U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I
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MEMORANDUM

DATE: See E-Signature Block Below

SUBJ: Approval and Funding for a Non-Time Critical Removal Action at the Pike Hill Copper Mine Superfund Site, Corinth, Vermont

FROM: Edward M. Hathaway, Remedial Project Manager
ME/VT/CT Superfund Section

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THRU: Robert Cianciarulo, Chief
Remediation Branch I

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TO: Bryan Olson, Director
Superfund and Emergency Management Division

Site ID# 0102121

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the selected non-time-critical removal action (NTCRA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 *et seq.*, described herein for the Pike Hill Copper Mine Superfund Site, Corinth, Orange County, Vermont. This Action Memorandum also requests and documents the approval of a "consistency" exemption from the $2 million- and 12- month statutory limits. This NTCRA will be performed by the Environmental Protection Agency (EPA) and is expected to be completed within 36-48 months of mobilization. The NTCRA will be fund-lead and is expected to require approximately $18 million in funding.

The overall objective of the NTCRA is to control the primary source of contaminated mining influenced water (MIW) at the Pike Hill Copper Mine Site ("Site") through On-Site Consolidation and Capping with In-Situ Stabilization. This action will result in a significant improvement in the water quality of Pike Hill Brook and the impacted portions of Cookville Brook Tributary #4.

This Action Memorandum does not include a request to fund any Post-Removal Site Control (PRSC). The State of Vermont Department of Environmental Conservation (VTDEC) has provided a letter of concurrence with the NTCRA, which is included as Attachment 8. VTDEC has indicated that it is willing to perform and finance any PRSC relating to the NTCRA, until a final remedial action is selected for the Site.

This NTCRA will ensure that EPA can provide a timely response to effectively minimize threats to public health or welfare or the environment which may result from the continuing release

and/or threat of release of hazardous substances at and from the Site.

While the NTCRA will accelerate the overall Site cleanup by containing and reducing site contamination, it is not expected to constitute the complete and final cleanup plan for the Site. Additional CERCLA response actions, either removal or remedial, may be necessary as more information regarding the Site conditions become available. A remedial investigation and feasibility study (RI/FS) is ongoing to complete the characterization of the nature and extent of contamination to identify whether any further response actions will be necessary, post-implementation of this NTCRA, to protect human health and the environment. EPA will document any future remedial action activities in a Record of Decision (ROD).

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

City and State: Corinth, Vermont
County: Orange
EPA ID: VTD988366720
Site ID. No.: 0102121
Category: Non-time-critical

The Site is an abandoned copper mine located in the Town of Corinth, Orange County, Vermont. It includes three historic mining areas: Union, Eureka (also known as Corinth), and Smith (also known as Bicknell) mines. Together, the three mines that comprise the Site are the most northerly of the copper mines comprising the larger Orange County copper belt. The other mines in this area include the Elizabeth Mine and the Ely Copper Mine, which are both NPL Superfund sites.

The waste piles at the Site extend over about 15 acres with an estimated volume of 85,000 cubic yards (cy) and are acting as a continuing source of contamination for the surface water and sediment of Pike Hill Brook and Cookville Brook Tributary #4. The Union and Eureka mines and the associated waste piles cover an area of about 14 acres and contain an estimated 81,000 cy of waste rock and tailing. The Smith mine and associated waste piles extend over an area of about 1 acre and contain about 4,000 cy of waste rock. The remaining areas of the Site include mine openings, historic foundations from the former mining operations and undeveloped woodlands. Figure 1 shows the location of the Site. Figure 2 depicts the three mines within the Site.

The mine waste generates MIW characterized by a low pH leachate with elevated metals, particularly aluminum, copper, iron and zinc, which is released via stormwater and other routes into the local waterways.

Copper ore was initially discovered in the vicinity of the Smith Mine on Pike Hill in 1845. In about 1853, mining of the Eureka deposit began at the peak of Pike Hill. Underground operations at the Eureka and Union Mines began in 1863. In 1881, the known portion of the ore body at the Union Mine was exhausted. The Smith Mine closed in 1882, leaving a relatively small area of waste rock piles and underground workings. The Eureka Mine ore mill closed in 1907 and activities were poorly documented between 1907 and 1915, which suggests that limited mining took place there during that period. Operations at the Eureka and Union Mines resumed under a single company (Pike Hill Mines Company) between 1916 and 1919. The magnetic separation and froth flotation processes were used during the two post 1900 operations resulting in the creation of the tailing waste at the Site. During the 1880's ore from the Pike Hill mines was brought to the Ely Copper Mine for smelting. The underground workings at the Pike Hill mines were never reopened, but during the late 1940s and early 1950s, portions of the ore dumps were trucked to the Elizabeth Mine mill for processing. The only remaining Site buildings were destroyed by fire in 1960.

Wih regard to historic ownership and operation of the Site, the mine property was sold by Vermont Copper Company to Appalachian Sulphides, Inc. in 1954, which subsequently sold the property to Pat Mines, Inc., in 1962. All three of these companies are now defunct. Currently, there are two owners of the Site property. One parcel, including the Union and Eureka Mines, is now owned by Second Growth Holdings, LLC, which acquired the property from LBI Timber LLC (LBI Timber) in approximately 2012. The location of the Smith Mine is owned by a private entity which has owned this parcel since 1983. The current use of the property has been as open space, passive recreation, and limited timber harvesting.

1. Removal Site Evaluation

Based upon the results of the previous investigations performed by EPA, the Vermont Agency of Natural Resources (VT ANR), and the United States Geological Survey (USGS), EPA signed an Approval Memorandum in December 2021 to initiate an Engineering Evaluation/Cost Analysis (EE/CA) to assess various options for controlling and containing the source of contamination at the Site. The key problem at the Site is the release of MIW from the waste rock and tailings deposited at the Site, as a result of historic mining activities. This MIW migrates into Pike Hill Brook and Cookville Brook Tributary #4 resulting in contamination that violates water quality standards and causes significant ecological impairment downstream of the Site. MIW may also be released by the underground mine workings.

No previous removal or remedial actions have been undertaken, although EPA is currently implementing the RI/FS for the Site. Exposed flotation tailings and magnetic separation tailings piles caught fire during the 1980s. This fire was managed by local responders but the EPA Region 1 Emergency Response Office performed an inspection

and provided technical support.

2. Physical Location and Features

The Site is located in the Town of Corinth, Orange County, Vermont (see Figure 1) and encompasses about 216 acres. The general site coordinates are: Latitude - 44° 03' 26.4" N, Longitude - 72° 18' 24.9" W.

The Eureka and Union Mines are located off of Richardson Road, approximately 1,000 feet apart near the top and northeast slope of Pike Hill. The two mines are generally considered to be a single impacted landscape within the Pike Hill Brook watershed that contains a barren area of waste rock, tailings piles, open mine cuts, trenches, and mine shafts and adits (some collapsed).

The Smith Mine is located on a private access road off Copper Mine Road approximately 0.4 miles south of the peak of Pike Hill, on the southern flank of the hill. It consists of three small mine waste piles, an open shaft, and a collapsed adit that lie within the Cookville Brook watershed.

The Site landscape is a combination of barren open areas containing the waste rock and tailings along with patches of birch and evergreen trees. The Site also includes mine openings and historic foundations from the former mining operations.

Pike Hill Brook and Cookville Brook Tributary #4 are the primary streams draining the Site, which eventually join the Waits River. Four significant wetland areas exist along Pike Hill Brook downstream of the Site. In addition, a small wetland exists along the Cookville Brook Tributary #4 just upstream of its confluence with Cookville Brook.

Site topography is dominated by the north-south trending ridge of Pike Hill, which has a peak elevation of approximately 1,965 feet above mean sea level (MSL). The Eureka and Union Mines occupy an area extending from the peak northward and eastward along the eastern flank of Pike Hill within an east-trending valley defined by moderate to steep slopes. There is approximately 500 feet of relief between the top of Pike Hill and confluence of the tributary with Pike Hill Brook at the eastern margin of the Site at Richardson Road. Below which the valley and Pike Hill Brook trend southeasterly. The Smith Mine is located on the east facing, moderate to steep slope at the southern end of the Pike Hill ridge. The ridge defines the western portion of a south facing valley drained by Cookville Brook Tributary #4.

The Town of Corinth has a population of approximately 1,455 people (United States Census Bureau, 2020). The Site itself is located in a rural, sparsely populated area of the

town. It is estimated that fewer than 100 people live within a one-mile radius of the Site. The nearest residents are located on the southwest side of Richardson Road, on the adjacent parcel southeast of the Site. The next closest residence is located northeast of Richardson Road. All the residents in the area rely upon private water supply wells for their drinking water.

