

Ann L Finneran

To the DRBC Commissioners:

Thank you for providing me and all concerned citizens for the opportunity to comment. This comment pertains to the extreme dangers inherent in fracking waste.

As a resident within the Delaware River Watershed, a concerned citizen, and Chair of the Water Issues Committee for the Atlantic Chapter of the Sierra Club, I call for a COMPLETE BAN on ALL activities related to unconventional HVHF drilling for natural gas, a/k/a fracking, within the Delaware River Watershed and Basin.

I object to any considerations to allow wastewater and waste by products produced by fracking (ie: flowback, slick water and drill cuttings, whether in liquid state or in a "solid mix" with construction debris and wood particles) to be stored, treated, or discharged within the Delaware River Watershed.

I have multiple articles to share coming out just this year, 2018, about the increase in radioactivity in streambeds and landfills as the result of even conventional drilling. There are no means to address radioactivity and it cannot be cleaned up. The fracking waste problem is tremendous, adding radioactive materials to the mix is nightmarish.

WE NEED TO KEEP IT IN THE GROUND in the Delaware River Basin.

Below and attached are items in regard to the problem of radioactive waste in landfills, including those including or within dangerous proximity to wetlands, specifically a landfill in the Southern Tier which has been found to contain an inordinate amount of radium derived radionuclides in the areas of the landfill where frack waste has been dumped.

Please feel free to utilize the following article which describes in detail the Wetlands specific to the Delaware in Pennsylvania:

https://www.aswm.org/wetlandsonestop/wetlands_of_pa_delaware_estuary_coastal_zone_and_vicinity_0315.pdf

(Tiner, R.W., E. Olson, D. Cross, and J. Herman. 2015. Wetlands of Pennsylvania's Delaware Estuary Coastal Zone and Vicinity: Characterization and Landscape-level Functional Assessment. Prepared for the Pennsylvania Department of Environmental Protection, Coastal Zone Management Program, Harrisburg, PA. U.S. Fish and Wildlife Service, Northeast Region, Hadley, MA. 44 pp. plus appendices.

Please also consider the following comment in regard to cleaning water by Public Herald (Pittsburgh) Editor-in-Chief and filmmaker Joshua B. Pribanic:

"I can't find [an] operation ... which has proven its success to produce 100% clean water. All operations accepting oil and gas waste that utilize a distillation process and produce discharge do so with the knowledge that contaminants, including radioactive compounds, can get discharged..."

Please read the following uploaded files: Comments and literature in regard to high radioactivity in the fracking waste Hakes landfill in Painted Post, NY. Included is the inadequate wetlands mitigation plan with citizen and organization comments revealing the problems with that plan. The authors of the Hakes comments have all granted permission to share, which I offer as illustrative of the dangers of fracking waste sites in regard to waterways and wetlands. The Wetland Mitigation plan I understand to be a public document.

January 31, 2018

Experts Spot High Levels of Radium and Radon Breakdown Products in Hakes Landfill Leachate Test Results

Expert affidavits filed yesterday in the Sierra Club, CCAC and PHE lawsuit challenging DEC's exclusion of radioactivity issues from the Draft Supplemental Environmental Impact Statement (DSEIS) for the Hakes landfill expansion project identify very high levels of the radionuclides lead-214 and bismuth-214 in some of the landfill's leachate test results.

The affidavits of Dr. Raymond Vaughan and Mr. Dustin May examine the landfill's semi-annual leachate radionuclide analytical results, which were obtained through a FOIL request to DEC. The affidavits point out that the highest levels of lead-214 and bismuth-214 concentrations were found in samples from landfill cells 3, 4, 5, 6, and 8B, all cells receiving shale gas drilling wastes. The highest observed lead-214 and bismuth-214 concentration was approximately 6000 pCi/L from an unfiltered leachate sample taken from Cell 8B in Q2 2017.

These results indicate major potential enrichment of the landfill leachate with radon-222 gas. The half-lives of lead-214 and bismuth-214, 27 and 20 minutes, respectively, are too short for these radionuclides to exist independently during the time period between collection and analysis. In order for these two radionuclides to be detectable in the samples weeks after collection, they would have to be supported and exist in an equilibrium state with radon-222 gas or radium-226.

The landfill did not test for radon-222 in the leachate samples, but did test for radium-226 using two methods generally used for testing drinking water, not liquids with high levels of dissolved solids. The landfill's tests found low levels of radium-226.

As described in the affidavits of Dr. Vaughan and Mr. May, as well as the affidavit of The affidavit of Dr. David Carpenter, the potentially high concentrations of radon-222 in and around the landfill leachate may pose risks to public health and the environment. Thus testing for radon-222 and new testing for radium-222 is needed to evaluate the potential impacts. Tests should also be conducted for other two other important radon-222 breakdown products, lead-210 and polonium-210.

Dr. Carpenter is Director of the Institute for Health and the Environment at the University at Albany. Dr. Vaughan is a consultant from Buffalo who has worked for many years on issues involving nuclear wastes at West Valley in Cattaraugus County. Mr. May is a PhD candidate at the University of Iowa in Iowa City, where he is part of a research group that has published a series of articles on measuring radioactivity in shale gas drilling wastes. Mr. May also serves as supervisor of the radiochemistry department of the State Hygienic Laboratory at the University of Iowa, the state of Iowa's public health laboratory.

The affidavits were filed January 19, 2018 in *Sierra Club v. DEC*, Steuben County Supreme Court, Index No. E2017-1384CV. The petitioners in the case are Sierra Club, Concerned Citizens of Allegany County, People for a Healthy Environment, Inc. and three individual neighbors of the landfill, John Culver and Brian and Maryalice Little. The Petitioners are represented by attorneys Richard Lippes from Buffalo and Rachel Treichler from Hammondsport. The papers filed in the case are posted at https://iapps.courts.state.ny.us/nyscef/DocumentList?docketId=C9Huno7WnpFtot4yyt_PLUS_png==&display=all and linked at <http://treichlerlawoffice.com/waste/hakes/index.html> .

Water cleaning methods generate waste. And radioactive compounds cannot be removed. And what is a safe level of radioactive material in water? According to the [National Science Foundation resource website](#):

“The safest amount of radiation to the human body is zero. It isn’t possible to be exposed to no ionizing radiation so the next best goal is to be exposed to as little as possible. The two best ways to minimize exposure is to limit time of exposure and to increase distance from the source.”



IMAGE: Treated oil and gas wastewater flows into a stream in western Pennsylvania. A new Duke study finds stream sediments at disposal sites such as this one have levels of radioactivity... [view more](#)

Credit: Avner Vengosh, Duke University

Duke University reports:

More than seven years after Pennsylvania officials requested that the disposal of radium-laden fracking wastewater into surface waters be restricted, a new Duke University study finds that high levels of radioactivity persist in stream sediments at three disposal sites.

The contamination is coming from the disposal of conventional, or non-fracked, oil and gas wastewater, which, under current state regulations, can still be treated and discharged to local streams.

The level of radiation found in stream sediments at the disposal sites was about 650 times higher than radiation in upstream sediments. In some cases, it even exceeded the radioactivity level that requires disposal only at federally designated radioactive waste disposal sites.

https://www.eurekalert.org/pub_releases/2018-01/du-rfo011918.php#.WmTUWr8f2bw.gmail



Concerned Citizens of Allegany County, Inc.

PO Box 425 † Angelica, NY 14709 † www.ccallegany.org

Kimberly Merchant, Deputy Regional Permit Administrator

NYSDEC Region 8

6274 East Avon-Lima Road

Avon, NY 14414

hakesSEQRhearing@dec.ny.gov

Re: Hakes C&D Disposal Expansion Project

3/14/2018

Dear Kimberly Merchant:

Concerned Citizens of Allegany County (CCAC) does hereby submit the following comment on the SEIS for the Hakes C7D Disposal Expansion Project (Hakes) .

