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Environmental Legal Services

May 4, 2020

Sent via Certified First Class U.S. Mail and Electronic Mail

Patrick McDonnell,
Secretary of the Department of Environmental Protection
P.O. Box 2063
Harrisburg, PA 17105-2063
pmcdonnell@pa.gov

RE: *Petition to Redesignate Upper Toms Creek Basin to Exceptional Value*

Dear Secretary McDonnell,

On behalf of Friends of Toms Creek ("FOTC"), please accept the enclosed Petition to Redesignate the upper Toms Creek Basin to Exceptional Value. This waterway is currently designated with a use classification of HQ-CWF, MF. The actual attained use of the waterway, however, is Exceptional Value as evidenced by in-stream bioassessment data collected during March 2020 and additional supporting materials enclosed. Therefore, FOTC hereby submits the enclosed Petition and supporting materials and requests the Environmental Quality Board amend 25 Pa. Code § 93.9z to redesignate Upper Toms Creek basin from its source to its confluence with, and including, Copper Run, so its streams may be fully protected as its existing use requires.

Please direct any questions to the undersigned at 412-904-2774 or rhamilton@fairshake-els.org.

Sincerely,

Ryan E. Hamilton, Esq.

Pittsburgh
5614 Elgin Street, 2nd Floor Pittsburgh, PA 15206
Phone: (412) 742-4615 Fax: (412) 291-1197

Akron
159 S. Main Street, Suite 1030 Akron, OH 44308
Phone: (234) 571-1970 Fax: (330) 319-8856

Enclosures:

- EQB Petition Form
- Supplement to Petition Form
- Appendix A: GHD Scott Bush Stream Assessment Report
- Appendix B: Watershed and Land Use Maps
- Appendix C: Point Source Discharge Map
- Appendix D: Princeton Hydro Report
- Appendix E: Michaux State Forest Timbering Map
- Appendix F: PNDI Request and Response
- Appendix G: Proposed Regulatory Language for Amendment
- Appendix H: Joint Comprehensive Plan Map
- Appendix I: Zoning Maps and Municipalities
- Appendix J: Letters of Support

cc: *via electronic mail*

Friends of Toms Creek,
Mark Brickner, mbrickner@pa.gov

0120-FM-PY0004 Rev. 3/2003

COMMONWEALTH OF PENNSYLVANIA
ENVIRONMENTAL QUALITY BOARD

PETITION FORM

I. PETITIONER INFORMATION

Name: Friends of Toms Creek

Mailing Address: P.O. Box 611

Fairfield, PA 17320

Telephone Number: Please direct correspondence to legal counsel at 412-904-2774 or rhamilton@fairshake-els.org

Date: May 4, 2020

II. PETITION INFORMATION

A. The petitioner requests the Environmental Quality Board to (check one of the following):

☐ Adopt a regulation

☒ Amend a regulation (Citation 25 Pa. Code § 93.9z)

☐ Repeal a regulation (Citation _____)

Please attach suggested regulatory language if request is to adopt or amend a regulation.

B. Why is the petitioner requesting this action from the Board? (Describe problems encountered under current regulations and the changes being recommended to address the problems. State factual and legal contentions and include supporting documentation that establishes a clear justification for the requested action.)

- This petition requests the examination of the upper Toms Creek basin which currently has the designated use classification of HQ-CWF,MF. The upper Toms Creek waterways demonstrate existing uses of EV (Exceptional Value) and are at risk from resource extraction and other development that may compromise their exceptional water quality uses. EQB is requested to amend its Chapter 93 Drainage List Z of designated uses to reflect the actual attained EV uses of the upper Toms Creek basin from its source to its confluence with, and including, Copper Run, so its streams may be fully protected.

- Based on in-stream bioassessment data collected from several locations along the mainstem of upper Toms Creek by a qualified aquatic biologist during March 2020 using existing PADEP protocols for stream assessment (Appendix A), as well as on other criteria set forth at 25 Pa. Code 93.4b, the streams appear to warrant a designated use of EV.

- Detailed information and supporting materials are provided in the attachments.

C. Describe the types of persons, businesses and organizations likely to be impacted by this proposal.

The protection of the waterways within upper Toms Creek at their current, higher existing uses will have a positive impact on the residents, farmers, visitors, outdoor enthusiasts, and businesses who depend and rely on clean water for their use and enjoyment. See attached for additional information, including letters of support.

D. Does the action requested in the petition concern a matter currently in litigation? If yes, please explain.

No.

E. For stream redesignation petitions, the following information must be included for the petition to be considered complete. Attach supporting material as necessary. **See Attached for requested supporting material.**

1. A clear delineation of the watershed or stream segment to be redesignated, both in narrative form and on a map.
2. The current designated use(s) of the watershed or segment.
3. The requested designated use(s) of the watershed or segment.
4. Available technical data on instream conditions for the following: water chemistry, the aquatic community (benthic macroinvertebrates and/or fishes), or instream habitat. If such data are not included, provide a description of the data sources investigated.
5. A description of existing and proposed point and nonpoint source discharges and their impact on water quality and/or the aquatic community. The names, locations, and permit numbers of point source discharges and a description of the types and locations of nonpoint source discharges should be listed.
6. Information regarding any of the qualifiers for designation as high quality waters (HQ) or exceptional value waters (EV) in §93.4b (relating to qualifying as High Quality or Exceptional Value waters) used as a basis for the requested designation.
7. A general description of land use and development patterns in the watershed. Examples include the amount or percentage of public lands (including ownership) and the amount or percentage of various land use types (such as residential, commercial, industrial, agricultural and the like).
8. The names of all municipalities through which the watershed or segment flows, including an official contact name and address.
9. Locational information relevant to items 4-8 (except for contact names and addresses) displayed on a map or maps, if possible.

All petitions should be submitted to the
Secretary of the Department of Environmental Protection
P.O. Box 2063
Harrisburg, PA 17105-2063

Supplement to Petition Form
Petition to Redesignate Upper Toms Creek Basin to Exceptional Value
Submitted by Friends of Toms Creek

SECTION B: Redesignation Background and Justification

This petition to redesignate the upper Toms Creek basin to Exceptional Value (the "Petition") is submitted on behalf of a non-profit group known as Friends of Toms Creek ("FOTC"). The mission of FOTC is to protect, preserve, enhance and restore the natural, scenic, historic and aesthetic resources within the Toms Creek watershed, an important resource located in Southwest Adams County, Pennsylvania.

Friends of Toms Creek is requesting the redesignation of upper Toms Creek (Basin, Source to the confluence with, and including, Copper Run) from High Quality Cold Water Fishes ("HQ-CWF") to Exceptional Value ("EV") pursuant to Chapter 93.4b(b)(1)(iii). A surface water such as Toms Creek qualifies as EV if it meets the requirements for a HQ Water, which the Department has long recognized Toms Creek does, along with one or more of the following criteria:

(i) The water is located in a National wildlife refuge or a State game propagation and protection area.

(ii) The water is located in a designated State park natural area or State forest natural area, National natural landmark, Federal or State wild river, Federal Wilderness area or National recreational area.

(iii) The water is an outstanding National, State, regional or local resource water.

(iv) The water is a surface water of exceptional recreational significance.

(v) The water achieves a score of at least 92% (or its equivalent) using the methods and procedures described in subsection (a)(2)(i)(A) or (B).

(vi) The water is designated as a "wilderness trout stream" by the Fish and Boat Commission following public notice and comment.

25 Pa. Code § 93.4b(b)(1).

As expanded upon throughout this Petition, the upper Toms Creek basin qualifies as EV for the following reasons: 1) Pursuant to 25 Pa. Code 93.4b(b)(1)(v), Toms Creek achieves a score of at least 92% (or its equivalent) using the subsection (a)(2)(i)(A) Biological Assessment Qualifier, 2) Pursuant to 25 Pa. Code 93.4b(b)(1)(iii), Toms Creek is an outstanding national, state, regional or local resource water because state and local agenices have adopted water quality protective measures affecting the applicable stretch of Toms Creek, 3) Pursuant to 25 Pa. Code § 93.4b(b)(1)(iv), Toms Creek is a "surface water of exceptional recreational significance" because it provides unique recreational opportunities for trout fishing that are only possible in a limited number of waterbodies across Pennsylvania, 4) Pursuant to 25 Pa. Code § 93.4b(b)(1)(vi), Toms Creek should be considered a "wilderness trout stream" because it provides a unique trout fishing experience in a remote, natural and unspoiled environment, and 5) Pursuant to 25 Pa. Code § 93.4b(b)(1)(ii), Toms Creek should be classified EV because it flows in close proximity to recognized State Forest natural areas, provides great value to the local community, and is classified as having similar significance to natural areas under the Watershed Conservation Prioritization program. Although there are several justifications for redesignating upper Toms Creek to EV, provided that Toms Creek is already designated HQ, satisfying any one of the §93.4b(b)(1) criteria alone is sufficient justification for redesignation.

i. Problems encountered under current designation

The primary reason FOTC is petitioning to redesignate the use classification of Toms Creek is because the stream's actual existing use for aquatic life is greater than, and requires more protection than, is afforded by the current designated use. The southwestern half of Adams County lies within the Potomac River Drainage Basin and is drained by tributaries of the Monocacy River in Maryland, including Toms Creek.

Protection of headwaters streams like Toms Creek has important implications for water quantity and quality both in the immediate vicinity and downstream. FOTC is petitioning for this redesignation to obtain a higher level of protection for the waterway, to coincide with land use regulations and land conservation efforts to protect the Toms Creek Watershed.

The total drainage area of the section of Toms Creeks proposed for redesignation is approximately 6.16 square miles (See attached APPENDIX B). Land uses are broken down to approximate percentages. The watershed is primarily forested (Michaux State Forest covers approximately 2,382 acres (61%); private forest (26.7%)). Residential areas are limited to one residential development in the southern end of the watershed and roadside homes 3.3%. There is very limited agricultural use 2.3%. There is one industrial mining operation 6.7%. See Appendix B.

The existing and proposed point and nonpoint source discharges (map included in Appendix C) which have the potential to affect Toms Creek include the following:

Point Source Discharges:

- Adams County Keahey Pond Pesticide Treatment Area authorized by Joint Chapter 91.38 Pesticides Permit, Permit No. 0113812 renewed on April 26, 2016
- Adams County Paolini Pond Pesticide Treatment Area authorized by Joint Chapter 91.38 Pesticides Permit No. 0119803 issued on May 3, 2019;
- Waynesboro Borough Water System Discharge Point authorized by NPDES Permit for Industrial Wastewater Discharge Minor Permit No. PA0084948 issued on September 4, 2002;
- NPDES permit # PA0223239 - This NPDES Permit is held by Specialty Granules LLC, authorizing a NPDES Industrial Mineral Mine discharge at the Charmian and Pitts Quarries site. The Department issued this permit on July 11, 2016. Specialty Granules submitted a renewal application on April 8, 2019. To date, Specialty Granules' current point source discharge authorized by this permit has had little to no impact on Toms Creek's aquatic life. Most of the mining discharge goes to another watershed;
- Proposed Large Surface Mine Permit # 01180301 and associated NPDES Permit # PA0279617 – Specialty Granules LLC submitted applications for these new

permits on January 5, 2018. Specialty Granules is proposing a large surface mine on the Northern Tract Quarry with a proposed discharge point that is likely to result in negative impacts to Toms Creek. In preparing public comments on the proposed permitting for the Northern Tract Quarry, FOTC engaged the expert services of Princeton Hydro, who developed a report, which in part, evaluates the potential for water quality and quantity impacts to Toms Creek. (See Appendix D, Princeton Hydro Report).

Nonpoint Source Discharges:

- There are no municipal sewer systems in the proposed section of Toms Creek and only on lot systems, which if they malfunction or fail have the potential to create nonpoint source discharges impacting Toms Creek.
- There is currently logging occurring in Michaux State Forest on approximately 130 acres in proximity to Toms Creek north of Kepners Knob Road (identified on map attached as Appendix E) which creates a significant potential for increased sedimentation through nonpoint or point sources discharges to Toms Creek.

Further, during March 2020 a consulting ecologist working with FOTC submitted a Pennsylvania Natural Diversity Inventory (PNDI) request to determine whether there are any records of threatened, endangered, or special concern species of plants or animals along the applicable section of Toms Creek. A copy of the PNDI request, for a 1,500-acre study corridor centered on a section of Toms Creek, including the initial response, is attached as Appendix F. Also attached is a more specific response from the DCNR Bureau of Forestry: a letter dated 26 March 2020, Appendix F. The DCNR letter identifies nodding trillium (Trillium cernuum) as a special concern species (proposed PA Threatened) for which records exist both within and around the identified corridor. The letter also lists three (3) other species and one (1) habitat type that are of concern to DCNR and which have been documented just outside of the identified corridor. FOTC believes that in the PNDI response the stated concern of the US Fish & Wildlife Service, and the concern of the PA Fish & Boat Commission for a "threatened" species, both relate to bog turtle suitable habitat which appears to exist in wetlands along this stretch of Toms Creek. FOTC has not yet received formal confirmation of this from either agency,

but will supplement this Petition with that information when it becomes available. Notably, special existing use provisions apply to the protection of threatened and endangered (T&E) species. See Water Quality Antidegradation Implementation Guidance, No. 391-0300-002 at p. 5. Therefore, it is necessary to redesignate the use of Toms Creek to EV in order to afford the stream the protection that its existing use requires.

ii. Recommended Changes

Friends of Toms Creek is requesting the redesignation of Toms Creek (Basin, Source to the confluence with, and including, Copper Run) from High Quality Cold Water Fishes ("HQ-CWF") to Exceptional Value ("EV") pursuant to Chapter 93.4b(b)(1). The suggested amendment to 25 Pa. Code Chapter 93.9z is included in Appendix G. Although Toms Creek is currently afforded the special protection of HQ status, the requested redesignation will give Toms Creek the additional protection that its attained EV use requires when the DEP reviews permits for activities affecting the stream.

Specifically, Chapter 93 antidegradation regulations require that, when DEP reviews new permit applications and considers whether to issue approvals for new development, the water quality of an EV water shall, without exception, be maintained and protected. 25 Pa. Code § 93.4a(d). Further, when seeking a permit or approval in an EV watershed, the antidegradation regulations require that the applicant first evaluate nondischarge alternatives to the proposed discharge such as recycling and reuse of industrial wastewater or infiltration of stormwater. If the applicant demonstrates that no environmentally sound and cost-effective alternative exists, the applicant must then use ABACT and demonstrate that the discharge will maintain and protect existing water quality of the stream.

Unlike HQ waters, for an EV stream, there is no Social and Economic Justification ("SEJ") exception to the antidegradation rule. In EV streams, applicants must either provide and implement a nondischarge alternative, or if nondischarge alternatives are not feasible, must show that the discharge will not lower the existing water quality of the EV stream. 25 Pa. Code § 93.4c(b). Therefore, redesignation of the upper section of Toms Creek to its attained EV use is one of the primary tools available for permitting

responsible development while also providing long term protection of water quality, aquatic life and the benefits to the community associated with this valuable resource.

iii. Factual and Legal Contentions Establishing Clear Justification for Redesignation

Justification #1: Pursuant to 25 Pa. Code 93.4b(b)(1)(v), Toms Creek achieves a score of at least 92% (or its equivalent) using the methods and procedures described in subsection (a)(2)(i)(A) or (B). FOTC retained GHD to complete a stream assessment on a 1.3 mile segment of Toms Creek generally situated between Tree Farm Lane upstream to Knepers Knob Lane in Hamiltonban Township. The purpose of the assessment was to determine if existing conditions in Toms Creek warrant a redesignation from High Quality (HQ) to Exceptional Value (EV) based on the standards listed at Title 25 PA Chapter 93.4b. The Reference Stream used for this assessment was Carbaugh Run, which is currently listed as Exceptional Value, with protected uses of Migratory Fishes (EV - MF). The assessment was completed in accordance with the protocols of the Water Quality Monitoring Protocols for Stream and Rivers (PADEP 2018). Based on the biological condition scores for the Candidate Stream (Toms Creek), all three stations sampled exceed 92% similarity threshold to the Reference Stream and qualify as Exceptional Value under PA Chapter 93.4 b. See GHD Scott Bush Report attached as Appendix A. Provided that Toms Creek is already designated HQ, satisfying the §93.4b(b)(1)(v) criteria alone is sufficient justification for upgrading Toms Creek. See 25 Pa. Code § 93.4b(b)(1).

Justification #2: Pursuant to 25 Pa. Code 93.4b(b)(1)(iii), Toms Creek is an outstanding National, State, regional or local resource water. Section 93.1 defines an "Outstanding National, State, regional or local resource water" as "[a] surface water for which a National or State government agency has adopted water quality protective measures in a resource management plan, or regional or local governments have adopted coordinated water quality protective measures along a watershed corridor." 25 Pa. Code 93.1. This criteria is satisfied as demonstrated by the following:

- Toms Creek runs through Michaux State Forest. The Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry, adopted water quality

protection measures in the State Forest Resource Management Plan (2003, 2007, 2016 update)[1] and Aquatic Habitat Buffer Guidelines (2007).[2] A draft Michaux State Forest Resource Management Plan is also available.[3]

- The Pennsylvania Natural Heritage Program (PNHP)[4] has already identified the upper portion of the Toms Creek Watershed as a Priority Conservation Watershed.[5] The PNHP's Watershed Conservation Prioritization program identifies watersheds that are significant conservation priorities based on water quality, biological assemblages, and habitat types.[6]
- The Southwest Adams County Joint Comprehensive Plan identifies the applicable section of Toms Creek as included in the special protection watershed (See Map 2-3 provided in Appendix H).[7]
- County of Adams $10 million referendum was passed by voters with overwhelming support (75% approval) in November 2008. $3.7 million went to purchase and conserve approximately 1,847 acres in the section proposed for

[1] DCNR State Forest Management Plan (2016), available online at: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20032045.pdf (last visited April 17, 2020).

[2] DCNR Bureau of Forestry Aquatic Habitat Buffer Guidelines (Jan. 1, 2007), available online at: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031027.pdf (last visited April 17, 2020).

[3] Michaux State Forest Resource Management Plan Draft, available online at: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20033649.pdf (last visited April 20, 2020).

[4] The PNHP is a partnership between the Department of Conservation and Natural Resources, the Western Pennsylvania Conservancy, the Pennsylvania Game Commission, and the Pennsylvania Fish and Boat Commission. Its purpose is to "provide current, reliable, objective information to help inform environmental decisions." *Our Purpose*, PENNSYLVANIA NATURAL HERITAGE PROGRAM, http://www.naturalheritage.state.pa.us/, (last accessed April 20, 2020).

[5] *Watershed Conservation Prioritization*, PENNSYLVANIA NATURAL HERITAGE PROGRAM, http://www.naturalheritage.state.pa.us/aquaticsConservPrior.aspx, (last accessed April 20, 2020).

[6] *Id.*

[7] Southwest Adams County Joint Comprehensive Plan (April 2015), Map 2-3, available online at: http://www.adamscounty.us/Munic/Documents/CompPlans/SWJCP_Final-April_2015sm.pdf (last visited April 20, 2020).

redesignation.[8] In addition, another approximately 405 acres had been preserved previously and was currently part of the state forest system.

- Hamiltonban Township has adopted water quality protective measures along the relevant corridor of Toms Creek, including but not limited to: 1) Township Zoning Map (March 2020) designates most of the proposed redesignation section as "Land Conservation," and "Open Space."(Appendix I);[9] 2) Township Well Construction Standards Ordinance 2014-01 (protects water quality and quantity of Toms Creeks baseflow), Act 167 Stormwater Management Ordinance 2012-04 (increases infiltration with new development), and Floodplain Monitoring Ordinance 2009-01 (protects the riparian corridor).
- Proposed redesignation section is within Fairfield Municipal Authority's Wellhead Protection Zone III for their only water supply (4 wells). Fairfield Wells No. 4 & 5 are in close proximity to Toms Creek and "there is the possibility that the creek is in direct contact with local groundwater."[10] This delineation was funded by PA Department of Environmental Protection through the Development of the Adams County Water Supply and Wellhead Protection Plan (2001). These wells supply water to approximately 425 customers (businesses and homes) and approximately 1000 people.

Provided that Toms Creek is already designated HQ, satisfying the §93.4b(b)(1)(iii) criteria alone is sufficient justification for the proposed redesignation of Toms Creek. See 25 Pa. Code § 93.4b(b)(1).

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[8] Pennsylvania Land Trust Association, Conservationtools.org, Referendum to Authorize a Tax or Bond for Conservation, Adams County Case Study, available online at: https://conservationtools.org/guides/16-referendum-to-authorize-a-tax-or-bond-for-conservation#heading_28 (last visited April 17, 2020).

[9] Township Areas Within Petition watershed: (total: 3,925 ac.) - Hamiltonban Township 3,475 acres 89%; Washington Twp. 330 acres; Quincy Twp. 120 acres. Percent Zoning in Hamiltonban part of watershed: Hamiltonban in watershed 3,475 acres; Zoned O.S. plus L.C. 2,530 acres (73%). See Appendix I.

[10] Adams County Pennsylvania Water Supply and Wellhead Protection Plan (June 2001), at VI-18, available online at: http://www.adamscounty.us/Dept/Planning/Documents/CountyPlans/WaterSupply-WellheadProtectionPlan.pdf (last visited April 20, 2020).

Justification #3: Pursuant to 25 Pa. Code § 93.4b(b)(1)(iv), Toms Creek is a "surface water of exceptional recreational significance." Section 93.1 defines a "[s]urface water of exceptional recreational significance" as one "which provides a water-based, water quality-dependent recreational opportunity (such as fishing for species with limited distribution) because there are only a limited number of naturally occurring areas and waterbodies across the State where the activity is available or feasible." Toms Creek satisfies this criterion because it is a highly valued trout stream stocked every year. Communities surrounding Toms Creek benefit greatly from recreational activities, including fishing, hiking, and swimming, related to having the pristine cold water trout stream run through their communities.

Justification #4: The relevant portion of Toms Creek should be considered a "wilderness trout stream" pursuant to 25 Pa. Code § 93.4b(b)(1)(vi). As explained by the Pennsylvania Fish & Boat Commission, "[w]ilderness trout stream management is based upon the provision of a wild trout fishing experience in a remote, natural and unspoiled environment where man's disruptive activities are minimized."[11] The Toms Creek Watershed provides such an experience and should be afforded the EV protections associated with wilderness trout streams.

Justification #5 Toms Creek runs near recognized State Forest natural areas, provides great value to the local community, and is classified as having similar significance to natural areas under the Watershed Conservation Prioritization program, so Toms Creek should be redesignated as EV in keeping with the intent of 25 Pa. Code § 93.4b(b)(1)(ii). Toms Creek runs through Michaux State Forest, which contains 1,647 acres of natural area.[12] While the Toms Creek Watershed in Michaux State Forest is not officially recognized as a natural area itself, the Watershed's status as a Priority Conservation Watershed, along with its historical and ecological significance to the surrounding community, suggests that it should be considered as such for purposes of EV

[11] Trout Water Classifications, PENNSYLVANIA FISH & BOAT COMMISION (last viewed July 16, 2019), https://www.fishandboat.com/Fish/PennsylvaniaFishes/Trout/Pages/TroutWaterClassifications.aspx.

[12] Pennsylvania Department of Conservation and Natural Resources, State Forest Resource Management Plan (2016).

classification. Pennsylvania natural areas are intended to "protect areas of scenic, historic, geologic or ecological significance, which will remain in an undisturbed state, with development and maintenance being limited to that required for health and safety."[13] In addition, it is well documented that following the Battle of Gettysburg, the Confederate Army retreated to Virginia following two routes: the first through Cashtown (northwest of Gettysburg) and the second through Fairfield (southwest of Gettysburg). The second route through Fairfield brought the Confederate soldiers through Hamiltonban Township, around Pine Hill. In Hamiltonban Township, Confederate soldiers retreated following what are now named Iron Springs Road, Lower Gum Springs Road, and Gum Springs Road – all following Toms Creek and wrapping around Pine Hill. The historic retreat tracked Toms Creek for approximately 2.7 miles (as a crow flies) and 3.5 miles for marching troops. The Retreat from Gettysburg is a significant historical resource in the area that is eligible for listing on the National Register of Historical Places.[14] The ecological and historic significance of this watershed justifies this proposal for redesignation.

SECTION C: Types of Person, Businesses and Organizations likely to be impacted by this proposal

The EV designation will not prohibit or inhibit development. Rather, by using the requirement for best management practices (BMPs) it fosters better planning and execution of development plans. In addition, there is significant benefit to the community, including organizations and businesses that promote tourism, fishing, and other recreation in the vicinity of Toms Creek to be able to officially refer to Toms Creek as an Exceptional Value waterway.[15] Redesignation to EV status will also protect

[13] Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry, Guidelines and Definitions for Natural Areas & Wild Areas (June 2016).
[14] *See, e.g.*, Multiple Properties Nomination to the National Register of Historic Places, Adams County, Pennsylvania for Properties Associated with the Battle of Gettysburg, July 1-3, 1863, certified by the Pennsylvania Historical and Museum Commission, April 11, 2000, and the Keeper of the National Register, May 18, 2000 (nomination *available at* https://npgallery.nps.gov/NRHP/GetAsset/NRHP/64500520_text).
[15]Recreational resorts, such as the Liberty Mountain Resort, rely on the Toms Creek watershed in operating their businesses. The Liberty Mountain Resort employs hundreds of people regularly, and over 1,000 people in the winter season.

drinking water aquifers, such as the Blue Ridge aquifer, that supply Fairfield and other communities and rely on recharge from Toms Creek and its tributaries.

Toms Creek is a highly valued trout stream to the local community, and there are thousands of trout stocked into the Creek every year. Communities surrounding Toms Creek benefit greatly from recreational activities, including fishing, hiking, and swimming, related to having the pristine cold water trout stream run through their communities. In fact, Toms Creek is annually stocked with trout twice per year. The Pennsylvania Fish and Boat Commission stocks Toms Creek with approximately 1,000 trout per year. The Pennsylvania Fish and Boat Cooperative Fish Nursery stocks Toms Creek with approximately an additional 600 trout annually. Further, the Mummasburg Sportsman's Club also stocks Toms Creek with approximately 125 trophy trout, meaning at least 16-24 inches in size. In addition, the community holds an annual fishing derby at Caroll Valley Park on Toms Creek. Each year approximately 80-125 families join in for a day of fishing, supported by the Caroll Valley community and at least 250 trout are donated by the PA Fish and Boat Cooperative Fish Nursery. Toms Creek is also used to create two lakes for the residents of Carroll Valley to use for boating and fishing. Finally, there are miles of hiking and horseback riding trails in Michaux State Forest in the near vicinity of Toms Creek and the Mt. Hope Rd., Gum Springs Rd., Iron Springs Rd. "loop" is a great bicycling/motorcycling route.

Toms Creek brings in tourists and anglers from out of town to enjoy its unique fishing opportunities, and the local communities benefit greatly from this consistent tourism. The Pennsylvania Fish and Boat Commission has recognized that trout streams attracting anglers generate millions of dollars in revenue across the state and support hundreds of jobs.[16] Increased sediment and stormwater discharges due to increased development have the potential to harm the stream by increasing pollutants and changing the stream temperature, which trout are especially sensitive to. Harming Toms Creek's water quality in any way would be detrimental to the sensitive trout stream and the positive economic and cultural impacts it provides to the local

[16] *See* Green, R., Carline, R. Diefenback, D., Shields, M., Kaufman, M., Moase, R., Hollender, B., Angler Use, Harvest, and Economic Assessment on Wild Trout Streams in Pennsylvania. Found online at: https://www.fishandboat.com/Fish/Fisheries/TroutPlan/Documents/WildTroutStreamAnglerUseCatchEconomicContribution.pdf

communities. Therefore, those individuals, business and organizations which rely on Toms Creek as a recreational, aesthetic, and natural resource will benefit from the redesignation of the Creek.

