Bushkill Stream and Streambank Rehabilitation
Town of Olive, Ulster County, New York
Environmental Review Record

Prepared by Tetra Tech Inc.
1999 Harrison Street, Suite 500
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New York State Homes and Community Renewal
Governor's Office of Storm Recovery
38-40 State Street
Albany, NY 12207

Bushkill Stream and Streambank, Olive, New York
Environmental Assessment

August 28, 2019

Project Name:	Bushkill Stream and Streambank Rehabilitation Project
Project Location:	Town of Olive, Ulster County, NY
Federal Agency:	US Department of Housing and Urban Development
Responsible Entity:	New York State Homes and Community Renewal
Responsible Agency's Certifying Officer:	Lori A. Shirley, Governor's Office of Storm Recovery, Certifying Officer
Project Sponsor:	Town of Olive
Primary Contact:	Sylvia Rozzelle, Supervisor Town of Olive 45 Watson Hollow Road West Shokan, NY 12494 Phone: (845) 657-8118 Email: olivesupervisor@hvc.rr.com
Project NEPA Classification:	24 CFR 58.35(a) (Categorical Exclusion Subject To 58.5)
Environmental Finding:	☒ Finding of No Significant Impact - The project will not result in a significant impact on the quality of the human environment. ☐ Finding of Significant Impact - The project may significantly affect the quality of the human environment.

Certification	The undersigned hereby certifies that New York State Homes and Community Renewal has conducted an environmental review of the project identified above and prepared the attached environmental review record in compliance with all applicable provisions of the National Environmental Policy Act of 1969, as amended (42 USC Sec. 4321 et seq.) and its implementing regulations at 24 CFR Part 58.
Signature	 Lori A. Shirley – Certifying Officer

Environmental Review Prepared By:	Tetra Tech, Inc. 1999 Harrison Street, Suite 500 Oakland, CA 94612

CERTIFICATION OF NEPA CLASSIFICATION

It is the finding of the New York State Housing Trust Fund Corporation that the activity(ies) proposed in the 2014 NYS CDBG-DR project, the Bushkill Creek Stream Restoration Project, is:

Check the applicable classification.

☐ Exempt as defined in 24 CFR 58.34 (a).

☐ Categorically Excluded as defined in 24 CFR 58.35(b).

☐ Categorically Excluded as defined in 24 CFR 58.35(a) and no activities are affected by federal environmental statues and executive orders [i.e., exempt under 58.34(a)(12)].

☐ Categorically Excluded as defined in 24 CFR 58.35(a) and some activities are affected by federal environmental statues and executive orders.

☒ "Other" neither exempt (24 CFR 58.34(a)) nor categorically excluded (24 CFR 58.35).

☒ Part or all of the project is located in an area identified as a floodplain or wetland. For projects located in a floodplain or wetland, evidence of compliance with Executive Orders 11988 and/or 11990 is required.

For activities excluding those classified as "Other," attached is the appropriate Classification Checklist (Exhibit 2-4) that identifies each activity and the corresponding citation.

Lori A Shirley

_____ August 28, 2019
Signature of Certifying Officer Date

Lori A. Shirley
GOSR Certifying Officer

CERTIFICATION OF SEQRA CLASSIFICATION

It is the finding of the New York State Housing Trust Fund Corporation that the activity(ies) proposed in its 2019 NYS CDBG-DR project, the Bushkill Creek Stream Restoration Project is:

Check the applicable classification:

- ☒ Type I Action (6NYCRR Section 617.4)
- ☐ Type II Action (6NYCRR Section 617.5)
- ☐ Unlisted Action (not Type I or Type II Action)

Check if applicable:

- ☐ Environmental Impact Statement (EIS) Prepared
  - ☐ Draft EIS
  - ☐ Final EIS

Lori A Shirley

_____ August 28, 2019

Signature of Certifying Officer Date

Lori A. Shirley
GOSR Certifying Officer

Description of the Proposed Project [24 CFR 50.12 & 58.32; 40 CFR 1508.25]**:**
The Town of Olive proposes to design and implement mitigations for potential flood hazard areas in the Bushkill channel and stream banks between Bushkill Bridge on County Route 42 and New York Route 28A Bridge to the east, in the Hamlet of West Shokan and Town of Olive, Ulster County, New York (See **Appendix A,** Figures).

The Bushkill drains a 19.7-square-mile watershed in Ulster County within the towns of Olive, Shandaken, and Denning, in the Catskill Mountain region of southeastern New York. The Bushkill flows generally north and east beginning in the Sundown Wild Forest and flowing primarily along County Route 42 (Watson Hollow Road) in West Shokan through the Town of Olive. It enters the Ashokan Reservoir just east of West Shokan, a hamlet of the Town of Olive.

Flooding from recent storms has resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel.

Two bridges are located within the project area the State Route 28A bridge, located approximately 1,500 feet upstream of the Ashokan Reservoir, and the County Route 42 (Watson Hollow Road) bridge, located approximately 4,600 feet upstream of the Ashokan Reservoir.

During Hurricane Irene, approximately 100 feet of the road by the State Route 28A Bridge washed out as well as the downstream embankment. The northern approach to the bridge and one of the piers subsequently required repairs. Additional repair work involved stream and slope stabilization, scour remediation along the embankment toe, and scour protection for the wingwall and abutment.

The County Route 42 (Watson Hollow Road) bridge was originally constructed as a three-span, two-pier bridge. It was replaced and realigned in 1992 with a single-pier bridge. Since the realignment of the bridge, the channel beneath it, as well as upstream and downstream, has adjusted significantly. A large sediment bar has formed along the upstream side of the left side of the channel, almost completely blocking the left opening. The right side of the channel has degraded and created a steep, eroding bank along the right side of the channel both upstream and downstream of the bridge. This situation worsened after Hurricane Irene, which resulted in the loss of much of the heavy stone riprap under the bridge and caused the downstream side of the right abutment to become undermined. While the upstream half of the right abutment retains its stone riprap cover, the downstream half of the pier cap is fully exposed, and a void is visible underneath it.

Upstream of the project area, the Bushkill is characterized by a steep, confined channel with very little floodplain. Raw, eroding banks can be observed at many locations, and large, active bank failures, some of which threaten roads, are present. This channel instability upstream of the project area represents a source of excessive sediment, which is transported downstream during large flood events and contributes to the large sediment load entering the project area.

Proposed Project

The Proposed Project would involve stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area.

The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

The project area includes approximately 2,525 linear feet (LF) of channel beginning approximately 500 LF upstream of the Watson Hollow Road bridge and ending approximately 2,000 LF downstream of Watson Hollow bridge or 1,000 LF upstream of the Route 28A bridge (See **Appendix A**, Figures).

The project will be undertaken in three phases. In the first phase, construction will occur within the most upstream portion of the project reach. The modifications will include concentrating the stream channel and widening of the floodplain area, stabilizing the streambank with joint planted boulder revetments or planting of live willow stakes, and fortifying the base of the Watson Hollow bridge along the right bank with grouted rip rap (See **Appendix B**, Site Plans). In the second phase, which occupies the middle section of the project reach, the construction activities will include widening of the floodplain, and stabilizing the streambank with joint planted boulder revetments and/or planting of live willow stakes. The third phase which will encompass the most downstream portion of the project reach, will involve the same modification as phase two as well as the removal of a side cast berm along the left bank.

To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Grading of the stream channel and floodplain will result in disturbance within the regulatory areas as follows:

- The stream channel will be disturbed for a length of 2,525 LF.
- In total, 10.45 acres will be disturbed, of which 4.04 acres will be below the ordinary high-water line (OHWL) and 4.23 acres will be within the NYSDEC regulated streambank area (50 feet beyond the OHWL).

- Tree clearing will occur on 1.15 acres of land.
- Materials that will be imported to the site and utilized to stabilize the streambank will primarily consist of the joint planted boulder revetment materials and will total 2,651 cubic yards (CY). Of that, 2,651 CY will be placed below the OHWL. 152 CY will be placed within the NYSDEC regulated streambank. (An additional 336 CY of fill material that will be placed below the OHWL, will be from on-site, reused material).

As a Class A(TS) stream, it is anticipated that no in-stream work will be permitted between September 30 and April 30th. As a result, the anticipated construction period is May 2020 (or slightly earlier to set up construction entrances, staging and traffic control measures) to September 30, 2020.

Statement of Purpose and Need for the Proposal [40 CFR 1508.9(b)]:
In June 2013, Governor Andrew Cuomo set out to centralize recovery and rebuilding efforts in impacted areas of New York State. Although Ulster County was not affected by Hurricane Sandy, this storm was the catalyst for the allocation of disaster relief funds under the Community Development Block Grant – Disaster Recovery (CDBG-DR) award. These funds are being used to assist not only counties that were devastated by Hurricane Sandy, but also counties like Ulster County that were severely impacted by Hurricane Irene and Tropical Storm Lee in 2011. The Governor's Office of Storm Recovery (GOSR) was established to administer the award funds, address communities' most urgent needs, and encourage the identification of innovative and enduring solutions to strengthen the State's infrastructure and critical systems. Operating under the umbrella of New York State Homes and Community Renewal (HCR), GOSR uses approximately $3.8 billion in flexible funding made available by the US Department of Housing and Urban Development's (HUD's) CDBG-DR program to concentrate aid to four main areas: housing recovery, small business, community reconstruction, and infrastructure. Paired with additional federal funding that was awarded to other State agencies, the CDBG-DR program is enabling homeowners, small businesses and entire communities to build back and better prepare for future extreme weather events.

During Hurricane Irene and Tropical Storm Lee, torrential rainfall caused flooding throughout the Esopus watershed, including the Bushkill in West Shokan. Government offices and hundreds of homes were completely isolated from surrounding areas during the floods. People seeking to receive and give assistance during the flooding were forced to make 1.5-hour detours around the flooding through Sullivan County. It is anticipated that this project will address mitigation of flooding of the Watson Hollow Road area during future storm events and will be designed and implemented so as to provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. The town envisions this project as a long-term solution for mitigating harmful effects of future storm events. All the proposed improvements will support and enhance the town's ability to carry out essential governmental operations during future storm events, which includes

increased emergency response capability and dispatching of public works employees to address emergencies throughout the town.

Standard Conditions for All Projects

Any change to the approved scope of work will require re-evaluation by the Certifying Officer for compliance with NEPA and other laws and Executive Orders. This review does not address all federal, state and local requirements. Acceptance of federal funding requires the recipient to comply with all federal state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.

Funding Information

Estimated Total HUD Funded Amount:
$1,752,622.50

Estimated Total Project Cost
(HUD and non-HUD funds) [24 CFR 58.32(d)]**:**
$1,752,622.50

Compliance with 24 CFR 58.5 and 58.6 Laws and Authorities

Record below the compliance or conformance determinations for each statute, executive order, or regulation. Provide credible, traceable, and supportive source documentation for each authority. Where applicable, complete the necessary reviews or consultations and obtain or note applicable permits of approvals. Clearly note citations, dates/names/titles of contacts, and page references. Attach additional documentation as appropriate.

Compliance Factors: Statutes, Executive Orders, and Regulations listed at 24 CFR §58.5 and §58.6	Are formal compliance steps or mitigation required?	Compliance determinations
STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 and 58.6		
Airport Hazards 24 CFR Part 51 Subpart D	Yes ☐ No ☒	Based on HUD guidance in Fact Sheet #D1, the National Plan of Integrated Airport Systems (NPIAS) was reviewed for civilian, commercial service airports near the project area, as projects within 2,500 feet of a civil airport require consultation with the appropriate civil airport operator. There are no civilian or military airports within 2,500 feet of the project area. There are no military airports within 15,000 feet of the project area. No runway clear zones would be affected by the Project. No vertical structures are proposed. (See **Appendix A**, Figures) **Source: 3, 4**
Coastal Barrier Resources Coastal Barrier Resources Act, as amended by the Coastal Barrier Improvement Act of 1990 [16 USC 3501]	Yes ☐ No ☒	According to the Coastal Barrier Resources System (CBRS) Mapper, the project area is not in a Coastal Barrier Resource area as defined by the state's Coastal Zone Management Program. (See **Appendix A**, Figures) **Source: 5**
Flood Insurance Flood Disaster Protection Act of 1973 and National Flood Insurance Reform Act of 1994 [42 USC 4001-4128 and 42 USC 5154a]	Yes ☐ No ☒	The project area is located within Zone AE- within the 100-year floodplain, as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 36111C0410F, dated November 18, 2016. A portion of the project

		area within the 100-year floodplain are also within a floodway, which includes the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachments so that a one percent annual chance flood (100-year flood) can be accommodated without substantial increases in flood height. Part of the project area also is within the 500-year floodplain. (See **Appendix A**, Figures) The Town of Olive is a participating community in the National Flood Insurance Program (NFIP) that requires that it adopt and enforce floodplain management regulations that meet or exceed the minimum NFIP standards and requirements. The project would not involve financial assistance for construction, rehabilitation, or acquisition of a mobile home, building, or insurable personal property or the purchase of machinery, equipment, fixtures, or furnishings insurable under the National Flood Insurance Program (NFIP). The proposed project would mitigate potential flood hazard areas in the channel and stream banks. **Source: 6**

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 & 58.5		
Clean Air Clean Air Act, as amended, particularly section 176(c) & (d); 40 CFR Parts 6, 51, 93	Yes ☐ No ☒	The project area is not located within a nonattainment or maintenance area for the 2015 and 2008 8-hour ozone standards, as defined by the US Environmental Protection Agency (EPA) Green Book Nonattainment Areas for Criteria Pollutants. The project would not require NYS Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit. Project activities would not substantively affect air quality since no sources are proposed.

		Implementation of standard best management practices (BMP) would control dust and other emissions during construction. Air quality impacts would be short term and localized during construction. Therefore, there would be no significant adverse impacts to air quality. (See **Appendix A**, Figures) **Source: 7**
Coastal Zone Management Coastal Zone Management Act, sections 307(c) & (d)	Yes ☐ No ☒	The project area is not in a coastal zone as defined by the state's Coastal Zone Management program. (See **Appendix A**, Figures) **Source: 8**
Contamination and Toxic Substances 24 CFR Part 50.3(i) & 58.5(i)(2)	Yes ☐ No ☒	The project area was not identified in NYSDEC Remediation or Bulk Storage Site Databases. A search of the NYSDEC Remediation Site Database containing records of the sites being addressed under one of NYSDEC's remediation programs (State Superfund, Brownfield Cleanup, Environmental Restoration and Voluntary Cleanup, the Registry of Inactive Hazardous Waste Disposal Sites, and Institutional and Engineering Controls), did not identify any remediation sites within a one-mile radius of the project site. (See **Appendix A**, Figures.) A search of the NYSDEC Bulk Storage Program Database identified one petroleum bulk storage facility (PBS) within one mile of the project area. The PBS program applies to facilities that store more than 1,100 gallons of petroleum in aboveground and underground storage tanks (AST and UST). Facilities with one or more underground storage tanks larger than 110 gallons must also be registered. (See **Appendix A**, Figures.) These bulk storage sites are not considered a hazard that could affect the health and safety pertaining to drainage improvements because the bulk storage sites are permitted and regulated by the NYDEC bulk storage program ensuring the

		proper containment, handling and storage of petroleum, hazardous substances/chemicals, or liquefied natural gas (LNG). Twenty-three EPA facilities are within one mile of the project area. (See **Appendix A**, Figures.) None of these 23 facilities are EPA Superfund sites. The listings include: one Resource Conservation and Recovery Act (RCRA)-regulated listing, 21 state master list records (FIS), and one National Pollutant Discharge Elimination System (NPDES) permit listing. Fourteen of the FIS records and the RCRA and NPDES listings are within 3,000 feet. Two of the state master list records are within the project area: Peekamoose Road along Bushkill and Peekamoose Road over Bush Kill. The first facility was listed for Section 404 permitting and Section 401 Certification/Coastal Zone Management and the second facility was listed for Section 401 Certification/Coastal Zone Management. The NPDES facility is the Town of Olive Swimming Pool and has no Clean Water Act violations, and the RCRA facility is the Ulster County Department of Highways and Bridges, which is listed as a hazardous waste generator with no violations. The reporting listings are unlikely to adversely affect the project area, since they are regulated and permitted. The project will not result in the exposure of people or sensitive environmental resources to the locations identified in these databases. **Source: 9, 10, 11, 12**
Endangered Species Endangered Species Act of 1973, particularly section 7; 50 CFR Part 402	Yes ☒ No ☐	Section 7 of the Endangered Species Act requires the action agency (GOSR) to make a determination of effect on any federally listed species or designated critical habitat that may occur from an action that is funded, authorized, or carried out by the action agency. GOSR is acting as HUD's designated representative for this program.

		Consultation with the New York Natural Heritage Program (NYNHP) regarding potential rare or state-listed animals or plants near the project area was initiated on September 26, 2018. According to information reviewed from the New York State Environmental Resource Mapper (ERM), the project area is in the vicinity of natural communities and rare plants. The project is near the beech-maple mesic forest natural community in Catskill Park. In a response dated October 12, 2018, NYNHP stated that the following state-listed animals have been documented in the vicinity of the project site: bald eagle (*Haliaeetus leucocephalus*) nesting within 0.8 mile of the project site; timber rattlesnake (*Crotalus horridus*) within 1.5 miles of the project site; spreading rush (*Juncus subcaudatus*) was identified on Little Mountain, West Shokan, within 0.5 mile of the project site in 1999 (this plant is found in seeps in hemlock-northern hardwood forests); and nodding pogonia (*Triphora trianthophoros*, ssp. *Trianthophoros*), which was identified within 0.5 mile of the project site in 2009 (this plant is found in mixed woods tending toward beech-maple). NYNHP stated that, depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources of the species listed in the NYNHP database may be required to fully assess impacts on biological resources. This will be addressed during the permitting process. In a letter dated January 28, 2019, the NYSDEC Division of Environmental Permits, Region 3 stated that it concurred that bald eagles would not likely be impacted by the project and no further review was necessary. The letter added that the project area is within screening distance of the timber rattlesnake, State-listed Threatened species. In a Notice of Incomplete Application from the same Department, dated May 1, 2019,

		noted that it is reasonable that timber rattlesnakes may be present in the work areas and advised that to prevent adverse impacts to the species, basic education and encounter plans should be implemented. This requires the following: • A "Timber Rattlesnake Encounter Plan" should be added to the project plans and followed in the event of an encounter during construction; • Separately, an education and encounter plan should be developed and must be submitted to the Department for approval. The plan would be distributed to all contractors/on-site personnel to inform them of the possibility of encountering a timber rattlesnake, and what to do if one is found. The US Fish and Wildlife Service (USFWS) online review process, completed on December 20, 2018, identified one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, *Myotis sodalis*) and the threatened northern long-eared bat (NLEB, *Myotis septentrionalis*) and the bog turtle (*Clemmys muhlenbergii*). Several migratory birds of concern that could potentially be affected by the proposed project were also identified in the online review process. No critical habitat for these species was identified and the wetlands associated with the project do not provide suitable habitat for the bog turtle. Coordination was initiated with USFWS in a letter on December 21, 2019. The letter determined that the project may affect but is unlikely to adversely affect the NLEB, IB, bog turtle, or migratory birds. Because the proposed project involves the removal of trees during the active season of the IB and NLEB, the letter recommended that a habitat assessment for the potential presence of the NLEB be conducted by a

		qualified biologist prior to project-related activities. If warranted by the results of habitat assessment, a bat acoustic survey may also need to be conducted to determine bat species. USFWS responded in a letter dated February 13, 2019 requesting a tree assessment and/or acoustic survey plans and requesting additional information regarding the wetland at the site and their potential suitability for bog turtles. On February 11, 2019, a Phase 1 Habitat Assessment was conducted by Amanda Bailey, NYSDEC Wildlife Biologist. The assessment concluded that while the project does not occur within a known Indiana bat occurrence buffer, there is potential suitable habitat available, and recommended that a bat acoustic survey be conducted. In May 2019, a Bat Acoustic Survey was conducted by Amanda Bailey, NYSDEC. The results of this acoustic survey indicated potential presence of the Indiana bat and the northern long-eared bat at the project location during the summer maternity season. Maximum likelihood estimate values associated with acoustic monitoring suggest that Indiana bats were present for one night at the stream sampling site, and one night at the trail site. This project is located just over 9 miles from the nearest Indiana bat maternity colony in eastern Ulster County, and is located approximately 13 miles from Rosendale, NY, which has several mines where both NLEB and IB hibernate. As a result of the Bat Acoustic Survey findings, a revised consultation was submitted to USFWS on July 8, 2019, committing to winter tree clearing and determining that with the commitment to undertake winter tree clearing, the project **may affect but is not likely to adversely affect** Indiana or Northern long eared bats. The revised consultation also provided additional information explaining that the wetlands at the project site do

		not provide suitable habitat for the bog turtle; therefore, GOSR determined that the project would have **no effect** on bog turtles. As of this the date of publication of this document, USFWS has not responded. It is presumed that the determination for the project is informed by the best available information and the project responsibilities under Section 7 of the ESA have been fulfilled. GOSR will promptly report any departures from the described proposed project activities that would change the effect determination to the USFWS New York Field Office (See **Appendix C**, USFWS, NYNHP, and NYSDEC Correspondence). **Source: 13, 14, 15**
Explosive and Flammable Hazards 24 CFR Part 51 Subpart C	Yes ☐ No ☒	The project would not introduce housing or sensitive public uses at the site that could be exposed to explosive or flammable hazards. The project does not constitute a HUD-funded hazardous facility, so 24 CFR part 51 Subpart C does not apply. HUD-assisted projects must be at an Acceptable Separation Distance (ASD) from stationary hazardous operations that store, handle, or process chemicals or petrochemicals of an explosive or flammable nature. These tanks include: • Aboveground storage tanks (AST) that store flammable or explosive gasses (such as propane) within a 1,000-foot radius of the project site; • ASTs exceeding 100 gallons that store flammable or explosive liquids within a 1,000-foot radius of the project site; or • ASTs that exceed 20,000 gallons and are within 1 mile of the site. The project would not disturb any ASTs and would not involve storage of flammable or explosive materials. No structures for human habitation are proposed. The project would not

		involve a change in land use or expose new populations to explosive hazards.
Farmlands Protection Farmland Protection Policy Act of 1981, particularly sections 1504(b) and 1541; 7 CFR Part 658	Yes ☐ No ☒	Approximately 4.6 acres of the project area are on farmland soils of statewide importance. However, the project area is not in a New York state agricultural district. (See **Appendix A**, Figures) The project area farmland soils will be disturbed during construction but will return to the existing land use once the project is completed. The area is previously disturbed and is occupied by residential land, stormwater drainage, and road rights-of-way. It is not in active cultivation. No farmland would be permanently converted by the project. According to Part 523.11 E of the Farmland Protection Policy Act (FPPA) Manual, an AD 1006 is not required. (See **Appendix A**, Figures) **Source: 16**
Floodplain Management Executive Order 11988, particularly section 2(a); 24 CFR Part 55	Yes ☒ No ☐	The project area is located within Zone AE- within the 100-year floodplain, as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 36111C0410F, dated November 18, 2016. A portion of the project area within the 100-year floodplain are also within a floodway, which includes the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachments so that a one percent annual chance flood (100-year flood) can be accommodated without substantial increases in flood height. Part of the project area also is within the 500-year floodplain. (See **Appendix A**, Figures.) A total of 10.45 acres of land will be disturbed, of which 4.04 acres will be below the ordinary high-water line (OHWL) and 4.23 acres will be within the NYSDEC regulated streambank area (50 feet beyond the OHWL). If required by permit, in-stream work will not be conducted between

		September 30th to April 30th, as the Bushkill stream is a Class A (TS) stream. An Early Notice of a Proposed Activity in a Floodplain and Wetland was published on January 29, 2019. An 8-Step Floodplain and Wetland Analysis has been performed in compliance with Executive Order 11988 in accordance with HUD regulations at 24 CFR 55.20. The analysis examined the direct and indirect impacts associated with the development within the floodplain. (See **Appendix D**, Floodplains and Wetlands.) The analysis concluded that these effects would be minimal because the project would create a more confined stream channel and result in a beneficial increase in the area of the floodplain and reduce erosion, sedimentation, and stream channel migration, thereby moderating future flooding. The project will require a NYSDEC Article 15 Protection of Waters Permit, CWA Section 401 Water Quality Certification, a USACE Section 404 permit, and a Local Floodplain Development Permit. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that conforms to requirements of the General Permit. **Source: 6**
Historic Preservation National Historic Preservation Act of 1966, particularly sections 106 and 110; 36 CFR Part 800; Tribal notification for new ground disturbance.	Yes ☐ No ☒	Consultation with the New York State Historic Preservation Office (SHPO) and the Division for Historic Preservation (DHP) in the Office of Parks, Recreation and Historic Preservation (OPRHP), in accordance with Section 106 of the National Historic Preservation Act of 1966, was initiated on January 28, 2019. SHPO evaluated the project for potential cultural and historic impacts. In a February 14, 2019 response, SHPO stated that the proposed project area is in an archaeologically sensitive area and

		recommended that a Phase I archaeological survey be conducted within location where ground-disturbing activities are proposed, unless substantial prior ground disturbance can be documented. On April 17, 2019, documentation of substantial ground disturbance was provided to SHPO. On April 23, 2019, SHPO determined that no historic properties will be affected by this undertaking. (See **Appendix E**, SHPO Correspondence) The Delaware Nation, Delaware Tribe, Mohawk Nation Council of Chiefs of Haudenosaunee Six Nations Confederacy, Saint Regis Mohawk Tribe, and the Band of the Mohicans were identified as possible consulting parties. Each was sent a letter on January 28, 2019, with the site description, photographs, site plan, and map. In a March 12, 2019, letter the Delaware Nation indicated the location of the proposed project does not endanger cultural, or religious sites of interest to the Delaware Nation. On February 13, 2019, the Stockbridge Munsee Community representative responded that although they are not aware of cultural sites within the area of potential effect, they wished to consult on the project and receive the survey reports for review when complete. On April 23, 2019, GOSR responded by explaining that as a result of SHPO's no effect determination, GOSR did not plan to undertake an archaeological Phase 1 survey unless the tribe requested it. GOSR committed that should an archaeological site or artifacts inadvertently be uncovered during project construction, all construction and ground disturbing activities would be immediately be halted until all appropriate agencies are notified (within 24 hours), and a proper archaeological assessment could be made. On May 3, 2019, the Stockbridge Munsee Community representative confirmed this plan of action. No other tribal

		responses have been received to date. (See **Appendix F**, Tribal Correspondence.)
Noise Abatement and Control Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978; 24 CFR Part 51 Subpart B	Yes ☐ No ☒	The project is not a noise sensitive use and the policies of 24 CFR 51.101(a)(3) do not apply to any action or emergency assistance under disaster assistance provisions or appropriations that are provided to save lives and protect public health and safety. The project would not introduce any new or rehabilitate any existing noise-sensitive uses. Construction activities would abide by all local noise ordnances.
Sole Source Aquifers Safe Drinking Water Act of 1974, as amended, particularly section 1424(e); 40 CFR Part 149	Yes ☐ No ☒	The project area is not located within the bounds of a Sole Source Aquifer (SSA). (See **Appendix A**, Figures) **Source: 18**
Wetlands Protection Executive Order 11990, particularly sections 2 and 5	Yes ☒ No ☐	Approximately 5.3 acres of Riverine and 1.2 acres of Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill are within the project area. These wetlands have been previously disturbed by the existing bridge, Watson Hollow Road, and residential development along the Bushkill. The project area is not within New York State Department of Environmental Conservation (NYSDEC) wetlands or the 100-foot buffer of NYSDEC wetlands. (See **Appendix A**, Figures) The project would result in temporary disturbance of wetlands during construction; therefore, An Early Notice of a Proposed Activity in a Floodplain and Wetland was published on January 29, 2019. An 8-Step Floodplain and Wetland Analysis has been performed in compliance with Executive Order 11988 in accordance with HUD regulations at 24 CFR 55.20. The analysis examined the direct and indirect impacts associated with the development within these wetlands. (See **Appendix D**, Floodplains and Wetlands.) The analysis concluded that the project would not damage the

		function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas would be restored. No changes in land use or increase in impervious surface would adversely affect the floodplain or these wetlands in the long term. Implementation of the project will comply with all best management practices and permit requirements and conditions set forth in the applicable Federal, State, and local permits, which will minimize the temporary effects of construction within wetlands. The project will require a NYSDEC Article 15 Protection of Waters Permit, CWA Section 401 Water Quality Certification, a USACE Section 404 permit, and a Local Floodplain Development Permit. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that conforms to requirements of the General Permit. Temporary erosion and sediment controls would be installed over the length of the project. These measures would be installed prior to disturbance and would remain in place until all slopes are stabilized and revegetated as necessary. All stockpiled soils would be protected with sediment and erosion control measures in compliance with Section 207-02 of the NYS Department of Transportation Standard Specifications. All necessary precautions would be undertaken to prevent contamination of any streams, channels or waterways by silt, sediment, fuel, solvents, lubricants, epoxy coatings, debris, concrete leachate, or any other pollutant associated with project construction would be avoided through proper equipment maintenance and washout basins, platforms, nets, and screens for equipment cleaning. Debris or excess construction material would be immediately

		removed off-site. (See **Appendix D**, Floodplains and Wetlands) **Source: 19, 20, 21**
Wild and Scenic Rivers Wild and Scenic Rivers Act of 1968, particularly section 7(b) and (c)	Yes ☐ No ☒	There are no state or federally designated wild and scenic rivers at near the project area. (See **Appendix A**, Figures) **Source: 22, 23, 24**
ENVIRONMENTAL JUSTICE		
Environmental Justice Executive Order 12898	Yes ☐ No ☒	An environmental justice area as defined by NYSDEC based on data from the 2000 U.S. Census is located within the project area. Because this project has no potential adverse impacts, there are no disproportionate adverse impacts anticipated. No adverse impacts are anticipated on the surrounding community because the project would follow local ordinances. Additionally, there are no environmental justice areas located within one mile of the project area. (See **Appendix A**, Figures) **Source: 25**

Environmental Assessment Factors [24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27] Recorded below is the qualitative and quantitative significance of the effects of the proposal on the character, features and resources of the project area. Each factor has been evaluated and documented, as appropriate and in proportion to its relevance to the proposed action. Verifiable source documentation has been provided and described in support of each determination, as appropriate. Credible, traceable and supportive source documentation for each authority has been provided. Where applicable, the necessary reviews or consultations have been completed and applicable permits of approvals have been obtained or noted. Citations, dates/names/titles of contacts, and page references are clear. Additional documentation is attached, as appropriate. **All conditions, attenuation or mitigation measures have been clearly identified.**

Impact Codes: Use an impact code from the following list to make the determination of impact for each factor.

- **(1)** Minor beneficial impact
- **(2)** No impact anticipated
- **(3)** Minor Adverse Impact – May require mitigation
- **(4)** Significant or potentially significant impact requiring avoidance or modification which may require an Environmental Impact Statement

Environmental Assessment Factor	Impact Code	Impact Evaluation
LAND DEVELOPMENT		
Conformance with Plans / Compatible Land Use and Zoning / Scale and Urban Design	**2**	The purpose of the project is to enhance the existing streambank by creating a more confined stream channel with an expanded floodplain area. The project is intended to provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. The project would require both temporary and permanent easements, that would not result in any changes in land use or involve the acquisition of additional property. The easements would be needed in areas of each property that are undeveloped and through which the Bushkill currently flows. Approximately 2.88 acres of temporary easements would be required during construction. Approximately 0.2 acres of permanent easements would be required, which would be approximately 5 feet on each side of the center of the new stream channel where it crosses private property. The Proposed Action is not expected to significantly modify property in floodplains, except that it would create a more confined stream channel and result in a beneficial increase in the area of the floodplain and reduce erosion, sedimentation, and stream channel migration. The project would not result in any changes in land use or zoning that would conflict with the Town of Olive Zoning Code.

		The project is identified in the Ulster County NYRCR Plan as a featured project that would restore the health, resiliency and capacity of the Bushkill Creek; provide permanent flood mitigation for Watson Hollow Bridge and Watson Hollow Road and may improve the area's attractiveness as a recreational and tourist attraction; and improve local and regional access to/from emergency, health and social service providers and facilities as a result of the reduction in roadway inundation. **Source: 2, 26**
Soil Suitability/ Slope/ Erosion/ Drainage/ Storm Water Runoff	**1**	The project area is not covered by impervious surfaces, and the creation of a more confined stream channel with an expanded floodplain area would not increase impervious surfaces. The topographic map of the project site indicates that the elevation ranges from approximately 674 feet at the western edge of the project area to about 624 feet at the eastern end of the project area. According to the soil survey, most existing soils on the project site are somewhat limited for surface water management. The ratings for Surface Water Management, System are based on the soil properties that affect the capacity of the soil to convey surface water across the landscape. The ratings are for soils in their natural condition and do not consider present land use. However, the project would stabilize the stream banks and re-grade the stream channel and floodplain. It is anticipated that improve stream conveyance and reduce flooding, beneficially affecting slope erosion, drainage, and storm water runoff. (See **Appendix G**, Topography) Prior to construction, the appropriate permits would be obtained in accordance with NYSDEC stormwater discharge from construction activities regulations; and Section 401 of the Clean Water Act. An SWPPP would be prepared for the project, describing the use of BMPs to control runoff during construction that would mitigate project-related temporary effects. **Source: 16**
Hazards and Nuisances including Site Safety and Noise	**2**	The project site is in a 100-year flood hazard area and Riverine and Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas. The project would affect approximately 4. 6 acres of farmland soils of statewide importance temporarily during construction but would not permanently convert these soils to another use. Two EPA FIS listings were identified within the project area; however, these listings were identified for Section 404 Permitting and Section

		401 Certification and would not represent hazards to the project. No other known natural hazards, including earthquake fault zones, landslide zones, or hazardous terrain, are at or near the project sites. The project would generate noise during construction. Noise effects on the surrounding residential community would be short term and limited in scope. A noise mitigation plan would be developed prior to construction to minimize construction noise effects. Project construction would follow the provisions of the local noise ordinances, including the Ulster County, NY, Noise Ordinance (Chapter 117 of the Ulster County Code). Mitigation measures could include but would not be limited to restricting the time and duration of construction activities during the day and week, phasing of construction, perimeter barriers, quieter models of equipment, and use of mufflers or other sound-dissipative devices on construction equipment.
Energy Consumption	**2**	The project would not result in additional energy consumption or changes in energy infrastructure. No impacts would occur to existing nearby suppliers.
SOCIOECONOMIC		
Employment and Income Patterns	**2**	There would be a temporary, minor increase in employment during construction and no increase in long-term employment.
Demographic Character Changes, Displacement	**2**	No direct or indirect population changes would result from the project, and there would be no demographic, character, or displacement impacts. The project would require both temporary and permanent easements in areas of each property that are undeveloped and through which the Bushkill currently flows. These easements would not result in any changes in land use or involve displacement of residents or businesses.

Environmental Assessment Factor	Impact Code	Impact Evaluation
COMMUNITY FACILITIES AND SERVICES		
Educational and Cultural Facilities	**2**	Because the project involves no changes in population, there would be no impact on demand for educational or cultural facilities. The proposed improvements would improve access to public services that could be reduced due to flooding. Traffic controls along Watson Hollow Road that may be put in place during construction would be temporary and not restrict access to educational and cultural facilities. Potential traffic delays would be minimized through signage, phasing, and a protocol that would be coordinated with the Town of Olive.
Commercial Facilities	**2**	Because the project involves no changes in population, and there are no commercial facilities in the project area, there would be no impact on demand for commercial facilities. The proposed improvements would improve access to commercial that could be reduced due to flooding. Traffic controls along Watson Hollow Road that may be put in place during construction would be temporary and not restrict access to commercial facilities. Potential traffic delays would be minimized through signage, phasing, and a protocol that would be coordinated with the Town of Olive.
Health Care and Social Services	**2**	Because the project involves no changes in population, there will be no impact on demand for health care and social services. The proposed improvements would improve access to health care and social services that could be reduced due to flooding. Traffic controls along Watson Hollow Road that may be put in place during construction would be temporary and not restrict access to health care and social services. Potential traffic delays would be minimized through signage, phasing, and a protocol that would be coordinated with the Town of Olive.
Solid Waste Disposal / Recycling	**2**	Construction may result in a temporary increase in solid waste. Construction debris would be collected on site and disposed of or recycled as appropriate. There will be no increase in solid waste disposal or recycling from operation of the project because it will not result in any changes in population or land use.
Waste Water / Sanitary Sewers	**2**	The proposed project will not generate wastewater and sewage. Because the project involves no changes in population, there will be no impact on wastewater and sewage generated in the project area.

Water Supply	**2**	This project would not change the area residents' use of water, and on-site no public drinking water supply is included in the project. No changes to the water supply system are anticipated. There are no drinking water wells within one-half mile of the Project site.
Public Safety - Police, Fire and Emergency Medical	**2**	Because the project involves no changes in population, there will be no impact on demand for health care and social services. The proposed improvements would improve access to for police, fire, and medical responders that could be reduced due to flooding. Traffic controls along Watson Hollow Road that may be put in place during construction would be temporary and not restrict access of police, fire, and medical emergency services, which would given priority. Potential traffic delays would be minimized through signage, phasing, and a protocol that would be coordinated with the Town of Olive.
Parks, Open Space and Recreation	**2**	The project would not involve an increase in resident population; therefore, no major increase in police and fire protection or emergency medical services would occur.
Transportation and Accessibility	**2**	Because the project involves no changes in population, there will be no impact on use of transportation infrastructure. The proposed improvements would improve access that could be reduced due to flooding. Traffic controls along Watson Hollow Road that may be put in place during construction would be temporary and not restrict access for residents. Potential traffic delays would be minimized through signage, phasing, and a protocol that would be coordinated with the Town of Olive.
NATURAL FEATURES		
Unique Natural Features, Water Resources	**1**	The project site is in Riverine and Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas would be restored. No changes in land use or increase in impervious surface would adversely affect these wetlands in the long term. The project would affect approximately 4. 6 acres of farmland soils of statewide importance temporarily during construction but would not permanently convert these soils to another use. The Bushkill is a Class A(TS) stream. It is anticipated that no in-stream work would be permitted between September 30 and April 30th. A USACE 404 wetland permit and BMPs would minimize impacts during construction. The stream is considered "Protected" waters. An Article 15, Protection of Waters Permit, pursuant to 6NYCRR Part 608 is required for any disturbance to

		the bed and banks of these streams. The proposed project will create a more confined stream channel with an expanded floodplain area to help mitigate flooding of the Watson Hollow Road area during future storm events and will be designed and implemented so as to provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. No other impact to unique natural features or water resources is anticipated.
Vegetation, Wildlife	**3**	An estimated 1.15 acres of trees will be removed by the project. The trees to be removed are mostly scattered or grouped along the stream and streambank, and do not constitute an intact forest. Winter tree clearing will be conducted. The NYNHP database had records of bald eagle nesting within 0.8 mile of the project site, timber rattlesnake within 1.5 miles of the project site, spreading rush (*Juncus subcaudatus*) within 0.5 mile of the project site, and nodding pogonia (*Triphora trianthophoros, ssp. Trianthophoros*) within 0.5 mile of the project site. letter NYSDEC Division of Environmental Permits, Region 3 stated that bald eagles would not likely be impacted by the project and no further review was needed. A Notice of Incomplete Application from the same Department, dated May 1, 2019, noted that it is reasonable that timber rattlesnakes may be present in the work areas and advised that to prevent adverse impacts to the species, basic education and encounter plans should be implemented. This requires the following: • A "Timber Rattlesnake Encounter Plan" should be added to the project plans and followed in the event of an encounter during construction; • Separately, an education and encounter plan should be developed and must be submitted to the Department for approval. The plan would be distributed ot all contractors/on-site personnel to inform them of the possibility of encountering a timber rattlesnake, and what to do if one is found. This will be addressed during the permitting process. The USFWS identified one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, *Myotis sodalis*) and the threatened northern long-eared bat (NLEB, *Myotis septentrionalis*) and bog turtle (*Clemmys muhlenbergii*). GOSR conducted a Habitat Assessment and a bat acoustic survey. The results of this

		acoustic survey indicated potential presence of the IB and the NLEB at the project location during the summer maternity season. As a result of the acoustic survey findings, a revised consultation was submitted to USFWS on July 8, 2019, committing to winter tree clearing and determining that with the commitment to undertake winter tree clearing, the project **may affect but is not likely to adversely affect** Indiana or northern long eared bats. The revised consultation also provided additional information explaining that the wetlands at the project site do not provide suitable habitat for the bog turtle; therefore, GOSR determined that the project would have **no effect** on bog turtles. As of the date of publication of this document, USFWS has not responded. It is presumed that the determination for the project is informed by the best available information and the project responsibilities under Section 7 of the ESA have been fulfilled. GOSR will promptly report any departures from the described proposed project activities that would change the effect determination to the USFWS New York Field Office. A rattlesnake management plan would be developed prior to construction and submitted to NYSDEC for approval. These measures would minimize potential effects to vegetation and wildlife.
Other Factors	**2**	No other factors were identified.

Additional Studies Performed:

Milone & MacBroom. Engineering Report. Phase I Study. *Bushkill Stream and Stream Bank Rehabilitation.* Town of Olive. Ulster County, New York. February 2017.

8-Step Floodplain and Wetland Analysis for Bushkill Stream and Streambank Rehabilitation Project Hamlet of West Shokan, Town of Olive, Ulster County, New York.

Phase 1 Habitat Assessment conducted by Amanda Bailey (NYSDEC), February 11, 2019

Bat Acoustic Survey Report, survey conducted by Amanda Bailey (NYSDEC), May 2019

List of Sources, Agencies and Persons Consulted [40 CFR 1508.9(b)]:

1. New York State. 2013. State of New York Action Plan for Community Development Block Grant Program Disaster Recovery (Action Plan, issued April 25, 2013, amended July 3, 2012) New York State.
2. New York State. 2014. NYRCR Ulster Communities. NY Rising Community Reconstruction Plan. March.
3. Federal Aviation Administration. Report to Congress – National Plan of Integrated Airport Systems. Internet Website: http://www.faa.gov/airports/planning_capacity/npias/reports/media/ npias-2015-2019-report-appendix-b-part-4.pdf.
4. Federal Aviation Administration. Report to Congress – National Plan of Integrated Airport Systems. Internet Website: http://www.faa.gov/airports/planning_capacity/npias/reports/media/npias-2015-2019-report-narrative.pdf.
5. US Fish and Wildlife Service. 2015. Coastal Barrier Resources Mapper – Beta. Internet Website: http://www.fws.gov/cbra/Maps/Mapper.html.
6. United States Federal Emergency Management Agency. Current FEMA issued Flood Maps. Internet Website: https://msc.fema.gov/portal/.
7. United States Environmental Protection Agency. Green Book Nonattainment Areas. Internet Website: http://www.epa.gov/oaqps001/greenbk/ancl.html.
8. New York State Department of State, Office of Communities and Waterfronts – Coastal Boundary Map. Internet Website: http://appext20.dos.ny.gov/coastal_map_public/map.aspx.
9. New York State Department of Environmental Conservation Bulk Storage Database Search. Internet Website: http://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=4.
10. New York State Department of Environmental Conservation Environmental Site Remediation Database Search. Internet Website: http://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3.

11. New York State Department of Environmental Conservation. 2015. Regulation of Petroleum Tanks. Internet Website: http://www.dec.ny.gov/chemical/2642.html.
12. United States Environmental Protection Agency. 2015. NEPAssist Internet Mapping Tool. https://nepassisttool.epa.gov/nepassist/nepamap.aspx.
13. New York Natural Heritage Program. 2018. Internet Website: http://www.dec.ny.gov/animals/29338.html
14. . U.S. Fish and Wildlife Service. 2018. Official Species List. December 20, 2018.
15. US Fish and Wildlife Service. 2016. Northern Long-eared Bat Hibernacula and Maternity Roost Tree Location Information. Internet Website: https://www.fws.gov/northeast/nyfo/es/MYSE%20bat%20sites_2016.xlsx.
16. United States Department of Agriculture. Natural Resources Conservation Service. Internet Website: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.
17. New York State Cultural Resource Information System. 2018. Internet Website: https://cris.parks.ny.gov/.
18. U.S. Environmental Protection Agency Region 2. 2007. Sole Source Aquifers for NY and NJ. September 2007. Internet Website: http://www.epa.gov/region02/gis/data/downloads/r2sole_source_aquifer.zip.
19. U.S. Fish and Wildlife Service. 2014. National Wetlands Inventory, New York. Internet Website: http://www.fws.gov/wetlands/Data/State-Downloads.html.
20. New York State Department of Environmental Conservation. Regulatory Freshwater Wetlands – New York State – 2002 GIS data. Internet Website: http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111.
21. New York State Department of Environmental Conservation. Tidal Wetlands – NYC and Long Island – 1974. Internet Website: https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1139
22. National Wild and Scenic Rivers System. Internet Website: http://www.rivers.gov/new-york.php.
23. New York State Department of Environmental Conservation. Wild Scenic and Recreational Rivers. Internet Website: http://www.dec.ny.gov/permits/32739.html.
24. USDA Forest Service – Automated Lands Program. 2015. Wild and Scenic Rivers GIS data. November 30, 2015.
25. New York State Department of Environmental Conservation. Environmental Justice Areas Internet Website: https://www.dec.ny.gov/public/333.html.
26. Town of Olive. Code of the Town of Olive, New York, Part II, General Legislation, Chapter 155, Zoning.

List of Appendices

Appendix A Figures
Appendix B Site Plans
Appendix C USFWS, NYNHP, and NYSDEC Correspondence
Appendix D Floodplains and Wetlands
Appendix E SHPO Correspondence
Appendix F Tribal Correspondence
Appendix G Topography

List of Permits Obtained or Required:

USACE Section 404 Wetland Permit OR Nationwide Permit 3
NYSDEC Article 15 Protection of Waters Permit
NYSDEC CWA Section 401 Water Quality Certification
NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from a Construction Activity (GP-0-15-002) and a Stormwater Pollution Prevention Plan (SWPPP)
Incidental Take Permit for the timber rattlesnake per Article 11, Title 5, Endangered and Threatened Species if project-related construction activities cannot be mitigated to avoid or minimize incidental take for this species.

Conditions:

Conduct winter tree clearing between November 1 and March 31 to avoid potential impacts to bats

List of Other Approvals Obtained or Required:

Temporary and permanent easements in areas of each property that are undeveloped and through which the Bushkill currently flows.

Public Outreach [24 CFR 50.23 & 58.43]:

An Early Notice of a Proposed Activity in a 100-Year Floodplain and Wetlands was published in the Kingston Daily Freeman on January 29, 2019. On August 28, 2019, a combined Final Notice of a Proposed Activity in a 100-Year Floodplain and Wetlands/ Finding of No Significant Impact/ Notice of Intent to Request Release of Funds will be published in the Kingston Daily Freeman. Any individual, group, or agency may submit written comments on the Environmental Review Record to:

Lori A. Shirley, GOSR, HCR
38-40 State Street
Albany, NY 12207
(518) 474-0755
NYSCDBG_DR_ER@nyshcr.org

Cumulative Impact Analysis [24 CFR 58.32]:
The project is not expected to trigger cumulative impacts, including the degradation of important natural resources, socioeconomic resources, human health, recreation, quality of life issues, and cultural and historic resources. The project is not of a scale large enough to contribute significantly to cumulative impacts. It will create positive impacts, as the proposed improvements to the drainage system would reduce flooding and damage to homes, lawns and landscaping. The project will directly contribute to the rebuilding and recovery of the area with a focus on resiliency and mitigation.

Alternatives [24 CFR 58.40(e); 40 CFR 1508.9]:
Proposed Project. As fully described in this Environmental Assessment, the Bushkill Stream and Streambank Rehabilitation Project would involve bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments along the Bushkill stream just west of the Ashokan Reservoir located in Town of Olive, Ulster County, New York.

No Action Alternative [24 CFR 58.40(e)]:
Not undertaking the project would not be consistent with the goals and objectives of the Ulster County NYRCR Plan because it would not provide permanent flood mitigation for Watson Hollow Bridge and Watson Hollow Road.

Not undertaking the project would result in future severe flooding of the area and will cost the Town of Olive, Ulster County, New York, significantly more money in damages over time. By not stabilizing and realigning the Bushkill channel and stream banks, the area would continue to be impacted by flood water damage. The constrictions, reduced capacity, and shift in the channel's course would continue to present an immediate danger to County Route 42 and properties on the north and south banks of the channel. The sediment bar along the upstream side of the left side of the channel would continue to block the left opening. The right side of the channel would continue to be degraded, with the steep, eroding bank along the right side of the channel both upstream and downstream of the bridge. The downstream side of the right abutment would continue to be undermined.

Summary of Findings and Conclusions:
The proposed project will not result in a significant impact on the quality of the human environment or result in other direct, indirect, or cumulative impacts. The proposed project site is located within a previously developed area, with portions of the project within the 100-year floodplain and wetlands. The mitigation measures identified in this document would reduce potential effects to sensitive resources to less than significant levels. The project will address mitigation of flooding of Watson Hollow Road area during future storm events and provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. The proposed improvements will support

and enhance the town's ability to carry out essential governmental operations during future storm events, which includes increased emergency response capability and dispatching of public works employees to address emergencies throughout the town. The project will comply with all relevant regulations listed in 24 CFR subparts 58.5 and 58.6.

Mitigation Measures and Conditions [40 CFR 1505.2(c)]

Summarize below all mitigation measures adopted by the Responsible Entity to reduce, avoid, or eliminate adverse environmental impacts and to avoid non-compliance or non-conformance with the above-listed authorities and factors. These measures/conditions must be incorporated into project contracts, development agreements, and other relevant documents. The staff responsible for implementing and monitoring mitigation measures should be clearly identified in the mitigation plan.

Law, Authority, or Factor	Mitigation Measure
Floodplain Management	No in-stream work will be conducted between September 30th to April 30th, as the Bushkill stream is a Class A (TS) stream. The project will obtain a NYSDEC Article 15 Protection of Waters Permit, CWA Section 401 Water Quality Certification, a USACE Section 404 permit, and a Local Floodplain Development Permit. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that conforms to requirements of the General Permit. Compliance with the conditions of these permits will minimize construction-related effects on the 100-year floodplain.
Endangered Species	Timber rattlesnake habitat would be assessed per the Timber Rattlesnake Guidelines Document. If necessary, conservation measures and take avoidance measures that may be needed during construction would be described in a rattlesnake management plan. If project-related impacts cannot be fully avoided or minimized, an Incidental take permit pursuant to Article 11, Title 5, Endangered and Threatened Species Act, would be obtained. Tree clearing will be conducted between November 1 and March 31 to avoid impacts to Indiana bats and Northern long eared bats.
Wetlands Protection	A Water Quality Certification permit will be obtained from NYSDEC, indicating that the proposed activity will not violate water quality standards, in accordance with Section 401 of the Clean Water Act. A permit from the USACE pursuant to Section 404 of the Clean Water Act, authorizing the removal of sediment or fill of waters within the United States will be obtained prior to construction. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP)

	will be developed that conforms to requirements of the General Permit. Implementation of the project will comply with all best management practices and permit requirements and conditions set forth in the applicable Federal, State, and local permits, which will minimize the temporary effects of construction within wetlands. Temporary erosion and sediment controls would be installed over the length of the project. These measures would be installed prior to disturbance and would remain in place until all slopes are stabilized and revegetated as necessary. All stockpiled soils would be protected with sediment and erosion control measures in compliance with Section 207-02 of the NYS Department of Transportation Standard Specifications. All necessary precautions would be undertaken to prevent contamination of any streams, channels or waterways by silt, sediment, fuel, solvents, lubricants, epoxy coatings, debris, concrete leachate, or any other pollutant associated with project construction would be avoided through proper equipment maintenance and washout basins, platforms, nets, and screens for equipment cleaning. Debris or excess construction material would be immediately removed off-site.
Soil Suitability/ Slope/ Erosion/ Drainage/ Storm Water Runoff	Prior to construction, the appropriate permits would be obtained in accordance with NYSDEC stormwater discharge from construction activities regulations; and Section 401 of the Clean Water Act. An SWPPP would be prepared for the project, describing the use of BMPs to control runoff during construction that would mitigate project-related temporary effects.
Noise	A noise mitigation plan would be developed prior to construction to minimize construction noise effects. Project construction would follow the provisions of the local noise ordinances, including the Ulster County, NY, Noise Ordinance (Chapter 117 of the Ulster County Code). Mitigation measures could include but would not be limited to restricting the time and duration of construction activities during the day and week, phasing of construction, perimeter barriers, quieter models of equipment, and use of mufflers or other sound-dissipative devices on construction equipment.

Determination:

☒ **Finding of No Significant Impact** [24 CFR 58.40(g)(1); 40 CFR 1508.27]
The project will not result in a significant impact on the quality of the human environment.

☐ **Finding of Significant Impact** [24 CFR 58.40(g)(2); 40 CFR 1508.27]
The project may significantly affect the quality of the human environment.

Genevieve Kaiser	August 28, 2019
Preparer Signature	**Date**
Genevieve Kaiser, Senior Environmental Planner, Tetra Tech, Inc.	
Name/Title/Organization	
Lori A Shirley	August 28, 2019
Signature of Certifying Officer	**Date**
Lori A. Shirley	Certifying Officer, GOSR
Print Name	**Title**

This original, signed document and related supporting material must be retained on file by the Responsible Entity in an Environmental Review Record (ERR) for the activity/project (ref: 24 CFR Part 58.38) and in accordance with recordkeeping requirements for the HUD program(s).