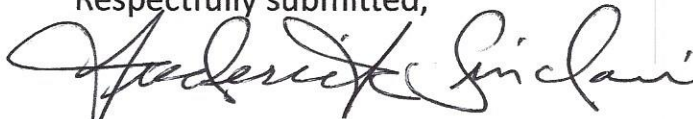
- 1) **The impact to regulated wetlands is greater in extent than what the SEIS discusses within the boundaries of the proposed Hakes expansion and borrow area.** Although the wetland impact areas within the footprint of the proposed expansion area are small in acres, these wetlands are directly connected to much larger off site wetlands and disturbances onsite will impact the recharge and characteristics of the wetlands on and off site. They are hydraulically connected and any evaluation of impact under SEQR pending COE/DEC permit assessment must evaluate these impacts and propose mitigation measures. The Hakes SEIS fails to do this. (See Exhibit A)
- 2) **The wetlands, impacted by the proposed expansion, are hydraulically connected to the groundwater suppression system beneath Hakes and to the nearby tributaries of a protected Trout stream which eventually discharges into an unconsolidated Primary Aquifer.** The wetland disturbance areas are dismissively described in section 4.1, Baseline Information on page 5 of the Wetland Mitigation Plan (WMP) where it states: "Although limited in their ability due to their small sizes, the

principle functions of these wetlands are Groundwater Recharge / Discharge, Floodwater Alteration, Sediment Toxicant Retention, Production Export, Sediment/Shoreline Stabilization and Wildlife Habitat." The WMP makes an erroneous assumption and conclusion regarding the size and connection to the quite expansive wetland. In regard to the leadoff statement "Although limited in their ability due to their small size". Hakes own Landfill Expansion Area Wetland Impact Plan map (Exhibit A) shows that wetlands and groundwater recharge/discharge areas are connected and indeed don't start and stop with project or property boundaries. These Recharge/Discharge, Flood flow Alteration,, Sediment Toxicant Retention, Production Export, Sediment/Shoreline Stabilization and Wildlife Habitat areas are, at points, also directly connected to tributary 4 of Erwin Hollow Creek (PA 3-58-1-4) a Class C stream which within 3,000 feet becomes a Classified and DEC protected Trout Stream (PA 3-58-1)Class C(T). Potential disturbance to the wetland, acting as recharge of this fishery resource, has not been fully examined. How, and to what extent, the suppression of groundwater beneath the nearby disposal cells, in conjunction with surficial collection and diversion of stormwater, will affect the wetlands is unknown. What "Sediment Toxicant Retention" discharges might occur is also not discussed in the SEIS.

- 3) **There is a present and growing threat of direct and rapid transport of radioactive pollutants from Hakes to the air, wetlands, groundwater and a protected stream that feeds the unconsolidated Corning Primary Aquifer.** The progeny of radium and radon have been shown to repeatedly be present in Hakes leachate test results. These radioactive pollutants, although periodically identified in leachate at alarming levels, have not been included in the stormwater runoff, groundwater suppression , landfill gas flaring system or air discharge testing regimens. The presence of radium, which is characteristic of the Marcellus waste stream, within the landfill will be actively producing radioactive progeny for a half life of 1600 years. The discharge of radon from the landfill and flare will deposit radioactive progeny of polonium and lead on the nearby wetlands,, runoff watershed and groundwater recharge areas. The end point of the drainage 3 miles away from Hakes is the Corning Primary Aquifer. (Exhibit B) The Hakes threat of toxic radiological impact to such a critical water supply are going unexamined in the Hakes SEIS. Regardless of the regulatory denial and failure of previous EIS to recognize the threats of even low levels of

radioactivity, there is no safe dose of radiation. None whatsoever! Alpha and beta forms of radiation are particularly harmful to humans when ingested or inhaled. Dilution is not the solution to radioactive pollution. Bioaccumulation in soil, plants, animals and humans is the undeniable process which concentrates, increases and exacerbates radiotoxicity over time. Exposure to radon gas, a progeny of radium, is the number one cause of cancer among non smokers. Natural background radiation does cause cancer. Adding to the background radiation dose just causes more cancer. There are 6,000 active Marcellus wells in Pa. with 10,000 permitted for drilling and a projected build out of 60,000 wells by the year 2030. This could result in thousands more tons of radioactive waste headed for Hakes. The Hakes failure to test for migration of radionuclides away from the site, in myriad vectors identified, invalidates the SEIS conclusion that there is no current or potential future radiological impact to the environment from the Hakes disposal of fracking drilling wastes. This conclusion cannot be defended without full radiological testing and until such is completed and results analyzed, the Hakes SEIS is invalid and the project cannot be approved.

Respectfully submitted,

A handwritten signature in black ink that reads "Frederick Sinclair". The signature is fluid and cursive, with the first name being more prominent.

Frederick Sinclair, Chairman

Concerned Citizens of Allegany County

fpsinclair@yahoo.com POBox 834 Alfred, NY 14802

Figure 2

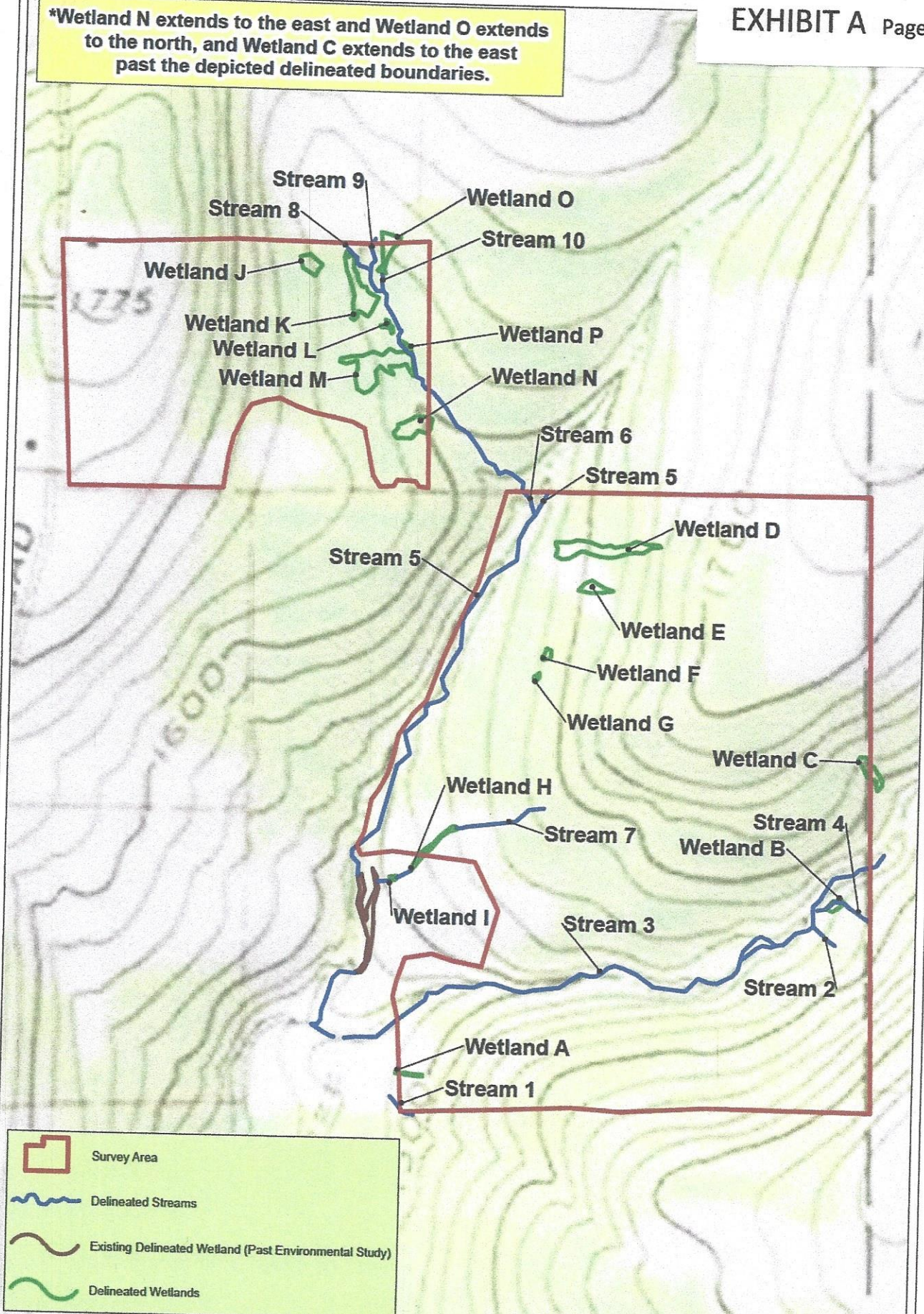
**Landfill Expansion Area
Wetland Impact Plan**



THE ENGINEER'S ATTENTION IS DRAWN TO ANY SURVEY DRAWING, DESIGN OR SPECIFICATION MADE IN ACCORDANCE WITH THE NEW YORK STATE EDUCATION LAW.

| | | | | | |
|--|----------|------------------------|--|--|--|
| NORTHERN EXPANSION WETLAND IMPACT PLAN | | HAKES C&D LANDFILL | | McMahon & Mann Consulting Engineers, P.C. <small>2485 MAIN STREET, SUITE 432 BUFFALO, NY 14214 (716) 834-8832 FAX (716) 834-8934</small> | |
| DWG. NO. 98047-1005a | FIGURE 2 | STEBEN COUNTY NEW YORK | | | |

*Wetland N extends to the east and Wetland O extends to the north, and Wetland C extends to the east past the depicted delineated boundaries.



