limitations specified in this General Permit and in 25 *Pa. Code* §§ 123.1 (relating to prohibition of certain fugitive emissions), 123.13 (relating to processes) and 123.41 (relating to limitations). In addition, compliance with any BAT requirements established in the previously issued plan approval pursuant to the BAT requirement specified in 25 *Pa. Code* §§ 127.1 and 127.12(a)(5) is also required.

Pursuant to 25 *Pa. Code* 25 § 123.1(a), there shall be no fugitive emissions from this facility at any time, except those that are a direct result of stockpiling or use of roads. Pursuant to 25 *Pa. Code* § 123.1(c), all reasonable actions shall be taken to prevent particulate matter that may arise from stockpiling or use of roads from becoming airborne. Pursuant to 25 *Pa. Code* § 123.2 (relating to fugitive particulate matter), fugitive emissions shall not cross the owner or operator's property line at any time.

Any HMA plant owner or operator authorized to use this General Permit shall comply with the following limitations and requirements:

i. The drop heights from front-end loaders being used to stockpile, transfer, and load aggregate shall be kept as short as possible to minimize dust emissions.

ii. Stockpiles shall be kept as compact as possible to limit exposure to the wind. Material shall be stockpiled in such a manner that it may be adequately wetted as necessary to control fugitive emissions.

iii. All in-plant roads shall be maintained to prevent particulate matter from becoming airborne in accordance with 25 *Pa. Code* §§ 123.1 and 123.2.

iv. All unpaved in-plant roads shall be watered once per day during warm weather, at the start of each shift, if no precipitation has fallen within the previous twenty-four (24) hours, and as needed thereafter on a preventative basis such that visible fugitive emissions are controlled in accordance with 25 *Pa. Code* §§ 123.1 and 123.2. Other methods of dust control may be used when weather conditions make the watering of unpaved roads hazardous.

v. In accordance with 25 *Pa. Code* § 123.1(c), the owner or operator shall promptly remove earth or other material from paved roads onto which earth or other material has been transported by trucking or earth moving equipment, or other means.

vi. A set vehicle pattern shall be established and maintained for vehicles entering and exiting the plant.

vii. The owner or operator shall post a sign limiting speeds to less that 15 mph on all in-plant roads.

viii. The owner or operator shall post and enforce a requirement stating "All vehicles entering or exiting the plant property shall be properly tarpaulin covered." Vehicles with a gross vehicle weight rating of less than 10,000 pounds shall be exempt from this condition.

ix. The Department reserves the right to require additional controls (water sprays, paving, conveyor covers, etc.) based on evaluation of the operation after inspection and determination that existing controls are not adequate for controlling fugitive emissions.

x. Speed limit signs shall be posted consistent with the requirements of the Pennsylvania Department of Transportation (overall dimension 20 inches x 24 inches, "SPEED LIMIT" in 4-inch letters and 10-inch numerals).

xi. Only HMA plants controlled by an appropriately designed fabric collector (i.e., baghouses capable of complying with all applicable requirements) may apply for this General Permit. A fabric collector ("baghouse") shall be accepted by the Department as "appropriately designed" only if the Department determines

it to be based upon the information provided by the owner or operator and on any other information available to the Department.

xii. No fugitive air contaminant emissions shall be generated as a result of removing collected dust from the baghouse or as a result of subsequently handling the collected dust on-site following its removal from the collector.

xiii. The owner or operator shall keep sufficient quantity of spare baghouse bags, at a minimum of 10% of the total number of bags, on hand for immediate replacement.

xiv. The owner or operator is approved to burn the following fuels under this General Permit:

1.) Propane
2.) Natural gas
3.) No.2 fuel oil
4.) No.4 fuel oil
5.) On-specification waste-derived liquid fuel ("WDLF")
6.) Biodiesel that is a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats and conform to ASTM D6751 specifications.
7.) Any alternative fuels that, unless specified, meet the same specification as other fuels permitted under this General Permit, such as:

A.) Liquid biofuels derived from recycled vegetable oils or animal fats from restaurants or food processing industries after processed through filtration, deodorization, water washing or other polishing and refining steps.
B.) Biofuels from bio-processing of cellulosic bio-mass.
C.) Bio-oils produced by pyrolysis of bio-mass materials.