The Site and vicinity are forested, with the exception of open areas occupied by mine waste rock or tailings piles. There are no residents or buildings at the Site. The Site is currently privately owned and has been generally undeveloped, unoccupied, and idle since cessation of mining activities, except for a few periods of timber harvesting. However, it is reportedly frequented by off-road recreational vehicles, hikers, and spelunkers. There is evidence of disturbance to parts of the Site related to these activities, particularly well-established off-road recreational vehicle tracks on the mine waste piles and evidence of trespassing within the underground workings that can be readily accessed in the winter when the mine pools are frozen.

The Site is home to four species of bats, three of which are state protected species: the northern long-eared bat *(Myotis septentrionalis*, federally threatened and state endangered); the little brown bat (*Myotis lucifugus*, state endangered); the eastern small-footed bat (*Myotis leibii*, state threatened) and the big brown bat (*Eptesicus fuscus*). All of these species have been documented hibernating in all three mines (Eureka, Union, and Smith) over the winter, with survey data reaching back to 1992. Although northern long-eared bats and little brown bats have experienced declines at the Site, eastern small-footed bats have experienced population increases at this site over time according to winter observations and this is the largest known concentration of the species in Vermont.

Human entry to the mine in the winter has been documented, along with dead little brown and eastern small-footed bats, which is rare to see in bat hibernation sites. Bats use forested areas and trees with cavities, cracks, and peeling bark around hibernation sites to safely forage, roost, swarm for mating in the fall, and migrate to their summer range. The vegetation around the entrance to hibernation sites helps to regulate airflow, temperature, and humidity conditions that bats are selecting for their over winter hibernation.

This Site was determined to be eligible for the National Register of Historic Places in 2011 due to its historical mining features. The identified resources including structural remains and artifact assemblages which are components of a complex, integrated, and well-preserved cultural landscape. The staff of the Vermont Division of Historic Preservation (VDHP) State Historic Preservation Office (SHPO) have identified the Site as VT-OR-0027 and determined that the Pike Hill Mines meet Criteria A, C and D of the National Register of Historic Places and retain sufficient integrity to support its historic

significance. A 114.8-acre preliminary Area of Potential Effect (APE) for has been identified at the Site with respect to potential cultural resource impacts. Of this 114.8-acre APE, 92.2 acres of the APE is associated with the Union and Eureka mines and 22.6 acres is associated with the Smith Mine. The APE for each of these is shown on Figure 3.

The Site contains federal jurisdictional wetlands as defined by the Clean Water Act along with State of Vermont jurisdictional wetlands. A wetlands delineation was performed for the areas within the limits of the cleanup alternatives evaluated in the EE/CA. Areas of federal jurisdictional wetlands generally fall within area classified by the State as Class 2 wetlands, while isolated wetlands outside of federal jurisdiction are primarily classified by the State as Class 3 wetlands. Wetlands on-site are classified under the National Wetland Inventory as, palustrine emergent (PEM) and palustrine shrub scrub (PSS). Some palustrine forested (PFO) wetlands are located downstream of the Site. A total of twenty-nine (29) wetland areas were identified on-site, encompassing a total of 96,350 square feet (sf) (2.2 acres). The location of wetlands identified on-site are shown on Figure 3.

3. Site Characteristics

As discussed above, the Site consists of three abandoned mines with waste rock and tailing piles along with underground workings. Each of the three mines at the Site are described in more detail below. Figure 2 shows the general layout of these areas.

Union Mine

Potential contaminant sources of MIW at the Union Mine include underground workings and waste rock, as described below. The waste rock is separated into two subareas as described separately below.

Underground Workings: The underground workings underlie an area approximately 250 feet wide by 750 feet long, and slope 25 to 30 degrees downward along the dip of the ore body to the northeast of the upper adit. The mine has two shaft openings located at the most upslope point (Union Mine Shaft) and an adit located near the central portion of the workings (Union Mine Adit). The underground workings appear to be nearly completely flooded up to the level of the Union Mine Adit. MIW samples from the mine pool at the Union Mine Adit and uppermost portal to the Union Mine Shaft analyzed by USGS had copper concentrations of 1,800 micrograms per liter (µg/L) and 4,950 µg/L, respectively. The extent to which MIW from the mine pool is migrating via overland flow appears to be minimal but is not well-documented.

Lower Waste Area: The waste rock piles at the Union Mine are located generally downslope from the mine openings and underground workings. The material is mostly sulfidic waste rock. Because these waste piles occupy the lower elevations and are centrally located in the valley, they have a greater potential to interact with surface runoff from Pike Hill and discharging groundwater and mine drainage than upslope waste piles. Two seeps drain from this area, and Pike Hill Brook (the stream draining the valley) runs along the southern margin of these piles. No significant distinguishing features have been noted between individual piles other than their size and location. This area has lenses of visible waste and sediment extending well beyond the previously defined waste piles. Two composite soil samples were analyzed by USGS from the larger piles in this area with copper concentrations between 3,670 and 8,410 milligrams per kilogram (mg/kg). Tailings were not identified in the Union Mine waste rock piles, which is separated into two areas: the Lower Waste Area and the Sediment Area. The estimated waste rock and impacted soil volume for this area is 31,900 cy.

*Sediment Area***:** The Sediment Area encompasses the segment of Pike Hill Brook from the Lower Waste Area to the confluence with a small tributary just prior to culvert which is located on the adjacent property, along with the mine waste adjacent to Pike Hill Brook. The estimated impacted sediment volume for this area is 3,300 cy. This volume was calculated assuming an average impacted sediment depth of 2 feet throughout the Sediment Area.

Eureka Mine

Potential contaminant sources of MIW at the Eureka Mine include underground workings, waste rock piles, and the flotation/magnetic separation mill tailing area, as described below.

Waste Rock Piles: The waste rock piles associated with the Eureka Mine extend from the peak of Pike Hill to the north and northeast along the northeast facing slope of Pike Hill and are separated into four subareas as described below. The areas are generally depicted on Figure 2.

Underground Workings: The underground workings are located south of the Union Mine and extend northward from the Eureka Mine Upper Shaft (also known as the Cuprum Shaft), near the peak of Pike Hill to the Eureka Mine Lower Adit. The ore body and related workings appear to follow the same northeasterly dipping trend as the Union Mine. The Eureka Mine underground workings underlie an area of approximately 250 feet wide by 650 feet long, sloping downward to the northeast from the open cut at the peak of Pike Hill along the 25- to 30-degree dip of the ore body. Four mine openings have been identified from south to north: Eureka Mine Upper Shaft, Eureka Mine Upper

Adit, Eureka Mine Lower Shaft, and Eureka Mine Lower Adit. A water sample from the mine pool at the Eureka Mine Lower Adit analyzed by USGS had a copper concentration of 1,980 µg/L. The mine appears to be flooded up to this level, which suggests the uppermost portion of the mine is not flooded. The extent to which mine pool water is actively seeping from the mine via overland flow appears to be minimal but is not well-documented.

Upper Waste Area: There are approximately 14 waste rock piles of varying sizes distributed along the crest of Pike Hill along the west and northwest side of the open cut, near the Eureka Mine Upper Shaft and immediately west of the Eureka Mine Upper Adit. Half of the piles are overlapping or tightly clustered near the Eureka Mine Upper Adit. Others are distributed uphill of the open cut, and a cluster of three small piles are located west and downslope of an old access road along the western flank of Pike Hill. Unlike the areas described above, several of the individual piles in this area appear to be located outside the Pike Hill Brook watershed, in areas likely draining to the west and south, flowing past the Smith Mine, via Cookville Brook Tributary #4. This area has lenses of visible waste and sediment extending well beyond the previously defined waste piles. No seeps were identified in this area. These waste piles appear to lie above the mine pool and are not likely to interact with mine drainage. However, drainage from this area may contribute to the mine pool. USGS analyzed two composite soil samples and one ore rock grab sample from the waste rock piles in this area, and copper concentrations ranged from 3,000 to 4,410 mg/kg. The estimated waste volume for Upper Waste Area is 14,000 cy.

Eureka Waste Area: Between the Eureka Mine Lower Adit and Eureka Mine Upper Adit are six relatively small, tightly clustered waste rock piles. The piles are more than 200 feet from the lower piles (described above for the Upper Waste Area) and no seeps have been identified in this area. The piles appear to lie above the elevation of the mine pool and are not likely to interact with mine drainage. However, drainage from this area may contribute to the mine pool. This partially wooded area has lenses of visible waste and sediment extending well beyond the previously defined waste piles. One composite sample and one grab sample analyzed by USGS had a copper concentration of 3,240 mg/kg. The estimated waste volume in Eureka Waste Area is 6,100 cy.