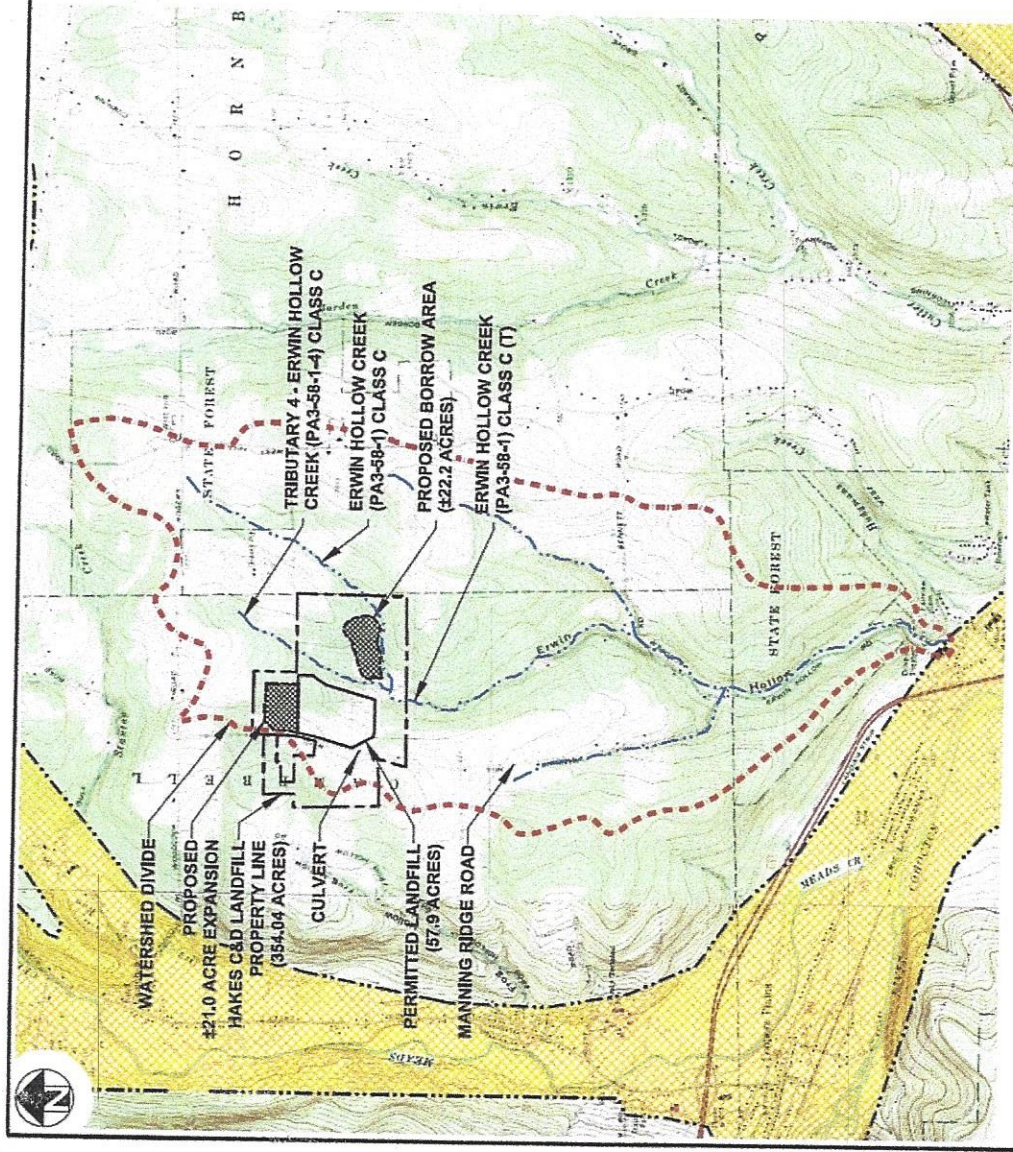
Sources: Topographic Basemap (ESRI, 2013)



1 inch = 375 feet

Hakes C&D Landfill
Delineated Resources
 Steuben County 10/07/2016 New York

Figure 7
 Project No. 574-171



| LEGEND | |
|--------|--|
| | APPROXIMATE PROPERTY LINE |
| | PROPOSED EXPANSION AND BORROW AREA LIMIT |
| | PERMITTED LANDFILL LIMIT |
| | WATERSHED DIVIDE (ERWIN HOLLOW CREEK) |
| | STREAM CHANNEL |
| | AQUIFER BOUNDARY (SEE NOTE 2) |

NOTES:
 1. Base map created from Campbell and Coming USGS quadrangle maps.
 2. Aquifer boundary based on map adapted from Water-Resources Investigations reported 87-4122 titled "Unconsolidated Aquifers in Upstate New York, Finger Lakes Sheet", prepared by Todd Miller.

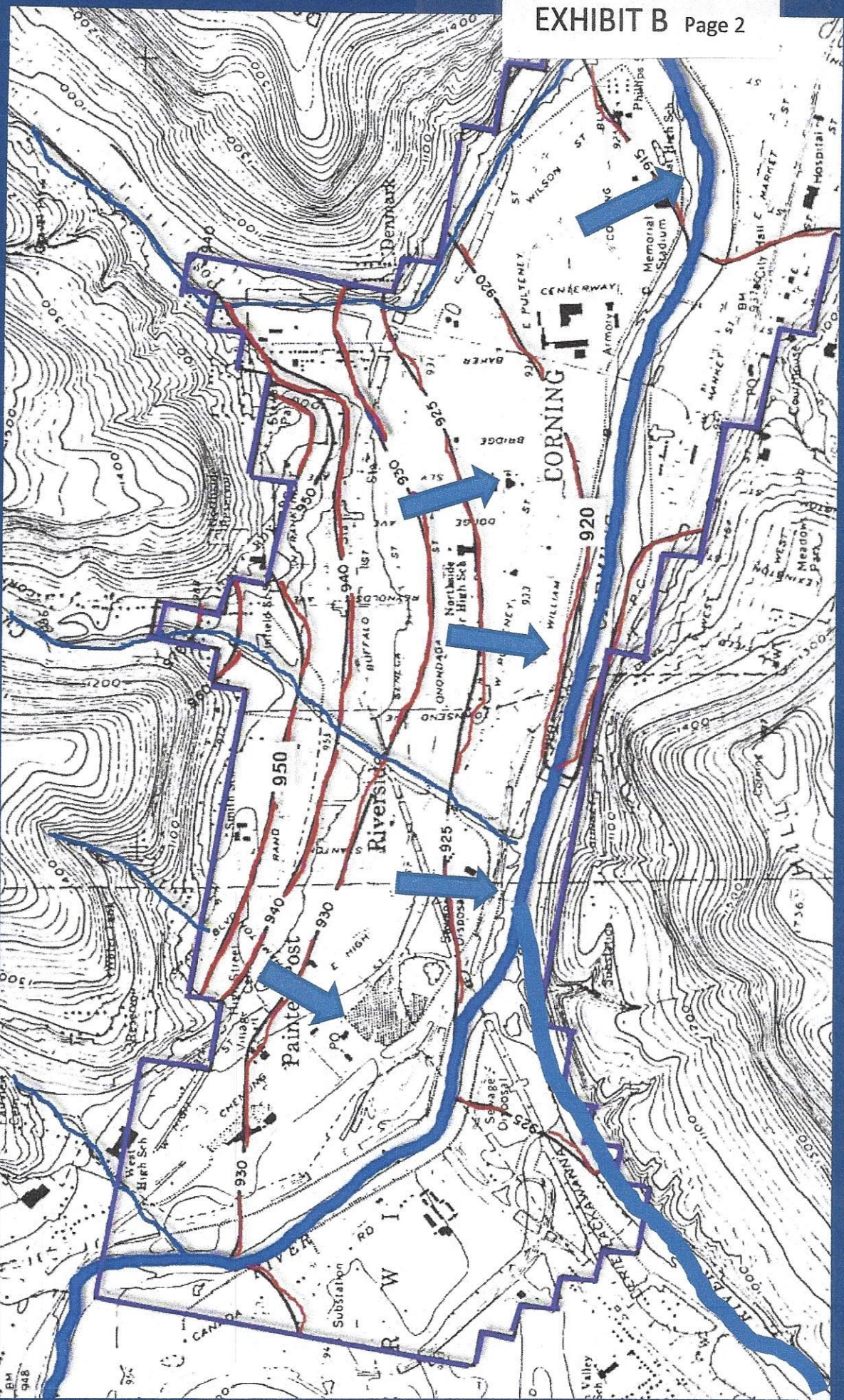
| | | |
|--|-----------------------------|-------------------------|
| McMahon & Mann Consulting Engineers, P.C. <small>210 MAIN STREET, SUITE 435 BUFFALO, NY 14204 PAK: (716) 834-9324</small> | HAKES C&D LANDFILL DSEIS | WATERSHED & AQUIFER MAP |
| | STEUBEN COUNTY NEW YORK | DWG. NO. 98047-937a |