Appendix A
Figures

Project Location

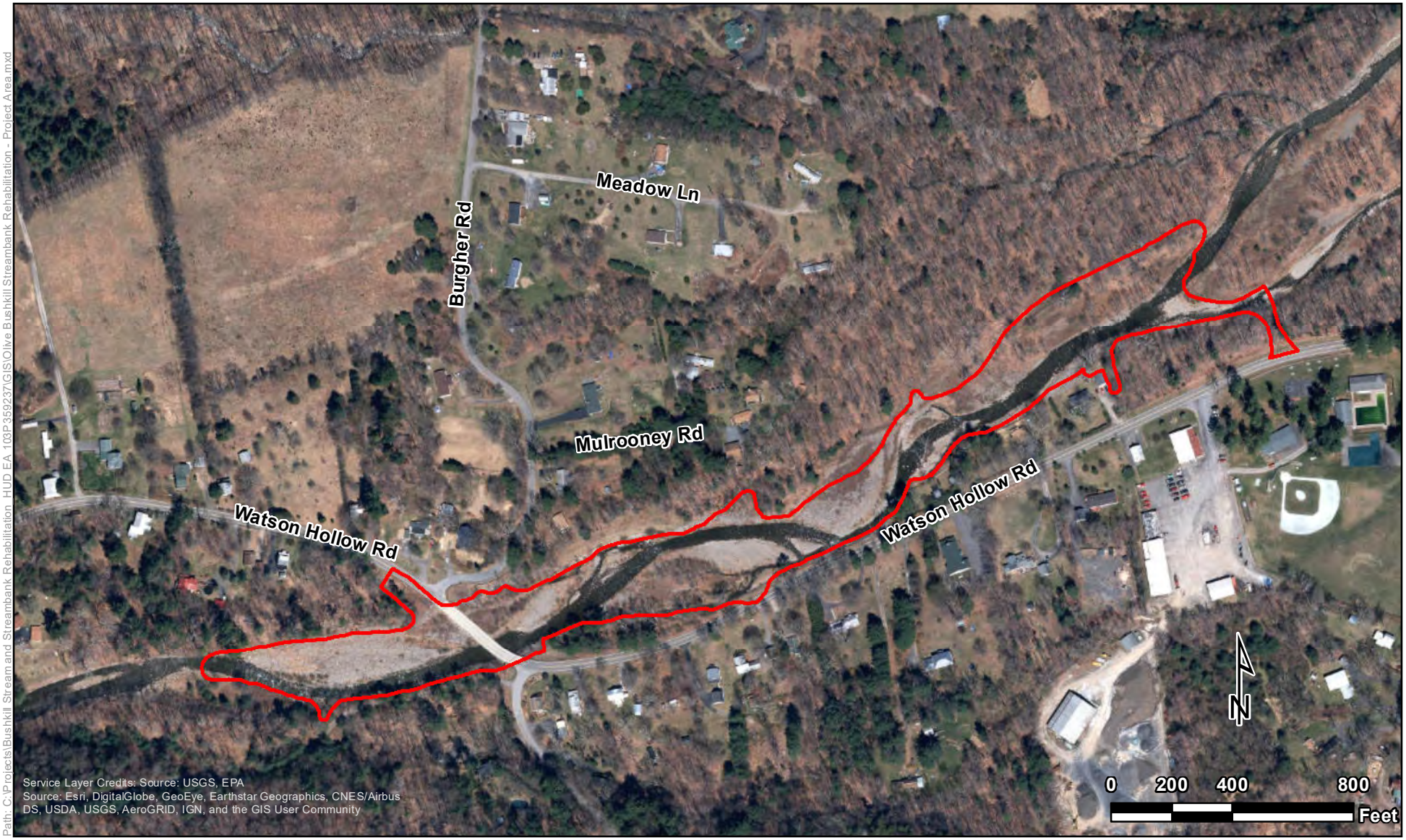
Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1



Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Project Area.mxd

Project Area

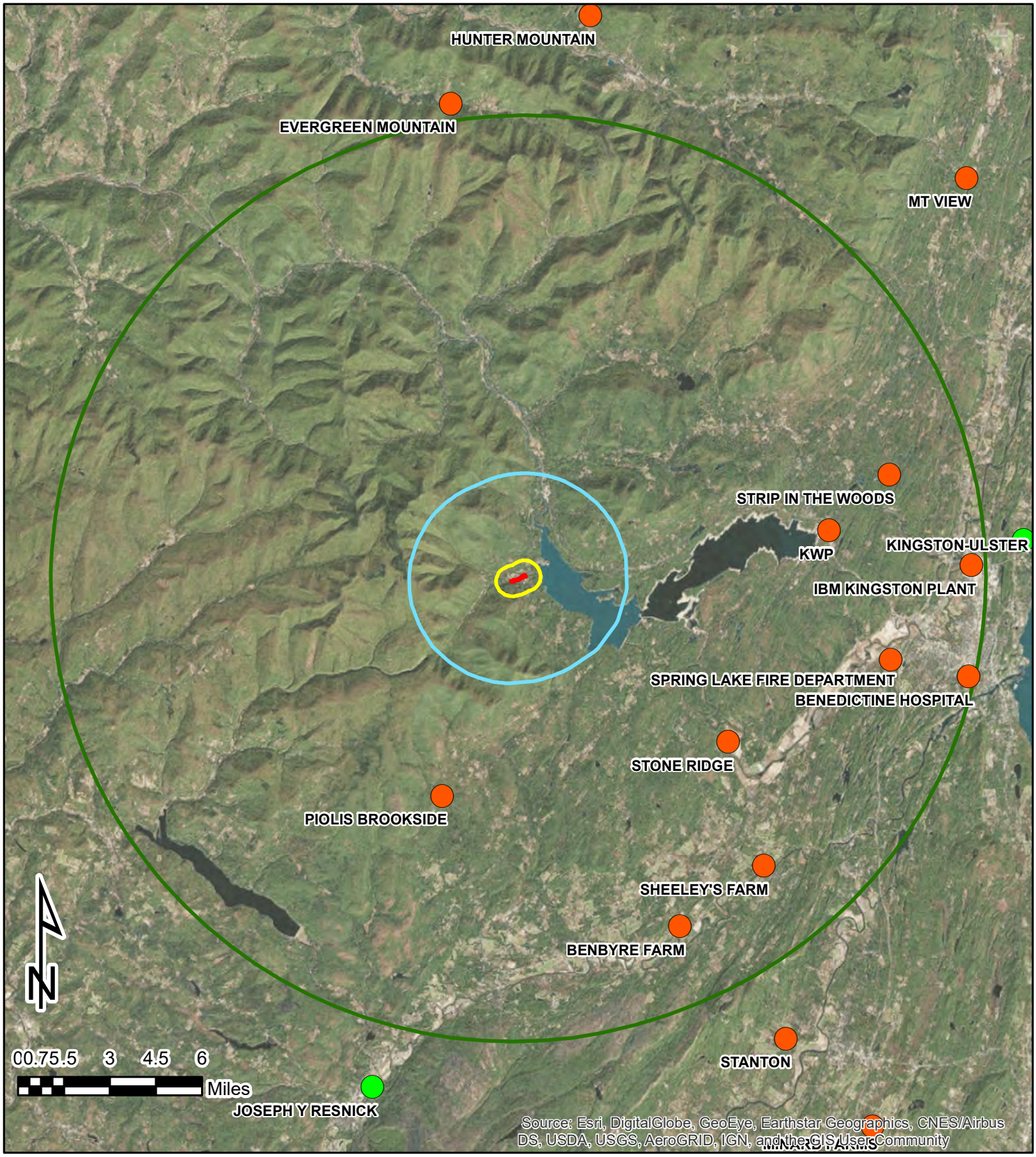
Legend

Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 2



Legend

- Project Area
- 2,500-Foot Project Site Buffe
- 15,000-Foot Project Site Buffe
- 15-Mile Project Site Buffer
- Private Use
- Public Use

Airports

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

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a Montrose Environmental Group company

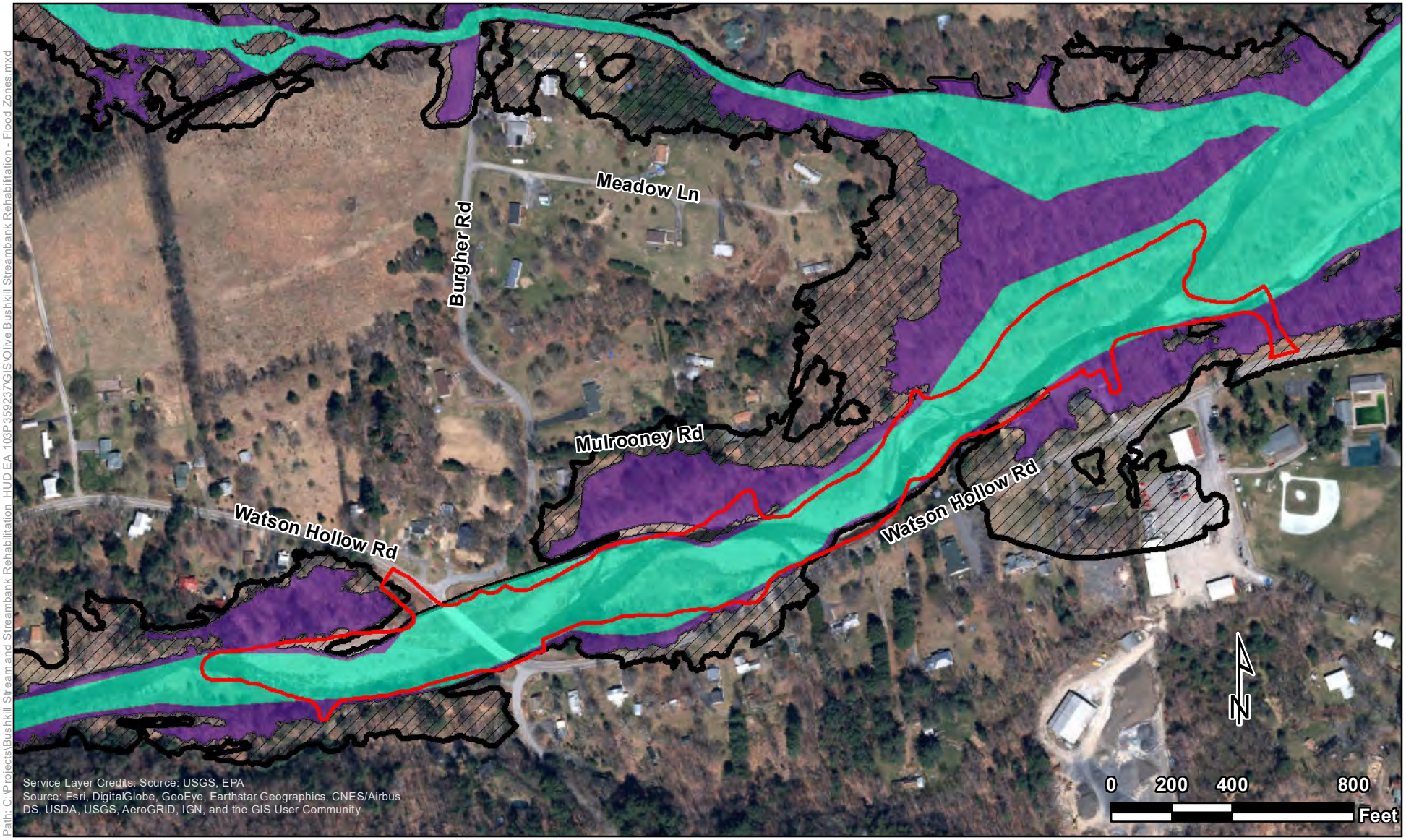
Legend

- Project Area
- Coastal Barrier Resouces System

Coastal Barrier Resources

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

PARS ENVIRONMENTAL
a Montrose Environmental Group company



Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Flood Zones.mxd

Legend

- Project Area

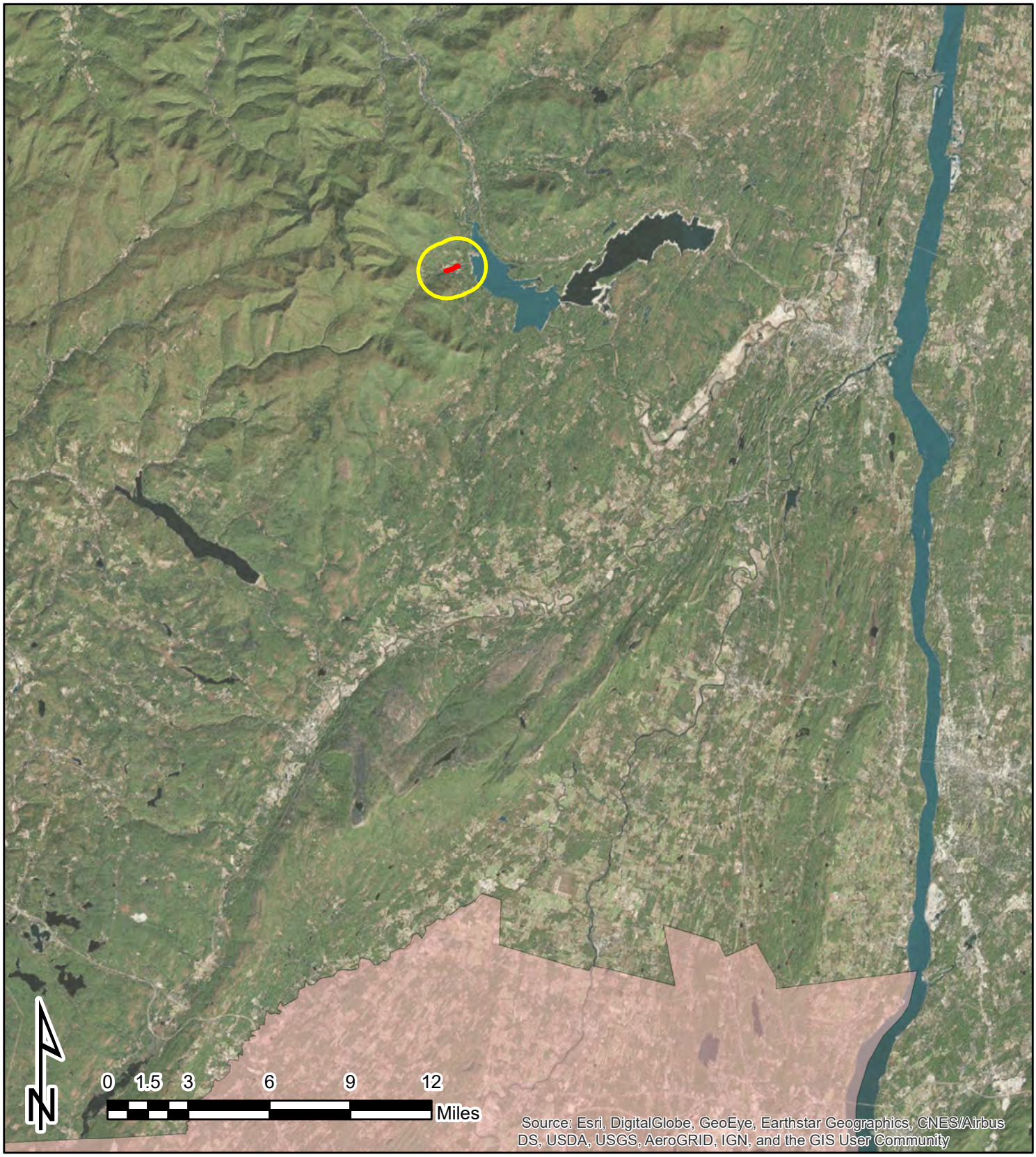
Flood Zones

- Zone AE- within the 1% annual chance flood
- Zone AE- Floodway within the 1% annual chance flood
- Zone X-within the 0.2% annual chance of flood
- Zone X- area of minimal flood hazard

Flood Zones

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc



Nonattainment Areas

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Legend

- Project Area
- One Mile Project Area Buffer
- PM2.5 2006 Standard NAA

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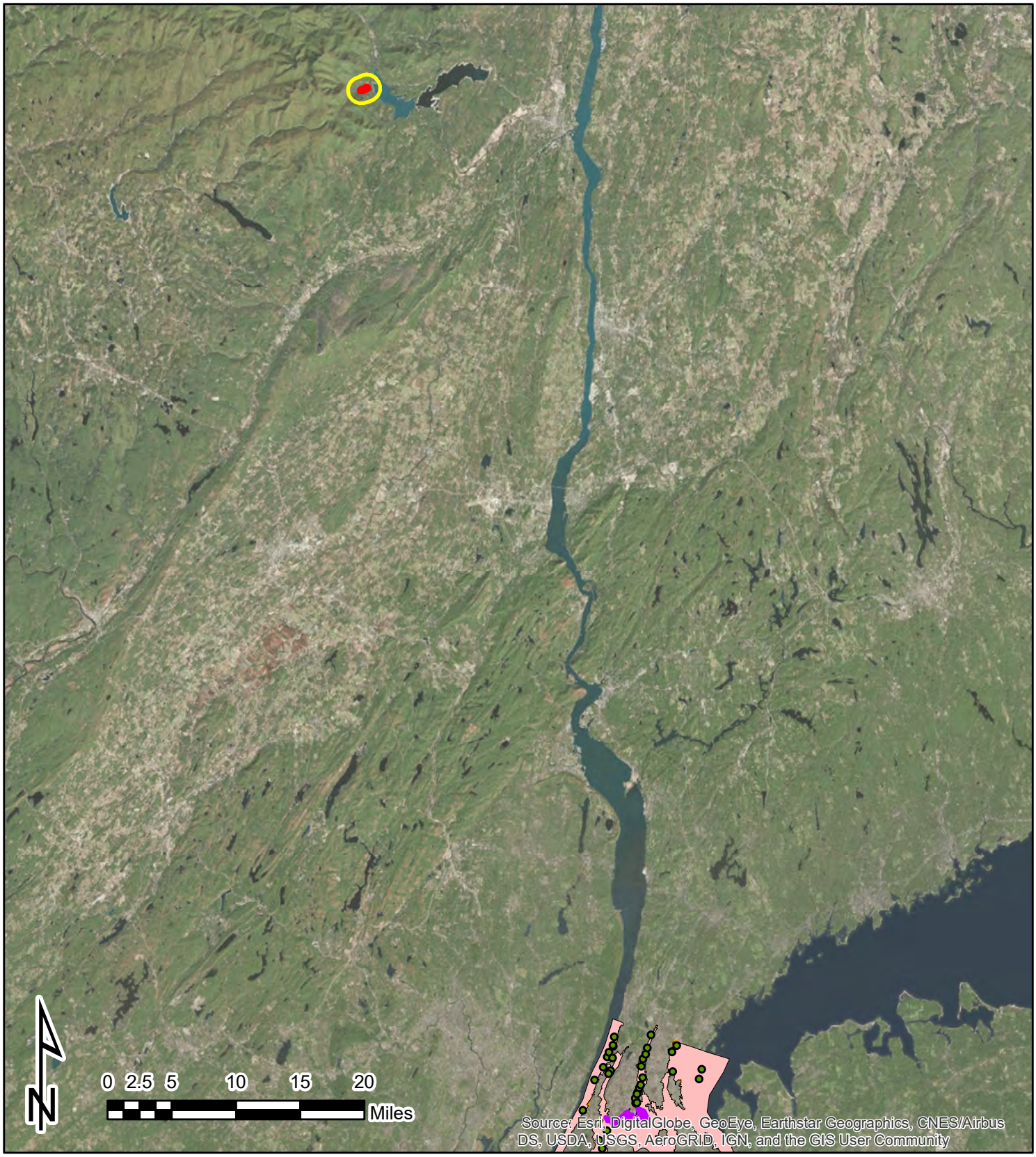

Legend

- Project Area
- One Mile Project Area Buffer
- nycwrprec_201601
- nycwrpsmia_201601
- nycwrpczb_201601
- nycwrppmaz_201601

Coastal Zones

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

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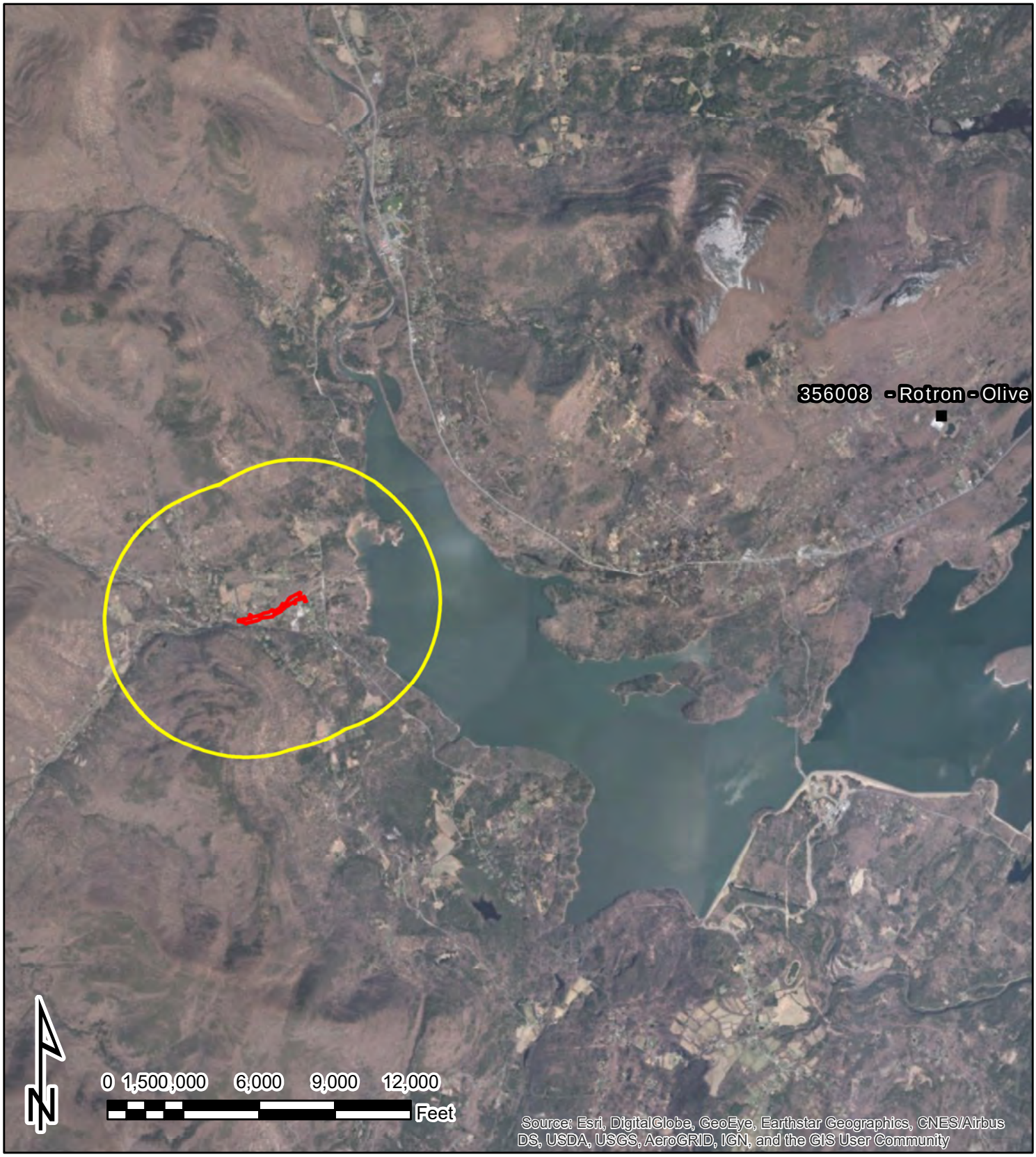

Legend

- Project Area
- One Mile Project Area Buffer
- State Superfund Program

Remediation Sites

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

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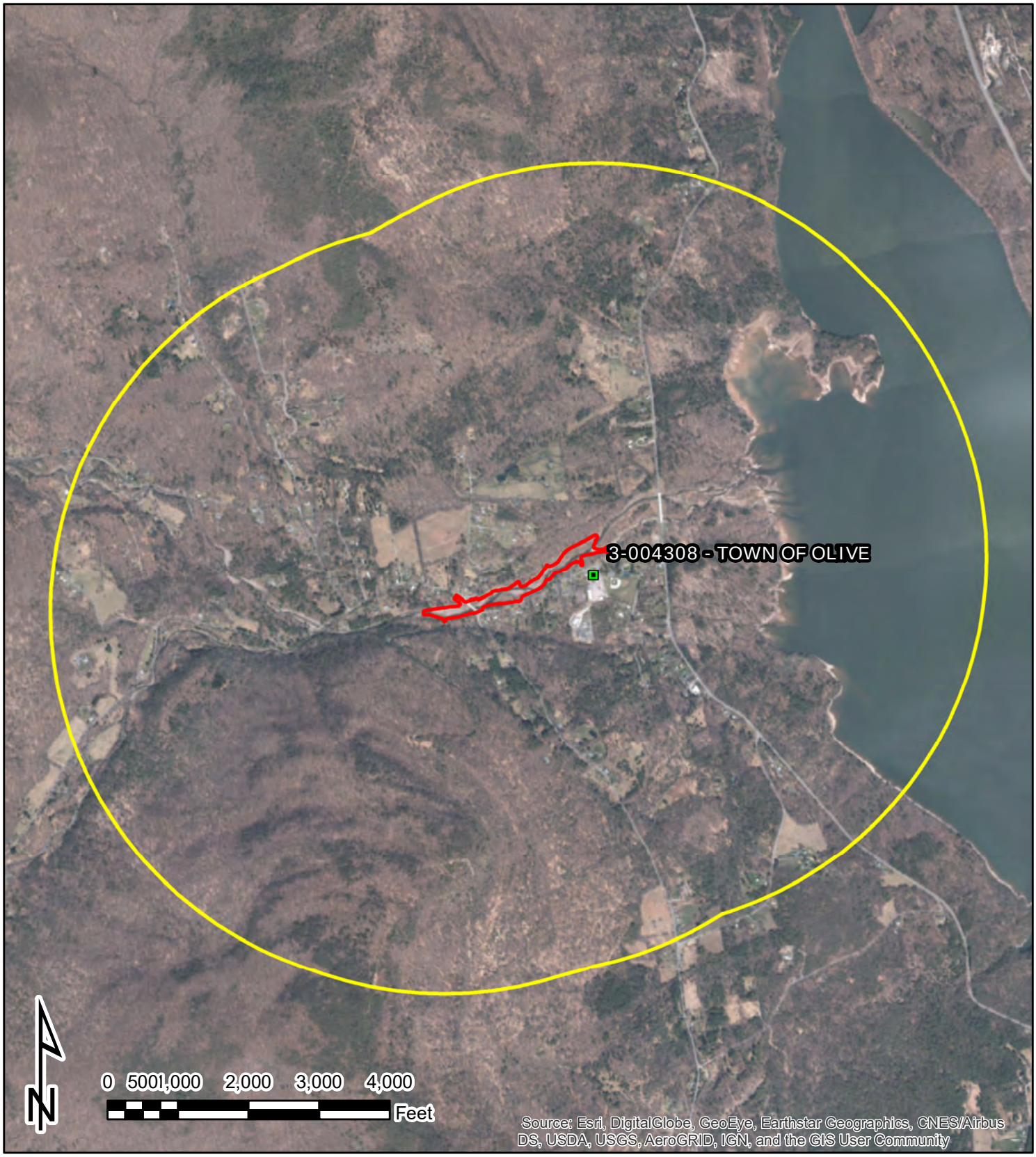

Legend

- Project Area
- One Mile Project Area Buffer
- Petroleum Bulk Storage

Bulk Storage Facilites

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

PARS ENVIRONMENTAL
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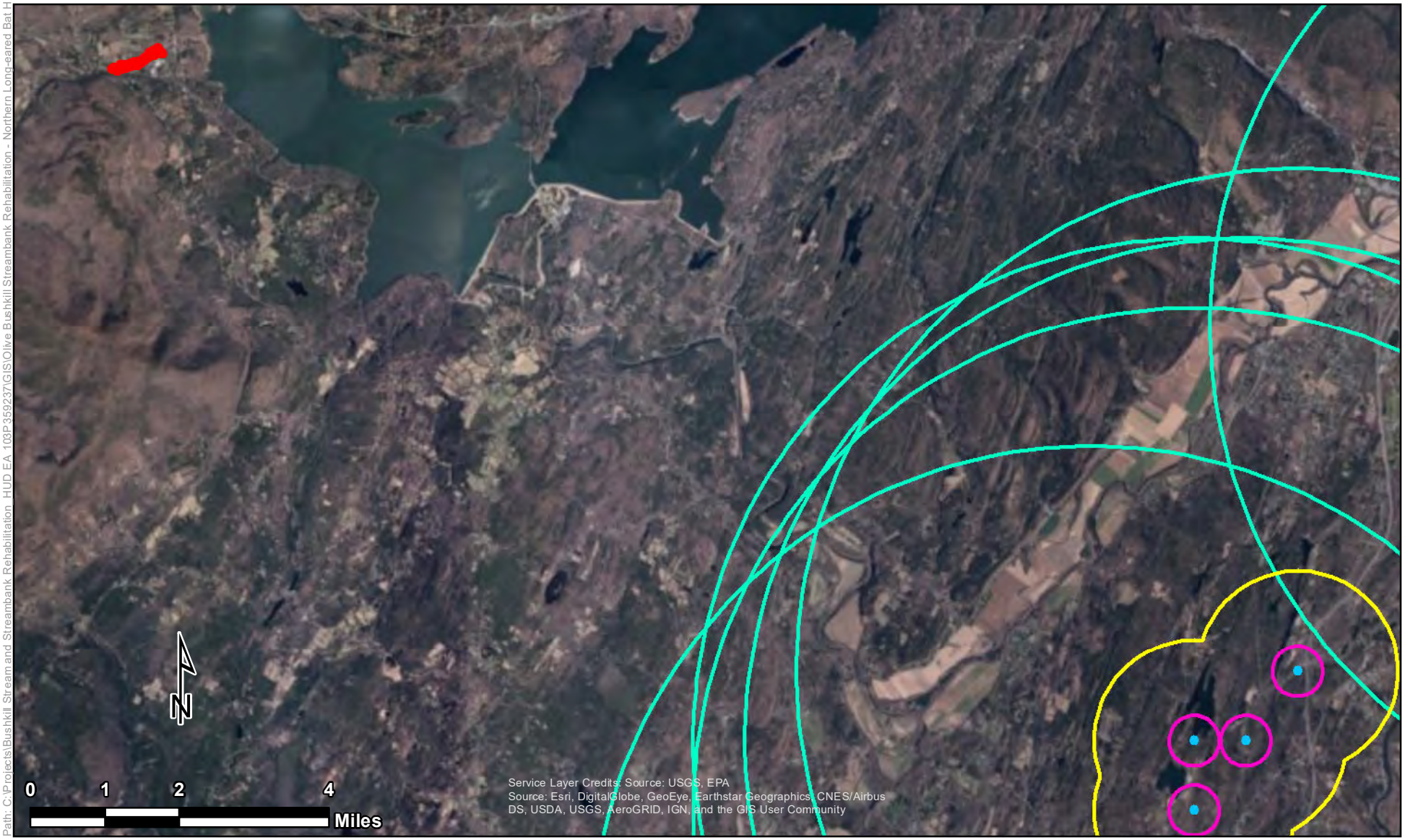
Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Northern Long-eared Bat Hibernacula.m



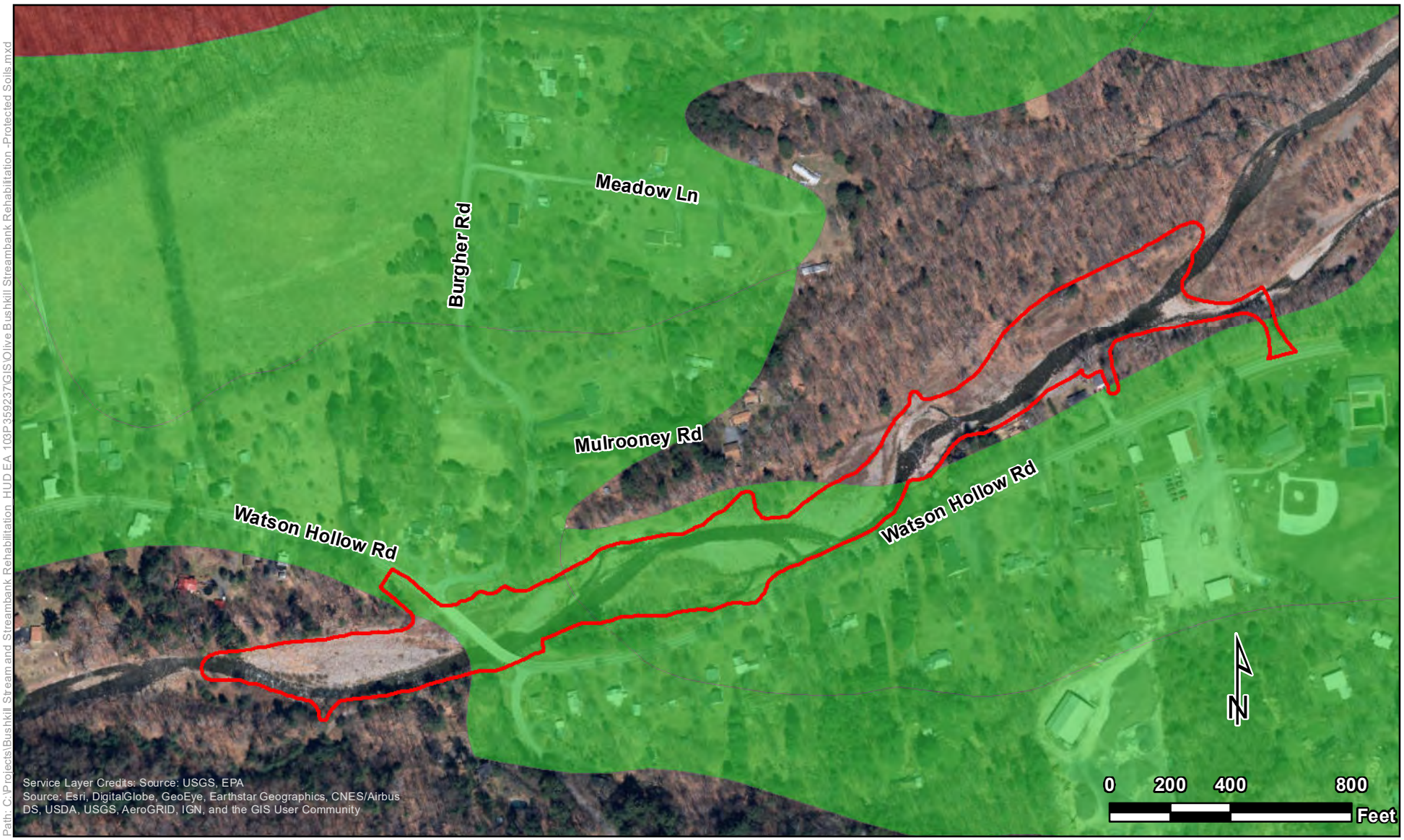
Northern Long-eared Bat Hibernacula

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Legend

- NLEB Hibernacula
- Project Area
- NLEB Hibernacula 0.25 Mile Buffer
- NLEB Hibernacula 1 Mile Buffer
- NLEB Hibernacula 5 Mile Buffer

Tetra Tech, Inc



Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation_Protected Soils.mxd

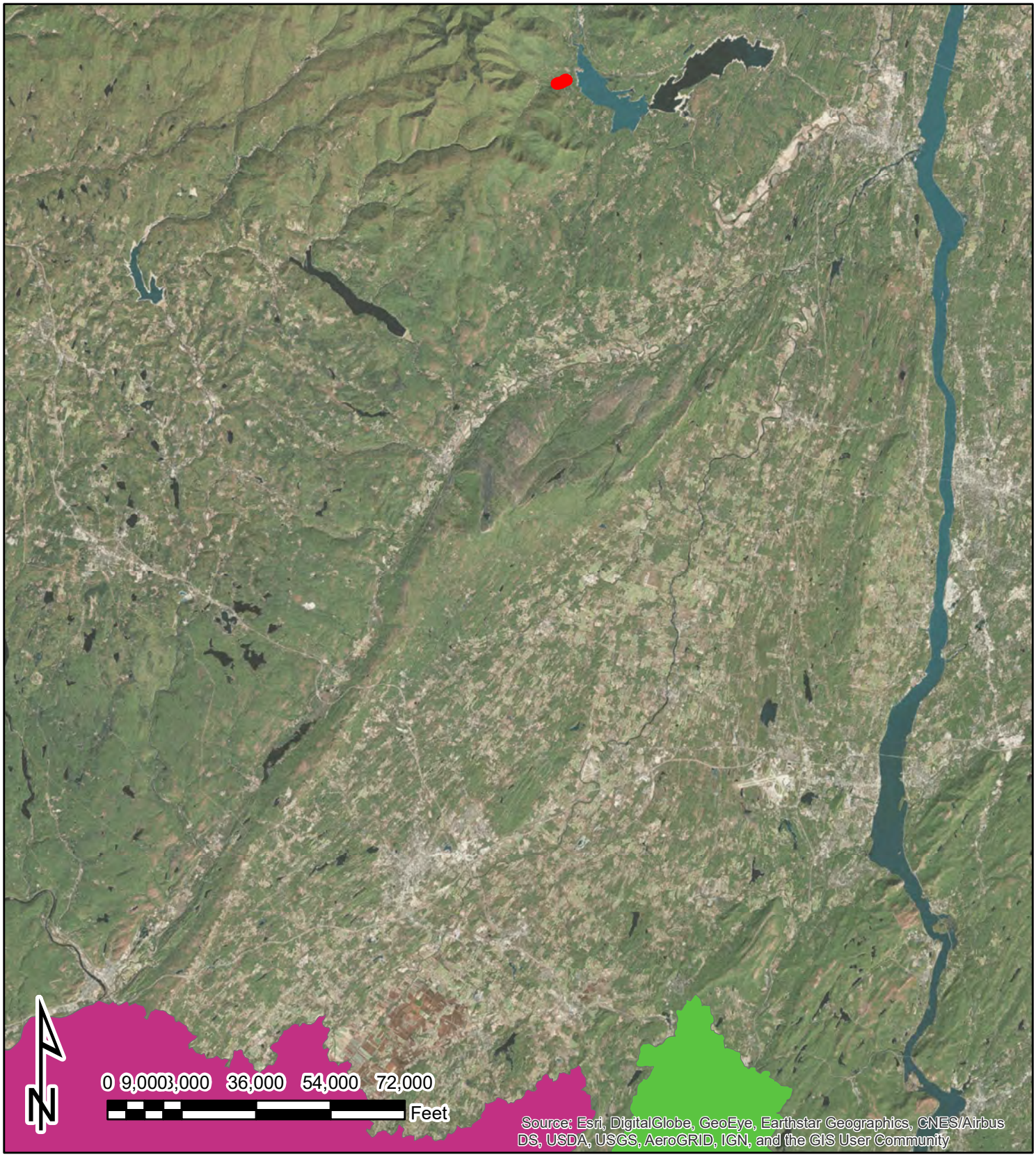
Legend

- Project Area
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained

Protected Soils

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc



Legend

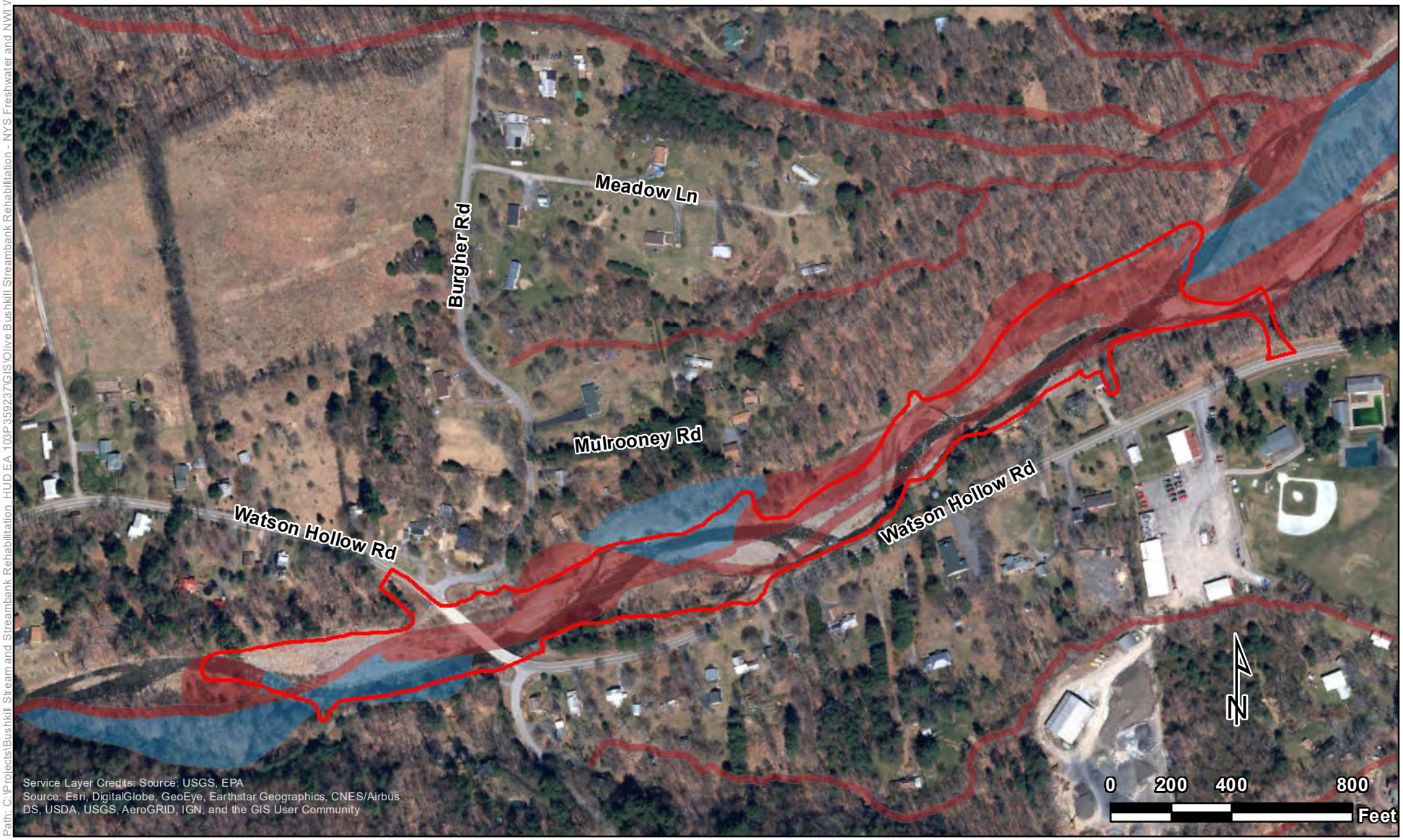
- Project Area
- Northwest NJ 15 Basin SSA
- Ramapo SSA

Sole Source Aquifers

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

PARS ENVIRONMENTAL
a Montrose Environmental Group company

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - NYS Freshwater and NWI Wetlands.mxd



Legend

- Project Area
- NYS Freshwater Wetlands
- NYS Freshwater Wetlands Buffer

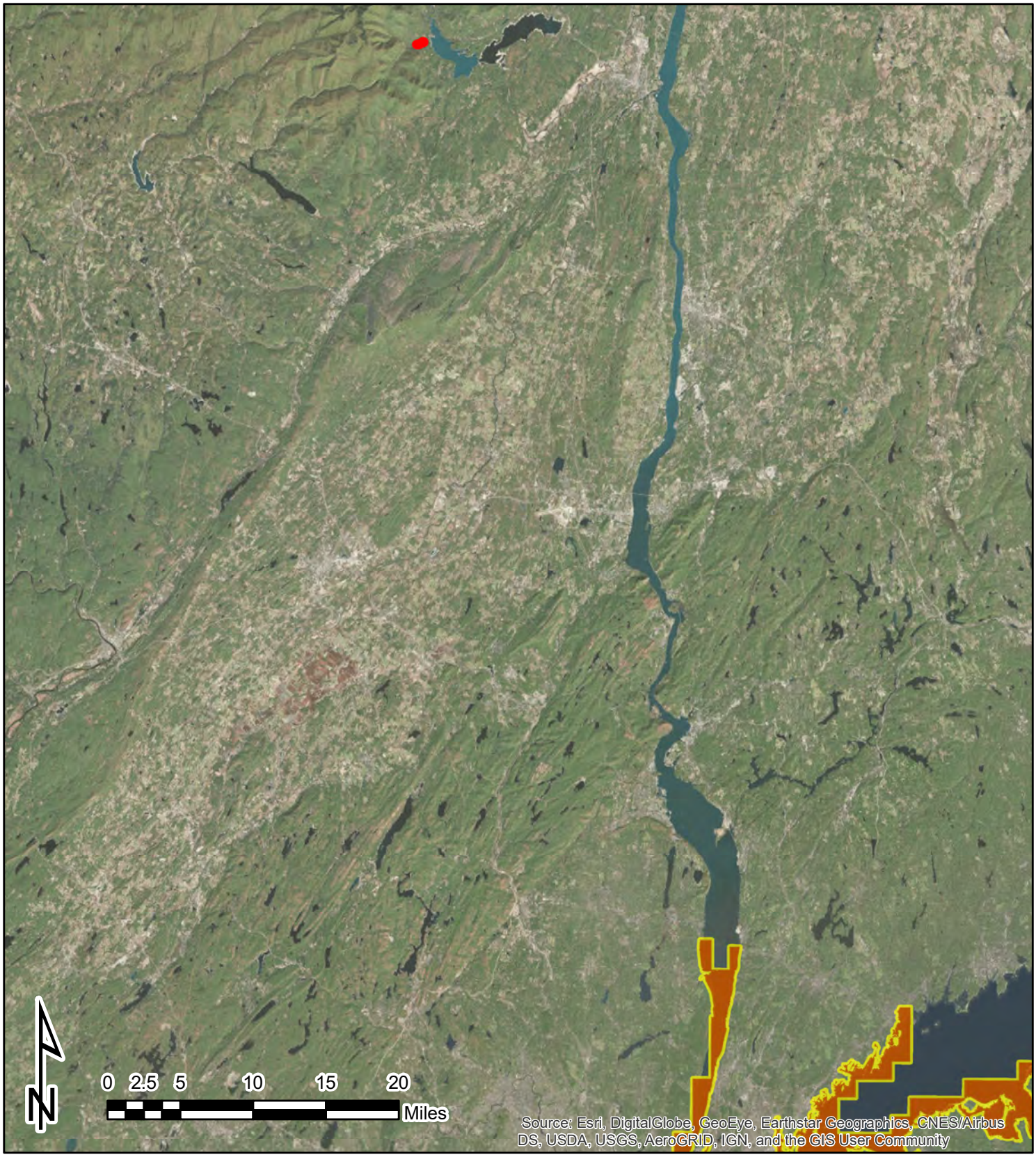
NWI Wetlands

- Freshwater Forested/Shrub Wetland
- Riverine

NYS Freshwater and NWI Wetlands

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc



Legend

- Project Area
- Tidal - Coastal Wetlands
- Tidal - Coastal Wetlands 300ft Buffer

Tidal-Coastal Wetlands

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

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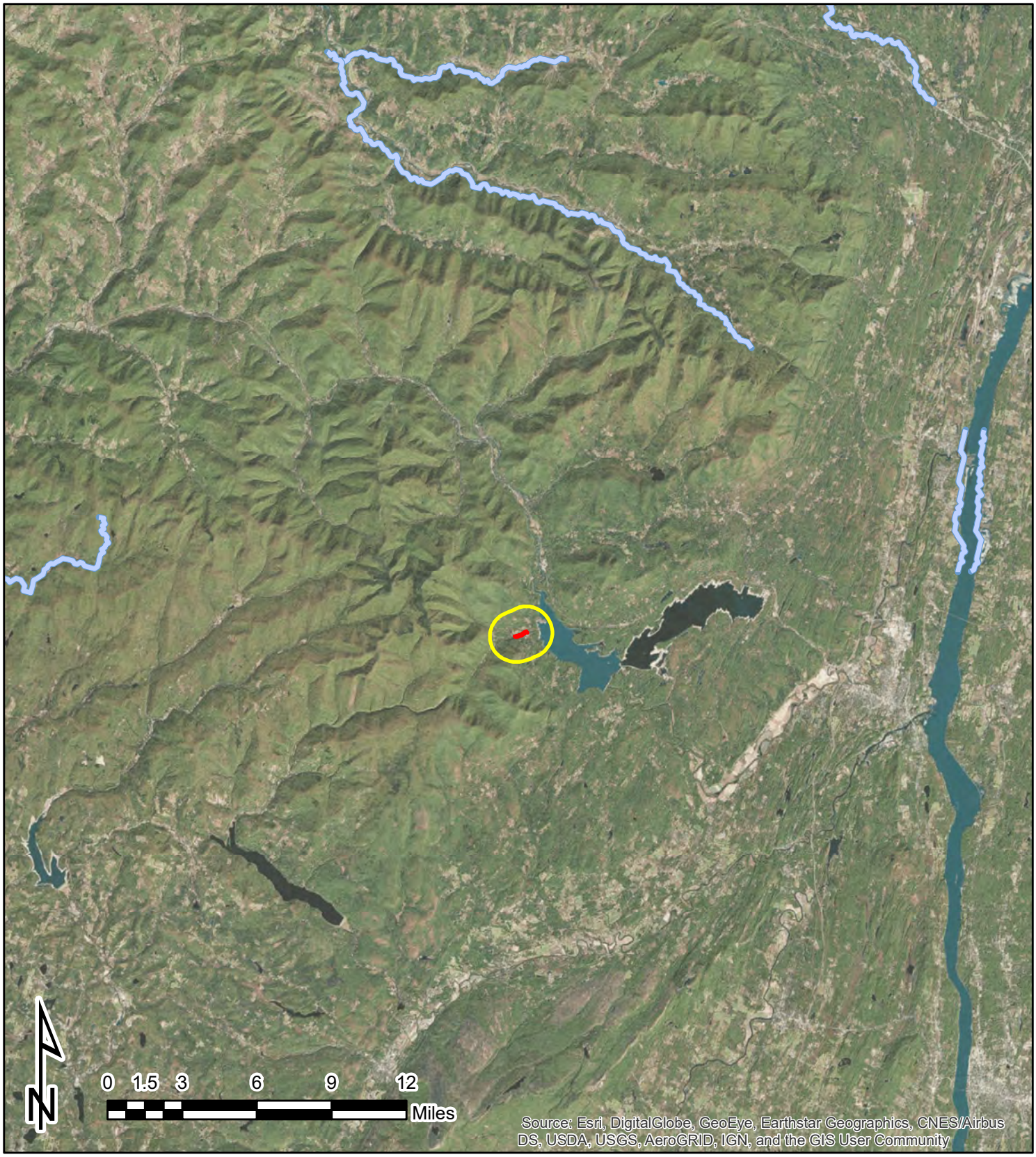


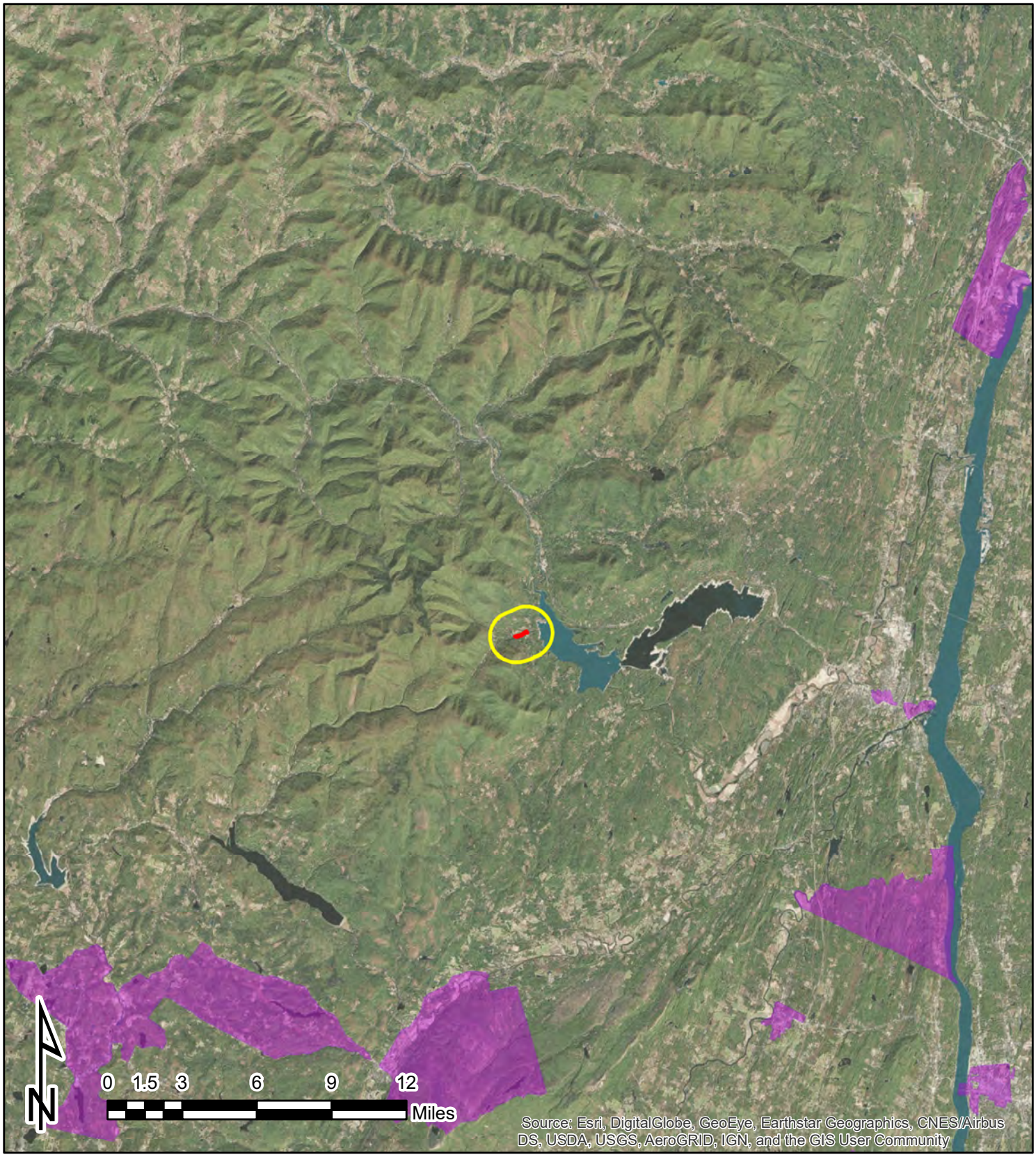
Legend

- Project Area
- One Mile Project Area Buffer
- Wild and Scenic Rivers

Wild and Scenic Rivers

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

PARS ENVIRONMENTAL
a Montrose Environmental Group company



Legend

- Project Area
- One Mile Project Area Buffer
- Environmental Justice Areas

Environmental Justice Areas

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

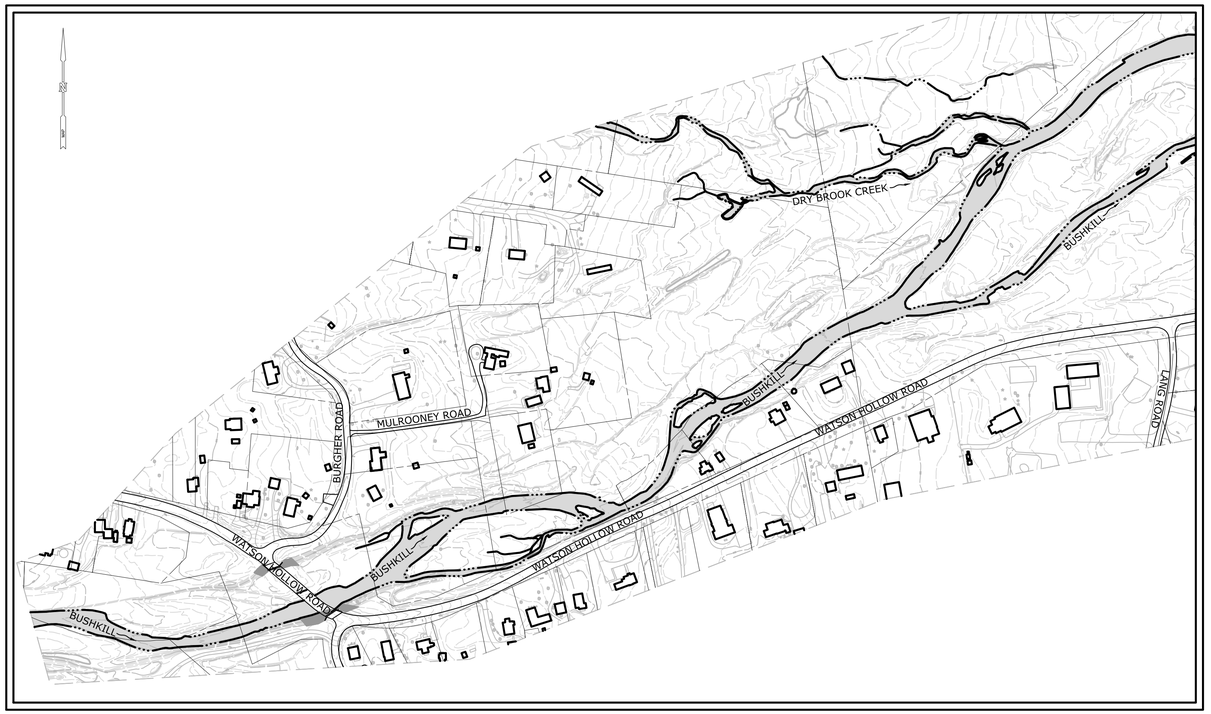
PARS ENVIRONMENTAL
a Montrose Environmental Group company

Appendix B
Site Plans

BUSHKILL CREEK STREAM AND STREAM BANK STABILIZATION DESIGN

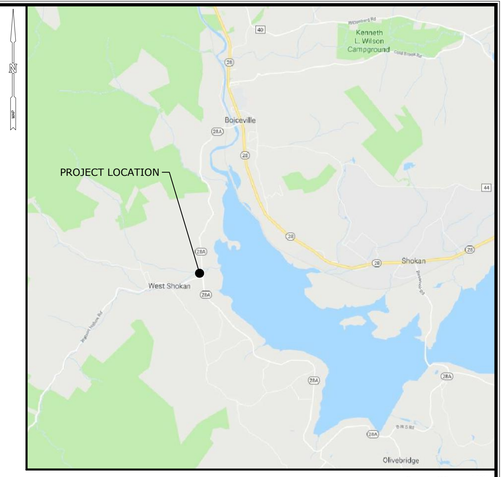
WATSON HOLLOW ROAD
TOWN OF OLIVE, NEW YORK

PRELIMINARY DESIGN (60%)
NOVEMBER 2, 2018
MMI#: 5909-01



PROJECT SITE VICINITY MAP

0' 100' 200'
0 1/2" 1"
SCALE 1" = 300'



LOCATION MAP

0' 3000' 6,000'
0 1/2" 1"
SCALE 1" = 1000'

PREPARED FOR:

TOWN OF OLIVE
45 WATSON HOLLOW ROAD
WEST SHOKAN, NY 12494

LIST OF DRAWINGS

NO.	NAME	TITLE
01	--	TITLE PLAN
02	IN-1	INDEX PLAN
03-05	EX 1-3	SITE PLAN - EXISTING CONDITIONS
06-08	GR 1-3	SITE PLAN - GRADING
09-11	LA 1-3	SITE PLAN - LAYOUT
12	PR-1	STREAM CHANNEL PROFILE
13-15	CP 1-3	CONSTRUCTION PLAN
16	SE-1	DETAILS - SEDIMENT AND EROSION CONTROL
17	DE-1	DETAILS - CHANNEL AND SITE RESTORATION

FUNDING PROVIDED THROUGH THE GOVERNOR'S OFFICE OF STORM RECOVERY'S
NEW YORK RISING COMMUNITY RECONSTRUCTION PROGRAM

PREPARED BY:

MILONE & MACBROOM®

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New Paltz, New York 12561
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811 Know what's **below.** **Call** before you dig. www.cbyd.com

MMI NO.: 5909-01
SUBMITTED: OCTOBER 2018

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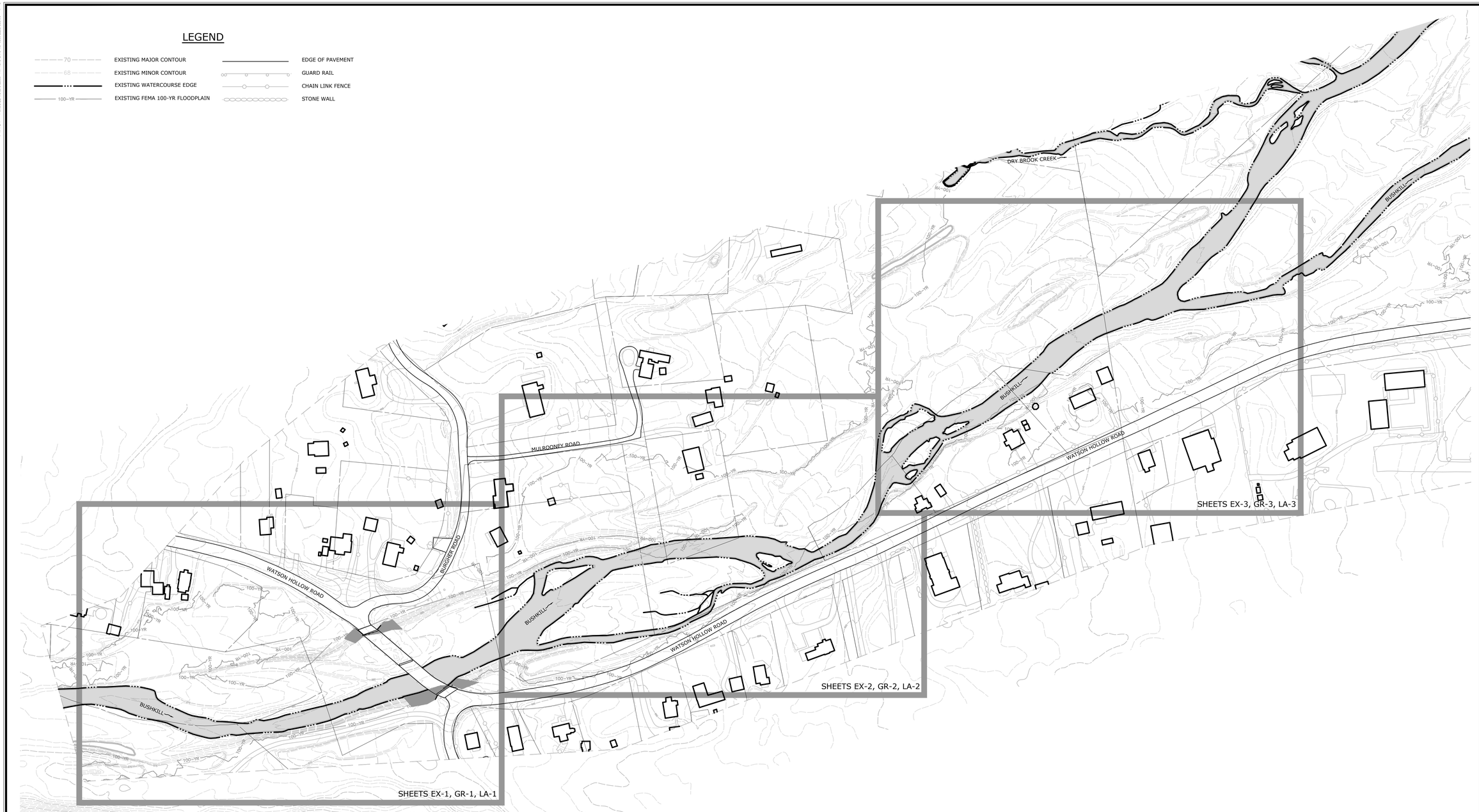
Plotted: 11/2/2018 11:29 AM By: JOHN@MACBROOM.COM
File Name: G:\PROJECTS\5909-01 BUSHKILL STREAM BANK REHABILITATION\CAD\PLOT\5909-01 IN-1.dwg
Xref Dependent Files: 5909-01 XR-TOPO.dwg

LEGEND

70 EXISTING MAJOR CONTOUR	EDGE OF PAVEMENT
68 EXISTING MINOR CONTOUR	GUARD RAIL
EXISTING WATERCOURSE EDGE	CHAIN LINK FENCE
100-YR EXISTING FEMA 100-YR FLOODPLAIN	STONE WALL



GENERAL NOTES

1. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. DIAL 811 OR GO TO WWW.DIGSAFELYNEWYORK.COM. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.