Additional letters of support from regional organizations and businesses likely to be impacted by this proposal are attached in Appendix J.

SECTION E: Supporting Material

In conformance with Section E of the EQB Petition Form and 25 Pa. Code § 23.1(a)(5), the following supporting materials are included with this Petition as indicated below:

1. A clear delineation of the watershed or stream segment to be redesignated, both in narrative form and on a map.

   See Appendix A, Appendix B, Appendix G, and Petition Section B.ii.

2. The current designated uses of the watershed or segment.

   See Petition Section B.ii and Appendix G.

3. The requested designated uses of the watershed or segment.

   See Petition Section B.ii and Appendix G.

4. Available technical data on instream conditions for the following: water chemistry, the aquatic community (benthic macroinvertebrates or fishes, or both) or instream habitat. If these data are not included, provide a description of the data sources investigated.

   See Appendix A.

5. A description of existing and proposed point and nonpoint source discharges and their impacts on water quality or the aquatic community, or both. The names, location and permit numbers of point source discharges and a description of the types and locations of nonpoint sources discharges should be listed.

   See Petition Section B.i and Appendix C.

6. Information regarding any of the qualifiers for designation as High Quality Waters (HQ) or Exceptional Value Waters (EV) in § 93.4b (relating to qualifying as a high quality or exceptional value waters) used as a basis for the requested designation.

   See Petition Section B.iii.

7. A general description of the land use and development patterns in the watershed. Examples include the amount or percentage of public lands (including ownership) and the amount or percentage of various land use types (such as residential, commercial, industrial, agricultural and the like).

   See Appendix B and Petition Section B.i.

8. The names of all municipalities through which the watershed or segment flows, including an official contact name and address.

   The applicable segment of Toms Creek mainstem flows through Hamiltonban Township (Adams County), and small sections of the associated watershed extend into Quincy and Washington Townships (Franklin County) -- See Appendix I Maps

   Inquiries to the Township may be directed to Township Supervisors at:

   Hamiltonban Township, c/o J. Edward Deardorff, Chairman, 23 Carrolls Tract Road, P.O. Box 526, Fairfield, PA 17320;[17]

   Quincy Township, c/o Robert Gunder, Chairman, 7575 Mentzer Gap Road, Waynesboro, PA 17268;

[17] Adams County Pennsylvania Municipal Contacts, available online at: http://www.adamscounty.us/Munic/HamiltonbanTownship/Pages/ContactUs.aspx (last visited April 17, 2020).

Washington Township, c/o Chad Reichard, Chairman, 13013 Welty Rd., Waynesboro, PA 17268.

9. Locational information relevant to subparagraphs (iv)—(viii) (except for contact names, and addresses) displayed on maps, if possible.

   For locational information relevant to sub paragraph

   - (iv) – See Appendix A and additional supporting materials;
   - (v) – See Appendix C and additional supporting materials;
   - (vi) – See Appendix A and additional supporting materials;
   - (vii) – See Appendix B and additional supporting materials;
   - (viii) – See Appendix I and additional supporting materials.

APPENDIX A

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May 1, 2020 Reference No. 11211201

Ms. Susan deVeer, Secretary / Treasurer
Friends of Toms Creek
P.O. Box 611
Fairfield, PA 17320-0611

Re: 2020 Stream Assessment of Toms Creek
Hamiltonban Township, Adams County, Pennsylvania

Dear Ms. deVeer:

Friends of Toms Creek (FOTC) retained GHD to complete a stream assessment on a 1.3 mile segment of Toms Creek generally situated between Tree Farm Lane upstream to Knepers Knob Lane in Hamiltonban Township, Adams County, Pennsylvania. The purpose of this assessment was to determine if existing conditions in Toms Creek (Candidate) warrant re-designation from High Quality (HQ) to Exceptional Value (EV) based on the standards listed at Title 25 PA Chapter 93.4b. The Reference Stream used for this assessment was Carbaugh Run, which is currently listed as Exceptional Value, with protected uses of Migratory Fishes (EV - MF). The data presented in this report are intended to supplement the FOTC's petition to PADEP to re-designate the protected uses in Toms Creek from HQ to EV.

1. Setting of Toms Creek

Toms Creek is located in the western part of the Marsh - Rock Creek Watershed within the Potomac River Sub-Basin pursuant to Pennsylvania's State Water Plan. Toms Creek lies within Hydrologic Unit Code (HUC-12) 020700090301. Toms Creek originates in the Ridge and Valley Physiographic Province and flows through the Piedmont Physiographic Province into Maryland. Originating in the Michaux State Forest, Toms Creek flows through or along a variety of geologic formations including interbedded sedimentary formations, metamorphic / igneous formations, and carbonate formations along its course. Toms Creek is currently listed as High Quality, with protected uses of Cold Water Fishes and Migratory Fishes (HQ - CWF, MF) and supports a variety of native fish and wildlife.

2. Methods

GHD implemented a Targeted Sampling Plan on a 1.3 mile segment of Toms Creek. A biologist from GHD completed a field visit on March 22, 2020 to measure water quality field parameters, complete a habitat assessment, and collect aquatic macroinvertebrate samples from three (3) 100-meter long reaches on Toms Creek (Toms Creek Stations 1, 2, and 3) and a 100 meter reference reach on Carbaugh Run (Carbaugh Station 1). Sampling was completed in accordance with the Water Quality Monitoring Protocols for Stream and Rivers (PADEP 2018). The locations of Toms Creek Stations 1, 2, and 3 and Carbaugh Station 1 are shown on Figures 1 and 2.

GHD
410 Eagleview Boulevard Suite 110 Exton Pennsylvania 19341 USA
T 610 321 1800 F 610 321 2763 W www.ghd.com

2.1 Water Quality Measurements

Water quality parameters were measured at each station using a calibrated Horiba U-52 multi-parameter water quality meter. At each station, temperature (°C), pH (standard units), oxidation reduction potential (unitless), conductivity (mS/cm), turbidity (NTUs) and dissolved oxygen (mg/L) were measured and recorded. Instrument quality control documentation is provided in Attachment A.

2.2 Habitat Assessment

The physical habitats in and along each reach were evaluated by an ecologist from GHD in accordance with PADEP's 2018 methods. Data for each reach was recorded on PADEP's Physical Habitat Evaluation Form for Riffle / Run Prevalence. Based on PADEP's Physical Habitat scoring system, twelve (12) physical habitat parameters are scored at each station. Each parameter can receive a scoring between 1 (indicating very poor habitat conditions) and 20 (indicating optimal habitat conditions). Total scores near 240 are optimal, while scores less than 240 indicate the presence of some habitat stressors. Very low scores indicate significant stressors on the system.

2.3 Aquatic Macroinvertebrate Sampling

Within each 100-meter reach, six (6) one-minute kicks were conducted immediately upstream of a non-truncated D-framed net with 500 micron (µm) mesh. Each kick disturbed approximately 1 square meter immediately upstream of the net to an approximate depth of 10 cm, as substrate allowed. During each kick, the net was held stationary. Kicks were completed in a downstream-to-upstream direction through the reach to avoid disturbing the upstream portions of the targeted reach. Kicks were distributed throughout the 100-meter reach and were representative of the variety of riffle-run present (e.g., slow-flowing, shallow riffles and fast-flowing, deeper riffles). Kicks were also conducted throughout the width of the stream, within each reach, to include the left-descending, middle, and right-descending areas. Care was taken in collecting duplicate kicks to not disturb habitats in the 100-meter reach that were disturbed during the first set of kicks. The six kick samples were composited and samples were preserved in 95% denatured ethanol and hand delivered under standard chain of custody procedures to Normandeau Associates in Stowe, Pennsylvania for processing, taxonomic identification, and enumeration. A duplicate sample, currently retained at the taxonomic laboratory, was collected at Station 1 on Toms Creek.

Sampling locations were generally selected based on a review of desktop secondary resources. The exact 100-meter reach was selected in the field based on instream and riparian habitats and the sampler's judgement that suitable and productive habitat types (riffles-runs) were present within each reach.

3. Results

3.1 Summary of Sampling Stations

Toms Creek Station 1 is located north of Gum Springs Road between Snyder's Hollow Lane and Kepner's Knob Lane at 39.76978, -77.45254. The drainage area to Station 1 is 1.66 square miles. The surrounding land cover is primarily hardwood forest with a small amount of low density residential use. At this location, Toms Creek is a boulder-cobble dominated freestone stream.

Toms Creek Station 2 is located north of Gum Springs Road between Mount Hope Road and Iron Springs Road at 39.77030, -77.43578. The drainage area to Station 2 is 3.94 square miles. The surrounding land cover is primarily hardwood forest. At this location, Toms Creek is a boulder-cobble dominated freestone stream.

Toms Creek Station 3 is located north of Gum Springs Road, just upstream of Tree Farm Lane at 39.77141, -77.42872. The drainage area to Station 3 is 6.16 square miles. The surrounding land cover is primarily hardwood forest with a small amount of low density residential use. At this location, Toms Creek is a boulder-cobble dominated freestone stream.

Carbaugh Run Station 1 (Reference Stream) is located south of U.S Route 30, just upstream of an existing pipeline right-of-way at 39.89877, -77.45190. The drainage area to Carbaugh Run Station 1 is 5.99 square miles. The surrounding land cover is primarily hardwood forest. At this location, Carbaugh Run is a boulder-cobble dominated freestone stream.

A USGS StreamStats summary of the basin characteristics for all stations sampled is provided in Attachment B. Photographs of each station are provided as Attachment C.

3.2 Field Water Quality Measurements

Water quality measurements were recorded at each sampling station and are summarized in Table 1.

Water quality measurements at all stations indicate good water quality with near-neutral pH, low conductivity, a high level of dissolved oxygen, and low turbidity.

Table 1
Summary of Water Quality Field Measurements

Parameters	Station			
	Toms Creek 1	Toms Creek 2	Toms Creek 3	Carbaugh Run 1
Temperature (°C)	6.97	7.87	9.05	8.4
pH (Standard Units)	7.76	7.52	7.65	7.49
Oxidation Reduction Potential (mV)	205	185	178	179
Conductivity (mS/cm)	0.032	0.066	0.080	0.020
Turbidity (NTU)	1.8	4.3	4.1	2.0
Dissolved Oxygen (mg/l)	13.42	13.56	12.65	14.38

3.3 Physical Habitat Assessment

As shown in Table 2, physical habitat scores ranged from 234 for Carbaugh Run to 168 at Toms Creek Station 3, the most downstream station on Toms Creek.

Table 2
Physical Habitat Scores

Station	Habitat Score
Toms Creek 1	229
Toms Creek 2	221
Toms Creek 3	168
Carbaugh Run 1	234

Stations 1 and 2 of Toms Creek and Carbaugh Run all scored high for Physical Habitat. Minimal indicators of stress to the system were evident, at these locations. Station 3 on Toms Creek scored only moderately high. GHD noted some evidence of bank erosion, sediment deposits and point bar formation, as well as sub-optimal flow status at this station, likely resulting from stormwater inputs.

Physical Habitat Evaluation Forms documenting the physical habitat present at each station are provided in Attachment D.

3.4 Aquatic Macroinvertebrate Samples

A summary of the community metrics calculated for aquatic macroinvertebrates collected each station are summarized in Table 3.

Table 3
Summary of Benthos Community Metrics by Station

Metrics	Station			
	Carbaugh Run 1	Toms Creek 1	Toms Creek 2	Toms Creek 3
Richness (total taxa)	25	23	29	27
Modified EPT Index (PTV = 0 - 4)	15	11	16	14
Hilsenhoff Biotic Index	2.45	2.75	2.77	2.70
Percent Dominant Taxon	24.6%	38.1%	27.5%	33.8%
Percent Modified Mayflies (PTV = 0 - 4)	48.2%	45.7%	27.0%	26.1%

Key: PTV - Pollution Tolerance Value (PADEP); EPT - Ephemeroptera Plecoptera Tricoptera.

As noted in Table 3, community metrics are similar across the four sampling stations and generally scored very high to excellent. Values for richness, modified EPT index, and percent modified mayflies are high indicating excellent stream health at all four stations. The dominant taxon at Carbaugh Run 1 (24.6%) and Toms Creek 1 (38.1%) was the mayfly *Ephemerella* having a PTV of 1. The dominant taxon at Toms Creek 2 (27.5%) and Toms Creek 3 (33.8%) was the blackfly *Prosimulium* having a PTV of 2. These taxa are both indicative of good water quality. The Hilsenoff Biotic Index was low across all stations indicating a low level of organic enrichment.

3.5 Evaluation of Candidate Stream

Scoring for each metric was completed for the Reference Stream (Carbaugh Run) and the Candidate Stream (Toms Creek). A percent comparison of the Candidate Stream to the Reference Stream was then completed. A summary of the comparison is presented in Table 4.

Table 4
Biological Condition Score by Station

Metrics	Carbaugh Run 1	Toms Creek 1	Toms Creek 2	Toms Creek 3
Richness (total taxa)	-	8	8	8
Modified EPT Index (PTV = 0 - 4)	-	6	8	8
Hilsenhoff Biotic Index	-	8	8	8
Percent Dominant Taxon	-	8	8	8
Percent Modified Mayflies (PTV = 0 - 4)	-	8	5	5
Total Score	40	38	37	37
Percent Similarity to Reference	-	95%	92.5%	92.5%

Key: PTV - Pollution Tolerance Value (PADEP); EPT - Ephemeroptera Plecoptera Tricoptera.

Based on the biological condition scores for the Candidate Stream (Toms Creek), all three stations sampled exceed 92% similarity threshold to the Reference Stream and qualify as Exceptional Value under PA Chapter 93.4 b.

Laboratory macroinvertebrate data tables for all stations along with a narrative of laboratory methods, scoring, and quality assurance / quality control are presented in Attachment E.

4. Summary and Conclusions

GHD completed an assessment of Toms Creek in Hamiltonban Township, Adams County, Pennsylvania. The assessment was completed in accordance with the protocols of the Water Quality Monitoring Protocols for Stream and Rivers (PADEP 2018). Based on the results of the assessment, Toms Creek meets the criteria to be re-designated to Exceptional Value (EV) under PA Chapter 93.4 b.

If you have any questions concerning this report, please do not hesitate to contact me at 610.646.7486 or scott.bush@ghd.com.

Sincerely,

GHD

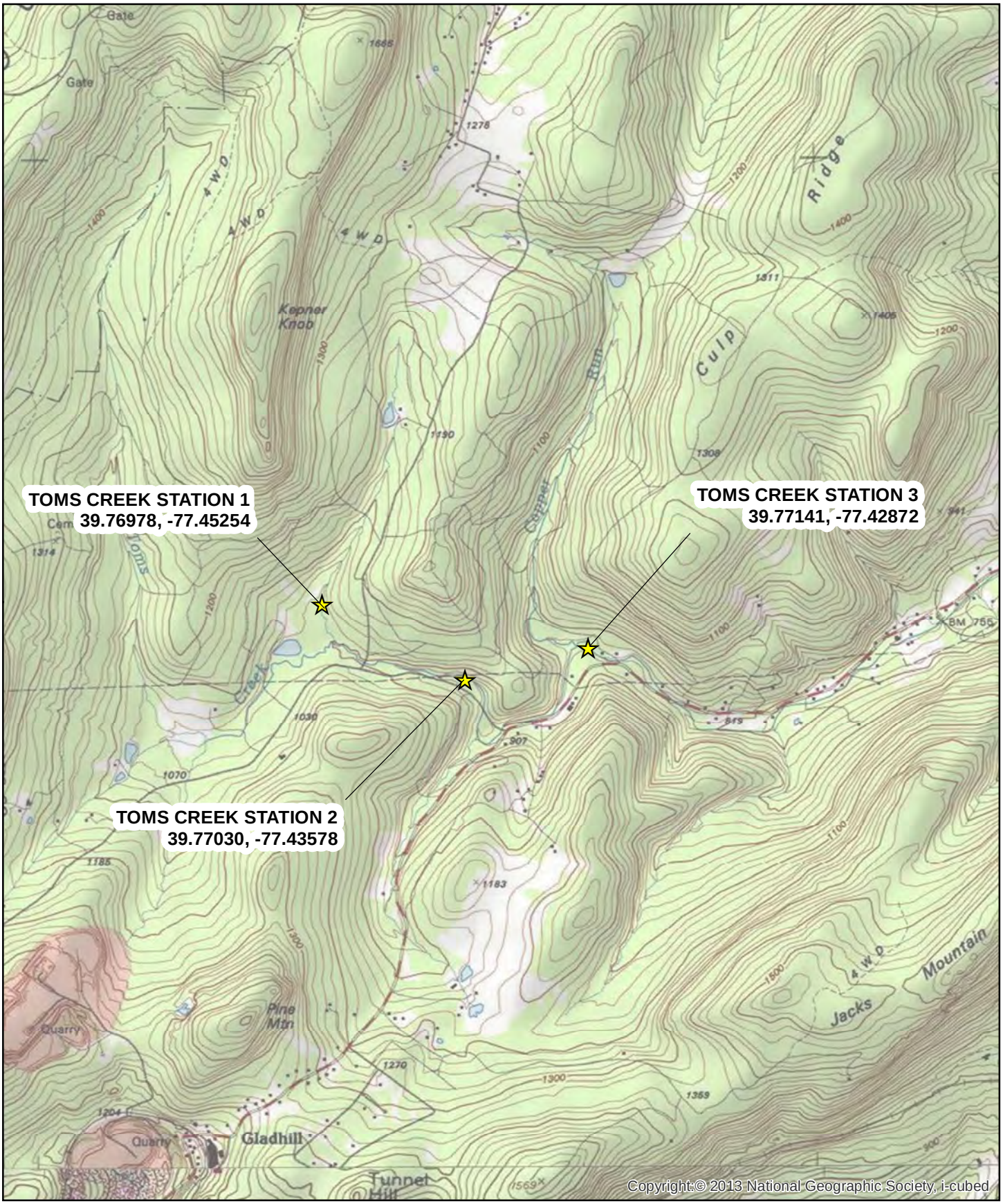
Scott E. Bush

Senior Ecologist

SB/cm/1

Encl.

Figures



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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

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ASSESSMENT OF TOMS CREEK

STREAM SAMPLING LOCATION MAP

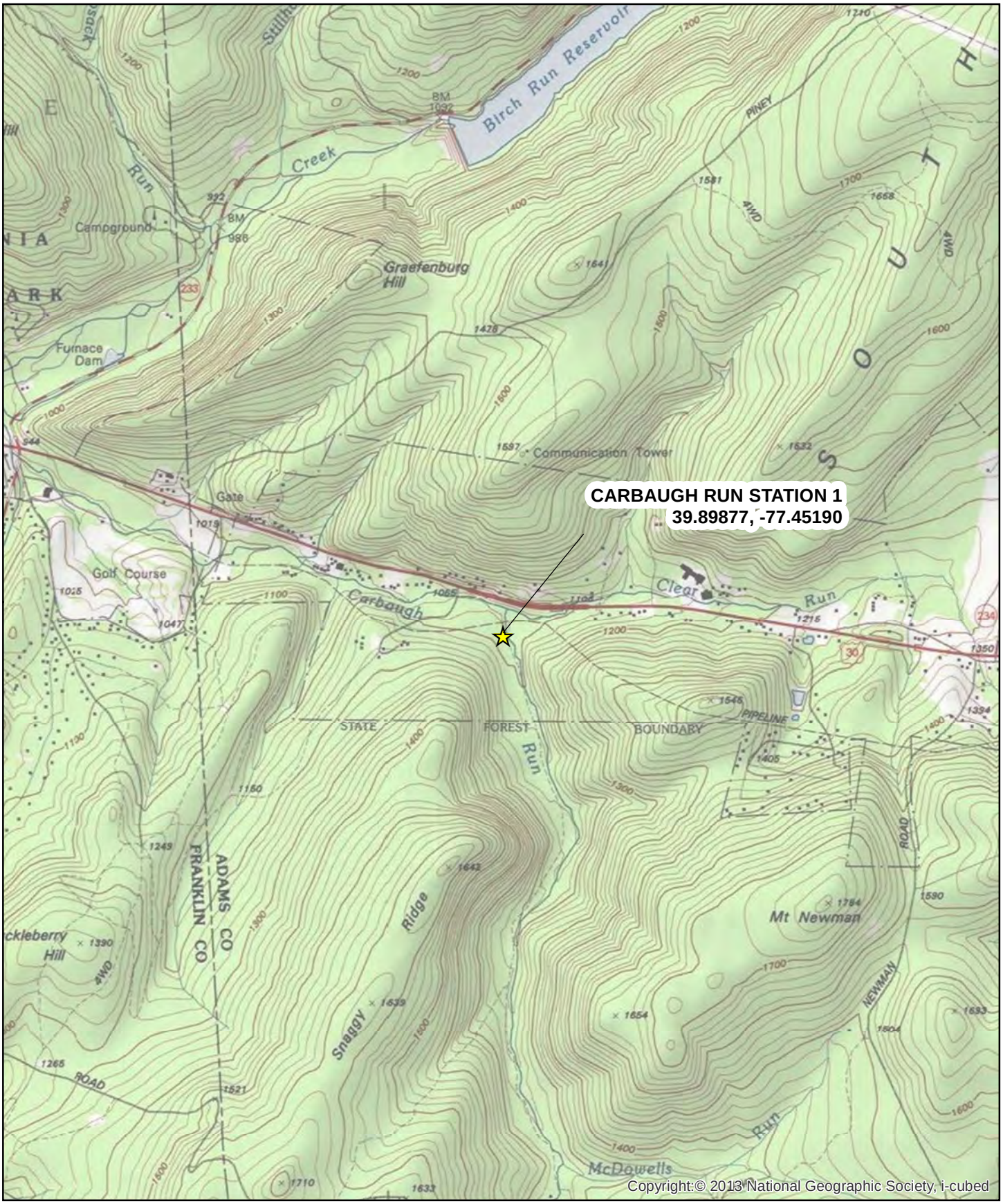
FRIENDS OF TOMS CREEK
HAMILTONBAN TOWNSHIP, ADAMS COUNTY, PA
USGS QUAD: IRON SPRINGS

Revision A
Date May 01, 2020

Figure 1

C:\Users\gkunka\Desktop\temp\Scott Map 5-1\GHD-Permit Map.mxd

1240 North Mountain Road Harrisburg, PA 17112 **T** 717 541 0622 **F** 717 541 8004 **W** www.ghd.com



Paper Size 8.5 x11

0 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

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GHD

ASSESSMENT OF TOMS CREEK

STREAM SAMPLING LOCATION MAP

FRIENDS OF TOMS CREEK
FRANKLIN TOWNSHIP, ADAMS COUNTY, PA
USGS QUAD: CALEDONIA PARK

Revision A
Date May 01, 2020

Figure 2

C:\Users\gkunka\Desktop\temp\Scott Map 5-1\GHD-Permit Map.mxd
1240 North Mountain Road Harrisburg, PA 17112 **T** 717 541 0622 **F** 717 541 8004 **W** www.ghd.com

Attachment A
Instrument Quality Control Documentation

INSTRUMENT QC/ PACKING LIST

Description	Horiba U-52/ U-53
Sonde ID#	44035
Display ID#	44034
Date Calibrated	3-19-20

PINE
www.pine-environmental.com

Standard Items	Prepared	QC check	Received by customer	Returned to Pine
Horiba U-52/ 53 w/ 6' cable and display w/ case	✓	✓		
Manual	✓	✓		
Quick reference card	✓	✓		
(4) C Alkaline batteries	✓	✓		
Probe Guard	✓	✓		
Calibration cup (clear)	✓	✓		
Sample cup (Black)	✓	✓		
Flow cell	✓	✓		
• Cell body		✓		
• Center window	✓	✓		
• Base and black bottom	✓	✓		
• O-ring cover	✓	✓		
• Threaded ring	✓	✓		
• (2) black O-rings	✓	✓		
• (1) red O-ring		✓		
• 2 of each black barb sizes (1/4, 3/8, and 1/2)	✓	✓		
D.O. probe reconditioning kit	✓	✓		
330 internal pH reference solution (1)	✓	✓		
250 ml Autocal solution	✓	✓		
ProCal calibration sheet	✓	✓		
Optional Items				
U-50 Data Collection Software				
USB Cable				

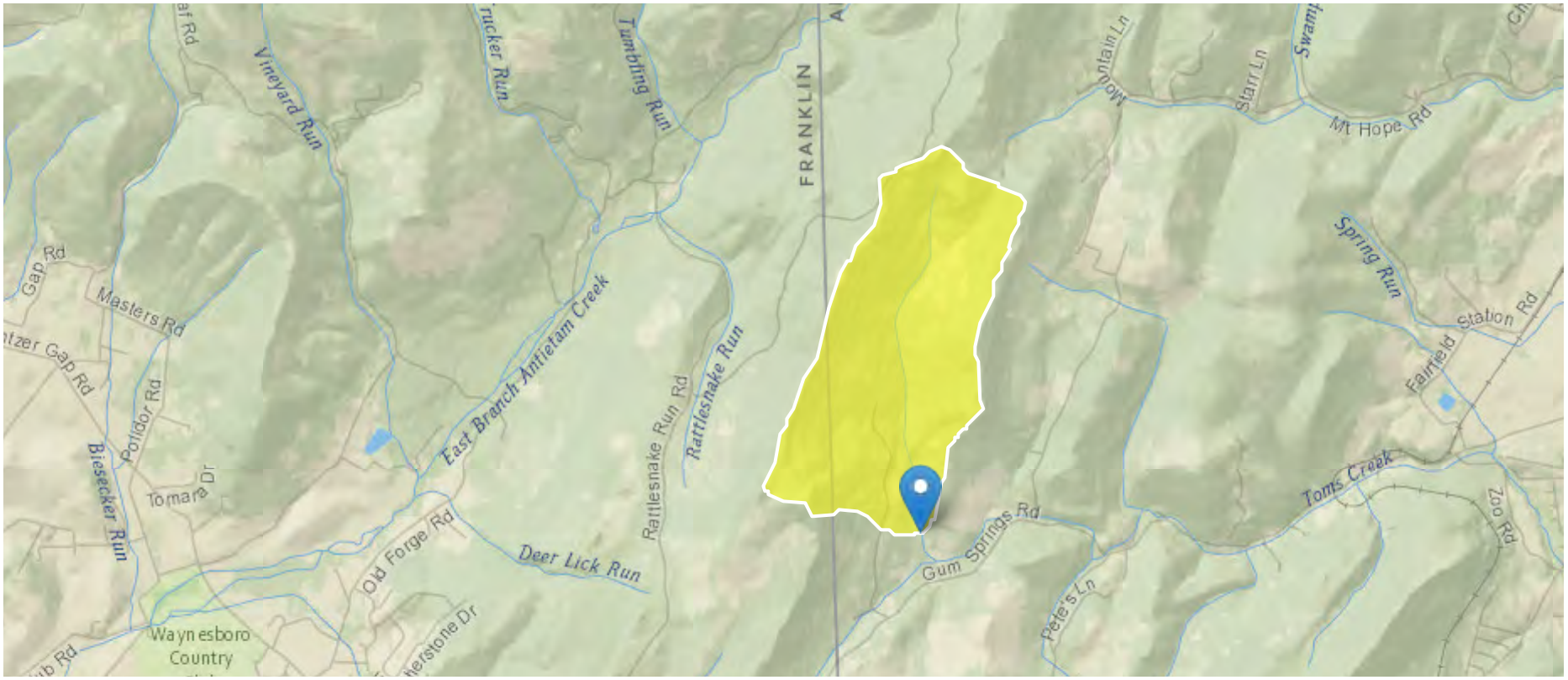
Prepared by: TS 3.19.20
QC checked by: ✓
Date: 3.19.20