SCALE: 1" = 3000'
 0 1500' 3000'
 APPROXIMATE SCALE: 1" = 3000'

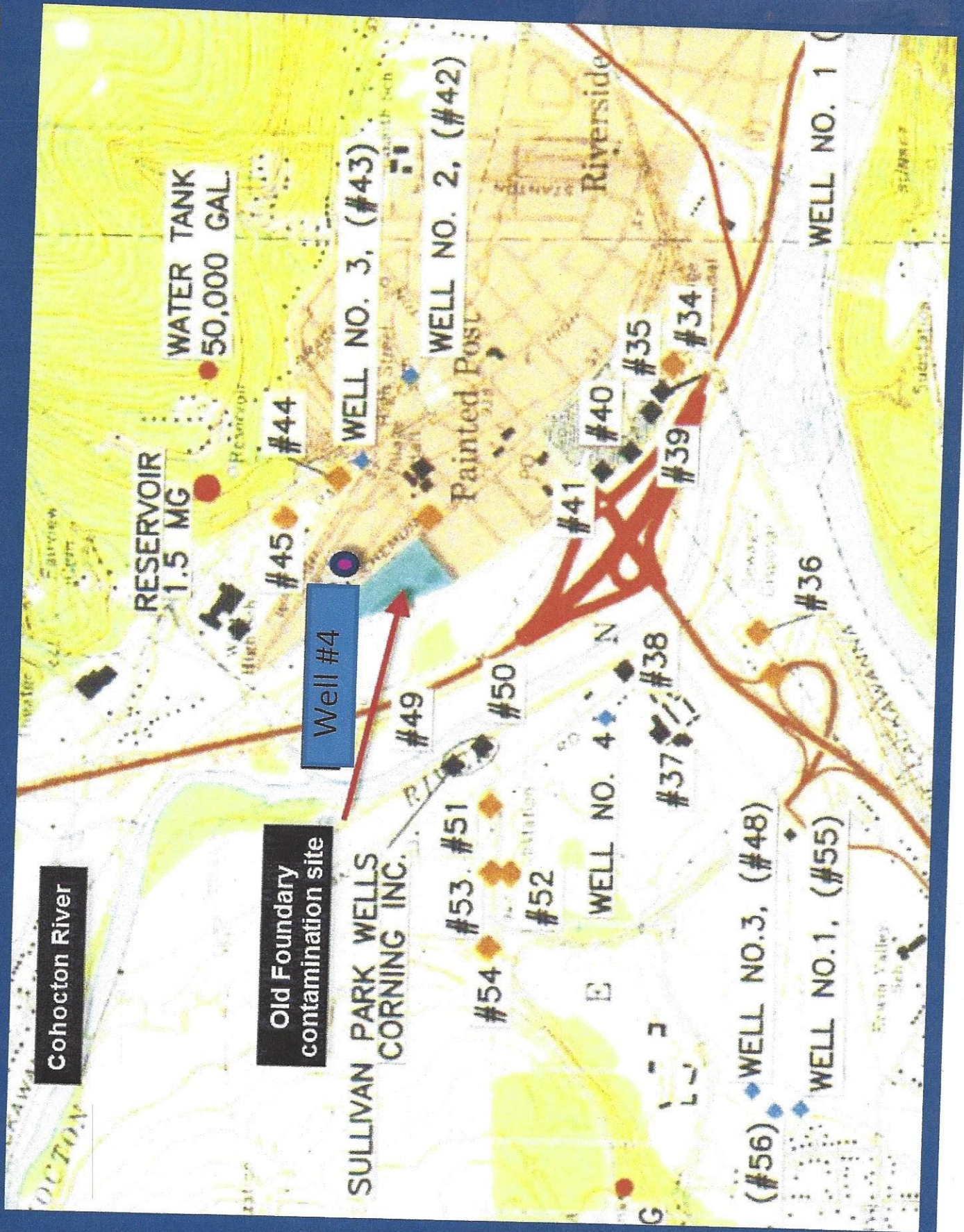
NOTE: THIS DRAWING IS A PRELIMINARY DESIGN AND IS SUBJECT TO CHANGE WITHOUT NOTICE. THE CLIENT IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AGENCIES.

How Does the Corning Aquifer Work?

Elevation of Water Table under natural (non-pumping) conditions
GW flows from north valley wall and discharges into the Chemung River
at the south valley wall



Well No. 4 is in the smaller Cohocton Basin



Dear Ms Merchant, Commissioner Beggos and Governor Cuomo,
I write today to comment on the Wetlands Remediation Plan for Hakes Landfill Facility ID No. 8-2648-0014, attached. I will conclude with summary remarks about Casella's entire application to expand the Hakes Landfill.

Reading the wetland mitigation proposal, I was immediately alerted by the reference to 'palustrine emergent wetlands.' These are very valuable wildlife resources, largely snow free during winter, affording access to grasses and other ground-based food. ["Part 1: Wet land Wildlife Values,"](#) Amy Marrella, Acting Commissioner, Connecticut Department of Environmental Protection, Wildlife Division, pg 20: Seeps are a relatively common Palustrine forested wetland sub-class found in the ledge rock and basalt hill areas of CT. ***They are often inconspicuous in the landscape*** [emphasis added]. Never the less, these shallow areas can be important for wildlife during severe winters as they tend to be snow free and have very early vegetation.

And from "Conclusions," (pg 46) "Riparian zones connect fragmented habitats, provide cover, and protect stream banks." — ["Part 1: Wet land Wildlife Values,"](#) pg 20, Amy Marrella, Acting Commissioner, *Connecticut Department of Environmental Protection, Wildlife Division*

All the palustrine emergent wetland areas that will be permanently lost (.95 acres) are noted in Casella's wetland remediation plan to be just such wetland seeps.

Secondly, this plan does not propose any mitigation of the loss other than compensatory action. An In Lieu Fee (IF) arrangement is proposed with The Wetlands Trust, in the Cohocton/Chemung Service area. That seems reasonable until one sees, in Figure 2 Area Maps beginning on page 10, that both the cell expansion area and the soil borrow area are located on opposing steep hillsides which drain into Erwin Hollow Creek, and contain the palustrine emergent wetlands which "discharge into the Tributary during storm events." It seems on the face of the matter that both the proposed cell and the soil borrow area are poorly chosen from the standpoint of terrain, soils, surrounding vegetation and wildlife impacts. The attempt to keep a landfill cell isolated from discharging into the creek during storms seems like a deliberate exercise in defeating gravity and hydraulics both at once. And taking soil from across the hollow to build, maintain and daily cap the cell likewise seems doomed to cause the loss of a substantial environment well outside the perimeter of the proposed permitted area.