2. MILONE & MACBROOM INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.

3. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

4. SEDIMENT AND EROSION CONTROL MEASURES AS DEPICTED ON THESE PLANS AND DESCRIBED WITHIN THE SEDIMENT AND EROSION CONTROL NARRATIVE SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT COVER AND STABILIZATION IS ESTABLISHED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL," AND IN ALL CASES BEST MANAGEMENT PRACTICES SHALL PREVAIL.

5. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATE FINISHED GRADE.

6. ALL CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE TOWN OF OLIVE, COUNTY OF ULSTER, AND/OR STATE OF NEW YORK REQUIREMENTS, AS NECESSARY AND APPLICABLE. CONSTRUCTION PRACTICES, MATERIALS, AND PAYMENT SHALL BE IN ACCORDANCE WITH THE CURRENTLY PUBLISHED VERSION OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AS APPLICABLE.

7. THE PLANS REQUIRE A CONTRACTOR'S WORKING KNOWLEDGE OF LOCAL, MUNICIPAL, WATER AUTHORITY, AND STATE CODES FOR UTILITY SYSTEMS. ANY CONFLICTS BETWEEN MATERIALS AND LOCATIONS SHOWN, AND LOCAL REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE EXECUTION OF WORK. THE ENGINEER WILL NOT BE HELD LIABLE FOR COSTS INCURRED TO IMPLEMENT OR CORRECT WORK WHICH DOES NOT CONFORM TO LOCAL CODE.

8. ALL FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS USED DURING CONSTRUCTION SHOULD BE STORED IN A SECONDARY CONTAINER AND REMOVED TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR DURING NON-WORK HOURS.

9. MODIFICATIONS TO ANY ABOVE-GROUND OR UNDERGROUND UTILITY, INCLUDING BUT NOT LIMITED TO STORM SEWER, SANITARY SEWER, WATER DISTRIBUTION, ELECTRIC, TELECOMMUNICATIONS, AND/OR GAS SYSTEMS SHALL BE COORDINATED WITH THE APPLICABLE UTILITY PROVIDER.

10. COMPLIANCE WITH ALL REGULATORY PERMIT APPROVALS AND SPECIAL CONDITIONS IS THE RESPONSIBILITY OF BOTH THE CONTRACTOR AND THE PERMITTEE.

11. THE CONTRACTOR MUST MAINTAIN (REPAIR/REPLACE WHEN NECESSARY) THE SILTATION CONTROL MEASURES UNTIL ALL DEVELOPMENT ACTIVITY IS COMPLETED AND ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.

0' 50' 100'
0 1/2" 1"

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

INDEX PLAN

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

1"=100'

NOVEMBER 2, 2018

5909-01

02 OF 17

IN-1

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Plotted: 02-Nov-2018 09:37 By: mjohnson
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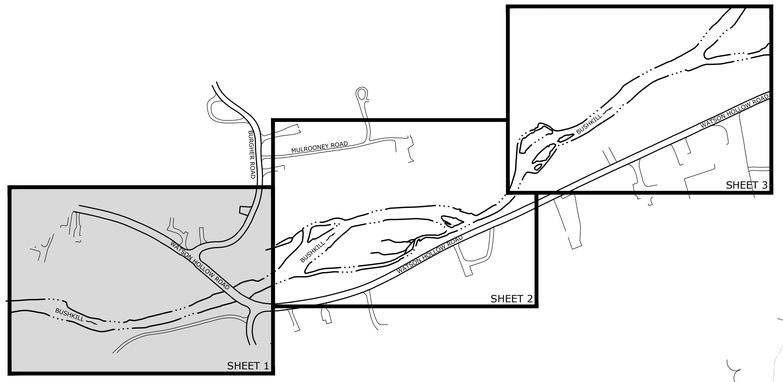

SHEET INDEX
(N.T.S.)

BRIDGE ABUTMENT

LOOKING UPSTREAM

LOOKING DOWNSTREAM

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- EXISTING FEMA 100-YEAR FLOODPLAIN
- ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

MAPPING AND SURVEY NOTES:

1. TOPOGRAPHIC INFORMATION IS BASED UPON AERIAL PHOTOGRAMMATETRY PERFORMED BY GOLDEN AERIAL, INC. NEWTOWN, CT, FLOWN APRIL 23, 2017, AND SUPPLEMENTED WITH GROUND SURVEY PERFORMED BY PRUDENT ENGINEERING, IN OCTOBER 2017. CHANNEL SURVEY PERFORMED BY MJ ENGINEERING IN AUGUST 2016.
2. HORIZONTAL MAPPING IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), IN THE NEW YORK EAST ZONE. ELEVATION DATA IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). ALL CONTOURS ARE PRESENTED IN FEET.
3. PROPERTY BOUNDARY INFORMATION WAS OBTAINED FROM ULSTER COUNTY, AND IS FOR INFORMATIONAL PURPOSES ONLY. ASSESSORS INFORMATION IS APPROXIMATE, AND SHOULD NOT BE CONSIDERED COMPLETE OR CURRENT FOR PURPOSES OF CONSTRUCTION AND/OR EASEMENT NEGOTIATION.
4. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. CONTACT "DIG SAFELY NEW YORK" BY CALLING 811. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
5. MILONE & MACBROOM INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.
6. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION.
7. FLOOD HAZARD INFORMATION AS DEPICTED FOR THE 100-YEAR FLOOD BOUNDARY WAS DERIVED FROM CURRENTLY EFFECTIVE FLOOD INSURANCE RATE MAPPING (FIRM) NO. 36111C0410F (EFF. 11/18/16).
8. THE PROJECT SITE INCLUDES BUSHKILL CREEK AND IS SUBJECT TO FLOODING. INFORMATION DEPICTED HEREIN IS SHOWN AS A REPRESENTATION OF THE PROJECT SITE AT THE TIME IT WAS SURVEYED, AND IS SUBJECT TO CHANGE BASED UPON HIGH FLOWS, FLOOD, EROSION, AND/OR CHANGING SITE CONDITIONS.
9. ALL CONTRACTORS ARE ADVISED TO VISIT THE SITE TO CONFIRM CURRENT CONDITIONS PRIOR TO SUBMITTING BIDS.

N
W E
S
0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

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SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1'=30'
DATE: NOVEMBER 2, 2018
PROJECT NO.: 5909-01
SHEET NO.: 03 OF 17

SHEET NAME: EX-1

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Plotted: 31-Oct-2018 08:49 By: ashleyb
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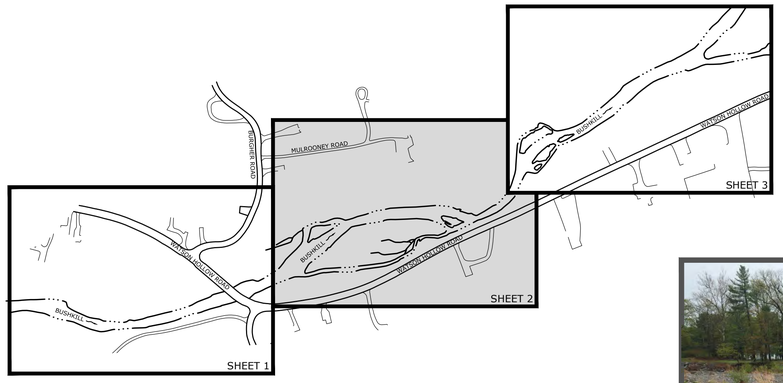
Xrefs: ...



SHEET INDEX
(N.T.S.)

SEDIMENT BAR

MATCHLINE (SEE SHEET EX-1)

MATCHLINE (SEE SHEET EX-3)

N/F
COUNTY OF ULSTER
MEADOW LN / BURGHER RD

N/F
THOMAS FREDERICK OLIVERI
BURGHER RD

EXISTING STONE ARMORING
ALONG RIGHT BANK

N/F
VICTOR AVILES
#70 WATSON HOLLOW RD

BUSHKILL

N/F
HECTOR & SIMONE SANZ
#10 BURGHER RD

WATSON HOLLOW ROAD

N/F
URSULA PERRY
#89 WATSON HOLLOW RD

N/F
SARAH HEMINGWAY LYNCH
#75 WATSON HOLLOW RD

N/F
FRED & MARIE JAECK
#91 WATSON HOLLOW RD

LIMITS OF AERIAL TOPOGRAPHY

LOOKING DOWNSTREAM

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- 70 — EXISTING MAJOR CONTOUR
- 68 — EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- 100-YR — EXISTING FEMA 100-YEAR FLOODPLAIN
- OHW — ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 04 OF 17

SHEET NAME: **EX-2**

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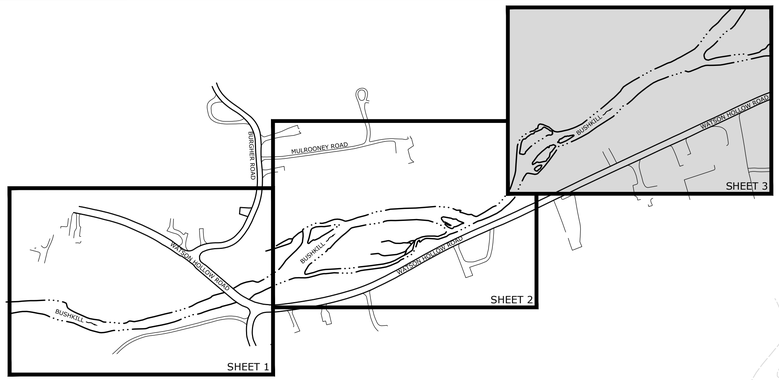


SHEET INDEX
(N.T.S.)

EXISTING SIDE CAST BERM

EXISTING SIDE CAST BERM

BUSHKILL

25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00

EROSION ALONG RIGHT BANK

LOOKING DOWNSTREAM

EROSION ALONG RIGHT BANK

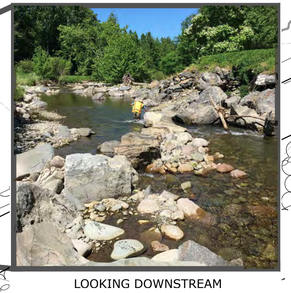
N/F
FRED & MARIE JAECK
#91 WATSON HOLLOW RD

WATSON HOLLOW ROAD

N/F
WERNER WAGNER
#62 WATSON HOLLOW RD

N/F
ADAM & JODI SCOTT
#59 WATSON HOLLOW RD

N/F
OLIVE FIRE DEPT NO 1 INC
#53 WATSON HOLLOW RD



LOOKING DOWNSTREAM

MATCHLINE (SEE SHEET EX-2)

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- 70 EXISTING MAJOR CONTOUR
- 68 EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- 100-YR EXISTING FEMA 100-YEAR FLOODPLAIN
- OHW ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

N
W E
S
0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 05 OF 17

SHEET NAME: EX-3

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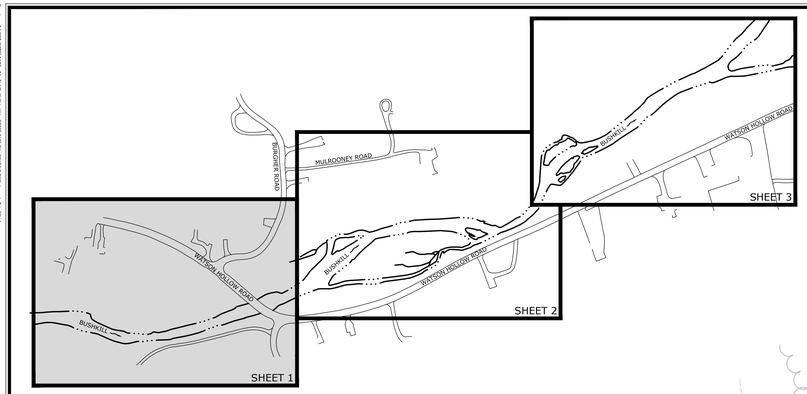

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-2)

WATSON HOLLOW ROAD

BURGHER ROAD

RESHAPE 25' WIDE SIDE CHANNEL

BEGIN STREAM CHANNEL RECONSTRUCTION
STA: 126+09

BUSHKILL

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 10H:1V

SLOPE 3H:1V

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION
WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 08 OF 17

SHEET NAME: GR-1

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Plotted: 31 OCT 2018 - 10:36am By: JOSHUA MACBROOM
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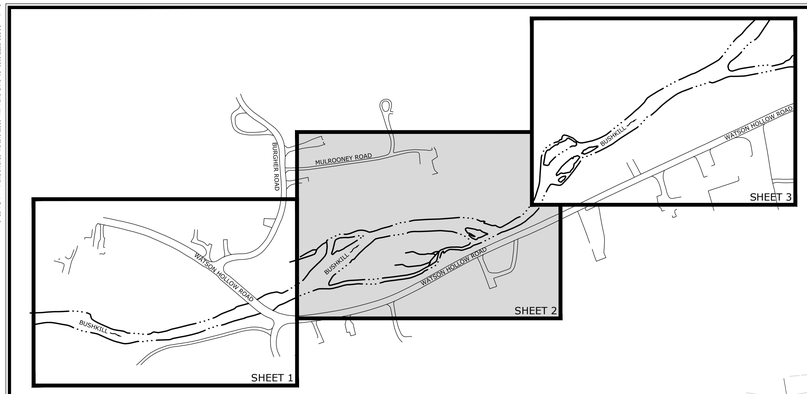
Xrefs: ...



SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-3)

MATCHLINE (SEE SHEET GR-1)

SLOPE 3H:1V

CONSTRUCT A 69' WIDE
BANKFULL CHANNEL
(SEE DETAIL CROSS SECTION)

SLOPE 100H:1V

SLOPE 50H:1V

FILL EXISTING
FLOODPLAIN SIDE CHANNEL

BUSHKILL

WATSON HOLLOW ROAD

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 07 OF 17

SHEET NAME: GR-2

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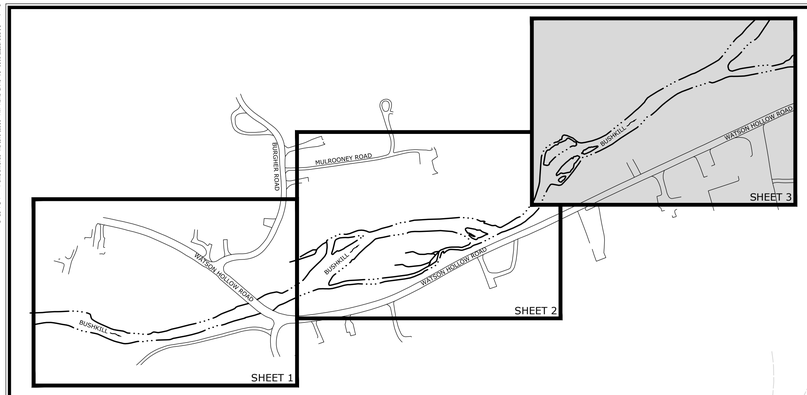

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 3H:1V

SLOPE 100H:1V

BUSHKILL

WATSON HOLLOW ROAD

END OF STREAM CHANNEL RECONSTRUCTION
STA: 100+00

MATCHLINE (SEE SHEET GR-2)

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

LEGEND

- 70 — EXISTING MAJOR CONTOUR
- 68 — EXISTING MINOR CONTOUR
- 70 — PROPOSED MAJOR CONTOUR
- 68 — PROPOSED MINOR CONTOUR

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PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 06 OF 17

SHEET NAME: GR-3

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Plotted: 9/28/2018 11:09:39 AM By: MIKE MACBROOM
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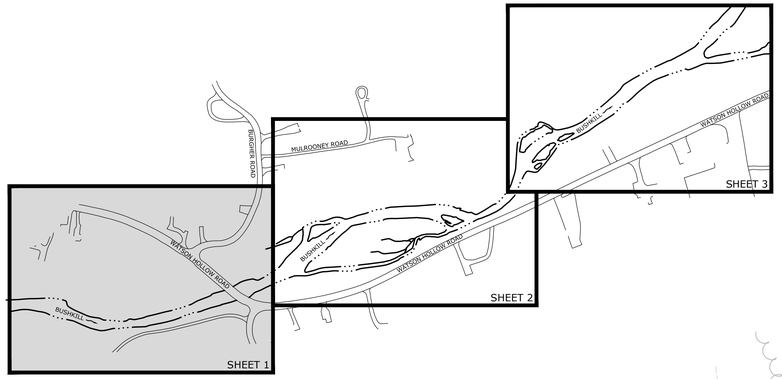

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-2)

REMOVE EXCESS MATERIAL FROM BRIDGE OPENING

RESHAPE EXISTING SIDE CHANNEL

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

BUSHKILL

INSTALL JOINT PLANTED BOULDER REVETMENT STA 119+50 TO 123+50 - SEE DETAIL

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

REPLACE RIPRAP AND GROUT (SEE DETAIL)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

1"=30'
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

09 OF 17
SHEET NO.

LA-1
SHEET NAME

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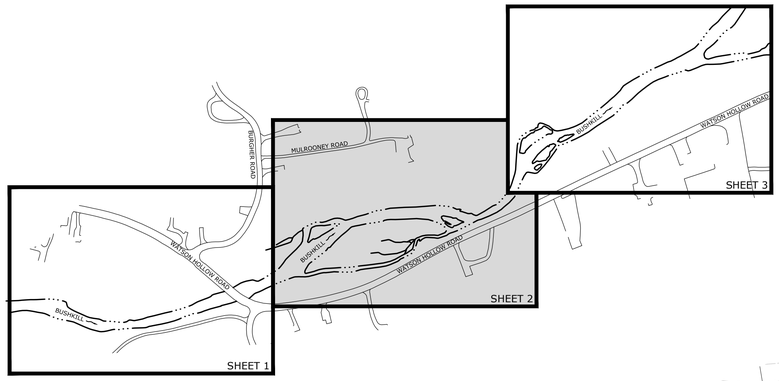

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-1)

MATCHLINE (SEE SHEET EX-3)

FILL EXISTING CHANNEL AND RELOCATE AWAY FROM ROAD

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

INSTALL JOINT PLANTED BOULDER REVETMENT STA 100+60 TO 111+75 - SEE DETAIL

FILL EXISTING SIDE CHANNEL

WATSON HOLLOW ROAD

BUSHKILL

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

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PRELIMINARY DESIGN 60%

SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 10 OF 17

SHEET NAME: LA-2

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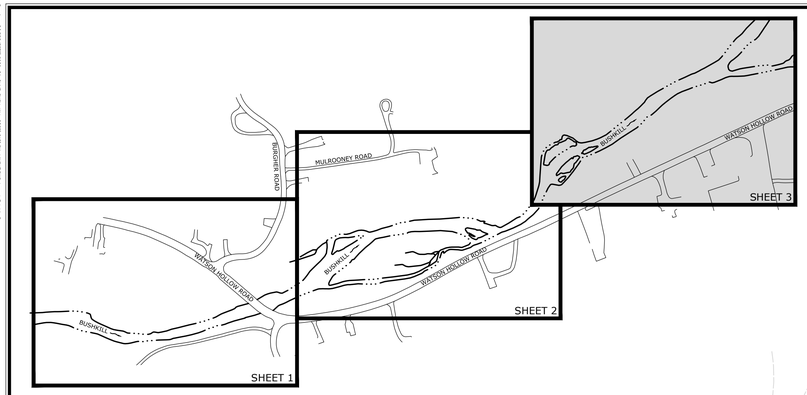

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

LIVE WILLOW CUTTINGS
(REUSE FROM SITE WHERE POSSIBLE)

INSTALL JOINT PLANTED BOULDER
REVETMENT STA 100+60 TO
111+75 - SEE DETAIL

REMOVE TREES ON PROPERTY

RE-USE EXISTING WILLOW PLANTS
FOR PLANTING WHERE POSSIBLE

FILL EXISTING SIDE CHANNEL
AWAY FROM PROPERTIES

BUSHKILL

WATSON HOLLOW ROAD

MATCHLINE (SEE SHEET EX-2)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

N
W E
S

0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 11 OF 17

SHEET NAME: LA-3

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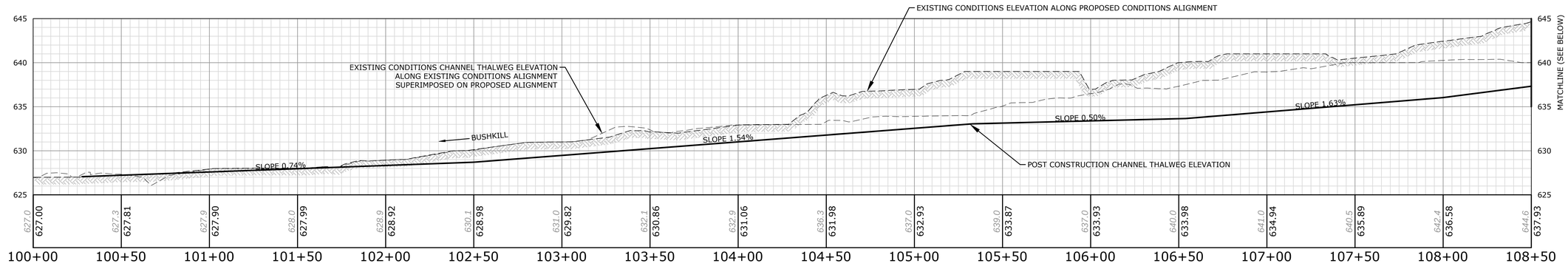

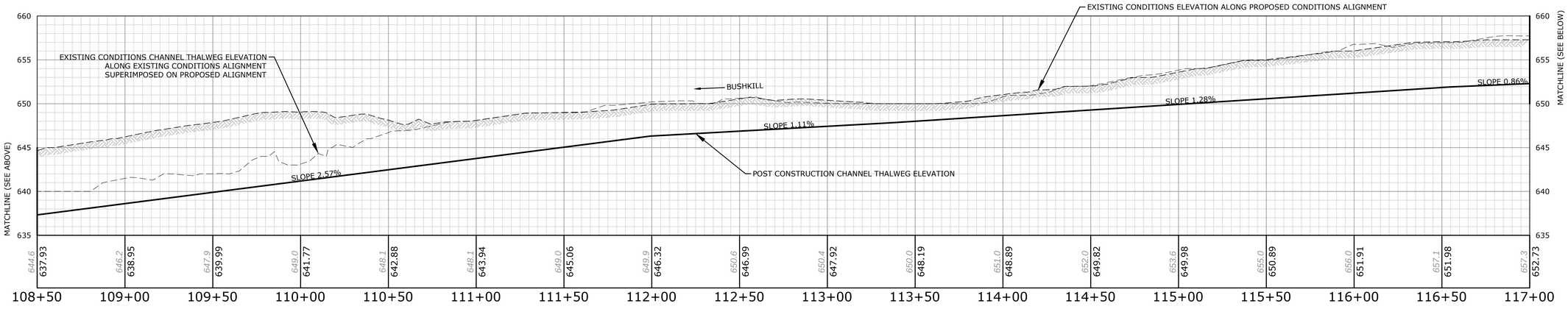

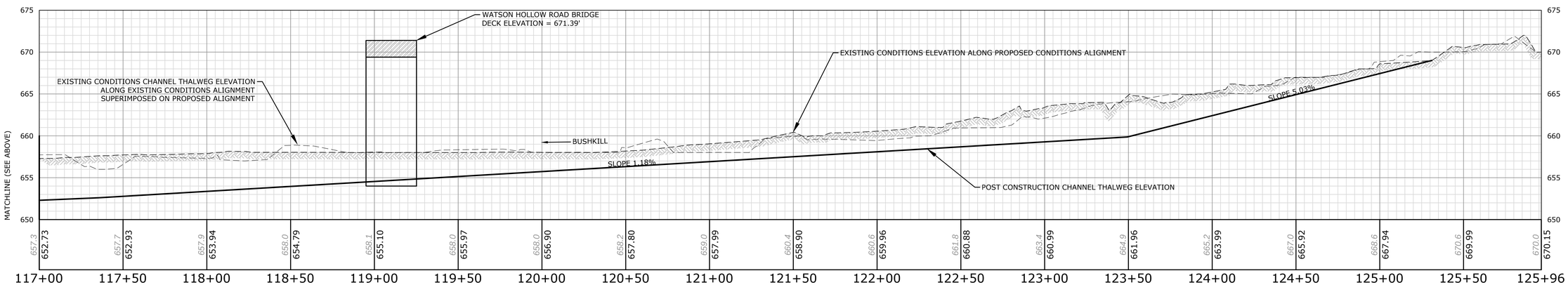

BUSHKILL - PROFILE VIEW

SCALE: 1"=30' (H); 1"=6' (V)

LEGEND

- EXISTING GRADE ALONG EXISTING ALIGNMENT
- EXISTING GRADE ALONG PROPOSED ALIGNMENT
- PROPOSED GRADE ALONG PROPOSED ALIGNMENT

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

STREAM PROFILE

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: AS NOTED

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 12 OF 17

SHEET NAME: PR-1

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

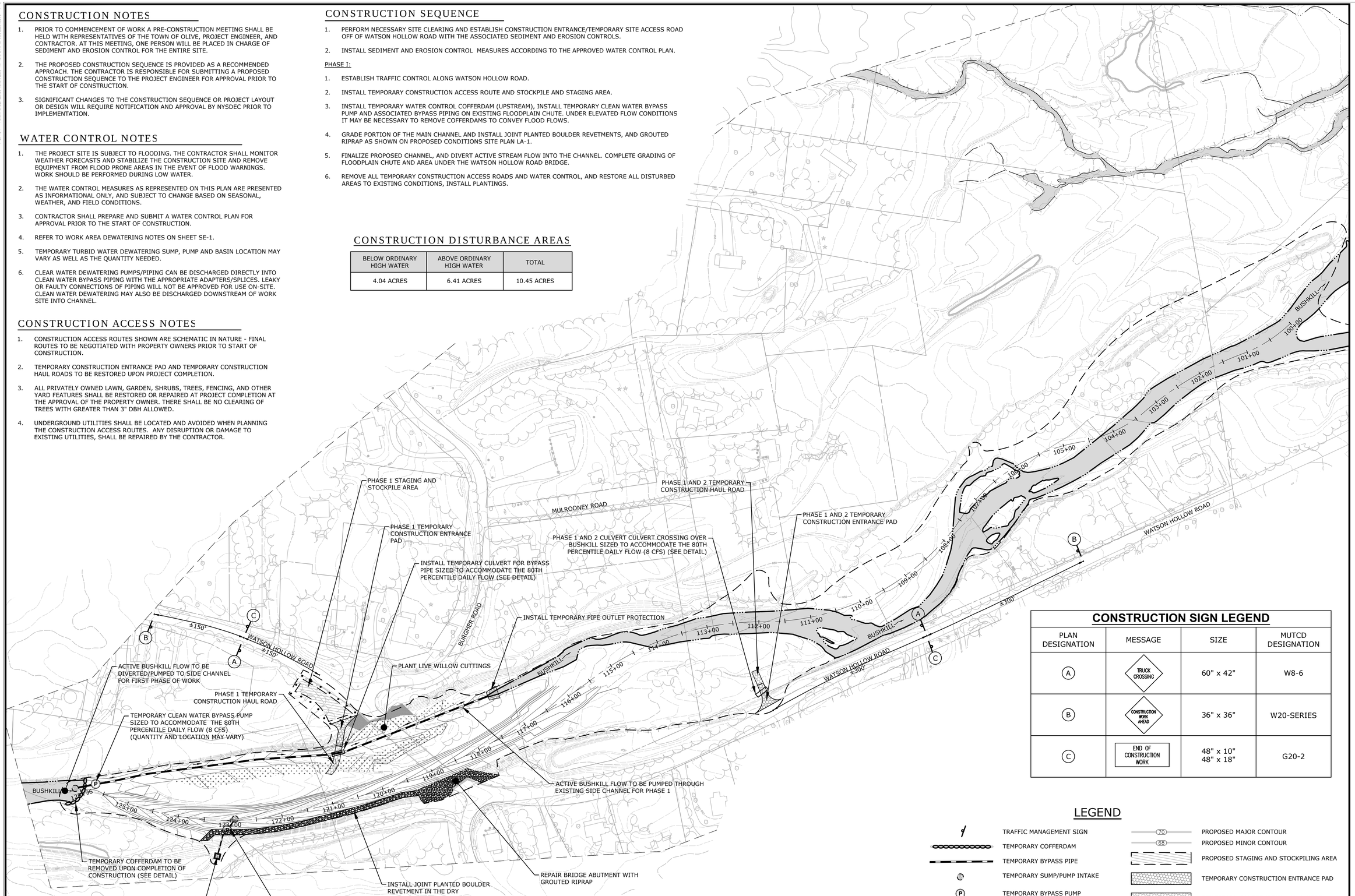
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE I:

1. ESTABLISH TRAFFIC CONTROL ALONG WATSON HOLLOW ROAD.
2. INSTALL TEMPORARY CONSTRUCTION ACCESS ROUTE AND STOCKPILE AND STAGING AREA.
3. INSTALL TEMPORARY WATER CONTROL COFFERDAM (UPSTREAM), INSTALL TEMPORARY CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING ON EXISTING FLOODPLAIN CHUTE. UNDER ELEVATED FLOW CONDITIONS IT MAY BE NECESSARY TO REMOVE COFFERDAMS TO CONVEY FLOOD FLOWS.
4. GRADE PORTION OF THE MAIN CHANNEL AND INSTALL JOINT PLANTED BOULDER REVETMENTS, AND GROUTED RIPRAP AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-1.
5. FINALIZE PROPOSED CHANNEL, AND DIVERT ACTIVE STREAM FLOW INTO THE CHANNEL. COMPLETE GRADING OF FLOODPLAIN CHUTE AND AREA UNDER THE WATSON HOLLOW ROAD BRIDGE.
6. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS, INSTALL PLANTINGS.

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES



CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

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DESCRIPTION | DATE | BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 1

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=80'
DATE: NOVEMBER 2, 2018
PROJECT NO.: 5909-01
SHEET NO.: 13 OF 17
SHEET NAME: CP-1

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

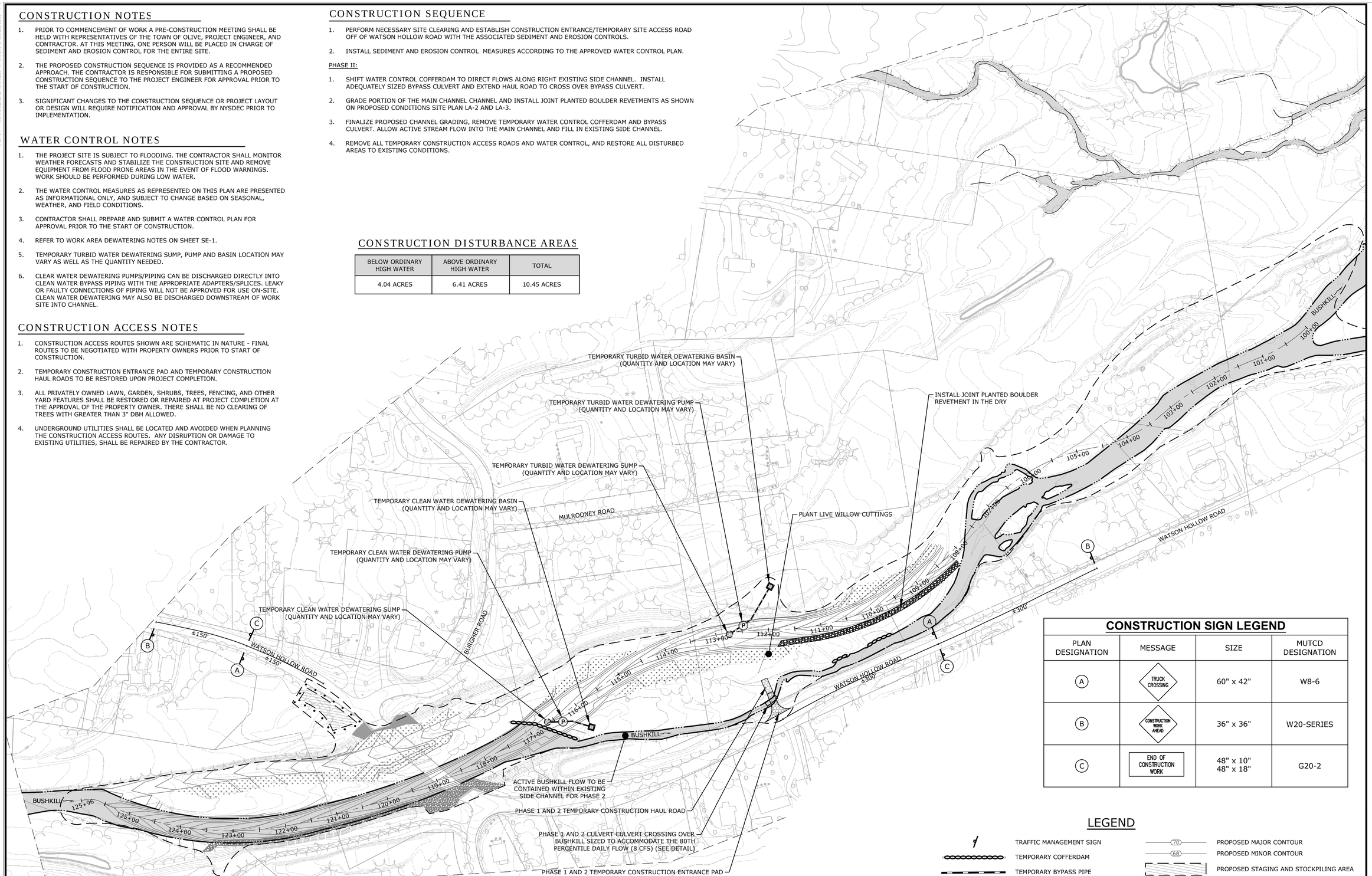
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE II:

1. SHIFT WATER CONTROL COFFERDAM TO DIRECT FLOWS ALONG RIGHT EXISTING SIDE CHANNEL. INSTALL ADEQUATELY SIZED BYPASS CULVERT AND EXTEND HAUL ROAD TO CROSS OVER BYPASS CULVERT.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES



CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR (70)
- PROPOSED MINOR CONTOUR (68)
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

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231 Main Street, Suite 102
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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 2

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 14 OF 17

SHEET NAME: CP-2

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

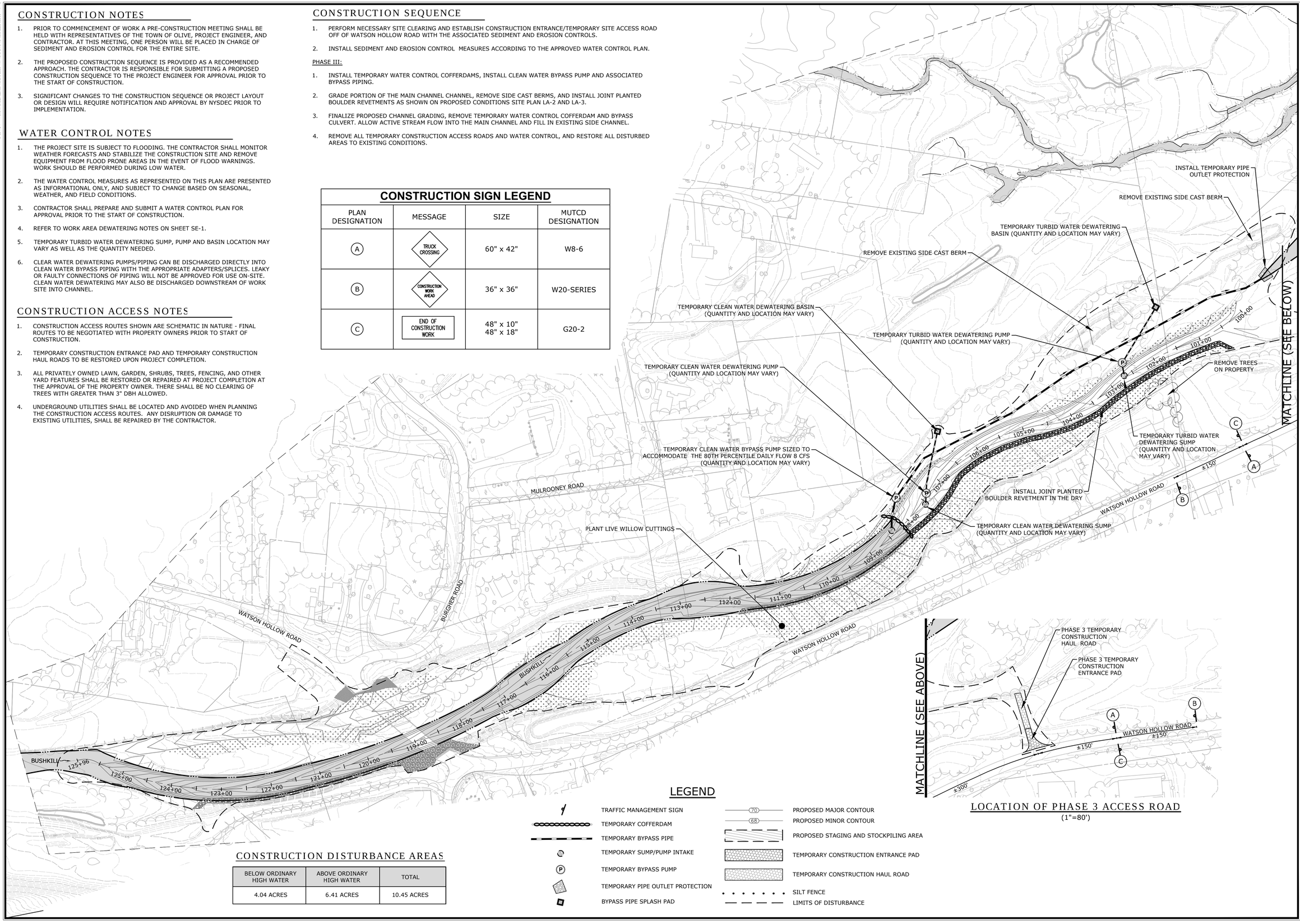
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE III:

1. INSTALL TEMPORARY WATER CONTROL COFFERDAMS, INSTALL CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL, REMOVE SIDE CAST BERMS, AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2



LOCATION OF PHASE 3 ACCESS ROAD
(1"=80')

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR (70)
- PROPOSED MINOR CONTOUR (68)
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES

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PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 3

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC DESIGNED	MC DRAWN	DRM CHECKED

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 15 OF 17

SHEET NAME: CP-3

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PROJECT DESCRIPTION

THE TOWN OF OLIVE RECEIVED COMMUNITY DEVELOPMENT BLOCK GRANT- DISASTER RECOVERY (CDBG-DR) FUNDING FROM THE GOVERNOR'S OFFICE OF STORM RECOVERY (GOSR) TO IMPLEMENT IMPROVEMENTS ALONG THE BUSHKILL TO REPAIR CHANNEL DAMAGE, SEDIMENT AGGRADATION AND ACCUMULATION OF WOODY DEBRIS THAT OCCURRED DURING TROPICAL STORM IRENE. THE PROJECT HAS BEEN DIVIDED INTO TWO PHASES. PHASE I OF THE PROJECT BEGAN WITH AN ASSESSMENT OF THE PROJECT AREA REACH FOR THE PURPOSE OF IDENTIFYING AND CHARACTERING WHERE CHANNEL AND INFRASTRUCTURE IMPROVEMENTS ARE NEEDED. PHASE II OF THE PROJECT IS THE ENGINEERING DESIGN AND CONSTRUCTION PHASE OF THE FINAL RECOMMENDATIONS MADE DURING PHASE I.

SITE DESCRIPTION

THE BUSHKILL DRAINS A 19.7-SQUARE-MILE WATERSHED IN ULSTER COUNTY WITHIN THE TOWNS OF OLIVE, SHANDAKEN, AND DENNING. THE BASIN IS WHOLLY CONTAINED WITHIN NEW YORK STATE'S CATSKILL PARK AND IS COMPRISED MAINLY OF UNDEVELOPED FORESTED LAND WITH 12.7 SQUARE MILES LOCATED IN THE SLIDE MOUNTAIN WILDERNESS AND SUNDOWN WILD FOREST AREAS. THE ELEVATION WITHIN THE BUSHKILL WATERSHED RANGES FROM 600 FEET AT THE ENTRANCE TO THE ASHOKAN RESERVOIR TO 3,855 FEET AT THE TOP OF CORNELL MOUNTAIN. THE UPPER PORTION OF THE WATERSHED CONSISTS OF STEEPLY SLOPING CONFINED VALLEY WALLS AND TRANSITIONS TO A MUCH WIDER, RELATIVELY FLAT VALLEY IN THE LOWER PORTION.

PROPOSED IMPROVEMENTS

THE FOCUS OF THIS PROJECT LOCATED AT THE REACH OF THE BUSHKILL FROM UPSTREAM OF THE WATSON HOLLOW BRIDGE AT STA 54+50, TO DOWNSTREAM NEAR THE LOCATION OF A MAJOR SEDIMENT BAR AT STA 27+00. THE RESTORATION ELEMENTS INCLUDED THE FOLLOWING:

- CHANNEL RESHAPING TO APPROXIMATE BANKFULL WIDTH TO INCREASE SEDIMENT TRANSPORT AND CONVEYANCE
- CHANNEL REALIGNMENT AWAY FROM ROADWAYS AND PROPERTIES
- REPAIR SCOUR PROTECTION ALONG THE RIGHT ABUTMENT AT THE WATSON HOLLOW ROAD BRIDGE AND REMOVE EXCESS SEDIMENT IN THE LEFT WATERWAY
- REMOVAL OF SIDE CAST BERMS LOCATED AT THE LOWER END OF THE PROJECT AREA

THE PROPOSED CONCEPT INVOLVES THE RESHAPING OF 2,500 LINEAR FEET OF THE CREEK CHANNEL TO MAXIMIZE SEDIMENT TRANSPORT AND RELOCATE THE STROM AWAY FROM THE ROADWAY AND WATSON HOLLOW BRIDGE ABUTMENT . THE ESTIMATED BANKFULL DIMENSIONS WOULD BE 46-69 FEET WIDE BY 3 FEET DEEP; CHANNEL FLOODPLAIN AT A 1% GRADE TYING BACK TO EXISTING GROUND WITH MINIMAL AMOUNT OF DISTURBANCE TO THE EXISTING OVERBANK AREAS.

SOILS

THE PROJECT AREA IS PREDOMINATELY IDENTIFIED AS SOIL MAPPING UNIT ALLUVIAL LAND WHICH INCLUDES THOSE SOILS THAT HAVE FORMED FROM THE ACCUMULATION OF SAND, SILT, CLAY, GRAVEL AND BOULDERS DEPOSITED FROM FAST-FLOWING MOUNTAIN RIVERS. DRAINAGE CLASSES CAN RANGE FROM SOMEWHAT POORLY DRAINED TO EXCESSIVELY DRAINED.

UPLAND AREAS AREA MADE UP PREDOMINATELY OF HOOSIC GRAVELLY LOAM, WHICH INCLUDES THOSE SOILS THAT HAVE FORMED FROM GLACIAL OUTWASH OF SANDY GRAVELLY GLACIOFLUVIAL DEPOSITS. DRAINAGE CLASSES TYPICALLY SOMEWHAT EXCESSIVELY DRAINED WITH A SOIL PERMEABILITY OF MODERATELY RAPID TO RAPID.

PLANNED EROSION AND SEDIMENT CONTROL PRACTICES

1. STABILIZED CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED AT ALL SITE ACCESS POINTS.
2. CONSTRUCTION ROAD STABILIZATION: THE CONSTRUCTION ACCESS ROAD WILL BE CONSTRUCTED AFTER THE REMOVAL OF TOPSOIL.
3. SILT FENCE WILL BE INSTALLED ALONG THE CONSTRUCTION ACCESS ROADS AND AROUND ANY STOCKPILE AREAS.
4. TURBID WATER MANAGEMENT: AREAS FOR DISCHARGE, DETAINING, AND INFILTRATING OF TURBID CONSTRUCTION WATER ARE SHOWN ON SITE PLANS.
5. SURFACE STABILIZATION: STABILIZATION OF THE SURFACE WILL BE ACCOMPLISHED WITH VEGETATION AS SPECIFIED ON THE SITE PLAN.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES INCLUDING TURBID CONSTRUCTION WATER MANAGEMENT AREAS AS PRESENTED ON THIS PLAN ARE PRESENTED AS A GUIDE ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.

EROSION CONTROL NOTES

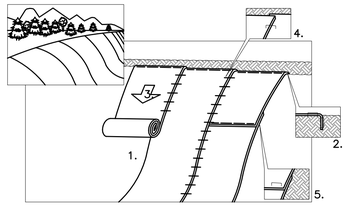
1. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL."
2. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
3. ALL WETLANDS SHALL BE AVOIDED AND PROTECTED FROM CONSTRUCTION ACTIVITIES WITH SEDIMENT CONTROL MEASURES WHERE NECESSARY AS DETERMINED BY THE PROJECT ENGINEER.
4. CLEARING OF NATIVE VEGETATION FOR CONSTRUCTION ACCESS SHOULD BE MINIMIZED.
5. TEMPORARY ACCESS AREAS SHALL BE BORDERED WITH SEDIMENT AND EROSION CONTROL FENCES AND HAYBALES. SEE PLANS AND DETAILS.
6. STOCKPILE AREAS TO BE ENCLOSED BY FILTER FABRIC AND HAYBALES. SEE PLANS AND DETAILS.
7. AN EROSION CONTROL BLANKET SHALL BE PLACED OVER ANY DISTURBED AREAS WITH A SLOPE GREATER THAN OR EQUAL TO 3:1 TO PREVENT EROSION. SEE PLANS AND DETAILS.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES. THE CONSTRUCTION INSPECTOR WILL VERIFY THE MAINTENANCE WEEKLY AND AFTER RAIN EVENTS.

STOCKPILING NOTES

1. TEMPORARY STOCKPILE AND STAGING AREAS TO BE FLAGGED BY CONTRACTOR PRIOR TO CONSTRUCTION AND APPROVED BY TOWN, LANDOWNERS AND PROJECT ENGINEER.
2. NO CONSTRUCTION VEHICLES SHALL BE STORED, SERVICED, WASHED OR FLUSHED IN A LOCATION WHERE LEAKS, SPILLAGE, WASTE MATERIALS, CLEANERS, OR WATERS WILL BE INTRODUCED OR FLOW INTO WETLANDS OR WATERCOURSES. AN EMERGENCY MANAGEMENT PLAN AND SPILL KIT WILL BE MAINTAINED ON SITE AT ALL TIMES. IN THE EVENT OF AN ACCIDENTAL RELEASE, IMMEDIATELY STOP CONSTRUCTION WORK, CONTAIN THE SPILL, AND NOTIFY THE TOWN, APPROPRIATE AUTHORITIES AND PROJECT ENGINEER.
3. THE CONTRACTOR SHALL MAINTAIN ALL STREETS, SIDEWALKS, AND WALKWAYS IN THE AREA FREE OF SOIL, MUD AND CONSTRUCTION DEBRIS. CONSTRUCTION ENTRANCES MUST BE MAINTAINED AT EACH RIVER ACCESS POINT. SEE PLANS AND DETAILS.
4. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
5. ALL STORAGE AND ACCESS ROUTES, PEDESTRIAN FENCES/BARRIERS, WORKING HOURS, AND LIMITS OF CLEARING SHALL BE APPROVED BY THE TOWN OF OLIVE, LANDOWNERS AND THE PROJECT ENGINEER.
6. FINAL LOCATION OF ALL TEMPORARY HAUL ROADS SUBJECT TO LAND-OWNER APPROVAL, AND MAY CHANGE PRIOR TO CONSTRUCTION. THE HAUL ROAD SHALL BE CONSTRUCTED WITH PROPER EROSION CONTROLS, INCLUDING SILT FENCE WHERE NECESSARY, AND A CONSTRUCTION ENTRANCE PAD AT THE ENTRANCE. RESTORATION OF THE DISTURBED AREA SHALL BE COORDINATED WITH THE PROPERTY OWNER.

EROSION CONTROL MAINTENANCE INTERVALS

EROSION CONTROL MEASURE	CONTROL OBJECTIVE	INSPECTION/MAINTENANCE	
SILT FENCE	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO ½ THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE
PUMP WATER SETTLING BASIN	- DETAIN SEDIMENT-LADEN RUNOFF FROM SMALL DEWATERING PUMPS LONG ENOUGH TO ALLOW THE SEDIMENT TO SETTLE OUT.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. STONE OUTLET SHOULD BE AT LEAST SIX (6) INCHES BELOW CREST OF EMBANKMENT. SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES ½ OF THE REQUIRED WET STORAGE.	- TURBID DISCHARGE WATER - EXCESSIVE SEDIMENT ACCUMULATION - OVERTOPPING EVIDENCE
STABILIZED CONSTRUCTION ENTRANCE	- REDUCE THE TRACKING OF SEDIMENT OFF-SITE ONTO PAVED SURFACES.	INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC ADDITION OF STONE, OR LENGTHENING OF ENTRANCE MAY BE REQUIRED AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES AS A RESULT OF INEFFICIENCY OF CONSTRUCTION ENTRANCE SHALL BE IMMEDIATELY REMOVED.	- SEDIMENT IN ROADWAY ADJACENT TO SITE

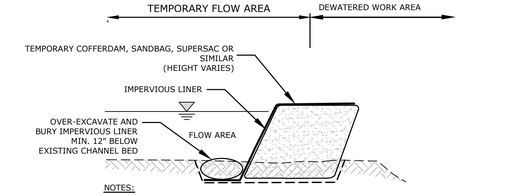


1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING S150, DO NOT SEED PREPARED AREA. S150 MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.

REFER TO GENERAL STAPLE PATTERN GUIDE IN NORTH AMERICAN GREEN CATALOG FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

APPLICATION OF EROSION CONTROL BLANKET ON SLOPES

NOT TO SCALE



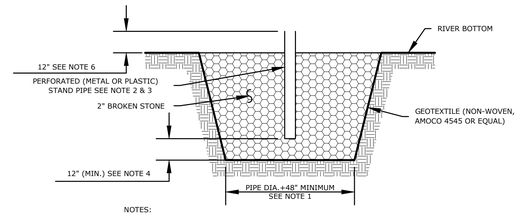
NOTES:

1. COFFERDAM AND TO BE SIZED FOR NORMAL FLOW CONDITIONS. TOP ELEVATION OF COFFERDAM TO ISOLATE LAGOON FROM TIDAL INFLUENCE AND STREAM FLOWS.
2. COFFERDAM TO BE CONSTRUCTED OF SANDBAGS, SUPERSAC OR SIMILAR PRODUCT.
3. EARTHEN (NATIVE) MATERIAL MAY BE USED IN PLACE OF SANDBAGS OR SUPERSAC.

TEMPORARY SANDBAG BARRIER WITH PLASTIC SHEETING (OR APPROVED EQUAL)

ALT. A. TEMPORARY COFFERDAM

NOT TO SCALE

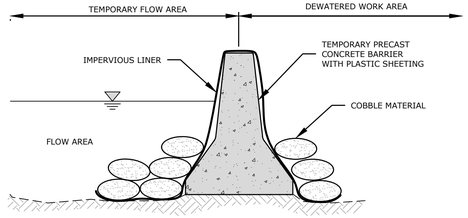


NOTES:

1. OVERALL SUMP PIT DIMENSIONS TO BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP TO BE USED.
2. THE STAND PIPE DIAMETER AND NUMBER OF PERFORATIONS TO BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
3. PERFORATIONS IN THE STANDPIPE TO BE EITHER CIRCULAR OR SLOTS, PERFORATION SIZE SHALL NOT EXCEED 1/2" DIAMETER.
4. 2" BROKEN STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
5. A PROPERLY DESIGNED GEOTEXTILE TO BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE BACKFILL.
6. THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

STONE PROTECTION AT DEWATERING PUMP INLET

NOT TO SCALE



ALT B. TEMPORARY CONCRETE BARRIER COFFERDAM DETAIL

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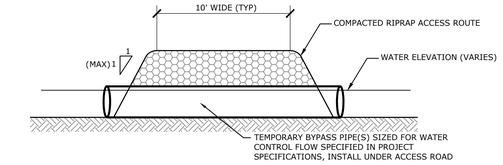
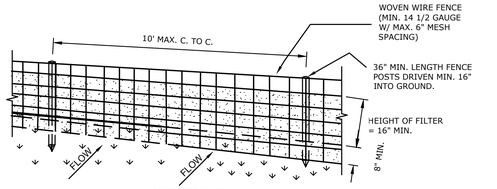


TEMPORARY ACCESS ROAD CULVERT CROSSING

NOT TO SCALE

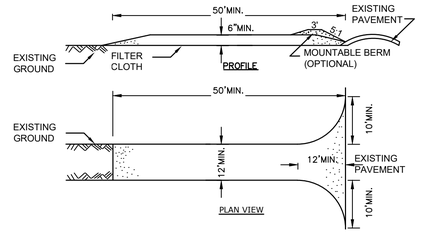


SILT FENCE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

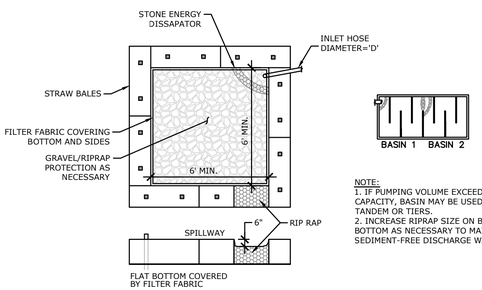


TEMPORARY CONSTRUCTION ENTRANCE PAD

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



NOTE:
1. IF PUMPING VOLUME EXCEEDS BASIN CAPACITY, BASIN MAY BE USED IN TANDEM OR TIERS.
2. INCREASE RIPRAP SIZE ON BASIN BOTTOM AS NECESSARY TO MAINTAIN SEDIMENT-FREE DISCHARGE WATERS

PUMP WATER SETTLING BASIN

NOT TO SCALE

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www.mminc.com

DESCRIPTION	DATE	BY

DETAILS - SEDIMENT AND EROSION CONTROL

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

PRELIMINARY DESIGN 60%

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

AS NOTED
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

16 OF 17
SHEET NO.

SE-1
SHEET NAME

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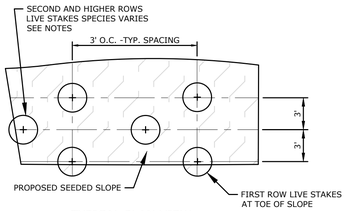
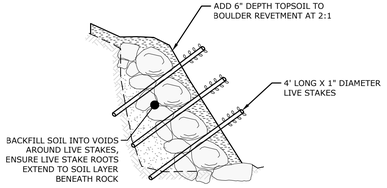


TYPICAL PLAN VIEW



JOINT PLANTING SECTION VIEW

JOINT PLANTING

(NOT TO SCALE)

PLANTING NOTES:

1. INSTALL BOULDER REVETMENT PER PLAN, AND PLACE 6 INCHES OF TOPSOIL AS SHOWN IN DETAIL.
2. ALONG THE TOE OF THE SLOPE (FIRST ROW), INSTALL 4' LONG X 1" DIAMETER LIVE WILLOW STAKES (*SALIX LUCIDA* OR SIMILAR NATIVE WILLOW SPECIES) SPACED 3' ON CENTER. THESE ARE TO BE INSERTED INTO PREDRILLED PILOT HOLES SLIGHTLY LARGER THAN THE STAKE DIAMETER AND BACKFILLED. STAKES SHOULD BE INSERTED TO 36" DEPTH.
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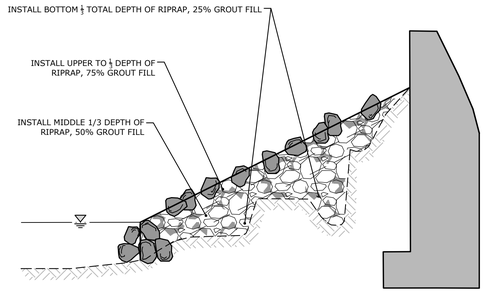
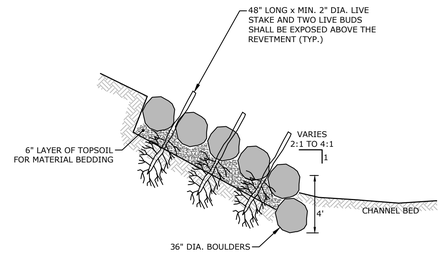


TYPICAL RIPRAP GROUT DETAIL - SECTION VIEW

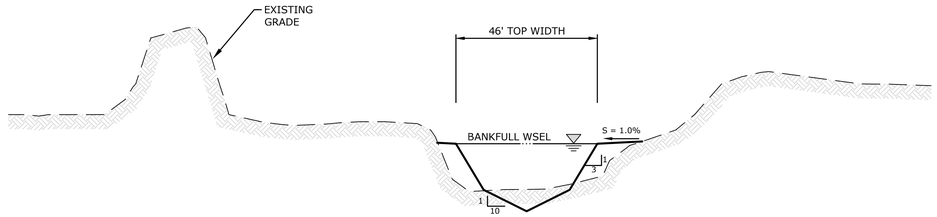
(LOOKING DOWNSTREAM, NOT TO SCALE)



JOINT PLANTED BOULDER REVETMENT

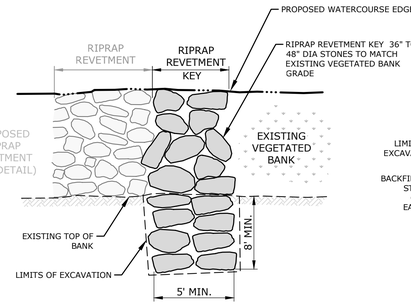
(NOT TO SCALE)

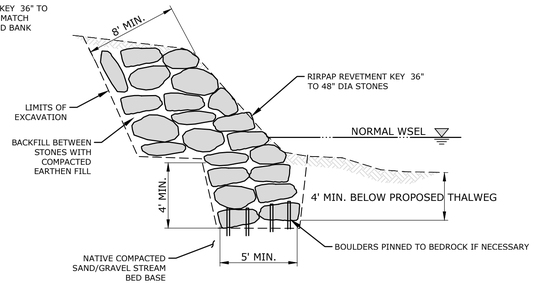
NOTES:
1. BOULDER REVETMENT SLOPE VARIES, SEE GRADING PLAN FOR SLOPES.