This packing list is to ensure that every item needed to operate the unit was sent and received. Upon receiving a shipment, please fill out the "Received by customer" column. Call Pine within 24 hours of receiving the equipment if any pieces are missing, damaged, or malfunctioning. Thank you for choosing Pine Environmental Services LLC

Attachment B
USGS StreamStats Summary

StreamStats Report

Region ID: PA
Workspace ID: PA20200501112551715000
Clicked Point (Latitude, Longitude): 39.76978, -77.45254
Time: 2020-05-01 07:26:07 -0400



Toms Creek Station 1

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	9.5	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	9.73	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	46738.4	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	87178.2	meters
DRN	Drainage quality index from STATSGO	3.2	dimensionless
DRNAREA	Area that drains to a point on a stream	1.66	square miles
ELEV	Mean Basin Elevation	1455.1	feet
FOREST	Percentage of area covered by forest	100	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	1	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	1.09	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.0191	percent
LONG_OUT	Longitude of Basin Outlet	-77.45248	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	59	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	46915	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	85585	meters
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	4.9	feet

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	0.96	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	1.59	miles
URBAN	Percentage of basin with urban development	0	percent

Application Version: 4.3.11

StreamStats Report

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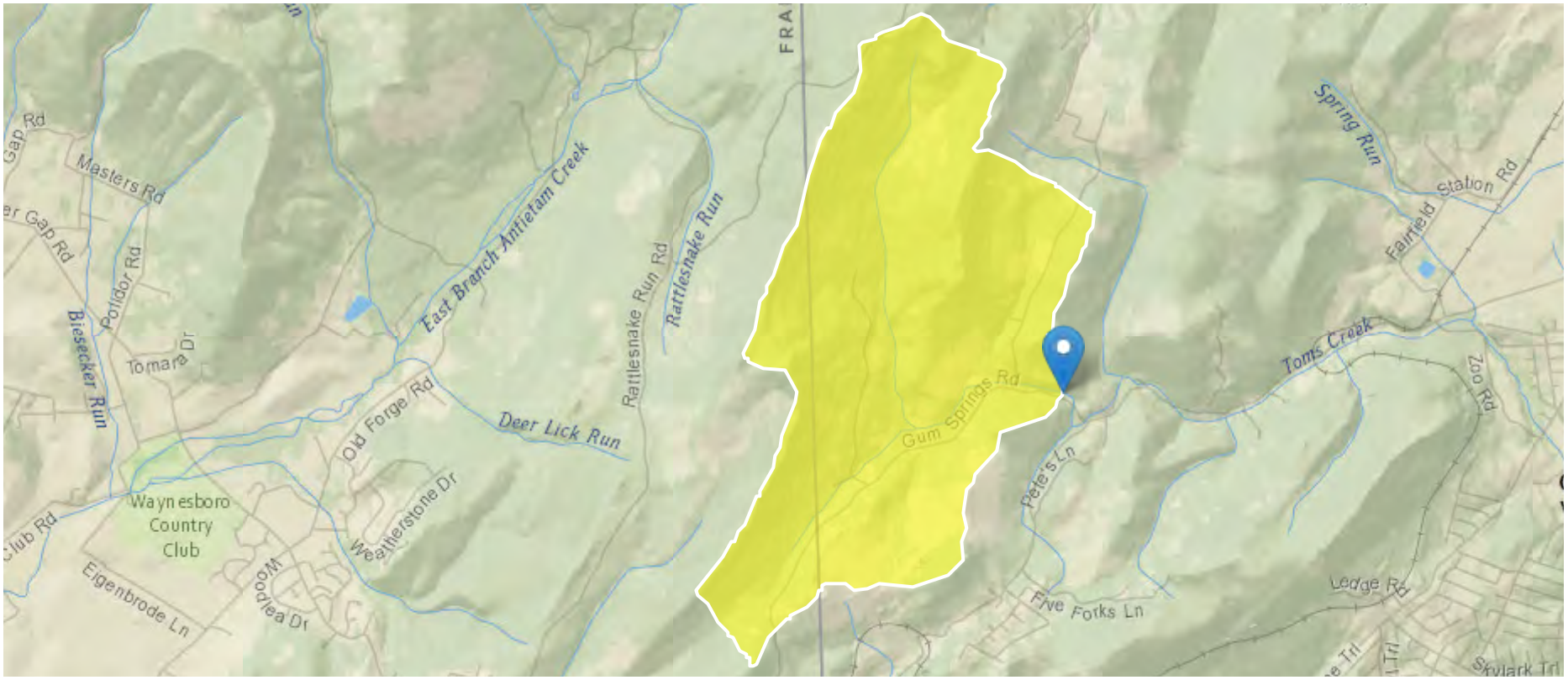

Toms Creek Station 2

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	9.5	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	9.7	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	46909.7	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	86151.1	meters
DRN	Drainage quality index from STATSGO	3.2	dimensionless
DRNAREA	Area that drains to a point on a stream	3.94	square miles
ELEV	Mean Basin Elevation	1353.2	feet
FOREST	Percentage of area covered by forest	97	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	1	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	4	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	3.54	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.94	percent
LONG_OUT	Longitude of Basin Outlet	-77.43578	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	60	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	48345	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	85655	meters
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	5	feet

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.53	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	6.02	miles
URBAN	Percentage of basin with urban development	1	percent

Application Version: 4.3.11

StreamStats Report

Region ID: PA
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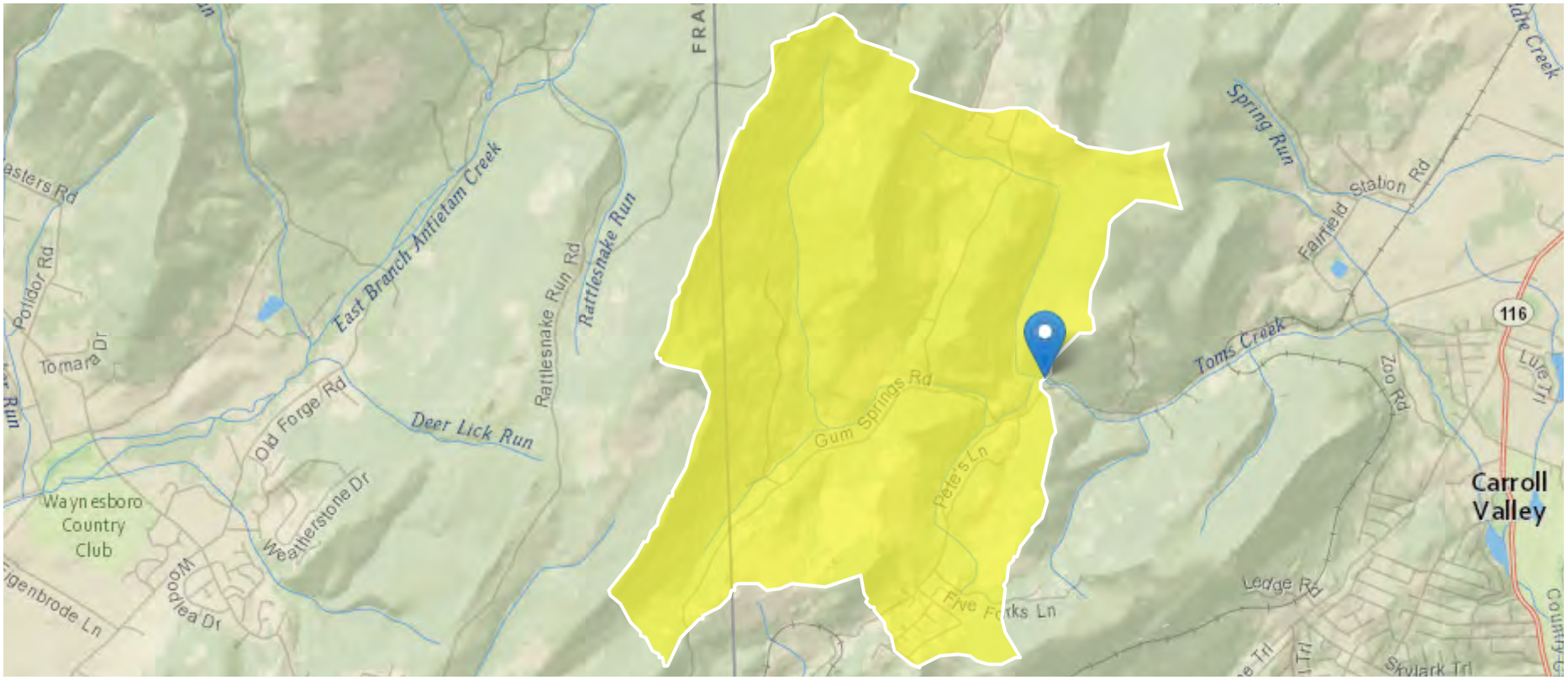
Time: 2020-05-01 07:15:13 -0400



Toms Creek Station 3

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	9.4	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	9.6	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	47498	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	86040	meters
DRN	Drainage quality index from STATSGO	3.2	dimensionless
DRNAREA	Area that drains to a point on a stream	6.16	square miles
ELEV	Mean Basin Elevation	1296.8	feet
FOREST	Percentage of area covered by forest	96	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	1	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	6	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	6.17	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	1.42	percent
LONG_OUT	Longitude of Basin Outlet	-77.42866	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	60	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	48955	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	85785	meters
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	5	feet

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.56	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	9.59	miles
URBAN	Percentage of basin with urban development	1	percent

Application Version: 4.3.11

StreamStats Report

Region ID: PA
Workspace ID: PA20200501112810432000
Clicked Point (Latitude, Longitude): 39.89877, -77.45190
Time: 2020-05-01 07:28:26 -0400

Carbaugh 1 (Reference Stream)

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.7	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	6.96	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	47214.5	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	96711.4	meters
DRN	Drainage quality index from STATSGO	3.2	dimensionless
DRNAREA	Area that drains to a point on a stream	5.99	square miles
ELEV	Mean Basin Elevation	1517.7	feet
FOREST	Percentage of area covered by forest	94	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	5	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	5.32	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.18	percent
LONG_OUT	Longitude of Basin Outlet	-77.4519	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	59	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	46875	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	99905	meters
PRECIP	Mean Annual Precipitation	45	inches
ROCKDEP	Depth to rock	5	feet

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	3	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.81	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	10.84	miles
URBAN	Percentage of basin with urban development	0	percent

Application Version: 4.3.11

Attachment C
Photographs

Photo 1 – Looking upstream at Toms Creek Station 1.

Photo 2 – Looking downstream at Toms Creek Station 1.

Photo 3 – Looking northwest at adjoining land uses at Toms Creek Station 1.

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Photo 4 – Looking upstream at Toms Creek Station 2.

Photo 5 – Looking downstream at Toms Creek Station 2.

Photo 6 – Mottled sculpin captured in d-frame net at Toms Creek Station 2 (released).

Photo 7 – *Perlidae* Stonefly commonly observed at all station on Toms Creek and Carbaugh Run.

Photo 8 – Looking downstream at Toms Creek Station 3. Note bank erosion and point bar formation.

Photo 9. Looking upstream at Toms Creek Station 3. Again note bar formation and bank damage caused by stormwater.

Photo 10 – Looking at mottled sculpin captured in d-frame net at Toms Creek Station 3 (released).

Photo 11. Looking upstream at Carbaugh 1 from downstream end of sampling reach.

Photo 12 – Looking downstream at Carbaugh Run downstream of sampling reach. Note pipeline ROW clearing.

Photo 13. Horiba U-52 water quality meter and probe at Carbaugh 1.

Attachment D
Physical Habitat Evaluation Forms

Physical Habitat Evaluation Form for Riffle/Run Prevalence					GIS Key (YYYYMMDD-hhmm-User): 20200322-11:37-SEB															
Waterbody Name: Toms Creek 1					Location: 39.773707°, -77.442936°															
Parameter	**Optimal**					**Suboptimal**					**Marginal**					**Poor**				
1. Instream Cover (Fish)	mix of boulders, cobbles, submerged logs, undercut banks or other stable habitat																			
	> 50%					50% to 30%					30% to 10%					< 10%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
2. Epifaunal Substrate	Riffles as wide as stream; lengths extending twice the widths. Well-developed riffle and run. Abundant cobble.					Riffles as wide as stream; lengths less than twice the widths. Abundant cobble. Boulders and gravels common.					Riffles not as wide as stream; lengths less than twice stream widths. Runs may be lacking. Prevalence of gravels, big boulders or bedrocks. Some cobbles.					Riffles or runs rare or absent. Prevalence of big boulders and/or bedrocks. Cobbles rare or absent.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3. Embeddedness	Gravel, cobble, and boulder particles surrounded by fine sediment																			
	< 25%					25% to 50%					50% to 75%					> 75%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
4. Velocity/Depth Regimes	**shallow-fast**					**shallow-slow**					deep-fast					deep-slow				
	Four present					Three present					Two present					One present				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. Channel Alteration	No channelization. No dredging.					Some channelization (bridge abutments). Past dredging or channelization (over 20 years ago), but not recent.					New embankments on both banks. 40% to 80% of reach channelized or disrupted.					Banks gabioned or cemented. > 80% of reach channelized or disrupted.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
6. Sediment Deposition	Little or no enlargement of islands or point bars. Less than 5% of bottom affected by sediment deposition.					Some new increase in bar formation, mostly from coarse gravel. 5% to 30% of bottom affected. Slight deposition in pools.					Moderate deposition of new gravel and/or coarse sand on bars. 30% to 50% of bottom affected. Deposits at obstructions, constrictions, and bends. Moderate deposition in pools.					Heavy deposits of fine material. Increased bar development. More than 50% of bottom changing frequently. Pools almost absent due to substantial deposition.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
7. Riffle Frequency	Distance between riffles divided by stream width																			
	5 to 7					7 to 15					15 to 25					> 25				
	Riffles relatively frequent. Variety of habitat.					Riffles infrequent.					Occasional riffle or bend. Bottom contours provide some habitat.					Almost all flat water or shallow riffles. Poor habitat.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
8. Channel Flow Status	Water reaches base of both banks. Minimal channel substrate exposed.					Water fills > 75% of channel. < 25% of channel substrate exposed.					Water fills 25% to 75% of channel and/or riffle substrates mostly exposed.					Very little water in channel and mostly present as standing pools.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
9. Condition of Banks	Banks stable. No evidence of bank erosion or failure.					Moderately stable. Infrequent, small areas of erosion mostly healed over.					Moderately unstable. Up to 60% of banks in reach have areas of erosion.					Unstable. "Raw" areas frequent along straight sections and bends. On side slopes, 60% to 100% of banks have erosional scars.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
10. Bank Vegetative Protection	Streambank surfaces covered by vegetation																			
	> 90%					90% to 70%					70% to 50%					< 50%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
11. Grazing or Other Disruptive Pressure	Grazing, mowing, or other vegetative disruption minimal or absent. Almost all plants growing naturally.					Disruption evident, but not greatly affecting full plant growth. More than half of potential plant stubble height remaining.					Disruption obvious. Areas of bare soil and/or closely cropped vegetation common. Less than half of potential stubble height remaining.					Disruption extensive. Vegetation removed to 2" or less in average stubble height.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
12. Riparian Vegetative Zone	Width > 18 meters. No human activities impacting riparian zone.					Width 12 to 18 meters. Human activities minimally impacting zone.					Width 6 to 12 meters. Human activities impacting zone a great deal.					Width < 6 meters. Little or no riparian vegetation due to human activities.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

TOTAL 229

Physical Habitat Evaluation Form for Riffle/Run Prevalence						GIS Key (YYYYMMDD-hhmm-User): 20200322-12:47-SEB															
Waterbody Name: Toms Creek 2						Location: 39.77030, -77.43578														
Parameter	**Optimal**					**Suboptimal**					**Marginal**					**Poor**				
1. Instream Cover (Fish)	mix of boulders, cobbles, submerged logs, undercut banks or other stable habitat																			
	> 50%					50% to 30%					30% to 10%					< 10%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
2. Epifaunal Substrate	Riffles as wide as stream; lengths extending twice the widths. Well-developed riffle and run. Abundant cobble.					Riffles as wide as stream; lengths less than twice the widths. Abundant cobble. Boulders and gravels common.					Riffles not as wide as stream; lengths less than twice stream widths. Runs may be lacking. Prevalence of gravels, big boulders or bedrocks. Some cobbles.					Riffles or runs rare or absent. Prevalence of big boulders and/or bedrocks. Cobbles rare or absent.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3. Embeddedness	Gravel, cobble, and boulder particles surrounded by fine sediment																			
	< 25%					25% to 50%					50% to 75%					> 75%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
4. Velocity/Depth Regimes	**shallow-fast**					**shallow-slow**					deep-fast					deep-slow				
	Four present					Three present					Two present					One present				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. Channel Alteration	No channelization. No dredging.					Some channelization (bridge abutments). Past dredging or channelization (over 20 years ago), but not recent.					New embankments on both banks. 40% to 80% of reach channelized or disrupted.					Banks gabioned or cemented. > 80% of reach channelized or disrupted.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
6. Sediment Deposition	Little or no enlargement of islands or point bars. Less than 5% of bottom affected by sediment deposition.					Some new increase in bar formation, mostly from coarse gravel. 5% to 30% of bottom affected. Slight deposition in pools.					Moderate deposition of new gravel and/or coarse sand on bars. 30% to 50% of bottom affected. Deposits at obstructions, constrictions, and bends. Moderate deposition in pools.					Heavy deposits of fine material. Increased bar development. More than 50% of bottom changing frequently. Pools almost absent due to substantial deposition.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
7. Riffle Frequency	Distance between riffles divided by stream width																			
	5 to 7					7 to 15					15 to 25					> 25				
	Riffles relatively frequent. Variety of habitat.					Riffles infrequent.					Occasional riffle or bend. Bottom contours provide some habitat.					Almost all flat water or shallow riffles. Poor habitat.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
8. Channel Flow Status	Water reaches base of both banks. Minimal channel substrate exposed.					Water fills > 75% of channel. < 25% of channel substrate exposed.					Water fills 25% to 75% of channel and/or riffle substrates mostly exposed.					Very little water in channel and mostly present as standing pools.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
9. Condition of Banks	Banks stable. No evidence of bank erosion or failure.					Moderately stable. Infrequent, small areas of erosion mostly healed over.					Moderately unstable. Up to 60% of banks in reach have areas of erosion.					Unstable. "Raw" areas frequent along straight sections and bends. On side slopes, 60% to 100% of banks have erosional scars.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
10. Bank Vegetative Protection	Streambank surfaces covered by vegetation																			
	> 90%					90% to 70%					70% to 50%					< 50%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
11. Grazing or Other Disruptive Pressure	Grazing, mowing, or other vegetative disruption minimal or absent. Almost all plants growing naturally.					Disruption evident, but not greatly affecting full plant growth. More than half of potential plant stubble height remaining.					Disruption obvious. Areas of bare soil and/or closely cropped vegetation common. Less than half of potential stubble height remaining.					Disruption extensive. Vegetation removed to 2" or less in average stubble height.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
12. Riparian Vegetative Zone	Width > 18 meters. No human activities impacting riparian zone.					Width 12 to 18 meters. Human activities minimally impacting zone.					Width 6 to 12 meters. Human activities impacting zone a great deal.					Width < 6 meters. Little or no riparian vegetation due to human activities.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

TOTAL 221

Physical Habitat Evaluation Form for Riffle/Run Prevalence											GIS Key (YYYYMMDD-hhmm-User): 20200322-13:40-SEB										
Waterbody Name: Toms Creek 3											Location: 39.77141, -77.42872										
Parameter	**Optimal**					**Suboptimal**					**Marginal**					**Poor**				
1. Instream Cover (Fish)	mix of boulders, cobbles, submerged logs, undercut banks or other stable habitat																			
	> 50%					50% to 30%					30% to 10%					< 10%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
2. Epifaunal Substrate	Riffles as wide as stream; lengths extending twice the widths. Well-developed riffle and run. Abundant cobble.					Riffles as wide as stream; lengths less than twice the widths. Abundant cobble. Boulders and gravels common.					Riffles not as wide as stream; lengths less than twice stream widths. Runs may be lacking. Prevalence of gravels, big boulders or bedrocks. Some cobbles.					Riffles or runs rare or absent. Prevalence of big boulders and/or bedrocks. Cobbles rare or absent.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3. Embeddedness	Gravel, cobble, and boulder particles surrounded by fine sediment																			
	< 25%					25% to 50%					50% to 75%					> 75%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
4. Velocity/Depth Regimes	**shallow-fast**					**shallow-slow**					deep-fast					deep-slow				
	Four present					Three present					Two present					One present				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. Channel Alteration	No channelization. No dredging.					Some channelization (bridge abutments). Past dredging or channelization (over 20 years ago), but not recent.					New embankments on both banks. 40% to 80% of reach channelized or disrupted.					Banks gabioned or cemented. > 80% of reach channelized or disrupted.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
6. Sediment Deposition	Little or no enlargement of islands or point bars. Less than 5% of bottom affected by sediment deposition.					Some new increase in bar formation, mostly from coarse gravel. 5% to 30% of bottom affected. Slight deposition in pools.					Moderate deposition of new gravel and/or coarse sand on bars. 30% to 50% of bottom affected. Deposits at obstructions, constrictions, and bends. Moderate deposition in pools.					Heavy deposits of fine material. Increased bar development. More than 50% of bottom changing frequently. Pools almost absent due to substantial deposition.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
7. Riffle Frequency	Distance between riffles divided by stream width																			
	5 to 7					7 to 15					15 to 25					> 25				
	Riffles relatively frequent. Variety of habitat.					Riffles infrequent.					Occasional riffle or bend. Bottom contours provide some habitat.					Almost all flat water or shallow riffles. Poor habitat.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
8. Channel Flow Status	Water reaches base of both banks. Minimal channel substrate exposed.					Water fills > 75% of channel. < 25% of channel substrate exposed.					Water fills 25% to 75% of channel and/or riffle substrates mostly exposed.					Very little water in channel and mostly present as standing pools.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
9. Condition of Banks	Banks stable. No evidence of bank erosion or failure.					Moderately stable. Infrequent, small areas of erosion mostly healed over.					Moderately unstable. Up to 60% of banks in reach have areas of erosion.					Unstable. "Raw" areas frequent along straight sections and bends. On side slopes, 60% to 100% of banks have erosional scars.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
10. Bank Vegetative Protection	Streambank surfaces covered by vegetation																			
	> 90%					90% to 70%					70% to 50%					< 50%				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
11. Grazing or Other Disruptive Pressure	Grazing, mowing, or other vegetative disruption minimal or absent. Almost all plants growing naturally.					Disruption evident, but not greatly affecting full plant growth. More than half of potential plant stubble height remaining.					Disruption obvious. Areas of bare soil and/or closely cropped vegetation common. Less than half of potential stubble height remaining.					Disruption extensive. Vegetation removed to 2" or less in average stubble height.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
12. Riparian Vegetative Zone	Width > 18 meters. No human activities impacting riparian zone.					Width 12 to 18 meters. Human activities minimally impacting zone.					Width 6 to 12 meters. Human activities impacting zone a great deal.					Width < 6 meters. Little or no riparian vegetation due to human activities.				
	20	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

TOTAL 168

Physical Habitat Evaluation Form for Riffle/Run Prevalence					GIS Key (YYYYMMDD-hhmm-User): 20200322-14:53-SEB															
Waterbody Name: Carbaugh 1					Location: 39.89877, -77.45190															
Parameter	**Optimal**					**Suboptimal**					**Marginal**					**Poor**				
1. Instream Cover (Fish)	mix of boulders, cobbles, submerged logs, undercut banks or other stable habitat																			
	> 50%					50% to 30%					30% to 10%					< 10%				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
2. Epifaunal Substrate	Riffles as wide as stream; lengths extending twice the widths. Well-developed riffle and run. Abundant cobble.					Riffles as wide as stream; lengths less than twice the widths. Abundant cobble. Boulders and gravels common.					Riffles not as wide as stream; lengths less than twice stream widths. Runs may be lacking. Prevalence of gravels, big boulders or bedrocks. Some cobbles.					Riffles or runs rare or absent. Prevalence of big boulders and/or bedrocks. Cobbles rare or absent.				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3. Embeddedness	Gravel, cobble, and boulder particles surrounded by fine sediment																			
	< 25%					25% to 50%					50% to 75%					> 75%				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
4. Velocity/Depth Regimes	**shallow-fast**					**shallow-slow**					deep-fast					deep-slow				
	Four present					Three present					Two present					One present				
	20	**19**	**(18)**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. Channel Alteration	No channelization. No dredging.					Some channelization (bridge abutments). Past dredging or channelization (over 20 years ago), but not recent.					New embankments on both banks. 40% to 80% of reach channelized or disrupted.					Banks gabioned or cemented. > 80% of reach channelized or disrupted.				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
6. Sediment Deposition	Little or no enlargement of islands or point bars. Less than 5% of bottom affected by sediment deposition.					Some new increase in bar formation, mostly from coarse gravel. 5% to 30% of bottom affected. Slight deposition in pools.					Moderate deposition of new gravel and/or coarse sand on bars. 30% to 50% of bottom affected. Deposits at obstructions, constrictions, and bends. Moderate deposition in pools.					Heavy deposits of fine material. Increased bar development. More than 50% of bottom changing frequently. Pools almost absent due to substantial deposition.				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
7. Riffle Frequency	Distance between riffles divided by stream width																			
	5 to 7					7 to 15					15 to 25					> 25				
	Riffles relatively frequent. Variety of habitat.					Riffles infrequent.					Occasional riffle or bend. Bottom contours provide some habitat.					Almost all flat water or shallow riffles. Poor habitat.				
	20	**(19)**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
8. Channel Flow Status	Water reaches base of both banks. Minimal channel substrate exposed.					Water fills > 75% of channel. < 25% of channel substrate exposed.					Water fills 25% to 75% of channel and/or riffle substrates mostly exposed.					Very little water in channel and mostly present as standing pools.				
	20	**(19)**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
9. Condition of Banks	Banks stable. No evidence of bank erosion or failure.					Moderately stable. Infrequent, small areas of erosion mostly healed over.					Moderately unstable. Up to 60% of banks in reach have areas of erosion.					Unstable. "Raw" areas frequent along straight sections and bends. On side slopes, 60% to 100% of banks have erosional scars.				
	20	**19**	**(18)**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
10. Bank Vegetative Protection	Streambank surfaces covered by vegetation																			
	> 90%					90% to 70%					70% to 50%					< 50%				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
11. Grazing or Other Disruptive Pressure	Grazing, mowing, or other vegetative disruption minimal or absent. Almost all plants growing naturally.					Disruption evident, but not greatly affecting full plant growth. More than half of potential plant stubble height remaining.					Disruption obvious. Areas of bare soil and/or closely cropped vegetation common. Less than half of potential stubble height remaining.					Disruption extensive. Vegetation removed to 2" or less in average stubble height.				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
12. Riparian Vegetative Zone	Width > 18 meters. No human activities impacting riparian zone.					Width 12 to 18 meters. Human activities minimally impacting zone.					Width 6 to 12 meters. Human activities impacting zone a great deal.					Width < 6 meters. Little or no riparian vegetation due to human activities.				
	(20)	**19**	**18**	**17**	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

TOTAL 234

Attachment E
Laboratory Data & Documentation

NORMANDEAU ASSOCIATES, INC.