On page 6, the remediation proposal states "Wetlands to be impacted by the proposed project were emergent wetland types with limited environmental functions due to their individual small sizes and lack of vegetative diversity (B&L, 2016)." Here again the proposal ignores both the unique value of these palustrine emergent wetlands but also the consequences of locating both a landfill cell and an associated Soil Borrow Area within about 250 yards of each other on the opposing steep hillsides of a creek running through a hollow. Digging and construction in such a geology inherently destroys the vegetative root system complex which has held the hillside relatively stable for decades and likely centuries.

There are no stated intentions to minimize damage to the surrounding environment. Indeed, there are no specified traffic routes between the proposed expansion and Soil Borrow Area. Since both are within Casella's property line one might well surmise that the vehicles moving soil from the Borrow Area to the expansion cell *will simply traipse the shortest distance* — making the trip some 250 yards down the ravine and across the creek rather than a much longer road trip — completely fouling and interrupting the integrity of the entire ravine and its waters from there downstream. This, in the middle of Erwin State Forest!

Nothing in Casella's mitigation proposal even faintly suggests otherwise.

In positing that Casella's operations will disturb only a small area the authors of the remediation proposal admit they have no idea of the critical nature of the geological terrain they are dealing with, and conceive of no need to assure the Department of Environmental Protection ("Department") or the public of how their operations will be performed to minimize damage to the surrounding environment. Such ignorance sets the stage to precipitate a large sudden loss of soils, terrain, habitat, flora and fauna far exceeding the area they are asking permission to operate in.

Such loss might also precipitate, exacerbate or magnify considerable losses from the landfill itself into Erwin Hollow Creek during storms, as the proposal notes of the wetlands under consideration. This poses the unacceptable possibility, and perhaps high probability of the release of radionuclides into the Cohocton, Tioga and Chemung rivers, as well as Erwin State Forest, as Casella is also applying for permission to expand its acceptance of Marcellus shale cuttings.

The Marcellus shale is notorious for being one of the most highly radioactive shales of any shale gas play. Though the Department has doggedly refused to acknowledge it, its refusal is not a credible rebuttal of the

fact that the drilling process itself constitutes a rendering of materials that would otherwise be normal occurring radioactive material (NORM) into TENORM, technically enhanced NORM. Any mechanical handling of radioactive material that brings it into the accessible environment is by definition TENORM: Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) is defined as, "[Naturally occurring radioactive materials](#) that have been concentrated or exposed to the accessible environment as a result of human activities such as manufacturing, mineral extraction, or water processing."—

["Technologically Enhanced Naturally Occurring Radioactive Materials \(TENORM\)," U.S. Environmental Protection Agency](#)

Siting a further extension of a facility accepting TENORM as well as other "normal" wastes containing unidentified toxins and heavy metals on the steep slopes of wetland seeps that admittedly discharge appreciably during storms into a creek tributary to major rivers and town water supplies is asking for trouble without even knowing it, seemingly: None of their proposal treats the site's position on such terrain as any sort of engineering challenge requiring comment within their Supplemental Environmental Impact Statement or their Wetlands Mitigation Plan. To read their proposal, one might well conclude they were talking about a facility sited on dry flat land that had only a tangential relationship to a substantial riparian environment.

This is entirely unacceptable. I urge the Department to reject both this remediation proposal and the landfill extension application that Casella pretends would comply with the Department's mission to conserve the natural resources of New York and promote the health of its citizens and wildlife.

Sincerely,

Dwain Wilder

Editor, *The Banner*

editor@thebanner.news

**Hakes C&D Landfill Expansion
Facility ID No. 8-2648-00014**

Town of Campbell, Steuben County, New York

Wetland Mitigation Plan

November 2017

Barton
&**L**oguidice

Hakes C&D Landfill Expansion
Facility ID No. 8-2648-00014
4376 Manning Ridge Road
Town of Campbell, Steuben County, New York

Wetland Mitigation Plan

November 2017

Prepared For:

Hakes C&D Disposal, Inc.
4376 Manning Ridge Road
Painted Post, New York 14870

Prepared By:

Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, New York 13088

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Attachments

| | |
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| Attachment A | TWT Credit Availability Letter |
| Attachment B | TWT Credit Transaction Letter Example |

1.0 Introduction

Hakes C&D Disposal, Inc. (Hakes) owns the 109-acre Hakes Construction and Demolition (C&D) debris Landfill (Hakes Landfill) on a 354-acre site (the Site) in the Town of Campbell, Steuben County, New York (Figure 1). The Hakes Landfill is nearing full capacity and Hakes is proposing to construct and operate an expansion to the existing landfill. The proposed Hakes Landfill Expansion will add 21.0 acres of permitted cell area (landfill expansion area) to the 57.9 acres of existing permitted cell area. The proposed Hakes Landfill Expansion also includes a 22.2-acre soil borrow area that will provide soil for construction and operation of the landfill expansion. Combined, these two actions make up the Proposed Project Area. The Proposed Project Area contains federal wetlands that are proposed to be filled to expand the landfill. A Joint Application for Permit (JAP) is being submitted to the U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC) to obtain permits for the proposed wetland disturbances, as required under Sections 401 and 404 of the Clean Water Act. This Wetland Mitigation Plan was prepared as part of the JAP to identify the mitigation proposed by Hakes to offset the lost functions and values of the wetlands impacted by the landfill expansion.

The wetlands and streams in the Proposed Project Area were delineated and mapped by Barton & Loguidice, D.P.C. (B&L) on August 18 and 24, 2016, and a request for an Approved Jurisdictional Determination (AJD) for the identified resources was submitted to the U.S. Army Corps of Engineers (USACE) on August 22, 2017. Impacts to the identified wetlands will require a permit from USACE for the discharge of fill into Waters of the U.S. that are protected under the Section 404 of the Clean Water Act. Under Executive Order 11990, mitigation must be provided for the lost functions and values resulting from permanent loss of wetlands and other Waters of the U.S. This Wetland Mitigation Plan (WMP) presents the mitigation proposed to compensate for the lost functions and values of site wetlands. This WMP was prepared in accordance with USACE's guidance contained in 33 CFR Chapter II Part 332 – Compensatory Mitigation for Losses of Aquatic Resources.

2.0 Resource Impacts

The Proposed Project will result in the permanent loss of 0.672 acres of palustrine emergent wetlands. Figure 2 shows the location of the wetland impact areas and their sizes. A summary of the wetland impacts in the Proposed Project Area is provided in Table 1, below.

| Table 1. Impacted Wetland Resources | | | | | | |
|--|----------------|------------|-------------|-------------------|---|---|
| Resource Name | Cowardin Class | Size | Impact | Hydrology Source | Connectivity | Principal Functions ¹ |
| Wetland K | PEM | 0.35 acres | 0.20 acres | Groundwater Seep | Drains to intermittent stream via channel | GW D/R FFA S/T R PE WH |
| Wetland L | PEM | 0.02 acres | 0.002 acres | Groundwater Seep | Adjacent to intermittent stream | GW D/R FFA PE WH |
| Wetland M | PEM | 0.59 acres | 0.47 acres | Groundwater Seeps | Drains to intermittent stream via channel | GW D/R FFA S/T R PE S/S S WH |
| Total | | 0.96 acres | 0.672 acres | | | |
| ¹ GW D/R – Groundwater Recharge/Discharge FFA – Floodflow Alteration S/T R – Sediment/Toxicant Retention PE – Production Export S/S S – Sediment/Shoreline Stabilization WH – Wildlife Habitat | | | | | | |

3.0 Mitigation Objectives

The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to Waters of the U. S. authorized by USACE permits. The USACE determines the compensatory mitigation required in their permit based on what is practicable and capable of compensating for the aquatic resource functions that will be lost as a result of the permitted activity. Compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with the USACE permit. Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts. Wetlands that will be impacted in the Proposed Project Area are classified as emergent wetlands that typically require 1:1 acreage replacement to offset the lost wetland functions and values. This WMP is proposing to provide 0.672 acres of mitigation for the loss of 0.672 acres of emergent wetland in the Proposed Project Area. However, final mitigation ratios and requirements will be defined by the USACE as permit conditions.