CHANNEL RESHAPING - TYPICAL CROSS SECTION

(LOOKING UPSTREAM, NOT TO SCALE)





BOULDER REVETMENT KEY

(NOT TO SCALE)

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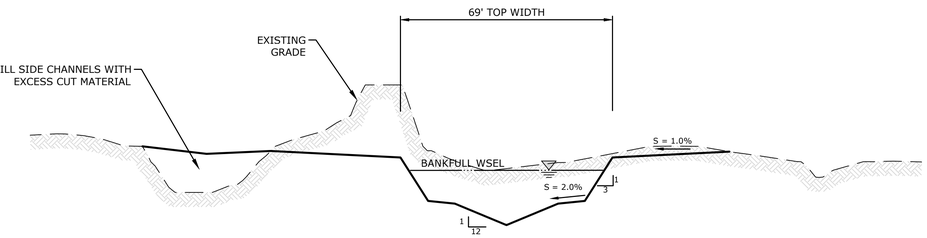
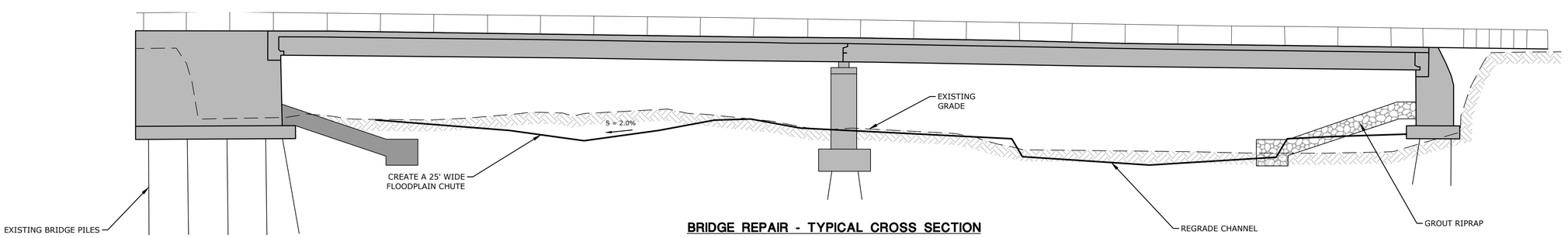


CHANNEL RESHAPING AT RIFFLES - TYPICAL CROSS SECTION

(LOOKING UPSTREAM, NOT TO SCALE)



BRIDGE REPAIR - TYPICAL CROSS SECTION

(LOOKING DOWNSTREAM, NOT TO SCALE)

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

DETAILS - CHANNEL AND SITE RESTORATION

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

AS NOTED
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

17 OF 17
SHEET NO.

DE-2
SHEET NAME

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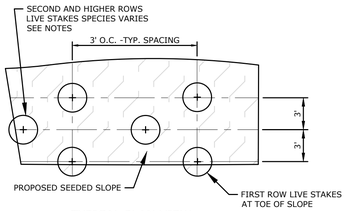

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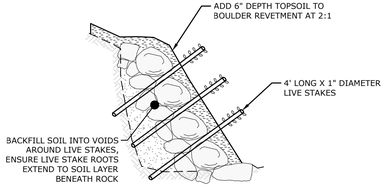

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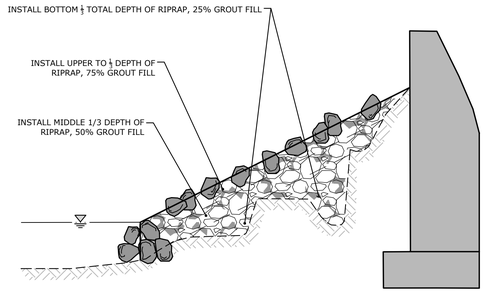

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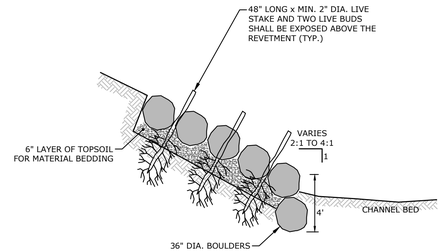

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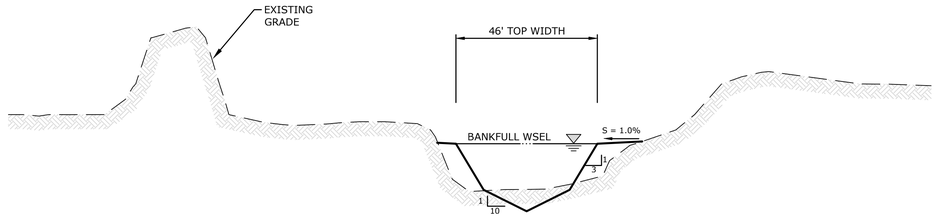

CHANNEL RESHAPING - TYPICAL CROSS SECTION

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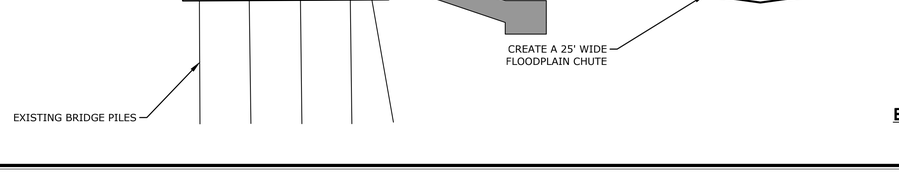

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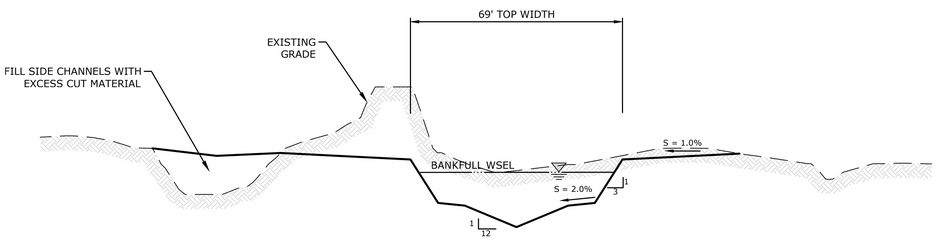

CHANNEL RESHAPING AT RIFFLES - TYPICAL CROSS SECTION

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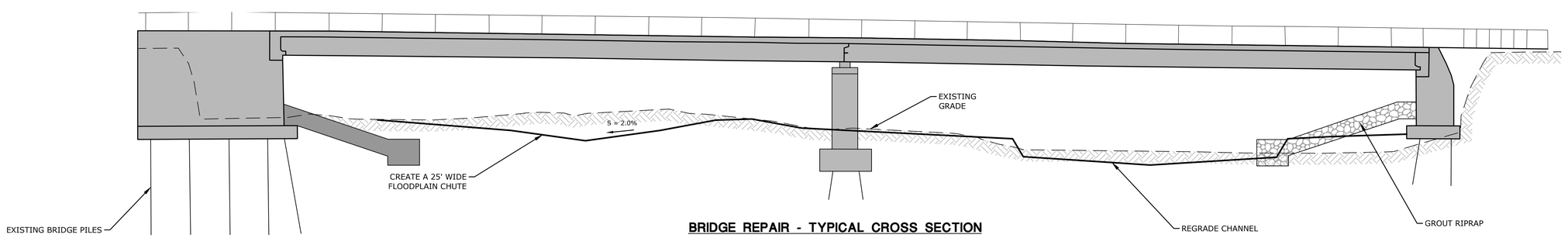

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BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
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AS NOTED (SCALE)

NOVEMBER 2, 2018 (DATE)

5909-01 (PROJECT NO.)

17 OF 17 (SHEET NO.)

DE-2 (SHEET NAME)

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Appendix C
USFWS, NYNHP, and NYSDEC Correspondence

Governor's Office of
Storm Recovery

ANDREW M. CUOMO
Governor

Via Electronic Mail

July 8, 2019

Robyn A. Niver
Endangered Species Biologist USFWS
New York Field Office
Cortland, NY 13045

Re: Section 7 Project Review – Follow up to December 21, 2018 Effect Determination for the Bushkill Stream and Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Ms. Niver:

The Governor's Office of Storm Recovery (GOSR), acting under the auspices of New York State Homes and Community Renewal's (HCR) Housing Trust Fund Corporation (HTFC), on behalf of the Department of Housing & Urban Development (HUD), is conducting an environmental review under HUD's environmental review regulations (24 CFR Part 58) and New York State's Environmental Quality Review Act (SEQRA) for the Bushkill Stream and Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York (see **Figures 1 and 2**).

The purpose of this letter is to provide the U.S. Fish and Wildlife Service – New York Field Office (USFWS) a follow up to GOSR's December 21, 2018 consultation of the proposed project, to present the results of an Indiana Bat and NLEB Habitat Assessment and Acoustic Survey and a review of the potential for bog turtle habitat. We are requesting concurrence from the U.S. Fish and Wildlife Service that the Bushkill Stream and Streambank Rehabilitation Project **may affect, but is not likely to adversely affect**, the northern long-eared bat and Indiana bat and would have **no effect** on the bog turtle.

Program Overview: During Hurricane Irene and Tropical Storm Lee, torrential rainfall caused flooding throughout the Esopus watershed, including the Bushkill, which runs parallel to County Route 42 (Watson Hollow Road) in West Shokan. The Town of Olive government offices, including the Department of Public Works and Highway Department and the West Shokan Fire Department are located in West Shokan. These government offices and hundreds of homes were completely isolated from surrounding areas during the floods. People seeking to receive and give assistance during the flooding were forced to make 1.5-hour detours around the flooding through Sullivan County. Flooding also resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course, that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks

of the channel. a Local Flood Analysis (LFA) identified the conditions in seven locations along the Bushkill, contributing to inundation of public and private infrastructure associated with high water flows during future events and develop mitigation strategies to address flood hazards. The town selected six of the seven potential flood hazard areas to be addressed through the New York Rising Community Recovery Program.

Area of Potential Effect: The proposed stream and streambank rehabilitation area is located along the Bushkill from the County Route 42 Bridge, east to the intersection of the Bushkill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York (see **Figures 1 and 2**).

Proposed Project Description: The Town of Olive has requesting $1,000,000 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

The project area includes approximately 2,525 linear feet (LF) of channel beginning approximately 500 LF upstream of the Watson Hollow Road bridge and ending approximately 2,000 LF downstream of Watson Hollow bridge or 1,000 LF upstream of the Route 28A bridge (**Figure 2**).

The project will be undertaken in three phases. In the first phase, construction will occur within the most upstream portion of the project reach. The modifications will include concentrating the stream channel and widening of the floodplain area, stabilizing the streambank with joint planted boulder revetments or planting of live willow stakes, and fortifying the base of the Watson Hollow bridge along the right bank with grouted rip rap (See Figures LD01 through LD08). In the second phase, which occupies the middle section of the project reach, the construction activities will include widening of the floodplain, and stabilizing the streambank with joint planted boulder revetments and/or planting of live willow stakes. The third phase which will encompass the most downstream portion of the project reach, will involve the same modification as phase two as well as the removal of a side cast berm along the left bank.

To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and removing approximately 120 trees (see **Attachment 1, Tree Clearing Tally**).

As a Class A(TS) stream, it is anticipated that no in-stream work will be permitted between September 30 and April 30th. As a result, the anticipated construction period is May 2019 (or slightly earlier to set up construction entrances, staging and traffic control measures) to September 30, 2019, unless NYSDEC extends the time restriction by amended permit.

Wetlands: See the attached wetland map, **Figure 3**.

- The project site is within Riverine and Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill. Both of these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project site covers approximately 4.9 acres of the riverine wetlands and approximately 1.1 acres of the

freshwater forested/shrub wetlands. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

- The project site is not within New York State Department of Environmental Conservation (NYSDEC) wetlands or the 100-foot buffer of NYSDEC wetlands.

ESA, Migratory Bird Treaty Act, And Bald and Golden Eagle Protection Act Species: The New York State Natural Heritage Program (NYSNHP) database search completed on October 12, 2018, had records of bald eagle (*Haliaeetus leucocephalus*) nesting within 0.8 mile of the project site, timber rattlesnake (*Crotalus horridus*) within 1.5 miles of the project site, spreading rush (*Juncus subcaudatus*) within 0.5 mile of the project site, and nodding pogonia (*Triphora trianthophoros*, ssp. *Trianthophoros*) within 0.5 mile of the project site. (See **Attachment 2, New York Natural Heritage Program Review**.)

The USFWS, New York Ecological Services Field Office was contacted through the Information, Planning, and Conservation System (IPaC) regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The attached Official Species List identifies one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, *Myotis sodalis*) and the threatened northern long-eared bat (NLEB, *Myotis septentrionalis*) and bog turtle (*Clemmys muhlenbergii*) (see **Attachment 3, Species List**). **No critical habit for these species was identified in IPaC**. The IPaC review also indicated that there are several migratory birds of concern that could potentially be affected by the proposed project. Below is a determination of potential effects of the project on each of threatened and endangered species.

DETERMINATIONS - NO CHANGE

Migratory Birds and Bald Eagles:

GOSR determined that there will be **no adverse impact to migratory birds** as a result of the Project. There are no known breeding bald eagles within the vicinity of the Project area; therefore, GOSR determined that there will be **no adverse impacts to breeding bald eagles** as a result of the Project. If eagles are found in the area, GOSR will follow the USFWS Bald Eagle Management Guidelines.

DETERMINATIONS - FOLLOW UP ON THE NORTHERN LONG EARED BAT AND INDIANA BAT

Northern Long-eared Bat (NLEB) and Indiana Bat (IB)

Neither of the two sites that comprise the project area are within five miles of northern long-eared bat (NLEB) hibernacula or known maternity colonies (see the attached **Figure 4**). the March 12, 2018, New York State Natural Heritage Program (NYSNHP) database review of known occurrences of rare or state-listed species identified no occupied habitat for the IB. The major concern for these species in relation to this project would be the destruction of potential roosts through tree clearing. The **project involves the removal of 118 trees** (see **Attachment 1, Tree Clearing Tally**), along with vegetated areas on cobble bars, dominated by willow shrubs (*Salix* ssp.) and young American sycamore (*Platinus occidentalis*) under 4 inches in diameter at breast height.

Since the proposed project involves the removal of trees, a Phase 1 Habitat Assessment (See **Attachment 4, Phase 1 Habitat Assessment**) was conducted for the IB on February 11, 2019. The assessment concluded that there is potential suitable habitat available for the IB and recommended an acoustic survey.

Based on the recommendations of the habitat survey, an acoustic survey was conducted on the project site between May 16 and May 25, 2019 (attached), in accordance with the 2017 Rangewide Indiana Bat Summer Survey Guidelines, May 9, 2017. Sampling began at sunset and end at sunrise each night of sampling. Recorded echolocation calls were then analyzed. A report on the results of the acoustic survey indicated that big brown bats (*Eptesicus fuscus*), red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), silver-haired bats (*Lasionycteris noctivagans*), little brown bats (*M. lucifugus*), Indiana bats (*M. sodalis*), and tri-colored bats (*Perimyotis subflavus*) were present in the project area (See **Attachment 5, Acoustic Survey**). Maximum likelihood estimates suggested that the Indiana bat was present at the stream site on 5/24/2019 and at the trail site on 5/16/2019.

Based on the acoustic survey results that indicate potential presence of the NLEB and IB at this project location during the summer maternity season, tree removal will be conducted only in the winter months between November 1 and March 31.

Because the Project will not impact a large area of suitable habitat relative to the surrounding landscape and tree removal will be conducted between November 1 and March 31, GOSR has determined that the Proposed Project **may affect, but is not likely to adversely affect** the NLEB and IB.

DETERMINATIONS - FOLLOW UP ON THE BOG TURTLE

Bog Turtle

Bog Turtles inhabit open, **unpolluted emergent and scrub/shrub wetlands** such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures. These habitats are characterized by soft muddy bottoms, interspersed wet and dry pockets, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water which often forms a network of shallow pools and rivulets. Bog Turtles prefer areas with ample sunlight, high evaporation rates, high humidity in the near-ground microclimate, and perennial saturation of portions of the ground. (source: https://www.fws.gov/northeast/nyfo/es/bogturtle.htm).

According to the October 26, 2018, USFWS Guidelines for Bog Turtle Surveys for the Northern Population Range, Phase 1 and 2 Surveys, potential bog turtle habitat is recognized by three criteria:

1. Suitable hydrology. Bog turtle wetlands are groundwater/spring-fed, interspersed with dry and wet pockets;
2. Suitable soils. Usually a bottom substrate of permanently saturated organic or mineral soils, which are often soft, mucky-like soils, such as Wayland silt loam, Sun silt loam, Palms muck, Catden (Carlisle) muck, Canandaigua silt loam, and Alden silt loam (MacDougall 2016); and
3. Suitable vegetation. Wetlands with a history of disturbance often contain a dominance of tall, aggressively competitive species, many of which are nonnative and have been attributed to local declines and extirpation of bog turtles from many sites.

The project site is within Riverine and Freshwater Forested/Shrub National Wetlands Inventory (NWI) wetland areas associated with Bushkill. These wetland areas have been previously disturbed by construction of the Watson Hollow Road bridge over Bush Kill in 1993 and residential development along the Bush Kill. As shown on the attached soil map, no silt loam soils are present on the project site (See **Attachment 6- Soil Map**). These

wetland areas do not represent the open, unpolluted emergent and scrub/shrub wetlands that provide habitat for the bog turtle.

Therefore, **the wetlands associated with the project do not provide suitable habitat for the bog turtle**. The vegetation will remain the same and the function of the wetlands will not be altered once the project is completed.

Upon further review of the characteristics of the wetland area that would be disturbed by the project and the criteria for a Phase 1 Habitat Assessment for bog turtle habitat, GOSR has determined that the proposed project would have **no effect** on bog turtles.

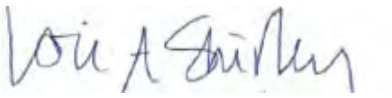
Summary and Compliance

The proposed project would not jeopardize the continued existence of ESA species or destroy or adversely modify their critical habitat. On this basis, GOSR has determined that the proposed action **may affect but is not likely to adversely affect** the NLEB and IB and would have **no effect** on bog turtles or migratory birds. We request your concurrence with this determination. Additionally, we request to be alerted if USFWS becomes aware of a Bald or Golden Eagle nest within 660 feet of the project site.

Project implementation is conditioned upon issuance of applicable federal and state permits and would be constructed in accordance with federal and state permit conditions. The proposed project would not have a significant impact on ESA species or adversely modify any critical habitat. Conservation measures would be employed to avoid impacts to bats, including a tree survey prior to any project-related disturbance and clearly demarcating trees to be protected compared with those to be cut if any are identified in the survey.

If you have questions or require additional information regarding this request, please contact Lori A. Shirley at (518) 474-0755 or Lori.Shirley@nyshcr.org. Thank you for your time and consideration.

Sincerely,



Lori A. Shirley
Certifying Officer
NYS Governor's Office of Storm Recovery

Figures
Figure 1 -Olive Bushkill Streambank Rehabilitation - Project Location
Figure 2 - Olive Bushkill Streambank Rehabilitation - Project Area
Figure 3 - Olive Bushkill Streambank Rehabilitation - NYS Freshwater and NWI Wetlands
Figure 4 - Olive Bushkill Streambank Rehabilitation - Northern Long-eared Bat Hibernacula

Attachments
Attachment 1 Tree Clearing Tally
Attachment 2 New York Natural Heritage Program Review
Attachment 3 USFWS Updated Species List - New York Ecological Services Field Office
Attachment 4 Bat Habitat Assessment

Attachment 5 Bat Acoustic Survey Report for the Bushkill Stream and Streambank Rehabilitation Project
Attachment 6 Soil Map
Attachment 7 Site Plans

Project Location

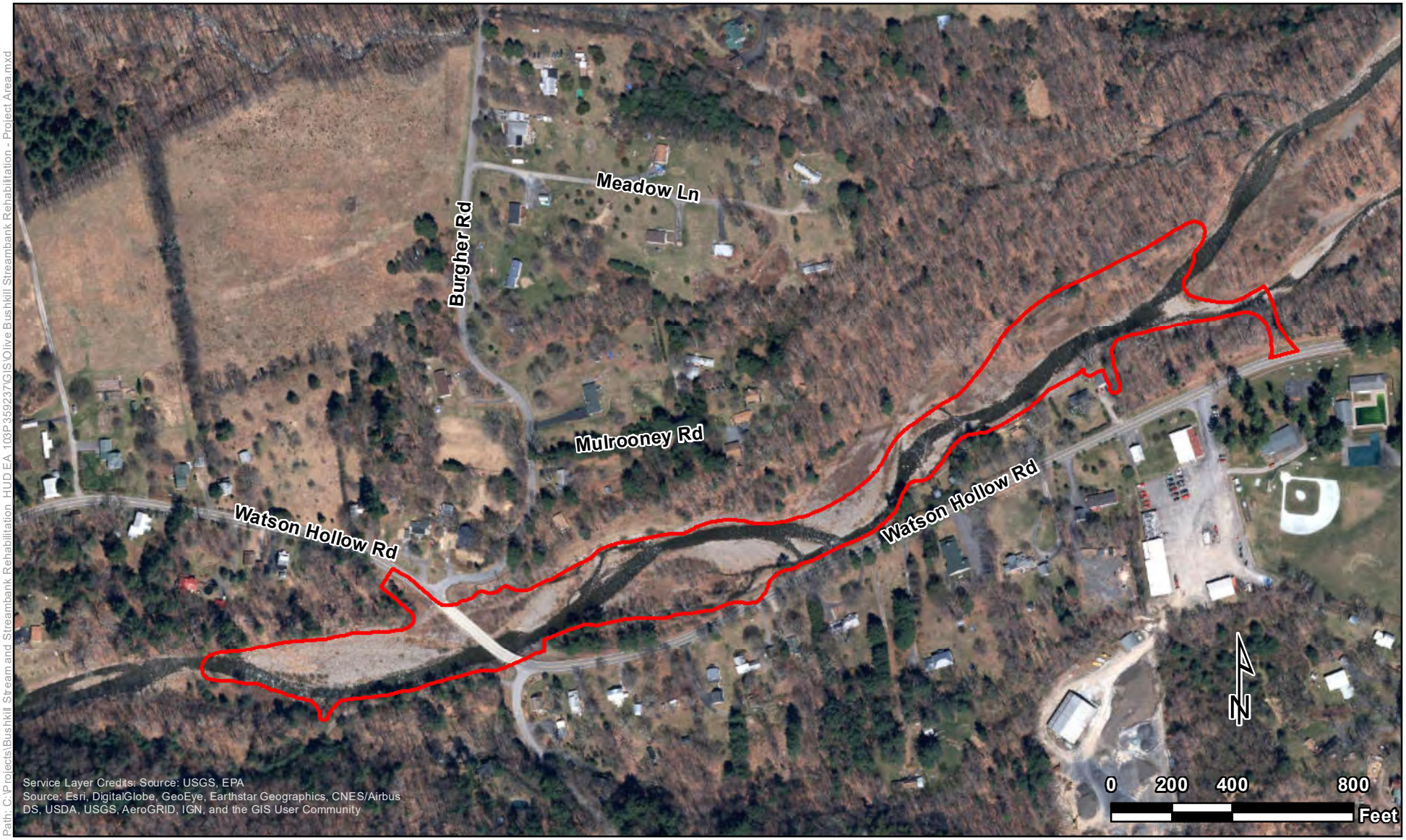
Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1



Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Project Area.mxd

Project Area

Legend

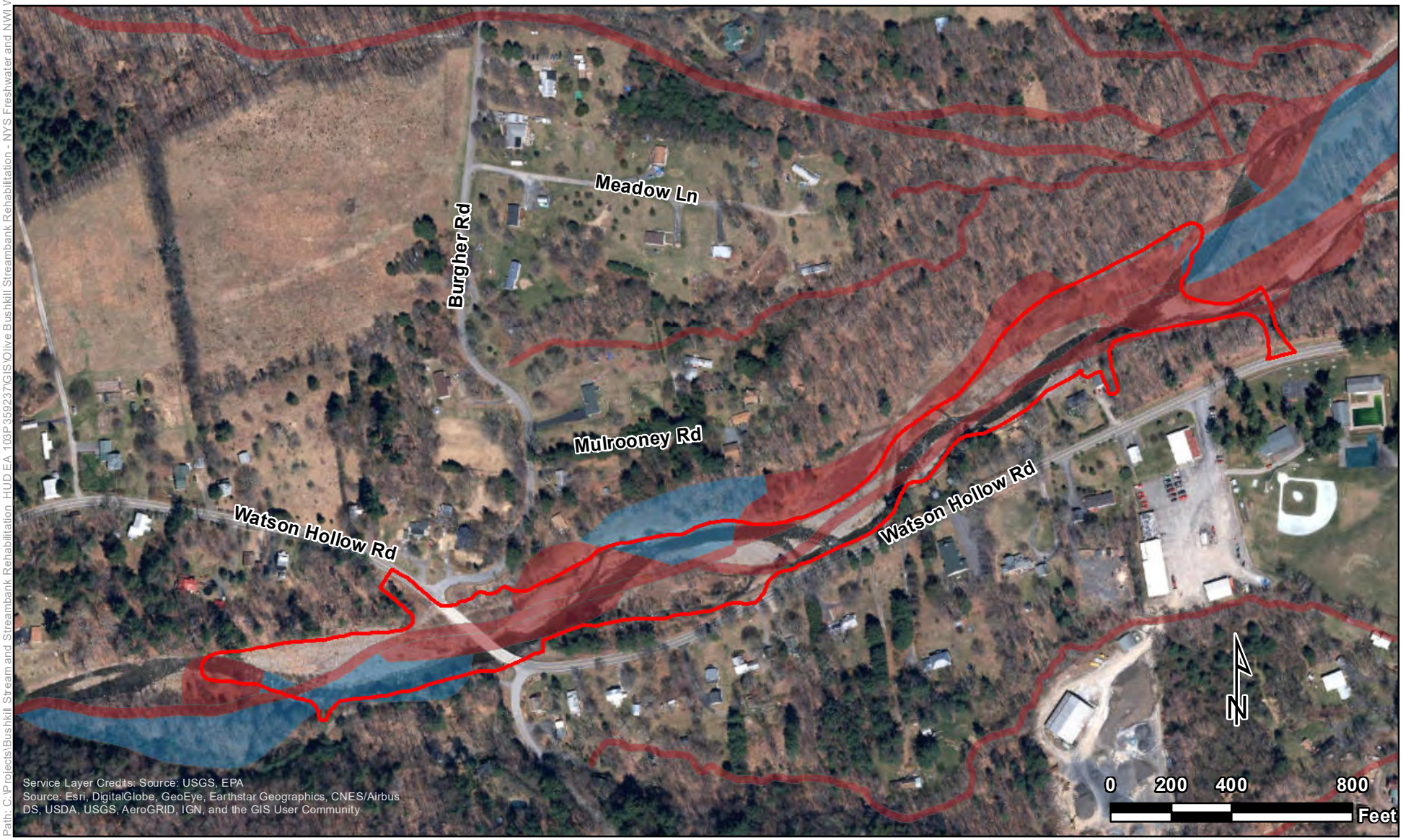
Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 2

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - NYS Freshwater and NWI Wetlands.mxd



Legend

- Project Area
- NYS Freshwater Wetlands
- NYS Freshwater Wetlands Buffer

NWI Wetlands

- Freshwater Forested/Shrub Wetland
- Riverine

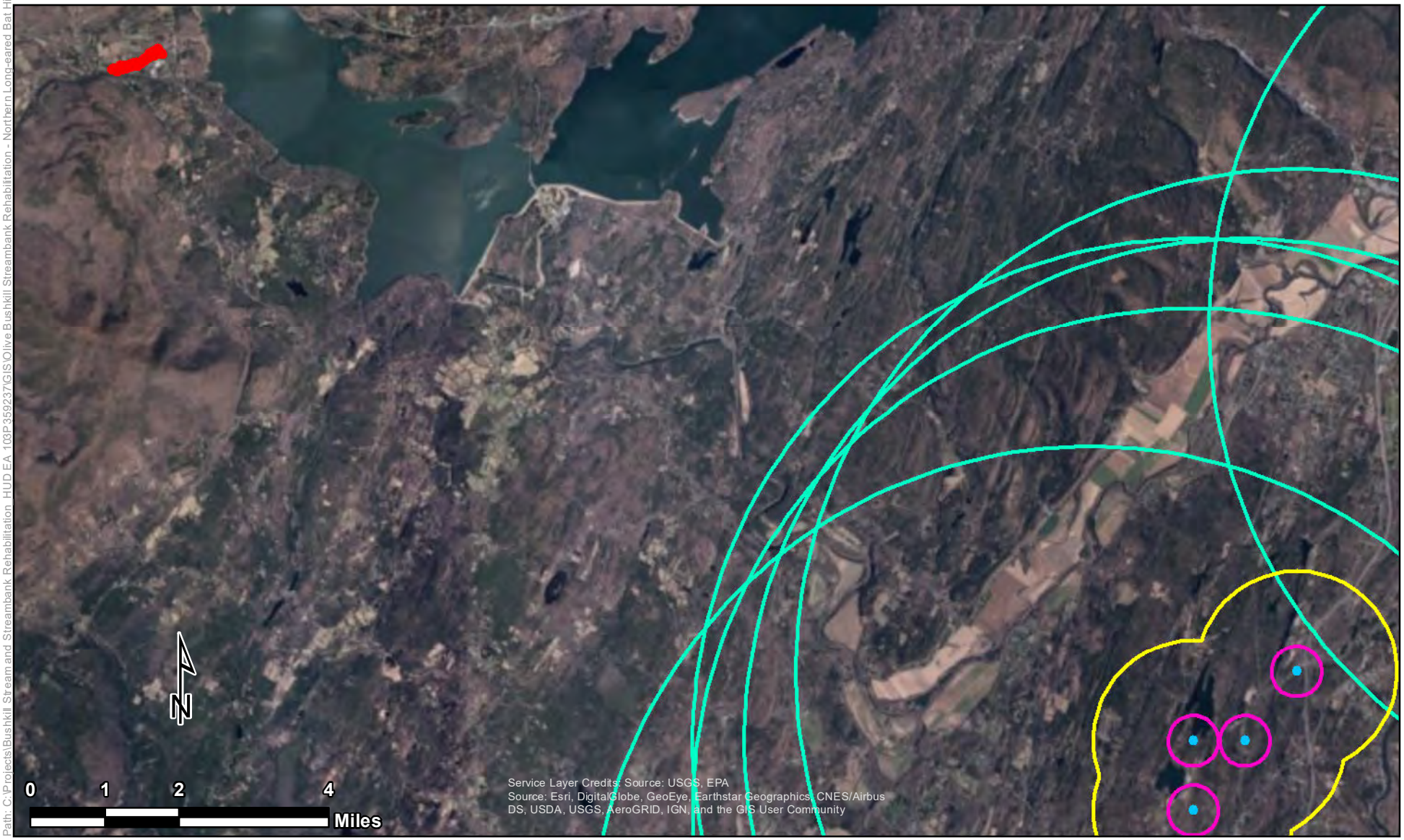
NYS Freshwater and NWI Wetlands

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Figure 3

Tetra Tech, Inc

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Northern Long-eared Bat Hibernacula.mxd



Legend

- NLEB Hibernacula
- Project Area
- NLEB Hibernacula 0.25 Mile Buffer
- NLEB Hibernacula 1 Mile Buffer
- NLEB Hibernacula 5 Mile Buffer

Northern Long-eared Bat Hibernacula

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 4

Attachment 1

Tree Tally

Tree Tally (conducted August 8, 2018)
Bushkill Stream & Streambank Rehabilitation
Olive, New York

Area A
49,170 square feet (1.1 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
northern red oak	*Quercus rubra*	18	1
sugar maple	*Acer saccharum*	6	15
		8	17
		12	4
		36	2
American sycamore	*Platinus occidentalis*	6	10
		8	7
		10	11
		12	11
		14	9
		20	6
		36	1
white ash	*Fraxinus americana*	8	3
		18	2
		20	2
eastern cottonwood	*Populus deltoides*	20	1
white pine	*Pinus strobus*	6	1
		10	2
		Total:	105

Area B
2,342 square feet (0.05 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
American sycamore	*Platinus occidentalis*	6	7
northern catalpa	*Catalpa speciosa*	6	3
		8	3
		Total:	13

Note: Vegetated areas to be disturbed outside of Area A and Area B are prediminantly cobble bars dominated by willow shrubs (*Salix ssp* .) and young American sycamore (*Platinus occidentalis*) under 4" dbh

Attachment 2

NHP Response 10-12-2018

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

October 12, 2018

Lori Shirley
Governor's Office of Storm Recovery
30-40 State St., Hampton Plaza
Albany, NY 12207

Re: Bushkill Stream and Streambank Rehabilitation Project, West Shokan
County: Ulster Town/City: Olive

Dear Ms. Shirley:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 3 Office, Division of Environmental Permits, at dep.r3@dec.ny.gov, (845) 256-3054.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

1152

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing.

For information about any permit considerations for the project, please contact the NYSDEC Region 3 Office, Department of Environmental Permits, at dep.r3@dec.ny.gov, (845) 256-3054.

The following species has been documented nesting within .8 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		1715

The following species has been documented within 1.5 miles of the project site. Individual animals may travel 1.5 miles from documented locations.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Timber Rattlesnake	*Crotalus horridus*	Threatened		13551

The following state-listed plants have been documented in the vicinity of the project site.

If suitable habitat for these species is present at the project site, these species may also occur there.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Spreading Rush	*Juncus subcaudatus*	Endangered	Critically Imperiled in NYS

Little Mountain, West Shokan, within .5 mile of the project site, 1999-08-17: Seeps in a recovering hemlock-northern hardwood forest. 1205

Nodding Pogonia	*Triphora trianthophoros* ssp. *trianthophoros*	Threatened	Imperiled in NYS

Within .5 mile of the project site, 2009-08-31: Mixed woods tending toward beech-maple. 14467

This report only includes records from the NY Natural Heritage database.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Attachment 3

Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: July 01, 2019
Consultation Code: 05E1NY00-2019-SLI-0669
Event Code: 05E1NY00-2019-E-07790
Project Name: Bushkill Stream and Streambank Rehabilitation Project, Town of Olive, Ulster County, NY

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2019-SLI-0669

Event Code: 05E1NY00-2019-E-07790

Project Name: Bushkill Stream and Streambank Rehabilitation Project, Town of Olive, Ulster County, NY

Project Type: LAND - FLOODING

Project Description: The Town of Olive has requesting $1,000,000 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.96815169932177N74.28308928432122W

Counties: Ulster, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Bog Turtle *Clemmys muhlenbergii* Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6962 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/182/office/52410.pdf Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/182/office/52410.pdf	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Bushkill Stream and Streambank Rehabilitation Date: 2/11/2019

Township/Range/Section: Town of Olive, Ulster County, NY

Lat Long/UTM/ Zone: Zone 18N - E: 559455.74 N: 4646588.79 Surveyor: A. Bailey

Brief Project Description

Approximately 2,525 linear feet of the Bushkill stream channel will be stabilized and realigned to mimic a more healthy, functioning stream with a confined channel and wider floodplain. 1.15 acres of trees (118 total trees) will be removed.

Project Area

	Total Acres	Forest Acres	Open Acres
Project	8.35	2.65	5.7 (open + stream)

	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
Proposed Tree Removal (ac)	1.15		7.2

Vegetation Cover Types

Pre-Project	Post-Project
The project area is a mixture of forested and open streambank.	The project area will remain a mixture of forested and open streambank.

Landscape within 5 mile radius

Flight corridors to other forested areas?

There are flight corridors to other forested areas in the vicinity of the project area.

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

The area immediately around the project area is mainly residential, with forested areas surrounding.

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

The project area lies within the Catskill Park, and is approximately 14 miles from Minnewaska State Park.

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): 1

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
			2,525 ft	
Pools/Ponds (# and size)		Open and accessible to bats?		The project area is along a quick-moving stream.
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
		3		
Dominant Species of Mature Trees	American sycamore			
% Trees w/ Exfoliating Bark		~30-40%		
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	See attached.			
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes

Additional Comments:

Please see the attached photographs and tree tally for more information on trees to be removed. While the project area does not occur within a known Indiana bat occurrence buffer, there is potential suitable habitat available. An acoustic survey is recommended.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Tree Tally (conducted August 8, 2018)
Bushkill Stream & Streambank Rehabilitation
Olive, New York

Area A
49,170 square feet (1.1 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
northern red oak	*Quercus rubra*	18	1
sugar maple	*Acer saccharum*	6	15
		8	17
		12	4
		36	2
American sycamore	*Platinus occidentalis*	6	10
		8	7
		10	11
		12	11
		14	9
		20	6
		36	1
white ash	*Fraxinus americana*	8	3
		18	2
		20	2
eastern cottonwood	*Populus deltoides*	20	1
white pine	*Pinus strobus*	6	1
		10	2
		Total:	105

Area B
2,342 square feet (0.05 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
American sycamore	*Platinus occidentalis*	6	7
northern catalpa	*Catalpa speciosa*	6	3
		8	3
		Total:	13

Note: Vegetated areas to be disturbed outside of Area A and Area B are prediminantly cobble bars dominated by willow shrubs (*Salix ssp* .) and young American sycamore (*Platinus occidentalis*) under 4" dbh

Attachment 4

Phase 1 Habitat Assessment

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

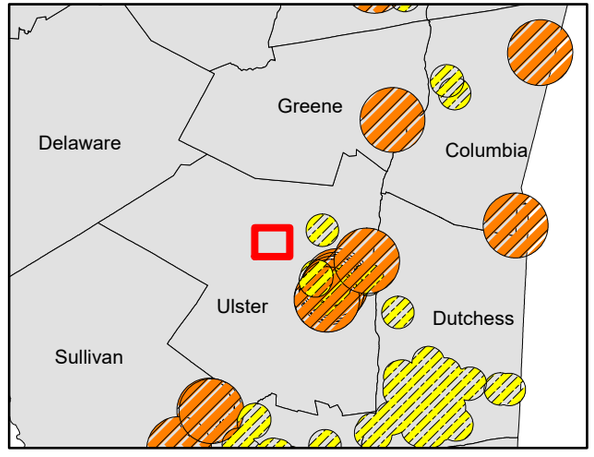
0 0.03 0.06 0.12 0.18 0.24
Miles

1 inch = 500 feet

NYS Resources Map

Bushkill Stream and Streambank Rehabilitation Town of Olive, Ulster County

Prepared by AMB on 2/4/2019



Project Area

Indiana Bat

Northern Long-eared Bat

Disclaimer: this map was prepared by the NYSDEC using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data. This map may contain information that is considered sensitive and therefore the distribution of this map is strictly prohibited.

Attachment 5

Bat Acoustic Survey

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife
625 Broadway, 5th Floor, Albany, NY 12233-4750
P: (518) 402-8924 | F: (518) 402-8925
www.dec.ny.gov

Bat Acoustic Survey Report
For the
Bushkill Stream & Streambank Rehabilitation Project
Ulster County, NY

May 2019

Prepared for:
U.S. Fish & Wildlife Service
Cortland, NY

Prepared by:
Amanda Bailey
NEIWPCC/NYSDEC
625 Broadway
Albany, NY 12233

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Executive Summary

The Governor's Office of Storm Recovery (GOSR) is administering a U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant for Disaster Recovery, including the New York Rising Community Reconstruction Program. One proposed project under this grant is the Bushkill stream and streambank rehabilitation project, which will stabilize the bank and channel bed of the Bushkill Stream, increase the floodplain width, and reinforce the existing Watson Hollow bridge abutments. To ensure compliance with Section 7 of the Endangered Species Act of 1973, an environmental review was initiated to assess the possibility of listed species presence on the project site.

The USFWS Information, Planning, and Conservation System (IPaC) Trust Resource Report and Official Species Lists listed that the federally endangered Indiana bat (*Myotis sodalis*) and federally threatened northern long-eared bat (*Myotis septentrionalis*) may occur in the proposed project area. A Phase 1 summer habitat assessment completed by Amanda Bailey (NYSDEC/NEIWPCC) found that potential roosting habitat for both species occurs on the project area (see Section 7 Project Review for Bushkill Stream and Streambank Rehabilitation). The purpose of this survey was to determine presence/absence of the Indiana bat and northern long-eared bat at the project site during the maternity season.

An acoustic survey was performed at two sites within the project area, including one streamside location and one trail location, both within the clearing area. Sites were monitored between May 16th and May 25th. Inclement weather led to 4 of these nights being discarded, and the batteries at the trail location died prematurely. In total, 9 successful detector nights were completed, 5 for the stream site and 4 for the trail site. Recorded files were run through Kaleidoscope Pro Bats of North America 4.2.0 automatic identification program to determine maximum likelihood estimates (MLE) for species presence on each detector night. According to these results, big brown bats (*Eptesicus fuscus*), red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), silver-haired bats (*Lasionycteris noctivagans*), little brown bats (*M. lucifugus*), Indiana bats (*M. sodalis*), and tri-colored bats (*Perimyotis subflavus*) were present in the project area. **Maximum likelihood estimates suggested that the Indiana bat was present at the stream site on 5/24/2019 and at the trail site on 5/16/2019.** All individual files from this night were reviewed by Amanda Bailey. Several call files from each detector night were identified as potential Indiana bat or northern long-eared bat calls, suggesting probable presence of these listed species on the project site.

1. Introduction 1.1 Project background

The Town of Olive is proposing a stream and streambank rehabilitation project along the Bushkill Stream from the County Route 42 Bridge, east to the intersection of the Bushkill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York (Figure 1-1). The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments. These improvements will occur along 2,525 feet of channel, and will require the removal of approximately 1.15 acres of trees in two different areas (Figure 1-2).

Hurricane Irene and Tropical Storm Lee, the Bushkill Stream flooded County Route 42, isolating the Town of Olive government offices and hundreds of homes. This flooding also resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel. This project aims to address these concerns and help ameliorate the risk of future flood events.

1.2 Bats of New York

The Bushkill stream and streambank rehabilitation project includes portions of the ranges of nine bat species, including the federally and state endangered Indiana bat, and the federally and state threatened northern long-eared bat.

Table 1-1. List of potential bat species at the Rochester Creek and Ponds Mitigation project area.

Common Name	Scientific Name (Code)	Status	Roosting Habitat
Big brown bat	*Eptesicus fuscus* (EPFU)	--	Trees, structures, caves, mines
Eastern red bat	*Lasiurus borealis* (LABO)	--	Trees
Eastern small-footed bat	*Myotis leibii* (MYLE)	SC	Rock crevices, structures
Hoary bat	*L. cinerus* (LACI)	--	Trees
Indiana bat	*M. sodalis* (MYSO)	SE, FE	Trees, structures, caves, mines
Little brown bat	*M. lucifugus* (MYLU)	--	Trees, structures, caves, mines
Northern long-eared bat	*M. septentrionalis* (MYSE)	ST, FT	Trees, structures, caves, mines
Silver-haired bat	*Lasionycteris noctivagans* (LANO)	--	Trees, structures, caves, mines
Tri-colored	*Perimyotis subflavus* (PESU)	--	Trees, structures, caves, mines

FE = Federally endangered, FT = Federally threatened, SE = State endangered, ST = State threatened, SC = State Species of Special Concern

2. Methods 2.1 Acoustic Monitoring

A habitat survey conducted by Amanda Bailey on 2/11/2019 concluded that potential Indiana bat and northern long-eared bat roosting habitat existed at the project locations. To reduce the possibility for adverse impacts for either species to occur, we conducted a phase 2 acoustic survey at the project site. The total tree clearing area is approximately 1.15 acres. We followed the protocol outlined in the 2019 Range-wide Indiana Bat Summer Survey Guidelines (Guidelines), which called for at least 8 detector nights at this location (USFWS 2019).

Bat acoustic surveys were performed using Wildlife Acoustics SM4Bat detectors equipped with omnidirectional SM-U1 microphones. We used the recommended manufacturer detector settings and set the detectors to begin recording 30 minutes before sunset and stop recording 30 minutes after sunrise.

We focused our efforts on Area A (Figure 1-2), as Area B was mainly small willow shrubs, with only trees to be removed, none of which were ideal roost trees. Area A had a number of larger potential roost trees, and the proximity to the stream and presence of forested corridors made it an ideal location to sample acoustically. Detector locations were selected to represent different habitats that will be cleared for this project (Figure 2-1). To remain within the clearing area (which was 1.1 acres) and select adequate detector locations different habitats, we were forced to have our two sample points less than 200 meters apart. One of these locations was along an open stream corridor, and the other was a forested trail corridor.

Detectors were placed in areas with minimum vegetation within at least 10 meters of the microphone. Microphones were mounted on a plastic painter's pole 2.5 meters from the ground and connected to the detector using a cable. Microphones were oriented at a 45° angle from the ground. Photo-documentation of detector locations can be found in Appendix A. Prior to each survey, we tested each microphone with an ultrasonic calibrator, and conducted a finger rub test and forced recording before and after each survey to ensure that the detector was functioning properly upon deployment.

We monitored the weather on each survey night with data from the weather station at Stewart International Airport. We counted each night where the temperature remained above 50°F, the wind remained light, and there was no significant precipitation within the first 5 hours after

sunset. Table 2-1 summarizes weather data from the Stewart International Airport weather station for the survey period. Overall, the stream site and the trail site were monitored for 5 and 4 nights, respectively (4 additional nights did not meet weather requirements). The memory card at the trail site filled up partway through the night on 5/24/2019, and so that night was not counted.

Table 2-1. Weather data from Stewart International Airport for the Bushkill Stream survey period. Data are from the first 5 hours of each survey night. Yellow highlights indicate that the night was not counted towards total detector nights because of weather conditions.

Date	Sunset Time	Sunset Temp (°F)	Min Temp (°F)	Avg Temp (°F)	Avg Wind Speed (mph)	Precipitation	Conditions
5/16/2019	20:11	55	54	54.83	4.67	None	Partly Cloudy
5/17/2019	20:12	59	45	51.17	0.83	None	Clear
5/18/2019	20:13	59	55	59.86	1.43	None	Overcast
5/19/2019	20:14	70	64	66.33	4.50	Thunderstorm at 21:45*	Overcast
5/20/2019	20:15	61	54	57.50	12.00	None	Overcast
5/21/2019	20:15	50	45	47.17	7.00	None	Clear
5/22/2019	20:16	61	55	59.00	1.17	Light rain between 23:4501:45	Overcast, showers
5/23/2019	20:17	66	59	62.17	7.80	None	Clear
5/24/2019	20:18	57	50	54.00	2.67	None	Partly Cloudy

*Storm was short in duration, and the rest of the night had clear weather.

2.2 Data Analysis

All recorded bat passes were analyzed using automated species identification software approved for use by the USFWS. We used Kaleidoscope Pro (Wildlife Acoustics) with the Bats of North America (Version 4.2.0) extension as a classifier, with a sensitivity setting of 0, as required by USFWS (USFWS 2019). Data was analyzed by night and by site. We considered species likely present at a site if the maximum likelihood estimator (MLE) for that night was significant ($p \leq 0.05$).

For the two nights where the MLE calculated by Kaleidoscope indicated likely presence of Indiana bats, we manually reviewed all call sequences recorded. Calls were analyzed in Kaleidoscope Pro and using SCAN'R software to get accurate slope and frequency measurements of pulses. The key used as a reference during the manual vetting was created by Carl Herzog of NYSDEC (see Appendix B).

3. Results 3.1 Acoustic Monitoring

We surveyed 2 different locations for a total of 9 successful detector nights (Table 3-1). The stream site was successfully surveyed on 5/16, 5/18, 5/19, 5/23, and 5/24. The trail site was successfully surveyed on 5/16, 5/18, 5/19, and 5/23. Other nights were not counted due to low temperatures, rain events, and/or high winds.

3.1.1 Species Composition

The MLEs calculated by Kaleidoscope Pro indicated that 7 different species were present at the study location (Table 3-2). After manual review, we determined that the eastern smallfooted bat (MYLE) call sequences recorded at the stream location were all likely northern long-eared bat (MYSE) call sequences. See Section 3.1.2 for more information on MYSE and MYSO detections. The most commonly detected species was little brown bat (MYLU), followed by big brown bat (EPFU; detected every successful detector night) and tri-colored bat (PESU, detected on 5 of 9 successful detector nights). MLE values indicated that red bats (LABO) were present at the stream site every night except for one; MLE values did not indicate presence of LABO at the trail site.

3.1.2 Indiana bat and northern long-eared bat presence and distribution

MLE values indicated that MYSO were present on two detector nights: 5/16/2019 at the stream site and 5/24/2019 at the trail site. Manual review of all calls over 35 kHz on those two nights confirmed potential presence of MYSO at both sample sites.

4. Conclusions

The results of this acoustic survey indicate potential presence of the Indiana bat and the northern long-eared bat at this project location during the summer maternity season. MLE values associated with acoustic monitoring suggests that Indiana bats were present for one night at our stream sampling site, and one night at the trail site. This project is located just over 9 miles from the nearest Indiana bat maternity colony in eastern Ulster County, and is located approximately 13 miles from Rosendale, NY, which has several mines that both MYSO and MYSE hibernate in. Further coordination with the US Fish and Wildlife Service will be necessary prior to the clearing of the 118 trees proposed for this project.

Table 3-1. Detector information for acoustic monitoring on Bushkill Stream & Streambank Rehabilitation project location.

Detector Name	Detector Model	Location Description	Detector Orientation	Detector Coordinates (UTM)	Recording Dates	Survey Hours	Successful Detector Night?	Number of Files Recorded
BSSB_stream	SM4Bat	Stream corridor	SSE	559643 E 4646702 N	5/16/2019	11 hrs 25 min	Yes	66
					5/17/2019	11 hrs 23 min	No	142
					5/18/2019	11 hrs 21 min	Yes	85
					5/19/2019	11 hrs 19 min	Yes	236
					5/20/2019	11 hrs 17 min	No	719
					5/21/2019	11 hrs 15 min	No	620
					5/22/2019	11 hrs 13 min	No	255
					5/23/2019	11 hrs 12 min	Yes	772
					5/24/2019	11 hrs 10 min	Yes	824
BSSB_trail	SM4Bat	Forest opening along trail	SSW	559559 E 4646655 N	5/16/2019	11 hrs 25 min	Yes	394
					5/17/2019	11 hrs 23 min	No	1367
					5/18/2019	11 hrs 21 min	Yes	200
					5/19/2019	11 hrs 19 min	Yes	1204
					5/20/2019	11 hrs 17 min	No	2146
					5/21/2019	11 hrs 15 min	No	1230
					5/22/2019	11 hrs 13 min	No	735
					5/23/2019	11 hrs 12 min	Yes	1731

Table 3-2. Kaleidoscope Pro results by detector site, by night. Nights with significant MLE values (≤ 0.05) for species are in green.

Detector Location	Survey Date	Species Presence: # files (MLE value)										Total
		EPFU	LABO	LACI	LANO	MYLE	MYLU	MYSE	MYSO	PESU	Unknown	
Stream	5/16/2019	6 (0.00)	6 (0.01)	0 (1.00)	5 (0.08)	0 (1.00)	35 (0.00)	1 (0.99)	0 (1.00)	4 (0.00)	9	66
	5/17/2019	4 (0.24)	6 (0.15)	0 (1.00)	10 (0.00)	0 (1.00)	63 (0.00)	0 (1.00)	4 (0.84)	18 (0.00)	37	142
	5/18/2019	8 (0.00)	7 (0.01)	1 (0.88)	4 (0.39)	0 (1.00)	44 (0.00)	0 (1.00)	3 (0.79)	1 (0.77)	17	85
	5/19/2019	9 (0.00)	97 (0.00)	0 (1.00)	3 (0.71)	0 (1.00)	73 (0.00)	1 (1.00)	3 (1.00)	15 (0.00)	35	236
	5/20/2019	3 (0.49)	65 (0.00)	1 (0.96)	8 (0.00)	0 (1.00)	396 (0.00)	1 (1.00)	20 (0.96)	144 (0.00)	81	719
	5/21/2019	2 (0.05)	40 (0.00)	0 (1.00)	0 (1.00)	4 (0.00)	410 (0.00)	4 (1.00)	8 (1.00)	6 (0.40)	146	620
	5/22/2019	3 (0.03)	28 (0.00)	0 (1.00)	1 (0.90)	2 (0.00)	111 (0.00)	5 (0.57)	8 (0.48)	5 (0.08)	92	255
	5/23/2019	10 (0.00)	41 (0.00)	0 (1.00)	2 (0.99)	1 (0.00)	559 (0.00)	0 (1.00)	7 (1.00)	17 (0.00)	135	772
	5/24/2019	10 (0.00)	18 (1.00)	0 (1.00)	8 (0.02)	0 (1.00)	618 (0.00)	4 (1.00)	43 (0.03)	33 (0.00)	90	824
Trail	5/16/2019	204 (0.00)	1 (1.00)	0 (1.00)	20 (1.00)	0 (1.00)	98 (0.00)	0 (1.00)	14 (0.00)	0 (1.00)	57	394
	5/17/2019	81 (0.00)	4 (1.00)	0 (1.00)	2 (1.00)	0 (1.00)	1191 (0.00)	0 (1.00)	7 (1.00)	4 (1.00)	78	1367
	5/18/2019	37 (0.00)	9 (0.16)	0 (1.00)	8 (0.98)	0 (1.00)	110 (0.00)	0 (1.00)	5 (0.99)	0 (1.00)	31	200
	5/19/2019	19 (0.00)	29 (1.00)	0 (1.00)	2 (1.00)	0 (1.00)	1013 (0.00)	0 (1.00)	37 (1.00)	1 (1.00)	103	1204
	5/20/2019	15 (0.00)	27 (1.00)	0 (1.00)	1 (1.00)	0 (1.00)	1963 (0.00)	1 (1.00)	11 (1.00)	10 (1.00)	118	2146
	5/21/2019	0 (1.00)	0 (1.00)	0 (1.00)	0 (1.00)	1 (0.00)	1056 (0.00)	3 (1.00)	33 (1.00)	25 (0.00)	112	1230
	5/22/2019	18 (0.00)	25 (0.28)	0 (1.00)	4 (0.98)	0 (1.00)	473 (0.00)	3 (1.00)	32 (0.12)	77 (0.00)	103	735
	5/23/2019	6 (0.00)	11 (1.00)	2 (0.25)	0 (1.00)	0 (1.00)	1405 (0.00)	0 (1.00)	24 (1.00)	138 (0.00)	145	1731

Figure 1-1. Project area for the Bushkill Stream and Streambank Rehabilitation project.

NEW YORK
STATE OF
OPPORTUNITY

Department of Environmental Conservation

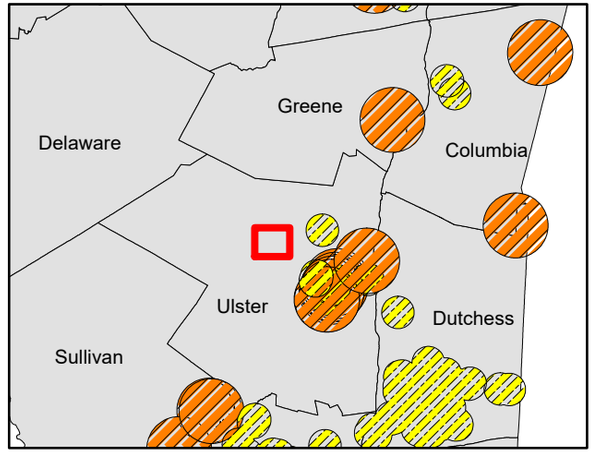
0 0.03 0.06 0.12 0.18 0.24
Miles

1 inch = 500 feet

NYS Resources Map

Bushkill Stream and Streambank Rehabilitation Town of Olive, Ulster County

Prepared by AMB on 2/4/2019



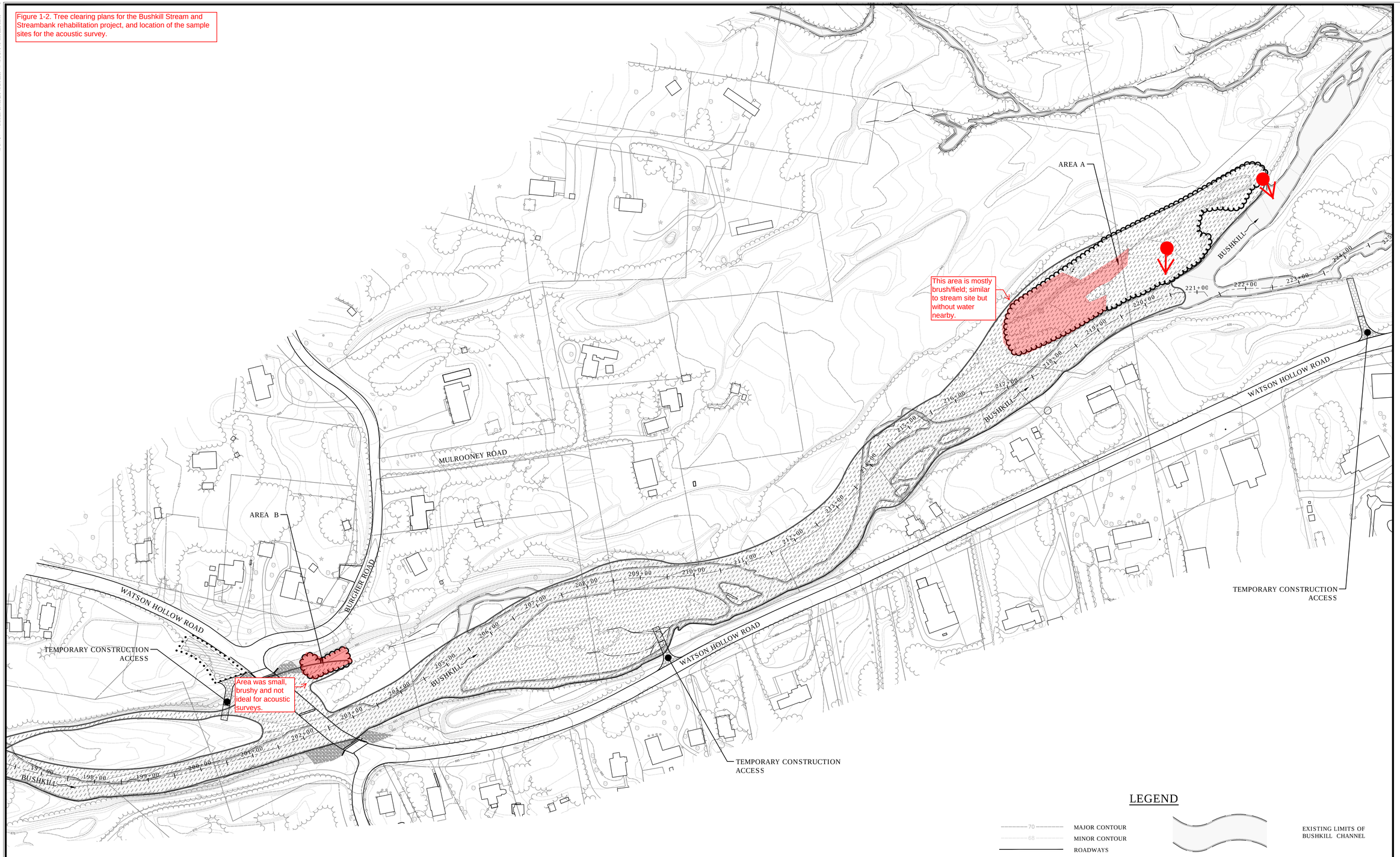
Project Area

Indiana Bat

Northern Long-eared Bat

Disclaimer: this map was prepared by the NYSDEC using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data. This map may contain information that is considered sensitive and therefore the distribution of this map is strictly prohibited.