6 April 2020

Ms. Susan deVeer
Friends of Toms Creek
Post Office Box 611
Fairfield, Pennsylvania 17320

CASE NARRATIVE

SUBJECT: Benthic Macroinvertebrate Sample Analysis: Toms Creek Stream Re-designation (Normandeau Associates, Inc. Project Number 24444.000)

Dear Ms. deVeer:

On 23, March, 2020 Normandeau Associates, Inc. (Normandeau) received as set of four samples collected by GHD Services, Inc. from Toms Creek and Carbaugh Run in Adams County, Pennsylvania. The samples were collected on 22 March 2020, on behalf of the Friends of Toms Creek for a Stream Re-designation analysis. One sample was taken from a Reference station on Carbaugh Run and three samples were collected from Toms Creek, the Candidate stream.

All sample collection, and laboratory analyses were conducted according to PA DEP protocols. Guidance documents for this project are PA DEP 2018, PA DEP 2003, and PennFuture 2006.

Methodology

Sample Collection

Each sample was collected as a six-kick composite from targeted riffle habitat along 100-meter stream sections. Each "kick" encompassed an approximate 1 x 3 foot area of substrate to produce a sample from six square feet (1.8 m^2) of streambed.

Laboratory Analysis

In the lab the sample matrices were distributed into a 28-grid pan and specimens removed at random from selected grids until a count of 200 (+/- 10 pct.) was obtained. A minimum of four grids were processed from each sample.

Most of the invertebrate specimens were identified to the genus taxonomic end point, using dissecting and compound microscopes. Exceptions were midges (Chironomidae) and segmented worms (Oligochaeta), which were left at the family and order levels, respectively. These end points are referred to as taxa.

Metric Analysis

The data were condensed to a set of five ecological metrics published by PA DEP to conduct Re-designation analyses:

Taxa Richness	Modified Hilsenhoff Index	Percent Modified Mayflies
Modified EPT Richness	Percent Dominant Taxon	

Each metric from the Candidate locations is scored on a scale of 1 to 8 according to its Percent Similarity to the corresponding metrics from the Reference stream. Site scores between 0 and 40 are then calculated for each candidate location by adding the metric scores. According to protocol, a site score of 40 is

assigned to the Reference stream. Once all scores are tallied, the status of the Candidate stream is evaluated according to its' Percent Comparison to the Reference using the formula: (Total Biological Condition Score / 40) x 100.

The results are interpreted as follows:

Percent Comparison	Stream Classification Category
> / = 92 percent	Exceptional Value (EV)
83 – 92 percent	High Quality (HQ)
< 83 percent	Existing or Designated Use (Non-EV or HQ)

Quality Assurance/Quality Control

Normandeau taxonomists are certified by the Society for Freshwater Science.

All sample matrices and specimens are retained at Normandeau.

Normandeau's corporate Quality Assurance/Quality Control procedures were applied to selected samples for both the processing and taxonomic identification phases of the analysis.

For processing, randomly selected samples are independently re-sorted to determine the efficiency of both taxa and specimen removal. The results are considered acceptable if a standard of 90 percent is attained. Quality Control results are shown below:

Sample Processing (specimen removal):

Sample	Taxa	Specimens
Toms - 1	95.7%	96.7%

For taxonomy, samples are re-analyzed by a second Biologist to determine the accuracy of the identifications. The results are considered acceptable if 90 percent or more of the identifications are confirmed. Quality Control results are given below:

Sample Analysis (taxonomy):

Sample	Taxa	Gross Count
Carb -1	84.0 %	94.0 %
Toms - 3	81.5 %	100.0 %

According to Normandeau procedure, when two samples analyzed by the same taxonomist do not attain 90.0 percent, the remaining samples for the project are re-analyzed. Therefore, for this project all four samples were analyzed twice prior to submission of the data. This produced a cumulative total of 48 taxa (all stations combined). Re-identification of all samples submitted for this project produced the following changes to the initial data set.

- The mayfly *Baetis* was amended to *Diphetor* or *Heterocloeon*
- The mayfly *Ephemerella* was amended to *Serratella* or *Drunella*
- The stonefly *Sweltsa* was amended to *Haploperla*
- The stonefly *Taeniopteryx* was amended to *Pteronarcys* or *Leuctra*
- The caddisfly *Hydroptila* was amended to *Stactobiella*
- The caddisfly *Brachycentrus* was amended to *Micrasema*

Precision:

A field duplicate was collected at Station Toms – 1 and archived should a precision check be requested for the field collection.

A laboratory duplicate(s) can be processed should a precision check be requested for the taxonomic analysis.

Results

The results are shown here.

Station	Score	Percent	Classification
Carb – 1	40	---------	Reference
Toms – 1	38	95.0 %	Exceptional value
Toms – 2	37	92.5 %	Exceptional value
Toms – 3	37	92.5 %	Exceptional value

Respectively Submitted,

George M. Christian
(Senior Scientist/Laboratory Manager)

cc. file

Sources:

Pennsylvania Department of Environmental Protection (PA DEP). 2018a. Water Quality Monitoring Protocols for Streams and Rivers. PA DEP, Office of Water Programs, Bureau of Clean Water, Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection (PA DEP). 2018b. Assessment Methodology for Rivers and Streams. PA DEP, Office of Water Programs, Bureau of Clean Water, Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection (PA DEP). 2003. Water Quality Anti-degradation and Implementation Guidance. PA DEP, Bureau of Water Supply and Wastewater Management, Harrisburg, Pennsylvania.

Citizens for Pennsylvania's Future (PennFuture). 2006. Stream Re-designation Handbook. PennFuture, Harrisburg, Pennsylvania.

Benthic Macroinvertebrates collected from Carbaugh Run (Adams County) for the Friends of Toms Creek watershed group

Sample Station	**Carb - 1 (Carbaugh Run - Reference)**
Sample Date:	**March 22, 2020**
Gear:	Kick Net: PA DEP IBI protocol - 200 specimen sub-sample

Taxon	PTV	Common name	Number	Percent
Bivalvia				
Pisdium	8	pill clam	1	0.5%
Hydrachnidia	7	water mite	2	1.0%
Decapoda				
Cambarus	6	crayfish	1	0.5%
Ephemeroptera				
Diphetor	6	mayfly	1	0.5%
Epeorus	0	mayfly	3	1.5%
Ephemerella	**1**	**mayfly**	**49**	**24.6%**
Leucrocuta	1	mayfly	1	0.5%
Maccaffertium	3	mayfly	8	4.0%
Paraleptophlebia	1	mayfly	21	10.6%
Rithrogena	0	mayfly	4	2.0%
Serratella	2	mayfly	10	5.0%
Plecoptera				
Amphinemura	3	stonefly	2	1.0%
Isoperla	2	stonefly	2	1.0%
Leuctra	0	stonefly	3	1.5%
Pteronarcys	0	stonefly	2	1.0%
Sweltsa	0	stonefly	2	1.0%
Trichoptera				
Cheumatopsyche	6	caddisfly	2	1.0%
Diplectrona	0	caddisfly	4	2.0%
Dolophilodes	0	caddisfly	2	1.0%
Stactobiella	2	caddisfly	3	1.5%
Coleoptera				
Oulimnius	5	riffle beetle	7	3.5%
Promoresia	2	riffle beetle	1	0.5%
Diptera				
Chironomidae	6	midges	34	17.1%
Prosimulium	2	black fly	33	16.6%
Tipula	4	crane fly	1	0.5%
Total Taxa			25	100.0%
Total Individuals			199	

Metrics:	**Value**	**Score**
Richness (total taxa)	**25**	-
Modified EPT Index (PTV = 0 - 4)	**15**	-
Hilsenhoff Biotic Index	**2.45**	-
Percent Dominant Taxon (*Ephemerella* : PTV = 1)	**24.6%**	-
Percent Modified Mayflies (PTV = 0 - 4)	**48.2%**	-
Total Score (reference)		**40**

Key: PTV - Pollution Tolerance Value (PA DEP)

Benthic Macroinvertebrates collected from Toms Creek (Adams County) for the Friends of Toms Creek watershed group

Sample Station	**Toms - 1 (Toms Creek - Candidate))**			
Sample Date:	**March 22, 2020**			
Gear:	Kick Net: PA DEP IBI protocol - 200 specimen sub-sample			
Taxon	**PTV**	**Common name**	**Number**	**Percent**
Bivalvia				
Hydrachnidia	7	water mite	2	1.0%
Decapoda				
Cambarus	6	crayfish	1	0.5%
Ephemeroptera				
Baetis	6	mayfly	1	0.5%
Epeorus	0	mayfly	2	1.0%
Ephemerella	**1**	**mayfly**	**80**	**38.1%**
Maccaffertium	3	mayfly	4	1.9%
Paraleptophlebia	1	mayfly	4	1.9%
Rithrogena	0	mayfly	2	1.0%
Serratella	2	mayfly	4	1.9%
Plecoptera				
Acroneuria	0	stonefly	2	1.0%
Alloperla	0	stonefly	3	1.4%
Amphinemura	3	stonefly	2	1.0%
Isoperla	2	stonefly	3	1.4%
Pteronarcys	0	stonefly	1	0.5%
Trichoptera				
Cheumatopsyche	6	caddisfly	2	1.0%
Coleoptera				
Oulimnius	5	riffle beetle	19	9.0%
Promoresia	2	riffle beetle	16	7.6%
Diptera				
Chironomidae	6	midges	40	19.0%
Blepharicera	0	net-winged midge	2	1.0%
Hemerodromia	6	dance fly	1	0.5%
Palpomyia gr.	6	sand fly	2	1.0%
Probezzia	6	sand fly	1	0.5%
Prosimulium	2	black fly	16	7.6%
Total Taxa			23	100.0%
Total Individuals			210	

Metrics:	**Value**	**Score**
Richness (total taxa)	**23**	**8**
Modified EPT Index (PTV = 0 - 4)	**11**	**6**
Hilsenhoff Biotic Index	**2.75**	**8**
Percent Dominant Taxon (*Ephemerella* : PTV = 1)	**38.1%**	**8**
Percent Modified Mayflies (PTV = 0 - 4)	**45.7%**	**8**
Total Score		**38**
Percent Comparison to Reference		**95.0%**

>/= 92% = Exceptional Value
83% - 92% = High Quality
< 83% = Existing or Designated Use (Non-HQ or EV)

Key: PTV - Pollution Tolerance Value (PA DEP)

Benthic Macroinvertebrates collected from Toms Creek (Adams County) for the Friends of Toms Creek watershed group

Sample Station	**Toms - 2 (Toms Creek - Candidate)**			
Sample Date:	**March 22, 2020**			
Gear:	Kick Net: PA DEP IBI protocol - 200 specimen sub-sample			
Taxon	**PTV**	**Common name**	**Number**	**Percent**
Decapoda				
Cambarus	6	crayfish	2	1.1%
Ephemeroptera				
Baetis	6	mayfly	1	0.5%
Drunella	1	mayfly	15	7.9%
Epeorus	0	mayfly	10	5.3%
Ephemerella	1	mayfly	11	5.8%
Heterocloeon	2	mayfly	4	2.1%
Leucrocuta	1	mayfly	1	0.5%
Maccaffertium	3	mayfly	3	1.6%
Paraleptophlebia	1	mayfly	2	1.1%
Serratella	2	mayfly	5	2.6%
Plecoptera				
Acroneuria	0	stonefly	4	2.1%
Alloperla	0	stonefly	1	0.5%
Isoperla	2	stonefly	1	0.5%
Pteronarcys	0	stonefly	1	0.5%
Trichoptera				
Cheumatopsyche	6	caddisfly	3	1.6%
Hydropsyche	5	caddisfly	2	1.1%
Micrasema	2	caddisfly	1	0.5%
Neophylax	3	caddisfly	1	0.5%
Rhyacophila	1	caddisfly	2	1.1%
Stactobiella	2	caddisfly	17	9.0%
Coleoptera				
Optioservus	4	riffle beetle	3	1.6%
Oulimnius	5	riffle beetle	7	3.7%
Promoresia	2	riffle beetle	2	1.1%
Psephenus	4	riffle beetle	1	0.5%
Diptera				
Antocha	3	crane fly	1	0.5%
Chironomidae	6	midges	32	16.9%
Clinocera	6	dance fly	1	0.5%
Probezzia	6	sand fly	3	1.6%
Prosimulium	**2**	**black fly**	**52**	**27.5%**
Total Taxa			29	100.0%
Total Individuals			189	

Metrics:	**Value**	**Score**
Richness (total taxa)	**29**	**8**
Modified EPT Index (PTV = 0 - 4)	**16**	**8**
Hilsenhoff Biotic Index	**2.77**	**8**
Percent Dominant Taxon (*Prosimulium*: PTV = 2)	**27.5%**	**8**
Percent Modified Mayflies (PTV = 0 - 4)	**27.0%**	**5**
Total Score		**37**
Percent Comparison to Reference		**92.5%**

>/= 92% = Exceptional Value
83% - 92% = High Quality
< 83% = Existing or Designated Use (Non-HQ or EV)
Key: PTV - Pollution Tolerance Value (PA DEP)

Benthic Macroinvertebrates collected from Toms Creek (Adams County) for the Friends of Toms Creek watershed group

Sample Station	**Toms - 3 (Toms Creek - Candidate)**			
Sample Date:	**March 22, 2020**			
Gear:	Kick Net: PA DEP IBI protocol - 200 specimen sub-sample			
Taxon	**PTV**	**Common name**	**Number**	**Percent**
Nematoda	9	round worm	1	0.5%
Turbellaria				
Dugesia	7	flat worm	1	0.5%
Oligochaeta	10	segmented worms	1	0.5%
Hydrachnidia	7	water mite	1	0.5%
Ephemeroptera				
Acentrella	4	mayfly	1	0.5%
Baetis	6	mayfly	2	1.0%
Drunella	1	mayfly	12	5.8%
Epeorus	0	mayfly	9	4.3%
Ephemerella	1	mayfly	26	12.6%
Maccaffertium	3	mayfly	1	0.5%
Paraleptophlebia	1	mayfly	5	2.4%
Plecoptera				
Acroneuria	0	stonefly	4	1.9%
Alloperla	0	stonefly	1	0.5%
Amphinemura	3	stonefly	8	3.9%
Leuctra	0	stonefly	1	0.5%
Pteronarcys	0	stonefly	2	1.0%
Trichoptera				
Cheumatopsyche	6	caddisfly	1	0.5%
Diplectrona	0	caddisfly	3	1.4%
Rhyacophila	1	caddisfly	4	1.9%
Stactobiella	2	caddisfly	3	1.4%
Coleoptera				
Oulimnius	5	riffle beetle	7	3.4%
Diptera				
Chironomidae	6	midges	39	18.8%
Blepharicera	0	net-winged midge	1	0.5%
Chelifera	6	dance fly	1	0.5%
Hexatoma	2	crane fly	1	0.5%
Probezzia	6	sand fly	1	0.5%
Prosimulium	**2**	**black fly**	**70**	**33.8%**
Total Taxa			27	100.0%
Total Individuals			207	

Metrics:	**Value**	**Score**
Richness (total taxa)	**27**	**8**
Modified EPT Index (PTV = 0 - 4)	**14**	**8**
Hilsenhoff Biotic Index	**2.70**	**8**
Percent Dominant Taxon (*Prosimulium*: PTV = 2)	**33.8%**	**8**
Percent Modified Mayflies (PTV = 0 - 4)	**26.1%**	**5**
Total Score		**37**
Percent Comparison to Reference		**92.5%**

>/= 92% = Exceptional Value
83% - 92% = High Quality
< 83% = Existing or Designated Use (Non-HQ or EV)
Key: PTV - Pollution Tolerance Value (PA DEP)

Environmental Analysis Request/Chain of Custody

eurofins

Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # _____ Group # _____ Sample # _____

COC # 507520

Client Information

Client: FOTC	Acct. #:
Project Name/#: FOTC	PWSID #:
Project Manager: Scott Bush	P.O. #:
Sampler: Scott Bush	Quote #:
State where samples were collected:	For Compliance: Yes ☐ No ☒

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix: Soil ☐ Sediment ☐ Tissue ☒	Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐	Other: Macroinvertebrates	Total # of Containers	Analysis Requested: PADEP 2019 WQMP for Streams & Rivers	Preservation Codes
T-1	03/22/20	11:37		X			X		X	11
T-1 Dup	11	12:05		X			X		X	11
T-2	11	12:47		X			X		X	11
T-3	11	13:40		X			X		X	11
Carb-1	11	14:55		X			X		X	11

For Lab Use Only

FSC: _____

SCR#: _____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

Remarks

Ethanol 95%

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: Scott.Bush@GHD.com

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Scott Bush	03/23/20	-	Kelly Clouts	3/23/20	-
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time

EDD Required? Yes No

If yes, format: XLW Formatt

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:

UPS _____ FedEx _____ Other Hand

Temperature upon receipt _____ °C

Section 4
Metric Scoring and Selection

Scoring - The current DEP procedure compares five metrics from a candidate site to the same five metrics from a single reference site matched by type (riffle/run or glide/pool), size (stream order), gradient, and pH (alkalinity). Each metric uses a different scoring scale, so they must first be converted to the same scale using the normalizing scores listed in the table below. All five of both the candidate and reference metrics must be normalized using this table.

Biological Condition Scoring Criteria

Biological Condition Score	Taxa Richness (Candidate/ Reference)	*Modified EPT (Candidate/ Reference)	**Modified Hilsenhoff Index (Candidate- Reference)	% Dominant (Candidate- Reference)	%Modified Mayflies (Reference- Candidate)
8	>80.0%	>80.0%	<0.71	<11.0%	<12.0%
7	80.0 – 77.2%	80.0 – 75.8%	0.71 – 0.79	11.0 – 12.5%	12.0 – 15.9%
6	77.1 – 74.4%	75.7 – 71.5%	0.80 – 0.87	12.6 – 14.0%	16.0 – 19.9%
5	74.3 – 71.5%	71.4 – 67.2%	0.88 – 0.97	14.1 – 15.6%	20.0 – 23.9%
4	71.4 – 68.7%	67.1 – 63.0%	0.98 – 1.04	15.7 – 17.2%	24.0 – 27.9%
3	68.6 – 65.8%	62.9 – 58.7%	1.05 – 1.13	17.3 – 18.8%	28.0 – 31.9%
2	65.7 – 63.0%	58.6 – 54.4%	1.14 – 1.21	18.9 – 20.3%	32.0 – 35.9%
1	62.9 – 60.0%	54.3 – 50.0%	1.22 – 1.31	20.4 – 22.0%	36.0 – 40.0%
0	<60.0%	<50.0%	>1.31	>22.0	>40.0

* Pollution tolerant taxa removed

** Pollution tolerances modified from original publication

Taxa Richness = Total number of taxa.
Modified EPT Index = Total number of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) minus EPT genera considered to be pollution tolerant.
Modified Hilsenhoff Index – An index that reflects macroinvertebrate tolerance to organic pollution with zero the least tolerant and ten the most tolerant. The original Hilsenhoff tolerance scores have been modified and some added to reflect the behavior of taxa found in Pennsylvania.
Percent Dominant – The percent of the total abundance made up by the single most abundant taxon.
Percent Modified Mayflies – The percent of the total abundance made up by the total abundance of mayflies minus the pollution tolerant mayfly genera.

The numbers in the above table normalize the metrics to the same scoring scale (8 to 0). Each metric has equal weighting so the five can be summed to obtain a total score. The highest total score is eight (highest metric score) times five (number of metrics), or 40. The final step is to divide the candidate total score by 40 and multiply by 100 to obtain a percentage. This percentage determines the antidegradation status of the stream according to the values in the following table.

%Comparison of Candidate Score to Reference Score	Stream Classification Category
>=92%	EV
83-92%	HQ
<83%	Existing use or designated use (Non-HQ or EV)

To attain an EV classification, the percent comparison of the candidate to the reference must be equal to or greater than 92 percent.

In order to attain an HQ classification, the percent comparison of the candidate score to reference score must be between 83 and 92 percent. DEP believes that these criteria assure that the best streams in the Commonwealth receive either EV or HQ protection.

Example: The following table shows how the entire scoring system would work for a hypothetical candidate stream.

	Taxa Richness	Modified EPT	Modified Hilsenhoff	%Dominant	%modified mayflies
Reference	28	12	1.23	25%	40%
Candidate	23	9	1.57	37%	32%
Difference	82%	75%	.34	12%	8%
Score	8	6	8	7	8

The summed score of the candidate stream is 8 + 6 + 8 + 7 + 8 = 37. Thirty-seven is 93 percent of the 40 possible points, putting the candidate in the 92-100 percent range. The candidate stream is EV.

Metric Selection and Derivation of Scores - The metrics used in the comparison were carefully selected using the "box and whisker plot" process now outlined in *Rapid Bioassessment Protocols For Use in Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish* (Barbour et al.; EPA 841-B-99-002; July, 1999). Box and whisker plots are simply graphical representations of frequency distributions. The "boxes" represent the 25th, 50th (median), and 75th quartiles while the whiskers represent the range of more extreme values. The frequency distributions of 41 metrics were analyzed to determine their discriminatory power in identifying HQ and EV waters.

The available RBP samples were first divided into three groups depending upon the stream they were taken from. The three groups were EV, HQ, and non-antidegradation. For each metric, three side-by-side box and whisker graphs, each representing one of these groups, were plotted on a page. When the box and whisker plots are far apart on the vertical scale (little or no overlap), the metric has good discriminatory power. In other words, the values of the metric are noticeably different in EV, HQ, and non-antidegradation streams. Metrics where the three side-by-side box and whisker plots overlapped were eliminated because they did not differentiate between antidegradation and non-antidegradation samples.

The last consideration is the elimination of one metric from pairs of correlated metrics. If the Simpson Index and percent dominant metric have a correlation coefficient of 0.95, they convey the same information. Including them both in the final set of metrics means that the same information (in this case diversity of taxa) is counted twice. Deleting one of the metrics prevents this double counting. The

FRIENDS OF TOM'S CREEK

"This stream testing was financed in part by a grant from the Community Conservation Partnerships Program, Environmental Stewardship Fund, under the administration of the Department of Conservation and Natural Resources, Bureau of Recreation and Conservation. The grant was awarded through the South Mountain Partnership, with management oversight of the Appalachian Trail Conservancy.

We are a partner of the South Mountain Partnership, an alliance of organizations working to preserve and enhance the cultural and natural assets of the South Mountain Landscape in Central Pennsylvania. To learn more about the Partnership, please visit www.southmountainpartnership.org"

P.O. Box 611, Fairfield, PA 17320 www.friendsoftomscreek.org

APPENDIX B

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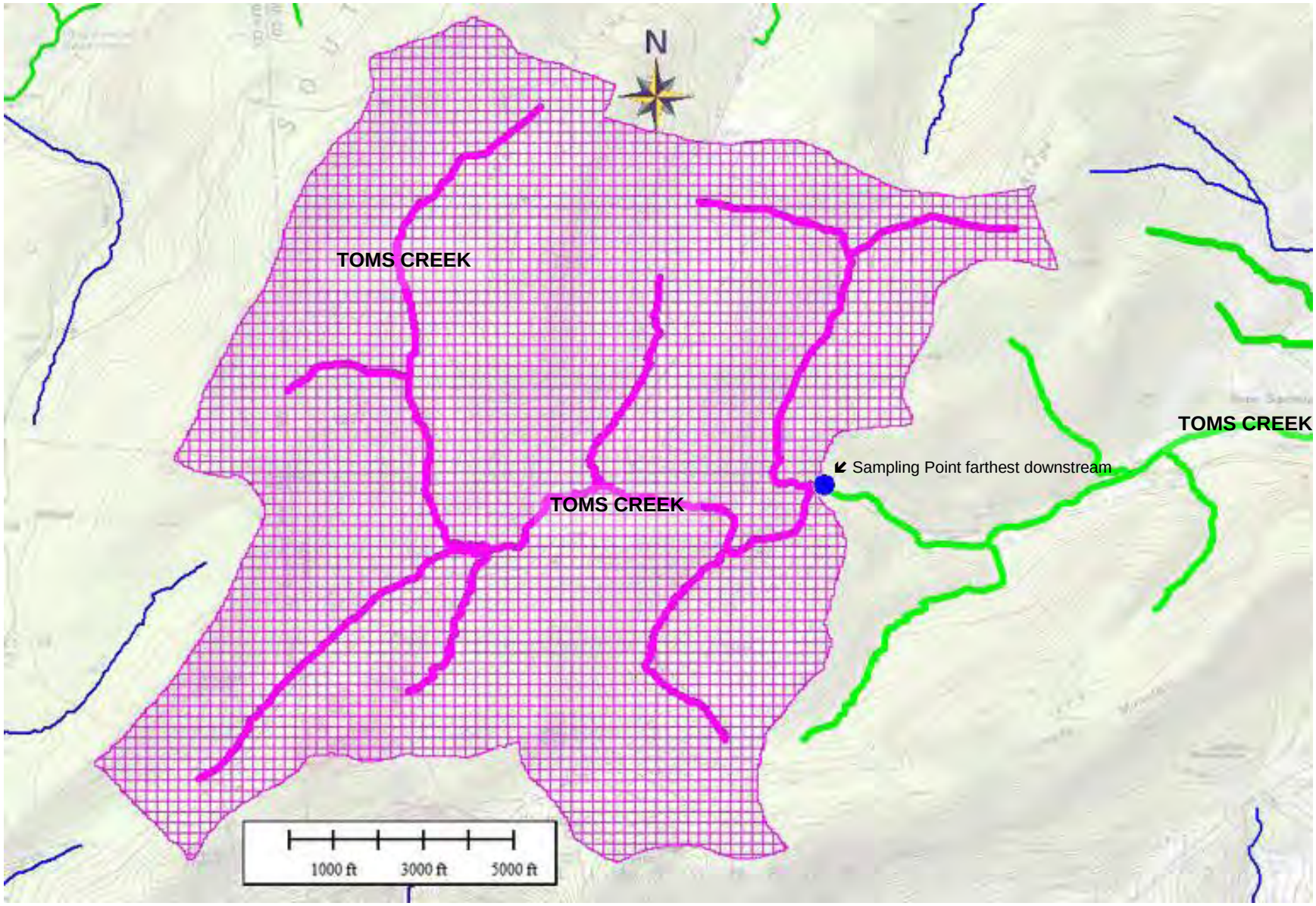
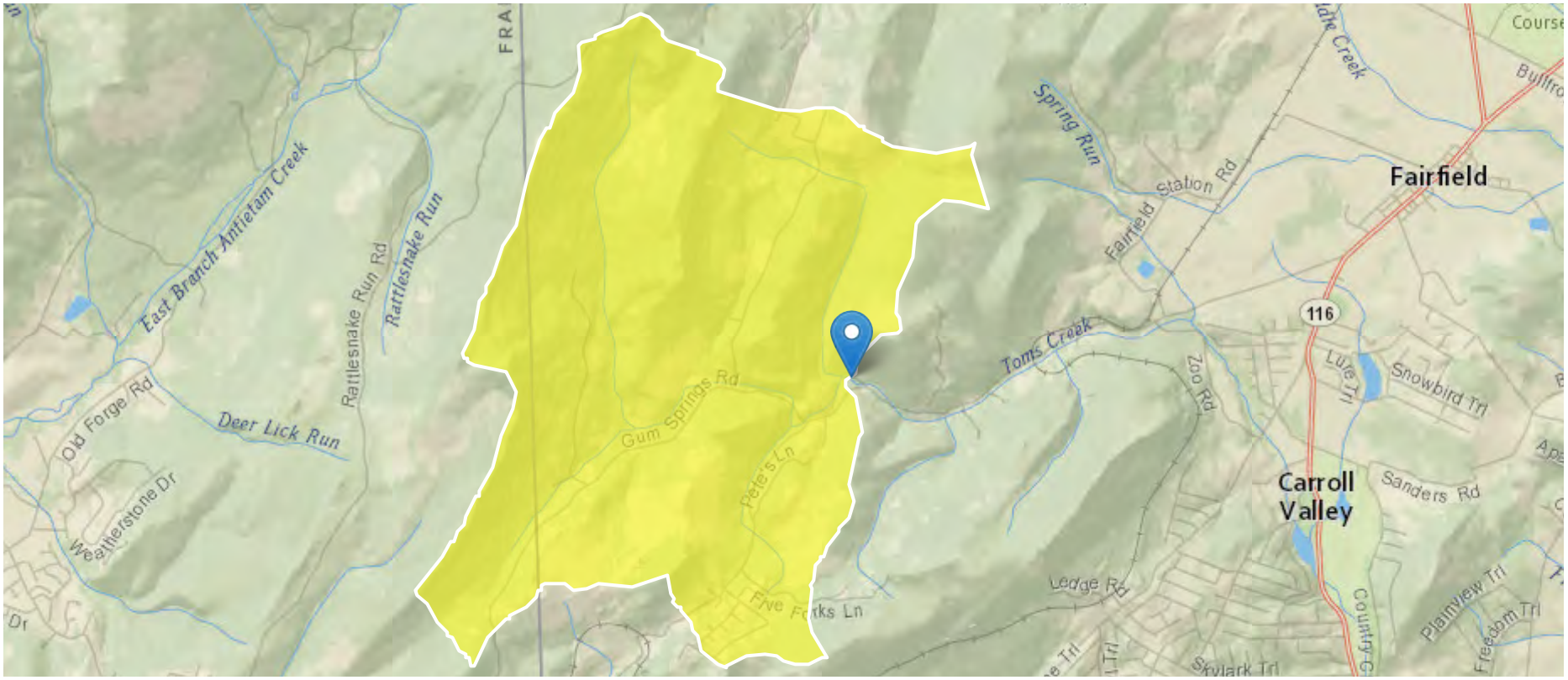