4.0 Mitigation Approach

When evaluating compensatory mitigation options, USACE assesses the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project. In many cases, the environmentally preferable compensatory mitigation may be provided through mitigation banks or in-lieu fee programs because they usually involve consolidating compensatory mitigation projects where ecologically appropriate, consolidating resources, providing financial planning and scientific expertise, reducing temporal losses of functions, and reducing uncertainty over project success.

Compensatory mitigation may be performed using the methods of restoration, enhancement, establishment, and in certain circumstances preservation. When considering options for successfully providing the required compensatory mitigation, USACE considers the type and location options in the order presented below:

1. Securing Credits from an Approved Mitigation Bank;
2. Securing Credits from an Approved In-Lieu Fee (ILF) Program;
3. Permittee-responsible mitigation under a watershed approach;
4. Permittee-responsible mitigation through on-site and in-kind mitigation;
5. Permittee-responsible mitigation through off-site and/or out-of-kind mitigation;
and
6. Watershed approach to compensatory mitigation.

The first step in developing this mitigation plan was to determine the type of mitigation best suited to the project. The alternatives for mitigation were evaluated following the recommended USACE sequence of purchasing credits from an established mitigation bank, in-lieu fee mitigation, and on-site and off-site permittee-responsible mitigation performed by Hakes. These options are discussed below:

Purchase of credits from an established mitigation bank – There are no existing mitigation banks that service the Southern Tier Region. Therefore, purchase of credits from a wetland mitigation bank is not an option for achieving mitigation for this project.

In-lieu fee mitigation – ILF programs involve the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for USACE permits. Similar to a mitigation bank, an in-lieu fee program sells compensatory

mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the ILF program sponsor.

Stakeholder organizations such as Ducks Unlimited (DU) and The Wetland Trust (TWT) were contacted to determine if potential projects of sufficient size or type were available for funding as mitigation under their applicable in-lieu fee programs. DU has no in-lieu fee mitigation programs whose service areas include the Southern Tier. However TWT has an in-lieu fee program, recognized as the Cohocton/Chemung Service Area, which includes the Hakes C&D Landfill location. A total of 14 credits is currently available from this TWT ILF program. Therefore, the TWT's ILF program is an option for achieving mitigation for the Proposed Project.

Based on the USACE's prioritization of the ILF mitigation option over permittee-responsible mitigation and the presence of an ILF program with available credits servicing the area that includes the Proposed Project Area, Hakes has selected the ILF program as the mitigation option for this project. In accordance with the USACE guidance, permittees who intend to fulfill their compensatory mitigation obligations by securing credits from approved mitigation banks or ILF programs need include only baseline information, a determination of credits, and the name of the specific mitigation bank or ILF program to be used in the mitigation plan. This information is provided in the following sections of this Wetland Mitigation Plan.

4.1 Baseline Information

The wetland resources that will be impacted by the project (Wetlands K, L, and M) occur along a steep hillside that descends to Tributary 4 to Erwin Hollow Creek (Figure 1). Groundwater seeps discharge into these wetlands to support an herbaceous hydrophytic plant community. These wetlands discharge to the Tributary during storm events. Although limited in their ability due to their small sizes, the principal functions of these wetlands are Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Production Export, Sediment/Shoreline Stabilization, and Wildlife Habitat. The size, location, type, and ecological characteristics of the wetlands to be impacted by the proposed project are presented in a Wetland Delineation Report prepared by B&L in 2016 for Hakes. Descriptions of existing plant communities, hydrology, and soil conditions, as well as the identified functions and values of the site wetlands are included in the Wetland Delineation Report. Figure 2 shows the locations and sizes of the wetlands that will be impacted by the proposed project. The Wetland Delineation Report is provided under separate cover.

4.2 Determination of Credits

The USACE will determine the amount of compensatory mitigation that will be required to offset unavoidable impacts to aquatic resources. The amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions.

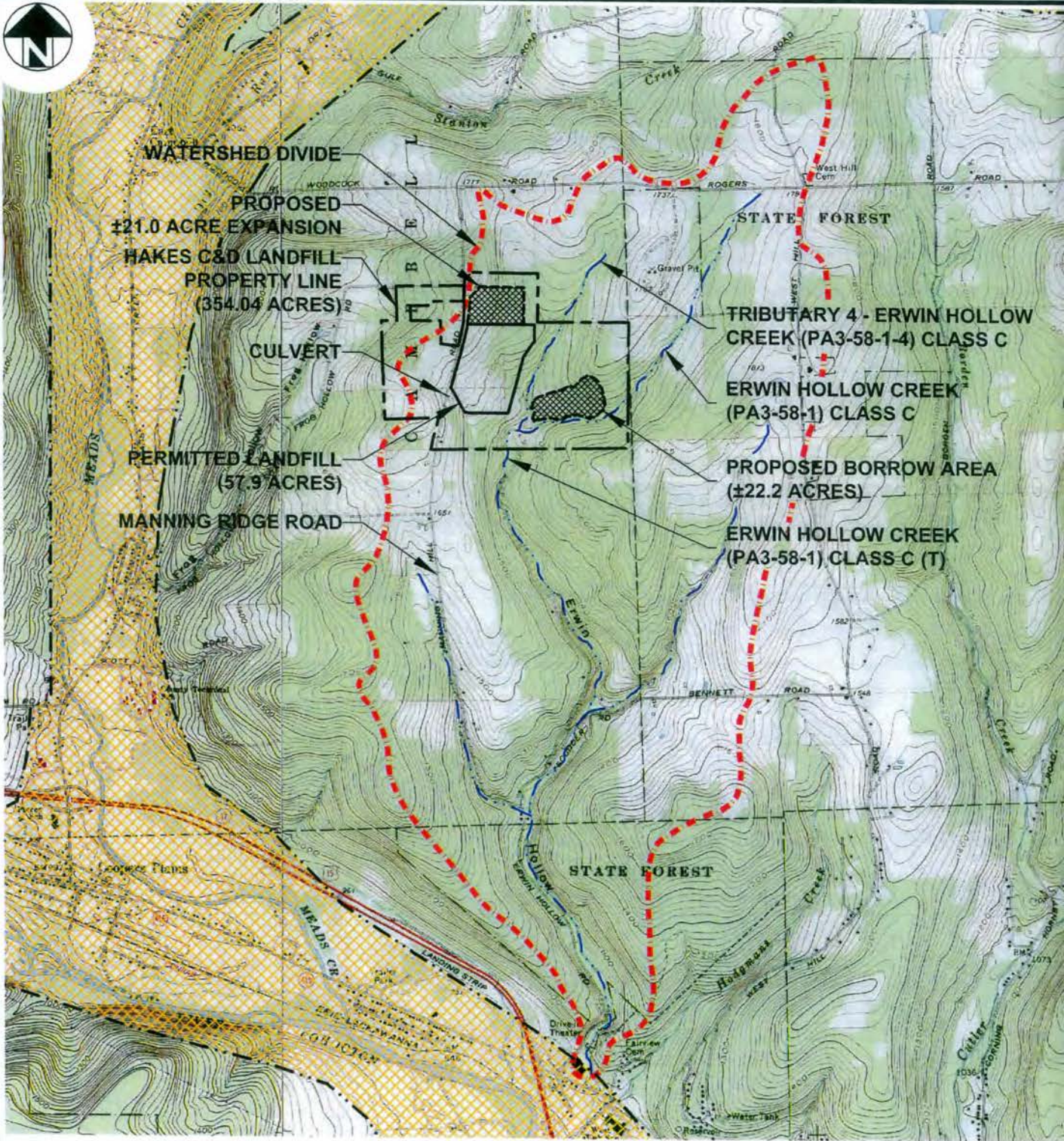
Wetlands to be impacted by the proposed project were emergent wetland types with limited environmental functions due to their individual small sizes and lack of vegetative diversity (B&L, 2016). The wetland impacts total 0.672 acres. The proposed mitigation for these wetland impacts is the purchase of 0.672 acres of emergent wetland credits from TWT's ILF program – Cohocton/Chemung Service Area. This credit amount resulted from a 1:1 mitigation ratio that was based on the type and functions of the wetlands to be impacted. Where permitted impacts are located within the service area of an approved ILF program, and the sponsor has the appropriate number and resource type of credits available, the permittee's compensatory mitigation requirements can be met by securing those credits from the sponsor.