Figure 1-2. Tree clearing plans for the Bushkill Stream and Streambank rehabilitation project, and location of the sample sites for the acoustic survey.



LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- ROADWAYS
- PROPERTY LINE
- TREE DISTURBANCE AREAS
- EXISTING LIMITS OF BUSHKILL CHANNEL
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED STAGING AND STOCKPILING AREA

N
W E
S
0' 40' 80'
0 1/2" 1"

MILONE & MACBROOM
281 MAIN STREET, SUITE 102
NEW PALTZ, NY 12561
845.633.8183
WWW.MMINC.COM

DESCRIPTION | DATE | BY

LIMITS OF DISTURBANCE PLAN

BUSHKILL STREAM AND STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	MC
DESIGNED	DRAWN	CHECKED

SCALE: 1" = 80'

DATE: AUGUST 08, 2018

PROJECT NO.: 5909-01

SHEET NO.: 01 OF 01

SHEET NAME: **LD-01**

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Tree Tally (conducted August 8, 2018)
Bushkill Stream & Streambank Rehabilitation
Olive, New York

Area A
49,170 square feet (1.1 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
northern red oak	*Quercus rubra*	18	1
sugar maple	*Acer saccharum*	6	15
		8	17
		12	4
		36	2
American sycamore	*Platinus occidentalis*	6	10
		8	7
		10	11
		12	11
		14	9
		20	6
		36	1
white ash	*Fraxinus americana*	8	3
		18	2
		20	2
eastern cottonwood	*Populus deltoides*	20	1
white pine	*Pinus strobus*	6	1
		10	2
		Total:	105

Area B
2,342 square feet (0.05 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
American sycamore	*Platinus occidentalis*	6	7
northern catalpa	*Catalpa speciosa*	6	3
		8	3
		Total:	13

Note: Vegetated areas to be disturbed outside of Area A and Area B are prediminantly cobble bars dominated by willow shrubs (*Salix ssp* .) and young American sycamore (*Platinus occidentalis*) under 4" dbh

Appendix A. Detector photographs

Detection area of trail site detector

Overview of trail site detector

Canopy above trail site detector

Detection area of trail site detector

Stream site detector location

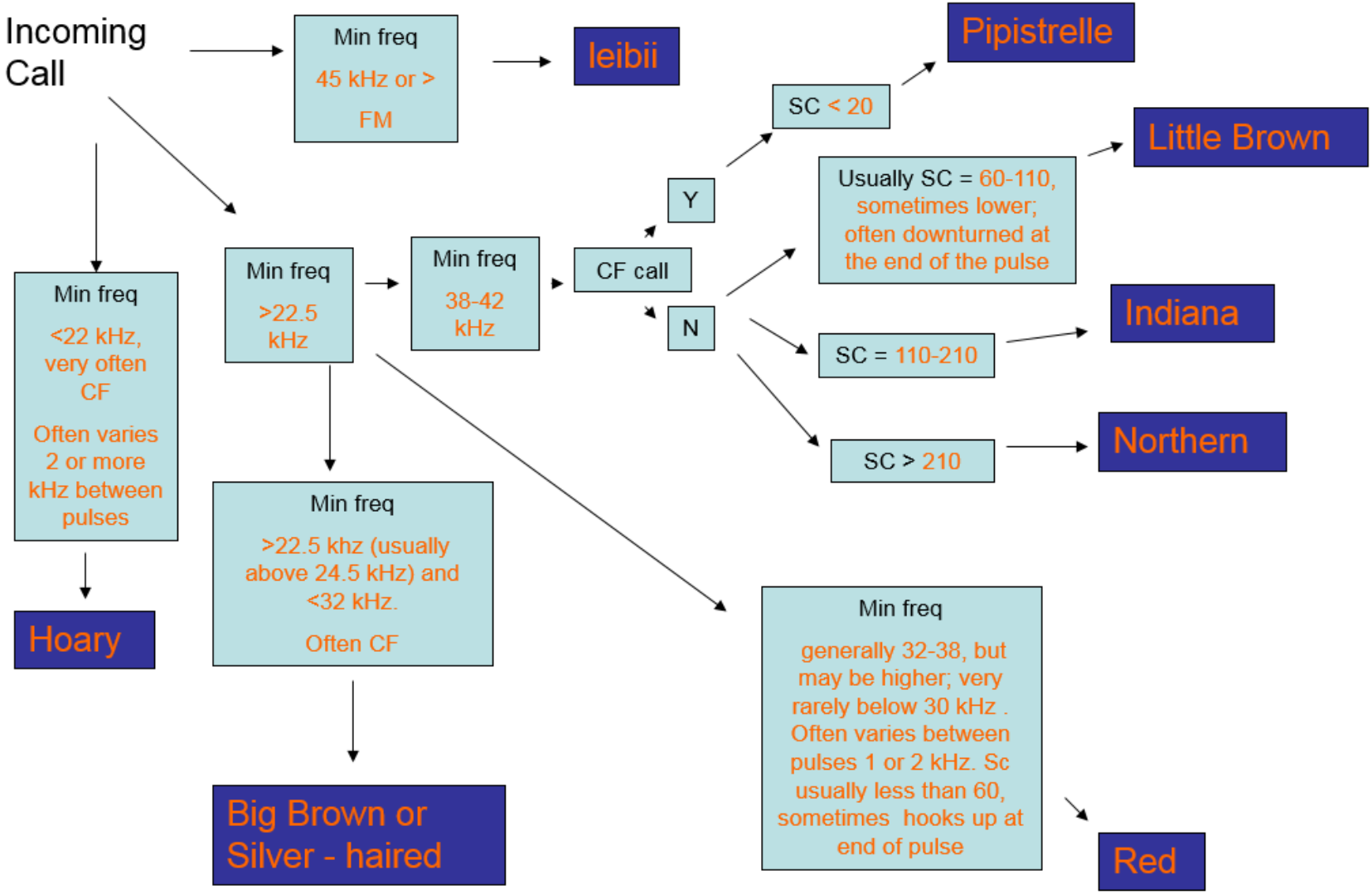
Canopy above stream site detector location

Overview of stream site detector location

Detection area of stream site detector

Detection area of stream site detector

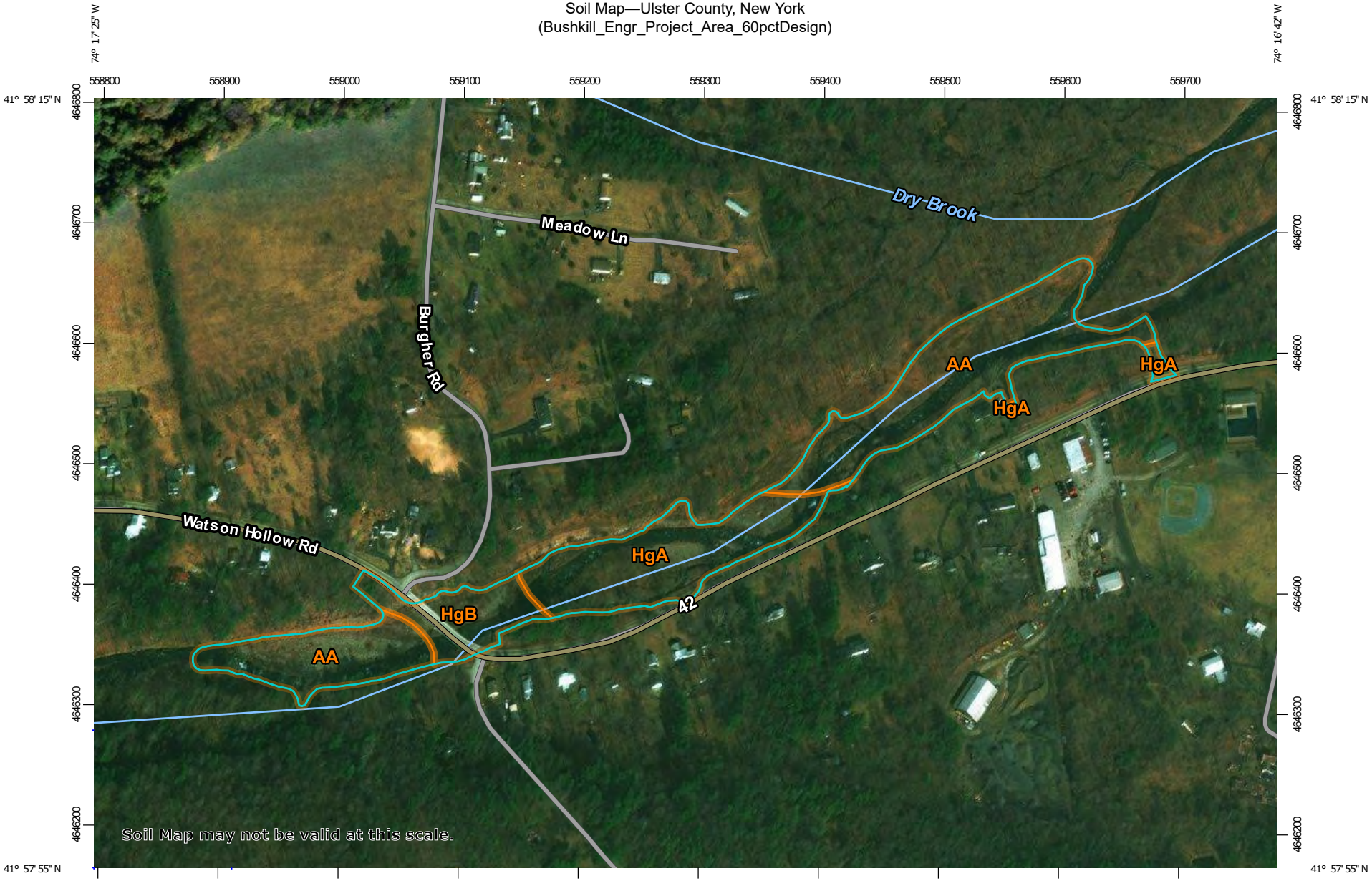
Appendix B. Acoustical key to species. Created by Carl Herzog, NYSDEC.



Attachment 6

Soil Map

Soil Map—Ulster County, New York
(Bushkill_Engr_Project_Area_60pctDesign)



Map Scale: 1:4,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 17, Sep 3, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AA	Alluvial land	5.9	55.8%
HgA	Hoosic gravelly loam, 0 to 3 percent slopes	3.3	31.0%
HgB	Hoosic gravelly loam, 3 to 8 percent slopes	1.4	13.2%
Totals for Area of Interest		**10.5**	**100.0%**

Attachment 7

Site Plans

CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

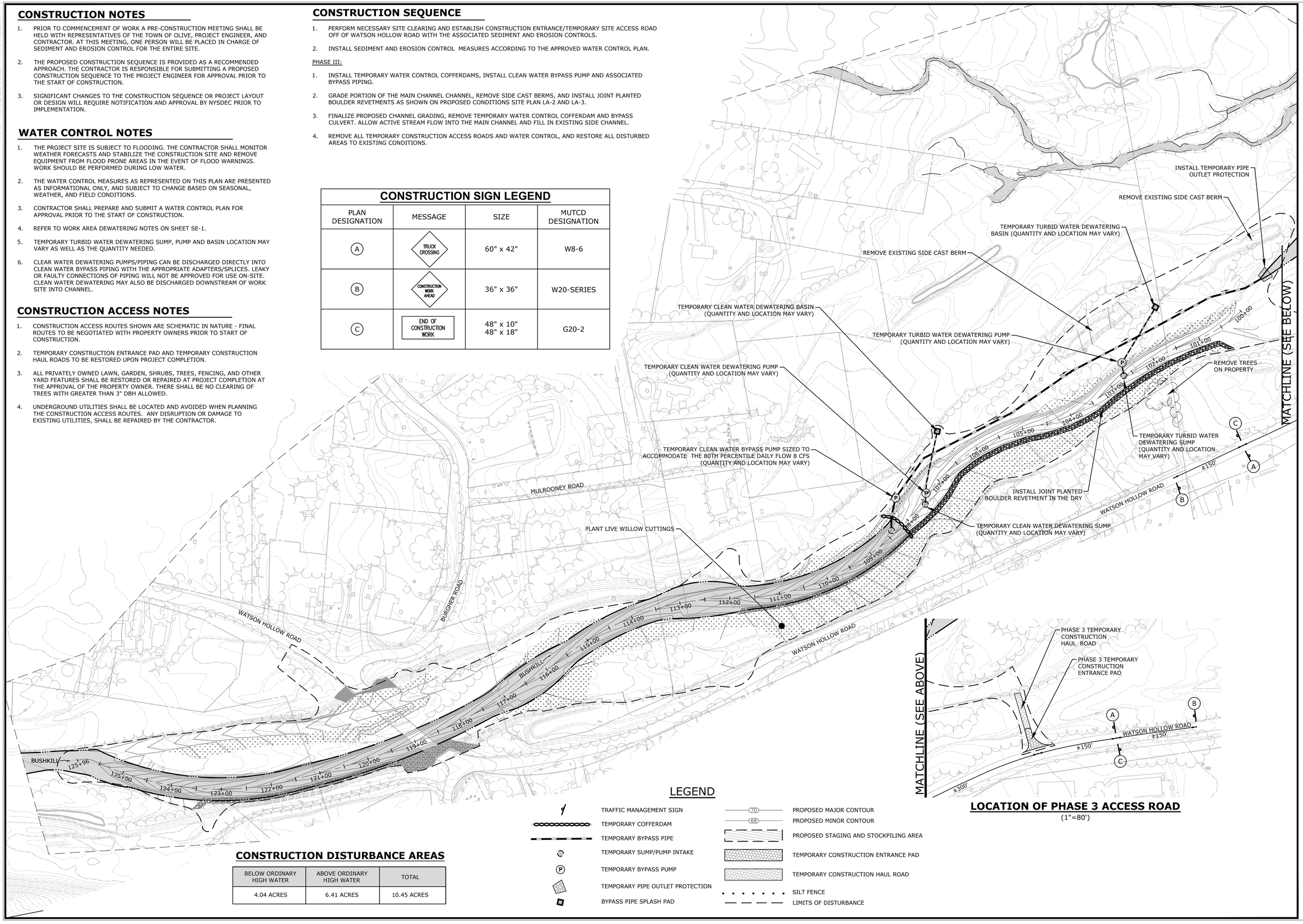
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE III:

1. INSTALL TEMPORARY WATER CONTROL COFFERDAMS, INSTALL CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL, REMOVE SIDE CAST BERMS, AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2



LOCATION OF PHASE 3 ACCESS ROAD

(1"=80')

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

MILONE & MACBROOM
231 Main Street, Suite 102
New Paltz, NY 12561
845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 3

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 15 OF 17

SHEET NAME: CP-3

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From: Rayman, Noelle <noelle_rayman@fws.gov>
Sent: Friday, February 1, 2019 8:58 AM
To: Shirley, Lori (NYSHCR) <Lori.Shirley@nyshcr.org>
Subject: Bushkill Stream Rehabilitation Project

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hi Lori,

Apologies for the delayed response on this project as our office was affected by the government shutdown. I took a look at it just now and find that we cannot complete consultation as it sounds like there is still a need for a bat habitat assessment and/or acoustic survey. Once we get that info, then we can see whether Indiana and northern long-eared bats could be impacted by the project or not.

Regarding bog turtle, there's no justification for the "may affect, not likely to adversely affect" determination. The letter states no suitable habitat so should the determination really be "no effect"? I recommend conducting Phase 1 habitat assessment surveys (when the snow is gone; see attachments) for wetlands in the area and then figuring out which determination is appropriate.

Please let me know if you have any questions.

Noelle

--
Noelle L. Rayman-Metcalf
Endangered Species Biologist
U. S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045
Phone: 607-753-9334
Fax: 607-753-9699

E-mail: noelle_rayman@fws.gov
http://www.fws.gov/northeast/nyfo/

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

February 13, 2019

Ms. Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
New York State Homes and Community Renewal
Governor's Office of Storm Recovery
38-40 State St., Hampton Plaza
Albany, NY 12207

Dear Ms. Shirley:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter dated December 21, 2018, regarding the proposed Bushkill Stream and Streambank Rehabilitation project located along Bushkill Creek from the County Route 42 bridge, east to the intersection of the Bushkill with New York State Route 28A bridge in the Hamlet of West Shokan, Town of Olive, Ulster County, New York. The proposed project includes bank stabilization, increasing floodplain width, stabilizing stream channel bed by realigning the channel profile, adding hard armor along select areas of the Bushkill, and reinforcing the Watson Hollow bridge abutments.

As you are aware, federal agencies, such as the U.S. Department of Housing and Urban Development (HUD), have responsibilities under section 7 of the Endangered Species Act (ESA) (87 Stat. 844, as amended; 16 U.S.C. 1531 *et seq.*) to consult with the Service regarding projects that may affect federally listed species or designated critical habitat, and confer with the Service regarding projects that are likely to jeopardize federally proposed species or adversely modify proposed critical habitat. We understand that the Governor's Office of Storm Recovery (GOSR) has been designated a HUD non-federal representative for the purposes of completing informal consultation pursuant to section 7(a)(2) of the ESA.

On behalf of HUD, the GOSR determined the proposed action may affect, but is not likely to adversely affect, the federally listed Indiana bat (*Myotis sodalis;* Endangered) and the northern long-eared bat (*Myotis septentrionalis;* Threatened). However, we understand that 118 trees that may be potential bat roosting trees are proposed for removal during the active bat roosting and foraging season (i.e., between April 1 and October 31). We understand that the GOSR plans to conduct an assessment to determine if potential roost trees are within the project area and further plans to conduct an acoustic survey should suitable roost trees be found. Due to these information needs, we have concluded that we cannot concur with your determination at this time. Please submit a tree assessment and/or acoustic survey plans as soon as they are available.

Similarly, the GOSR determined the project may affect, but is not likely to adversely affect, the federally listed bog turtle (*Clemmys* [=*Glyptemys*] *muhlenbergii*; Threatened) based on the lack of suitable habitat for this species. It is unclear if a Phase 1 Bog Turtle Habitat Survey[1] was conducted by a biologist/consultant familiar with this species to determine if suitable habitat exists along the project area. Please provide additional information regarding the wetlands at the site and their potential suitability for bog turtles.

We look forward to receiving this information.

As a reminder, the most recent compilation of federally listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, we recommend that you check our website regularly to ensure that listed species presence/probable absence information for the proposed project is current.*

Any additional information regarding the proposed project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation.

Thank you for your time. If you require additional information or assistance, please contact Noelle Rayman-Metcalf at 607-753-9334. Future correspondence with us on this project should reference project file 19I0669.

Sincerely,

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at: http://www.fws.gov/northeast/nyfo/es/section 7.htm

cc: NYSDEC, New Paltz, NY (Env. Permits)

[1] The Service's Phase 1 Bog Turtle Habitat Survey guidelines, along with data forms and supplemental information can be found here: https://www.fws.gov/northeast/nyfo/es/bogturtle.htm.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

October 12, 2018

Lori Shirley
Governor's Office of Storm Recovery
30-40 State St., Hampton Plaza
Albany, NY 12207

Re: Bushkill Stream and Streambank Rehabilitation Project, West Shokan
County: Ulster Town/City: Olive

Dear Ms. Shirley:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 3 Office, Division of Environmental Permits, at dep.r3@dec.ny.gov, (845) 256-3054.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

1152

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing.

For information about any permit considerations for the project, please contact the NYSDEC Region 3 Office, Department of Environmental Permits, at dep.r3@dec.ny.gov, (845) 256-3054.

The following species has been documented nesting within .8 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		1715

The following species has been documented within 1.5 miles of the project site. Individual animals may travel 1.5 miles from documented locations.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Timber Rattlesnake	*Crotalus horridus*	Threatened		13551

The following state-listed plants have been documented in the vicinity of the project site.

If suitable habitat for these species is present at the project site, these species may also occur there.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Spreading Rush	*Juncus subcaudatus*	Endangered	Critically Imperiled in NYS

Little Mountain, West Shokan, within .5 mile of the project site, 1999-08-17: Seeps in a recovering hemlock-northern hardwood forest. 1205

Nodding Pogonia	*Triphora trianthophoros* ssp. *trianthophoros*	Threatened	Imperiled in NYS

Within .5 mile of the project site, 2009-08-31: Mixed woods tending toward beech-maple. 14467

This report only includes records from the NY Natural Heritage database.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Governor's Office of
Storm Recovery

ANDREW M. CUOMO
Governor

Via Electronic Mail

December 21, 2018

Robyn A. Niver
Endangered Species Biologist USFWS
New York Field Office
Cortland, NY 13045

Re: Section 7 Project Review - ESA/MBTA/BGEPA Consultation for the Bushkill Stream and Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Ms. Niver:

The Governor's Office of Storm Recovery (GOSR), acting under the auspices of New York State Homes and Community Renewal's (HCR) Housing Trust Fund Corporation (HTFC), on behalf of the Department of Housing & Urban Development (HUD), is conducting an environmental review under HUD's environmental review regulations (24 CFR Part 58) and New York State's Environmental Quality Review Act (SEQRA) for the Bushkill Stream and Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York (see **Figures 1 and 2**).

The purpose of this letter is to provide the U.S. Fish and Wildlife Service – New York Field Office (USFWS) notice of the proposed project and to document compliance with Section 7 of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), as well as the Migratory Bird Treaty Act of 1918 (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703-712), and the Bald and Golden Eagle Protection Act of 1940 (BGEPA) (54 Stat. 240, as amended; 16 U.S.C. 668-668c).

Program Overview: During Hurricane Irene and Tropical Storm Lee, torrential rainfall caused flooding throughout the Esopus watershed, including the Bushkill, which runs parallel to County Route 42 (Watson Hollow Road) in West Shokan. The Town of Olive government offices, including the Department of Public Works and Highway Department and the West Shokan Fire Department are located in West Shokan. These government offices and hundreds of homes were completely isolated from surrounding areas during the floods. People seeking to receive and give assistance during the flooding were forced to make 1.5-hour detours around the flooding through Sullivan County. Flooding also resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course, that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel. a Local Flood Analysis (LFA) identified the conditions in seven locations along the Bushkill, contributing to inundation of public and private infrastructure associated with high water flows during future

events and develop mitigation strategies to address flood hazards. The town selected six of the seven potential flood hazard areas to be addressed through the New York Rising Community Recovery Program.

Area of Potential Effect: The proposed stream and streambank rehabilitation area is located along the Bushkill from the County Route 42 Bridge, east to the intersection of the Bushkill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York (see **Figures 1 and 2**).

Proposed Project Description: The Town of Olive has requesting $1,000,000 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

The project area includes approximately 2,525 linear feet (LF) of channel beginning approximately 500 LF upstream of the Watson Hollow Road bridge and ending approximately 2,000 LF downstream of Watson Hollow bridge or 1,000 LF upstream of the Route 28A bridge (**Figure 2**).

The project will be undertaken in three phases. In the first phase, construction will occur within the most upstream portion of the project reach. The modifications will include concentrating the stream channel and widening of the floodplain area, stabilizing the streambank with joint planted boulder revetments or planting of live willow stakes, and fortifying the base of the Watson Hollow bridge along the right bank with grouted rip rap (See Figures LD01 through LD08). In the second phase, which occupies the middle section of the project reach, the construction activities will include widening of the floodplain, and stabilizing the streambank with joint planted boulder revetments and/or planting of live willow stakes. The third phase which will encompass the most downstream portion of the project reach, will involve the same modification as phase two as well as the removal of a side cast berm along the left bank.

To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and removing a total of 118 trees (see the attached **Tree Clearing Tally**).

As a Class A(TS) stream, it is anticipated that no in-stream work will be permitted between September 30 and April 30th. As a result, the anticipated construction period is May 2019 (or slightly earlier to set up construction entrances, staging and traffic control measures) to September 30, 2019.

Wetlands: See the attached wetland map, **Figure 3**.

- The project site is within Riverine and Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill. Both of these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project site covers approximately 4.9 acres of the riverine wetlands and approximately 1.1 acres of the freshwater forested/shrub wetlands. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

- The project site is not within New York State Department of Environmental Conservation (NYSDEC) wetlands or the 300-foot buffer of NYSDEC wetlands.

ESA, Migratory Bird Treaty Act, And Bald and Golden Eagle Protection Act Species: The New York State Natural Heritage Program (NYSNHP) database search completed on October 12, 2018, had records of bald eagle (*Haliaeetus leucocephalus*) nesting within 0.8 mile of the project site, timber rattlesnake (*Crotalus horridus*) within 1.5 miles of the project site, spreading rush (*Juncus subcaudatus*) within 0.5 mile of the project site, and nodding pogonia (*Triphora trianthophoros*, ssp. *Trianthophoros*) within 0.5 mile of the project site. (See attached New **York Natural Heritage Program Review**.)

The USFWS, New York Ecological Services Field Office was contacted through the Information, Planning, and Conservation System (IPaC) regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The attached Official Species List identifies one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, *Myotis sodalis*) and the threatened northern long-eared bat (NLEB, *Myotis septentrionalis*) and bog turtle (*Clemmys muhlenbergii*) (see attached list). **No critical habit for these species was identified in IPaC**. The IPaC review also indicated that there are several migratory birds of concern that could potentially be affected by the proposed project. Below is a determination of potential effects of the project on each of threatened and endangered species.

Northern Long-eared Bat (NLEB)

Ulster County is within the White-Nose Syndrome Zone. The NLEB, listed as federally threatened, is a temperate, insectivorous bat whose life cycle can be coarsely divided into two primary phases - reproduction and hibernation. NLEB hibernate in caves or mines during winter and then emerge in early spring, with males dispersing and remaining solitary until mating season at the end of the summer, and pregnant females forming maternity colonies in which to rear young. No caves or mines occur near the project site. Summer habitat of the NLEB generally includes upland and riparian forest within heavily forested landscapes. The NLEB is sensitive to fragmentation and urbanization and requires interior forest for both foraging and breeding. Roost trees are usually in intact forest, close to the core and away from large clearings, roads, or other sharp edges. Neither of the two sites that comprise the project area are within five miles of NLEB hibernacula or known maternity colonies (see the attached **Figure 4**). The **project involves the removal of 118 trees** (see the attached **Tree Clearing Tally**), along with vegetated areas and cobble bars dominated by willow shrubs (*Salix* ssp.) and young American sycamore (*Platinus occidentalis*) under 4 inches in diameter at breast height. The trees to be removed are mostly scattered or grouped along the stream and streambank, and do not constitute an intact forest; however, because the proposed project involves the removal of trees during the active season of the NLEB, a habitat assessment for the potential presence of the NLEB will be conducted by a qualified biologist prior to project-related activities. If warranted by the results of habitat assessment, an acoustic survey may also be conducted prior to tree removal. The vegetation cover type will remain the same after the project has been completed, and there is ample forested habitat within 0.5 miles of the project location. All activities associated with the proposed project will not:

- disturb hibernating NLEBs or in a known hibernaculum;
- alter the entrance or interior environment of a known hibernaculum;
- remove any trees within 0.25 miles of a known hibernaculum at any time of year; or

- cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from a maternity roost tree, during the pup season (June 1 through July 31).

Based on these conditions, GOSR has determined that the proposed project **may affect but is not likely to adversely affect** the NLEB.

Indiana Bat (IB)

The IB, listed as federally endangered, is a temperate, insectivorous bat. IB hibernate in caves or mines during winter and emerge during the spring, with males dispersing and remaining solitary or forming small bachelor groups until the end of the summer, and pregnant females forming maternity colonies. Summer habitat of the IB generally includes wooded areas, where they roost under loose tree bark on dead or dying trees. The IB consumes a variety of flying insects found along rivers and other inland water bodies, and the IB is sensitive to forested habitat fragmentation and urbanization of habitat that was previously used for roosting.

GOSR received a review for the Bushkill Stream and Streambank Rehabilitation Project from the NYSDEC on March 12, 2018, of the available information in the New York State Natural Heritage Program (NYSNHP) database on known occurrences of rare or state-listed species. No occupied habitat for the IB was identified. The major concern for this species in relation to this project would be the destruction of potential roosts through tree clearing. The trees to be removed are mostly scattered or grouped along the stream and streambank, and do not constitute an intact forest; however, because the proposed project involves the removal of trees during the active season of the IB, a habitat assessment for the potential presence of the IB will be conducted by a qualified biologist prior to project-related activities. If warranted by the results of habitat assessment, an acoustic survey may also be conducted prior to tree removal. The vegetation cover type will remain the same after the project has been completed, and there is ample forested habitat within 0.5 miles of the project location. All activities associated with the proposed project will not:

- disturb hibernating IBs or in a known hibernaculum;
- alter the entrance or interior environment of a known hibernaculum;
- remove any trees within 0.25 miles of a known hibernaculum at any time of year; or
- cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from a maternity roost tree, during the pup season (June 1 through July 31).

Based on these conditions, GOSR has determined that the proposed project **may affect but is not likely to adversely affect** the IB.

Bog Turtle

Bog turtles rarely leave wetland habitats, and their home ranges are small. Long-distance movements between wetlands were infrequently observed. Bog turtles usually occur in small, discrete populations, generally occupying open-canopy, unpolluted, herbaceous sedge meadows and fens bordered by wood areas. Fens are freshwater, bog-like wetland that are a mosaic of open and shrub habitats with grasses, sedges, and small spring-fed streams (source: https://www.fws.gov/northeast/ecologicalservices/turtle/pdf/Bogturtle.pdf).

Bog Turtles inhabit open, **unpolluted emergent and scrub/shrub wetlands** such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures. These habitats are characterized by soft muddy bottoms, interspersed wet and dry pockets, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water which often forms a network of shallow pools and rivulets. Bog Turtles prefer areas with ample sunlight, high evaporation rates, high humidity in the near-ground microclimate, and perennial saturation of portions of the ground. Eggs are often laid in elevated areas, such as the tops of tussocks. Bog Turtles generally retreat into more densely vegetated areas to hibernate from mid-September through mid-April (source: https://www.fws.gov/northeast/nyfo/es/bogturtle.htm).

Mating occurs from late April to early June. Lays clutch of 1-6 (usually 3-5) eggs in May, June, or July (occasionally August). Eggs hatch in about 6-9 weeks, late July to early September. In the north, hatchlings may not emerge from the nest until October or they may overwinter in the nest.

Eggs are susceptible to trampling by humans walking through the habitat. Frequent human visits to single sites conceivably could interfere with the turtles' basking behavior and may disturb females attempting to nest (source: http://explorer.natureserve.org/servlet/NatureServe?searchName=Clemmys+muhlenbergii+).

The project site is within Riverine and Freshwater Forested/Shrub National Wetlands Inventory (NWI) wetland areas associated with Bushkill. These wetland areas already have been disturbed by the existing bridge, Watson Hollow Road and residential development along Bushkill. These wetland areas do not represent the open, unpolluted emergent and scrub/shrub wetlands that provide habitat for the bog turtle. Therefore, **the wetlands associated with the project do not provide suitable habitat for the bog turtle**. The vegetation will remain the same and the function of the wetlands will not be altered once the project is completed. Therefore, GOSR has determined that the proposed project **may affect but is not likely to adversely affect** bog turtles.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The IPaC review indicated that seven migratory bird species of concern for the project area, including the bald eagle. The NYNHP database search identified the bald eagle (*Haliaeetus leucocephalus*) as a species near the project area, with a documented nest site within 0.8 mile of the project site. The bald eagle and golden eagle (*Aquila chrysaetos*) warrant attention because of the Bald and Golden Eagle Protection Act. As with other migratory birds, foraging bald eagles may temporarily avoid the area during construction due to noise and disturbance. GOSR will conduct a survey prior to project-related activities to ensure that no bald eagle nests would be disturbed by the project.

Summary and Compliance

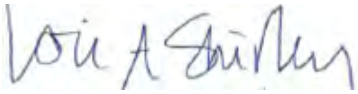
The proposed project would not jeopardize the continued existence of ESA species or destroy or adversely modify their critical habitat. On this basis, GOSR has determined that the proposed action **may affect but is not likely to adversely affect** the NLEB, IB, bog turtle, or migratory birds. We request your concurrence with this determination. Additionally, we request to be alerted if USFWS becomes aware of a Bald or Golden Eagle nest within 660 feet of the project site.

Project implementation is conditioned upon issuance of applicable federal and state permits and would be constructed in accordance with federal and state permit conditions. The proposed project would not have a

significant impact on ESA species or adversely modify any critical habitat. Conservation measures would be employed to avoid impacts to bats, including a tree survey prior to any project-related disturbance and clearly demarcating trees to be protected compared with those to be cut if any are identified in the survey.

Your assistance with this matter is greatly appreciated. We respectfully request your concurrence with our determinations and are seeking a response within 30 days of receipt of this letter. If you have questions or require additional information regarding this request, please contact Lori A. Shirley at (518) 474-0755 or Lori.Shirley@nyshcr.org. Thank you for your time and consideration.

Sincerely,



Lori A. Shirley
Certifying Officer
NYS Governor's Office of Storm Recovery

Attachments:
Figure 1 -Olive Bushkill Streambank Rehabilitation - Project Location
Figure 2 - Olive Bushkill Streambank Rehabilitation - Project Area
Figure 3 - Olive Bushkill Streambank Rehabilitation - NYS Freshwater and NWI Wetlands
Figure 4 - Olive Bushkill Streambank Rehabilitation - Northern Long-eared Bat Hibernacula
Site Plans
New York Natural Heritage Program Review
USFWS Species List - New York Ecological Services Field Office
Tree Clearing Tally

Project Location

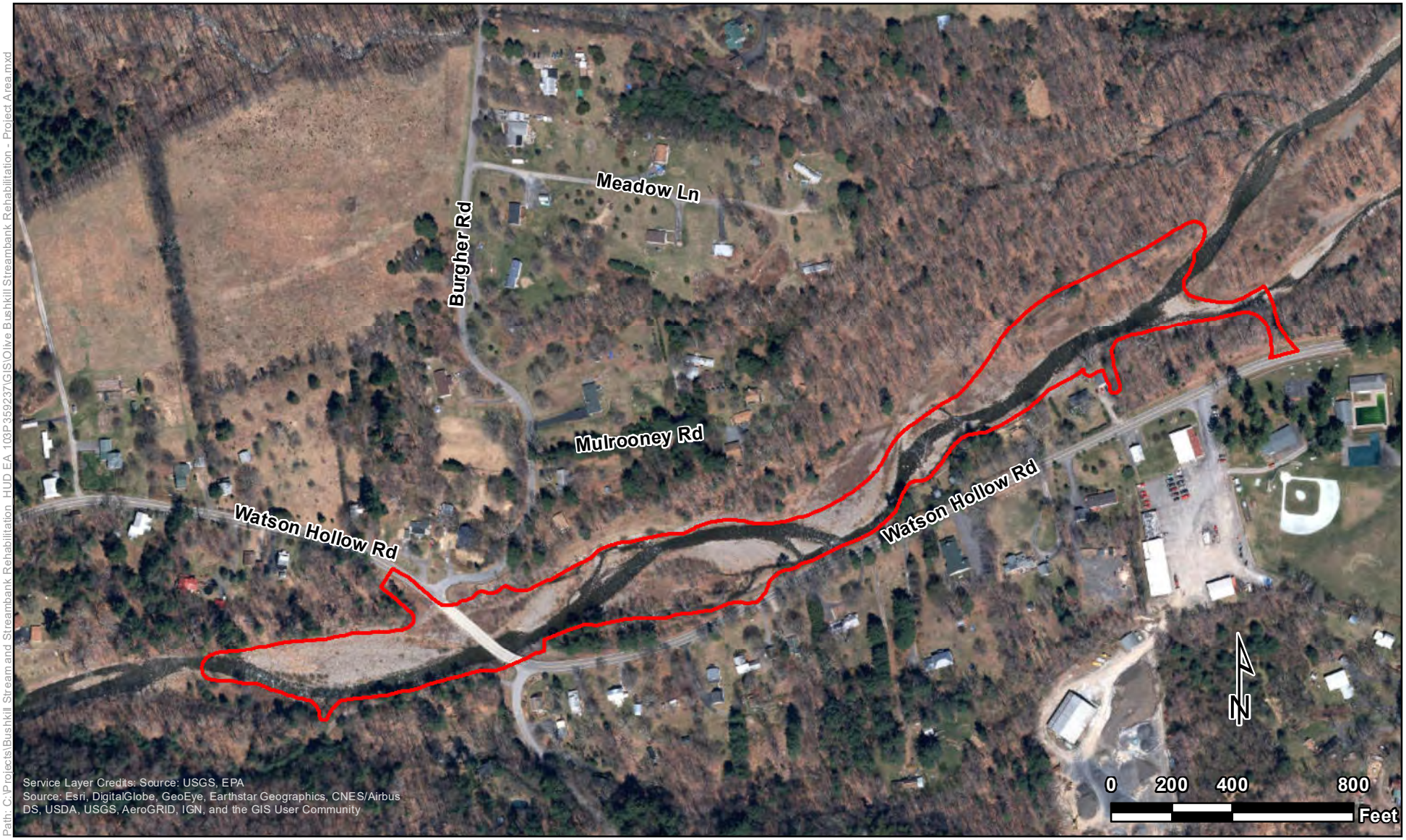
Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1



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Project Area

Legend

Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 2

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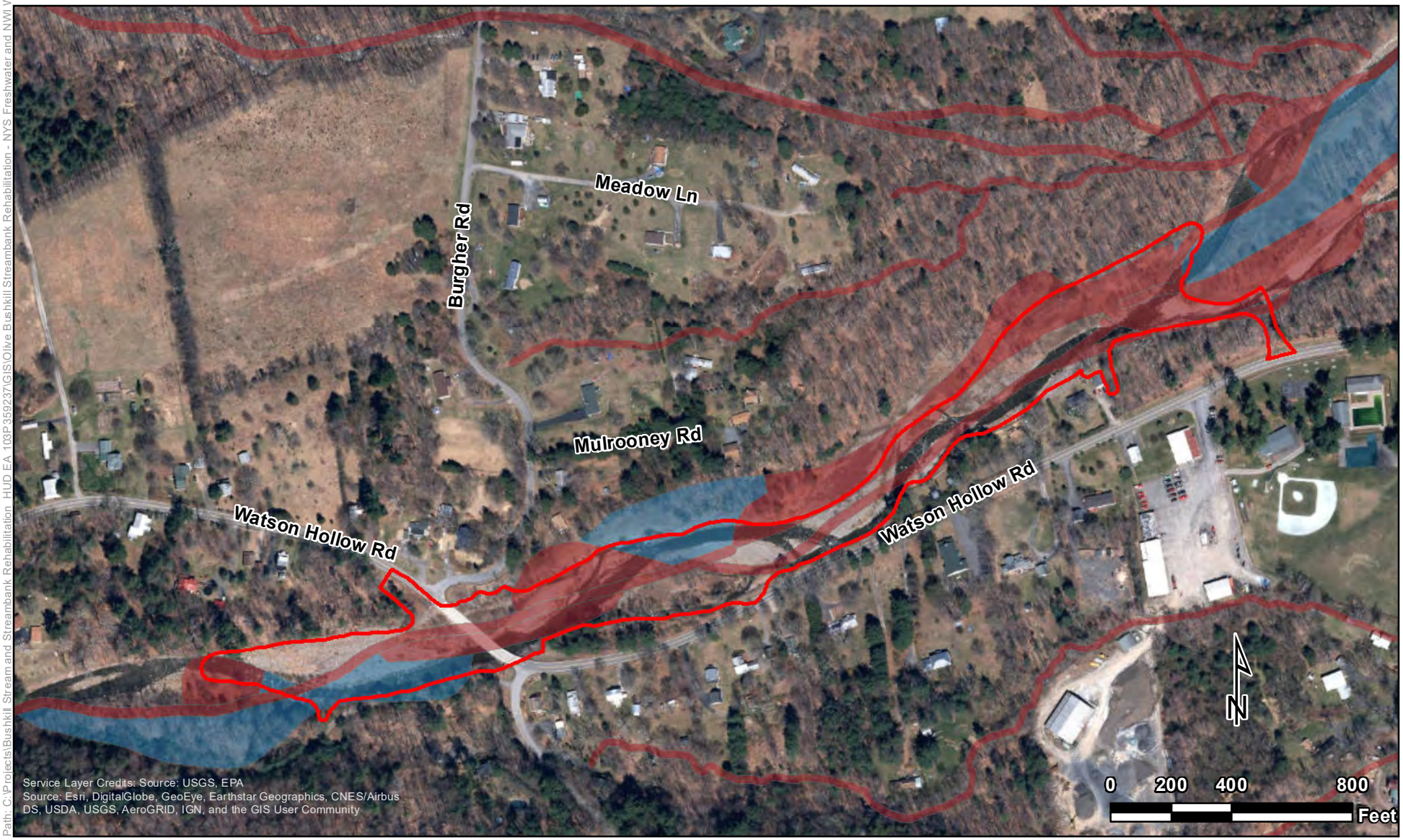


Legend

- Project Area
- NYS Freshwater Wetlands
- NYS Freshwater Wetlands Buffer

NWI Wetlands

- Freshwater Forested/Shrub Wetland
- Riverine

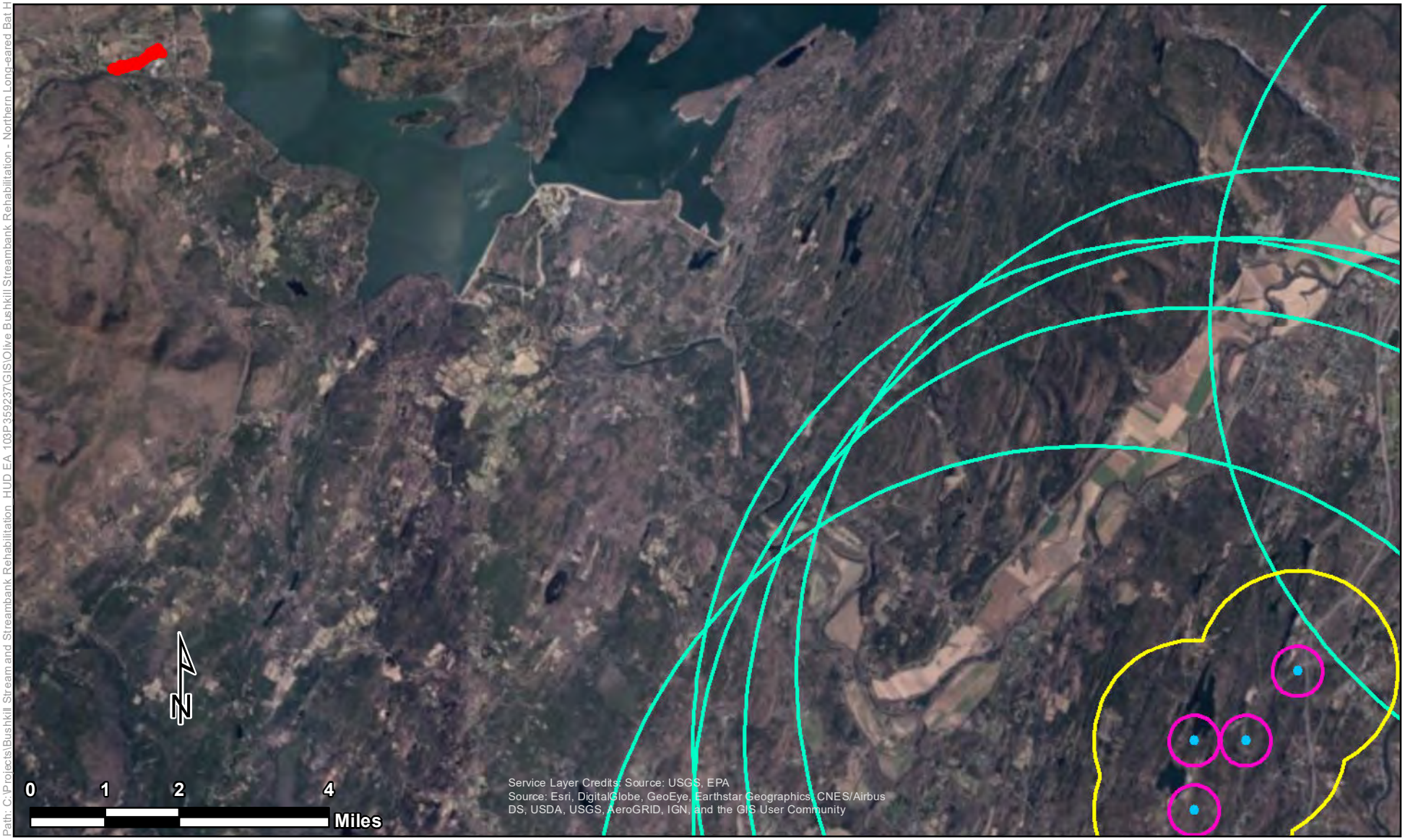
NYS Freshwater and NWI Wetlands

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Figure 3

Tetra Tech, Inc

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Northern Long-eared Bat Hibernacula.m



Legend

- NLEB Hibernacula
- Project Area
- NLEB Hibernacula 0.25 Mile Buffer
- NLEB Hibernacula 1 Mile Buffer
- NLEB Hibernacula 5 Mile Buffer

Northern Long-eared Bat Hibernacula

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 4

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: December 20, 2018
Consultation Code: 05E1NY00-2019-SLI-0669
Event Code: 05E1NY00-2019-E-02032
Project Name: Bushkill Stream and Streambank Rehabilitation Project, Town of Olive, Ulster County, NY

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2019-SLI-0669

Event Code: 05E1NY00-2019-E-02032

Project Name: Bushkill Stream and Streambank Rehabilitation Project, Town of Olive, Ulster County, NY

Project Type: LAND - FLOODING

Project Description: The Town of Olive has requesting $1,000,000 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.96815169932177N74.28308928432122W

Counties: Ulster, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Bog Turtle *Clemmys muhlenbergii* Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6962 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/182/office/52410.pdf Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/182/office/52410.pdf	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Tree Tally (conducted August 8, 2018)
Bushkill Stream & Streambank Rehabilitation
Olive, New York

Area A
49,170 square feet (1.1 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
northern red oak	*Quercus rubra*	18	1
sugar maple	*Acer saccharum*	6	15
		8	17
		12	4
		36	2
American sycamore	*Platinus occidentalis*	6	10
		8	7
		10	11
		12	11
		14	9
		20	6
		36	1
white ash	*Fraxinus americana*	8	3
		18	2
		20	2
eastern cottonwood	*Populus deltoides*	20	1
white pine	*Pinus strobus*	6	1
		10	2
		Total:	105

Area B
2,342 square feet (0.05 acres)

Common Name	Scientific Name	DBH (inches)	Stem Count
American sycamore	*Platinus occidentalis*	6	7
northern catalpa	*Catalpa speciosa*	6	3
		8	3
		Total:	13

Note: Vegetated areas to be disturbed outside of Area A and Area B are prediminantly cobble bars dominated by willow shrubs (*Salix ssp* .) and young American sycamore (*Platinus occidentalis*) under 4" dbh

Appendix D
Floodplains and Wetlands

SUMMARY OF THE 8-STEP FLOODPLAIN AND WETLAND ANALYSIS FOR BUSHKILL STREAM AND STREAMBANK REHABILITATION PROJECT HAMLET OF WEST SHOKAN, TOWN OF OLIVE, ULSTER COUNTY, NEW YORK,

Governor's Office of Storm Recovery
U.S. Department of Housing and Urban Development Community Development Block Grant – Disaster Recovery

Introduction & Overview

The purpose of Executive Order (EO) 11988 Floodplain Management is "to avoid to the extent possible the long- and short-term adverse impacts associated with occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The purpose of EO 11990 Protection of Wetlands is "to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." This report contains the analysis prescribed by 24 CFR Part 55 and documents the eight-step decision making process for the Proposed Action and pertains to activities within the Special Flood Hazard Area (SFHA) as defined by the Federal Emergency Management Agency (FEMA), or its successors, pursuant to the National Flood Insurance Program (NFIP), or a successor program, whether advisory, preliminary, or final.

The Governor's Office of Storm Recovery (GOSR), an office of the New York State Housing Trust Fund Corporation (HTFC), proposes to provide Community Development Block Grant – Disaster Recovery (CDBG-DR) funding from the NY Rising Community Reconstruction Program to implement Bushkill Stream and Streambank Rehabilitation Project in the Hamlet of West Shokan, Town of Olive, Ulster County, New York. The Bushkill drains a 19.7-square-mile watershed in Ulster County within the towns of Olive, Shandaken, and Denning, in the Catskill Mountain region of southeastern New York. The Bushkill flows generally north and east beginning in the Sundown Wild Forest and flowing primarily along County Route 42 (Watson Hollow Road) in West Shokan through the Town of Olive. It enters the Ashokan Reservoir just east of West Shokan, a hamlet of the Town of Olive.

The analysis that follows focuses on floodplain and wetland impacts because the Proposed Action will result in impacts to the 100-year floodplain and wetlands. Based on an analysis of the Proposed Action activities and locations described herein, it is concluded that there is a reasonable basis to proceed with funding for this Proposed Action within floodplain and wetlands. The CDBG-DR funding is administered through the New York State Rising Community Reconstruction Program which is using bottom-up community participation and State-provided technical expertise to develop resilient and sustainable communities. Thus, alternatives preventing or impeding the development of resilient and sustainable communities are not considered reasonable alternatives.

Description of Proposed Action & Land Use

The Town of Olive is requesting $1,752,622.50 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. (See **Figures 1 and 2**.) The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

The project area includes approximately 2,525 linear feet (LF) of channel beginning approximately 500 LF upstream of the Watson Hollow Road bridge, east to 1,000 LF upstream of the intersection of the Bush Kill with the NY Route 28A bridge.

The project will be undertaken in three phases. In the first phase, construction will occur within the most upstream portion of the project reach. The modifications will include concentrating the stream channel and widening of the floodplain area, stabilizing the streambank with joint planted boulder revetments or planting of live willow stakes, and fortifying the base of the Watson Hollow bridge along the right bank with grouted rip rap. In the second phase, which occupies the middle section of the project reach, the construction activities will include widening of the floodplain, and stabilizing the streambank with joint planted boulder revetments and/or planting of live willow stakes. The third phase, which will encompass the most downstream portion of the project reach, will involve the same modification as phase two as well as the removal of a side cast berm along the left bank.

To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree and shrub clearing will occur on 1.15 acres of land.

Flooding from recent storms has resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel. During Tropical Storm Irene, approximately 100 feet of the road by the State Route 28A Bridge washed out, as well as the downstream embankment. The northern approach to the bridge and one of the piers subsequently required repairs. Additional repair work involved stream and slope stabilization, scour remediation along the embankment toe, and scour protection for the wingwall and abutment. The County Route 42 (Watson Hollow Road) bridge was replaced and realigned in 1992. Since the realignment of the bridge, the channel beneath it, as well as upstream and downstream, has adjusted significantly. A large sediment bar has formed along the upstream side of the left side of the channel, almost completely blocking the left opening. The right side of the channel has degraded and created a steep, eroding bank along the right side of the channel both upstream and downstream of the bridge. This situation worsened after Tropical Storm Irene, which resulted in the loss of much of the heavy stone riprap under the bridge and caused the downstream side of the right abutment to become undermined. While the upstream half of the right abutment retains its stone riprap cover, the downstream half of the pier cap is fully exposed, and a void is visible underneath it. Upstream of the project area, the Bushkill is characterized by a steep, confined channel with very little floodplain. Raw, eroding banks can be observed at many locations, and large, active bank failures, some of which threaten roads, are present. This channel instability upstream of the project area represents a source of excessive sediment, which is transported downstream during large flood events and contributes to the large sediment load entering the project area. The town envisions this project as a long-term solution to support and enhance the town's ability to carry out essential governmental operations during future storm events.

Applicable Regulatory Procedure Per EO 11988 and EO 11990

The Proposed Action corresponds with a noncritical action not excluded under 24 CFR §55.12(b) or (c), and the use is a functionally dependent use. Funding is permissible for the use in the floodplain and wetland if the proposed action is processed under §55.20 and the findings of the determination are affirmative to suggest that the project may proceed. No work is anticipated in a floodway.

The Proposed Action would result in permanent impacts to a 100-year floodplain and a 500-year floodplain, as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 36111C0410F, dated November 18, 2016. A portion of the Proposed Action

area within the 100-year floodplain are also within a floodway, which includes the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachments so that a one percent annual chance flood (100-year flood) can be accommodated without substantial increases in flood height. Both the floodplain and wetlands have been disturbed previously by residential development and infrastructure along Watson Hollow Road.

The Proposed Action would result in temporary impacts to Riverine and Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill.

According to 24 CFR §55, the activity planned for stream and streambank stabilization occurs in the Town of Olive, which is in the regular program of the National Flood Insurance Program (NFIP) and is currently in good standing. This Proposed Action is aimed at flood mitigation through creation of a more confined stream channel with an expanded floodplain area and stabilization of eroding streambanks. As such, the full eight-step decision making process in §55.20 is required, and the following analysis examines each step.

Step 1. Determine Whether the Proposed Action is Located in the 100-year Floodplain (500-year for Critical Actions) or results in New Construction in Wetlands.

The Proposed Action would result in permanent impacts to 9.75 acres of a 100-year floodplain and 0.43 acres of a 500-year floodplain, as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 36111C0410F, dated November 18, 2016 (attached). Approximately 8.88 acres of the Proposed Action area within the 100-year floodplain are also within a floodway, which includes the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachments so that a one percent annual chance flood (100-year flood) can be accommodated without substantial increases in flood height. A Floodplain map (**Figure 3**) based on the FEMA Base Flood Elevation Maps is are attached.

The Proposed Action would result in temporary impacts to approximately 5.3 acres of Riverine and 1.2 acres of Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill. A wetlands map (**Figure 4**) is attached. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

The Proposed Action will require a NYSDEC Article 15 Protection of Waters Permit, CWA Section 401 Water Quality Certification, a USACE Section 404 permit, and a Local Floodplain Development Permit. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that conforms to requirements of the General Permit.

Step 2. Initiate Public Notice for Early Review of Proposal.

Because the Proposed Action is located within a floodplain and wetlands, GOSR published an early notice that allowed for the public and public agencies to provide input on the decision to provide funding for the Proposed Action. The early public notice and 15-day comment period is complete. No public comments were received.

"Early Notice of a Proposed Activity in a 100-Year Floodplain & Wetland" was published in the Kingston Daily Freeman newspaper on January 29, 2019, with the 15-day period expiring on February 13, 2019. The

notice targeted local residents, including those with property within the floodplain. The notice was also sent to the following state and Federal agencies on January 29, 2019: HUD; Federal Emergency Management Agency (FEMA); U.S Fish and Wildlife Service (USFWS); U.S. Environmental Protection Agency (EPA); NYSDEC; NY State Historic Preservation Office (SHPO); NYS Office of Parks, Recreation and Historic Preservation; and the NYS Division of Homeland Security & Emergency Services. The notice was also sent to the Town of Olive. (See the attached **Early Notice and Affidavit of Publication**).

Step 3. **Identify and Evaluate Practicable Alternatives to Locating the Proposed Action in a 100-year Floodplain (or 500-year Floodplain if a Critical Action) or Wetland.**
The New York State Rising Community Reconstruction Program is structured to provide eligible communities resources and expertise to build projects resilient to future flooding events.

The primary alternative for the current Proposed Action is the "no action" alternative. This alternative means that erosion along both sides of the Bushkill's channel and banks, constrictions, reduced capacity, and a shift in the channel's course would continue. These problems, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel. The County Route 42 bridge would continue to be threatened by the shifting channel beneath it, the deposition of sediment upstream, erosion both upstream and downstream, and undermining of the downstream embankment. Large, active bank failures would continue to threaten roads. The "no action" alternative would provide no protection to the roadway, bridges, and community from future flood events. Thus, the "no action" alternative is not feasible in relation to the desired objective of creating area resiliency to future flooding events.

The Proposed Action is a functionally dependent use, requiring that it be located in the area most in need of restoration, which is allowed to be constructed in wetlands, the 100-year floodplain, and floodways if processed under §55.20.

The above identified alternatives will be re-evaluated in response to public comments received.

Step 4. **Step 4: Identify and describe the proposed action's direct and indirect effects associated with occupying or modifying the floodplain and wetlands.**
No changes in land use or increase in impervious surface would adversely affect the floodplain or these wetlands in the long term because of the Proposed Action.

The floodplain impact analysis focuses on potential adverse effects on lives and property and on natural and beneficial floodplain values. Natural and beneficial values include consideration of potential for adverse impacts on water resources such as natural moderation of floods, water quality maintenance, and groundwater recharge.

Natural moderation of floods
The Proposed Action is aimed at flood mitigation through stream channel and streambank rehabilitation within the 100-year floodplain and wetlands. The proposed rehabilitation includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach and reinforcing the Watson Hollow bridge abutments. The project would create a more confined stream channel and result in a beneficial increase in the area of the floodplain and reduce erosion, sedimentation, and stream channel migration, thereby moderating future flooding.

Living resources such as flora and fauna
To implement the Proposed Action Tree clearing will occur on 1.15 acres of land. The New York State Natural Heritage Program (NYSNHP) database search completed on October 12, 2018, had records of bald

eagle (Haliaeetus leucocephalus) nesting within 0.8 mile of the project site, timber rattlesnake (Crotalus horridus) within 1.5 miles of the project site, spreading rush (Juncus subcaudatus) within 0.5 mile of the project site, and nodding pogonia (Triphora trianthophoros, ssp. Trianthophoros) within 0.5 mile of the project site. (See attached New York Natural Heritage Program Review.) In its January 25, 2019, jurisdictional review, NYSDEC stated that based on the project area's distance to the nearest known bald eagle nest, this project is not likely to impact bald eagles. No further review is necessary for bald eagles. Impacts to the species and potential suitable habitat would be assessed following the Timber Rattlesnake Guidelines. At a minimum, conservation measures and take avoidance measures may be needed during construction of this project. Additional information may be needed to determine if suitable habitat for this species will be impacted. If project-related impacts cannot be fully avoided or minimized, an Incidental Take permit pursuant to Article 11, Title 5, Endangered and Threatened Species may be required. Implementation of the Proposed Action would follow the NYSDEC recommendations.