APPENDIX B: WATERSHED MAP. Identification of the 6.16-square mile Upper Toms Creek watershed (purple crosshatch) associated with the subject Petition, according to the USGS StreamStats, accessed 20 April 2020. https://streamstats.usgs.gov/ss/

StreamStats Report

Region ID: PA
Workspace ID: PA20200420173843332000
Clicked Point (Latitude, Longitude): 39.77152, -77.42880
Time: 2020-04-20 13:38:48 -0400

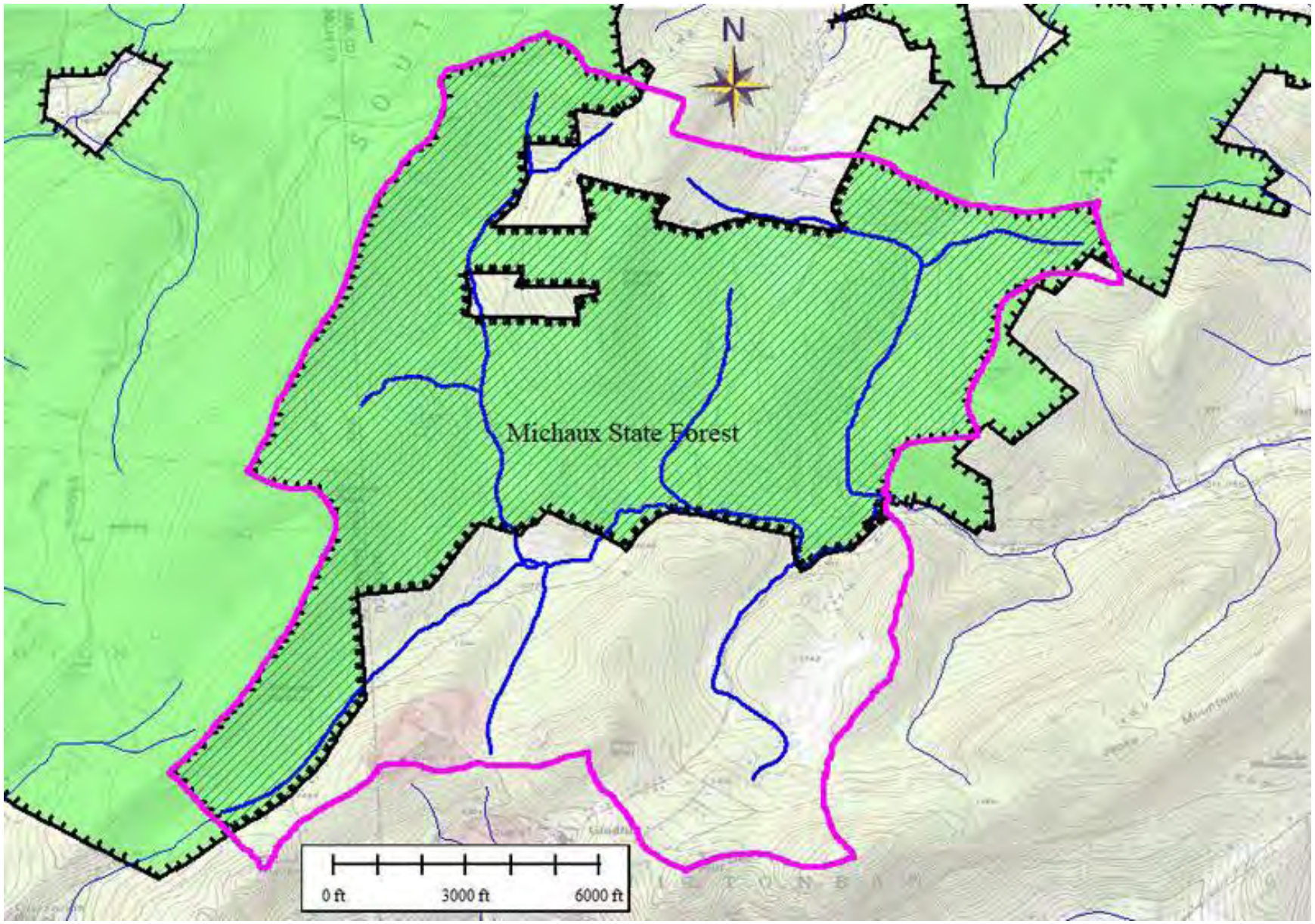


Basin Characteristics

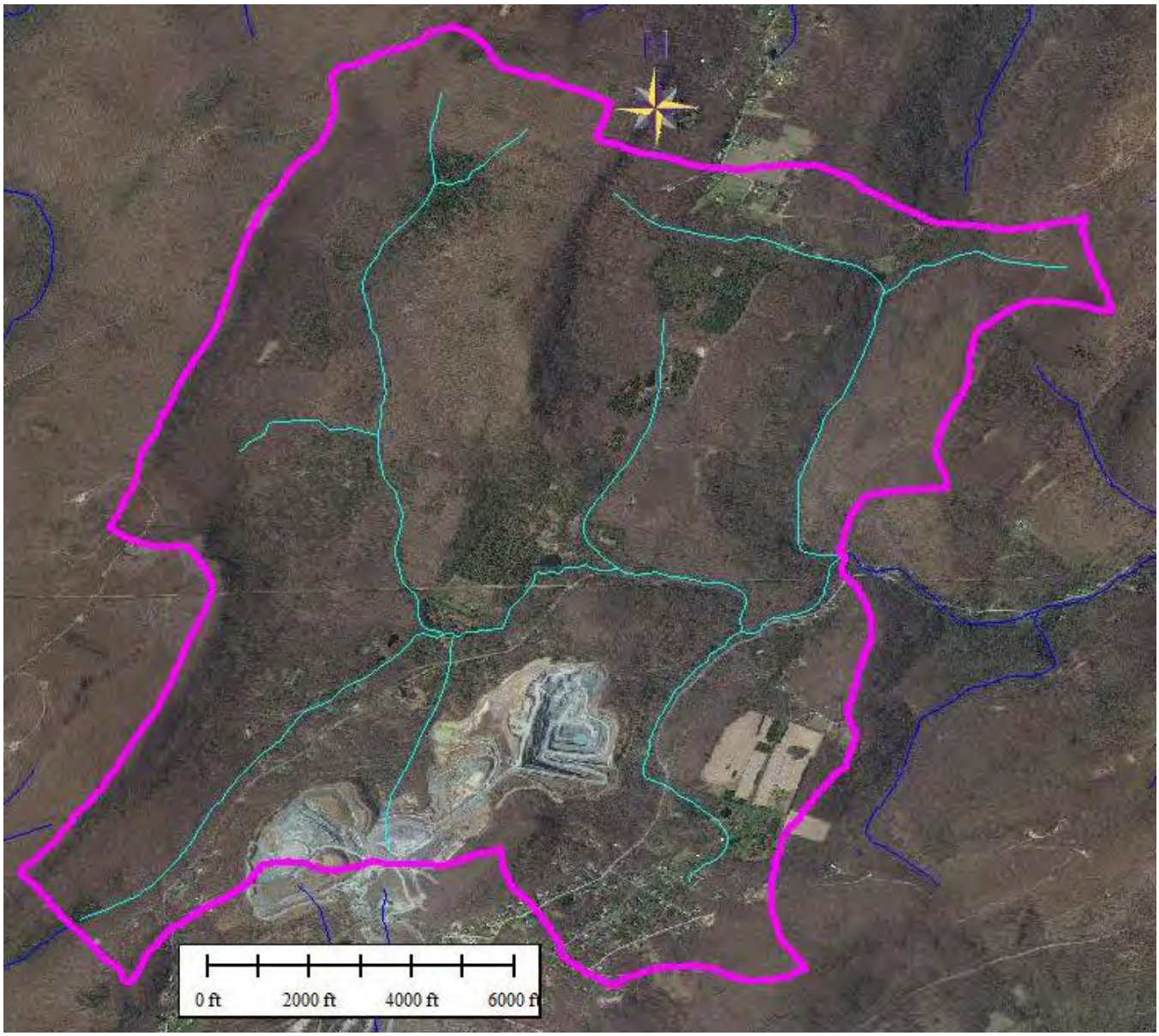
Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	9.4	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	9.6	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	47496.9	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	86040.1	meters
DRN	Drainage quality index from STATSGO	3.2	dimensionless
DRNAREA	Area that drains to a point on a stream	6.16	square miles
ELEV	Mean Basin Elevation	1297	feet
FOREST	Percentage of area covered by forest	96	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	1	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	6	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	6.18	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	1.42	percent
LONG_OUT	Longitude of Basin Outlet	-77.42877	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	60	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	48945	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	85795	meters
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	5	feet

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.56	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	9.59	miles
URBAN	Percentage of basin with urban development	1	percent

Application Version: 4.3.11



APPENDIX B: STATE FOREST Identification of the upper Toms Creek watershed (purple outline) and nearby sections of Michaux State Forest (green). Approximately 2,382 acres (61%, crosshatched) of the Petition watershed total (3,925 acres) are within State Forest lands.



APPENDIX B: LAND USES. Existing land use in the upper Toms Creek Petition watershed (purple outline), based on a 2018 color aerial photograph. Streams within the subject watershed are highlighted in light blue. Most of the watershed is forested (96% forest cover according to the USGS StreamStats calculation), and there is very little agriculture. The quarry in the southern section of the watershed is the primary developed use.

APPENDIX C

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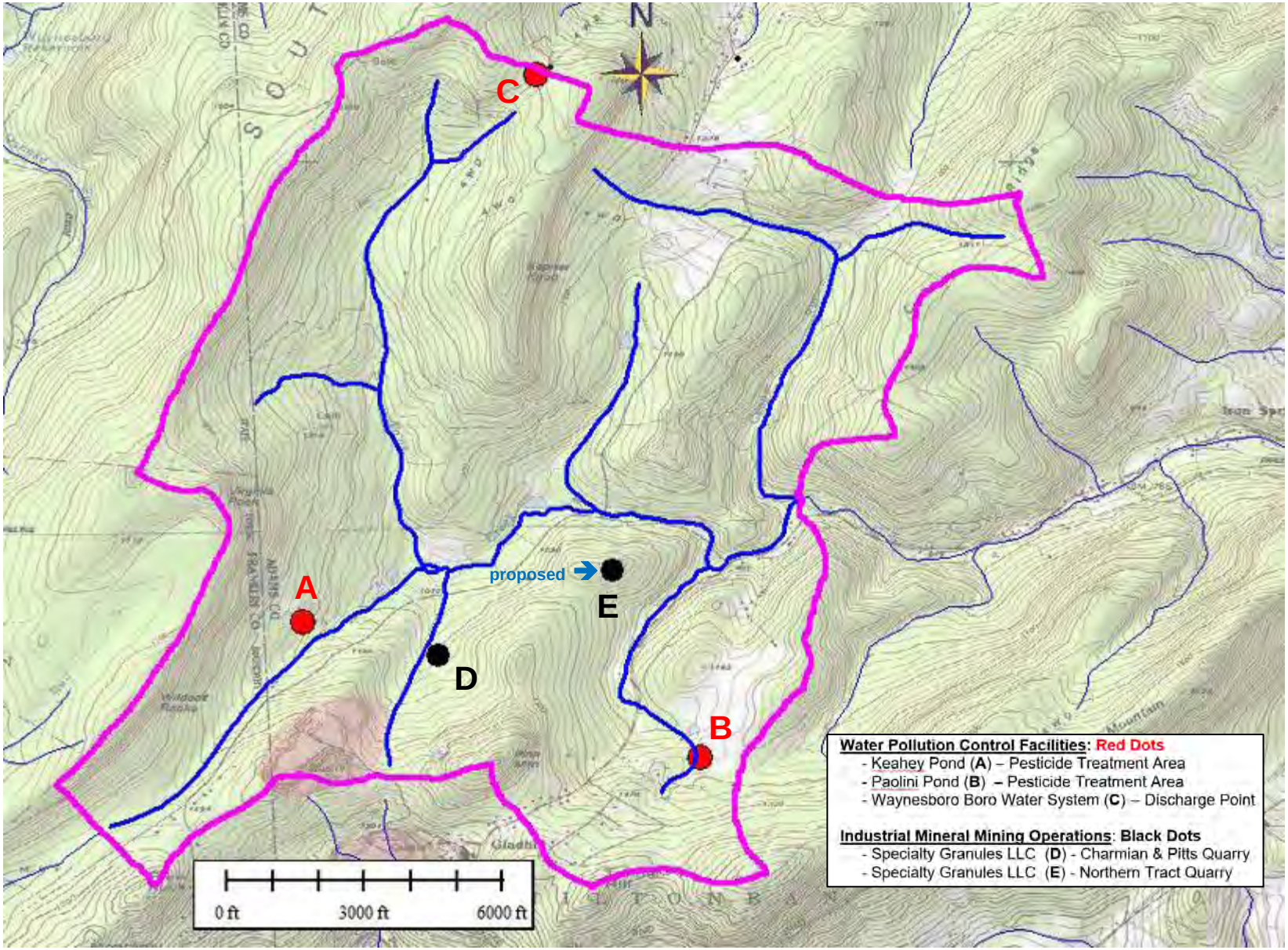

APPENDIX C. Outfalls and discharges in the upper Toms Creek watershed (purple outline), from Pennsylvania Spatial Data Access (PASDA). Shown here are three Water Pollution Control Facilities as of April 2020, and two Industrial Mineral Mining Operations as of April 2020. All are existing, except **E** which is listed as *"proposed, awaiting authorization*"

APPENDIX D

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29 January 2019

Mr. Ryan E. Hamilton Esq.
Fair Shake Environmental Legal Services
3495 Butler Street, Suite 102
Pittsburgh, PA 15201

RE: **Client Confidential**
Environmental Review of Proposed SGI Mine/Quarry of Toms Creek
By Email: **rhamilton@fairshake-els.org**

Dear Mr. Hamilton:

Princeton Hydro, LLC has done a review of the plans and documentation related to the Proposed Mine Expansion for Specialty Granules, Inc. Specialty Granules Incorporated (SGI) operates a surface mine/quarry within the watershed boundaries of Toms Creek with the nearby town of Fairfield to the north in Hamiltonban Township, Adams County, Pennsylvania. SGI has submitted a proposal and is seeking permits to expand the mine. If so permitted, this will result in an environmental threat to the existing water quality and environmental quality of Toms Creek, as well as the headwater tributaries, forested lands, wetlands and riparian areas adjacent to and down gradient of the proposed expansion. Toms Creek is a PADEP listed High Quality stream. The materials that were the subject of Princeton Hydro's review consisted of the following:

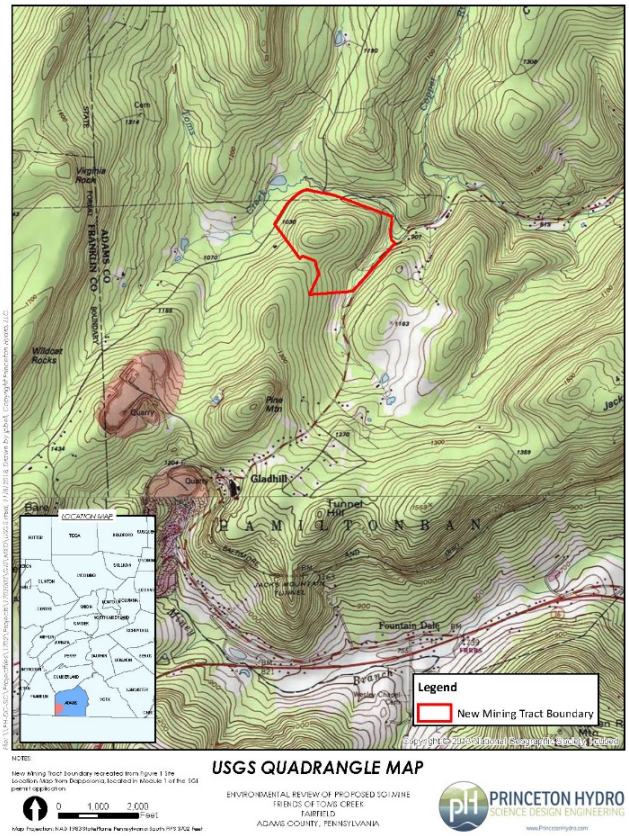
1. Large Noncoal Surface Mining Permit Drawings and Site Plans, Northern Tract Quarry, Charmian Site, Specialty Granules, LLC prepared by D'Appolonia Engineers 19 October 2016, Sheets Natural Features Plan, Sheet 1-43.
2. Large Noncoal Surface Mining Permit Application, Northern Tract Quarry, Charmian Site, Specialty Granules, LLC, Modules 1-24, 15 December 2017 revised 17 April 2018.
3. PA DEP Northern Tract Quarry Review Letter to SGI of technical deficiencies, 6 March 2018.
4. PA DEP Letter to Friends of Toms Creek in response to concerns of SGI mining expansion, 13, September 2018.
5. SGI response to public comments received at July 23, 2018 public meeting and related period for submission of written comments; dated Nov 12, 2018.

We have also reviewed various other documents and materials listed in Section 6.0 Works Cited. Princeton Hydro's technical review of all of the materials focused on the acute and long-term environmental impacts of the proposed development stemming from site clearing, grading, changes in stormwater runoff volume and quality, and other related land development activities. Our review also encompassed the proposed development's projected impacts on off-site, downstream ecosystems.

1.0 Existing Site Conditions

Specialty Granules LLC (SGI) extracts non-coal materials through existing Pennsylvania Department of Environmental Protection (PA DEP) Surface Mine Permits at the Charmian Quarry complex located north of the town of Blue Ridge Summit in Hamiltonban Township, Adams County, Pennsylvania. The Charmian Site generally consists of an active quarry (Pitts Quarry – SMP 01930302), an inactive quarry (West Ridge Quarry – SMP 6477SM5, which is in the reclamation phase), stockpile storage areas, rock crushers, manufacturing plants, and related erosion and sediment control/stormwater control

features (e.g. sediment ponds and traps, collection ditches, and other best management practices features). SGI extracts metabasalt and related lithologies at the Charmian Site to produce multiple rock products for SGI customers. The main product is manufactured roofing granules that are used to coat asphalt roofing shingles. SGI is currently applying for a new surface mine permit to expand its permitted quarry operations to the north onto the "Northern Tract," an approximately 112-acre parcel contiguous to the Pitts Quarry. The 112-acre Northern Tract permit area is intended to serve as an expansion of the active Pitts Quarry.



The permit limits of the Northern Tract Quarry are presented on the Proposed Site Location Map (Figure 1). The proposed mineral extraction area at the Northern Tract permit area will be limited by two surrounding buffers, referred to as a maintained buffer and an operational buffer. No activities other than to add or replace damaged/dead trees are permitted to occur within this area. The Maintained Buffer is a minimum distance of 300 feet from Toms Creek. Within the additional 150-foot wide operational buffer, only non-extractive mine support activities will be permitted, such as stormwater/erosion control systems, access roads, and temporary stockpiles. The location of these buffer areas is supposed to limit the area that will be disturbed for mineral extraction activities.

Figure 1 Proposed site location topographic map

Tom's Creek is a nearly 21-mile long tributary of the Monocacy River that flows from Pennsylvania into Maryland and is part of the Potomac River watershed, ultimately emptying into the Chesapeake Bay. Tom's Creek originates along South Mountain within Michaux State Forest and flows southward through Adams County, PA to join the Monocacy River in Frederick County, Maryland. The main stem of Tom's Creek and the unnamed tributaries run on either side (to the North and Southeast) of the proposed Northern Tract expansion. Tom's Creek is a pristine trout stream that is located in the headwaters of the Potomac River Watershed, and is currently considered to be High Quality (HQ) for cold water fish (CWF), though some consideration has been made toward classifying it as one with Exceptional Value (EV). Much of the land is currently forested upland or minorly developed open space. Disturbance to this land will have a much more noticeable impact than if it were already designated for other land uses.

2.0 Water quality, ecology, and general environmental status of Toms Creek, surface water located within and immediately down gradient of the SGI operation.

2.1 Tom's Creek as a Stream of High Quality-Cold Water Fishes:

As mentioned previously mentioned, Tom's Creek is considered an HQ water and may be considered further for EV status based on 25 PA Code § 93.4. The following outlines that code:

25 Code § 93.4 (a) *Qualifying as a High Quality Water.* A surface water that meets one or more of the following conditions is a High Quality Water.

(1) *Chemistry*.

(i) The water has long-term water quality, based on at least 1 year of data which exceeds levels necessary to support the propagation of fish, shellfish and wildlife and recreation in and on the water by being better than the water quality criteria in § 93.7, Table 3 (relating to specific water quality criteria) or otherwise authorized by § 93.8a(b) (relating to toxic substances), at least 99% of the time for the following parameters:

dissolved oxygen	aluminum
iron	dissolved nickel
dissolved copper	dissolved cadmium
temperature	pH
dissolved arsenic	ammonia nitrogen
dissolved lead	dissolved zinc

(ii) The Department may consider additional chemical and toxicity information, which characterizes or indicates the quality of a water, in making its determination.

(2) *Biology.* One or more of the following shall exist:

(i) *Biological assessment qualifier.*

(A) The surface water supports a high-quality aquatic community based upon information gathered using peer-reviewed biological assessment procedures that consider physical habitat, benthic macroinvertebrates or fishes based on *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish*, Plafkin, et al., (EPA/444/4-89-001), as updated and amended. The surface water is compared to a reference stream or watershed, and an integrated benthic macroinvertebrate score of at least 83% shall be attained by the referenced stream or watershed.

25 Code § 93.4 (b) *Qualifying as an Exceptional Value Water*. A surface water that meets one or more of the following conditions is an Exceptional Value Water:

(1) The water meets the requirements of subsection (a) and one or more of the following:

(i) The water is located in a National wildlife refuge or a State game propagation and protection area.

(ii) The water is located in a designated State park natural area or State forest natural area, National natural landmark, Federal or State wild river, Federal wilderness area or National recreational area.

As an HQ water, Toms Creek is protected. SGI notes that aluminum, nitrogen, and iron were found in stormwater runoff at their active Pitts Quarry and could likely end up in Tom's Creek if the Northern Tract is disturbed for expansion. It should be noted that SGI did not show any kind of macroinvertebrate or fish surveys to indicate any species presence in Toms Creek, just the 2 monitoring samples that only tested for limited parameters. This lack of data underscores the possible habitat that Tom's Creek provides as an HQ water. Finally, the headwaters of Toms Creek occur in the Michaux State Forest could make it eligible to being classified as being an Exceptional Value stream according to 25 Code § 93.4(b).

2.2 Ecological Impact

In addition to affecting the waters of Tom's Creek, much of the surrounding habitat that is supported by the stream would also be negatively impacted. Of particular note are threatened and endangered species like the Indiana Bat, Timber Rattlesnake, and the Nodding Trillium.

2.2.1 Indiana Bat

Almost a quarter (23.8%) of the more than 1100 described species of bats are classified as threatened (Mickleburgh et al. 2002) and many threats to bat populations around the world are linked to human activities. A major threat to bats worldwide is the loss of roosting and foraging habitat, including loss or fragmentation of woodlands (Russell, et al. 2009).

The Pennsylvania Game Commission has identified Adams County, PA as summer habitat for nationally endangered and state protected and endangered Indiana Bat (Myotis sodalist). The bat survey referenced by SGI reports mist nest surveys done at the abandoned historic copper mine on the property to see if it qualified for potential hibernaculum and if any bats were present. No Indiana bats were found; however, Adams County is summer roosting habitat (PGC, 2018). Indiana bats roost in trees and roosts have been reported within forests above and below the canopy and among isolated trees or single trees in open areas such as wetlands, fields, and pastures with correspondingly wide ranges in solar exposure (Cope 1977). The mist netting was done in early-mid October targeting the copper mine. Since Adams county is documented summer range, and the woodland habitat that SGI will deforest for mining activity would support Indiana bat roosting habitat, we would urge more sampling to be done within the property boundary in the summer months.

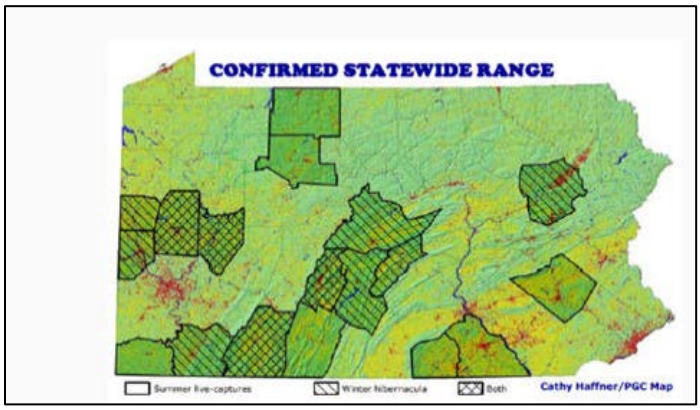


Figure 2. Confirmed Range of Indiana Bat in Pennsylvania

During the mist net survey, 1 tri-colored bat (*Perimyotis subflavus*) was collected. This provides evidence as potential hibernaculum for this species of bat. *P. subflavus* is currently under review for U.S. Endangered status. The PA Game Commission has determined that cave bats have lost upwards of 97% of their historic populations in Pennsylvania and their reproduction rate of one pup per female per year is not sufficient to achieve population recovery (PGC, 2018).

2.2.1 Timber Rattlesnake

The Timber Rattlesnake (*Crotalus horridus*) is listed on Pennsylvania's Wildlife Action Plan as a species of immediate concern. It is one of seven reptiles in this highest priority tier. It is therefore protected under specific regulations by the Pennsylvania Fish & Boat Commission (PFBC). New regulations took effect in 2007 to increase the protection for the species.