Central Waste Area: Northeast of the Eureka Mine Lower Adit are approximately twelve closely clustered and overlapping waste rock piles covering the steep slope extending between the Eureka Mine Lower Adit and the former mill foundation. These piles appear to fill the area at the head of the main tributary that drains the valley. This partially wooded area has lenses of visible waste and sediment extending well beyond the previously defined waste piles. USGS analyzed one composite soil sample from one of the larger piles in this group with a copper concentration of 8,060 mg/kg. The estimated

waste volume in Central Waste Area is 15,300 cy.

Processed Waste Area (Flotation/Magnetic Separation Area): This subarea includes the former ore processing mill and four overlapping piles of flotation tailings, partially burnt tailings, and magnetic separation tailings located immediately north of the former mill foundation. A separate and smaller pile of magnetic separation tailings is located immediately northwest of the former mill foundation. Lenses of visible waste surround the previously defined waste piles in this area, extending downgradient into wooded areas. The main tributary that drains the valley is located on the northwest margin of these piles. A seep emanates from the downslope/northeast margin of these piles. USGS analyzed one composite soil sample from burnt tailings; one composite sample from magnetic separation tailings; and grab samples from each of the red, gray, and yellow-colored waste layers within the piles for characterization. Copper concentrations from the tailings ranged from 7,200 to 9,200 mg/kg. The estimated waste volume in the Processed Waste Area is 10,600 cy.

Smith Mine

The Smith Mine is located approximately 0.4 miles south of the peak of Pike Hill, within the Cookville Brook watershed. The mine area consists of the collapsed Smith Mine Adit with three nearby waste rock piles, the largest of which is immediately downslope of the adit portal. A series of exploratory trenches were dug in the hillside between the Smith and Eureka Mine areas, but no ore mining occurred in this area, and no waste rock containing ore is known to exist in this area. Figure 2 shows the general layout of these areas.

Underground Workings: The Smith Mine underground workings are within an area approximately 75 feet wide by 100 feet long extending westward from the shaft location, which is the only existing opening to the mine. The collapsed adit to the mine extends eastward from the shaft location. The underground workings appear to be completely flooded to a level just below the main shaft. No surface seepage of the mine pool has been observed. The mine pool is accessible enough to allow sampling from the ground surface, below the main adit opening. A water sample from the mine pool at the main shaft location had a copper concentration of 992 µg/L.

Smith Waste Area (Waste Rock Piles): The waste piles in the Smith Waste Area are mostly wooded/vegetated. No seeps are identified in the immediate vicinity of the Smith Mine waste piles; however, Cookville Brook Tributary #4 is located approximately 500 feet downslope of the waste rock piles and a bedrock seep has been identified along the bank of the brook. Three composite soil samples (one from each waste rock pile), four grab samples, and a soil composite sample from a downslope area had copper

concentrations ranging from 1,380 to 1,800 mg/kg. The estimated waste volume in the Smith Waste Area is 3,800.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

Information gathered from state, federal and owner/operator records indicate that hazardous substances were generated and disposed of at the Site. As a result of historic improper waste disposal practices many of the hazardous substances have been released into the environment. Site investigations, as further documented below, have detected hazardous substances in the surface water and sediments within and adjacent to the Site. In particular, aluminum, copper, iron, and zinc have been detected at concentrations above those acceptable for ecological exposure. These contaminants of concern are "hazardous substances" as defined by CERCLA Section 101(14) and 40 C.F.R. Section 300.5.

The release of the hazardous substances into the environment has resulted in the contamination of surface water and sediments. Substantial ecological risks are present as a result of the hazardous substances migrating from the Site.

4(a) Nature and Extent of Contamination

The major issue at the Site is MIW, which is the result of oxidation of waste rock and tailings. The geochemical reactions responsible for the oxidation of sulfide minerals, such as pyrrhotite, are driven by the availability of atmospheric oxygen and water. These geochemical reactions produce sulfuric acid, which results in the generation of low-pH (typically less than 4.0 standard units) leachate. At low pH, many of the metals that were bound in the ore and native soil become soluble and dissolve into the leachate. Table 1 lists the pH measurements obtained at multiple locations acros the Site in 2021 and 2022 and Figure 4 shows the pH at the sampled locations in November 2021.

The leachate from the Site often contains elevated levels of aluminum, cadmium, cobalt, copper, iron, manganese, and zinc. Aluminum and manganese are also contributed by the leaching of metals from the native soil. In addition to the oxidation of the sulfide-bearing minerals, the cyclic formation and subsequent dissolution of evaporative metal salts on exposed waste ore and tailings also contributes to MIW at the Site. Metal salts form on the surfaces of the tailings and waste ore piles as metal-containing acidic moisture evaporates. The metals stored in these salts are dissolved and remobilized during subsequent rainfall

events. This run-off ultimately is conveyed to receiving streams resulting in an increase in the metals concentration and load. i

Metals associated with MIW at the Site have been detected at elevated concentrations in the surface water of Pike Hill Brook and Cookville Brook Tributary #4. MIW directly affects surface water quality at the Site by lowering the pH and contributing to elevated concentrations of metals to this medium. In addition, the tailings and weathered waste rock have been transported from the original areas of deposition by erosion and re-distributed in Pike Hill Brook, causing elevated concentrations of metals in the sediment. Figure 5 shows the sample results for copper and zinc at select locations in Pike Hill Brook and Cookville Brook Tributary #4. The concentration of copper in Pike Hill Brook was 444 times greater than the Vermont Water Quality Standard (VTWQS) of 9 ug/l for copper in May 2021 and 422 times the VTWQS in October 2021. The concentration of copper in Cookville Brook Tributary #4 was 12 times the VTWQS in May 2021 and 22 times the VTWQS in October 2021.

4(b) Ecological Impact Summary

In support of the EE/CA developed for the NTCRA, EPA performed a streamlined risk evaluation which is documented in the memorandum entitled: *Streamlined Risk Evaluation Memo for an Engineering Evaluation/Cost Analysis in support of a Non-Time-Critical Removal Action,* dated April 21, 2022 (Streamlined Risk Evaluation). This Streamlined Risk Evaluation supports the justification for taking a removal action and identifies what current or potential exposures should be prevented. The evaluation was also consistent with the evaluation of the Threat to Public Health, Welfare and the Environment presented in the EE/CA Approval Memorandum. The Streamlined Risk Evaluation documented an unacceptable risk to aquatic receptors associated with the release of hazardous substances into the environment at the Site.

The impacts to Pike Hill Brook from the Union and Eureka mines at the Site documented by VTANR, EPA, and USGS were used to develop an overall assessment of the impact of mine drainage on the aquatic system downstream from the Site. The key findings of Streamlined Risk Evaluation are:

- Copper concentrations in the water of Pike Hill Brook that drains the Site and in Pike Hill Brook at the northern limit of the Site, after the confluence from the tributary to the northwest (along Richardson Road) exceeds both Vermont Water Quality Standards and the federal NRWQC. Concentrations in Cookville Brook Tributary #4 below the Smith Mine

area of the Site also exceed these criteria. Figure 5 shows the copper and zinc concentrations in Pike Hill Brook and Cookville Brook Tributary #4 as compared to water quality standards.

- The discharge from the Site is causing acute toxicity (ranging from 100% mortality with 0.7 miles downstream of the Site to 85% mortality 1 mile downstream of the Site) to the aquatic community of Pike Hill Brook for almost 1.5 miles below the discharge from the Site. Figure 5 shows the surface water toxicity test results for Pike Hill Brook.

- The benthic community and fish community of Pike Hill Brook are severely impaired by the release from the Site for several miles below the discharge from the Site. A more limited area of impairment was identified in Cookville Brook Tributary #4 below the Smith Mine. Figures 6 and 7 shows the benthic and fish assessments for Pike Hill Brook and Cookville Brook Tributary #4.

The VTDEC Biomonitoring and Aquatic Studies Section (BASS) summarized their assessment of Pike Hill Brook and Cookville Brook Tributary #4 in a June 14, 2022 memorandum to John Schmeltzer of VTDEC and Edward Hathaway of USEPA. Their findings are summarized below:

> Pike Hill Brook is impaired over its entire length based on macroinvertebrate and fish community assessments. The upper reaches from river mile 2.1 to the stream's origin at the Pike Hill mine site is in "Poor" condition for both macroinvertebrates and fish. The macroinvertebrate community is extremely low in abundance and taxa based on the VTDEC BASS criteria, and the stream is virtually fishless. The lower reaches of Pike Hill Brook are slightly improved but remain in "Poor-Fair" condition based on the VTDEC BASS criteria. Within lower gradient reaches, such as river mile 1.4 and 0.9, moderately tolerant macroinvertebrate taxa are present in higher abundances, as are tolerant fish species. Within the higher gradient reaches from river mile 0.4 down to river mile 0.1, minor recovery of the macroinvertebrate and fish community is evident, but the communities still fail to meet VTDEC biocriteria, with overall macroinvertebrate and Brook Trout abundance somewhat depressed. Sampling at river mile 0.4 was performed in 2017; density and Ephemeroptera, Plecoptera and Trichoptera (EPT) richness were higher than previous sample events in 2005 and 2007, but the sample still failed to meet biocriteria.