ILF projects typically involve larger, more ecologically valuable parcels, and more rigorous scientific and technical analysis, planning and implementation than permittee-responsible mitigation. They also devote significant resources to identifying and addressing high-priority resource needs on a watershed scale, as reflected in their compensation planning framework. For these reasons, USACE prefers ILF program credits over permittee-responsible mitigation. Hakes will retain responsibility for providing the compensatory mitigation until the appropriate number and resource type of credits have been secured from TWT and the USACE receives documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation.

4.3 In-Lieu Fee Program

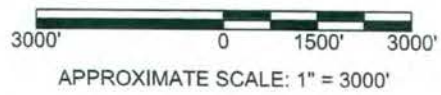
The wetland resources that will be impacted in the Proposed Project Area occur within the service area of TWT's Cohocton/Chemung ILF Program. There are currently 12.58 advanced mitigation credits available through this program. An availability of Credit letter from TWT is provided in Attachment A. TWT is located at 4729 State Route 414 in Burdett, NY. TWT's ILF program instrument indicates that TWT is responsible for the implementation, performance, and long-term management of the compensatory mitigation project(s) and that TWT agrees to assume responsibility for a permittee's compensatory mitigation requirements. The process requires Hakes to secure the appropriate number and resource type of credits from TWT and provide documentation of the purchase to the USACE. Documentation is typically provided in a credit transaction letter signed by Hakes that includes the USACE permit number and a statement indicating the number and resource type of credits that have been secured from TWT. An example credit transaction letter is provided in Attachment B. Copies of this documentation will be retained in the administrative records for both the permit and the instrument. If the sponsor fails to provide the required compensatory mitigation, the district engineer may pursue measures against the sponsor to ensure compliance.

Figure 1
Project Location Map



WATERSHED DIVIDE
PROPOSED ±21.0 ACRE EXPANSION
HAKES C&D LANDFILL PROPERTY LINE (354.04 ACRES)
CULVERT
PERMITTED LANDFILL (57.9 ACRES)
MANNING RIDGE ROAD







STATE FOREST
TRIBUTARY 4 - ERWIN HOLLOW CREEK (PA3-58-1-4) CLASS C
ERWIN HOLLOW CREEK (PA3-58-1) CLASS C
PROPOSED BORROW AREA (±22.2 ACRES)
ERWIN HOLLOW CREEK (PA3-58-1) CLASS-C (T)



NOTE:
UNAUTHORIZED ALTERATION OR ADDITION TO ANY SURVEY, DRAWING, DESIGN, SPECIFICATION, PLAN, OR REPORT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

McMa
Consult
2495 MAIN STREET, SU
BUFFALO, NY 14214



| LEGEND | |
|---|--|
|  | APPROXIMATE PROPERTY LINE |
|  | PROPOSED EXPANSION AND BORROW AREA LIMIT |
|  | PERMITTED LANDFILL LIMIT |
|  | WATERSHED DIVIDE (ERWIN HOLLOW CREEK) |
|  | STREAM CHANNEL |
|  | AQUIFER BOUNDARY (SEE NOTE 2) |

- NOTES:
1. Base map created from Campbell and Corning USGS quadrangle maps.
 2. Aquifer boundary based on map adapted from Water-Resources Investigations reported 87-4122 titled "Unconsolidated Aquifers in Upstate New York, Finger Lakes Sheet", prepared by Todd Miller.

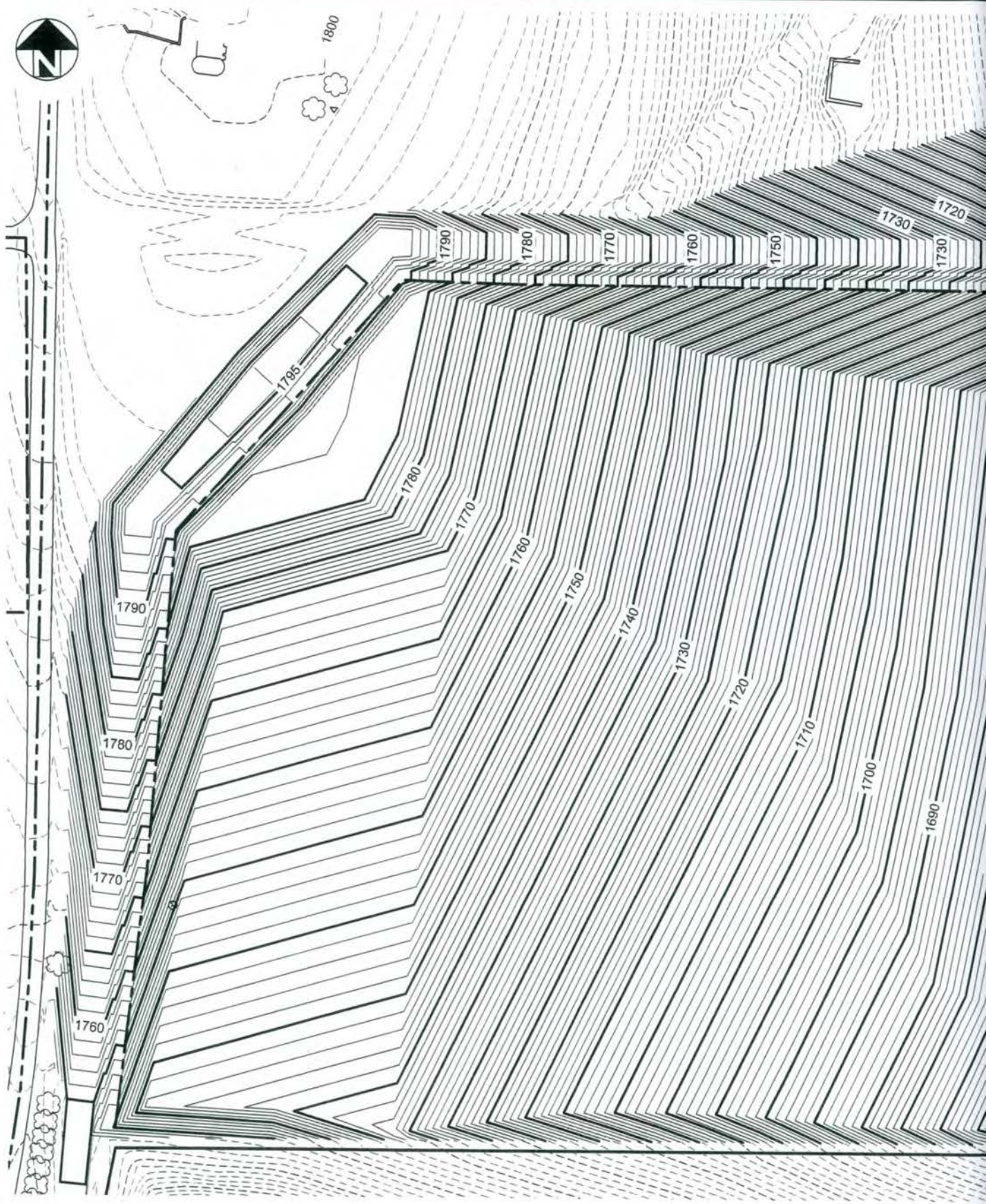
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 Consulting Engineers, P.C.
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 FAX: (716) 834-8934