According to a timber rattlesnake habitat assessment conducted on the Northern Tract, Wildlife Specialists determined that low potential/marginal potential denning and gestating habitat for *C. horridus* does exist within the disturbance area of the proposed Northern Tract Project. No timber rattlesnakes were observed during presence/absence surveys of the identified potential denning habitat. Timber rattlesnakes do not appear to be utilizing the proposed Project disturbance area for over-wintering/hibernacula. However, it was noted in the findings that portions of the Project area may be utilized by timber rattlesnakes for basking and foraging. The test only occurred on 4 different occasions from April-May and not even in the warmest months of the year when foraging and basking activity would be greater.

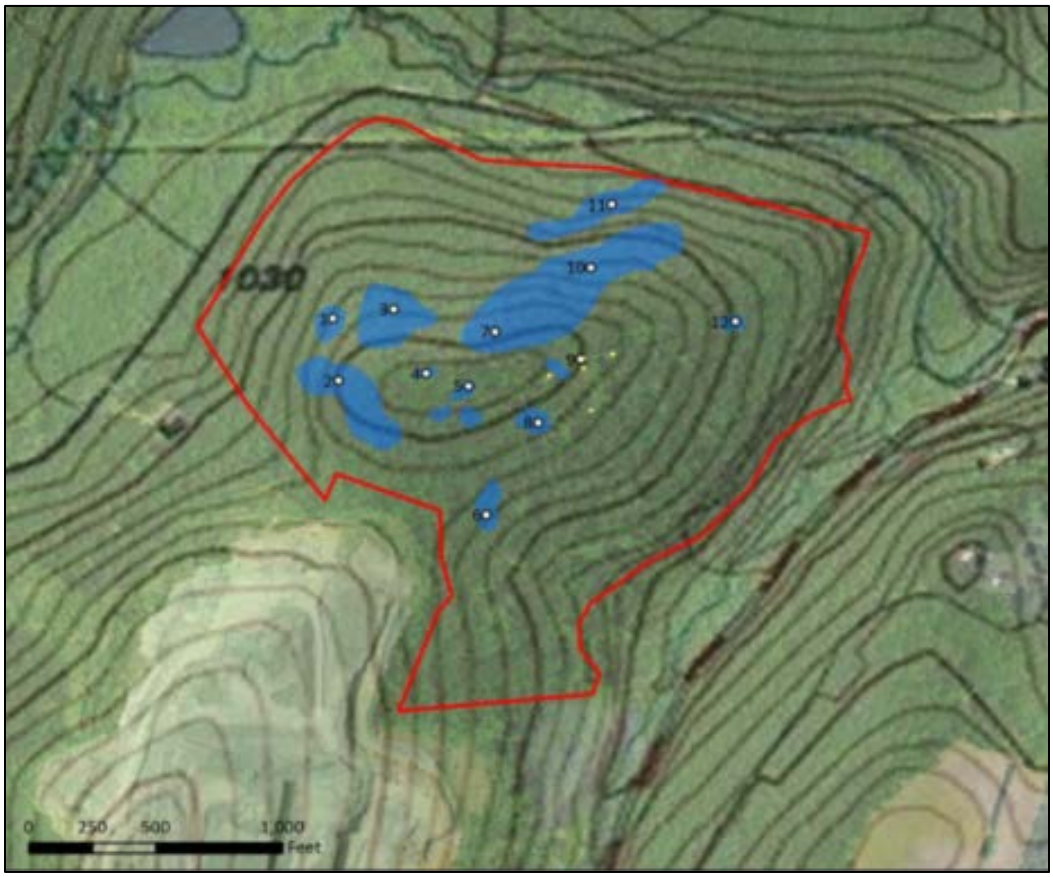


Figure 3. Potential denning habitat as indicated by Wildlife Specialists LLC (Blue polygons).

2.2.2 Bog Turtle: Review from Skelly and Loy

The bog turtle (*Glyptemys muhlenbergii*) is a habitat specialist that relies on early successional, groundwater-driven, emergent wetlands. Primary bog turtle habitat typically consists of wetlands with wet, mucky soils, and open, sunny, emergent vegetation. The classic example of bog turtle habitat is a spring-fed meadow with dominant vegetation consisting of low pedestal-forming grasses and sedges, often containing a scrub-shrub wetland component, and with soft mud or "mucky" soils. This turtle is listed federally as threatened and in PA as Endangered.

Based on the landscape position and setting of these habitats, lack of supporting vegetative structure, 80-100% canopy closure from the mature forest setting, and the lack of supporting soil structure/subterranean tunnels, the aquatic resources identified within the Northern Tract were determined not to support typical habitat conditions for the bog turtle. USFWS/PFBC Phase I Bog Turtle Habitat Evaluation Field Forms documenting the characteristics of the identified wetland habitats on the Northern Tract are included the field survey report; no amphibian or reptile fauna were observed during the field investigation of December 16, 2015. However, most amphibian and reptile activity is minimal that time of year and results would like be different had a survey been done during warmer months. A cursory review of aquatic habitats within approximately 300 feet of the Northern Tract boundary identified potential supporting habitat conditions for the bog turtle within sections of a large wetland complex associated with the riparian corridor of Toms Creek on the Michaux State Forest property to the north.

A report by Skelly and Loy mentions that the Northern tract was determined not to support typical habitat conditions for the bog turtle, however in their "Rationale of Phase 1 Bog Turtle Habitat Evaluation (p. 95 module 1)" it is indicated that for every Wetland (A,B,C,& D) "*Despite groundwater and marginal mucky substrate conditions, the habitat was not regarded as potential species habitat due to the lack of supporting vegetative structure, 80%-100% canopy closure from mature forest setting, and lack of supporting soil structure/subterranean tunnels". H*owever, the presence of skunk cabbage (*Symplocarpus foetidus*) or Jewelweed (*Impatiens spp*.) was noted and in Wetland D, both of these species were present along with sedges, which have all been documented to support bog turtle habitat (Barton and Price 1955; Arndt 1977; Taylor et al. 1984; Herman and George 1986; Carter et al. 1999, 2000).

Photographs taken of Wetland D do not show dense canopy cover and evidence indicates the presence of supporting vegetative structure for Bog Turtle habitat. There are also year-round saturated soils based upon the surveyor's field sheets. We believe that a Phase II survey is warranted based on the surveyor's own indication of vegetative and hydrological structure conducive to bog turtle habitat, especially for Wetland D. The federal recovery plan for bog turtles mandates no impact to habitat.

2.2.3 Nodding Trillium

A large, previously characterized population of Nodding Trillium (*Trillium cernuum*) was redelineated within the confines of the project study area associated with the SGI Northern Tract Development Project. The PA Biological Survey considers Nodding Trillium to be a species of special concern and is protected. The previous Nodding Trillium survey was undertaken to update information collected in 2012 by representatives of AECOM

and to map the current extent of the population. Results of this effort show a strong overlap between surveys with a few minor exceptions.

Nodding Trillium is a "part shade-shade" plant; 18 out of the 152 individuals are in the operational buffer and will be directly impacted (Figure 4). The excavation of the deciduous forest for mining activity will severely jeopardize the habitat of the biggest Nodding Trillium population in the state. However, the number of Nodding Trillium affected may be much greater based on SGI's own indication on Page 14-7 of module 14 that "Approximately 65% of the existing contributory drainage area to two hillside-associated wetland habitats within the Northern Tract Quarry mine permit boundary, Wetland C and Wetland D, may be removed as a result of the ultimate quarry development." If these wetlands' associated drainages areas are removed, then so will more of the Nodding Trillium but also hydrologic contributions to the unnamed tributary of Toms Creek which runs directly through Wetland C and on the eastern border of Wetland D. If the 2 wetlands are altered, then the tributary to Toms Creek and the Nodding Trillium population will experience much more detrimental effects from Quarry development.

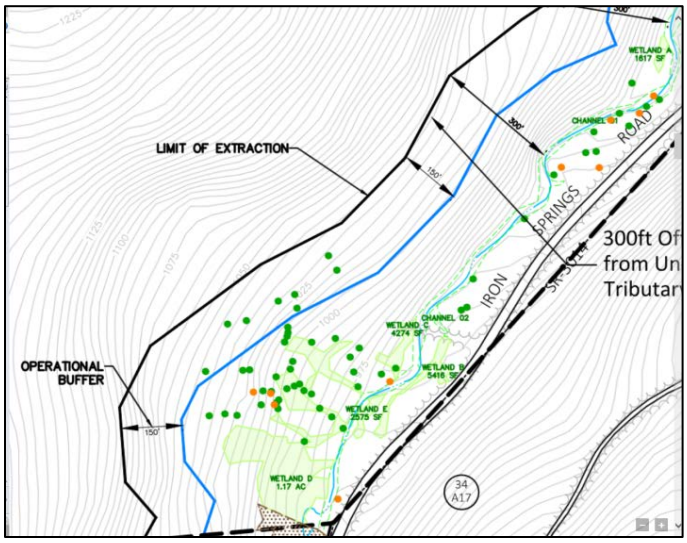


Figure 4. Nodding Trillium locations on site

3.0 Capacity and functionality of the storm water runoff management system proposed by SGI to properly treat and control runoff generated from the mine site prior to its discharge to Toms Creek and its headwaters.

3.1 Hydrology

SGI reports in Module 8-14 that possible hydrological consequences will occur as a result of mining activities on the permit area and the adjacent area (includes Tom's Creek):

There is a potential for water loss as a result of both the reduction in the run-off area (watershed) and the predicted decrease in elevation of the water table (especially in the western edge of Wetland D) adjacent to Wetland D caused by the dewatering of the proposed Northern Tract Quarry

Such changes in hydrology pose a direct threat to the wetlands and resident biota.

28. Conventional and Nonconventional Pollutants. For each of the following constituents, check the boxes for those that you expect to be present in the discharge. (EPA Table IV)

☐ Bromide	☒ Nitrogen, Total Organic	☐ Sulfite	☒ Iron, Total
☐ Chlorine, Total Residual	☐ Oil and Grease	☐ Surfactants	☒ Magnesium, Total
☒ Color	☐ Phosphorus, Total	☒ Aluminum, Total	☐ Molybdenum, Total
☐ Fecal Coliform	☐ Radioactivity	☒ Barium, Total	☒ Manganese, Total
☐ Fluoride	☒ Sulfate	☐ Boron, Total	☐ Tin, Total
☒ Nitrate-Nitrite	☐ Sulfide	☐ Cobalt, Total	☒ Titanium, Total

For new outfalls, for each constituent checked above (those that you expect to be present) provide the estimated daily maximum concentration, daily average concentration and the source of the information on an attachment. For existing outfalls, report quantitative data for those checked.

The above-checked constituents have been detected in at least one sample of stormwater runoff at adjacent Pitts Quarry at low concentrations (in naturally occurring ranges). No agricultural land use exists in the permit area and no municipal wastewater is present which are the sources of many of these pollutants.

Figure 5. Pollutants anticipated on the project site by SGI; Module 2, Pg 4 (8/2014)

SGI indicates that the selected pollutants above (Figure 5) have been detected in "at least one" sample of stormwater runoff. However in the revised modules (8.1(a)), water tests are included but do not show tests for the pollutants that were marked as present in their other quarry such as Titanium, Barium, Nitrogen, Nitrates, or Color. In section 8.4 of revised modules (12/2014), it is reported as no contamination having occurred at the West Ridge and Pitts Quarry. SGI indicates "natural ranges" of these pollutants are occurring with no measured values. SGI also continually asserts that these pollutants are from agricultural usage, but there is no agricultural activity within the area. The source of the pollutants is unclear, since SGI is not located in an area with much agriculture.

A specific pollutant that SGI noted to be present in their adjacent Pitts Quarry is Selenium. They estimate that <0.01mg/L (or <10µg/L) was present. EPA (2002) determined "*Mn, Fe, Al, and Se can become further concentrated in stream sediments, and Se bioaccumulates in organisms. A survey of 78 MTM/VF (Mountain-Top Removal/ Valley Fills) streams found that 73 had Se water concentrations greater than the 2.0 µg/L threshold for toxic bioaccumulation*." Some of the toxic effects of Se accumulations is reproductive failure, physical deformity, and mortality of aquatic organisms. SGI/ Skelly and Loy did not conduct any biological sampling of fish species or macroinvertebrates of Toms Creek even though it is a high quality CWF/MF. Without any background sampling on biodiversity in Toms Creek or its unnamed tributaries, degradation from harmful pollutants like Se will not be accurately quantified. "Mountaintop mining (MTM) affects chemical, physical, and hydrological properties of receiving streams, but the long-term consequences for fish-assemblage structure and function are poorly understood." (Hitt and Chambers 2014).

Further, copper is large component of SGIs processing and is present in the by products that end up in the nearby waterways, even if first being discharged into a retaining pond. Copper is used to kill algae and prevent it from growing on the shingles produced from granules mined at this facility. Copper is a known highly toxic substance to more than algae, but also fish and other aquatic organisms. Any introduction of copper into the environment would be significantly detrimental to the health of the ecosystem with a stream of high quality.

Figure 6. A) Upstream sample from Tom's Creek B) Downstream sample from unnamed tributary of Tom's Creek

The water monitoring reports indicate that Skelly and Loy had tested for flow (GPM), static Water Elevation, Field pH, Laboratory pH, Suspended solids (mg/L), Total dissolved solids (mg/l), specific conductance (uS/m), Field Temp (C°), Alkalinity (mg/l), Acidity (mg/l), Iron (mg/l), Manganese (mg/l), Aluminum (mg/l), and Sulfate (mg/l). These tests were conducted 6 different times from 7/2016-12/2016 and then 6 different tests were conducted from 9/2017-2/2018 that only included "Flow (GPM) or Static Water Elevation" and no other parameters. Water quality testing should be consistent and those parameters need to be collected and evaluated to show proper, accurate comparison.

3.2 *Sedimentation Pond Capacity*

The Northern Tract pond is intended to primarily serve as runoff control during initial phase on site development. SGI states in the Response to Public Comments that it is meant to collect run-off from 43.4 acres of a 90-acre watershed, nearly half of all runoff that normally goes to Toms Creek. This represents a significant change in hydrology, which is not compliant with Chapter 93 HQ water protections. Once the development of the proposed Northern Tract is complete, the collection ditches that are built to convey stormwater to the ponds, and from the Northern Tract Pond to Pitts Quarry, will be eliminated so runoff will drain just into Pitts Quarry instead of into Toms Creek. This creates a long-term impact to Toms Creek and nearby wetlands by eliminating that runoff. Further, the remaining runoff that drains to Pitts Quarry will eventually end up in existing sedimentation pond. Calculations will show that the existing stormwater control is not designed for this new source of input and is undersized, making unintentional discharge inevitable with storm events.

Currently, SGI has to drain the sediment pond by way of pump just before a storm event is predicted; the sediment pond is normally a passive discharge. If further inputs from runoffs is added, as stated by SGI in the Response to Public Comment, then the additional stormwater from the expansion will be require more active pumping discharges. This will not allow for solids to settle out and create more materials to be discharged to Toms Creek more frequently.

3.3 *Greenstone and metabasalt permeability*

SGI emphasizes the lack of permeability of greenstone and metabasalt in the area. This indicates that wells in the area may be affected if fractured, potentially as a result of blasting; there is already poor permeability resulting in poor yields for wells thus making them more sensitive to change. Disturbance by blasting and the existence of fault lines, fissures, and cracks could result in leaching of contaminants that might affect not just Toms Creek, but also water wells.

4.0 Modeling of existing condition pollutant (sediment, phosphorus, and nitrogen) load and post-expansion (sediment, phosphorus, and nitrogen) pollutant load to the creek from the mine site.

4.1 Methodology

Watershed based nutrient loading is often times the largest contributor of nutrients and sediments to the receiving stream. The watershed area and land use, in conjunction with the soils and slopes which comprise the watershed, are all prime determinants of the magnitude of nutrient loading to a stream system. For the purpose of calculating the watershed based nutrient load Princeton Hydro utilized the Unit Areal Loading (UAL) approach. The UAL approach is the recommended pollutant modeling technique as per 40 CFR Part 35, Appendix A, the USEPA's "Guidance for Diagnostic-Feasibility Studies." This modeling approach is widely used by both USEPA and PADEP, and Princeton Hydro has applied it to compute the nutrient and sediment loads for well over 200 waterbodies located throughout the mid-Atlantic and New England states. The unit areal loading modeling approach is based on the premise that land use activities throughout a watershed have a direct impact on nutrient release and transport to a receiving waterbody. Essentially, those land uses which are disturbed (i.e. urban, commercial, and agricultural lands) serve to transport more pollutants to a receiving waterbody than those which are undisturbed (i.e. forest and wetlands). For the application of this model Princeton Hydro first utilized permit data (Figure 1, Site Location Map, Module 1 of SGI permit application) to recreate the project site boundary.

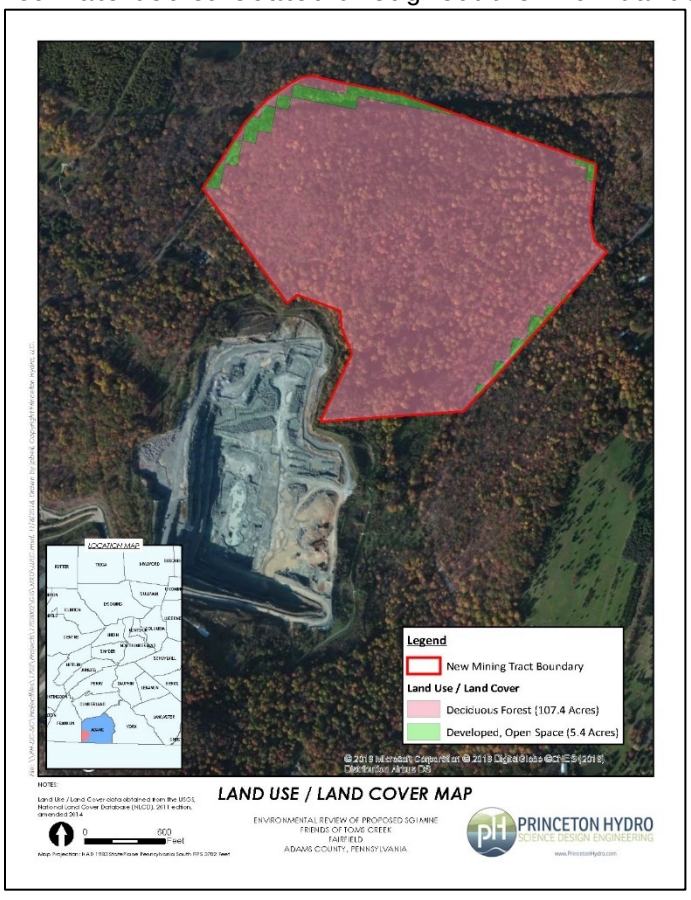


Figure 7. Project area Land Use/Land Cover Map topography

Following this delineation land use / land cover data was clipped to this boundary. The land use data utilized for site characterization was the 2011 National Land Cover Database (Amended in 2014) provided via the United States Geologic Survey (USGS). This information was then utilized as the basis for the selection of pollutant export coefficients, in the units of (Kilogram of pollutant / Hectare / Year), which were most suitable for the project area given prevailing soils, slopes, geology, and climatic conditions. Sources of export coefficients chosen for the project area were derived primarily from the scientific literature which included but was not limited to those published by Reckhow, 1980 and Uttomark et al, 1974.

4.2 Modeling Results

The results of the UAL analysis are hereby presented in tables 1 through 3:

Table 1: Existing Conditions Analysis

Existing Conditions Analysis			Coefficient			Load		
	Acres	Ha	TN (kg/ha/yr)	TP (kg/ha/yr)	TSS (kg/ha/yr)	TN (kg/yr)	TP (kg/yr)	TSS (kg/yr)
Developed, Open Space	5.53	2.24	7	0.3	750	15.68	0.67	1,679.63
Deciduous Forest	107.39	43.46	2.5	0.2	250	108.65	8.69	10,865.30
Sum to Toms Creek	112.93	45.70				124.33	9.36	12,544.94

Existing conditions analysis shows a load of 124.33 kg/yr of total nitrogen, 9.36 kg/yr of total phosphorus and 12,544.94 kg/yr of sediment to Tom's Creek. After conducting the existing conditions analysis, Princeton Hydro computed the nutrient load under a 'transitional' phase where all vegetation was removed over 34.4 ha (85 acres). Stormwater derived under the disturbed area (34.4 ha) will be shunted to the Pitts Quarry and subsequently treated via retention basins. The loading to Tom's Creek and Miney Branch, under the transitional phase, is described in table 2.

Table 2: Transitional Conditions Analysis

Transitional Conditions Analysis			Coefficient			Load		
LULC	Acres	Ha	TN (kg/ha/yr)	TP (kg/ha/yr)	TSS (kg/ha/yr)	TN (kg/yr)	TP (kg/yr)	TSS (kg/yr)
Developed, Open Space	5.53	2.24	7	0.3	750	15.68	0.67	1,679.63
Deciduous Forest	22.39	9.06	2.5	0.2	250	22.66	1.81	2,265.73
Barren Land	85.00	34.40	10	0.6	4000	343.98	20.64	137,593.24
Sum	112.93	45.70				382.32	23.12	141,538.60
Sum to Tom's Creek:	27.93	11.30				38.33	2.48	3,945.36
Sum to Retention Basin:	85.00	34.40				343.98	20.64	137,593.24
BMP Retention Basin:	Reductions (%):					-30% (NO_3)	-60%	-70%
Net Loading to Miney Branch (kg/yr):						240.79	8.26	41,277.97

Under the transitional analysis, loading to Tom's Creek is shown to be reduced as a result of redirection of surface water stormflow to Pitts Quarry which will subsequently be discharged to Miney Branch. An additional load of 240.79 kg/yr of nitrogen, 8.26 kg/yr of phosphorus and 41,277.97 kg/yr of sediment may be discharged to Miney Branch as a result of the transitional operation. Please note, Princeton Hydro utilized reduction coefficients for nitrogen, phosphorus and sediments ascribed to we retention basins via the Pennsylvania Stormwater Best Management Practices Manual (PADEP, 2006). Finally, Princeton Hydro computed nutrient load under the final phase of active mining (Table 3).

Table 3: Operational Mine Analysis

Operational Mine Analysis			Coefficient			Load		
LULC	Acres	Ha	TN (kg/ha/yr)	TP (kg/ha/yr)	TSS (kg/ha/yr)	TN (kg/yr)	TP (kg/yr)	TSS (kg/yr)
Developed, Open Space	5.53	2.24	7	0.3	750	15.68	0.67	1,679.63
Deciduous Forest	22.39	9.06	2.5	0.2	250	22.66	1.81	2,265.73
Extractive Mining	66.30	26.83	10	0.6	4000	268.31	16.10	107,322.73
Altered lands	18.70	7.57	7.6	0.99	1255	57.51	7.49	9,497.37
Sum	112.93	45.70				364.15	26.07	120,765.46
Sum to Tom's Creek:	27.93	11.30				38.33	2.48	3,945.36
Sum to Retention Basin:	85.00	34.40				325.82	23.59	116,820.10
BMP Retention Basin:						-30% (NO_3)	-60%	-70%
Net Loading to Miney Branch (kg/yr):						228.07	9.44	35,046.03

Under the operational mine analysis, loading to Tom's Creek was again seen as reduced, primarily as the result of re-directing inflow outside of the watershed to Miney Branch. Loading to Miney Branch, under the active mining scenario, is estimated to increase nitrogen by 228.07 kg/yr, phosphorus by 9.44 kg/yr and sediment by 35,046.03 kg/yr.

Though it appears that the pollutant load decreases as the landscape changes due to mine expansion, the underlying cause of load reduction is the issue for concern. There is less nutrient loading not because the amount of pollutant decreases, but because the water that conveys the pollutants is being diverted along the landscape differently. Tom's Creek itself is receiving less water from runoff, which is an indication of a drastic over overall hydrology change to the watershed. If the flow of Toms Creek is jeopardized by diverting the water the creek would normally receive to retention ponds, then the habitat that supports migratory fish and other undocumented aquatic life will suffer due to lack of habitat. Further, any receiving waters for the retention ponds will experience increased pollutant loads.

SGI should identify where the water would go and how much water will be diverted to the retention pond and Miney Branch that would result in this change in nutrient loading to Tom's Creek.

5.0 Summary

Princeton Hydro, LLC finds the SGI proposed mine expansion will create significant disturbance to the project area and have significant adverse effects on the local watershed. The proposed stormwater management measures are not enough to mitigate negative impacts on the hydrologic, water quality, and ecological properties of the affected waterways and wetlands. This in turn will impact and compromise Tom's Creek, a C1 stream of high quality for cold water fish and migratory fish.

This project will add to the watershed stresses that have already resulted in documented water quality impairments. There will be an increase in runoff, soil erosion, and pollutant transport as a result of this development. As noted, the site's native soils are particularly sensitive to alteration and effects of development. Given the magnitude of this development, the projected reductions in stormwater recharge and infiltration will have drastic adverse impacts on the downstream wetlands and streams, further compromising their ecological services and functions.

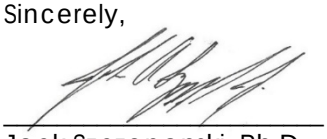
SGIs own indication to possibly remove wetlands C and D and to breach Northern Tract Pond 2 due to diminishment of tributary watershed assert that discharges will likely occur, not just in the event of >100-year storm. Runoff being drained to various sediment ponds at different points on the property alters the hydrology of the area for more than just the

short-term and will maintain the negative impact to the Toms Creek watershed well beyond the initial phases of proposed development.

Based on these indications and lack of biological sampling to Toms Creek and its tributaries, any degradation will not be accurately quantified. Repercussions of this mine will not only degrade Toms Creek but also the endangered flora and fauna on the property directly by either destroying the individuals or their habitat.

As such, we conclude that if this project should proceed, it will be detrimental to the water resources and surrounding habitat of Tom's Creek.