xv. The owner or operator may not use a fuel to fire a burner at the plant that exceeds the sulfur limits stated below:

1.) For No.2 fuel oil, biodiesel and alternative fuels, ≤0.3%, by weight.
2.) For No.4 fuel oil and WDLF, ≤0.5%, by weight.

xvi. Fuel analysis records shall be used to demonstrate compliance with the above sulfur limitations. For each shipment of any liquid fuel, fuel sulfur content shall also be demonstrated by providing the supplier's fuel certification for the type of fuel received.

xvii. On–Specification WDLF

The owner or operator shall not accept at the facility any WDLF which is represented by the oil supplier as failing to meet following standards, or for which the facility does not have documentation from the waste oil supplier verifying the following acceptable standards:

Sulfur ≤ 0.5% (by weight)
Btu ≥8000 btu/lb
Flashpoint ≥100°F;
Total Halogens (TX) ≤ 1000 ppmw
Lead ≤ 100 ppmw
Arsenic ≤ 5 ppmw
Cadmium ≤ 2 ppmw
Chromium ≤10 ppmw
PCBs Not Detectable
Ash ≤ 1.0% (by weight)

xviii. Analytical Techniques

The following analytical techniques and methods, or alternative methods approved in writing by the Department, will be accepted for the analyses required by this General Permit.

Constituent	Analytical Technique
Arsenic	EPA Method 6010, 6020, 7010, 7061, or 7062
Cadmium	EPA Method 6010, 6020, 7000 or 7010
Chromium	EPA Method 6010, 7000 or 7010
Lead	EPA Method 6010, 7000 or 7010
PCBs	EPA Method 8082
TX	EPA Method 9075, 9076, or 9077
Flash Point	EPA Method 1010 or ASTM D93
Ash	ASTM D482
Sulfur	ASTM D3227, D1552, D4294, or D129

xix. The owner or operator may not blend WDLF into existing fuel or burn WDLF by itself unless an analysis has been performed for the specified constituents and a copy of the analysis is available demonstrating that none of the levels cited in Condition 14 a.xvii are exceeded before it is fired as fuel for the dryer. For each shipment of WDLF, a fuel specification sheet shall be obtained from the supplier. All such documents shall be kept at the facility for a period of three (3) years and shall be made available to the Department upon request.

xx. Total Halogen Screening for WDLF

Prior to accepting each shipment of WDLF delivered to the facility, the owner or operator shall test each shipment for total halogens using EPA Reference Method 9077, or an alternate test method if approved in writing by the Department. If the test of any shipment reveals total halogens in excess of 1,000 ppmw, then the owner or operator shall refuse to accept the shipment.

Vendor guarantee or recent test data from WDLF suppliers shall be sufficient to show compliance with this standard. The permittee shall keep records of the results of sampling required by this condition for at least three (3) years.

xxi. Taking and Retaining Samples

The owner or operator shall take and retain a sample of each shipment of WDLF, biodiesel and any alternative fuels that is delivered to the facility. The samples shall be retained on-site for at least one year and shall be made available to the Department upon request. The samples are to be sealed and identified with the identity of the supplier, the date of delivery, the delivery invoice number, and the total gallons of WDLF in the shipment.

xxii. Auditing for WDLF

For at least one (1) out of every fifteen (15) shipments of WDLF received at the facility, the owner or operator shall take an additional sample for the purpose of conducting a complete analysis for all the properties listed in Condition 14.a.xvii. The owner or operator shall use test methods specified in Condition 14.a.xviii, unless an alternate test method has been approved in writing by the Department. Aside from any sample taken from a shipment of WDLF received at the facility, the owner or operator need not store such additionally-sampled fuel separately nor delay its use. If the analysis results on such fuel are not received within fifteen (15) days of the date of delivery of the relevant shipment, the permittee shall cease using the WDLF fuel from the tank(s) in which the relevant shipment was placed until compliance with the limits listed in Condition 14.a.xvii is verified in the laboratory results. This auditing provision should not be interpreted, in any event, to allow the owner or operator to accept knowingly or use fuel not meeting permit specifications, or to accept or use fuel for which the facility does not have documentation from the waste oil supplier regarding compliance with permit specifications. If the analysis results show exceedances of any of the limits listed in Condition 14.a.xvii, then the owner or operator shall cease using the WDLF from the tank(s) in which the relevant shipment was placed, and shall not resume using WDLF from the tank(s) until either:

1.) The Department has granted written approval to resume use of the WDLF based on an alternate demonstration of acceptability of the WDLF in the tank(s) for use as fuel at the facility, or

2.) The WDLF remaining in the tank(s) has been re-sampled and

A.) If the re-sample meets the limits in Condition 14.a.xvii, the Department has granted written permission to resume using the WDLF, or

B.) If the re-sample fails to meet the limits in Condition 14.a.xvii, the Department has granted written permission to resume using the tank(s) after the owner or operator has emptied the WDLF from the tank(s) and has made proper disposal arrangements and the tank

has been refilled with WDLF that meets the limits in Condition 14.a.xvii.

The owner or operator shall cease using the WDLF from such tank(s) not later than two (2) hours after making the original determination, or having had reasonable opportunity to make the determination that off-specification WDLF was placed in the tanks.

Upon successful demonstration for each supplier of their accuracy in ensuring delivery of eight (8) consecutive samples of on-specification WDLF fuels that comply with properties listed in Condition 14.a.xvii, the auditing frequency of shipments may be decreased by the Department. The auditing frequencies shall be determined for each individual supplier on a case-by-case basis depending on recorded compliance history and margin of compliance. The records of sample analysis results shall be kept at the facility for a period of three (3) years and shall be made available to the Department upon request.

xxiii. WDLF Sampling

The Department reserves the right to random sample any alternative fuels to check if they meet the same specifications as other fuels permitted under this General Permit.

In the case of WDLF, if the analysis results from any random tank sampling conducted by the Department show exceedances of any of the limits in Condition 14.a.xvii of the General Permit, the owner or operator shall cease using WDLF from the affected tank(s) and shall not resume using WDLF from the tank(s) until either:

1.) The Department has granted written approval to resume use of the WDLF based on an alternate demonstration of compliance for the original sample; or

2.) The Department has granted written permission to resume placing WDLF in the tank(s) after the owner or operator has emptied the off-specification WDLF from the tank(s) and has made proper disposal arrangements.

The owner or operator shall cease using the WDLF from such tank(s) not later than 2 hours after receiving notification from the Department of the exceedances.

xxiv. This General Permit shall not be construed to authorize the permittee to transport, treat, process, or refine any fuel, or to blend off-specification fuel with any other fuels for the purpose of producing an on-specification mixture.

xxv. The owner or operator is responsible for the proper storage and management of liquid biofuels to ensure the following:

1.) The storage conditions shall not cause the harborage, breeding, or attraction of vectors; and

2.) If vectors are present, measures necessary to exterminate them are immediately taken.

b. The owner or operator of any existing HMA plant constructed after July 1, 1972, but prior to the effective date of this General Permit and for which an approval was obtained pursuant to 25 *Pa. Code* § 127.11 shall comply with the following limitations and requirements:

i. The filterable particulate matter emissions in the exhaust of the baghouse shall not exceed 0.016 grains per dry standard cubic foot of effluent gas volume.

ii. The following emission limits pertain to Nitrogen Oxide (NOx), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC, as propane):

Pollutant	NOx	CO	VOC (as propane)
Emission limits	85 ppmvd @15% O_2	350 ppmvd @15% O_2	60 ppmvd @15% O_2

iii. The owner or operator may not permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is equal to or greater than 10% at any time.

c. The owner or operator of any HMA plant constructed after the effective date of this General Permit , and a plant constructed after July 1, 1972, but prior to the effective date of this General Permit and for which no plan approval was obtained pursuant to 25 *Pa. Code* § 127.11 shall comply with the following best available technology requirements, which are hereby established pursuant to 25 *Pa. Code* §§ 127.1 and 127.12(a)(5):

i. The filterable particulate matter emissions in the exhaust of the fabric collector (baghouse) shall not exceed 0.009 grains per dry standard cubic foot of effluent gas volume.