Cookville Brook Tributary #4 is impaired from immediately downstream of the Smith Mine discharge for approximately a half mile. The biological community was sampled at river mile 1.7 in 2007 and 2017; both sample events had very low overall density, richness, and EPT richness.

Based on the assessments discussed above, VTDEC has identified the entire 4-mile reach of Pike Hill Brook from the Site to the Waits River and the 0.7-mile reach of Cookville Brook Tributary #4 downstream of the Smith Mine as impaired in the 2020 303(d) list of impaired waters, which was approved by EPA Region 1 on September 17, 2020.

Copper concentrations in surface water in Pike Hill Brook at the northern limit of the Site range from 1,940 to 30,800 µg/L. The range of pH measured in Pike Hill Brook within the Site was between 2.7 and 4.4 standard units. The sediment in this same area of Pike Hill Brook within the site downgradient of the waste rock piles has a copper concentration of 8,070 mg/kg. This is the same concentration as the waste rock and indicates that erosion has transported mine waste into Pike Hill Brook downgradient of the Site. While the extent of the area impacted by the release from the Smith Mine area of the Site is less extensive, the surface water in Cookville Brook Tributary #4 where the Smith Mine leachate discharges contains elevated levels of copper and has caused documented reductions in the benthic community.

The ecological assessments performed to date at the Site provide clear evidence of an unacceptable ecological risk based on multiple lines of evidence, particularly water chemistry, toxicity testing, and benthic community studies. Such impairment also limits the functions of the streams to provide a food source for terrestrial life such as birds and mammals, which is particularly important due to the presence of federally threatened and state endangered bat species.

5. NPL Status

The Site was proposed for inclusion on the National Priorities List (NPL) in Federal Register / Vol. 69, No. 45 / Monday, March 8, 2004 / Proposed Rules. The Site was finalized on July 22, 2004: Final NPL Listing: Federal Register / Vol. 69, No. 140 / Thursday, July 22, 2004

EPA began the remedial investigation and feasibility study of the Site in 2004.

6. Maps, Pictures and Other Graphic Representations

Attachment 1 – Table and Figures

Attachment 2 - EE/CA Approval Memo

Attachment 3 - ARARS Tables

Attachment 4 - EE/CA Fact Sheet

Attachment 5 - Response to Comments

Attachment 6 - Public Hearing Transcript

Attachment 7- Administrative Record Index

Attachment 8 - Letter of Concurrence from VTDEC dated September 29, 2022

Attachment 9 - Enforcement Addendum

II. B. Other Actions to Date

1. Previous Actions

EPA and VTDEC has performed investigations at the Pike Hill Copper Mine as part of the RI/FS and the Vermont Biomonitoring program. These investigations include the following:

- Vermont Department of Environmental Conservation (VTDEC): 1997, 2002, 2005, 2007, and 2017 ecological studies of macroinvertebrate and fish populations in downstream surface water. All the data collected by VTDEC is available through the BASS website at: https://dec.vermont.gov/watershed/map/monitor/biomonitoring

- United State Geologic Survey (USGS) (working for EPA through an interagency agreement) performed the following studies of the Site source areas along with Pike Hill Brook and Cookville Brook Tributary #4:

    - Geochemical Characterization of Mine Waste, Mine Drainage, and Stream Sediments at the Pike Hill Copper Mine Superfund Site, Orange County, Vermont. SIR 2006-5303 (USGS, 2006).

    - Surface- water hydrology and quality at the Pike Hill Superfund Site, Corinth, Vermont, October 2004 to December 2005. USGS Scientific Investigations Report 2007-5003 (USGS, 2007).

    - Aquatic Assessment of the Pike Hill Copper Mine Superfund Site, Corinth, Vermont. SIR 2012-5288. (USGS, 2013).

- EPA performed field studies in coordination with the USGS studies, including:

    - Two-species, 96-hour, acute toxicity testing results using pore-water samples collected from the Pike Hill Mine in Corinth, VT: Environmental Services Assistance Team (ESAT) report submitted to the EPA Office of Environmental Measurement and Evaluation January 17, 2008.

    - Toxicity testing results using sediment samples from Pike Hill Mine Corinth, Vermont: Environmental Services Assistance Team (ESAT) report submitted to the EPA Office of Environmental Measurement and Evaluation January 17, 2008.

- Nobis:
    - 2008 CSM Technical Memorandum (As Nobis Engineering) summarized work conducted at the Site to date (Nobis, 2008).
    - 2019 Field Investigation Plan (FIP) evaluated all investigations performed at the Site to date, incorporating evaluations from other Vermont copper mines (Ely and Elizabeth) to refine the CSM (Nobis, 2019).

The USGS, EPA, and Nobis reports are available at the EPA Pike Hill Copper Mine website: www.epa.gov/superfund/pikehill.

No previous CERCLA removal or remedial actions have been undertaken at the Site.

2. Current Actions

The Site is currently under investigation as part of a RI/FS. At the same time, in order to control the continuing contamination of the surface water and sediment as expeditiously as possible, EPA developed an Approval Memorandum in December 2021 and completed an EE/CA in July 2022 in support of the NTCRA authorized by this Action Memorandum. The EE/CA evaluated various response actions to control the source of contamination at the Site, based upon cost, effectiveness, and implementability.

While the NTCRA authorized by this Action Memorandum will accelerate the overall Site cleanup by containing and reducing Site contamination, it does not constitute the complete and final cleanup plan for the Site. Additional response actions, either removal or remedial, may be considered as more information regarding the Site conditions become available. The NTCRA is consistent with the RI/FS and long-term remedial response at the Site.

C. State and Local Authorities' Role

1. State and Local Actions to Date

The State of Vermont supported the inclusion of the Site on the NPL and has since reviewed and commented on the various components of the ongoing RI/FS work. EPA consulted with the State regarding the performance of a NTCRA at the Site, and the State has indicated its full support for this expedited approach to site cleanup. The Vermont Department of Environmental Conservation

(VTDEC) has provided EPA with a letter of concurrence regarding the NTCRA (See Attachment 8).

Local authorities have been briefed regarding the Site and have expressed support for the NTCRA. The Corinth Planning Commission submitted comments in support of the cleanup action proposed by EPA (See Attachment 5).

2. Potential for Continued State/Local Response

The State and local authorities are expected to maintain a high level of interest in the Site. The State is expected to review and comment on the upcoming RI/FS activities, as well as the final selection of a remedial action. The State will also participate in the implementation of the NTCRA as a support agency. The State has agreed to perform the post-removal-site control (PRSC) until a final remedy is selected. Local governments are expected to remain highly involved in the design and implementation of the cleanup.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b)(2) of the NCP lists a number of factors for EPA to consider in determining whether a removal action is appropriate, including:

- (i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
- (ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;
- (iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
- (iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;
- (v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;
- (vi) Threat of fire or explosion;

- (vii) The availability of other appropriate federal or state response mechanisms to respond to the release; and

- (viii) Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

The evaluation of the Site conditions warranting a NTCRA was presented in the EE/CA Approval Memorandum and is updated below. Factor "iii" is not relevant to the Site because there are no known "drums, barrels, tanks, or other bulk storage containers" present on the Site.

i. *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants.* There are actual current exposures of animals to hazardous substances, pollutants, and contaminants which have resulted in benthic organism and fish communities being severely impacted. As discussed previously in Section II.B.4 and in the EE/CA, the Site contains sulfidic mine waste that creates low pH leachate and which also contains elevated levels of metals toxic to aquatic organisms, particularly aluminum, copper and zinc (collectively resulting in MIW). For the areas within the Site and immediately downgradient, the low pH water and elevated metals are causing severe impacts to aquatic organisms as indicated by 100% mortality in surface water toxicity tests performed in Pike Hill Brook. The metals impacts extend downstream as evidenced by surface water toxicity that extends for a mile downstream of the Site. The 2012 aquatic assessment prepared by the USGS found that degradation of surface water quality for Pike Hill Brook and Cookville Brook Tributary #4 below the South Mine is dominated by elevated copper, and to a lesser extent, cadmium. Localized degradation was also caused by aluminum, iron, and zinc. The Streamlined Risk Evaluation Memorandum for the Site included in the EE/CA, concluded that ecological assessments performed to date for the Site provide clear evidence of an unacceptable ecological risk based on multiple lines of evidence, particularly water chemistry (multiple order of magnitude exceedance of water quality criteria for copper), toxicity testing (100% mortality in surface water for 0.7 miles downstream of Site), and benthic community studies (Pike Hill Brook and Cookville Tributary #4 are listed as impaired waters).