Sincerely,



Jack Szczepanski, Ph.D.
Senior Aquatic Ecologist
Princeton Hydro, LLC

6.0 Works Cited

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APPENDIX E

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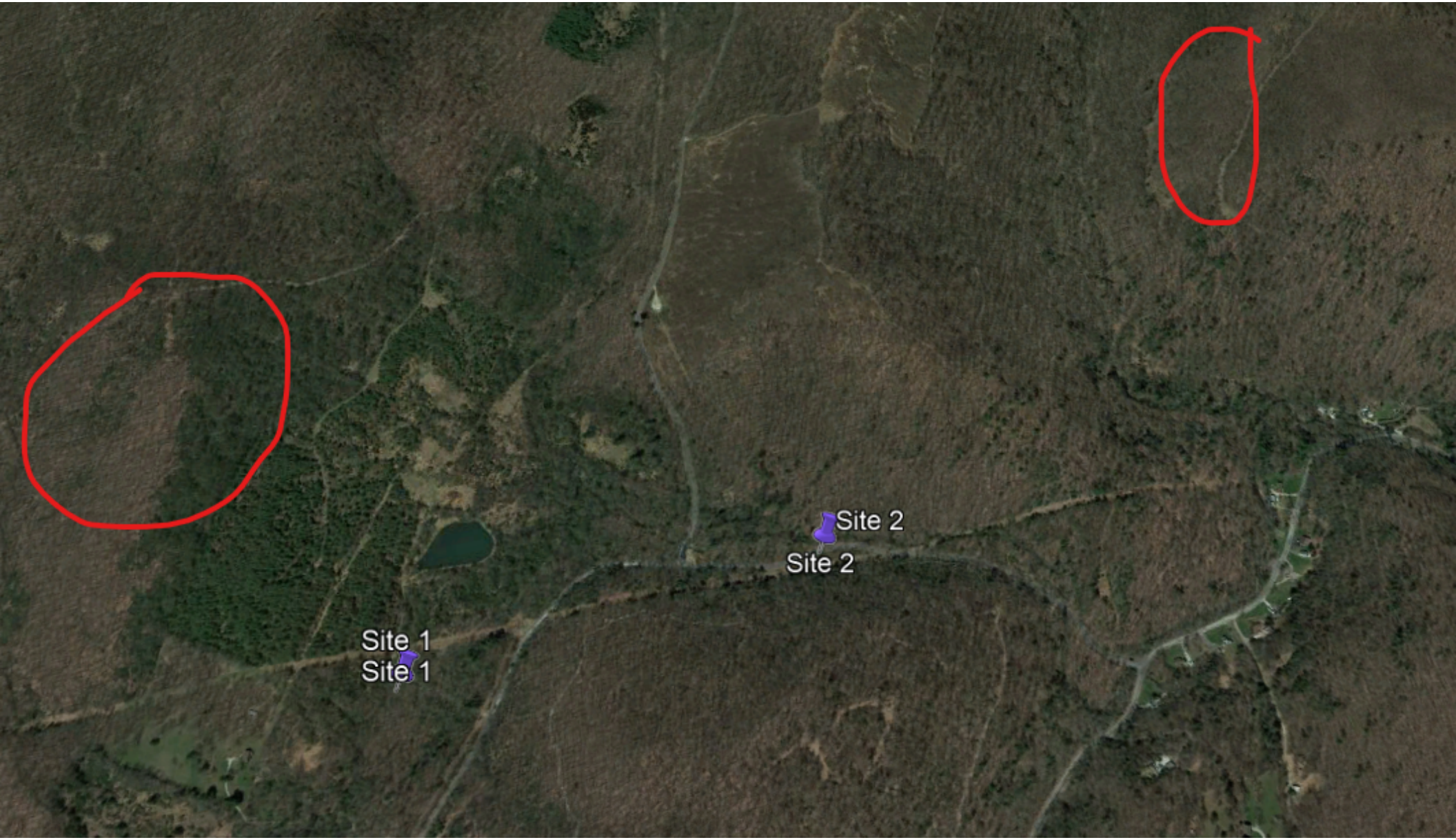
Site 2
Site 2
Site 1
Site 1

APPENDIX F

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1. PROJECT INFORMATION

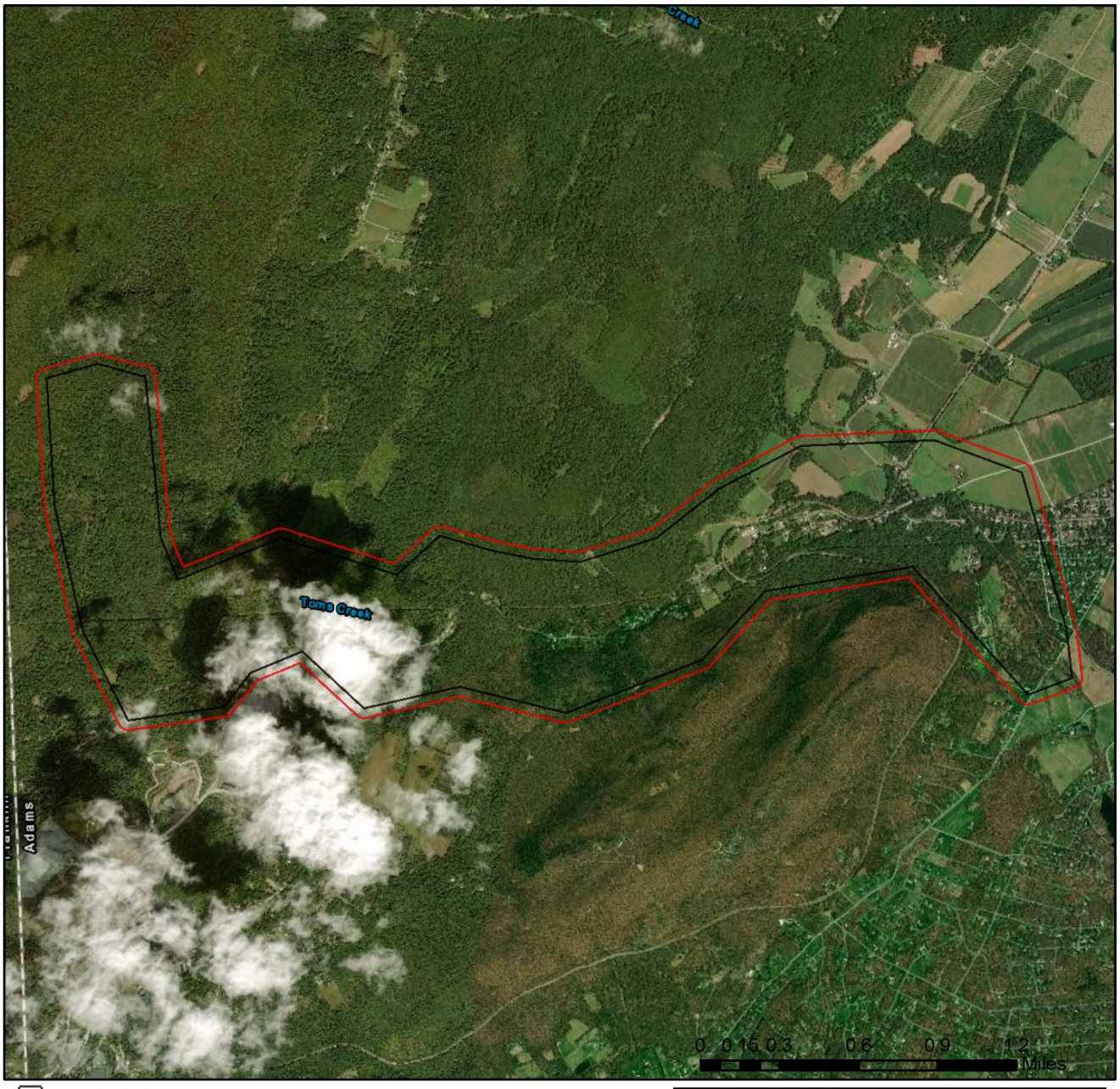
Project Name: **Toms Creek Corridor**
Date of Review: **3/18/2020 10:18:34 AM**
Project Category: **Development, New commercial/industrial development (store, gas station, factory)**
Project Area: **1,505.30 acres**
County(s): **Adams**
Township/Municipality(s): **CARROLL VALLEY; HAMILTONBAN**
ZIP Code: **17320**
Quadrangle Name(s): **IRON SPRINGS**
Watersheds HUC 8: **Monocacy**
Watersheds HUC 12: **Upper Toms Creek**
Decimal Degrees: **39.772271, -77.424068**
Degrees Minutes Seconds: **39° 46' 20.1739" N, 77° 25' 26.6453" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

Toms Creek Corridor

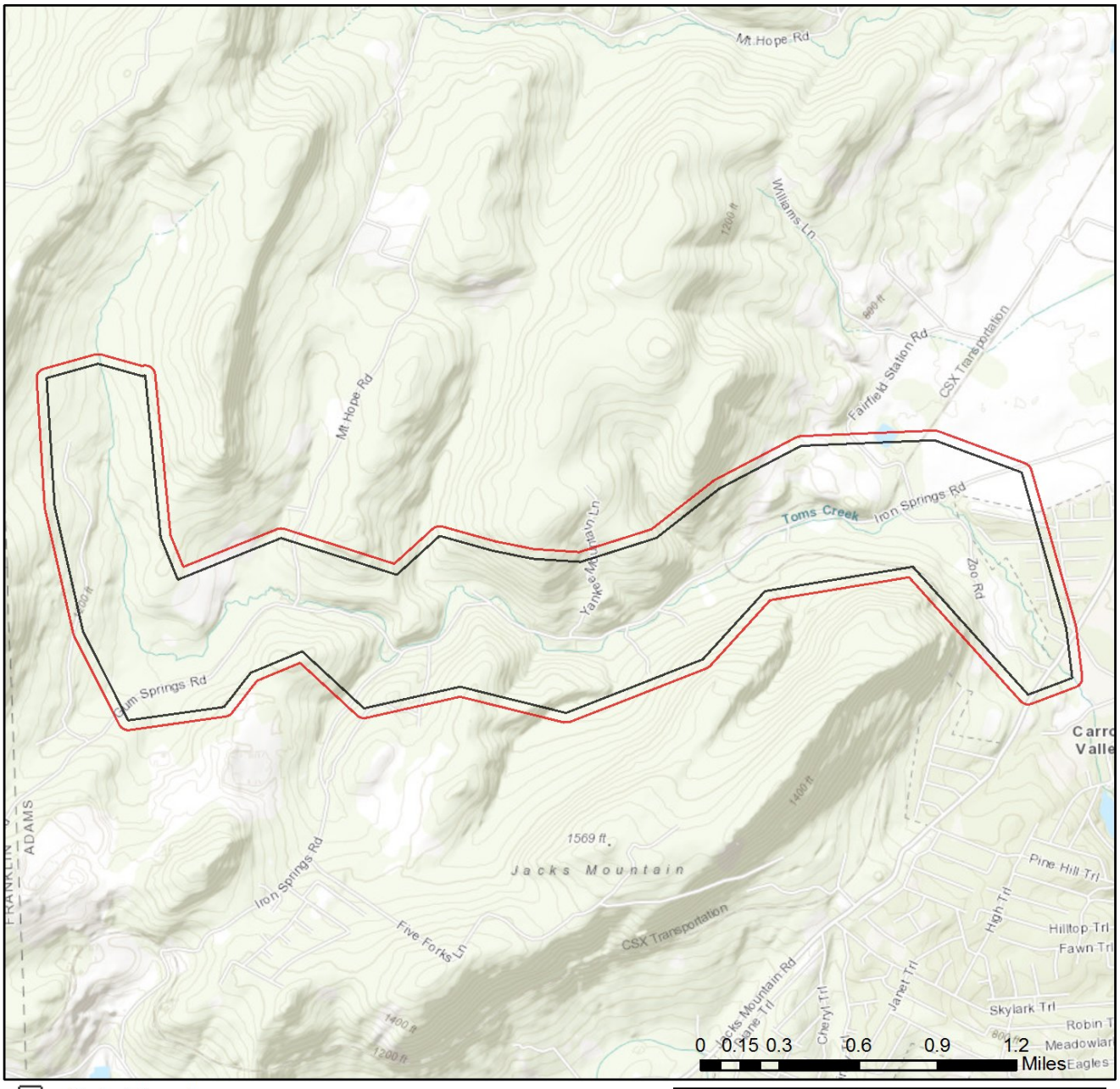


Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Toms Creek Corridor



Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: Which of the following closest describes the proposed project?
Your answer is: The proposed project will be connected to, and entirely serviced by, an existing, off-site water delivery and supply line (e.g., operated by a municipality or water company).

Q2: Are there any perennial or intermittent waterways (rivers, streams, creeks, tributaries) in or near the project area, or on the land parcel?
Your answer is: Yes

Q3: Describe how wastewater (effluent) will be handled (select one). For the purpose of this question, wastewater/effluent does not include stormwater runoff. If the project involves solely the renewal or modification of an existing discharge permit (e.g., NPDES permit), select from options 3, 4, 5, or 6 below.
Your answer is: All wastewater/effluent from this project/activity will be routed to an existing municipal wastewater treatment plant.

Q4: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The specific project area (that is, project layout or "footprint") has not yet been identified, but the land parcel on which the project will occur has been investigated by someone qualified to identify and delineate wetlands, and wetlands were located.

Q5: The proposed project is in the range of the Indiana bat. Describe how the project will affect bat habitat (forests, woodlots and trees) and indicate what measures will be taken in consideration of this. Round acreages up to the nearest acre (e.g., 0.2 acres = 1 acre).
Your answer is: The project will affect 1 to 39 acres of forests, woodlots and trees.

Q6: Is tree removal, tree cutting or forest clearing of 40 acres or more necessary to implement all aspects of this project?
Your answer is: No

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Sensitive Species**		Special Concern Species*	Threatened	Flowers April - May

PA Fish and Boat Commission

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Special Concern Species*
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

March 26, 2020

PNDI Number: 706313
Version: Final_1; 3/18/20

Stephen Kunz
Schmid & Company
1201 Cedar Grove Rd
Media, PA 19063
Email: spkunz@aol.com (hard copy will not follow)

Re: Toms Creek Corridor
Carroll Valley, Hamiltonban; Adams, PA

Dear Mr. Kunz,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number **706313 (Final_1)** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

PNDI records indicate that species under DCNR's jurisdiction are known to occur in the vicinity of the proposed project area. **Please see the attached table detailing species that may occur within the project area. Avoidance of suitable habitat is recommended and should be considered during the planning process as specific projects commence. Please obtain a PNDI receipt using the online PA Conservation Explorer tool for each subsequent project.**

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely

Greg Podniesinski

Greg Podniesinski, Section Chief
Natural Heritage Section

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window	Preferred Habitat	Locally Documented Habitat
Scirpus ancistrochaetus	Northeastern Bulrush	PA Endangered/ Federally Endangered	PA Endangered	Fruits in July; flower structures with achenes through January	Vernal ponds and mudholes with fluctuating water levels	Just W of Toms Creek Corridor
Ilex opaca	American Holly	PA Threatened	PA Threatened	Flowers May – early June, fruits October – winter; evergreen leaves	Moist, alluvial woods and wooded slopes, also cultivated and frequently escaped	W of Toms Creek Corridor
Lysimachia hybrida	Lance-leaf Loosestrife	Special Concern	PA Endangered	Flowers June – August	Swamps, wet meadows, fens, and pond margins	W of Toms Creek Corridor
Trillium cernuum	Nodding Trillium	Special Concern	PA Threatened	Flowers April – May	Rich Woods	In and arround Toms Creek Corridor
Herbaceous Vernal Pond	Herbaceous Vernal Pond	N/A	N/A	N/A	N/A	W of Toms Creek Corridor

APPENDIX G

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APPENDIX G

Suggested language for request to amend a regulation

The current regulation, 25 Pa. Code §93.9z (“Drainage List Z.”), currently contains the following text relating to the designation of the subject watershed:

Potomac River Basin in Pennsylvania
Potomac River

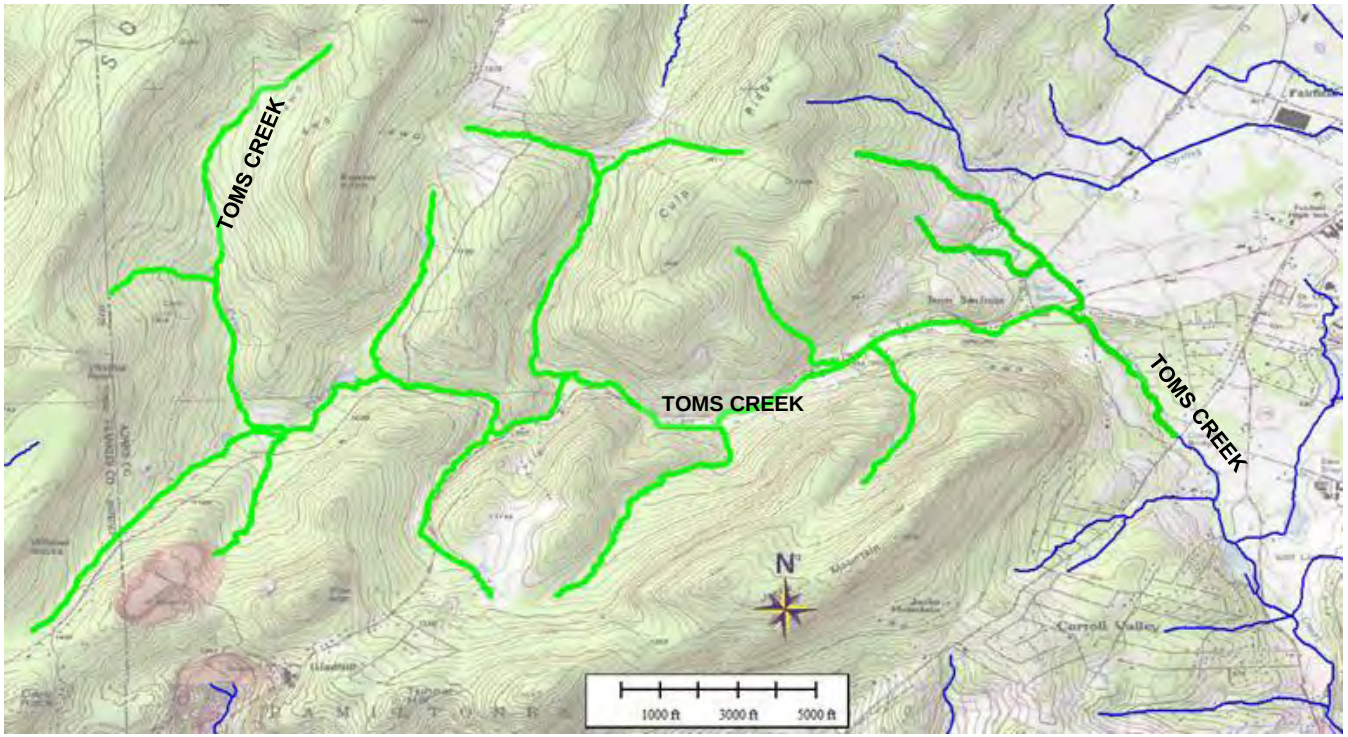
Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
[omitted]	*[omitted]*	*[omitted]*	*[omitted]*	*[omitted]*
3---Toms Creek	Basin, Source to LR 01053 (SR 3021) Bridge	Adams	HQ-CWF, MF	None
[omitted]	*[omitted]*	*[omitted]*	*[omitted]*	*[omitted]*

After redesignation, the suggested regulatory language at 25 Pa. Code §93.9z (“Drainage List Z.”) would be as follows:

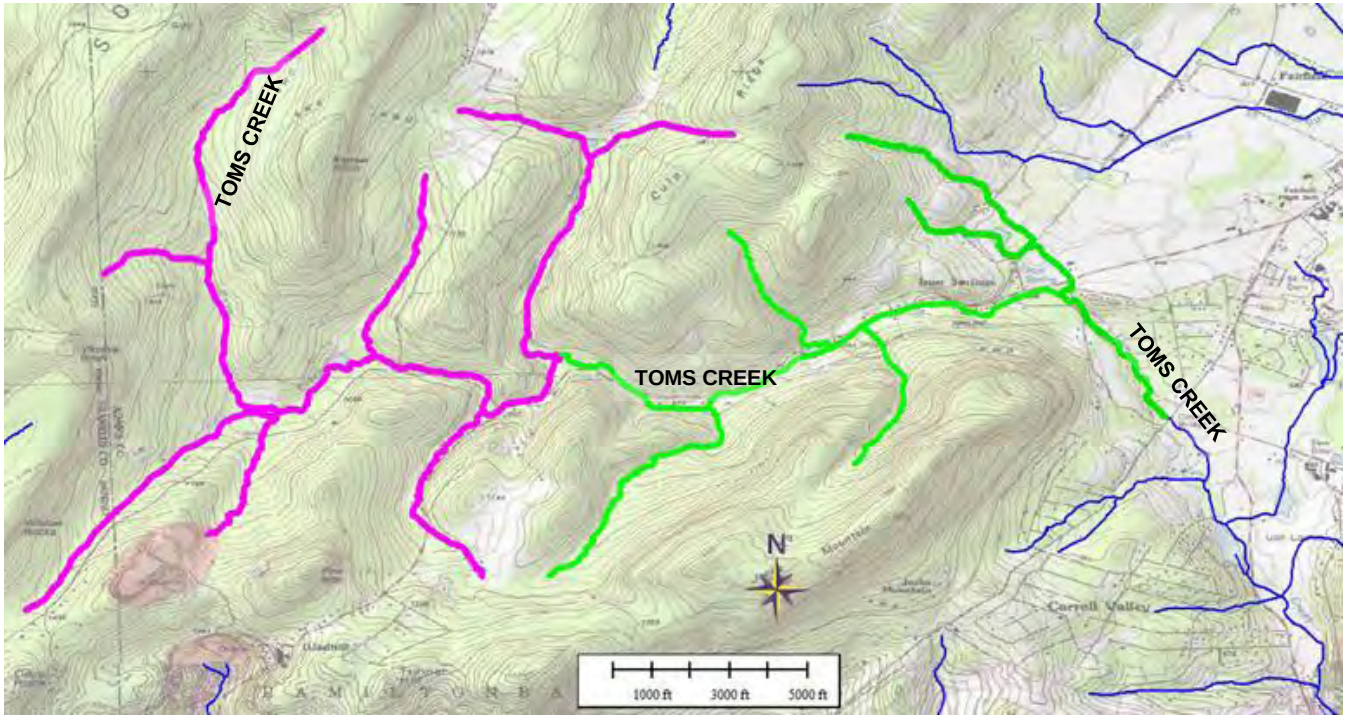
Potomac River Basin in Pennsylvania
Potomac River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
[omitted]	*[omitted]*	*[omitted]*	*[omitted]*	*[omitted]*
3---Toms Creek	Basin, Source to Confluence of Copper Run	Adams	EV	None
3---Toms Creek	Basin, Copper Run to LR 01053 (SR 3021) Bridge	Adams	HQ-CWF, MF	None
[omitted]	*[omitted]*	*[omitted]*	*[omitted]*	*[omitted]*

APPENDIX G: MAPS



Current Chapter 93 designated uses along upper sections of Toms Creek and tributaries (green is HQ, blue is CWF)



Requested Chapter 93 designated uses along upper sections of Toms Creek and tributaries (purple is EV, green is HQ, blue is CWF)

APPENDIX H

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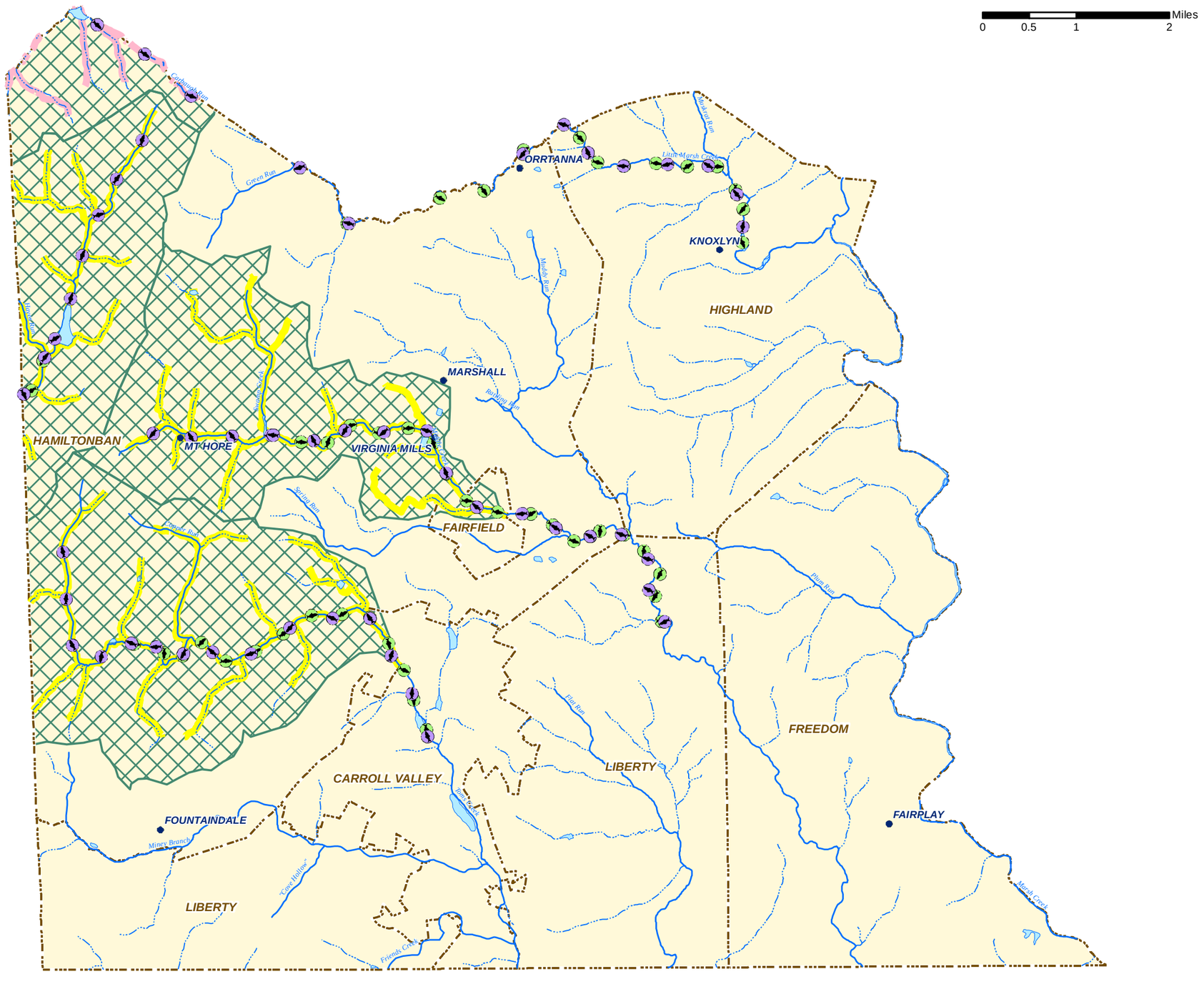

SURFACE WATER QUALITY

Legend

- Village
- Natural Trout Reproduction
- Trout Stocked Stream
- Stream
- Exceptional Value Waters
- High Quality Waters
- Waterbody
- Special Protection Watershed
- Municipal Boundary

Natural Trout Reproduction - Stream sections supporting naturally reproducing populations of trout.

Trout Stocked Stream - Stocked by PA Fish & Boat Commis.

High Quality Waters - Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying PA Code § 93.4b(a).

Exceptional Value Waters - Surface waters of high quality which satisfy PA Code § 93.4b(b) (relating to antidegradation).

Special protection uses: High Quality (HQ) and Exceptional Value (EV) waters are among the cleanest and most out-standing waters in Pennslyvania.