ii. The total PM-10 (filterable plus condensable) in the exhaust of the baghouse shall not exceed 0.021 grains per dry standard cubic foot of effluent gas volume.

iii. There shall be no visible air contaminant emissions from the exhaust of the baghouse.

iv. Pursuant to BAT requirements, the following emission limits pertain to NOx, CO and VOC (as propane)

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Pollutant	NOx	CO	VOC (as propane)
Emission limits	60 ppmvd @15% O_2	200 ppmvd @15% O_2	30 ppmvd @15% O_2

15. Performance Testing/Tuning

a. Emissions testing using EPA reference methods shall be conducted one time while the source is burning the worst case fuel to verify compliance with filterable particulate, NOx, CO and VOCs. An existing HMA plant as described in Condition 14.b. may use an earlier stack test result approved by the Department for demonstration of compliance with this requirement, if it has been tested for the worst case fuel. The new and other plants as described in Condition 14.c. shall be tested for total PM_{10} and $PM_{2.5}$.

The owner or operator shall comply with the following requirements:

i. Within one hundred eighty (180) days of the commencement of operation of any HMA plant at the respective site, the owner or operator shall perform a source test to establish the baseline emissions of filterable particulate, NOx, CO and VOCs. The new and other plants as described in Condition 14.c. of this General Permit shall also be tested for total PM_{10} and $PM_{2.5}$.

ii. At least sixty (60) calendar days prior to commencing an emissions testing program required by this General Permit, a test protocol shall be submitted to the Department's Division of Source Testing and Monitoring and the appropriate Regional Office for review and approval. The test protocol shall meet all applicable requirements specified in the most current version of the Department's Source Testing Manual. The emissions testing shall not commence prior to receipt of a protocol acceptance letter from the Department.

iii. At least fifteen (15) calendar days prior to commencing an emissions testing program required by this General Permit, written notification of the date and time of testing shall be provided to the Department's appropriate Regional Office. Notification in writing shall also be sent to the Department's Bureau of Air Quality, Division of Source Testing and Monitoring. The Department is under no obligation to accept the results of any testing performed without adequate advance written notice to the Department of such testing.

iv. Within fifteen (15) calendar days after completion of the on-site testing portion of an emission test program, if a complete test report has not yet been submitted, an electronic mail notification shall be sent to the Department's Division of Source Testing and Monitoring at RA-epstacktesting@state.pa.us and the appropriate Regional Office indicating the completion date of the on-site testing.

v. A complete test report shall be submitted to the Department no later than sixty (60) calendar days after completion of the on-site testing portion of an emission test program.

vi. A complete test report shall include a summary of the emission results on the first page of the report indicating if each pollutant measured is within permitted limits and a statement of compliance or non-compliance with all applicable permit conditions. The summary results shall include, at a minimum, the following information:

1.) A statement that the owner or operator has reviewed the report from the emissions testing body and agrees with the findings;

2.) Permit number(s) and condition(s) which are the basis for the evaluation;

3.) Summary of results with respect to each applicable permit condition; and

4.) A statement of compliance or non-compliance with each applicable permit condition.

vii. All submittals shall meet all applicable requirements specified in the most current version of the Department's Source Testing Manual.

viii. All submittals, except notifications, shall be accomplished through PSIMS*Online, available through https://www.depgreenport.state.pa.us/ecomm/Login.jsp . If Internet submittal is not feasible, one copy of the submittal shall be sent to the appropriate Pennsylvania Department of Environmental Protection Regional Office and to the attention of the Department's Bureau of Air Quality, Division of Source Testing and Monitoring, 400 Market Street, 12th Floor Rachel Carson State Office Building, Harrisburg, PA 17105-8468 with deadlines verified through document postmarks.

ix. The owner or operator shall comply with all applicable federal reporting requirements, including timelines more stringent than those contained in this General Permit. In the event of an inconsistency or any conflicting requirements between federal and state laws and regulation, the permittee shall comply with the most stringent provision, term, condition, method or rule.

x. All testing shall be conducted in accordance with any applicable federal regulations (such as New Source Performance Standards, Subpart I); 25 *Pa. Code*, Chapter 139 (relating to sampling and testing); and the current revision of the Department's Source Testing Manual. The following federal reference methods shall be used to demonstrate compliance.