ii. *Actual or potential contamination of drinking water supplies or sensitive ecosystems.* The mine waste at the Site is also causing contamination to sensitive ecosystems, including surface water bodies supporting federal and state threatened and endangered bats. The impacts to the surface water at the Site deplete the available prey for the threatened and endangered bats. Pike Hill Mine is a unique hibernation site for bats in Vermont. It is colder and drier than many other hibernation sites, hosts the largest known concentration of state-threatened eastern small-footed bats in Vermont, and is a location northern long-eared bats have used as hibernacula in the past.

iv. *High concentrations of hazardous substances, pollutants, or contaminants in soils largely at or near the surface, that may migrate.* High concentrations of hazardous substances, pollutants or contaminants, particularly copper and zinc, are largely at or near the surface in the mine waste piles and are actively migrating into the surface water of Pike Hill Brook and into Cookville Brook Tributary #4, creating contaminated surface water (MIW) and sediment. These pollutants are also migrating into downstream wetlands and contaminating these areas. High concentrations of metals (including aluminum, cadmium, chromium, cobalt, copper, iron, manganese, and zinc) have been detected in waste rock and flotation tailings materials exposed at the surface in the Pike Hill Mine Site. Currently, a large portion of the waste rock piles in the Lower Waste Area (1.5 acres) and a portion of the waste rock piles in the Upper Waste Area (0.25 acres) have little to no vegetated cover. The magnetic separation and flotation tailing piles in the Processed Waste Area are also exposed (0.6 acres). Contamination is being continually released through erosion and acid mobilization of the metals. Migration of dry oxidized tailings through wind-blown dust has likely been a problem in the past, and it could continue to be a problem if actions are not taken to stabilize (cover) the exposed waste.

v. *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.* The principal contaminant transport pathway at the Site is stormwater runoff. The mine is situated on a hillside in east central Vermont, where storm conditions through much of the year produce short-term rainfall events. Annual precipitation averages approximately 35 inches in the Corinth area., which is greater than the 30 inches per year long-term average for the contiguous United State from 1901-2000 according to NOAA. Erosion of exposed waste rock and tailings results in acid drainage with high dissolved and suspended metals runoff, which results in MIW flowing into Pike Hill Brook and Cookville Brook Tributary #4. Long-duration discharge events, such as snowmelt in the spring, likely contribute the greatest metal and acid loads to the surface water environment over a four-week period from early April to early May. Snowpack at the beginning of the spring melt is typically in the three to four-foot range throughout the Pike Hill Brook and Cookville Brook watersheds.

vi. *Threat of fire or explosion.* Exposed flotation tailings and magnetic separation tailings piles caught fire during the 1980s. The cause of the fire remains unknown. The waste materials burned for some time and required the fire department to extinguish the fire.

vii. *The availability of other appropriate federal or state response mechanisms to respond to the release*. Due to the potential high costs associated with the NTCRA, there are likely no State response mechanisms available with sufficient funding to perform a NTCRA to respond to the threats posed by the mine waste materials. Potentially Responsible Party (PRP) search activities are completed and no viable PRPs were identified that could conduct the proposed work.

The factors summarized above indicate that the tailings and waste rock piles at the Site constitute a threat to public health or the environment (principally to sensitive ecological receptors) through the release, or potential release, of hazardous substances, pollutants, and contaminants into the environment. A NTCRA is therefore appropriate to abate, prevent, minimize, stabilize, mitigate, or eliminate such threats. In particular, a NTCRA is necessary to provide source control measures to remove, control, or contain the risk to the sensitive ecological receptors within Pike Hill Brook and Cookville Brook Tributary #4, the downgradient wetland complexes and the Waits River, as well as potential future users of the ground water.

This removal action is designated as non-time-critical, because more than six months planning time is available before on-site activities must be initiated. Prior to the actual performance of a NTCRA at this Site, Section 300.415(b)(4) of the NCP requires that an EE/CA be performed to evaluate response options. An EE/CA was performed, and the EE/CA Report was distributed (and made available) to the public, as discussed in Section VI.2.4

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants, or contaminants, from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

This removal will require funding above $2 million and will require more than 1 year to implement, which are both exceedances of statutory limits established under 42 U.S.C. §§ 9604 (c)(1). The proposed NTCRA is projected to cost $18 million and take 36-48 months to complete. However, a "consistency" exemption under 42 U.S.C. §§ 9604 (c)(1)(C) is invoked through this Action Memorandum to allow EPA to exceed the $2 million and 12-month limits in order to implement the NTCRA proposed in this Action Memorandum.

Based on EPA's investigation and evaluation of this Site to date, and further informed by EPA's experience at two other similar Vermont former copper mine sites, the proposed NTCRA, as described in this Action Memorandum, is considered appropriate and consistent with any further remedial action to be taken at this Site. The NTCRA included in this Action Memorandum will control the primary source of contamination to the surface water and sediments of Pike Hill Brook and a Cookville Brook Tributary #4. Consolidation and capping along with in-situ treatment of mine waste are response actions that would be consistent with the type of actions that would be considered as part of the expected remedial response and do not preclude any

future remedial response that may be necessary. The implementation of the NTCRA is necessary to prevent the further migration of the contamination in the soils. Authority to invoke this consistency exemption has been delegated from the Regional Administrator, EPA Region I, to the Director of the EPA Region I Superfund and Emergency Management Division (Delegation No. 14-2) on April 5, 2002.

VI. PROPOSED ACTIONS

1. Removal Action Objectives

The following RAOs have been identified to take into consideration the known nature and extent of contamination, the anticipated human health and ecological impacts based on previous investigations and experience with other Vermont Copper Belt mines (Elizabeth and Ely), and the anticipated scope of the NTRCA to be performed at the Site:

- Control/reduce the release of MIW from mine waste to improve the composition and density of the aquatic community and reduce toxicity to the biota in Pike Hill Brook, Cookville Brook Tributary #4, and associated wetlands.

- Control/reduce the release of MIW from mine waste to reduce the loading of copper into Pike Hill Brook and Cookville Brook Tributary #4 and to lessen the area exceeding surface water quality standards.

- Control the erosion of mine waste into Pike Hill Brook to reduce the transport of contaminants into Pike Hill Brook, reduce toxicity to biota, and improve the composition and density of the aquatic community in Pike Hill Brook.

- Implement the response action in a manner that will minimize, to the extent practicable, impacts to federal and state threatened and endangered bats.

- Implement the response action in a manner that will minimize, to the extent practicable, impacts to historic resources at the Site.

2. Proposed Action Description

Alternative 1: On-site Consolidation and Capping with In-Situ Stabilization

Alternative 1 consists of excavation of mine waste and impacted sediment/soil and

consolidating this material in an engineered waste containment cell (or multiple waste cells), each with a cover system that will be determined during the NTCRA Design, as described below. The current estimated extent of the on-site containment cell and cover system is approximately 3 acres, assuming one cell location. *In-situ* stabilization of waste rock will be performed in close proximity to historic resources (foundations and features) and sensitive endangered species habitat (shafts and adits). Revegetation and stabilization of the of waste excavation areas will be performed as described below. Figure 8 shows the general extent of the areas to be excavated and the areas where *in-situ* stabilization will be performed. Figure 9 shows the possible location for the Waste Containment Cell. Table 2 lists the estimated volume of material to be excavated and extent of clearing for each sub-area within the Site.

Prior to the implementation of the NTCRA, a design for the NTCRA will be developed. In addition, a series of Site investigations will be performed in support of the design. Based on the feedback received from the community, the design will seek to reduce the quantity of material required to be imported to the Site to minimize truck traffic and associated impacts. The design will also evaluate whether the Waste Containment Cell can be located in another area of the Site that would be less visible from the road, as was requested by some public comments.

Once the design is complete, EPA will procure a contractor to implement the NTCRA. The NTCRA Contractor will develop a series of work plans to describe the work to be performed prior to the implementation of the NTCRA. The major construction activities for the NTCRA are described below.

- **Mobilization** – Mobilization will include the personnel, facilities, equipment, and materials necessary to initiate the NTCRA. This phase would include setting up a project trailer(s) with electricity, heat/air conditioning, and telecommunication services. Mobilization of portable toilets would also be part of this phase.

- **Survey Controls & Layout** – A surveyor licensed in the State of Vermont will be responsible for establishing multiple benchmarks/control points on-site. These points will be located inside and outside the limit of work for redundancy. Once survey control is established, exclusion zones around the adits and shafts and the limits of clearing will be laid out following industry standards. Layout of the exclusion zones and clearing limits can be performed by the NTCRA Contractor or a licensed surveyor.