Source: ACOPD - GIS Division,
PASDA, PA Fish & Boat Commission

February 2, 2009

MAP 2-3

APPENDIX I

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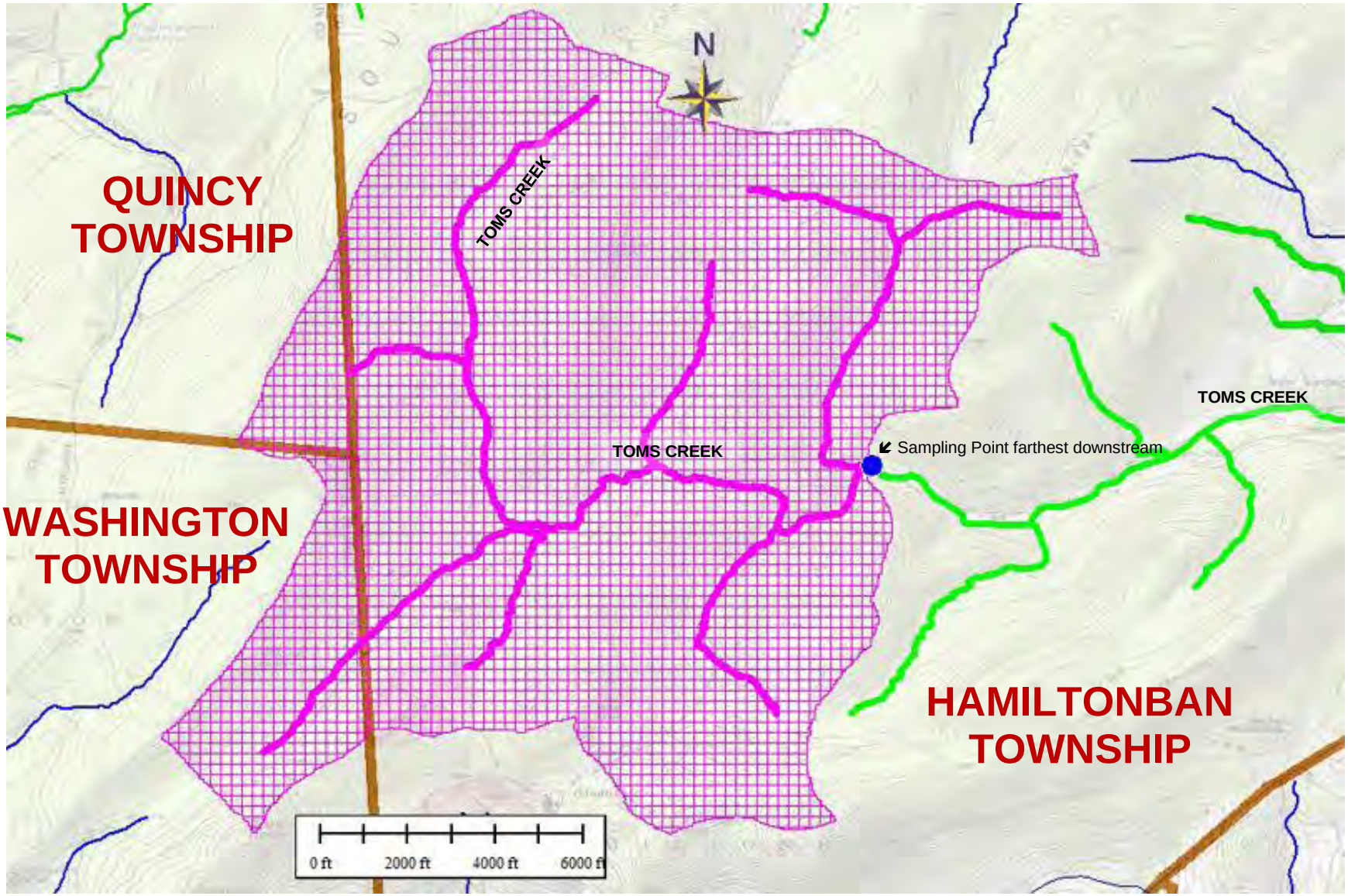
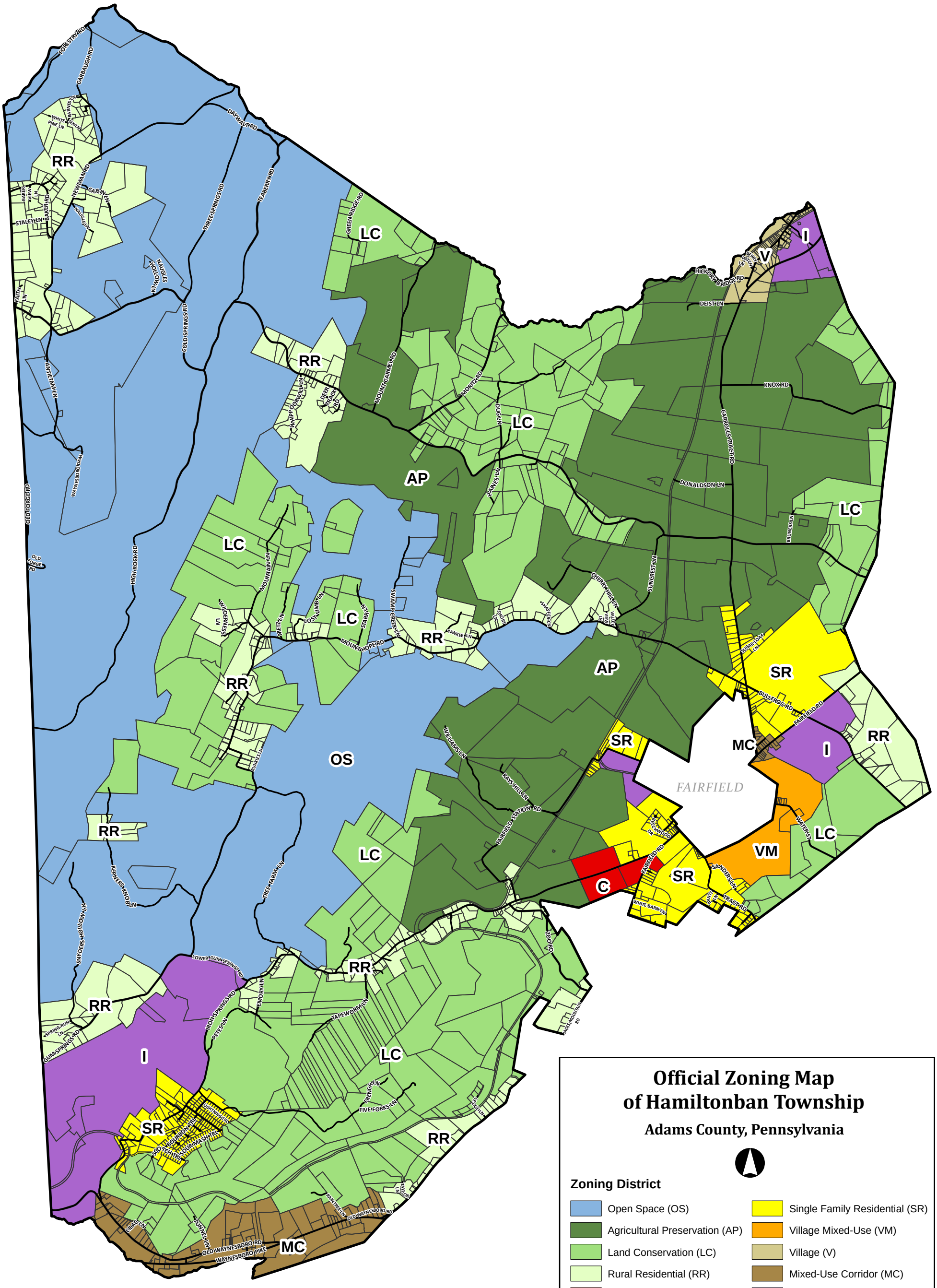


APPENDIX I: MUNICIPALITIES: Identification of the Upper Toms Creek Petition watershed area (purple crosshatch) in Hamiltonban Township (Adams County) and Quincy and Washington Townships (Franklin County).

HAMILTONBAN TOWNSHIP ZONING MAP

Adopted: March 3, 2020



Official Zoning Map of Hamiltonban Township

Adams County, Pennsylvania

Zoning District

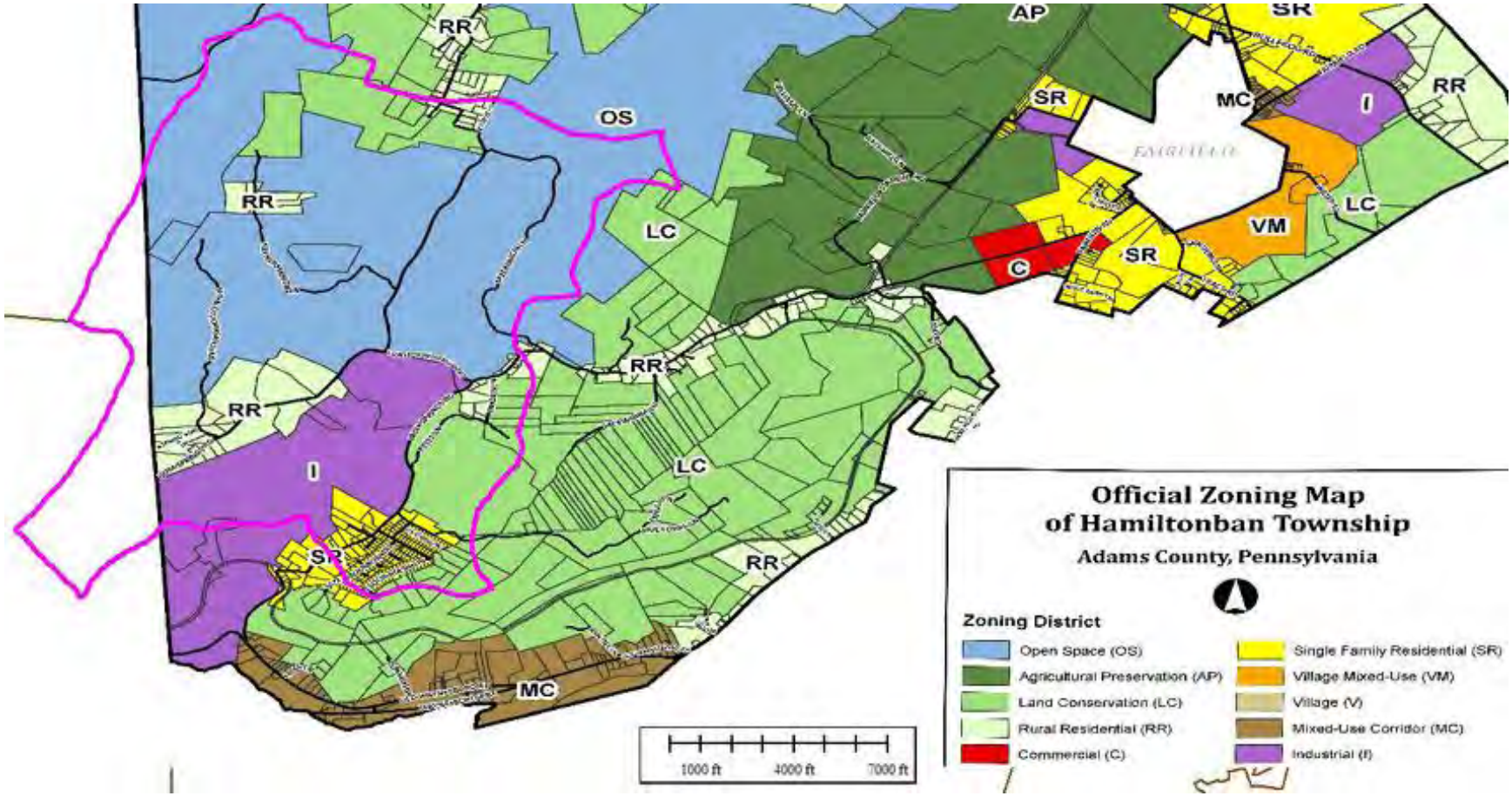
- Open Space (OS)
- Agricultural Preservation (AP)
- Land Conservation (LC)
- Rural Residential (RR)
- Commercial (C)
- Single Family Residential (SR)
- Village Mixed-Use (VM)
- Village (V)
- Mixed-Use Corridor (MC)
- Industrial (I)

0 0.5 1 2

Miles

Prepared By: ACOPD - GIS Division | August 8, 2019 SW

Office of PLANNING and DEVELOPMENT



APPENDIX I: Hamiltonban Township zoning within Petition watershed, which is outlined in purple. About 73% of the watershed area within Hamiltonban Township is zoned Open Space and Land Conservation.

APPENDIX J

[REMAINDER OF PAGE INTENTIONALLY BLANK]

PENNSYLVANIA CAMPAIGN FOR CLEAN WATER
Exceptional Value Workgroup
1315 Walnut Street, Suite 1650
Philadelphia PA 19107
215-545-5250 phone
215-545-2315 fax

April 22, 2020

The Honorable Patrick McDonnell
Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063

Re: Support for Friends of Toms Creek Stream Redesignation Petition

Dear Secretary McDonnell,

On behalf of the Pennsylvania Campaign for Clean Water's Exceptional Value Workgroup (CCWEV), we are writing in support of the Friends of Toms Creek stream redesignation petition that is being submitted to the Pennsylvania Department of Environmental Protection (Department) to ensure that Toms Creek in Adams County is given the protections it deserves in accordance with an Exceptional Value designation.

Per the Friends of Toms Creek petition to the Department, we understand that recent benthic surveys collected for upper Toms Creek indicate metric scores that meet the 92% or higher Biological Assessment Qualifier criteria. With these EV benthic scores and data, we request that after data review, the Department immediately provide existing use EV protection for this creek while the lengthy regulatory process continues. This existing use listing will help ensure protection of this important stream that already has High Quality (HQ) designation combined with many other local and state protections.

CCWEV understands from the petition that in addition to the diverse EV benthic scores, Toms Creek also meets other stream redesignation qualifiers for its exceptional attributes. Some of these attributes and qualifiers discussed in the upgrade petition include:

1) Toms Creek is an outstanding national, state, regional or local resource water because state and local agenices have adopted water quality protective measures affecting the applicable stretch of Toms Creek.

2) Toms Creek is a "surface water of exceptional recreational significance**"** because it provides unique recreational opportunities for trout fishing that are only possible in a limited number of waterbodies across Pennsylvania.

3) Toms Creek is a highly valued trout stream stocked every year. Communities surrounding Toms Creek benefit greatly from recreational activities, including fishing, hiking, and swimming, related to having this pristine cold water trout stream running through their communities.

4) Toms Creek flows through Michaux State Forest of which The Pennsylvania Department of Conservation and Natural Resources (DCNR) adopted water quality protection measures in the State Forest Resource Management Plan and Aquatic Habitat Buffer Guidelines.

5) As part of the County of Adams $10 million referendum passed by voters with overwhelming support (75% approval) in November 2008, $3.7 million went to purchase and conserve approximately 1,847 acres in the proposed redesignation section. Prior preserved land of over 400 additional acres also exist for the proposed redesignation area which flows through state forest.

6) The Toms Creek corridor PNDI surveys indicate several special concern species and habitats of concern that are deserving of protection. The Pennsylvania Natural Heritage Program (PNHP) has identified the upper portion of the Toms Creek Watershed as a Priority Conservation Watershed.

7) Hamiltonban Township has adopted several water quality protective measures along the relevant corridor of Toms Creek, designating most of the proposed EV section as "Woodland Conservation" among other local protections that include: Act 167 Stormwater Management Ordinance, a Township Well Construction Standard Ordinance, and a Floodplain Monitoring Ordinance which protects the riparian corridor.

8) The proposed redesignation section is within Fairfield Municipal Authority's Wellhead Protection Zone III for their only water supply which includes 4 wells. These wells supply water to approximately 425 customers (businesses and homes) and approximately 1000 people.

In closing, we are delighted the local community, sister agencies, and Friends of Toms Creek have implemented extensive conservation efforts over the years that support this petition that Toms Creek be provided the Exceptional Value designation it deserves – a long overdue and deserving step and a requirement of the federal Clean Water Act and Pennsylvania antidegradation policies. This antidegradation guidance complements the Pennsylvania Clean Streams Law, enacted to preserve and improve the purity of the waters of the Commonwealth for the protection of public health, animal life, aquatic life, and other beneficial uses[1]. A redesignation to EV for Toms Creek is also aligned and beautifully complements the Pennsylvania Environmental Rights amendment, Article I, Section 27 of the Pennsylvania Constitution which states:

> *The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.*

The Pennsylvania Campaign for Clean Water (CCW) is a coalition of over 180 environmental, conservation, sporting, and religious groups from all corners of the state that speaks in one voice in support of federal and state policies to protect and restore Pennsylvania's water resources. The Exceptional Value workgroup

[1] PA DEP's Water Quality Implementation Guidance. November 29, 2003. Accessed 12.2.19 from PADEP website.

focuses on protection of the Commonwealth's highest quality streams and we regularly meet to discuss and support local watershed petitions, upgrades, science, and other protective measures being undertaken across the state.

Thank you for your time and consideration of these comments. We look forward to helping ensure EV designation for the Toms Creek is realized and please reach out if we can be of further assistance.

Sincerely,

Faith Zerbe
CCW Exceptional Value Co-Chair
Delaware Riverkeeper Network

Eric Harder
CCW Exceptional Value Co-Chair
Youghiogheny Riverkeeper

cc. Friends of Toms Creek
PA Fish and Boat Commission
PA Dept. of Conservation and Natural Resources

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NETWORK

3070 M Street, NW
Washington, DC 20007
202.888.2037 (main)
www.prknetwork.org

April 21, 2020

Patrick McDonnell,
Secretary of the Department of Environmental Protection
P.O. Box 2063
Harrisburg, PA 17105-2063

RE: Support of Friends of Toms Creek Petition to upgrade Toms Creek status from high quality to exceptional value.

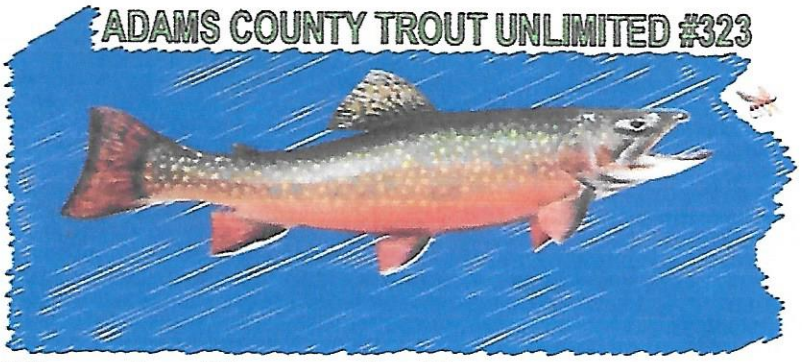
Dear Secretary McDonnell,

I am writing on behalf of our 3000 members in the Potomac Watershed that have a common goal to see the rivers and streams in this watershed protected. Potomac Riverkeeper Network supports the petition submitted by the Friends of Toms Creek to upgrade the designation of Toms Creek from a high quality (HQ) designation to an exceptional value (EV) designation.

Toms creek is a prime example of a headwater stream that supports a healthy trout population. The recent macroinvertebrate sampling clearly shows that Toms Creek has a significant population of intolerant macroinvertebrates that are suggestive of an EV status. Protecting headwater streams like Toms Creek is of the high priority for Potomac Riverkeeper Network.

Sincerely,

Brent Walls
Upper Potomac Riverkeeper
Potomac Riverkeeper Network



Managing Streams for Future Generations

To: Friends of Toms Creek (FOTC)
Date: April 22, 2020
From: Adams County Trout Unlimited (ACTU)

I would like to pledge ACTU's support for the petition to DEP to designate Toms Creek to the status of an Exceptional Value (EV) waterway in Adams County, PA.

Toms Creek meets the requirements to be designated EV. Its current uses certainly reflect such a designation.

ACTU has over 40 years of experience improving and maintaining the only "fly fishing, catch and release" stream in Adams County, i.e., a 1 mile stretch of the Conewago, as well as addressing the needs of other streams in the Adams County area. We are familiar with conservation of watersheds, the importance of fishing as a recreation for all to enjoy, and protecting our waterways for future generations.

An EV designation for Toms Creek will protect the creek and its watershed for future generations, protect and improve its current uses, and contribute to the cleaning up of the Chesapeake Bay.

Please convey our support for the Petition to the DEP.

Respectfully yours,
Hank Rajotte
President ACTU Chapter #323

SIERRA CLUB
FOUNDED 1892

April 22, 2020

The Honorable Patrick McDonnell
Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063

Dear Secretary McDonnell:

The Sierra Club Governor Pinchot Group has over 3000 members who live in southcentral Pennsylvania. We understand Friends of Toms Creek, a local citizens group, is petitioning DEP to re-designate Toms Creek from its source to the confluence with Copper Run from High Quality Cold Water Fishes ("HQ-CWF") to Exceptional Value ("EV"). The Sierra Club supports the re-designation of Toms Creek in Adams County to Exception Value.

The land through which Tom's Creek flows includes Pine Hill. At the base of Pine Hill, Toms Creek flows along two historic roads, Iron Springs and Gum Springs roads. These roads are part of the Great Wagon Road, the retreat route of General Lee's army during the civil war. The area includes over 100 acres of pristine, verdant woodlands and wetlands that support fragile and rare flora and fauna. Pine Hill stands tall at 1400 feet and stood as an obstacle as Confederate Civil War troops sought to retreat following the Battle of Gettysburg. Adams County residents raised money by taxes and bonds to purchase the property and to protect the hill by donating it to the Pennsylvania Bureau of Forestry. It was incorporated into the Michaux State Forest.

Sierra Club members have hiked along Toms Creek to enjoy the clear waters, the diverse vegetation, the riparian forest land, and the historic farms. These organized hikes have led to a deeper appreciation of a natural and unspoiled environment.

Water quality in Toms Creek is exceptional. We understand that aquatic surveys have been conducted in the creek and have shown abundant aquatic organisms. This stream also supports stocked trout.

Tom's Creek is a precious natural resource endowed with esthetic, scenic and important historical values. These values are constitutionally protected under the Environmental Rights Amendment. Pa. Const. Art.1 § 27.

The Sierra Club works with the Pennsylvania Campaign for Clean Water as a coalition member, along with over 180 environmental, conservation, sporting, and religious groups from all corners of the state in support of policies to protect and restore Pennsylvania's water resources. PCCW has supported

expanding the number of streams protected by the Exceptional Value designation. Toms Creek is a valuable water resource that deserve Exceptional Value protection. We need to preserve the Commonwealth's highest quality streams.

Sincerely,

Thomas Y. Au
Conservation Chair
Sierra Club, Governor Pinchot Group
PO Box 606
Harrisburg, PA 17108

cc: Friends of Toms Creek

April 25, 2020

The Honorable Patrick McDonnell
Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063

Re: Support for Toms Creek Stream Upgrade Petition – Adams County, PA

Dear Secretary McDonnell,

Delaware Riverkeeper Network (DRN) is writing to support the Friends of Toms Creek stream upgrade petition that is being submitted to the Pennsylvania Department of Environmental Protection (Department) to ensure that Toms Creek in Adams County, now designated as a High Quality (HQ) stream that flows through Michaux State Forest, is given the Exceptional Value (EV) protection designation it deserves and that is long overdue. Community groups, watershed associations, and fishing groups have long been the impetus to many stream upgrades in Pennsylvania and are a critical part of ensuring states and regulatory bodies adequately protect streams with their highest uses and existing uses as required by the Clean Water Act.

Per the Friends of Toms Creek petition to the Department, DRN understands that macroinvertebrate surveys collected for upper Toms Creek indicate scores that qualify the stream for EV designation – meeting the threshold of 92% or higher Biological Assessment Qualifier criteria. We urge the Department after reviewing this data and the community petition, to promptly list the stream as Exceptional Value for its existing use while the lengthy regulatory process continues. We believe this immediate listing of additional protection may be even more critical at a time with COVID-19 safety provisions that may limit the amount of agency sampling that can be conducted in the coming months. This existing use listing will help ensure protection of Toms Creek that already has High Quality (HQ) designation combined with many other local and state protections that are shared in the community petition that qualify the stream under multiple antidegradation guidance outlined in 25 Pa. Code § 93.4b.

Some of these attributes that Toms Creek exhibits that supports its immediate upgrade in addition to the 92% biological metric being met and that are outlined in the petition include:

DELAWARE RIVERKEEPER NETWORK
925 Canal Street, Suite 3701
Bristol, PA 19007
Office: (215) 369-1188
fax: (215)369-1181
drn@delawareriverkeeper.org
www.delawareriverkeeper.org

- **Toms Creek is an outstanding national, state, regional or local resource water** because state and local agenices have adopted water quality protective measures affecting Toms Creek of which many are outlined in the community petition. Section 93.1 defines an "Outstanding National, State, regional or local resource water" as "[a] surface water for which a National or State government agency has adopted water quality protective measures in a resource management plan, or regional or local governments have adopted coordinated water quality protective measures along a watershed corridor." 25 Pa. Code 93.1.

    a. Toms Creek flows through Michaux State Forest of which The Pennsylvania Department of Conservation and Natural Resources (DCNR) has adopted water quality protection measures in the State Forest Resource Management Plan and adopted Aquatic Habitat Buffer Guidelines to protect riparian buffers in the forest.

    b. As part of the County of Adams $10 million referendum passed by voters with overwhelming support (75% approval) in November 2008, $3.7 million went to purchase and conserve approximately 1,847 acres in the proposed redesignation section. Prior preserved land of over 400 additional acres also exist for the proposed redesignation area which flows through state forest. Communities around the entire state of Pennsylvania have been overwhelmingly urging the Department through its triennial review process to ensure such conservation easements and land protection mechanisms – both public and private - are recognized with stream upgrade petitions and designations.

    c. The Toms Creek corridor PNDI surveys indicate several special concern species and habitats of concern that are deserving of protection. The Pennsylvania Natural Heritage Program (PNHP) has identified the upper portion of the Toms Creek Watershed as a Priority Conservation Watershed.

    d. Hamiltonban Township has adopted water quality protective measures along the relevant corridor of Toms Creek, designating most of the proposed EV section as "Woodland Conservation" among other local protections that include: Act 167 Stormwater Management Ordinance, a Township Well Construction Standard Ordinance, and a Floodplain Monitoring Ordinance which protects the riparian corridor.

    e. The proposed redesignation section is within Fairfield Municipal Authority's Wellhead Protection Zone III for their only water supply which includes 4 wells. These wells supply water to approximately 425 customers (businesses and homes) and approximately 1000 people.

While the Department is reviewing this community petition, it is important that Toms Creek wetlands are also given EV protections as outlined in Chapter 105.17[1]. According to the Department wetlands are EV if they are:

- *In an EV watershed*
- *In or along the floodplain of a wild trout stream and the floodplain of its tributaries*
- *Are within a designated National or State wild or scenic river corridor*
- *Along a drinking water supply and maintain the quality & quantity of the supply*
- *T&E species are present*
- *Are hydrologically connected to OR located within ½ mi. of wetlands that are habitat for flora or fauna AND maintain the habitat of the threatened and endangered species*

In closing, we are delighted the Friends of Toms Creek, sister agencies like DCNR and the FBC, and other community entities have conducted essential protection measures over the years to best steward and protect this well-loved stream. EV protection now by the Department would further strengthen these important strides that complement the Pennsylvania Clean Streams Law, enacted to preserve and improve the purity of the waters of the Commonwealth for the protection of public health, animal life, aquatic life, and other beneficial uses[2]. A redesignation to EV for Toms Creek also complements the Pennsylvania Environmental Rights amendment, Article I, Section 27 of the Pennsylvania Constitution which states:

> *The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.*

Delaware Riverkeeper Network takes part in the Pennsylvania Campaign for Clean Water (CCW) which is a coalition of over 180 environmental, conservation, sporting, and religious groups from all corners of the state that speaks in one voice in support of federal and state policies to protect and restore Pennsylvania's water resources. The Exceptional Value workgroup, which Delaware Riverkeeper Network co-chairs, focuses on protection of the Commonwealth's highest quality streams and regularly meets to discuss and support local watershed petitions, upgrades, science, and other protective measures being undertaken across the state. Thank you for your time and consideration. We look forward to helping ensure EV designation for the Toms Creek is realized and if there is anything we can assist with, please contact DRN's Monitoring Director, Faith Zerbe, at 215-369-1188 ext. 110.

Sincerely,

Maya K. van Rossum
the Delaware Riverkeeper

[1] PA DEP Wetlands and Waterways Permitting in Pennsylvania. April 24, 2012. Accessed 4.25.2020 from the PADEP website: https://www.energy.gov/sites/prod/files/2015/06/f22/WWPPA.pdf.

[2] PA DEP's Water Quality Implementation Guidance. November 29, 2003. Accessed 12.2.19 from PADEP website.