The USFWS, New York Ecological Services Field Office was contacted through the Information, Planning, and Conservation System (IPaC) regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The Official Species List identifies one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, Myotis sodalis) and the threatened northern long-eared bat (NLEB, Myotis septentrionalis) and bog turtle (Clemmys muhlenbergii). No critical habit for these species was identified in IPaC. The proposed rehabilitation project would not jeopardize the continued existence of ESA species or destroy or adversely modify their critical habitat. On this basis, GOSR has determined that the Proposed Action may affect but is not likely to adversely affect the NLEB, IB, bog turtle, or migratory birds.

Project implementation is conditioned upon issuance of applicable federal and state permits and would be constructed in accordance with federal and state permit conditions. Conservation measures would be employed to avoid impacts to bats, including a tree survey prior to any project-related disturbance and clearly demarcating trees to be protected compared with those to be cut if any are identified in the survey. Tree clearing would be conducted according to the recommendations of the NYSDEC jurisdictional review on January 25, 2019. To avoid potential take, NYSDEC recommends that any tree clearing be conducted between November 1 and March 31, when bats are inactive in hibernation sites. It also recommends that snag and cavity trees remain uncut, unless their removal is necessary for protection of human life and property.

In addition to the timing restrictions for threatened and endangered species, as a Class A(TS) stream, it is anticipated that no in-stream work will be permitted between September 30 and April 30th. As a result, the anticipated construction period is May 2019 (or slightly earlier to set up construction entrances, staging and traffic control measures) to September 30, 2019.

Impacts to Property & Lives

The Proposed Action does not present the potential to impact occupancy of the floodplain, as no new construction would be performed that would affect local residential, commercial, and industrial structures. The proposed activities consist of bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments. The Proposed Action would require both temporary and permanent easements, that would not result in any changes in land use or involve the acquisition of additional property. The easements would be needed in areas of each property that are undeveloped and through which the Bushkill currently flows. Approximately 2.88 acres of temporary easements would be required during construction. Approximately 0.2 acres of permanent easements would be required, which would be approximately 5 feet on each side of the center of the new stream channel where it crosses private property. The Proposed Action is not expected to significantly modify property in floodplains, except that it would create a more confined stream channel and result in a beneficial increase in the area of the

floodplain and reduce erosion, sedimentation, and stream channel migration.

The proposed improvements will sustain area property values and community character within the neighborhood. This construction will provide flood, erosion, and sedimentation control and support and enhance the town's ability to carry out essential governmental operations during future storm events.

Cultural resources such as archaeological, historic & recreational aspects
On April 23, 2019, the NY SHPO reviewed the Proposed Action and determined that no historic properties will be affected by this undertaking. All work will be completed in previously disturbed areas and therefore are not areas where archeological artifacts would be intact.

Agricultural, aquacultural, and forestry resources
It is possible during the short-term construction activities could impact local water quality and these economic resources. However, Best Management Practices (BMPs) will be used during construction to minimize potential impacts to these resources. These measures include, but are not limited to, installing temporary silt fencing on land to prevent soil and/or debris from being washed off-site and installing turbidity curtains in the water to minimize sediment transportation from the area of disturbance to the larger body of water per the soil erosion control plan. The Proposed Action will be completed in accordance with all applicable federal, state and local permit requirements and conditions. Permits required for the project will be obtained prior to commencing work and all permit requirements and conditions will be adhered to by the recipient. Thus, only minor temporary impacts are anticipated from the Proposed Action.

Wetland Evaluation
The purpose of wetland evaluation is to consider factors relevant to a Proposed Action's effect on the survival, quality, and beneficial function and values of the wetland. These factors include public health (including water supply and water quality), maintenance of natural systems, cost increases attributed to construction in wetland, and other uses of wetland in the public interest.

Public health, safety, and welfare, including water supply, quality, recharge, and discharge; pollution; flood and storm hazards and hazard protection; and sediment and erosion.

The purpose of this project is to improve the capacity of the stream and address the shift in the channel's course to relieve the danger to County Route 42 and properties on the north and south banks of the channel. It is anticipated that this project will address mitigation of flooding of the Watson Hollow Road area during future storm events and will be designed and implemented to provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. The Proposed Activity would result in temporary impacts to wetland areas. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

Maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna; species and habitat diversity and stability; natural hydrologic function; wetland type; fish; wildlife; timber; and food and fiber resources.
Implementation of the Proposed Action will comply with all best management practices and permit requirements and conditions set forth in the applicable Federal, State, and local permits. The Proposed Action will require an individual Section 404 permit under the Clean Water Act, NYSDEC Protection of Waters (ECL Article 15 and Excavation and Fill in Navigable Waters) and Local Floodplain Development Permit.

To implement the Proposed Action, tree clearing will occur on 1.15 acres of land. The New York State Natural Heritage Program (NYSNHP) database search completed on October 12, 2018, had records of bald eagle (Haliaeetus leucocephalus) nesting within 0.8 mile of the project site, timber rattlesnake (Crotalus horridus) within 1.5 miles of the project site, spreading rush (Juncus subcaudatus) within 0.5 mile of the project site, and nodding pogonia (Triphora trianthophoros, ssp. Trianthophoros) within 0.5 mile of the project site. (See attached New York Natural Heritage Program Review.) In its January 25, 2019, jurisdictional review, NYSDEC stated that based on the project area's distance to the nearest known bald eagle nest, this project is not likely to impact bald eagles. No further review is necessary for bald eagles. Impacts to the species and potential suitable habitat would be assessed following the Timber Rattlesnake Guidelines. At a minimum, conservation measures and take avoidance measures may be needed during construction of this project. Additional information may be needed to determine if suitable habitat for this species will be impacted. If project-related impacts cannot be fully avoided or minimized, an Incidental Take permit pursuant to Article 11, Title 5, Endangered and Threatened Species may be required. Implementation of the Proposed Action would follow the NYSDEC recommendations.

The USFWS, New York Ecological Services Field Office was contacted through the Information, Planning, and Conservation System (IPaC) regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The Official Species List identifies one endangered and two threatened species that are potentially associated with the project site: the endangered Indiana bat (IB, Myotis sodalis) and the threatened northern long-eared bat (NLEB, Myotis septentrionalis) and bog turtle (Clemmys muhlenbergii). No critical habit for these species was identified in IPaC. The proposed rehabilitation project would not jeopardize the continued existence of ESA species or destroy or adversely modify their critical habitat. On this basis, GOSR has determined that the Proposed Action may affect but is not likely to adversely affect the NLEB, IB, bog turtle, or migratory birds.

Project implementation is conditioned upon issuance of applicable federal and state permits and would be constructed in accordance with federal and state permit conditions. Conservation measures would be employed to avoid impacts to bats, including a tree survey prior to any project-related disturbance and clearly demarcating trees to be protected compared with those to be cut if any are identified in the survey. Tree clearing would be conducted according to the recommendations of the NYSDEC jurisdictional review on January 25, 2019. To avoid potential take, NYSDEC recommends that any tree clearing be conducted between November 1 and March 31, when bats are inactive in hibernation sites. It also recommends that snag and cavity trees remain uncut, unless their removal is necessary for protection of human life and property.

In addition to the timing restrictions for threatened and endangered species, as a Class A(TS) stream, it is anticipated that no in-stream work will be permitted between September 30 and April 30th. As a result, the anticipated construction period is May 2019 (or slightly earlier to set up construction entrances, staging and traffic control measures) to September 30, 2019.

The Proposed Activity would result in temporary impacts to wetland areas. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

Cost increases attributed to wetland-required new construction and mitigation measures to minimize harm to wetlands that may result from such use.

The proposed project activities will be completed in accordance with construction best management practices and all applicable federal, state, and local permits and their requirements and conditions, which will be obtained prior to commencing work. Consequently, there would be no additional anticipated cost increases for mitigation measures to minimize harm to wetlands. There would be financial benefits gained

by proceeding with the Proposed Action. The Proposed Action will reduce exposure to flood damage and the risk of economic loss associated with rebuilding and repairs for repetitive losses and generate economic savings from reduced future costs associated with continued risks to infrastructure to flooding, erosion, and stream channel migration.

Other uses of wetlands in the public interest, including recreational, scientific, and cultural uses.
The Proposed Action would require both temporary and permanent easements, that would not result in any changes in land use or involve the acquisition of additional property. The easements would be acquired in areas of each property that are undeveloped and through which the Bushkill currently flows. Approximately 2.88 acres of temporary easements would be required during construction. Approximately 0.2 acres of permanent easements would be required, which would be approximately 5 feet on each side of the center of the new stream channel where it crosses private property. The Proposed Action would not change current land use or require the acquisition of additional property and would, therefore, not affect any current uses of the project area.

Step 5. **Identify methods to minimize the potential adverse impacts within a floodplain and wetland and to restore and preserve the natural and beneficial values.**
The Proposed Action is designed to reduce the effects of flooding and erosion on infrastructure and the residences along the banks of the Bushkill. All phases of the The Proposed Action include widening of the floodplain and creation of a more confined stream channel that would mimic a healthy functioning stream. These elements would have beneficial effects on the natural and beneficial values of the floodplain.

The Proposed Activity would result in temporary impacts to wetland areas. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project would not damage the function and beneficial values of these wetlands. Implementation of the Proposed Action will comply with all best management practices and permit requirements and conditions set forth in the applicable Federal, State, and local permits. The Proposed Action will require a NYSDEC Article 15 Protection of Waters Permit, CWA Section 401 Water Quality Certification, a USACE Section 404 permit, and a Local Floodplain Development Permit. The project will obtain coverage under the current SPDES General Permit for Stormwater Discharge from Construction Activity (GP-0-15-002), and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that conforms to requirements of the General Permit. Once the streambank has been rehabilitated, the wetland areas will be restored.

Step 6. **Reevaluate the Alternatives and Proposed Action.**
The “no action” alternative would not address the purpose and need of the Proposed Action. Without the Proposed Action, the impacted community would be left more susceptible to future floods than it would after the implementation of the Proposed Action. Therefore, the “no action” alternative examined is not practicable, and the Proposed Action is still practicable. Disturbance of the floodplain and wetlands are necessary to protect County Route 42 and properties on the north and south banks of the channel and support and enhance the town’s ability to carry out essential governmental operations during future storm events. Since the Proposed Action would not result in an increase in impervious surface, or a change in land use, and does incorporate elements to improve the long-term function and beneficial values of the floodplain and wetland, no long term adverse effects are anticipated. Construction activities will adhere to the conditions of all applicable permits, which will be obtained prior to construction. This will minimize potential temporary adverse impacts on the floodplain and wetlands during construction.

The impacts of these alternatives will be re-evaluated in response to any public comments received.

Step 7. **If the only practicable alternative is locating in a floodplain, publish a final public notice.**
It is the finding of this report that there is no practicable alternative to locating the project in the floodplain and wetlands. The location within floodplain and wetlands cannot be avoided to protect the Dalton Point area.

A combined Notice of Intent to Release Funds (NOIRROF)/final public notice was published in the Kingston Daily Freeman newspaper by the Governor's Office of Storm Recovery on August 28, 2019, in compliance with Executive Orders 11988 and 11990 and 24 CFR Part 55. The final notice details the reasons why the project must be located in the floodplain, a list of alternatives considered, and all mitigation measures taken to minimize adverse impacts and preserve natural and beneficial floodplain values. All comments received during the comment period will be addressed prior to funds being committed to the proposed project. The comment period started with the Notice of Intent to Release Funds (NOIRROF)/final public notice on August 28, 2019. The comment period for the Final Notice expires at 5pm on September 12, 2019. The Final Notice was also sent to the following state and Federal agencies on August 28, 2019: the US Army Corps of Engineers, HUD, FEMA, USFWS, EPA, NYSDEC, NY SHPO, NYS Office of Parks, Recreation and Historic Preservation, NYS DOT, and the NYS Division of Homeland Security and Emergency Services. The notice was also sent to the Town of Olive.

Step 8. **Implement the Proposed Action**
GOSR, operating under the auspices of the New York State Homes and Community Renewal's (NYSHCR) Housing Trust Fund Corporation, is the responsible entity. GOSR will ensure that the Proposed Action, as described above, is executed and necessary language will be included in all agreements with participating parties. Implementation of the proposed action may require additional local and state permits, which could place additional design modifications or mitigation requirements on the Project. It is acknowledged there is a continuing responsibility by the responsible entity to ensure, to the extent feasible and necessary, compliance with Steps 5 through 7.

Attachments
Figure 1 - Bushkill Stream and Streambank Rehabilitation - Project Location
Figure 2 – Bushkill Stream and Streambank Rehabilitation - Project Area
Figure 3 – Bushkill Stream and Streambank Rehabilitation - Flood Zones
Figure 4 – Bushkill Stream and Streambank Rehabilitation - Freshwater Wetlands
FIRM Panel 36103C0862H
Site Plans
Early Floodplain Notice
Early Floodplain Notice Affidavit of Publication

Project Location

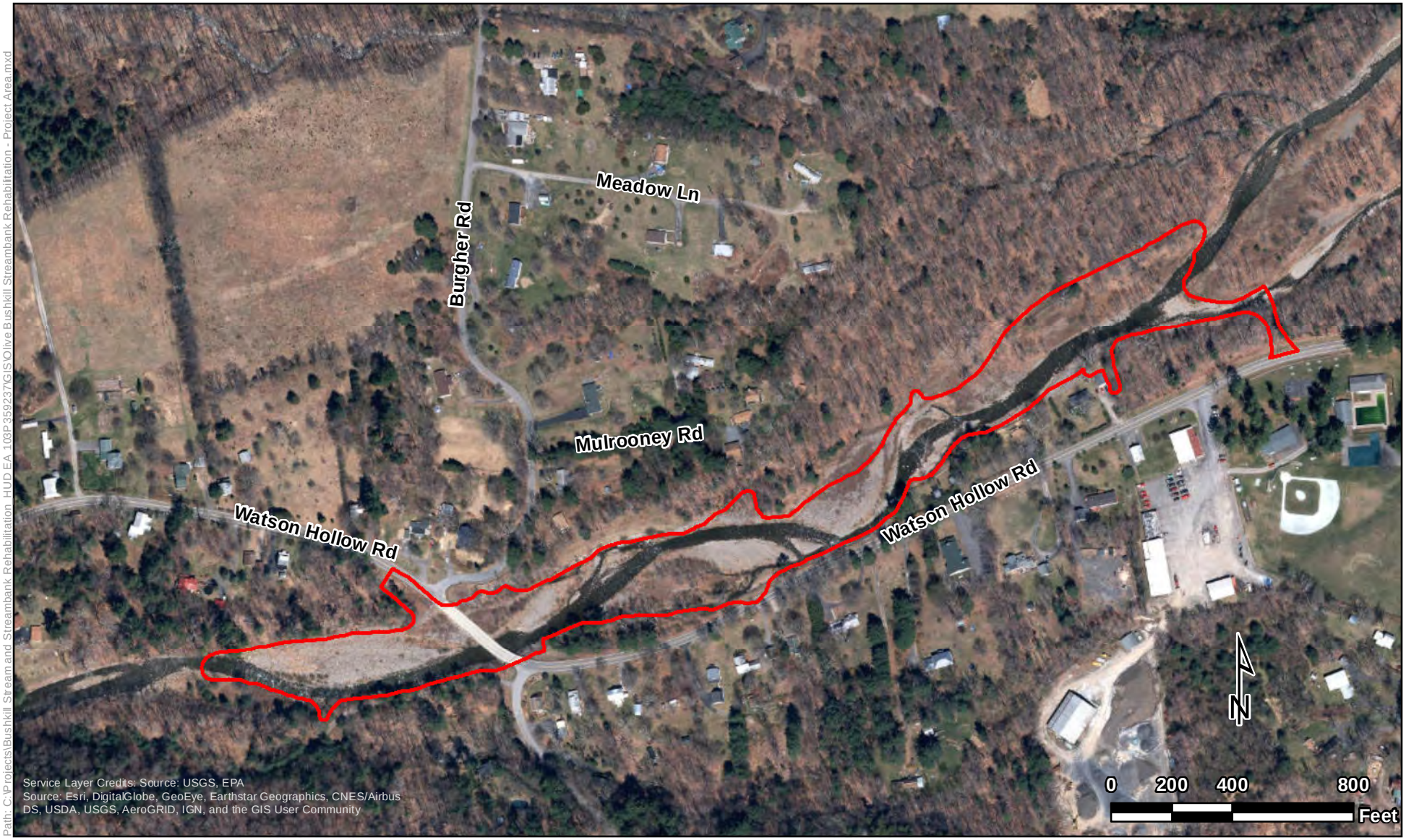
Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1



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Project Area

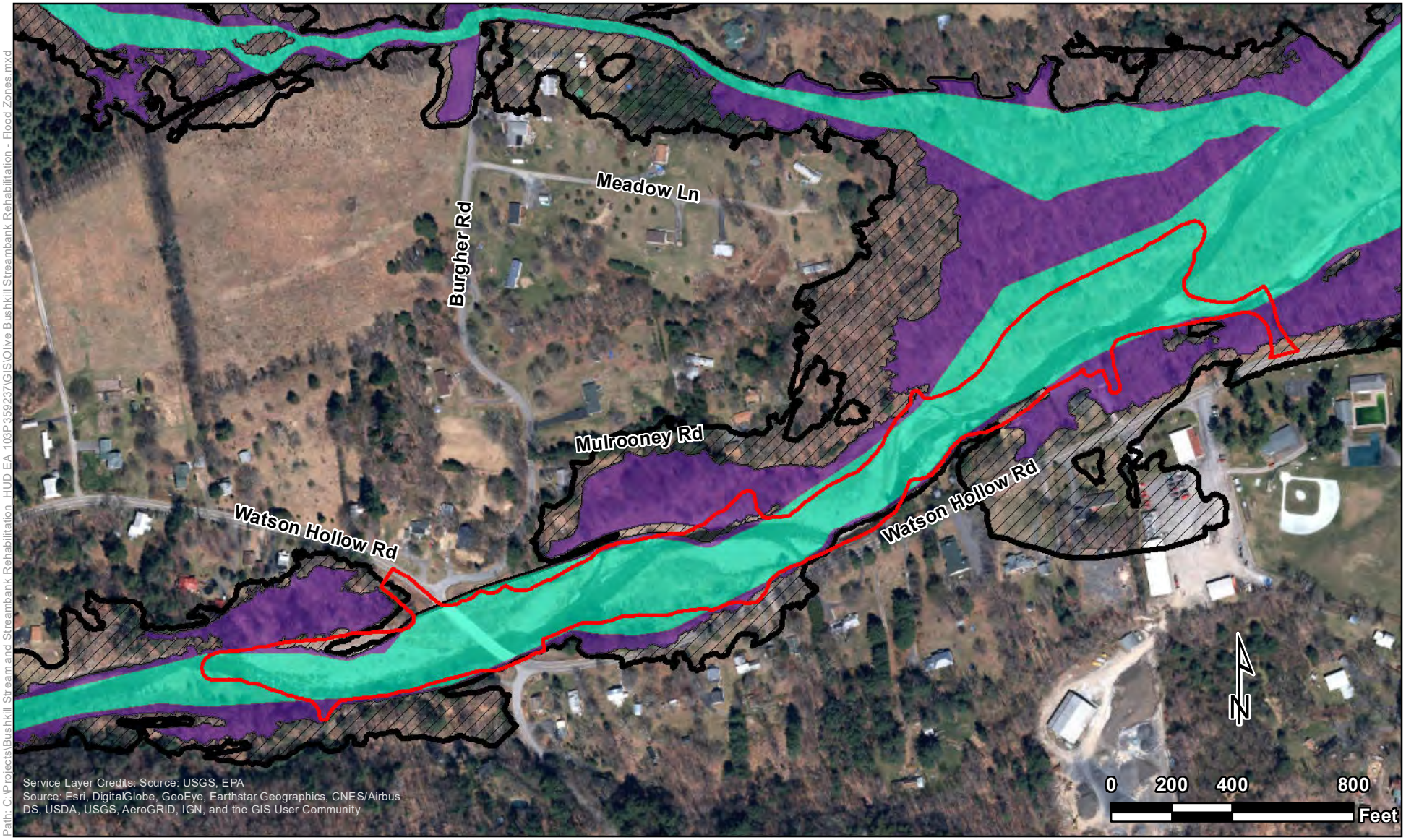
Legend

Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 2



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Legend

- Project Area

Flood Zones

- Zone AE- within the 1% annual chance flood
- Zone AE- Floodway within the 1% annual chance flood
- Zone X-within the 0.2% annual chance of flood
- Zone X- area of minimal flood hazard

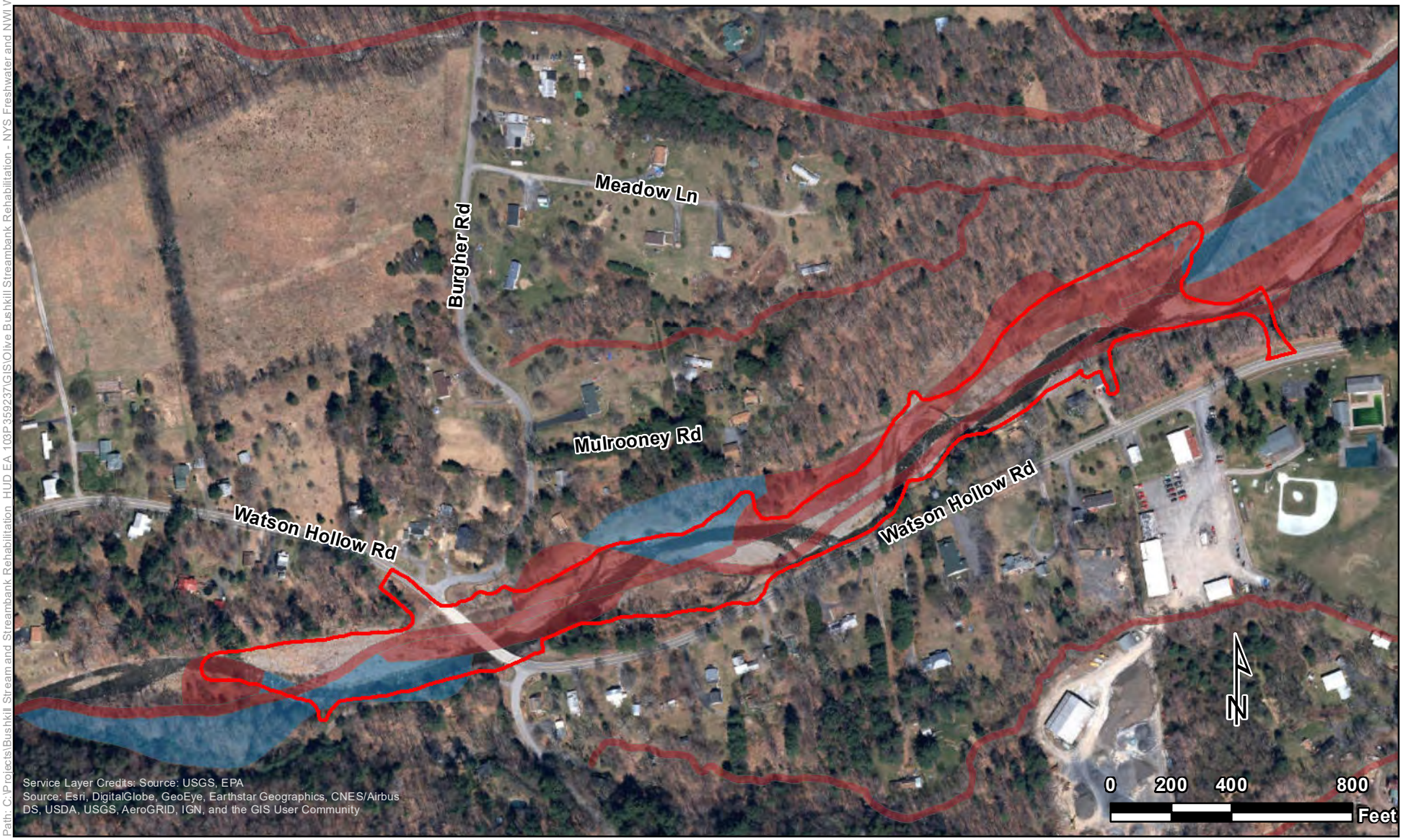
Flood Zones

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Figure 3

Tetra Tech, Inc

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - NYS Freshwater and NWI Wetlands.mxd



Legend

- Project Area
- NYS Freshwater Wetlands
- NYS Freshwater Wetlands Buffer

NWI Wetlands

- Freshwater Forested/Shrub Wetland
- Riverine

NYS Freshwater and NWI Wetlands

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Figure 4

Tetra Tech, Inc

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by the New York State Office of Cyber Security & Critical Infrastructure from photography dated April 2009.

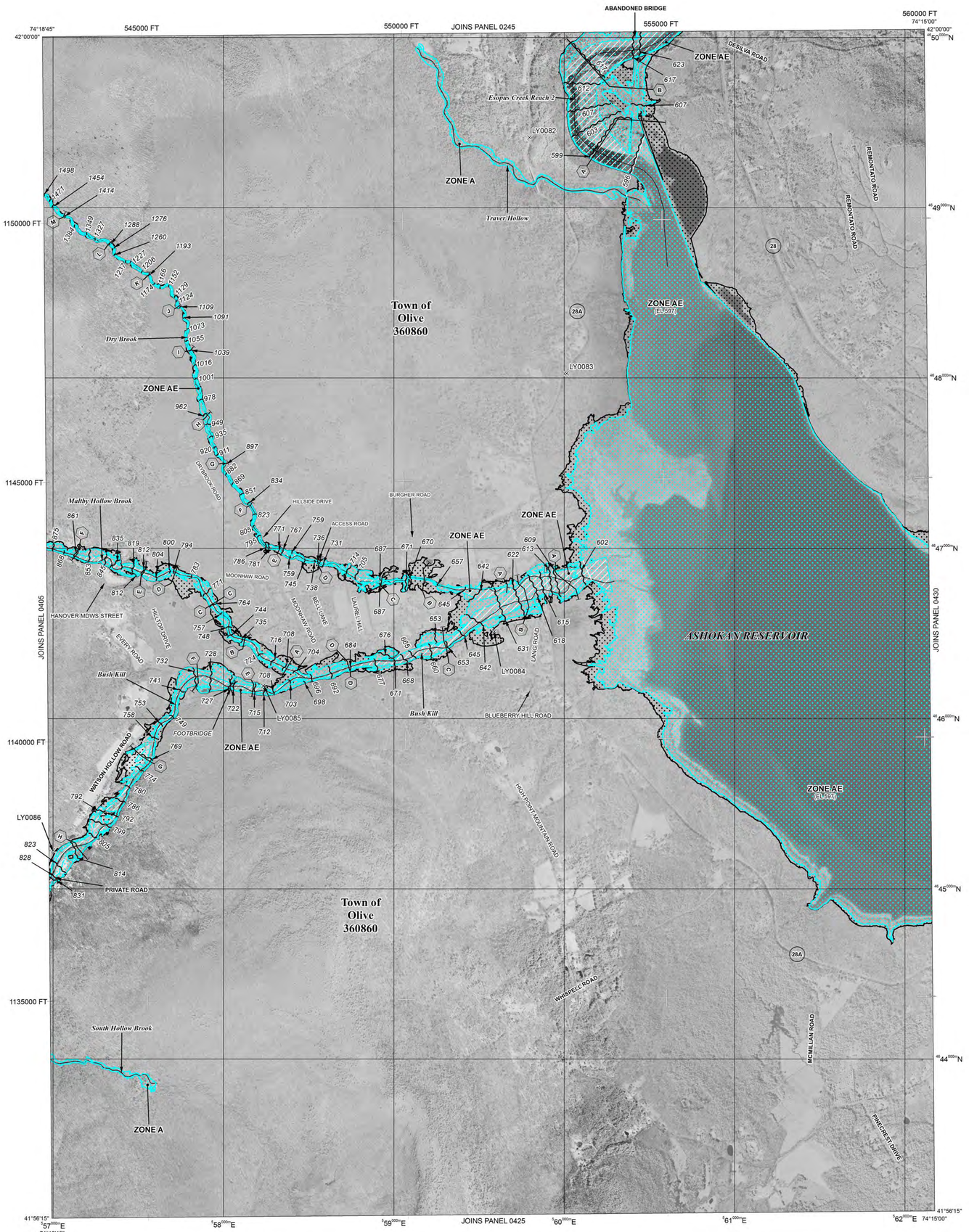
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/national-flood-insurance-program.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 3 — 3 — Limited detail cross section line
- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3976000mN — 1000-meter Universal Transverse Mercator grid values, zone 18N
- 600000 FT — 5000-foot grid values: New York State Plane coordinate system, East zone (FIPSZONE 3101), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ● M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 25, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
November 18, 2016 - to update map format, to change Base Flood Elevations, and to change Special Flood Hazard Areas

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0410F

FIRM
FLOOD INSURANCE RATE MAP

for ULSTER COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
OLIVE, TOWN OF	360860

PANEL 410 OF 910
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36111C0410F

MAP REVISED
NOVEMBER 18, 2016

Federal Emergency Management Agency

CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

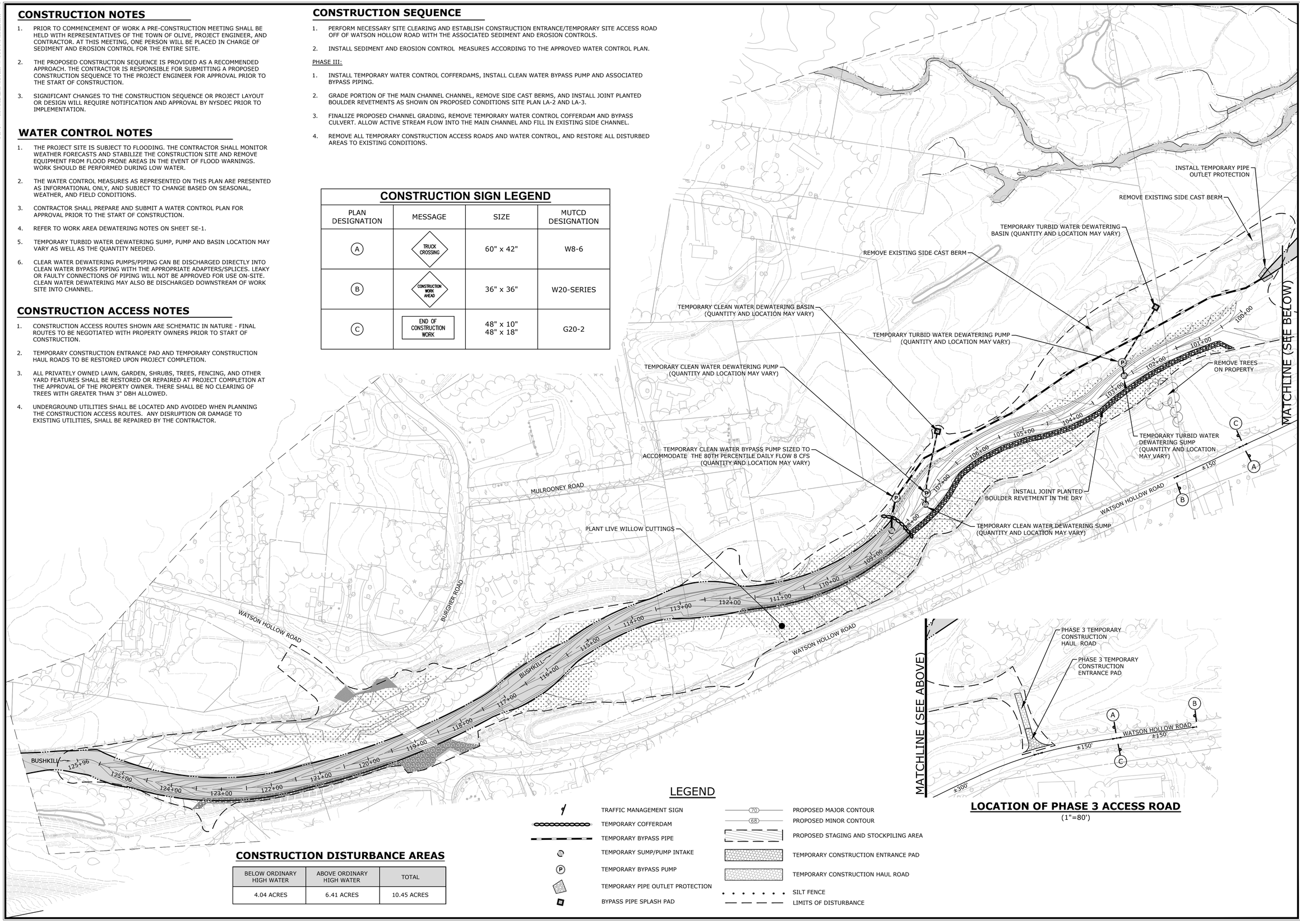
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE III:

1. INSTALL TEMPORARY WATER CONTROL COFFERDAMS, INSTALL CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL, REMOVE SIDE CAST BERMS, AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2



LOCATION OF PHASE 3 ACCESS ROAD
(1"=80')

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES

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New Paltz, NY 12561
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www.mminc.com

DESCRIPTION | DATE | BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 3

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 15 OF 17

SHEET NAME: **CP-3**

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EARLY NOTICE OF A PROPOSED ACTIVITY
IN A 100-YEAR FLOODPLAIN AND WETLANDS

BUSHKILL STREAM AND STREAMBANK REHABILITATION PROJECT
HAMLET OF WEST SHOKAN,
TOWN OF OLIVE, ULSTER COUNTY, NEW YORK,
JANUARY 29, 2019

To: All interested Agencies, Groups, and Individuals

This is to give notice that the Governor's Office of Storm Recovery (GOSR), an office of the New York State Housing Trust Fund Corporation (HTFC), has received an application from the Town of Olive to use Community Development Block Grant – Disaster Recovery (CDBG-DR) funding from the NY Rising Community Reconstruction Program to implement Bushkill Stream and Streambank Rehabilitation Project in the Hamlet of West Shokan, Town of Olive, Ulster County, New York (hereinafter, the "Proposed Activity") and is conducting an evaluation as required by Executive Order 11988 and Executive Order 11990 in accordance with U.S. Department of Housing and Urban Development (HUD) regulations (24 CFR Part 55).

There are three primary purposes for this notice. First, to provide the public an opportunity to express their concerns and share information about the Proposed Activity, including alternative locations outside of the floodplain and wetlands. Second, adequate public notice is an important public education tool. The dissemination of information about floodplains and wetlands facilitates and enhances governmental efforts to reduce the risks associated with the occupancy and modification of these special areas. Third, as a matter of fairness, when the government determines it will participate in actions taking place in floodplains or wetlands, it must inform those who may be put at greater or continued risk. Funding for the Proposed Activity will be provided by the HUD CDBG-DR program for storm recovery activities in New York State.

The Proposed Activity is needed to mitigate flooding of the Watson Hollow Road area during future storm events and to provide long-term protection from flooding to area residents, the town's emergency responders, and the area's current infrastructure. Flooding from recent storms has resulted in significant erosion of the Bushkill's channel and banks that resulted in constrictions, reduced capacity, and a shift in the channel's course that, if not addressed, would present an immediate danger to County Route 42 and properties on the north and south banks of the channel. The town envisions this project as a long-term solution to support and enhance the town's ability to carry out essential governmental operations during future storm events.

The Town of Olive has requesting $1,752,622.50 in CDBG-DR funding for design and construction of stream channel and streambank rehabilitation along the Bushkill stream just west of the Ashokan Reservoir. The Bushkill stream runs generally parallel to Watson Hollow Road in the project area. The proposed restoration includes bank stabilization, increasing the floodplain width, stabilizing the channel bed by realigning the channel profile and adding armoring at specified locations along the project reach, and reinforcing the Watson Hollow bridge abutments.

The project area includes approximately 2,525 linear feet (LF) of channel beginning approximately 500 LF upstream of the Watson Hollow Road bridge and ending approximately 2,000 LF downstream of Watson Hollow bridge or 1,000 LF upstream of the Route 28A bridge.

The project will be undertaken in three phases. In the first phase, construction will occur within the most upstream portion of the project reach. The modifications will include concentrating the stream channel and widening of the floodplain area, stabilizing the streambank with joint planted boulder revetments or planting of live willow stakes, and fortifying the base of the Watson Hollow bridge along the right bank with grouted rip rap. In the second phase, which occupies the middle section of the project reach, the construction activities will include widening of the floodplain, and stabilizing the streambank with joint planted boulder revetments and/or planting of live willow stakes. The third phase, which will encompass the most downstream portion of the project reach, will involve the same modification as phase two as well as the removal of a side cast berm along the left bank.

To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and will remove approximately 120 trees, shrubs and bushes.

The Proposed Activity would result in temporary impacts to approximately 5.3 acres of Riverine and 1.2 acres of Freshwater Forested/Shrub Wetlands National Wetlands Inventory (NWI) wetland areas associated with Bushkill. All these wetland areas already have been disturbed by the existing bridge, Watson Hollow Road, and residential development along Bushkill. The project would not damage the function and beneficial values of these wetlands. Once the streambank has been rehabilitated, the wetland areas will be restored.

The Proposed Activity would result in permanent impacts to 9.75 acres of a 100-year floodplain and 0.43 acres of a 500-year floodplain, as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 36111C0410F, dated November 18, 2016. Approximately 8.88 acres of the Proposed Activity area within the 100-year floodplain are also within a floodway, which includes the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachments so that a one percent annual chance flood (100-year flood) can be accommodated without substantial increases in flood height. The project would create a more confined stream channel and result in a beneficial increase in the area of the floodplain.

Floodplain maps based on the FEMA Base Flood Elevation Maps and wetlands maps based on the NWI and New York State Department of Environmental Conservation (NYSDEC) data have been prepared and are available for review with additional information at http://www.stormrecovery.ny.gov/environmental-docs.

Any individual, group, or agency may submit written comments on the Proposed Activity or request further information by contacting Lori A. Shirley, Certifying Officer, Governor's Office of Storm Recovery, 99 Washington Avenue, Suite 1224, Albany, NY 12260; email: NYSCDBG_DR_ER@nyshcr.org. Standard office hours are 9:00 AM to 5:00 PM Monday through Friday. For more information call 518-474-0755. All comments received by February 13, 2019, will be considered.

AFFIDAVIT OF PUBLICATION

STATE OF NEW YORK,
Ulster County, ss:
City of Kingston.

EARLY NOTICE OF A PROPOSED ACTIVITY IN A 100-YEAR FLOODPLAIN AND WETLANDS
BUSHKILL STREAM AND STREAMBANK REHABILITATION PROJECT HAMLET OF WEST SHOKAN, TOWN OF OLIVE, ULSTER COUNTY, NEW YORK, JANUARY 29, 2019
To: All interested Agencies, Groups, and Individuals
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Lucinda Grinvalsky residing in Ballston Spa, New York, being duly sworn, deposes and says that she is the Regional Clerk of **21st Century Media Newspaper, LLC** a Corporation duly organized under the laws of the State of New York; that said Corporation is the publisher of **The Daily Freeman**, a daily newspaper published in the City of Kingston, County of Ulster and State of New York, and that the notice of which the annexed is a printed copy, has been regularly published in **The Daily Freeman**

ONCE DAILY for ONE DAY

To wit: on the 29th day of October, 2018

Lucinda Grinvalsky

Sworn to before me this
29th of January, 2019

DEBRA A. BECK
Notary Public, State of New York
01BE6072229
Qualified in Rensselaer County
Commission Expires April 01, 20 22

Notary Public

as a matter of fairness, when the government determines it will participate in actions taking place in floodplains or wetlands, it must inform those who may be put at greater or continued risk. Funding for the Proposed Activity will be provided by the HUD CDBG-DR program for storm recovery activities in New York State.

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#1737915

Appendix E
SHPO Correspondence

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

April 23, 2019

Ms. Lori Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
38-40 State Street
Albany, NY 12207

Re: GOSR
GOSR-Bush Kill Stream and Streambank Repairs
Town of Olive, Ulster County, NY
19PR00664

Dear Ms. Shirley:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO has determined that no historic properties will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA
Director, Division for Historic Preservation

Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

Via CRIS

April 17, 2019

Philip Perazio, Historic Preservation Technical Specialist
New York State Office of Parks, Recreation and Historic Preservation
Division of Historic Preservation
Peebles Island
P.O. Box 189
Waterford, New York 12188-0189

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York- Response to February 14, 2019 SHPO comments (PR00664)

Dear Mr. Perazio:

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), an office of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"), is serving as the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and request for consultation.

In accordance with Section 106 of the National Historic Preservation Act ("NHPA") of 1966, as amended (54 U.S.C. §306108), and its implementing regulations, 36 Code of Federal Regulations ("CFR") Part 800, this letter describes prior disturbance of the project site in response to SHPO's Comment Letter on the project (February 14, 2019).

- Areas of disturbance during Hurricane Irene and Tropical Storm Lee, aside from severe channel scouring, were noted along the north and south banks of the Bushkill. Most notably, the events of 2011 caused significant erosion of residential properties along the south bank of the stream. The loss of soils and other aggregates ranged from a few-to-several feet of these residential properties. Due to velocity coupled with depth of the floodwaters, these lost soils were washed into Lake Ashokan, along with portions of Watson Hollow Road (Ulster County Highway 42).

- South Bank Disturbance: The residences constructed to the north of Watson Hollow Road were constructed in the mid-1970s. The area on which these buildings are erected was formerly utilized as an agricultural area (as was the entire Watson Hollow Valley) following removal of the first growth trees used as a resource for area tanneries. Local reports also indicate that the residential area between NY S.R. 28A and the Watson Hollow Bridge was excavated extensively to provide for necessary infrastructure improvements allowing for development, to include the digging of water wells on each property, septic tank burials, and leach field installations. In fact, leach field degradation resulting from erosion caused by flooding is utilized as one rationale

for this project, to mitigate against untreated residential sewage entering the Bushkill and polluting the stream, not to mention Lake Ashokan, which provides drinking water for residents of NYC.

- North Bank Disturbance: Areas north of Bushkill were also utilized as agricultural areas for at least 150 years prior to the introduction of residential housing in the area during the mid-1970s. Until fairly recently, the method for dealing with debris and detritus left in the wake of high-water events in the stream channel has been to remove rock and large wood material by excavator and bulldozing. This material was then "sidecast" onto the north bank to create a berm presently ranging from 20-25 feet in width and 8-12 feet in height. Water hydraulics during present storm events are thus altered in these areas, causing an undercutting of soils from these areas, and resulting collapse of these sidecast berms. Soils are carried into Lake Ashokan.

- North Bank Staging Area, Phase I: This area, noted on page 13 of the engineer's drawings, is a previously disturbed area, created in 1992, when Ulster County Department of Public Works replaced its Watson Hollow Road Bridge. This area was built-up at that time with large sidecast materials and covered with gravel. The County DPW then constructed a construction equipment path from the staging area to the water's edge (now under approximately 12 feet under deposition left after Hurricane Irene). This project will utilize this former staging area for the same purpose utilized by Ulster County in 1992.

If you have any questions or require additional information regarding this request, please feel free to contact me (518) 474-0755 or via email at Lori.Shirley@nyshcr.org, and please advise us on how to proceed. Thank you for your time and consideration.

Sincerely,

Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

February 14, 2019

Lori Shirley
Governor's Office of Storm Recovery
38 State St
Albany, NY 12207

Re: GOSR/ HTF/ HUD CDBG-DR
Bush Kill Stream and Streambank Repairs
from County Route 42 to NY 28A bridge, West Shokan, Town of Olive/ Ulster County.
19PR00664

Dear Ms. Shirley:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the submitted materials in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/ Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

The project APE is in an archaeologically sensitive area. Some portions are actively scoured by the stream. We have no further concerns regarding these areas. For the remainder, we recommend that a Phase I archaeological survey be conducted of locations where ground-disturbing activities are proposed, unless substantial prior ground disturbance can be documented. If we can be of further assistance, please contact Philip Perazio (518) 268-2187 Philip.perazio@parks.ny.gov.

If I can be of further assistance, please contact me at (518) 268-2175 Larry.moss@parks.ny.gov

Sincerely,

L Moss

Larry K Moss, Historic Preservation Technical Specialist

CC: Joseph Fischl, Tetratech

Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

Via Electronic Mail

January 28, 2019

Mr. Larry Moss
Historic Preservation Technical Specialist
New York State Office of Parks, Recreation and Historic Preservation
Division of Historic Preservation
Peebles Island
P.O. Box 189
Waterford, New York 12188-0189

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Mr. Moss:

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), an office of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"), is serving as the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and request for consultation.

GOSR processes environmental reviews for projects funded with HUD CDBG-DR on a case-by-case basis. A consultation request for the project described herein will also be sent to the Tribal Historic Preservation Offices for the Delaware Nation, the Delaware Tribe of Indians, the Stockbridge-Munsee Community Band of Mohicans and the St. Regis Mohawk Tribe. In accordance with Section 106 of the National Historic Preservation Act ("NHPA") of 1966, as amended (54 U.S.C. §306108), and its implementing regulations, 36 Code of Federal Regulations ("CFR") Part 800, this letter serves as notification of the proposed action.

Proposed Project Description: GOSR proposes to fund the design and construction of improvements to approximately 3,060 linear feet of the Bush Kill stream channel and stream banks, as well as repairs to abutments of a bridge span that conveys County Route 42 across Bush Kill in the Hamlet of West Shokan, Town of Olive, Ulster County, New York (Project). This project involves rehabilitation of six Potential Flood Hazard Areas (PFHA's) along a reach of the Bush Kill, from approximately 500 linear feet (LF) upstream of the Watson Hollow CR 42 Bridge, east to approximately 1,000 LF upstream of the intersection of the Bush Kill with NY Route 28A. These PFHA's are identified as significant areas of concern by the Town of Olive through a LFA conducted by NYCDEP. The six PFHAs project elements are: #1: reduce the risk of channel migration through bank armoring or other acceptable measures; #2: repair Watson Hollow Bridge scour and increase conveyance; #3: Create floodplain connectivity by removing a sidecast berm and reconnecting the

channel to its floodplain and alleviate erosion; #4: Debris management. #5: Stabilizing the bank to withstand the shear stress associated with the flood waters and mitigating head cut; #6: stabilize the bank to withstand the shear stress associated with flooding. To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and removing a total of 118 trees.

Existing Conditions: Two bridges are located within the project area. The State Route 28A bridge is located approximately 1,500 feet upstream of the Ashokan Reservoir and originally consisted of two bridge openings spanning separate segments of the channel. The bridge segments were originally built in 1911 and were repaired several times. The County Route 42 (Watson Hollow Road) bridge is located approximately 4,600 feet upstream of the Ashokan Reservoir. The bridge was originally constructed as a three-span, two-pier bridge. It was replaced and realigned in 1992 with a single-pier bridge.

Upstream of the project area, the Bush Kill can be characterized as a steep, confined channel with very little floodplain. Raw, eroding banks can be observed at many locations along the channel upstream of the project area. Large, active bank failures, some of which threaten roads, are present along the channel. This channel instability upstream of the project area represents a source of excessive sediment, which is transported downstream during large flood events.

Just upstream of the County Road 42 bridge, the Bush Kill transitions from a confined valley with high, steep banks to a wide and gently sloping valley. As this portion of the valley became more populated and developed, large floodplains that once bordered the Bush Kill became obstructed by berms to protect homes and roadways built on the floodplain. In addition, the channel was excavated and significantly widened in the 1980s to create more capacity within the channel, further disconnecting the Bush Kill from its floodplain. This, in combination with a high supply of sediment from upstream, has resulted in a laterally dynamic, multithread channel with significant sediment aggradation throughout the reach. Continual aggradation has created bank erosion along significant portions of this reach, potentially threatening bridges and homes.

Potential Project Effects: The Project requires bank armoring, bridge scour repair, debris management, bank stabilization and tree removal at various locations within the channel and along portions of the bank as described above.

Area of Potential Effects: In addition to the locations immediately effected by the drainage improvements in the Town of Olive, Ulster County, NY, described above, the Area of Potential Effects (APE) also includes a 50-foot buffer zone around the work area. Consideration of the impact on cultural resources of this project includes all potential resources within the APE.

The proposed stream and streambank rehabilitation area covers approximately 3,060 linear feet along the Bush Kill from the County Route 42 Bridge, east to the intersection of the Bush Kill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York.

Assessment of Effects: The assessment of effects on cultural resources resulting from the streambank rehabilitation in the town of Olive, Ulster County, NY is based primarily on any cultural resources in or near the APE recorded in the New York State Cultural Resource Information System (NYS-CRIS).

According to NYS-CRIS, the entire project area is located within an archaeologically sensitive area. A prehistoric archaeological site, the West Shokan Rock Shelter (also referred to as the Bush Kill Rock Shelter [USN# 11111.000015; NYSM 8112]), has been identified approximately 260 feet south of the APE.

Civil and residential construction in the project area throughout the 20th century, combined with extensive channel widening and alignment along the Bush Kill, may have had a negative impact on the integrity of any archaeological

deposits in the vicinity. However, due to the project area's proximity to a water source, its location within an archaeologically sensitive area, and the identification of a nearby rock shelter, there remains the possibility that subsurface cultural resources may be impacted by the proposed work.

Request for Comment: The purpose of this letter is to initiate consultation pursuant to Section 106 of the NHPA per the implementing regulations at 36 Code of Federal Regulations (CFR) Part 800. GOSR respectfully requests your review of the proposed Project described herein. If you have any questions or require additional information regarding this request, please feel free to contact me (518) 474-0755 or via email at Lori.Shirley@nyshcr.org. Thank you for your time and consideration.

Sincerely,

Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207

Enclosures:
Project Location Map
Site Plan
Photos

Project Location

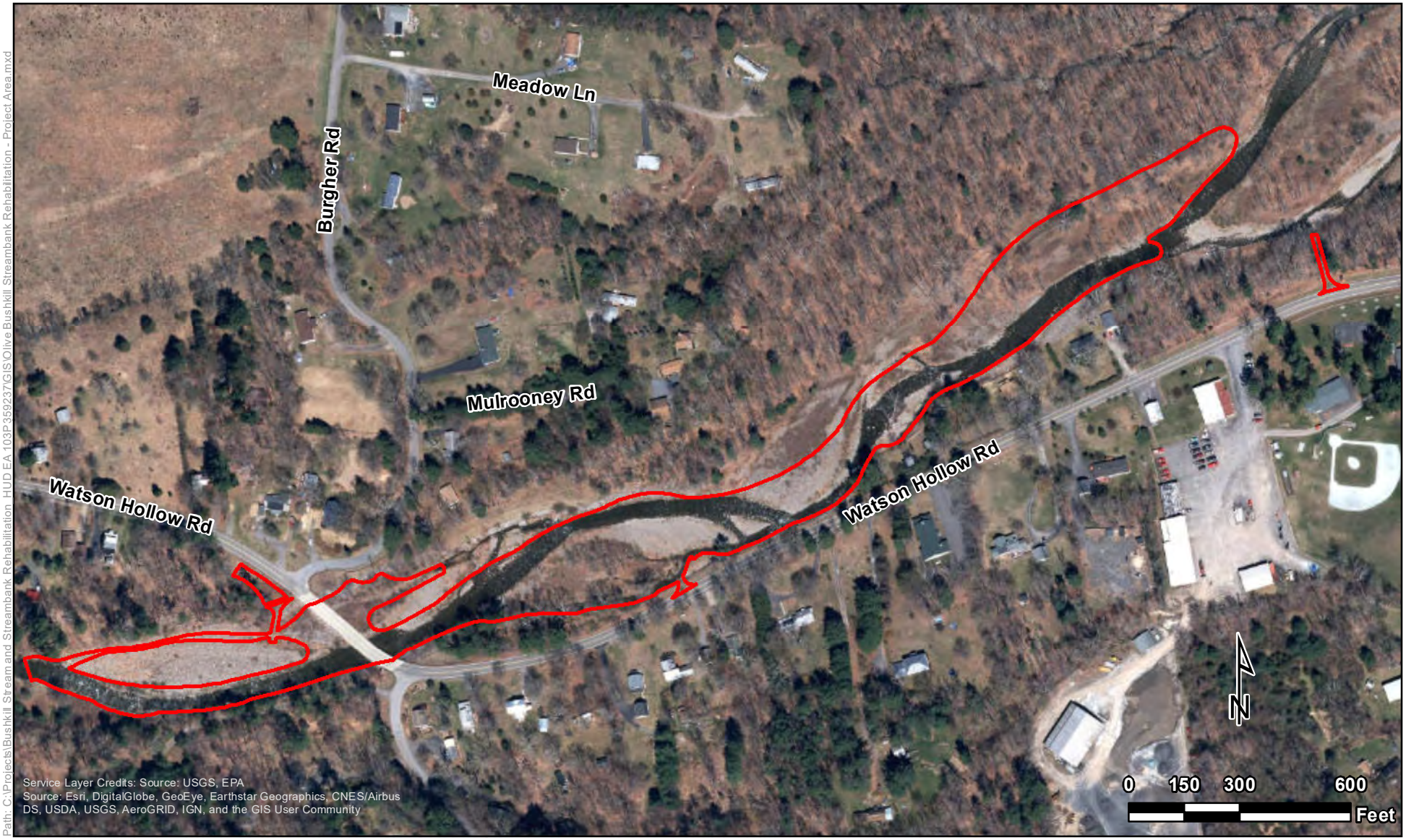
Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1



Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Project Area.mxd

Project Area

Legend

Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

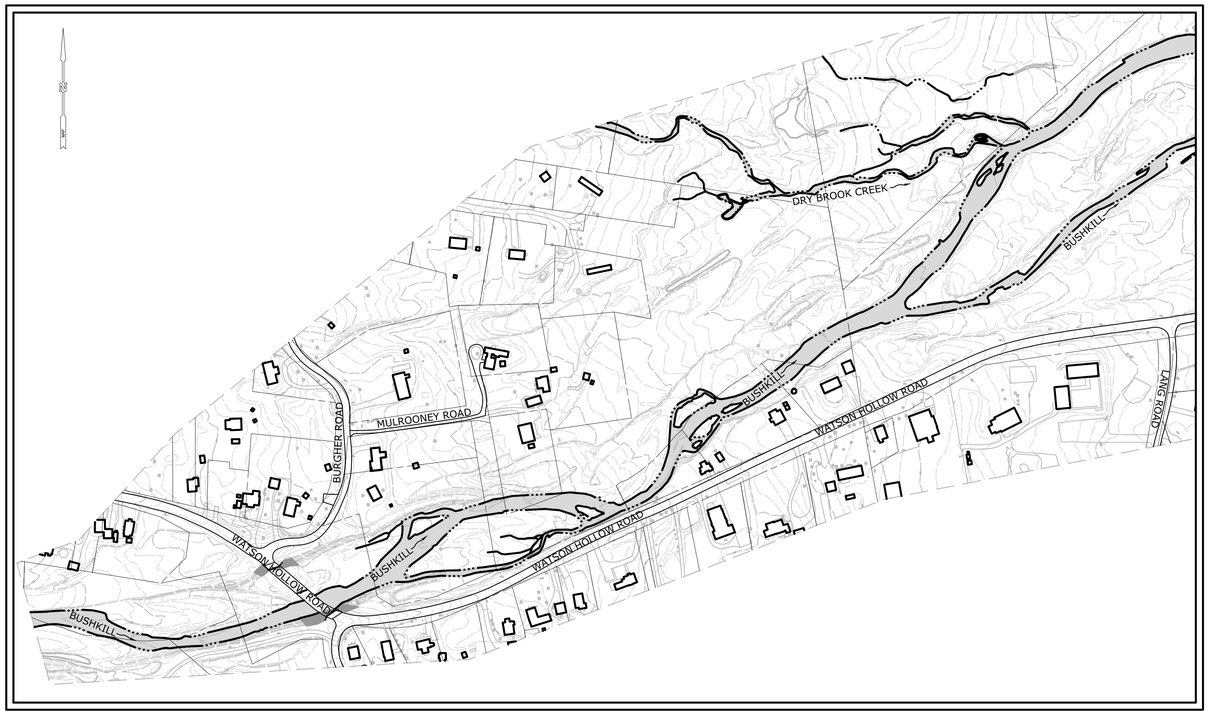
Tetra Tech, Inc

Figure 2

BUSHKILL CREEK STREAM AND STREAM BANK STABILIZATION DESIGN

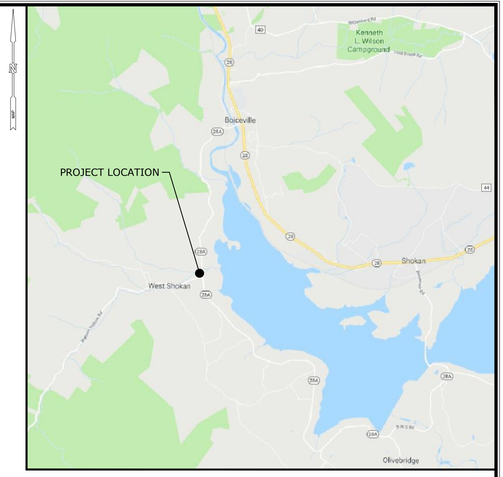
WATSON HOLLOW ROAD
TOWN OF OLIVE, NEW YORK

PRELIMINARY DESIGN (60%)
NOVEMBER 2, 2018
MMI#: 5909-01



PROJECT SITE VICINITY MAP

0' 100' 200'
0 1/2" 1"
SCALE 1" = 300'



LOCATION MAP

0' 3000' 6,000'
0 1/2" 1"
SCALE 1" = 1000'

PREPARED FOR:

TOWN OF OLIVE
45 WATSON HOLLOW ROAD
WEST SHOKAN, NY 12494

LIST OF DRAWINGS

NO.	NAME	TITLE
01	--	TITLE PLAN
02	IN-1	INDEX PLAN
03-05	EX 1-3	SITE PLAN - EXISTING CONDITIONS
06-08	GR 1-3	SITE PLAN - GRADING
09-11	LA 1-3	SITE PLAN - LAYOUT
12	PR-1	STREAM CHANNEL PROFILE
13-15	CP 1-3	CONSTRUCTION PLAN
16	SE-1	DETAILS - SEDIMENT AND EROSION CONTROL
17	DE-1	DETAILS - CHANNEL AND SITE RESTORATION

FUNDING PROVIDED THROUGH THE GOVERNOR'S OFFICE OF STORM RECOVERY'S
NEW YORK RISING COMMUNITY RECONSTRUCTION PROGRAM

PREPARED BY:

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New Paltz, New York 12561
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811 Know what's **below.** **Call** before you dig. www.cbyd.com

MMI NO.: 5909-01
SUBMITTED: OCTOBER 2018

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Plotted: 11/2/2018 11:29 AM By: JOHN@MACBROOM.COM
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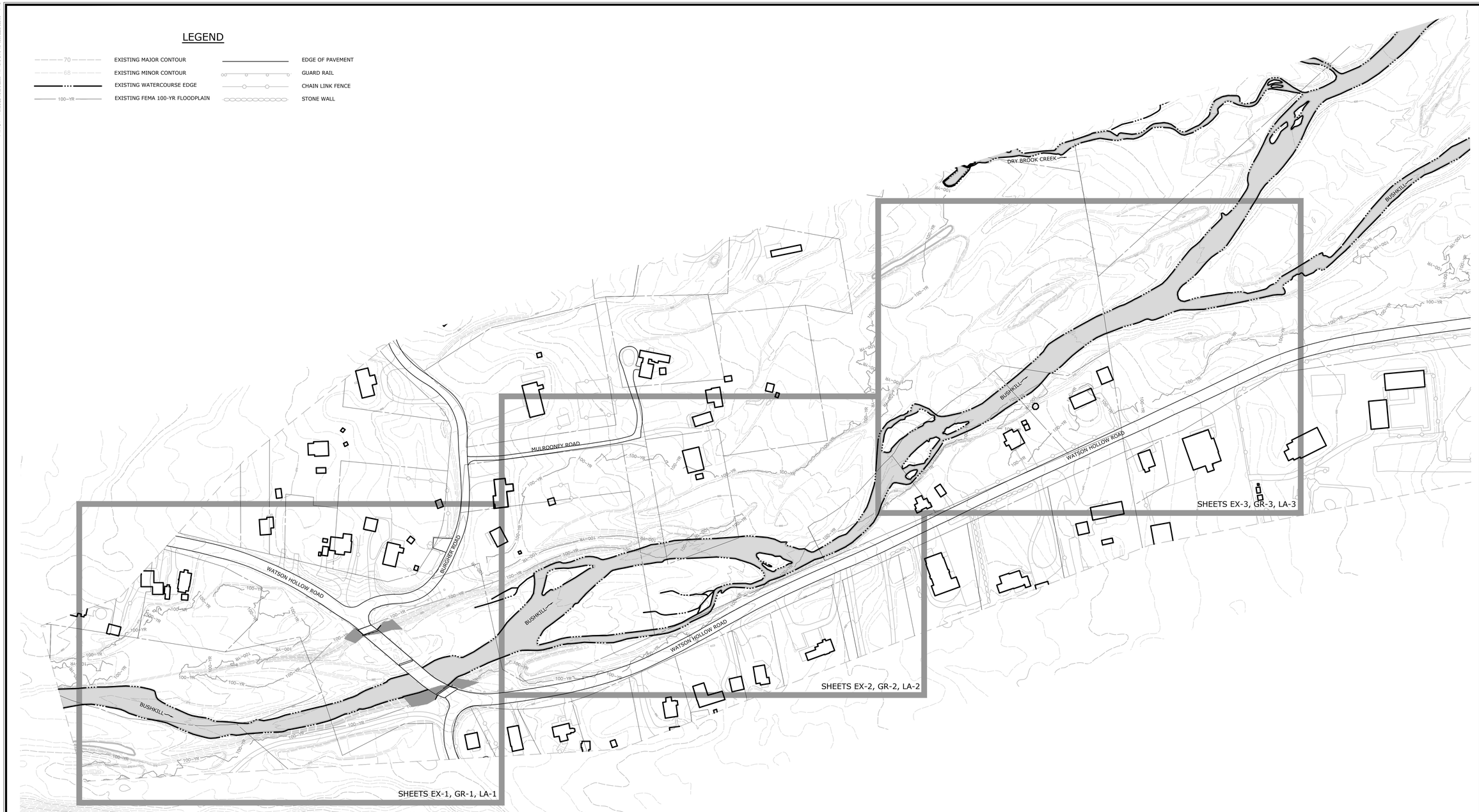
Xref Dependent Files: 5909-01 XR-TOPO.dwg

LEGEND

70 EXISTING MAJOR CONTOUR	EDGE OF PAVEMENT
68 EXISTING MINOR CONTOUR	GUARD RAIL
EXISTING WATERCOURSE EDGE	CHAIN LINK FENCE
100-YR EXISTING FEMA 100-YR FLOODPLAIN	STONE WALL



GENERAL NOTES

1. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. DIAL 811 OR GO TO WWW.DIGSAFELYNEWYORK.COM. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.