- **Clearing** – Implementation of Alternative 1 requires approximately 16 acres of clearing. Clearing activities will be initiated in the proposed staging area adjacent to

Richardson Road, providing a lay down area for felled trees. Clearing activities will advance from north to south across the Site and will be limited to felling and skidding of the trees (*i.e.*, no grubbing/removal of stumps during this activity). Due to the presence of state and federally threatened bats (northern long-eared bat, eastern small-footed bat, and little brown bat), clearing activities will need to be performed between October 15th and April 15th. Chipping and/or processing of the felled trees will reduce the volume of imported material needed for the NTCRA, as wood chips can be used as erosion control measures and to manufacture topsoil on-site.

- **Installation of Erosion Controls** – Installation of temporary erosion controls will be initiated simultaneously with clearing activities in vulnerable areas (*i.e.*, staging area, skidding roads, *etc*.). The level of temporary erosion controls installed during clearing activities will vary depending on the time of year and ground conditions (*i.e.*, frozen vs unfrozen). This will be evaluated further during the NTCRA Design. Site-wide installation of erosion control measures will be implemented prior to grubbing and waste excavation activities. The key erosion control features included in the conceptual design are temporary stone-lined sediment basins, mixed erosion berms, silt fencing, vehicle tracking pad(s), and dust control.

- **Traffic Control** – Implementation of the NTCRA may require a significant volume of imported material. Management of the vehicles bringing material to the Site is critical element of the NTCRA and will be carefully evaluated in the design. The conceptual design prepared for the EE/CA includes the use of three public roads to access the Site: Brook Road (paved), Richardson Road (unpaved), and Copper Mine Road (unpaved and only to bring material from the Smith Mine to the Union and Eureka mines) with the possible use of Pike Hill Road. A State-designated Legal Trail may also be used for access. A formal traffic control plan will be prepared as part of the NTCRA Design. The EE/CA Fact Sheet identified the potential for 5,000 truck loads of material to bring the material requires for construction of the Waste Containment Cell, stabilization of the areas where waste will remain in place and revegetation of the areas disturbed to consolidate the mine waste into the Waste Containment Cell. The revised estimate is that between 2,000 and 3,500 truck loads of material may be required to complete the NTCRA assuming material suitable for use is not identified within the Site. As discussed above, the NTCRA Design will focus on reducing the required amount of material required to be imported to the Site to reduce truck traffic.

- **Staging Area(s)** – Staging area construction will commence following clearing activities adjacent to Richardson Road. The location of the staging area was selected to minimize potential impacts to the row of historic foundations in this area. The

staging area will be constructed with a non-woven geotextile and a 12-inch-thick layer of dense graded crushed stone or a suitable geosynthetic material. The staging area will be used for stockpiling imported materials, parking of construction equipment, and decontamination of trucks traveling off-site.

- **On-Site Haul Road Improvements** – On-Site haul road improvements are necessary to allow the NTCRA Contractor to safely and efficiently perform the work. Construction of the on-site haul road improvements will include installation of culverts as needed to convey flow under the roads.

- **Off-Site Access Road Improvements –** As noted in the traffic control section above, Richardson Road and Copper Mine Road are narrow unpaved/gravel roadways that provide access to the Site from Brook Road. A detailed evaluation, along with substantial consultation with the community and Town officials, will be performed to determine what modification, if any, will be made to the roads. Any changes to the Town roads would require Town approval and, if required, could be removed once the project is completed.

- **Borrow Source Area(s)** – If an on-site borrow source is identified, development of an on-site borrow source area(s) will commence following completion of the mobilization and site preparation activities, including installation of erosion control measures and construction of the staging area. The intent of the development of an on-site borrow source area(s) is to generate native soil needed for the cover system over the consolidated waste, *in-situ* stabilization, and other site restoration activities. Use of on-site material would minimize the volume of imported material needed to complete the NTCRA (*i.e.*, reduce truck traffic).

- **Grubbing** – Grubbing (*i.e.*, removal of stumps, woody debris, and vegetation) will commence following completion of haul road improvements and installation of temporary erosion control measures. Stumps, woody debris, and vegetation will be pulled and shaken to remove residual soil prior to being loaded into haul trucks and transported to the staging area for grinding. Grubbing will be performed from high to low within each waste excavation area to the extent possible. Stumps and other woody debris may be processed and reused on-site as erosion control measures and/or to manufacture topsoil.

- **Preparation of Waste Consolidation Area** – Preparation of an approximate 3-acre waste consolidation area will include installation of upgradient surface water diversion swales, stripping of topsoil and other organic materials, regrading of the subgrade surface to promote positive drainage, installation of a bedding layer, and

construction of perimeter access roads. The bedding layer may be a stone/gravel layer, a supporting soil layer, or a geosynthetic layer as determined during the NTCRA Design.

- **Waste Excavation** – Waste excavation will be performed using standard excavation equipment and practices. Excavated waste will be loaded into off-road dump trucks for transportation to the on-site consolidation area. Waste excavation is mostly likely to begin at the higher elevations and proceed downhill to the lower elevations, starting with the Upper Waste Area and finishing in the Sediment Area. Alternative 1 consists of excavation of selective areas of exposed/barren waste rock from the Upper Waste Area and Eureka Waste Area, and bulk waste excavation from the Central Waste Area, and Lower Waste Area (estimated 50,600 cy), processed waste materials from the Processed Waste Area (estimated 10,600 cy), and impacted sediment from Pike Hill Brook between the Lower Waste Area and Richardson Road (estimated 3,300 cy). A cultural resource specialist (individual qualified by the Department of the Interior) will be on-site throughout waste excavation activities in close proximity to historic foundations and features to monitor and document the activities. Waste excavation adjacent to historic foundations/features will be performed with caution, at the direction of the cultural resource specialist, to minimize the potential for impacts to the resources. Waste excavation in the Smith Mine will be performed as a stand-alone task, in a similar manner as the other waste areas. The total estimated waste excavation volume for all three areas (Union, Eureka and Smith mines) is 64,500 cy. This volume may change as a result of NTCRA Design Investigations and as the NTCRA Design is finalized.

- **Waste Dewatering** – Saturated waste is likely to be encountered in each of the waste areas on-site. Given the topography and number of visible seeps in the lower portion of the Site, as well as the presence of contaminated sediments, the percentage of saturated waste is likely to be significantly higher in the Lower Waste Area and Sediment Area. Saturated waste will need to be temporarily staged/stockpiled and/or windrowed within the excavation areas as needed to facilitate drying prior to being transported to the on-site consolidation area.

- **Waste Consolidation** – Waste consolidation will be performed to achieve proper compaction and to minimize the potential for future settlement. The waste consolidation area will be temporarily covered during precipitation events to minimize the potential for waste saturation and sediment migration. In dryer conditions the surface of the consolidated waste may require misting to minimize dust. For the purposes of the EE/CA, it was assumed that the consolidation area will be graded to maximum 3 horizontal (H) to 1 vertical (V) slopes and the finished

surface of the waste will be graded and compacted to have a minimum slope of 5%. The actual slopes will be determined during the final NTCRA Design.

- **Engineered Waste Cell Cover System Construction** – The function of the cover system for the engineered waste cell is to minimize infiltration of precipitation through the waste materials and to minimize erosion. In addition, the cover must accommodate settlement with minimal post-closure maintenance and monitoring. The NTCRA Design will evaluate options to reduce the material required for the cover system and the location of the cover system. For the purposes of the EE/CA it was assumed that the cap/cover will consist of a geomembrane barrier layer, geosynthetic drainage net and cover material that may be stone or soil, to be determined during the NTCRA Design. Multiple smaller waste cells may also be constructed if such an approach would minimize visual impacts at the Site.

- **Confirmatory Sampling** – Post-excavation confirmatory sampling will be performed in accordance with an EPA approved Quality Assurance Project Plan to confirm that contaminant concentrations at the post-excavation (subgrade) surface meet NTCRA screening evaluation criteria. The frequency of confirmatory sampling will be established during the NTCRA Design.

- ***In-Situ* Stabilization** – *In-situ* stabilization of waste will be performed in areas around historic resources (foundations/features) and sensitive bat habitat (shafts, adits, and mine openings) in areas with clearing restrictions and/or heavy equipment exclusion zones. *In-situ* stabilization will likely include placement of agricultural lime followed by installation of a layer of compost material (or biochar) sown with native seed mixtures to promote a healthy stand of vegetative growth. The intent is to minimize the potential for future generation of MIW from the underlying waste materials through precipitation, percolation and leaching, or the release of shallow underflow to surface water flow. The material may be mixed into the top 6 inches of surface soil/waste or installed as a soil cover over the waste. The estimated area of *in-situ* stabilization for the EE/CA is 168,700 sf (3.9 acres) with an estimated 20,500 cy of waste to remain in-place. The additional information needed to further define these areas and the site-specific *in-situ* stabilization mixture will be developed during the NTCRA Design.