HAKES C&D LANDFILL
 STEUBEN COUNTY NEW YORK

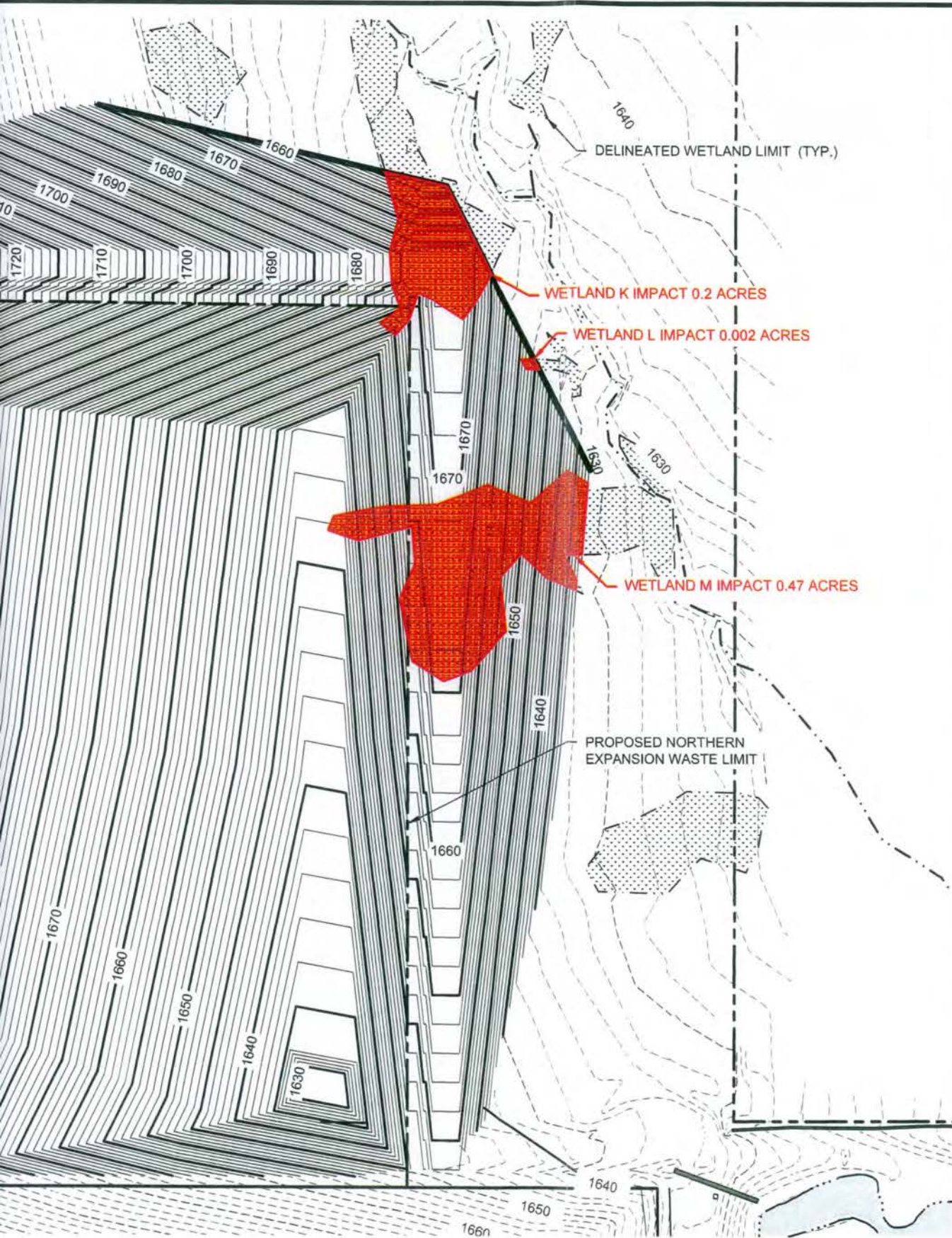
PROJECT LOCATION MAP
 DWG. NO. 98047-937a FIGURE 1

Figure 2

**Landfill Expansion Area
Wetland Impact Plan**



JUNE 2017



DELINEATED WETLAND LIMIT (TYP.)

WETLAND K IMPACT 0.2 ACRES

WETLAND L IMPACT 0.002 ACRES

WETLAND M IMPACT 0.47 ACRES

PROPOSED NORTHERN EXPANSION WASTE LIMIT

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HAKES C&D LANDFILL

STEUBEN COUNTY NEW YORK

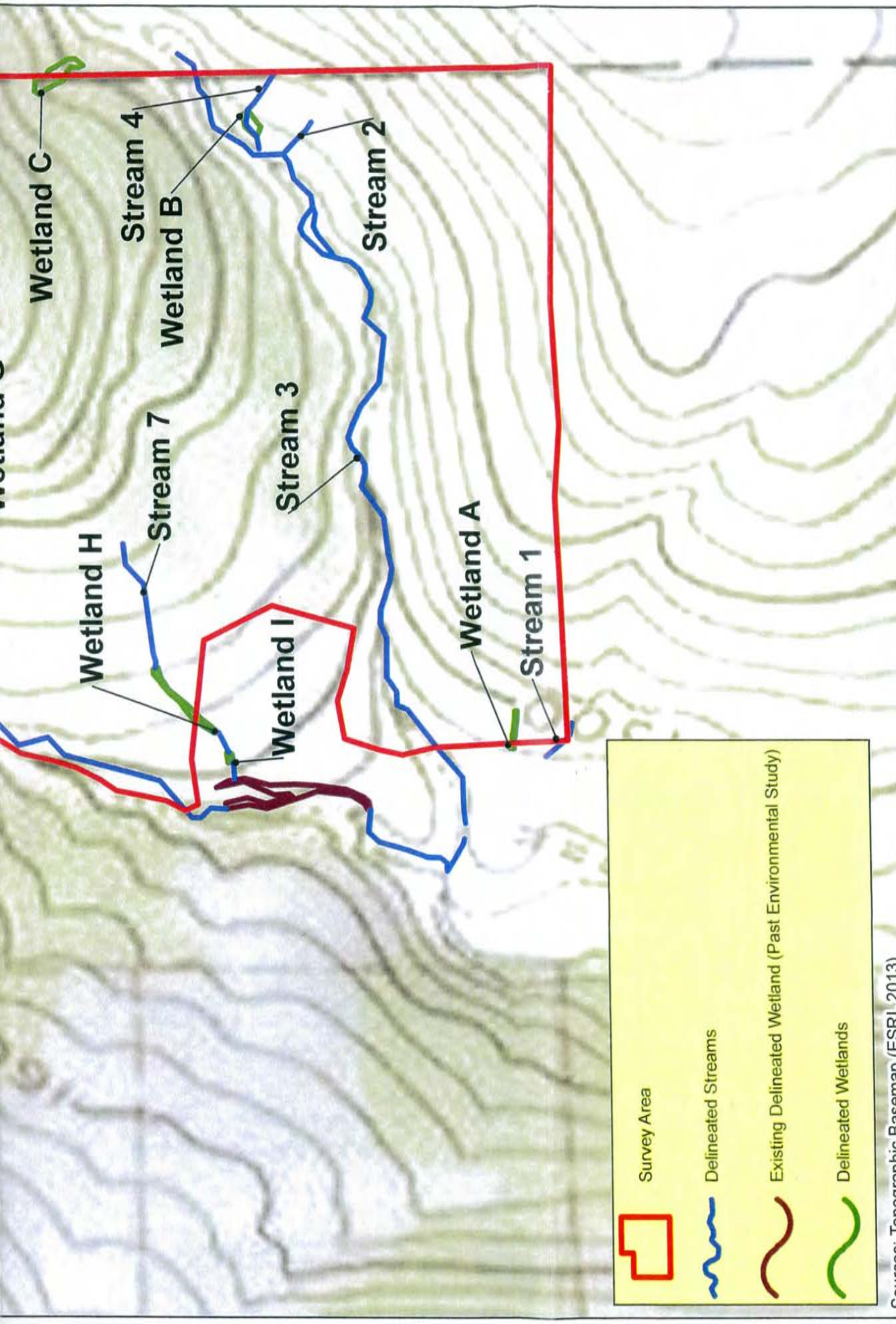
**LANDFILL EXPANSION AREA
WETLAND IMPACT PLAN**





FIGURE 2

DWG. NO. 98047-1005a

*Wetland N extends to the east and Wetland O extends to the north, and Wetland C extends to the east past the depicted delineated boundaries.





| | |
|---|--|
|  | Survey Area |
|  | Delineated Streams |
|  | Existing Delineated Wetland (Past Environmental Study) |
|  | Delineated Wetlands |

Sources: Topographic Basemap (ESRI, 2013)



Engineers • Environmental Scientists • Planners • Landscape Architects



1 inch = 375 feet

Hakes C&D Landfill

Delineated Resources

Steuben County 10/07/2016 New York

Figure 7
Project No. 574.171