2. MILONE & MACBROOM INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.

3. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

4. SEDIMENT AND EROSION CONTROL MEASURES AS DEPICTED ON THESE PLANS AND DESCRIBED WITHIN THE SEDIMENT AND EROSION CONTROL NARRATIVE SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT COVER AND STABILIZATION IS ESTABLISHED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL," AND IN ALL CASES BEST MANAGEMENT PRACTICES SHALL PREVAIL.

5. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATE FINISHED GRADE.

6. ALL CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE TOWN OF OLIVE, COUNTY OF ULSTER, AND/OR STATE OF NEW YORK REQUIREMENTS, AS NECESSARY AND APPLICABLE. CONSTRUCTION PRACTICES, MATERIALS, AND PAYMENT SHALL BE IN ACCORDANCE WITH THE CURRENTLY PUBLISHED VERSION OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AS APPLICABLE.

7. THE PLANS REQUIRE A CONTRACTOR'S WORKING KNOWLEDGE OF LOCAL, MUNICIPAL, WATER AUTHORITY, AND STATE CODES FOR UTILITY SYSTEMS. ANY CONFLICTS BETWEEN MATERIALS AND LOCATIONS SHOWN, AND LOCAL REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE EXECUTION OF WORK. THE ENGINEER WILL NOT BE HELD LIABLE FOR COSTS INCURRED TO IMPLEMENT OR CORRECT WORK WHICH DOES NOT CONFORM TO LOCAL CODE.

8. ALL FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS USED DURING CONSTRUCTION SHOULD BE STORED IN A SECONDARY CONTAINER AND REMOVED TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR DURING NON-WORK HOURS.

9. MODIFICATIONS TO ANY ABOVE-GROUND OR UNDERGROUND UTILITY, INCLUDING BUT NOT LIMITED TO STORM SEWER, SANITARY SEWER, WATER DISTRIBUTION, ELECTRIC, TELECOMMUNICATIONS, AND/OR GAS SYSTEMS SHALL BE COORDINATED WITH THE APPLICABLE UTILITY PROVIDER.

10. COMPLIANCE WITH ALL REGULATORY PERMIT APPROVALS AND SPECIAL CONDITIONS IS THE RESPONSIBILITY OF BOTH THE CONTRACTOR AND THE PERMITTEE.

11. THE CONTRACTOR MUST MAINTAIN (REPAIR/REPLACE WHEN NECESSARY) THE SILTATION CONTROL MEASURES UNTIL ALL DEVELOPMENT ACTIVITY IS COMPLETED AND ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.

0' 50' 100'
0 1/2" 1"

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www.miloneandmacbroom.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

INDEX PLAN

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

1"=100'

NOVEMBER 2, 2018

5909-01

02 OF 17

IN-1

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Plotted: 02-Nov-2018 09:37 By: mjohnson
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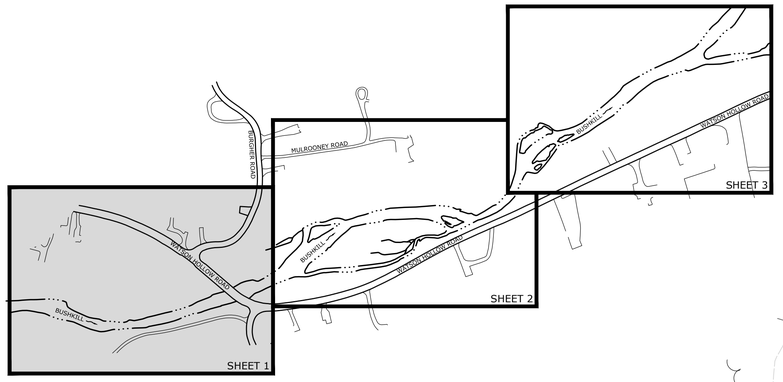

SHEET INDEX
(N.T.S.)

BRIDGE ABUTMENT

LOOKING UPSTREAM

LOOKING DOWNSTREAM

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- EXISTING FEMA 100-YEAR FLOODPLAIN
- ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

MAPPING AND SURVEY NOTES:

1. TOPOGRAPHIC INFORMATION IS BASED UPON AERIAL PHOTOGRAMMATETRY PERFORMED BY GOLDEN AERIAL, INC. NEWTOWN, CT, FLOWN APRIL 23, 2017, AND SUPPLEMENTED WITH GROUND SURVEY PERFORMED BY PRUDENT ENGINEERING, IN OCTOBER 2017. CHANNEL SURVEY PERFORMED BY MJ ENGINEERING IN AUGUST 2016.
2. HORIZONTAL MAPPING IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), IN THE NEW YORK EAST ZONE. ELEVATION DATA IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). ALL CONTOURS ARE PRESENTED IN FEET.
3. PROPERTY BOUNDARY INFORMATION WAS OBTAINED FROM ULSTER COUNTY, AND IS FOR INFORMATIONAL PURPOSES ONLY. ASSESSORS INFORMATION IS APPROXIMATE, AND SHOULD NOT BE CONSIDERED COMPLETE OR CURRENT FOR PURPOSES OF CONSTRUCTION AND/OR EASEMENT NEGOTIATION.
4. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. CONTACT "DIG SAFELY NEW YORK" BY CALLING 811. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
5. MILONE & MACBROOM INC. ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPS AND DATA WHICH HAVE BEEN SUPPLIED BY OTHERS.
6. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION.
7. FLOOD HAZARD INFORMATION AS DEPICTED FOR THE 100-YEAR FLOOD BOUNDARY WAS DERIVED FROM CURRENTLY EFFECTIVE FLOOD INSURANCE RATE MAPPING (FIRM) NO. 36111C0410F (EFF. 11/18/16).
8. THE PROJECT SITE INCLUDES BUSHKILL CREEK AND IS SUBJECT TO FLOODING. INFORMATION DEPICTED HEREIN IS SHOWN AS A REPRESENTATION OF THE PROJECT SITE AT THE TIME IT WAS SURVEYED, AND IS SUBJECT TO CHANGE BASED UPON HIGH FLOWS, FLOOD, EROSION, AND/OR CHANGING SITE CONDITIONS.
9. ALL CONTRACTORS ARE ADVISED TO VISIT THE SITE TO CONFIRM CURRENT CONDITIONS PRIOR TO SUBMITTING BIDS.

N
W E
S
0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1'=30'
DATE: NOVEMBER 2, 2018
PROJECT NO.: 5909-01
SHEET NO.: 03 OF 17

SHEET NAME: EX-1

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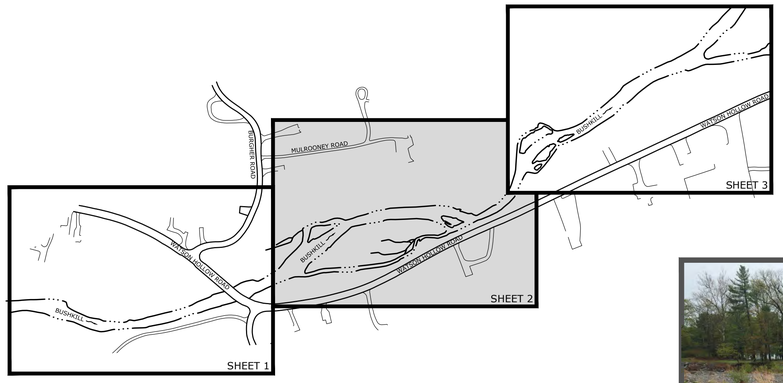

SHEET INDEX
(N.T.S.)

SEDIMENT BAR

MATCHLINE (SEE SHEET EX-1)

MATCHLINE (SEE SHEET EX-3)

N/F
COUNTY OF ULSTER
MEADOW LN / BURGHER RD

N/F
THOMAS FREDERICK OLIVERI
BURGHER RD

EXISTING STONE ARMORING
ALONG RIGHT BANK

N/F
VICTOR AVILES
#70 WATSON HOLLOW RD

BUSHKILL

N/F
HECTOR & SIMONE SANZ
#10 BURGHER RD

WATSON HOLLOW ROAD

N/F
URSULA PERRY
#89 WATSON HOLLOW RD

N/F
SARAH HEMINGWAY LYNCH
#75 WATSON HOLLOW RD

N/F
FRED & MARIE JAECK
#91 WATSON HOLLOW RD

LIMITS OF AERIAL TOPOGRAPHY

LOOKING DOWNSTREAM

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- 70 — EXISTING MAJOR CONTOUR
- 68 — EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- 100-YR — EXISTING FEMA 100-YEAR FLOODPLAIN
- OHW — ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

MILONE & MACBROOM
231 Main Street, Suite 102
New Paltz, NY 12561
845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 04 OF 17

SHEET NAME: **EX-2**

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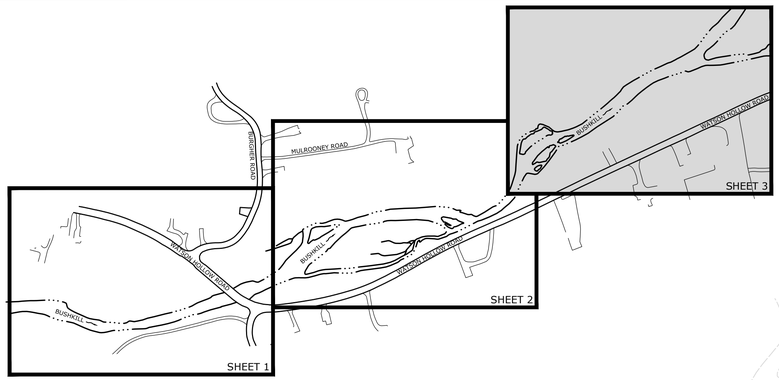


SHEET INDEX
(N.T.S.)

EXISTING SIDE CAST BERM

EXISTING SIDE CAST BERM

BUSHKILL

25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00

EROSION ALONG RIGHT BANK

LOOKING DOWNSTREAM

EROSION ALONG RIGHT BANK

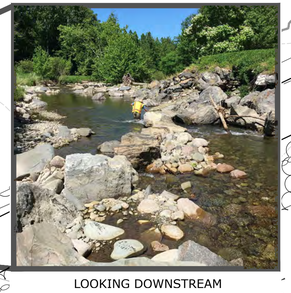
N/F
FRED & MARIE JAECK
#91 WATSON HOLLOW RD

WATSON HOLLOW ROAD

N/F
WERNER WAGNER
#62 WATSON HOLLOW RD

N/F
ADAM & JODI SCOTT
#59 WATSON HOLLOW RD

N/F
OLIVE FIRE DEPT NO 1 INC
#53 WATSON HOLLOW RD



LOOKING DOWNSTREAM

MATCHLINE (SEE SHEET EX-2)

LEGEND

- EXISTING WATERCOURSE EDGE
- PROPERTY LINE
- EDGE OF PAVEMENT
- TREE LINE
- 70 EXISTING MAJOR CONTOUR
- 68 EXISTING MINOR CONTOUR
- STONE WALL
- FENCE
- UTILITY POLE
- GUARD RAIL
- 100-YR EXISTING FEMA 100-YEAR FLOODPLAIN
- OHW ORDINARY HIGH WATER LINE
- LIMITS OF AERIAL TOPOGRAPHY

N
W E
S
0' 15' 30'
0 1/2" 1"

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New Paltz, NY 12561
845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - EXISTING CONDITIONS

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 05 OF 17

SHEET NAME: EX-3

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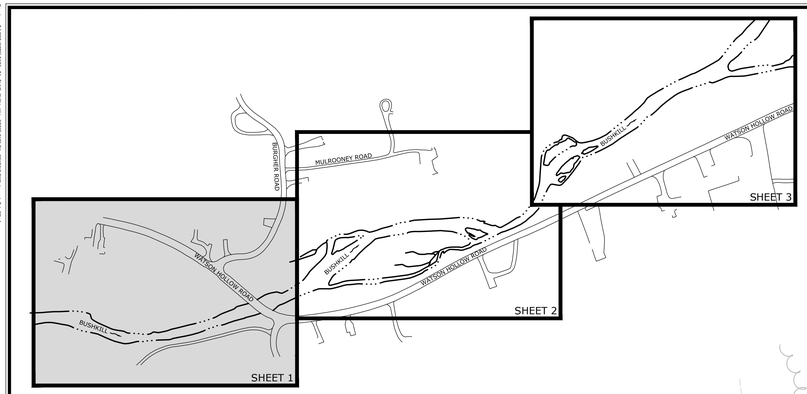

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-2)

WATSON HOLLOW ROAD

BURGHER ROAD

RESHAPE 25' WIDE SIDE CHANNEL

BEGIN STREAM CHANNEL RECONSTRUCTION
STA: 126+09

BUSHKILL

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 10H:1V

SLOPE 3H:1V

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION
WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 08 OF 17

SHEET NAME: GR-1

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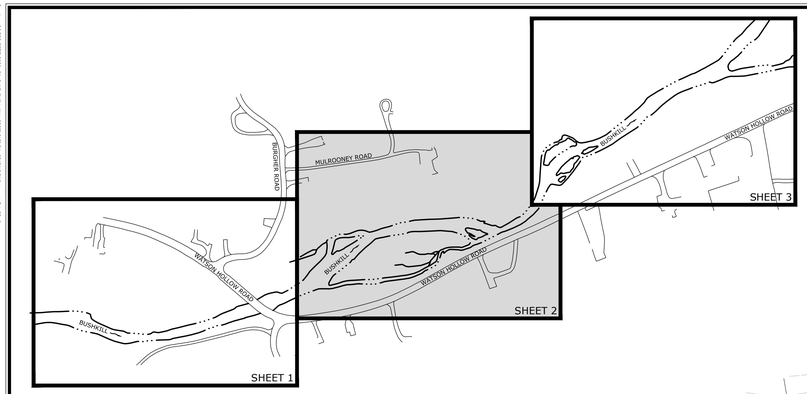
Xrefs: ...



SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-3)

MATCHLINE (SEE SHEET GR-1)

SLOPE 3H:1V

CONSTRUCT A 69' WIDE
BANKFULL CHANNEL
(SEE DETAIL CROSS SECTION)

SLOPE 100H:1V

SLOPE 50H:1V

FILL EXISTING
FLOODPLAIN SIDE CHANNEL

BUSHKILL

WATSON HOLLOW ROAD

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 07 OF 17

SHEET NAME: GR-2

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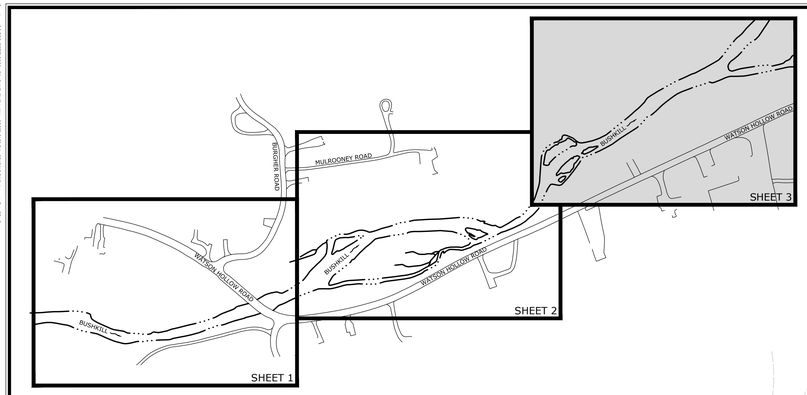

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 3H:1V

SLOPE 100H:1V

BUSHKILL

WATSON HOLLOW ROAD

END OF STREAM CHANNEL RECONSTRUCTION
STA: 100+00

MATCHLINE (SEE SHEET GR-2)

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

LEGEND

- 70 — EXISTING MAJOR CONTOUR
- 68 — EXISTING MINOR CONTOUR
- 70 — PROPOSED MAJOR CONTOUR
- 68 — PROPOSED MINOR CONTOUR

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SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 06 OF 17

SHEET NAME: GR-3

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Plotted: 9/28/2018 11:09:39 AM By: MIKE MACBROOM
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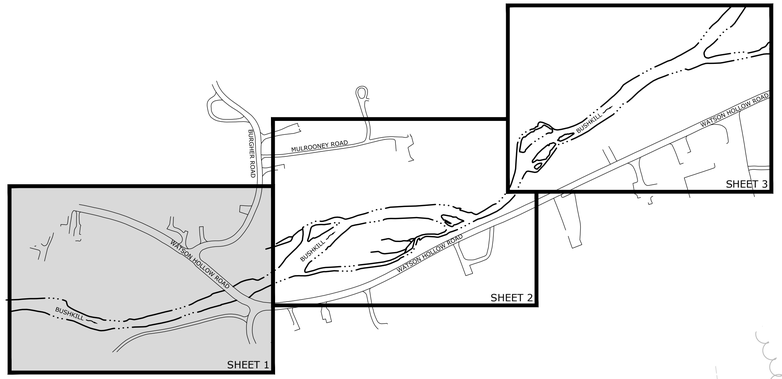

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-2)

REMOVE EXCESS MATERIAL FROM BRIDGE OPENING

RESHAPE EXISTING SIDE CHANNEL

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

BUSHKILL

INSTALL JOINT PLANTED BOULDER REVETMENT STA 119+50 TO 123+50 - SEE DETAIL

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

REPLACE RIPRAP AND GROUT (SEE DETAIL)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

0' 15' 30'
0 1/2" 1"

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

1"=30'
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

09 OF 17
SHEET NO.

LA-1
SHEET NAME

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Plotted: 10/30/2018 8:36:08 AM By: JGRAHAM
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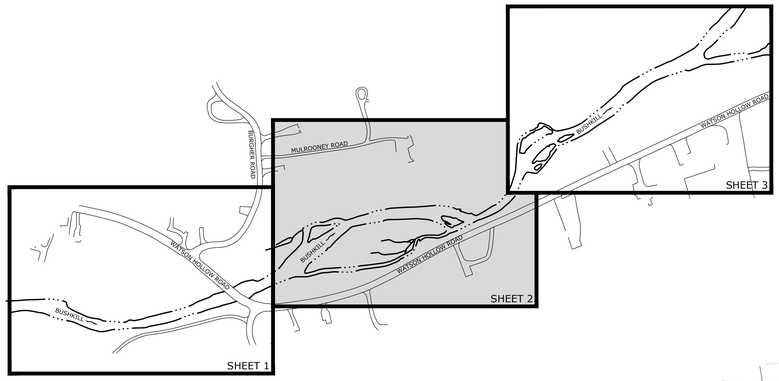

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-1)

MATCHLINE (SEE SHEET EX-3)

FILL EXISTING CHANNEL AND RELOCATE AWAY FROM ROAD

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

INSTALL JOINT PLANTED BOULDER REVETMENT STA 100+60 TO 111+75 - SEE DETAIL

FILL EXISTING SIDE CHANNEL

WATSON HOLLOW ROAD

BUSHKILL

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 10 OF 17

SHEET NAME: LA-2

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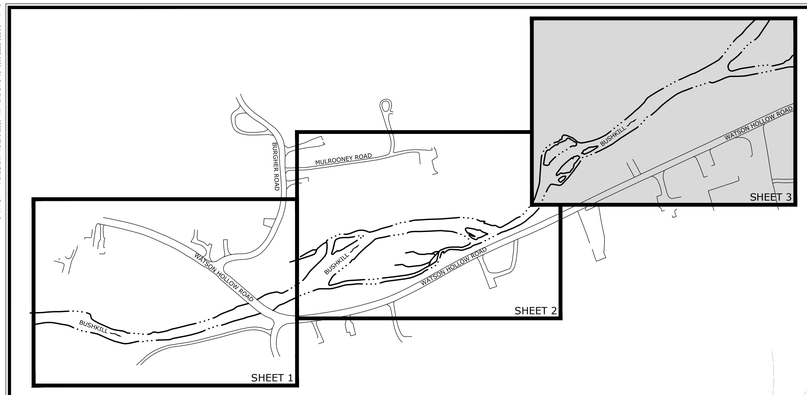

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

LIVE WILLOW CUTTINGS
(REUSE FROM SITE WHERE POSSIBLE)

INSTALL JOINT PLANTED BOULDER
REVETMENT STA 100+60 TO
111+75 - SEE DETAIL

REMOVE TREES ON PROPERTY

RE-USE EXISTING WILLOW PLANTS
FOR PLANTING WHERE POSSIBLE

FILL EXISTING SIDE CHANNEL
AWAY FROM PROPERTIES

BUSHKILL

WATSON HOLLOW ROAD

MATCHLINE (SEE SHEET EX-2)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

N
W E
S

0' 15' 30'
0 1/2" 1"

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DESCRIPTION	DATE	BY

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 11 OF 17

SHEET NAME: LA-3

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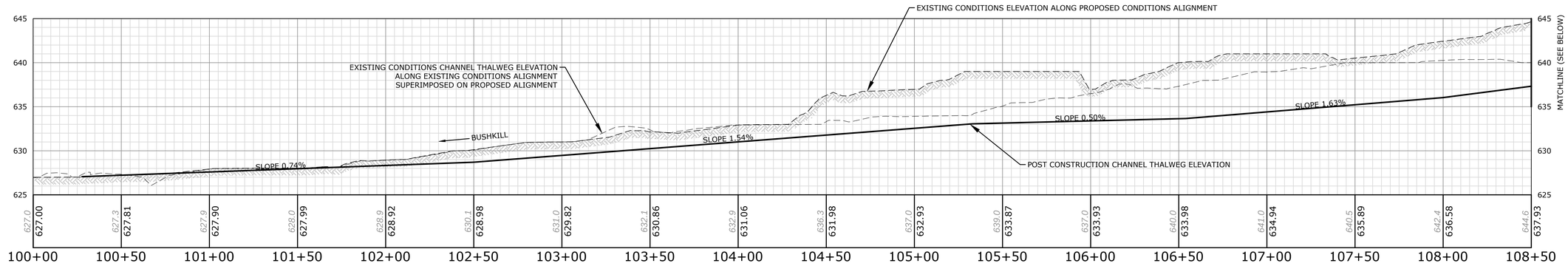

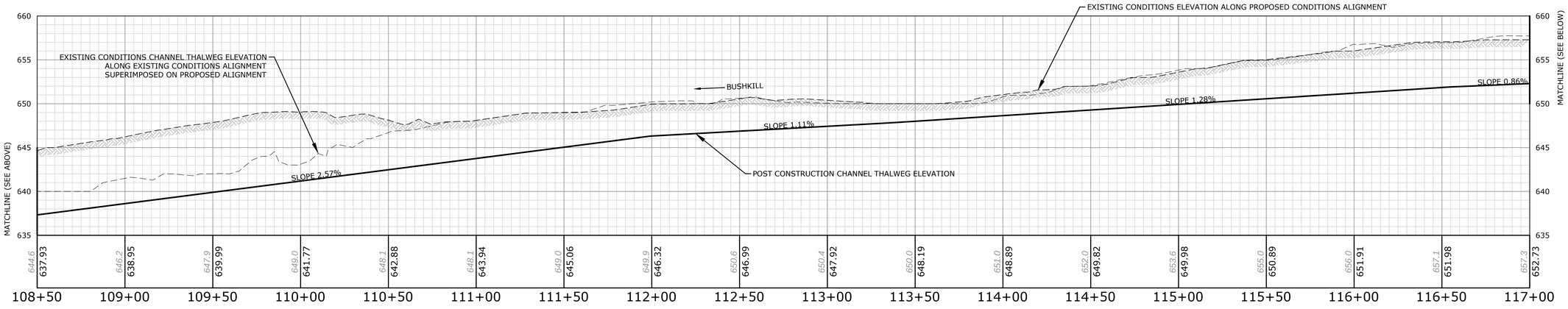

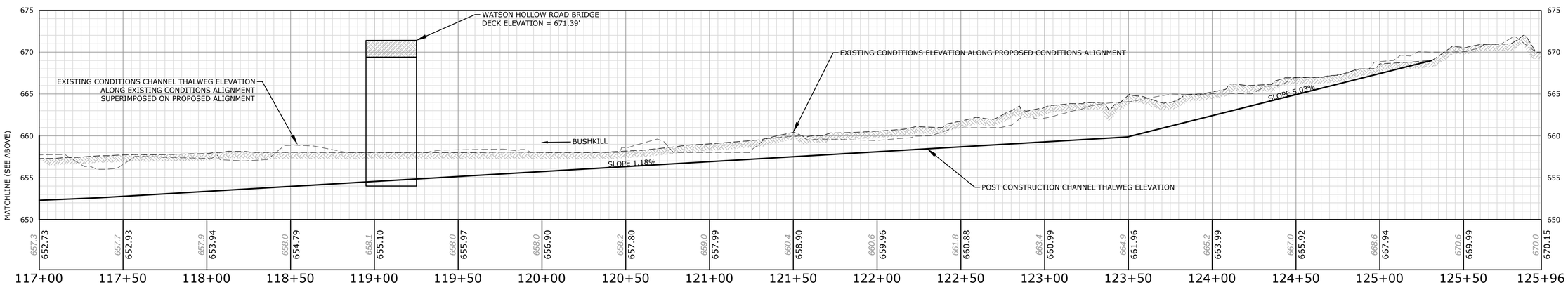

BUSHKILL - PROFILE VIEW

SCALE: 1"=30' (H); 1"=6' (V)

LEGEND

- EXISTING GRADE ALONG EXISTING ALIGNMENT
- EXISTING GRADE ALONG PROPOSED ALIGNMENT
- PROPOSED GRADE ALONG PROPOSED ALIGNMENT

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

STREAM PROFILE

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: AS NOTED

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 12 OF 17

SHEET NAME: PR-1

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

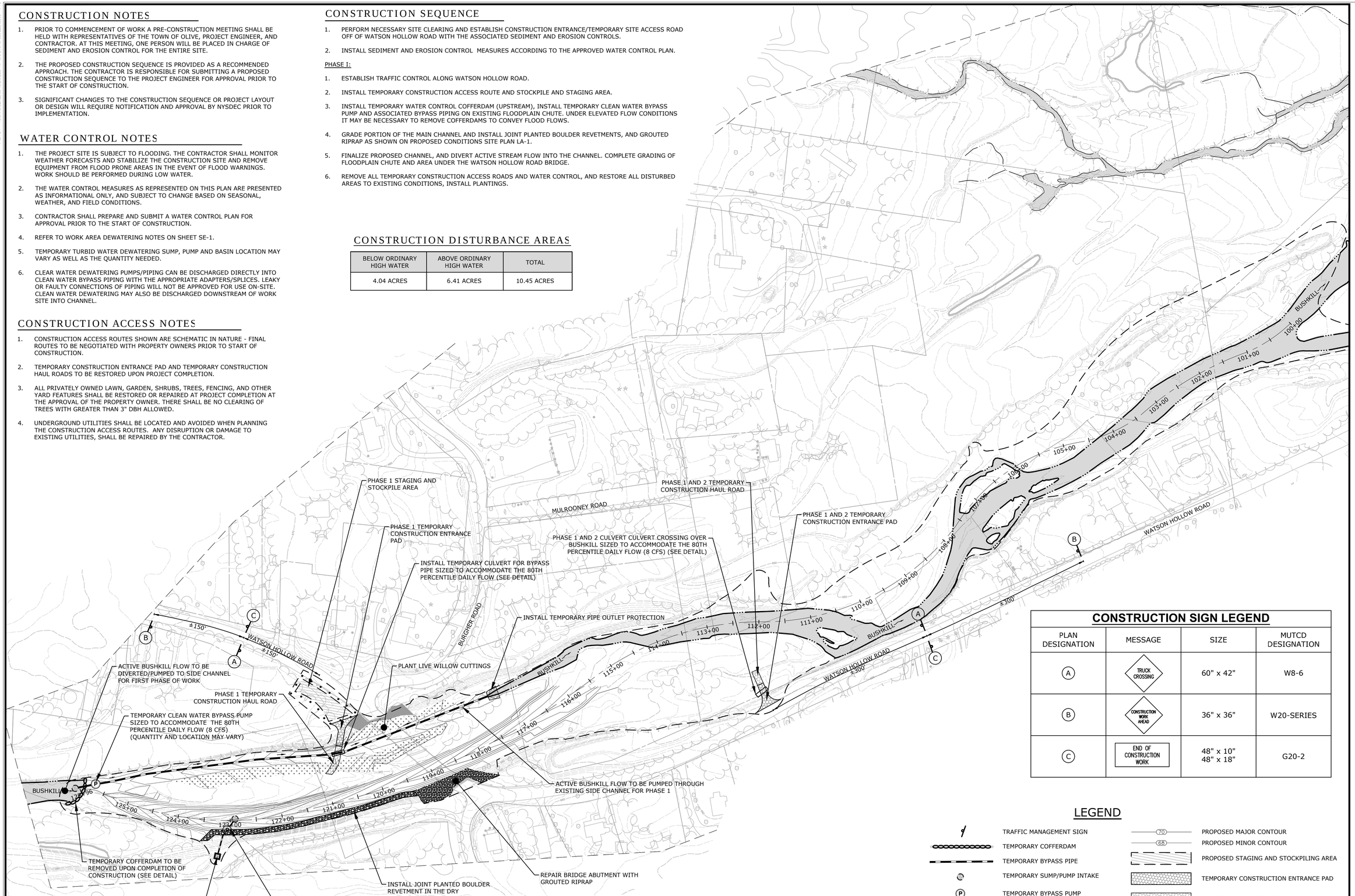
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE I:

1. ESTABLISH TRAFFIC CONTROL ALONG WATSON HOLLOW ROAD.
2. INSTALL TEMPORARY CONSTRUCTION ACCESS ROUTE AND STOCKPILE AND STAGING AREA.
3. INSTALL TEMPORARY WATER CONTROL COFFERDAM (UPSTREAM), INSTALL TEMPORARY CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING ON EXISTING FLOODPLAIN CHUTE. UNDER ELEVATED FLOW CONDITIONS IT MAY BE NECESSARY TO REMOVE COFFERDAMS TO CONVEY FLOOD FLOWS.
4. GRADE PORTION OF THE MAIN CHANNEL AND INSTALL JOINT PLANTED BOULDER REVETMENTS, AND GROUTED RIPRAP AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-1.
5. FINALIZE PROPOSED CHANNEL, AND DIVERT ACTIVE STREAM FLOW INTO THE CHANNEL. COMPLETE GRADING OF FLOODPLAIN CHUTE AND AREA UNDER THE WATSON HOLLOW ROAD BRIDGE.
6. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS, INSTALL PLANTINGS.

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES



CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

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DESCRIPTION | DATE | BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 1

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=80'
DATE: NOVEMBER 2, 2018
PROJECT NO.: 5909-01
SHEET NO.: 13 OF 17
SHEET NAME: CP-1

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

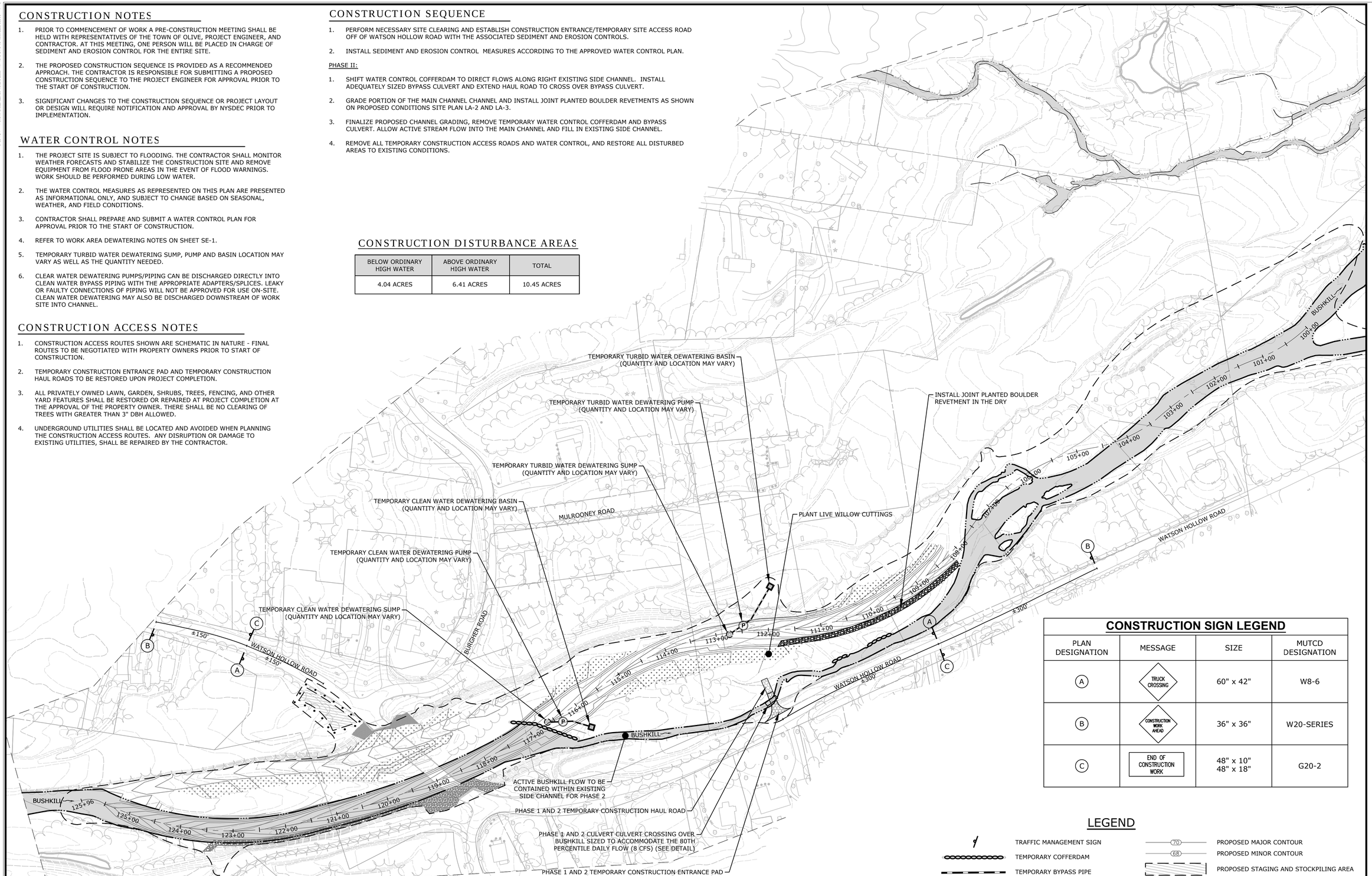
1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE II:

1. SHIFT WATER CONTROL COFFERDAM TO DIRECT FLOWS ALONG RIGHT EXISTING SIDE CHANNEL. INSTALL ADEQUATELY SIZED BYPASS CULVERT AND EXTEND HAUL ROAD TO CROSS OVER BYPASS CULVERT.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES



CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
C	END OF CONSTRUCTION WORK	48" x 10" 48" x 18"	G20-2

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR (70)
- PROPOSED MINOR CONTOUR (68)
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

MILONE & MACBROOM
231 Main Street, Suite 102
New Paltz, NY 12561
845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 2

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

DESIGNED	DRAWN	CHECKED
MC	MC	DRM

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 14 OF 17

SHEET NAME: CP-2

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CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF WORK A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES OF THE TOWN OF OLIVE, PROJECT ENGINEER, AND CONTRACTOR. AT THIS MEETING, ONE PERSON WILL BE PLACED IN CHARGE OF SEDIMENT AND EROSION CONTROL FOR THE ENTIRE SITE.
2. THE PROPOSED CONSTRUCTION SEQUENCE IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. SIGNIFICANT CHANGES TO THE CONSTRUCTION SEQUENCE OR PROJECT LAYOUT OR DESIGN WILL REQUIRE NOTIFICATION AND APPROVAL BY NYSDEC PRIOR TO IMPLEMENTATION.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES AS REPRESENTED ON THIS PLAN ARE PRESENTED AS INFORMATIONAL ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
4. REFER TO WORK AREA DEWATERING NOTES ON SHEET SE-1.
5. TEMPORARY TURBID WATER DEWATERING SUMP, PUMP AND BASIN LOCATION MAY VARY AS WELL AS THE QUANTITY NEEDED.
6. CLEAR WATER DEWATERING PUMPS/PIPING CAN BE DISCHARGED DIRECTLY INTO CLEAN WATER BYPASS PIPING WITH THE APPROPRIATE ADAPTERS/SPLICES. LEAKY OR FAULTY CONNECTIONS OF PIPING WILL NOT BE APPROVED FOR USE ON-SITE. CLEAN WATER DEWATERING MAY ALSO BE DISCHARGED DOWNSTREAM OF WORK SITE INTO CHANNEL.

CONSTRUCTION ACCESS NOTES

1. CONSTRUCTION ACCESS ROUTES SHOWN ARE SCHEMATIC IN NATURE - FINAL ROUTES TO BE NEGOTIATED WITH PROPERTY OWNERS PRIOR TO START OF CONSTRUCTION.
2. TEMPORARY CONSTRUCTION ENTRANCE PAD AND TEMPORARY CONSTRUCTION HAUL ROADS TO BE RESTORED UPON PROJECT COMPLETION.
3. ALL PRIVATELY OWNED LAWN, GARDEN, SHRUBS, TREES, FENCING, AND OTHER YARD FEATURES SHALL BE RESTORED OR REPAIRED AT PROJECT COMPLETION AT THE APPROVAL OF THE PROPERTY OWNER. THERE SHALL BE NO CLEARING OF TREES WITH GREATER THAN 3" DBH ALLOWED.
4. UNDERGROUND UTILITIES SHALL BE LOCATED AND AVOIDED WHEN PLANNING THE CONSTRUCTION ACCESS ROUTES. ANY DISRUPTION OR DAMAGE TO EXISTING UTILITIES, SHALL BE REPAIRED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

1. PERFORM NECESSARY SITE CLEARING AND ESTABLISH CONSTRUCTION ENTRANCE/TEMPORARY SITE ACCESS ROAD OFF OF WATSON HOLLOW ROAD WITH THE ASSOCIATED SEDIMENT AND EROSION CONTROLS.
2. INSTALL SEDIMENT AND EROSION CONTROL MEASURES ACCORDING TO THE APPROVED WATER CONTROL PLAN.

PHASE III:

1. INSTALL TEMPORARY WATER CONTROL COFFERDAMS, INSTALL CLEAN WATER BYPASS PUMP AND ASSOCIATED BYPASS PIPING.
2. GRADE PORTION OF THE MAIN CHANNEL CHANNEL, REMOVE SIDE CAST BERMS, AND INSTALL JOINT PLANTED BOULDER REVETMENTS AS SHOWN ON PROPOSED CONDITIONS SITE PLAN LA-2 AND LA-3.
3. FINALIZE PROPOSED CHANNEL GRADING, REMOVE TEMPORARY WATER CONTROL COFFERDAM AND BYPASS CULVERT. ALLOW ACTIVE STREAM FLOW INTO THE MAIN CHANNEL AND FILL IN EXISTING SIDE CHANNEL.
4. REMOVE ALL TEMPORARY CONSTRUCTION ACCESS ROADS AND WATER CONTROL, AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITIONS.

CONSTRUCTION SIGN LEGEND

PLAN DESIGNATION	MESSAGE	SIZE	MUTCD DESIGNATION
A	TRUCK CROSSING	60" x 42"	W8-6
B	CONSTRUCTION WORK AHEAD	36" x 36"	W20-SERIES
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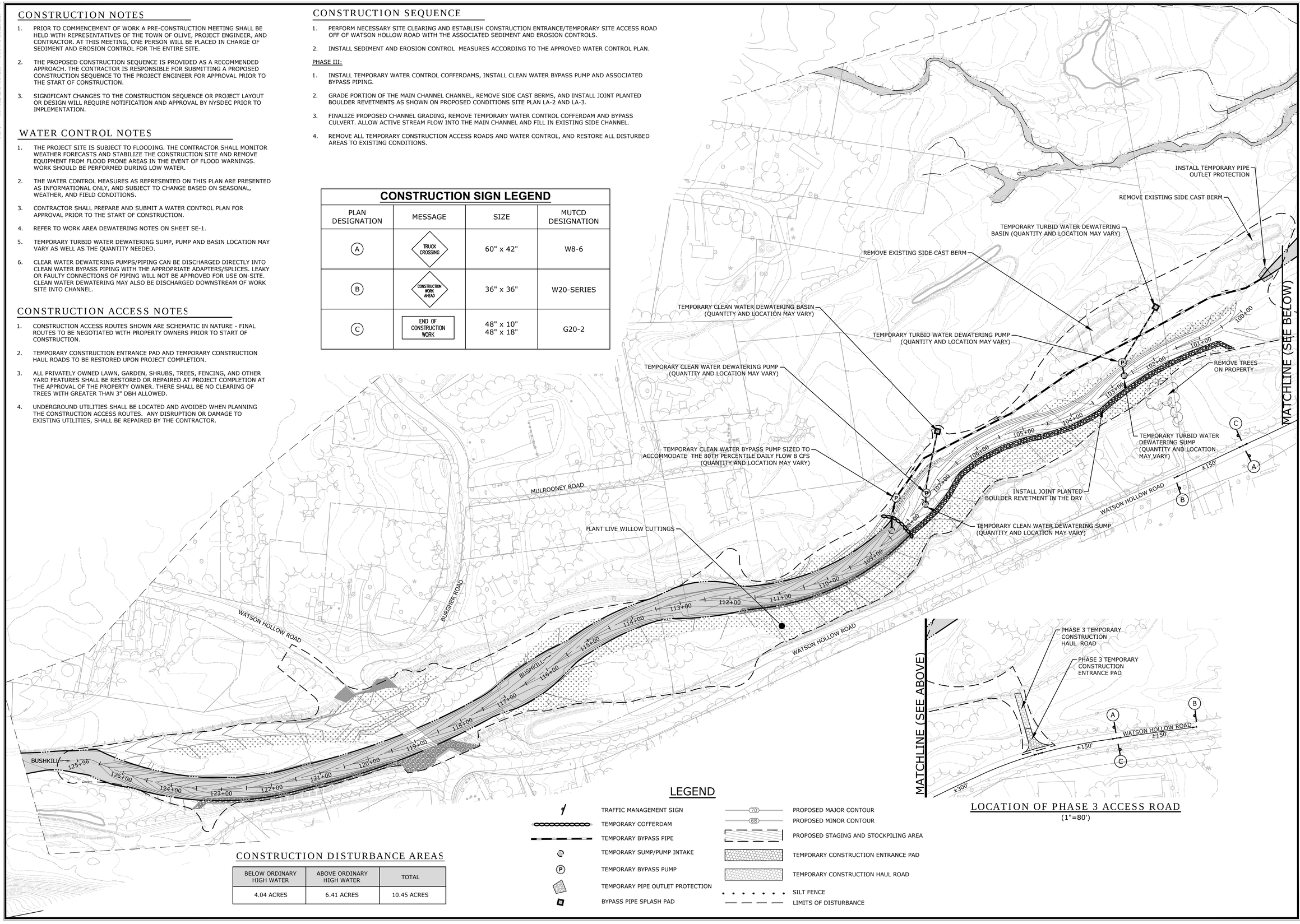

LOCATION OF PHASE 3 ACCESS ROAD
(1"=80')

LEGEND

- TRAFFIC MANAGEMENT SIGN
- TEMPORARY COFFERDAM
- TEMPORARY BYPASS PIPE
- TEMPORARY SUMP/PUMP INTAKE
- TEMPORARY BYPASS PUMP
- TEMPORARY PIPE OUTLET PROTECTION
- BYPASS PIPE SPLASH PAD
- PROPOSED MAJOR CONTOUR (70)
- PROPOSED MINOR CONTOUR (68)
- PROPOSED STAGING AND STOCKPILING AREA
- TEMPORARY CONSTRUCTION ENTRANCE PAD
- TEMPORARY CONSTRUCTION HAUL ROAD
- SILT FENCE
- LIMITS OF DISTURBANCE

CONSTRUCTION DISTURBANCE AREAS

BELOW ORDINARY HIGH WATER	ABOVE ORDINARY HIGH WATER	TOTAL
4.04 ACRES	6.41 ACRES	10.45 ACRES

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

CONSTRUCTION PLAN - PHASE 3

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC DESIGNED	MC DRAWN	DRM CHECKED

SCALE: 1"=80'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 15 OF 17

SHEET NAME: CP-3

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PROJECT DESCRIPTION

THE TOWN OF OLIVE RECEIVED COMMUNITY DEVELOPMENT BLOCK GRANT- DISASTER RECOVERY (CDBG-DR) FUNDING FROM THE GOVERNOR'S OFFICE OF STORM RECOVERY (GOSR) TO IMPLEMENT IMPROVEMENTS ALONG THE BUSHKILL TO REPAIR CHANNEL DAMAGE, SEDIMENT AGGRADATION AND ACCUMULATION OF WOODY DEBRIS THAT OCCURRED DURING TROPICAL STORM IRENE. THE PROJECT HAS BEEN DIVIDED INTO TWO PHASES. PHASE I OF THE PROJECT BEGAN WITH AN ASSESSMENT OF THE PROJECT AREA REACH FOR THE PURPOSE OF IDENTIFYING AND CHARACTERING WHERE CHANNEL AND INFRASTRUCTURE IMPROVEMENTS ARE NEEDED. PHASE II OF THE PROJECT IS THE ENGINEERING DESIGN AND CONSTRUCTION PHASE OF THE FINAL RECOMMENDATIONS MADE DURING PHASE I.

SITE DESCRIPTION

THE BUSHKILL DRAINS A 19.7-SQUARE-MILE WATERSHED IN ULSTER COUNTY WITHIN THE TOWNS OF OLIVE, SHANDAKEN, AND DENNING. THE BASIN IS WHOLLY CONTAINED WITHIN NEW YORK STATE'S CATSKILL PARK AND IS COMPRISED MAINLY OF UNDEVELOPED FORESTED LAND WITH 12.7 SQUARE MILES LOCATED IN THE SLIDE MOUNTAIN WILDERNESS AND SUNDOWN WILD FOREST AREAS. THE ELEVATION WITHIN THE BUSHKILL WATERSHED RANGES FROM 600 FEET AT THE ENTRANCE TO THE ASHOKAN RESERVOIR TO 3,855 FEET AT THE TOP OF CORNELL MOUNTAIN. THE UPPER PORTION OF THE WATERSHED CONSISTS OF STEEPLY SLOPING CONFINED VALLEY WALLS AND TRANSITIONS TO A MUCH WIDER, RELATIVELY FLAT VALLEY IN THE LOWER PORTION.

PROPOSED IMPROVEMENTS

THE FOCUS OF THIS PROJECT LOCATED AT THE REACH OF THE BUSHKILL FROM UPSTREAM OF THE WATSON HOLLOW BRIDGE AT STA 54+50, TO DOWNSTREAM NEAR THE LOCATION OF A MAJOR SEDIMENT BAR AT STA 27+00. THE RESTORATION ELEMENTS INCLUDED THE FOLLOWING:

- CHANNEL RESHAPING TO APPROXIMATE BANKFULL WIDTH TO INCREASE SEDIMENT TRANSPORT AND CONVEYANCE
- CHANNEL REALIGNMENT AWAY FROM ROADWAYS AND PROPERTIES
- REPAIR SCOUR PROTECTION ALONG THE RIGHT ABUTMENT AT THE WATSON HOLLOW ROAD BRIDGE AND REMOVE EXCESS SEDIMENT IN THE LEFT WATERWAY
- REMOVAL OF SIDE CAST BERMS LOCATED AT THE LOWER END OF THE PROJECT AREA

THE PROPOSED CONCEPT INVOLVES THE RESHAPING OF 2,500 LINEAR FEET OF THE CREEK CHANNEL TO MAXIMIZE SEDIMENT TRANSPORT AND RELOCATE THE STROM AWAY FROM THE ROADWAY AND WATSON HOLLOW BRIDGE ABUTMENT . THE ESTIMATED BANKFULL DIMENSIONS WOULD BE 46-69 FEET WIDE BY 3 FEET DEEP; CHANNEL FLOODPLAIN AT A 1% GRADE TYING BACK TO EXISTING GROUND WITH MINIMAL AMOUNT OF DISTURBANCE TO THE EXISTING OVERBANK AREAS.

SOILS

THE PROJECT AREA IS PREDOMINATELY IDENTIFIED AS SOIL MAPPING UNIT ALLUVIAL LAND WHICH INCLUDES THOSE SOILS THAT HAVE FORMED FROM THE ACCUMULATION OF SAND, SILT, CLAY, GRAVEL AND BOULDERS DEPOSITED FROM FAST-FLOWING MOUNTAIN RIVERS. DRAINAGE CLASSES CAN RANGE FROM SOMEWHAT POORLY DRAINED TO EXCESSIVELY DRAINED.

UPLAND AREAS AREA MADE UP PREDOMINATELY OF HOOSIC GRAVELLY LOAM, WHICH INCLUDES THOSE SOILS THAT HAVE FORMED FROM GLACIAL OUTWASH OF SANDY GRAVELLY GLACIOFLUVIAL DEPOSITS. DRAINAGE CLASSES TYPICALLY SOMEWHAT EXCESSIVELY DRAINED WITH A SOIL PERMEABILITY OF MODERATELY RAPID TO RAPID.

PLANNED EROSION AND SEDIMENT CONTROL PRACTICES

1. STABILIZED CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED AT ALL SITE ACCESS POINTS.
2. CONSTRUCTION ROAD STABILIZATION: THE CONSTRUCTION ACCESS ROAD WILL BE CONSTRUCTED AFTER THE REMOVAL OF TOPSOIL.
3. SILT FENCE WILL BE INSTALLED ALONG THE CONSTRUCTION ACCESS ROADS AND AROUND ANY STOCKPILE AREAS.
4. TURBID WATER MANAGEMENT: AREAS FOR DISCHARGE, DETAINING, AND INFILTRATING OF TURBID CONSTRUCTION WATER ARE SHOWN ON SITE PLANS.
5. SURFACE STABILIZATION: STABILIZATION OF THE SURFACE WILL BE ACCOMPLISHED WITH VEGETATION AS SPECIFIED ON THE SITE PLAN.

WATER CONTROL NOTES

1. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
2. THE WATER CONTROL MEASURES INCLUDING TURBID CONSTRUCTION WATER MANAGEMENT AREAS AS PRESENTED ON THIS PLAN ARE PRESENTED AS A GUIDE ONLY, AND SUBJECT TO CHANGE BASED ON SEASONAL, WEATHER, AND FIELD CONDITIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT A WATER CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.

EROSION CONTROL NOTES

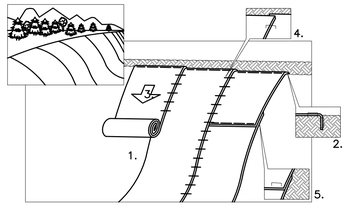
1. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL."
2. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
3. ALL WETLANDS SHALL BE AVOIDED AND PROTECTED FROM CONSTRUCTION ACTIVITIES WITH SEDIMENT CONTROL MEASURES WHERE NECESSARY AS DETERMINED BY THE PROJECT ENGINEER.
4. CLEARING OF NATIVE VEGETATION FOR CONSTRUCTION ACCESS SHOULD BE MINIMIZED.
5. TEMPORARY ACCESS AREAS SHALL BE BORDERED WITH SEDIMENT AND EROSION CONTROL FENCES AND HAYBALES. SEE PLANS AND DETAILS.
6. STOCKPILE AREAS TO BE ENCLOSED BY FILTER FABRIC AND HAYBALES. SEE PLANS AND DETAILS.
7. AN EROSION CONTROL BLANKET SHALL BE PLACED OVER ANY DISTURBED AREAS WITH A SLOPE GREATER THAN OR EQUAL TO 3:1 TO PREVENT EROSION. SEE PLANS AND DETAILS.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES. THE CONSTRUCTION INSPECTOR WILL VERIFY THE MAINTENANCE WEEKLY AND AFTER RAIN EVENTS.

STOCKPILING NOTES

1. TEMPORARY STOCKPILE AND STAGING AREAS TO BE FLAGGED BY CONTRACTOR PRIOR TO CONSTRUCTION AND APPROVED BY TOWN, LANDOWNERS AND PROJECT ENGINEER.
2. NO CONSTRUCTION VEHICLES SHALL BE STORED, SERVICED, WASHED OR FLUSHED IN A LOCATION WHERE LEAKS, SPILLAGE, WASTE MATERIALS, CLEANERS, OR WATERS WILL BE INTRODUCED OR FLOW INTO WETLANDS OR WATERCOURSES. AN EMERGENCY MANAGEMENT PLAN AND SPILL KIT WILL BE MAINTAINED ON SITE AT ALL TIMES. IN THE EVENT OF AN ACCIDENTAL RELEASE, IMMEDIATELY STOP CONSTRUCTION WORK, CONTAIN THE SPILL, AND NOTIFY THE TOWN, APPROPRIATE AUTHORITIES AND PROJECT ENGINEER.
3. THE CONTRACTOR SHALL MAINTAIN ALL STREETS, SIDEWALKS, AND WALKWAYS IN THE AREA FREE OF SOIL, MUD AND CONSTRUCTION DEBRIS. CONSTRUCTION ENTRANCES MUST BE MAINTAINED AT EACH RIVER ACCESS POINT. SEE PLANS AND DETAILS.
4. THE PROJECT SITE IS SUBJECT TO FLOODING. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND STABILIZE THE CONSTRUCTION SITE AND REMOVE EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. WORK SHOULD BE PERFORMED DURING LOW WATER.
5. ALL STORAGE AND ACCESS ROUTES, PEDESTRIAN FENCES/BARRIERS, WORKING HOURS, AND LIMITS OF CLEARING SHALL BE APPROVED BY THE TOWN OF OLIVE, LANDOWNERS AND THE PROJECT ENGINEER.
6. FINAL LOCATION OF ALL TEMPORARY HAUL ROADS SUBJECT TO LAND-OWNER APPROVAL, AND MAY CHANGE PRIOR TO CONSTRUCTION. THE HAUL ROAD SHALL BE CONSTRUCTED WITH PROPER EROSION CONTROLS, INCLUDING SILT FENCE WHERE NECESSARY, AND A CONSTRUCTION ENTRANCE PAD AT THE ENTRANCE. RESTORATION OF THE DISTURBED AREA SHALL BE COORDINATED WITH THE PROPERTY OWNER.

EROSION CONTROL MAINTENANCE INTERVALS

EROSION CONTROL MEASURE	CONTROL OBJECTIVE	INSPECTION/MAINTENANCE	
SILT FENCE	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO ½ THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR DEWATERING OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE
PUMP WATER SETTLING BASIN	- DETAIN SEDIMENT-LADEN RUNOFF FROM SMALL DEWATERING PUMPS LONG ENOUGH TO ALLOW THE SEDIMENT TO SETTLE OUT.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. STONE OUTLET SHOULD BE AT LEAST SIX (6) INCHES BELOW CREST OF EMBANKMENT. SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES ½ OF THE REQUIRED WET STORAGE.	- TURBID DISCHARGE WATER - EXCESSIVE SEDIMENT ACCUMULATION - OVERTOPPING EVIDENCE
STABILIZED CONSTRUCTION ENTRANCE	- REDUCE THE TRACKING OF SEDIMENT OFF-SITE ONTO PAVED SURFACES.	INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC ADDITION OF STONE, OR LENGTHENING OF ENTRANCE MAY BE REQUIRED AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES AS A RESULT OF INEFFICIENCY OF CONSTRUCTION ENTRANCE SHALL BE IMMEDIATELY REMOVED.	- SEDIMENT IN ROADWAY ADJACENT TO SITE

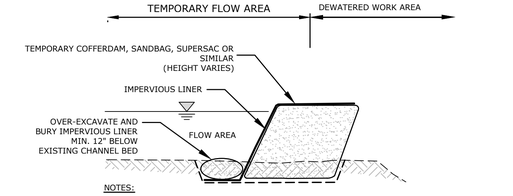


1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING S150, DO NOT SEED PREPARED AREA. S150 MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.