1.) 40 CFR 60, Appendix A, Methods 1-4 shall be used to determine the volumetric flow rate of the effluent exiting the fabric collector (baghouse).

2.) 40 CFR 60, Appendix A, Method 5 shall be used to determine the filterable particulate emission concentration (grains/dscf) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse).

3.) 40 CFR 60, Appendix A, Method 7E shall be used to determine the nitrogen oxides (NO_x) concentration (ppmvd) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse).

4.) 40 CFR 60, Appendix A, Method 10 shall be used to determine the carbon monoxide (CO) concentration (ppmvd) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse).

5.) 40 CFR 60, Appendix A, Method 18 or an alternate method approved by the Department, shall be used to determine the methane/ethane concentration (ppmvd) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse).

6.) 40 CFR 60, Appendix A, Method 25A shall be used to determine the total hydrocarbon (THC) concentration (ppmvd as propane) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse). The VOC concentration and emission rate shall be determined by subtracting the Method 18 (methane/ethane) results from the Method 25A results.

7.) 40 CFR 60, Appendix A, Method 202 shall be used to determine the condensable particulate matter (CPM) concentration (grains/dscf) and emission rate (lbs/hour) in the effluent exiting the fabric collector (baghouse). The Method 5 and Method 202 results shall be summed to calculate the total PM-10 concentration and emission rate.

xi. The testing shall be performed while the source is operating at a maximum routine operating conditions rate and while producing a typical mix formulation.

The following process data shall be recorded at 15-minute intervals (if possible) during each test run to document the operation of the plant and the baghouse:

1.) Type of Fuel (propane, natural gas, No.2 & No. 4 oil, WDLF, biodiesel, alternative fuels);
2.) Fuel Usage (gpm for liquids; cfm for gases);
3.) Asphalt Production Rate (tons/hr);
4.) Aggregate Usage (tons/hr);
5.) Asphaltic Oil (%);
6.) Fines in mix (% <600 mesh); and
7.) Mix Temperature (°F).

b. Except for the first year, the owner or operator shall conduct a burner tuning procedure in accordance with the manufacturer's specifications to minimize NOx and CO emissions each year thereafter. The owner or operator shall conduct each annual tune-up not later than June 15 of each year or within four (4) weeks after each start-up of the HMA plant. An existing HMA plant as described in Condition 14.b of this General Permit may use an earlier stack test result approved by the

Department for demonstration of compliance with this requirement, if it has been already tested for the worst case fuel. In such case, conducting a burner tuning procedure in accordance with the manufacturer's specifications will be adequate. The owner or operator shall comply with the following requirements:

i. The burner shall be tuned so that the emissions do not exceed limits stated in Conditions 14.b.ii. and 14.c.iv of the General Permit.

ii. The air-to-fuel ratio controls shall be inspected and adjusted to ensure proper operation in accordance with the manufacturer's specifications.

iii. Monitoring records stating the following information shall be kept on site for a minimum of five years and shall be made available to the Department upon request.

1.) The date of the tuning procedure;
2.) The name of the servicing company and technician;
3.) The production rate (tons/hr) or load before and after tuning;
4.) The CO and NOx concentrations (ppmvd) before and after tuning; and
5.) The percent O_2 before and after tuning.

c. The owner or operator shall, upon request of the Department, provide fuel analyses, or samples of any fuel permitted by the Department for use in any unit authorized to operate under this General Permit.

d. If at any time the Department has reason to believe that the air contaminant emissions from the exhaust of a fabric collector (baghouse) associated with an HMA plant operating under this General Permit are, or may be, in excess of any applicable air contaminant emission limitation, the owner or operator shall conduct such stack tests or source tests requested by the Department to determine the actual air contaminant emission rate. The owner or operator shall perform any such testing in accordance with the applicable provisions of 25 *Pa. Code*, Chapter 139 (relating to sampling and testing) as well as in accordance with any additional requirements or conditions established by the Department at the time the owner or operator is notified, in writing, of the need to conduct testing.