- **Revegetation and Stabilization of Disturbed Areas** – Once confirmatory sampling verifies that impacted soil is sufficiently removed in each waste area, the excavated areas will be regraded, to the extent practicable, to promote positive drainage and to create smooth transitions with adjacent topography. Areas where bedrock is exposed as a result of the excavation activities may be left as exposed rock. A layer of

topsoil, or a functionally equivalent cover material, will be placed over the subgrade soil / bedrock to support revegetation. The topsoil layer will be stabilized with a hydroseed mixture consisting of a high-performance fiber mulch, a blend of native seed mixtures, and fertilizer. Biodegradable straw wattles, or functional equivalent will be installed within restored areas to breakup flow and minimize the potential for rilling and sediment migration. Slopes steeper than 2 H to 1V may require stabilization with non-woven geotextile covered with appropriately sized rip rap. Additional erosion control features to add slope roughness and break up flow will be assessed and may be included in the NTCRA Design. Stabilization and revegetation activities will be performed within each waste excavation area as soon as possible following confirmatory sampling. The NTCRA will likely have multiple crews working on-site (*i.e.*, erosion control crew, waste excavation crew, restoration crew) to minimize the area of exposed soil throughout the NTCRA.

- **Construction of Surface Water Channels** – Construction of surface water channels is necessary to adequately collect and convey stormwater runoff through the Processed Waste Area and Lower Waste Area. These channels will be constructed using non-woven geotextile, crushed stone, and rip rap. The sizing/design of these channels will be performed during the NTCRA Design.

- **Reconstruction of Pike Hill Brook** –Pike Hill Brook will be reconstructed from the northern limit of the Lower Waste Area through the Sediment Area following completion of the surface water channels in the Processed and Lower Waste Areas. Options for restoration of Pike Hill Brook include a natural channel, a rip rap lined channel, or a hybrid approach. The type and limits will be determined during the NTCRA Design. For the purposes of the EE/CA cost development, a natural channel design was selected.

- **Wetland Mitigation** – Implementation of Alternative 1 will impact an estimated 51,000 sf of State and federal jurisdictional wetlands on-site. Wetland mitigation consisting of developing mounds and pools with native plantings and woody debris piles that will be established during restoration activities. The location, structure, and composition of the mounds and pools will be determined during the design. Altered waterways will also be mitigated. The goal will be to replace any wetlands/waterways disturbed during the NTCRA.

- **Engineering Controls** – Engineering controls for Alternative 1 will consist of the installation of signage and, if determined necessary, perimeter fencing around the consolidation area(s), and signage and bat grates around the shafts and adits. The need for bat grates and/or fencing will be evaluated as part of the design.

- **Demobilization** –Demobilization will include removal of the project trailer(s), general site restoration, regrading permanent access roads on-site, cleaning out permanent sediment basins, removing temporary erosion control features no longer needed because up gradient areas are stabilized, and removal of equipment and personnel from the Site.

Capital Cost of Preferred Alternative: The approximate capital cost for Alternative 1is $18 million.

Post-Removal Site Control (PRSC): Upon completion of the NTCRA, PRSC would be implemented to inspect and maintain the cover system and other engineered features. For a fund-lead NTCRA, the state usually performs the PRSC. The State of Vermont has stated that it intends to perform the PRSC for this NTCRA until the final remedy is selected. The expected cost to the State of Vermont is $25,000 per year.

3. Contribution to Remedial Performance

The NTCRA proposed in this document is expected to contribute significantly to the long-term remedial action. The remedial goal for this Site is to protect human health and the environment. More specifically, the remedial response will seek to address any threats to human health or the environment that have not be resolved by the NTCRA. The removal of the source of the contamination is entirely consistent with all potential future remedial responses.

The completion of the RI/FS will focus on the need for additional source control beyond the NTCRA and the need for long-term groundwater response. Additional EE/CAs may be prepared and NTCRAs proposed if Site conditions reveal the need for source control actions prior to the issuance of a ROD.

4. EE/CA

An EE/CA was developed in support of this NTCRA. The final EE/CA Report was placed into the site file and Administrative Record in July 2022. A description of the selected alternatives and other alternatives considered is presented in the EE/CA. EPA mailed copies of the EE/CA Fact sheet describing the proposed NTCRA to the State of Vermont, local officials, local residents, site property owners and other interested parties. EPA provided a briefing to the community at a Corinth Selectboard meeting on March 14, 2022 and held public informational meetings on June 21 and July 19, 2022 to present the EE/CA and EPA's preferred alternative (see EE/CA Fact Sheet, Attachment 4). EPA then held a public hearing on August 23, 2022 to receive oral comments. The public comment period began on August 3, 2022 and ended on September 2, 2022. The NTCRA selected in this Action Memorandum is EPA's formal decision stemming from the EE/CA process in compliance with CERCLA and the National Contingency Plan (NCP), 40 C.F.R. Part 300. Approximately 9 discrete sets of comments, in addition to the 11 individuals who made statements at the formal hearing, were received in writing during the comment period. The comments were fully considered in the preparation of this Action Memorandum. EPA has prepared a response to comments for the comments submitted during the comments period for the EE/CA and EE/CA Fact Sheet. The response to comments is included as Attachment 5.

5. Applicable or Relevant and Appropriate Requirements

Section 300.415(j) of the NCP requires that "Fund-financed removal actions under CERCLA Section 104 and removal actions pursuant to CERCLA Section 106, shall, to the extent practicable, considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws."

ARARs are divided into three categories: Location-Specific; Chemical-Specific; and Action-Specific. The sections below describe each of the categories and how they apply to the NTCRA. The full list of ARARs are provided in Attachment 3.

The text below includes a discussion of several key Location-Specific ARARs that apply to the NTCRA. EPA specifically sought comments from the public regarding the following:

(1) Impacts to wetlands and floodplains.
(2) Adverse effects to historic properties.

Floodplain Impacts: Federal Floodplain Management regulations at 44 CFR Part 9 (which promulgate requirements under Executive Order 11988 (Floodplain

Management)) establish guidelines for federal activities that may impact floodplains. The Regulation of Stream Flow Act, 10 V.S.A. § 1027 and 10 V.S.A. Chapter 41 and the Vermont Stream Alteration Rule, Env. Prot. R. Ch. 27, § 27-101 through 27-706 also regulate activities that impact watercourses, river corridors, and flood hazard areas. Removal alternatives that may cause negative impacts within any 500-year floodplain on Site or to downstream floodplain will be implemented in compliance with these ARARs. While some construction activities anticipated under the NTCRA will be performed within the channel and floodplain areas of Pike Hill Brook, the activities described in the EE/CA are not expected to impact floodplain areas of Pike Hill Brook downstream of the area where the NTCRA will be performed. If necessary, temporary storage/holding areas may need to be constructed in the headwaters of Pike Hill Brook watershed to address an increase in storm water runoff during the NTCRA. Vermont Obstruction of Streams statute, 10 V.S.A. ch. 111 § 4607, regulates obstructions that prevent the passing of fish in a stream or the outlet or inlet of a natural or artificial pond on a public stream. While currently the waterways to be impacted by the NTCRA are either too impaired to support fish or fish populations are extremely limited, the waterways will be restored so as to allow fish populations to become reestablished in the waterways. As required by FEMA floodplain management regulations, EPA solicited public comment concerning the potential impacts to floodplain resources from the proposed alternative. No comments were received.

Wetland Impacts: Removal activities that involve the dredging or filling federally-regulated waterways or wetlands on Site are required to comply with Section 404 of the federal Clean Water Act, 33 U.S.C. § 1344, and regulatory requirements at 40 CFR Part 230, 231, and 33 CFR Parts 320-323. Under this requirement no activity that adversely affects a wetland/waterway shall be permitted if a practicable alternative with lesser effects is available. If activity takes place, impacts must be minimized to the maximum extent. These requirements also set standards for restoration and mitigation required as a result of unavoidable impacts to wetland.

EPA has evaluated the requirements of Section 404(b) of the Clean Water Act to identify the proposed actions that are the Least Environmentally Damaging Practicable Alternative (LEDPA) to protect federally regulated wetland and aquatic resources from exposure to contaminated sediments and contaminated surface water. Alternative 1 was determined to be the LEDPA due to the lower short-term impacts and substantially lower cost. The impacts to these waterways/wetlands are unavoidable because the mine waste present in the waterways/wetlands are a source of the contamination causing impairment of downstream waters. EPA did not receive any public comments regarding the LEDPA determination.