REFER TO GENERAL STAPLE PATTERN GUIDE IN NORTH AMERICAN GREEN CATALOG FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

APPLICATION OF EROSION CONTROL BLANKET ON SLOPES

NOT TO SCALE



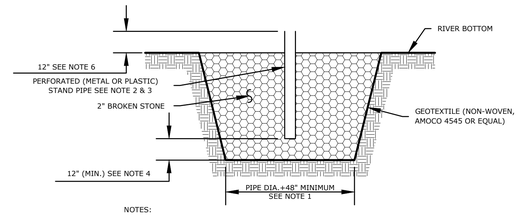
NOTES:

1. COFFERDAM AND TO BE SIZED FOR NORMAL FLOW CONDITIONS. TOP ELEVATION OF COFFERDAM TO ISOLATE LAGOON FROM TIDAL INFLUENCE AND STREAM FLOWS.
2. COFFERDAM TO BE CONSTRUCTED OF SANDBAGS, SUPERSAC OR SIMILAR PRODUCT.
3. EARTHEN (NATIVE) MATERIAL MAY BE USED IN PLACE OF SANDBAGS OR SUPERSAC.

TEMPORARY SANDBAG BARRIER WITH PLASTIC SHEETING (OR APPROVED EQUAL)

ALT. A. TEMPORARY COFFERDAM

NOT TO SCALE

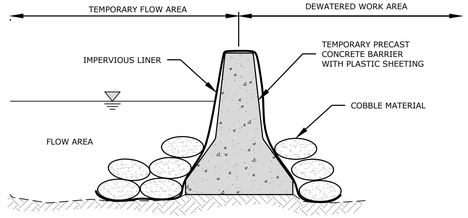


NOTES:

1. OVERALL SUMP PIT DIMENSIONS TO BE COMPATIBLE WITH ANTICIPATED SEEPAGE RATES AND PUMP TO BE USED.
2. THE STAND PIPE DIAMETER AND NUMBER OF PERFORATIONS TO BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
3. PERFORATIONS IN THE STANDPIPE TO BE EITHER CIRCULAR OR SLOTS, PERFORATION SIZE SHALL NOT EXCEED 1/2" DIAMETER.
4. 2" BROKEN STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
5. A PROPERLY DESIGNED GEOTEXTILE TO BE PLACED BETWEEN THE EXISTING SOILS AND THE CRUSHED STONE BACKFILL.
6. THE STANDPIPE SHALL EXTEND A MINIMUM OF 12" ABOVE THE SURROUNDING GROUND.

STONE PROTECTION AT DEWATERING PUMP INLET

NOT TO SCALE



ALT B. TEMPORARY CONCRETE BARRIER COFFERDAM DETAIL

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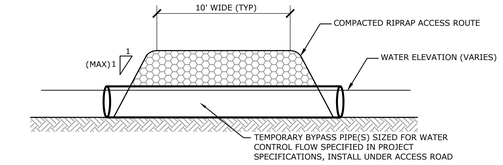
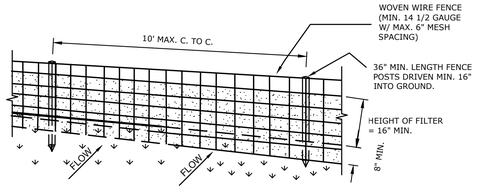


TEMPORARY ACCESS ROAD CULVERT CROSSING

NOT TO SCALE

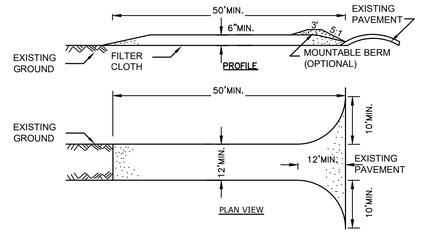


SILT FENCE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

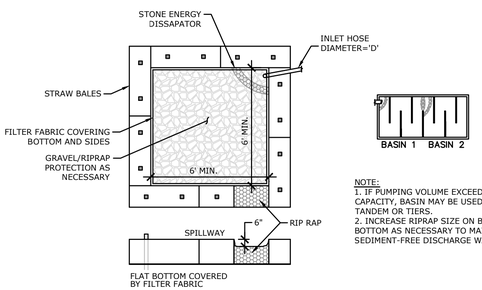


TEMPORARY CONSTRUCTION ENTRANCE PAD

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



NOTE:
1. IF PUMPING VOLUME EXCEEDS BASIN CAPACITY, BASIN MAY BE USED IN TANDEM OR TIERS.
2. INCREASE RIPRAP SIZE ON BASIN BOTTOM AS NECESSARY TO MAINTAIN SEDIMENT-FREE DISCHARGE WATERS

PUMP WATER SETTLING BASIN

NOT TO SCALE

MILONE & MACBROOM
231 Main Street, Suite 102
New Paltz, NY 12561
845.633.8153
www.mminc.com

DESCRIPTION	DATE	BY

DETAILS - SEDIMENT AND EROSION CONTROL

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

PRELIMINARY DESIGN 60%

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

AS NOTED
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

16 OF 17
SHEET NO.

SE-1
SHEET NAME

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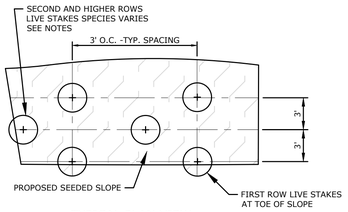
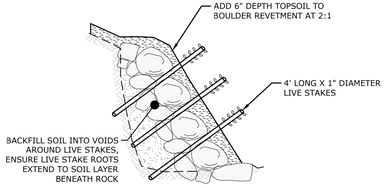


TYPICAL PLAN VIEW



JOINT PLANTING SECTION VIEW

JOINT PLANTING

(NOT TO SCALE)

PLANTING NOTES:

1. INSTALL BOULDER REVETMENT PER PLAN, AND PLACE 6 INCHES OF TOPSOIL AS SHOWN IN DETAIL.
2. ALONG THE TOE OF THE SLOPE (FIRST ROW), INSTALL 4' LONG X 1" DIAMETER LIVE WILLOW STAKES (*SALIX LUCIDA* OR SIMILAR NATIVE WILLOW SPECIES) SPACED 3' ON CENTER. THESE ARE TO BE INSERTED INTO PREDRILLED PILOT HOLES SLIGHTLY LARGER THAN THE STAKE DIAMETER AND BACKFILLED. STAKES SHOULD BE INSERTED TO 36" DEPTH.
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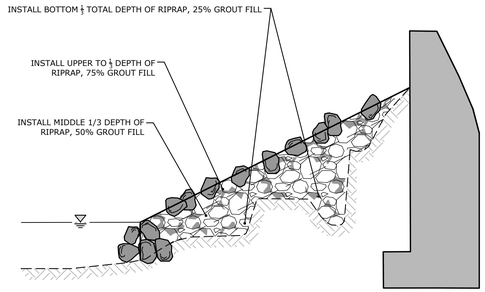
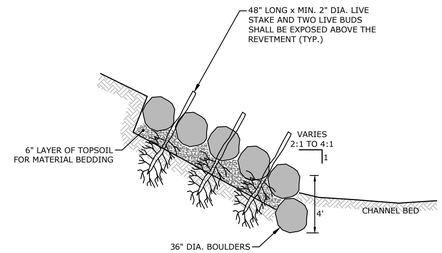
6. PLANT SPECIES AND SOURCES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.



TYPICAL RIPRAP GROUT DETAIL - SECTION VIEW

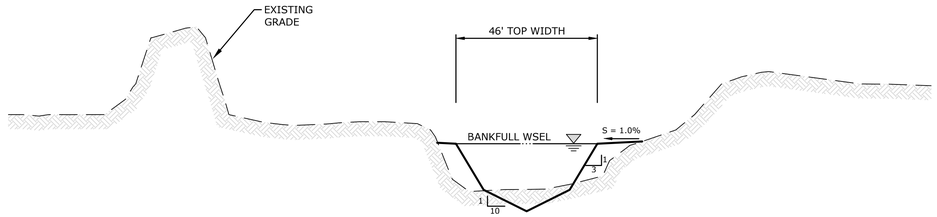
(LOOKING DOWNSTREAM, NOT TO SCALE)



JOINT PLANTED BOULDER REVETMENT

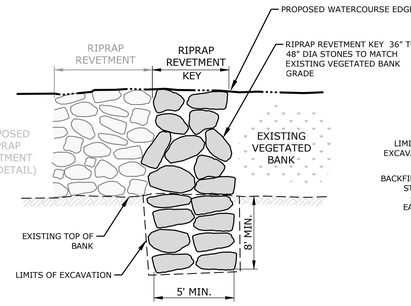
(NOT TO SCALE)

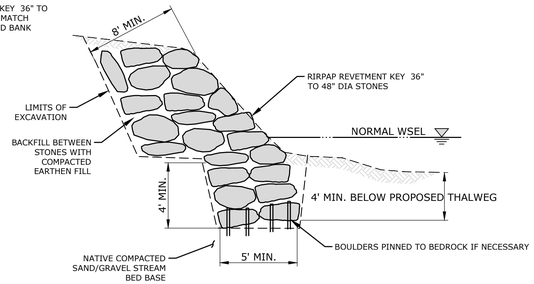
NOTES:
1. BOULDER REVETMENT SLOPE VARIES, SEE GRADING PLAN FOR SLOPES.



CHANNEL RESHAPING - TYPICAL CROSS SECTION

(LOOKING UPSTREAM, NOT TO SCALE)

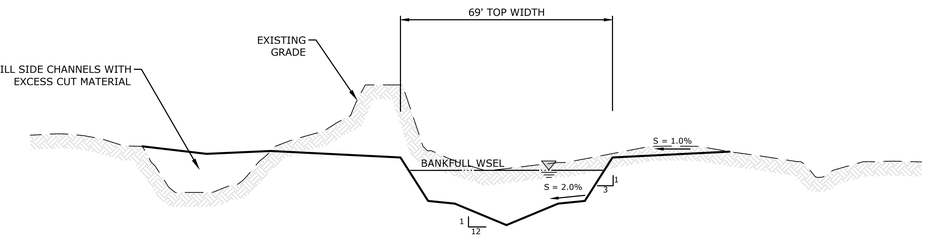




BOULDER REVETMENT KEY

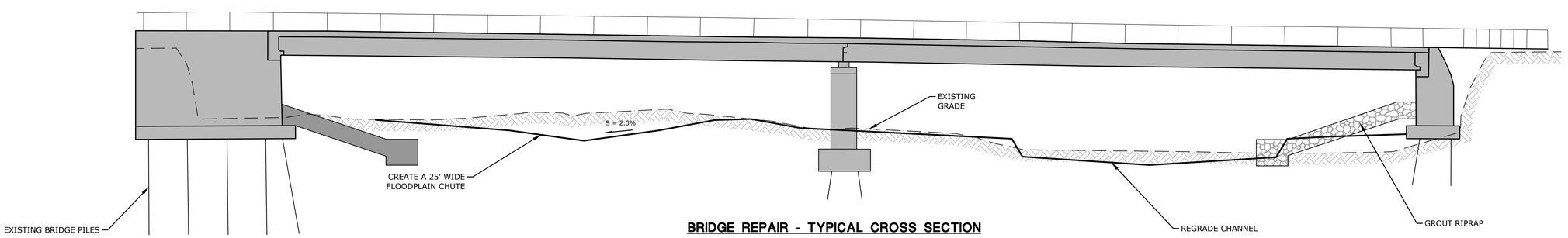
(NOT TO SCALE)

NOTES:
1. EMBED THE STONE A MINIMUM OF 3 FEET INTO THE STREAM BED AND 8 FEET INTO THE STREAM BANK TO KEY.
2. FINISHED ELEVATION OF THE STONES AS SHOWN ON CROSS SECTIONS.



CHANNEL RESHAPING AT RIFFLES - TYPICAL CROSS SECTION

(LOOKING UPSTREAM, NOT TO SCALE)



BRIDGE REPAIR - TYPICAL CROSS SECTION

(LOOKING DOWNSTREAM, NOT TO SCALE)

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

DETAILS - CHANNEL AND SITE RESTORATION

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

AS NOTED
SCALE

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PROJECT NO.

17 OF 17
SHEET NO.

DE-2
SHEET NAME

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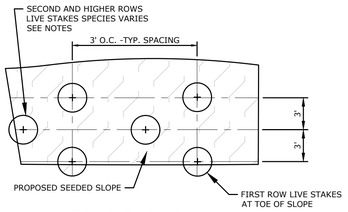

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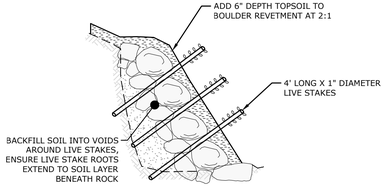

JOINT PLANTING SECTION VIEW

JOINT PLANTING

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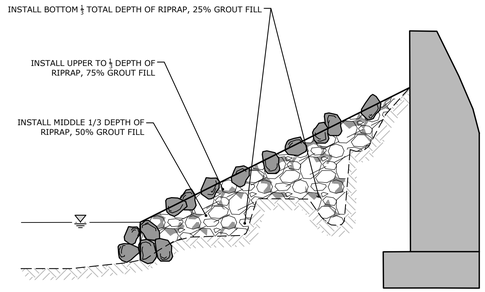
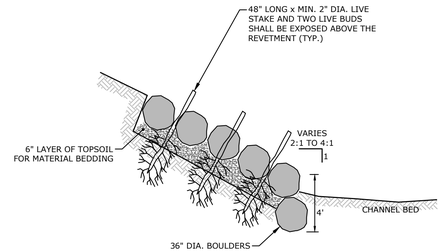


TYPICAL RIPRAP GROUT DETAIL - SECTION VIEW

(LOOKING DOWNSTREAM, NOT TO SCALE)



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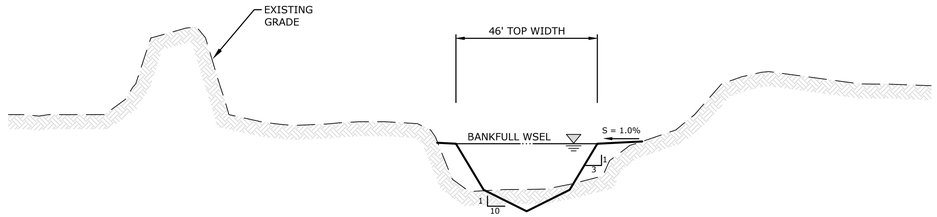
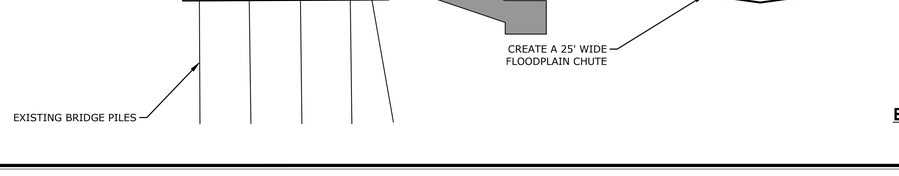


CHANNEL RESHAPING - TYPICAL CROSS SECTION

(LOOKING UPSTREAM, NOT TO SCALE)



BOULDER REVETMENT KEY

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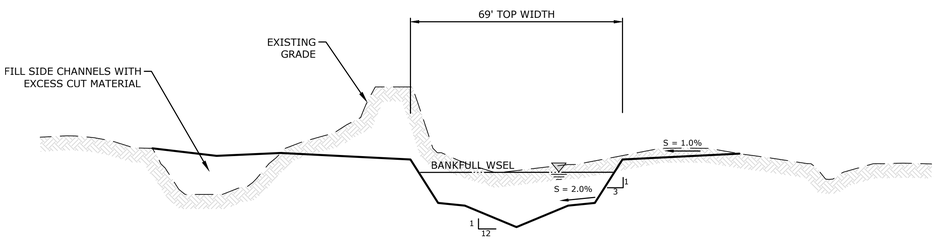

CHANNEL RESHAPING AT RIFFLES - TYPICAL CROSS SECTION

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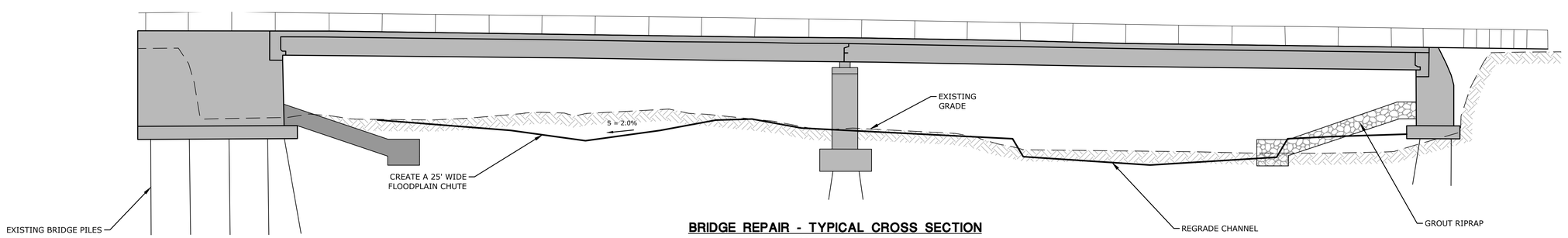

BRIDGE REPAIR - TYPICAL CROSS SECTION

(LOOKING DOWNSTREAM, NOT TO SCALE)

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PRELIMINARY DESIGN 60%

DETAILS - CHANNEL AND SITE RESTORATION

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

AS NOTED (SCALE)

NOVEMBER 2, 2018 (DATE)

5909-01 (PROJECT NO.)

17 OF 17 (SHEET NO.)

DE-2 (SHEET NAME)

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APPENDIX A

PHOTO LOG

Bushkill Upstream of Project Area

MILONE & MACBROOM

Watson Hollow Road Bridge

Sediment clogs left opening

Severe scour at right abutment

MILONE & MACBROOM

Bank Erosion along Watson Hollow Road

MILONE & MACBROOM

Berms from Sidecast Dredge Spoils

Route 28A Bridge

MILONE & MACBROOM

Appendix F
THPO Correspondence

The Delaware Nation
Cultural Resources /106 Department
31064 State Highway 281
Anadarko, OK 73005
Phone (405)247-2448 Fax (405) 247-8905

12 March 2019

To Whom It May Concern:

The Delaware Nation Cultural Preservation Department received correspondence regarding the following referenced project(s).

Project: Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Our office is committed to protecting tribal heritage, culture and religion with particular concern for archaeological sites potentially containing burials and associated funerary objects.

The Lenape people occupied the area indicated in your letter during prior to European contact until their eventual removal to our present locations. According to our files, the location of the proposed project does not endanger cultural, or religious sites of interest to the Delaware Nation. **Please continue with the project as planned** keeping in mind during construction should an archaeological site or artifacts inadvertently be uncovered, all construction and ground disturbing activities should immediately be halted until the appropriate state agencies, as well as this office, are notified (within 24 hours), and a proper archaeological assessment can be made.

Please note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation Cultural Preservation Office to conduct proper Section 106 consultation. Should you have any questions, feel free to contact our offices at 405/247-2448.

Dana Kelly
Historic Preservation/106 Asst.
Delaware Nation
31064 State Highway 281
Anadarko, OK 73005
Ph. 405-247-2448
dkelly@delawarenation.com

Shirley, Lori (NYSHCR)

From: Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Sent: Friday, May 3, 2019 12:37 PM
To: Shirley, Lori (NYSHCR)
Subject: RE: Bush Kill Stream bank restoration- Olive, West Shokan, NY

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Hi Lori:
I am ok with that.
Thanks,
Bonney

Bonney Hartley
Tribal Historic Preservation Officer
Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension office
65 1st Street
Troy, NY 12180
(518) 244-3164
Bonney.Hartley@mohican-nsn.gov
https://protect2.fireeye.com/url?k=cdc7d310-91e1e4b3-cdc52a25-000babda0106-9ddb46508e26b087&u=http://www.mohican-nsn.gov/

From: Shirley, Lori (NYSHCR) <Lori.Shirley@nyshcr.org>
Sent: Tuesday, April 23, 2019 3:46 PM
To: Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Subject: Bush Kill Stream bank restoration- Olive, West Shokan, NY

Hi Bonney,
To follow up on this, attached is SHPO's request for additional information, GOSR's response and description of prior disturbance in the project area, and SHPO's determination of No Effect. Based on SHPO's no effect determination, GOSR does not plan to conduct an archaeological Phase 1, unless you request that we do so. Rather, we propose that should an archaeological site or artifacts inadvertently be uncovered, all construction and ground disturbing activities immediately be halted until the you and all appropriate agencies are notified (within 24 hours), and a proper archaeological assessment can be made. Would that be acceptable to you? Please let me know.
Thank you,
Lori

From: Shirley, Lori (NYSHCR)
Sent: Thursday, February 14, 2019 8:47 AM
To: Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Cc: Jarman, Clifford (Clifford.Jarman@tetratech.com) <Clifford.Jarman@tetratech.com>; Kaiser, Genevieve

(Genevieve.Kaiser2@tetratech.com) <Genevieve.Kaiser2@tetratech.com>
Subject: RE: Streambank rehab- West Shokan NY

Thank you, Bonney,
We will keep you in the loop.
Lori

Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207
Office: (518) 474-0755 I Cell: (917) 446-2281 I Lori.Shirley@nyshcr.org
www.stormrecovery.ny.gov

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From: Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Sent: Wednesday, February 13, 2019 11:55 AM
To: Shirley, Lori (NYSHCR) <Lori.Shirley@nyshcr.org>
Subject: Streambank rehab- West Shokan NY

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Hello Lori,
I reviewed the correspondence for Stockbridge Munsee Community regarding the Streambank Rehabilitation Project in West Shokan, Ulster County, NY. I am not aware of cultural sites within the APE but we wish to consult on the project and receive the survey reports for review when complete.
Thank you,
Bonney

Bonney Hartley
Tribal Historic Preservation Officer
Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension office
65 1st Street
Troy, NY 12180
(518) 244-3164
Bonney.Hartley@mohican-nsn.gov
https://protect2.fireeye.com/url?k=bdd5b18f-e1f3862c-bdd748ba-000babda0106-f9b042ab38ff086c&u=https://protect2.fireeye.com/url?k=027ab9ec-5e5c8e4f-027840d9-000babda0106-0349937e6b5265da&u=http://www.mohican-nsn.gov/

Governor's Office of
Storm Recovery

ANDREW M. CUOMO
Governor

January 28, 2019

Ms. Bonney Harley, THPO-New York Office
Stockbridge-Munsee Community, Band of the Mohicans
65 1st Street
Troy, New York 12180

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Ms. Hartley,

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), is acting under auspices of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"). GOSR is the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and inviting this discussion with your Tribe to respond with any concerns or comments.

GOSR processes environmental reviews for projects funded with HUD CDBG-DR on a case-by-case basis. GOSR proposes to provide funding to design and implement a streambank rehabilitation project in the Hamlet of West Shokan, Town of Olive, Ulster County, New York. In accordance with Section 101(d)(6)(B) of the National Historic Preservation Act of 1966, as amended (54 U.S.C. §302706(b)), and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, this letter serves as notification of the proposed action. GOSR will also send this letter to the Delaware Nation, The Delaware Tribe, the Mohawk Nation and the St. Regis Mohawk Tribe.

Proposed Project Description

GOSR proposes to fund the design and construction of improvements to approximately 3,060 linear feet of the Bush Kill stream channel and stream banks, as well as repairs to abutments of a bridge span that conveys County Route 42 across Bush Kill in the Hamlet of West Shokan, Town of Olive, Ulster County, New York (Project). This project involves rehabilitation of six Potential Flood Hazard Areas (PFHA's) along a reach of the Bush Kill, from approximately 500 linear feet (LF) upstream of the Watson Hollow CR 42 Bridge, east to approximately 1,000 LF upstream of the intersection of the Bush Kill with NY Route 28A. These PFHA's are identified as significant areas of concern by the Town of Olive through a LFA conducted by NYCDEP. The six PFHAs project elements are: #1: reduce the risk of channel migration through bank armoring or other acceptable measures; #2: repair Watson Hollow Bridge scour and

increase conveyance; #3: Create floodplain connectivity by removing a sidecast berm and reconnecting the channel to its floodplain and alleviate erosion; #4: Debris management. #5: Stabilizing the bank to withstand the shear stress associated with the flood waters and mitigating head cut; #6: stabilize the bank to withstand the shear stress associated with flooding. To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and removing a total of 118 trees.

Existing Conditions

Two bridges are located within the project area. The State Route 28A bridge is located approximately 1,500 feet upstream of the Ashokan Reservoir and originally consisted of two bridge openings spanning separate segments of the channel. The bridge segments were originally built in 1911 and were repaired several times. The County Route 42 (Watson Hollow Road) bridge is located approximately 4,600 feet upstream of the Ashokan Reservoir. The bridge was originally constructed as a three-span, two-pier bridge. It was replaced and realigned in 1992 with a single-pier bridge.

Upstream of the project area, the Bush Kill can be characterized as a steep, confined channel with very little floodplain. Raw, eroding banks can be observed at many locations along the channel upstream of the project area. Large, active bank failures, some of which threaten roads, are present along the channel. This channel instability upstream of the project area represents a source of excessive sediment, which is transported downstream during large flood events.

Just upstream of the County Road 42 bridge, the Bush Kill transitions from a confined valley with high, steep banks to a wide and gently sloping valley. As this portion of the valley became more populated and developed, large floodplains that once bordered the Bush Kill became obstructed by berms to protect homes and roadways built on the floodplain. In addition, the channel was excavated and significantly widened in the 1980s to create more capacity within the channel, further disconnecting the Bush Kill from its floodplain. This, in combination with a high supply of sediment from upstream, has resulted in a laterally dynamic, multithread channel with significant sediment aggradation throughout the reach. Continual aggradation has created bank erosion along significant portions of this reach, potentially threatening bridges and homes

Potential Project Effects

The Project requires bank armoring, bridge scour repair, debris management, bank stabilization and tree removal at various locations within the channel and along portions of the bank as described above.

Area of Potential Effects

In addition to the locations immediately effected by the drainage improvements in the Town of Olive, Ulster County, NY, described above, the Area of Potential Effects (APE) also includes a 50-foot buffer zone around the work area. Consideration of the impact on cultural resources of this project includes all potential resources within the APE.

The proposed stream and streambank rehabilitation area covers approximately 3,060 linear feet along the Bush Kill from the County Route 42 Bridge, east to the intersection of the Bush Kill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York.

Assessment of Effects

The assessment of effects on cultural resources resulting from the streambank rehabilitation in the town of Olive, Ulster County, NY is based primarily on cultural resources in or near the APE recorded in the New York State Cultural Resource Information System (NYS-CRIS).

According to NYS-CRIS, the entire project area is located within an archaeologically sensitive area. A prehistoric archaeological site, the West Shokan Rock Shelter (also referred to as the Bush Kill Rock Shelter [USN# 11111.000015; NYSM 8112]), has been identified approximately 260 feet south of the APE.

Civil and residential construction in the project area throughout the 20th century, combined with extensive channel widening and alignment along the Bush Kill, may have had a negative impact on the integrity of any archaeological deposits in the vicinity. However, due to the project area's proximity to a water source, its location within an archaeologically sensitive area, and the identification of a nearby rock shelter, there remains the possibility that subsurface cultural resources may be impacted by the proposed work.

GOSR is completing an environmental review for this project pursuant to HUD NEPA regulations. If the Area of Potential Effects encompasses historic properties of religious or cultural significance to your Tribe, please respond within 30 days or sooner. In addition, please indicate if there are other sources of information or other parties, Nations, Tribes, or members of the public you believe should be included in the consultation process. Please respond by email or in writing to the address listed below.

Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207

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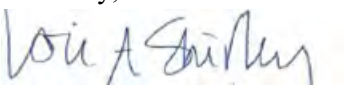

Lori A. Shirley
Director
Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery

Enclosures:
Figure 1: Site Locations
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Figure 3: Bush Kill Stream and Stream Bank Rehabilitation Proposed Site Plan

Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

January 28, 2019

Kim Penrod, Director, Cultural Resources/Section 106
The Delaware Nation
P.O. Box 825
Anadarko, Oklahoma 73005

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Kim Penrod,

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), is acting under auspices of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"). GOSR is the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and inviting this discussion with your Tribe to respond with any concerns or comments.

GOSR processes environmental reviews for projects funded with HUD CDBG-DR on a case-by-case basis. GOSR proposes to provide funding to design and implement a streambank rehabilitation project in the Hamlet of West Shokan, Town of Olive, Ulster County, New York. In accordance with Section 101(d)(6)(B) of the National Historic Preservation Act of 1966, as amended (54 U.S.C. §302706(b)), and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, this letter serves as notification of the proposed action. GOSR will also send this letter to the Delaware Tribe of Indians, the Stockbridge-Munsee Community Band of Mohican Indians, the Mohawk Nation and the St. Regis Mohawk Tribe.

Proposed Project Description

GOSR proposes to fund the design and construction of improvements to approximately 3,060 linear feet of the Bush Kill stream channel and stream banks, as well as repairs to abutments of a bridge span that conveys County Route 42 across Bush Kill in the Hamlet of West Shokan, Town of Olive, Ulster County, New York (Project). This project involves rehabilitation of six Potential Flood Hazard Areas (PFHA's) along a reach of the Bush Kill, from approximately 500 linear feet (LF) upstream of the Watson Hollow CR 42 Bridge, east to approximately 1,000 LF upstream of the intersection of the Bush Kill with NY Route 28A. These PFHA's are identified as significant areas of concern by the Town of Olive through a LFA conducted by NYCDEP. The six PFHAs project elements are: #1: reduce the risk of channel migration through bank armoring or other acceptable measures; #2: repair Watson Hollow Bridge scour and

increase conveyance; #3: Create floodplain connectivity by removing a sidecast berm and reconnecting the channel to its floodplain and alleviate erosion; #4: Debris management. #5: Stabilizing the bank to withstand the shear stress associated with the flood waters and mitigating head cut; #6: stabilize the bank to withstand the shear stress associated with flooding. To mimic a healthy, functioning stream, the proposed project will create a more confined stream channel with an expanded floodplain area. Stabilization of eroding streambanks will be accomplished by fortifying the banks with a combination of joint planted revetments and live willow stakes. Tree clearing will occur on 1.15 acres of land and removing a total of 118 trees.

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Area of Potential Effects

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Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207

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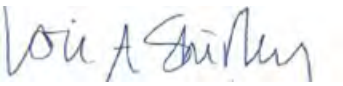

Lori A. Shirley
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Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

January 28, 2019

Dr. Brice Obermeyer, THPO
Delaware Tribe of Indians
Delaware Tribe Historic Preservation Office
Roosevelt Hall, Room 12
1200 Commercial Street
Emporia, Kansas 66801

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Dr. Obermeyer,

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), is acting under auspices of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"). GOSR is the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and inviting this discussion with your Tribe to respond with any concerns or comments.

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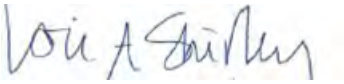

Lori A. Shirley
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Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

January 28, 2019

Mohawk Nation Council of Chiefs of Haudenosaunee Six Nations Confederacy
Akwesasane Territory
Box 336
Rooseveltown, New York 13683-0336

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Council of Chiefs,

Pursuant to the Disaster Relief Appropriations Act, 2013 (Public Law 113-2) and the Housing and Community Development Act (42 U.S.C. §5301 et seq.), the Governor's Office of Storm Recovery (GOSR), is acting under auspices of New York State Homes and Community Renewal's Housing Trust Fund Corporation as a recipient of Community Development Block Grant – Disaster Recovery ("CDBG-DR") funds from the United States Department of Housing and Urban Development ("HUD"). GOSR is the entity responsible for compliance with the HUD environmental review procedures set forth in 24 CFR Part 58. GOSR is acting on behalf of HUD in providing the enclosed project information and inviting this discussion with your Tribe to respond with any concerns or comments.

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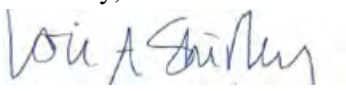

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Governor's Office of Storm Recovery

ANDREW M. CUOMO
Governor

January 28, 2019

Ron LaFrance Jr.
Saint Regis Mohawk Tribe
412 Route 37
Akwesasne, New York 13655

Re: Section 106 Compliance for the Streambank Rehabilitation Project, Hamlet of West Shokan, Town of Olive, Ulster County, New York

Dear Mr. LaFrance,

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Existing Conditions

Two bridges are located within the project area. The State Route 28A bridge is located approximately 1,500 feet upstream of the Ashokan Reservoir and originally consisted of two bridge openings spanning separate segments of the channel. The bridge segments were originally built in 1911 and were repaired several times. The County Route 42 (Watson Hollow Road) bridge is located approximately 4,600 feet upstream of the Ashokan Reservoir. The bridge was originally constructed as a three-span, two-pier bridge. It was replaced and realigned in 1992 with a single-pier bridge.

Upstream of the project area, the Bush Kill can be characterized as a steep, confined channel with very little floodplain. Raw, eroding banks can be observed at many locations along the channel upstream of the project area. Large, active bank failures, some of which threaten roads, are present along the channel. This channel instability upstream of the project area represents a source of excessive sediment, which is transported downstream during large flood events.

Just upstream of the County Road 42 bridge, the Bush Kill transitions from a confined valley with high, steep banks to a wide and gently sloping valley. As this portion of the valley became more populated and developed, large floodplains that once bordered the Bush Kill became obstructed by berms to protect homes and roadways built on the floodplain. In addition, the channel was excavated and significantly widened in the 1980s to create more capacity within the channel, further disconnecting the Bush Kill from its floodplain. This, in combination with a high supply of sediment from upstream, has resulted in a laterally dynamic, multithread channel with significant sediment aggradation throughout the reach. Continual aggradation has created bank erosion along significant portions of this reach, potentially threatening bridges and homes

Potential Project Effects

The Project requires bank armoring, bridge scour repair, debris management, bank stabilization and tree removal at various locations within the channel and along portions of the bank as described above.

Area of Potential Effects

In addition to the locations immediately effected by the drainage improvements in the Town of Olive, Ulster County, NY, described above, the Area of Potential Effects (APE) also includes a 50-foot buffer zone around the work area. Consideration of the impact on cultural resources of this project includes all potential resources within the APE.

The proposed stream and streambank rehabilitation area covers approximately 3,060 linear feet along the Bush Kill from the County Route 42 Bridge, east to the intersection of the Bush Kill with NY Route 28A bridge in the Hamlet of West Shokan and Town of Olive, New York.

Assessment of Effects

The assessment of effects on cultural resources resulting from the streambank rehabilitation in the town of Olive, Ulster County, NY is based primarily on cultural resources in or near the APE recorded in the New York State Cultural Resource Information System (NYS-CRIS).

According to NYS-CRIS, the entire project area is located within an archaeologically sensitive area. A prehistoric archaeological site, the West Shokan Rock Shelter (also referred to as the Bush Kill Rock Shelter [USN# 11111.000015; NYSM 8112]), has been identified approximately 260 feet south of the APE.

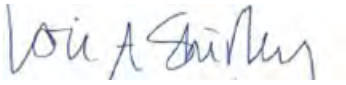
Civil and residential construction in the project area throughout the 20th century, combined with extensive channel widening and alignment along the Bush Kill, may have had a negative impact on the integrity of any archaeological deposits in the vicinity. However, due to the project area's proximity to a water source, its location within an archaeologically sensitive area, and the identification of a nearby rock shelter, there remains the possibility that subsurface cultural resources may be impacted by the proposed work.

GOSR is completing an environmental review for this project pursuant to HUD NEPA regulations. If the Area of Potential Effects encompasses historic properties of religious or cultural significance to your Tribe, please respond within 30 days or sooner. In addition, please indicate if there are other sources of information or other parties, Nations, Tribes, or members of the public you believe should be included in the consultation process. Please respond by email or in writing to the address listed below.

Lori A. Shirley
Director, Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery
New York State Homes & Community Renewal
38-40 State Street, Albany, NY 12207

I am available to answer any questions that you may have regarding this action. If you have any questions, please feel free to contact me at (518) 474-0755 or via email at Lori.Shirley@nyshcr.org.

Sincerely,



Lori A. Shirley
Director
Bureau of Environmental Review and Assessment
Governor's Office of Storm Recovery

Enclosures:
Figure 1: Site Locations
Figure 2: Project Area
Figure 3: Bush Kill Stream and Stream Bank Rehabilitation Proposed Site Plan

Project Location

Legend

Project Location

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 1

Path: C:\Projects\Bushkill Stream and Streambank Rehabilitation_HUD EA 103P359237\GIS\Olive Bushkill Streambank Rehabilitation - Project Area.mxd

Project Area

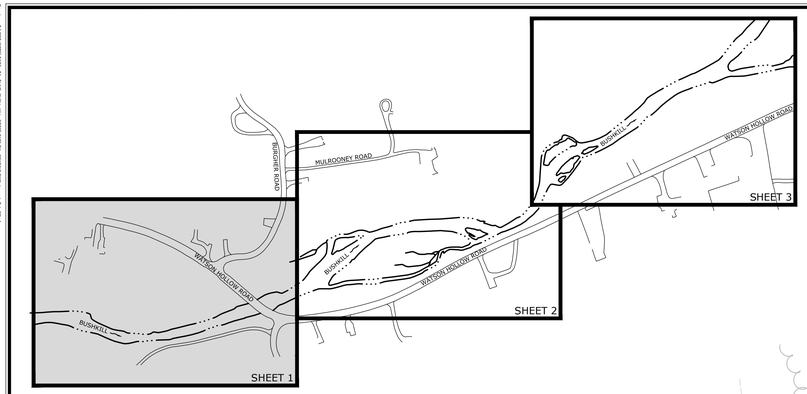
Legend

Project Area

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

Tetra Tech, Inc

Figure 2



SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-2)

WATSON HOLLOW ROAD

BURGHER ROAD

RESHAPE 25' WIDE SIDE CHANNEL

BEGIN STREAM CHANNEL RECONSTRUCTION
STA: 126+09

BUSHKILL

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 10H:1V

SLOPE 3H:1V

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION
WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 08 OF 17

SHEET NAME: GR-1

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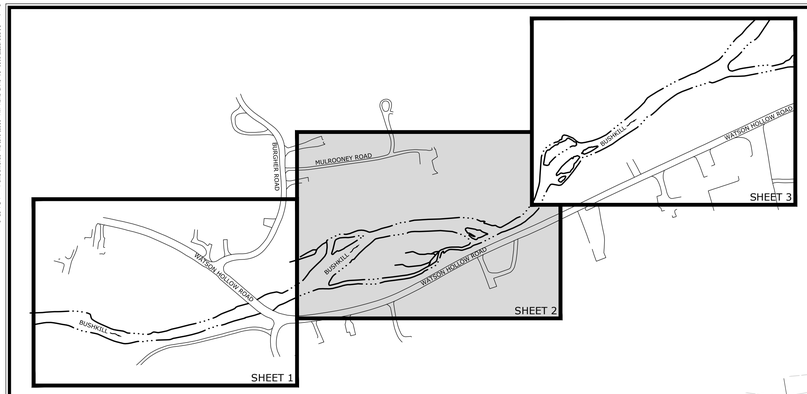

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET GR-3)

MATCHLINE (SEE SHEET GR-1)

SLOPE 3H:1V

CONSTRUCT A 69' WIDE
BANKFULL CHANNEL
(SEE DETAIL CROSS SECTION)

SLOPE 100H:1V

SLOPE 50H:1V

FILL EXISTING
FLOODPLAIN SIDE CHANNEL

BUSHKILL

WATSON HOLLOW ROAD

LIMITS OF AERIAL TOPOGRAPHY

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

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DESCRIPTION	DATE	BY

PRELIMINARY DESIGN 60%

SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 07 OF 17

SHEET NAME: GR-2

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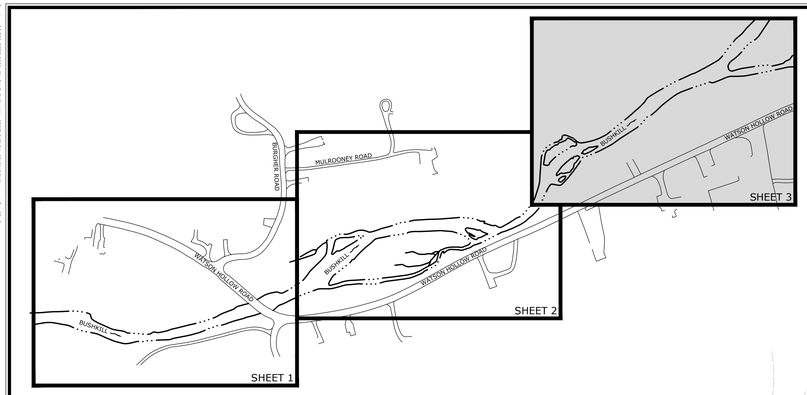

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

CONSTRUCT A 46' WIDE BANKFULL CHANNEL (SEE DETAIL CROSS SECTION)

SLOPE 3H:1V

SLOPE 100H:1V

BUSHKILL

WATSON HOLLOW ROAD

END OF STREAM CHANNEL RECONSTRUCTION
STA: 100+00

MATCHLINE (SEE SHEET GR-2)

GRADING NOTES:

1. PROPOSED CONTOURS AS PRESENTED ON THIS PLAN INDICATE FINAL GRADE AFTER TOPSOIL, ROCKS, AND OTHER PROPOSED STRUCTURES AND FINISH TREATMENTS ARE COMPLETE.
2. MATERIAL GENERATED DURING CONSTRUCTION THAT IS TO BE REMOVED FROM THE SITE MUST BE HAULED TO AN APPROVED LOCATION.

LEGEND

- 70 — EXISTING MAJOR CONTOUR
- 68 — EXISTING MINOR CONTOUR
- 70 — PROPOSED MAJOR CONTOUR
- 68 — PROPOSED MINOR CONTOUR

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SITE PLAN - GRADING

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 06 OF 17

SHEET NAME: GR-3

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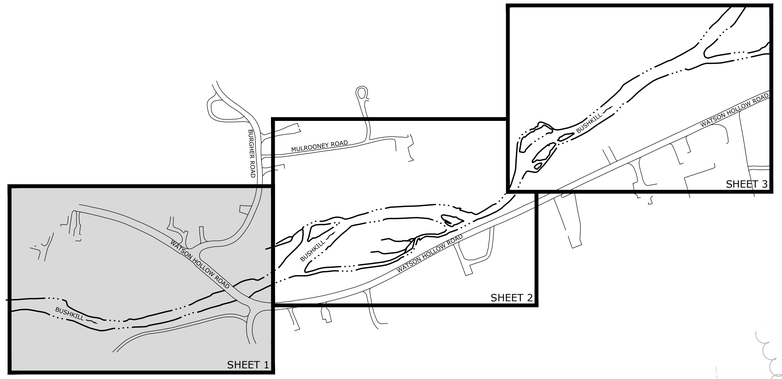

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-2)

REMOVE EXCESS MATERIAL FROM BRIDGE OPENING

RESHAPE EXISTING SIDE CHANNEL

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

BUSHKILL

INSTALL JOINT PLANTED BOULDER REVETMENT STA 119+50 TO 123+50 - SEE DETAIL

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

REPLACE RIPRAP AND GROUT (SEE DETAIL)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

0' 15' 30'
0 1/2" 1"

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

1"=30'
SCALE

NOVEMBER 2, 2018
DATE

5909-01
PROJECT NO.

09 OF 17
SHEET NO.

LA-1
SHEET NAME

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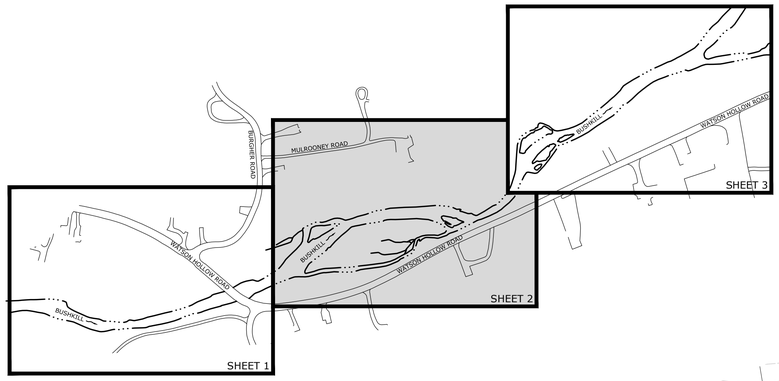

SHEET INDEX
(N.T.S.)

MATCHLINE (SEE SHEET EX-1)

MATCHLINE (SEE SHEET EX-3)

FILL EXISTING CHANNEL AND RELOCATE AWAY FROM ROAD

LIVE WILLOW CUTTINGS (REUSE FROM SITE WHERE POSSIBLE)

RE-USE EXISTING WILLOW PLANTS FOR PLANTING WHERE POSSIBLE

INSTALL JOINT PLANTED BOULDER REVETMENT STA 100+60 TO 111+75 - SEE DETAIL

FILL EXISTING SIDE CHANNEL

WATSON HOLLOW ROAD

BUSHKILL

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

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SHEET NO.: 10 OF 17

SHEET NAME: LA-2

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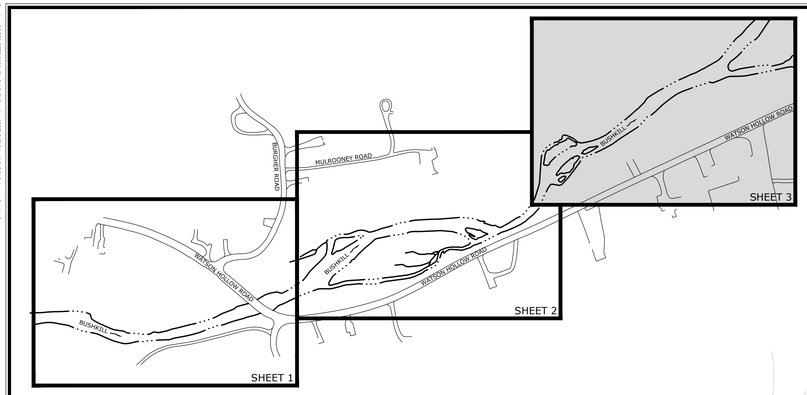

SHEET INDEX
(N.T.S.)

REMOVE SIDE CAST BERM

REMOVE SIDE CAST BERM

LIVE WILLOW CUTTINGS
(REUSE FROM SITE WHERE POSSIBLE)

INSTALL JOINT PLANTED BOULDER
REVETMENT STA 100+60 TO
111+75 - SEE DETAIL

REMOVE TREES ON PROPERTY

RE-USE EXISTING WILLOW PLANTS
FOR PLANTING WHERE POSSIBLE

FILL EXISTING SIDE CHANNEL
AWAY FROM PROPERTIES

BUSHKILL

WATSON HOLLOW ROAD

MATCHLINE (SEE SHEET EX-2)

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED GROUTED RIPRAP
- PROPOSED LIVE WILLOW STAKE CUTTINGS
- PROPOSED JOINT PLANTED BOULDER REVETMENT
- PROPOSED CHANNEL
- PROPOSED LOW FLOW CHANNEL (±28' WIDE)
- PROPOSED BANKFULL CHANNEL (±46'-69' WIDE)

N
W E
S

0' 15' 30'
0 1/2" 1"

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SITE PLAN - LAYOUT

BUSHKILL STREAM & STREAM BANK REHABILITATION

WATSON HOLLOW ROAD
TOWN OF OLIVE, ULSTER COUNTY, NY

MC	MC	DRM
DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: NOVEMBER 2, 2018

PROJECT NO.: 5909-01

SHEET NO.: 11 OF 17

SHEET NAME: LA-3

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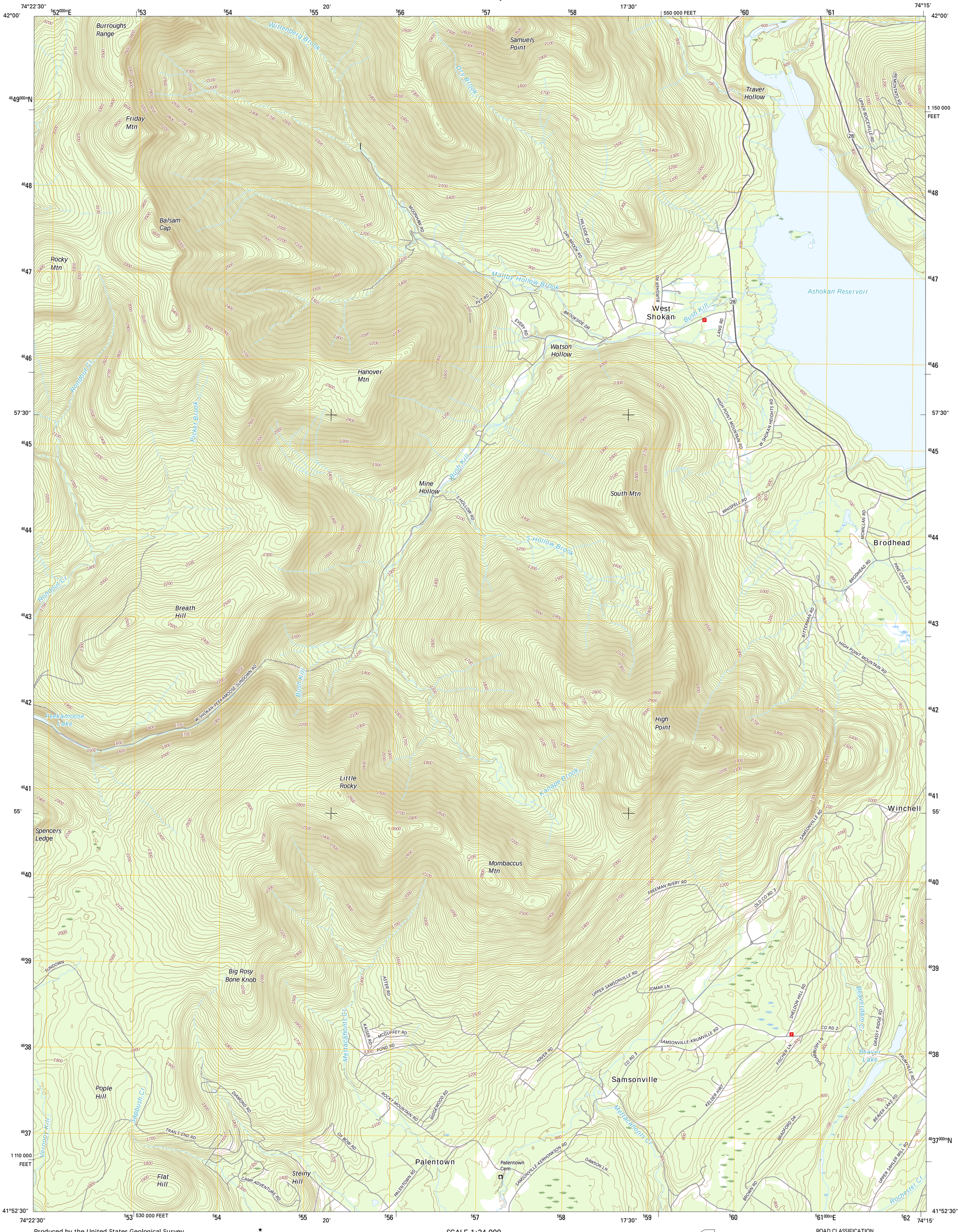
Appendix G
Topography

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

WEST SHOKAN QUADRANGLE
NEW YORK-ULSTER CO.
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 18T
10 000-foot ticks: New York Coordinate System of 1983 (east zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, August 2013
Roads..... U.S. Census Bureau, 2015 - 2016
Names.....GNIS, 2016
Hydrography.....National Hydrography Dataset, 2013
Contours.....National Elevation Dataset, 2016
Boundaries.....Multiple sources; see metadata file 1972 - 2016

Wetlands.....FWS National Wetlands Inventory 1977 - 2014

MN 13° 6' 233 MILS
GN 0° 28' 8 MILS
UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
WM
Grid Zone Designation
18T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.19

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD

Interstate Route US Route State Route

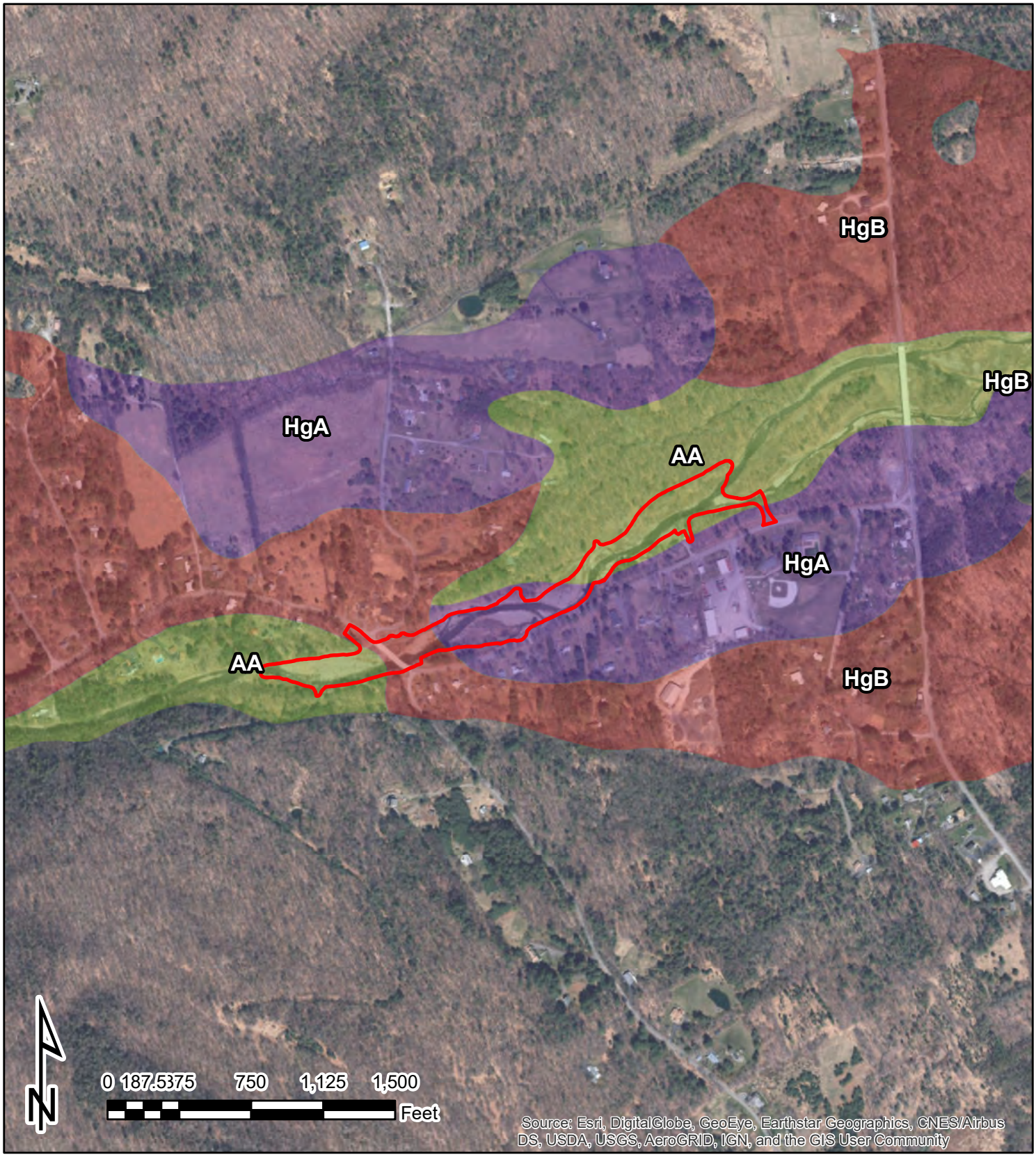
1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES

1 Shandaken
2 Phoenicia
3 Bearsville
4 Peekamoose Mountain
5 Ashokan
6 Rondout Reservoir
7 Kerhonkson
8 Mohonk Lake

WEST SHOKAN, NY
2016

NSN 7643018638731
NGA REF NO. USGSX24K48344



Legend

- Project Area
- AA = Alluvial Land
- HgA = Hoosic gravelly loam, 0 to 3 percent slopes
- HgB = Hoosic gravelly loam, 3 to 8 percent slopes

Soils

Bushkill Stream and Streambank Rehabilitation
Town of Olive
Ulster County, New York

PARS ENVIRONMENTAL
a Montrose Environmental Group company

Surface Water Management, System—Ulster County, New York
(Bushkill Stream Rehabilitation-Surface Water Management)

Map Scale: 1:2,650 if printed on B landscape (17" x 11") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Lines

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Points

Very limited

Somewhat limited

Not limited

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 17, Sep 3, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Surface Water Management, System

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
AA	Alluvial land	Somewhat limited	Fluvaquents (45%)	Ponding (0.50)	5.9	55.8%
				Flooding (0.40)		
				Large rock fragments (0.11)		
			Udifluvents (35%)	Flooding (0.40)		
				Large rock fragments (0.13)		
HgA	Hoosic gravelly loam, 0 to 3 percent slopes	Somewhat limited	Hoosic (80%)	Large rock fragments (0.50)	3.3	31.0%
HgB	Hoosic gravelly loam, 3 to 8 percent slopes	Very limited	Hoosic (80%)	Slope (1.00)	1.4	13.2%
				Large rock fragments (0.50)		
Totals for Area of Interest					**10.5**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Somewhat limited	9.1	86.8%
Very limited	1.4	13.2%
Totals for Area of Interest	**10.5**	**100.0%**

Description

The ratings for Surface Water Management, System are based on the soil properties that affect the capacity of the soil to convey surface water across the landscape. Factors affecting the system installation and performance are considered. Water conveyances include graded ditches, grassed waterways, terraces, and diversions. The ratings are for soils in their natural condition and do not consider present land use. The properties that affect the surface system performance include depth to bedrock, saturated hydraulic conductivity, depth to cemented pan, slope, flooding, ponding, large stone content, sodicity, surface water erosion, and gypsum content.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as that listed for the map unit. The percent composition of each component in a particular map unit is given so that the user will realize the percentage of each map unit that has the specified rating.

A map unit may have other components with different ratings. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.