16. Monitoring, Recordkeeping and Reporting

a. The owner or operator shall maintain records including the following:

i. Monthly and 12-month rolling total for asphalt production;
ii. Daily records shall be made available to the Department upon request;
iii. 12-month rolling total for gallons of No. 2 fuel oil, No. 4 fuel oil, WDLF, biodiesel, alternative fuels used;
iv. Hours operated while firing each liquid fuel;
v. 12-month rolling total for each pollutant listed;
vi. Daily baghouse pressure drop reading;
vii. Daily stack, fugitive and malodor surveys;
viii. Any corrective actions taken to bring facility back into compliance with stack, fugitive, and malodor requirements of this permit; and

ix. Records of tune-up and annual portable monitor testing done in accordance with Condition 15.b. of the General Permit.

b. All logs and required records shall be maintained on site for a minimum of five (5) years and shall be made available to the Department upon request.

c. The owner or operator shall perform monitoring of the facility at least once per operating day for the presence of visible emissions and malodors. The owner or operator shall take immediate corrective action to eliminate any emissions that are out of compliance with the plant's operating permit. A Method 9 reading is not required for the evaluation of visible emissions.

d. The baghouse shall be equipped with instrumentation to monitor the differential pressure across the unit on a continuous basis. The gauge should be positioned so that it is easily accessed and read.

e. Pursuant to 25 *Pa. Code* § 135.5 (relating to recordkeeping), the owner or operator of the HMA plant shall maintain and make available, upon request by the Department, such records as may be necessary to demonstrate compliance with 25 *Pa. Code* § 135.3 (relating to reporting). These records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions. The records shall be retained for a minimum of five (5) years and shall be made available to the Department upon request.

f. Pursuant to 25 *Pa. Code* § 135.3, a person who owns or operates an air contamination source to which 25 *Pa. Code*, Chapter 135 (relating to reporting of sources) applies and who has previously been advised by the Department to submit an annual emissions report shall submit by March 1 of each year an emission report for the preceding calendar year. The report shall include information for all previously reported air contamination sources, new air contamination sources that were first operated during the preceding calendar year and air contamination sources modified during the same period that were not previously reported.

An owner or operator who receives initial notification by the Department that an emission report is necessary shall submit the report within sixty (60) days after receiving notification or by March 1 of the year following the year for which the report is required, whichever is later.

g. HMA plants constructed after June 11, 1973 are subject to the New Source Performance Standards of 40 CFR, Part 60, Subpart I, Standards of Performance for HMA Facilities. In accordance with 40 CFR 60.4, copies of all requests, reports, applications, and submittals, and other communications, shall be forwarded to EPA at the address listed below, unless otherwise noted.

Air Enforcement Branch Chief (3AP00)
United States Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

h. The owner or operator of the HMA plant shall submit to EPA Region III the notifications required by 40 CFR § 60.7. The required notifications shall include the following: date of commencement of construction (within 30 days after starting construction), date of anticipated start-up (30-60 days prior to equipment start-up), actual start-up date (within 15 days after equipment start-up), physical or operational changes (60 days or as soon as practicable before equipment start-up), and opacity observations (within 30 days).

17. Circumvention

a. The owner or operator, or any other person, may not circumvent the new source review requirements of 25 *Pa. Code* Chapter 127, Subchapter E by causing or allowing a pattern of ownership or development, including the phasing, staging, delaying or engaging in incremental construction, over a geographic area of a facility which, except for the pattern of ownership or development, would otherwise require a permit or submission of a plan approval application.

b. No person may permit the use of a device, stack height which exceeds good engineering practice stack height, dispersion technique or other technique which, without resulting in reduction of the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise be in violation of this plan approval, the APCA or the regulations promulgated thereunder, except that with prior approval of the Department, the device or technique may be used for control of malodors.

Approved by:

Joyce E. Epps
Director, Bureau of Air Quality

Date approved: February 2, 2010