In addition, federal Wetland Protection regulations at 44 CFR Part 9 (which promulgate

requirements under Executive Order 11990 [Protection of Wetlands]). EPA did not receive any public comment concerning its determination that the removal of the primary source of MIW that is significantly impairing the current wetlands and waterways will allow for the reestablishment of biota to those wetlands/waterways to be altered and then restored under the preferred alternative. Unavoidable wetland/waterway impacts on-site that are associated with the NTCRA are shown in Figure 3.

Vermont Wetlands Protection and Water Resources Management Act, 10 V.S.A. ch. 37 and the Vermont Wetland Rules, Vt. Code R. 12 004 056 establish requirements for the protection of State-regulated water, ground water, and wetland resources. The State regulates a broader range of wetland resources than the federal government. The Vermont Wetlands Rules establishes criteria for delineating Class One and Class Two wetlands, which are considered significant wetlands, sets forth allowed and conditional uses for these wetlands, and provides for the establishment of Buffer Zones contiguous to these wetlands. If not designated, Class One has a default 100 foot buffer zone and Class Two has a default 50-foot buffer zone. Class Three wetlands need not be designated and have no default buffer zone. Class Three wetlands are also defined under the Rules but are not considered as significant wetlands and are regulated under the Vermont Land Use and Development Plans Law (Act 250), 10 V.S.A. ch. 151. Within the Site, the area of Class Two wetlands generally corresponds with the area of delineated federal jurisdictional wetlands. Certain isolated wetlands on site have been determined to be Class Three wetlands. The NTCRA will be implemented to minimize impacts to State-jurisdictional wetland/aquatic resources while addressing the contamination that is impairing the wetlands and waterways.

Historic Resources: Section 106 of NHPA, 54 U.S.C. § 300101 *et seq*.) and promulgated regulations (36 C.F.R. Part 800), requires EPA to take into account the effects of all actions on historic properties, including archaeological sites that have been determined to be eligible for the National Register of Historic Places. EPA, in consultation with VDHP SHPO, has determined that the Site is eligible for listing in the National Register of Historic Places. EPA has also determined that the construction activities required to implement this NTCRA will have unavoidable direct and indirect impacts on historic features, including archaeological sites, at the Site, but that these impacts are necessary to protect human health and the environment. The preliminary APE, as defined under NHPA for direct effects is shown in Figure 3. Additional assessment may be required for areas of Site where NTCRA cleanup actions are now proposed but have not been previously assessed and for any areas of the Site that may be altered to supply soil for the capping/restoration. The APE will also be further defined to address indirect effects, cumulative effects, and other effects as part of the design. EPA will work with the VDHP SHPO and other consulting parties to minimize and mitigate any adverse effects to historic resources and archaeological sites. EPA received comments advocating that

the historic resources be documented and protected to the extent possible. See Response to Comments included as Attachment 5.

Endangered and Threatened Species: Design and implementation of the NTCRA will also address measures that may be required to protect habitat for State and federally-listed endangered and threatened bat species in compliance with the federal Endangered Species Act, 16 U.S.C. 1531 *et seq.*, and promulgated regulations at 33 C.F.R. Part 320 and 50 CFR Part 17(o); the Vermont Protection of Endangered Species Act, 10 V.S.A. Chapter 123, §§ 5401, 5403-5408, 5410; and the federal Fish and Wildlife Coordination Act, 16 USC Part 661 *et seq.*, which also requires coordination with federal and state officials concerning the alteration of endangered species/wetland habitat resources.

Land Use Controls: State land use control and development standards under the Vermont Land Use and Development Plans Law (Act 250), 10 V.S.A. ch. 151 would be met to the extent practicable in the design and implementation of the NTCRA for all regulated activities, including standards for water and air pollution, protection of headwaters, waste disposal, floodways, streams, wetlands (including Vermont Class 3 wetlands not regulated under the Vermont Wetland Rules), soil erosion, historic sites, endangered species, and extraction of earth resources, energy conservation, and protecting public investments.

Chemical-Specific ARARs are usually promulgated human health or ecological standards that limit the concentration of a chemical found in or discharged to the environment. Note that for the Pike Hill NTCRA there are no specific cleanup standards; instead, the RAOs call for the control of sources of MIW. Final cleanup standards for the Site will be developed as part of the remedial action. The preliminary Chemical-Specific ARARs and other TBC guidance (discussed below) are summarized in Attachment 3.

The preliminary Action-Specific ARARs and TBC guidance (discussed below) are listed in Attachment 3.

It is expected that all activities can be designed and implemented to comply with the identified Action-Specific ARARs regarding the containment of contaminants, stormwater controls, and water treatment/discharge standards.

Solid Waste: The flotation mill tailings are defined as mine waste/mineral processing waste under the Vermont Waste Management Act, 10 V.S.A. Chapter 159 and the Vermont Solid Waste Management Rules (VSWMR), Env. Prot. R. Ch. 6. The management of this material is required to comply with the applicable rules at Section 6-1006(c) of the VSWMR, to the extent practicable. The waiver provisions under Sections 6-303 of VSWMR permits the waiver of technical and siting requirements provided the

following conditions are met: (A) The President of the United States [acting through EPA] intends to perform a response action, as defined in 42 U.S.C. § 9601(25) in response to a release or threatened release of hazardous substances or materials; and (B) there are written findings that: (1) The proposed response action will not adversely affect public health, safety or the environment; and (2) The technical and siting requirements will be complied with, to the extent practicable, in light of the overall objectives of the response. In addition, Section 6-1004(c) of the VSWMR also includes specific waiver provisions that allow the waiver of liner, landfill-gas, and leachate collection and treatment requirements for solid waste disposal facilities. Through this Action Memorandum EPA is invoking the waiver of the liner, technical and certain siting requirements and is making the findings identified above based on the Administrative Record.

The waiver of the liner requirements is justified because the consolidation and containment of the flotation mill tailings and roasted ore (the regulated solid waste at the Site) can be designated as not a potential source of leachate or landfill gas that is harmful to public health and safety or the environment or capable of creating a public nuisance because this waste will be contained in a way that will achieve the technical objectives of the VSWMR. The waiver of the siting requirements is necessary because the selected NTCRA is addressing an existing site, meaning that the siting was determined during the mining operations. The NTCRA will be designed to take into account setback requirements from streams, wetlands, water supplies, and adjacent properties to the extent practicable given the Site conditions.

As required, the design will focus on achieving the technical and siting requirements, contained in Sections 6-1004–6-1005 and 6-1003 respectively, for solid waste disposal sites, to the extent practicable in light of the overall objectives of the response. In particular, Section 6-1007 of the VSWMR establishes the closure performance standards that are applicable to the consolidation and capping of the regulated solid wastes. The consolidation and capping of these wastes will be subject to closure requirements that require that a facility be closed in a manner that: (a) Minimizes the need for further maintenance related to the waste facility; and (b) Controls, minimizes, or eliminates, to the extent necessary to prevent threats to public health and safety and the environment. Post-closure requirements at Section 6-1008 of the VSWMR will be attained through the remedial action.

Waste Rock: The waste rock at the Site is not classified as mine waste/mineral processing waste under the VSWMR and therefore the management of this material is exempt from VSWMR requirements, but instead would be consolidated and capped under risk-based standards to control the release of MIW.

Stormwater Controls: Federal Clean Water Act (33 U.S.C. § 1342) and promulgated Stormwater Requirements for Construction Sites regulations (40 C.F.R. § 122.26), as well as the Vermont Stormwater Management Act (10 V.S.A. §§ 1263 and 1264) and promulgated Vermont Stormwater Permitting Rule (Env. Prot. R. Ch. 22) and Vermont Stormwater Management Manual (VT Env. Prot. R. Ch. 36) regulate stormwater discharge from construction activity including clearing, grading and excavation. Site disturbance will be conducted in compliance with these stormwater management standards, to the extent practicable.

Water Treatment/Discharge: Federal Clean Water Act, Section 402 (33 U.S.C. § 1342) and National Pollution Discharge Elimination System (NPDES), EPA guidance, as well as the Vermont Pollution Control Act (10 V.S.A. Ch. 47 §§1263(g), 1258) promulgated Water Pollution Control Permit Regulations (VT Env. Prot. R. Ch. 13), and Vermont Water Quality Standards (VT Env. Prot. R. Ch. 29(a)), contain discharge limitations, monitoring requirements, and best management practices (BMPs) for discharges into surface waters. Water generated from the NTCRA will be treated to meet discharge standards, to the extent practicable.

Air Pollution: Vermont Air Pollution Control Act (10 V.S.A. Ch. 23) and Vermont Air Pollution Control Regulations (VT Env. Prot. R. Ch. 5) list prohibited activities, establish ambient air quality standards for specific pollutants (including dust), and contain standards for air pollution prevention, abatement, and control.

Forest Growth and Fire Prevention: Vermont Slash Removal Statute (10 V.S.A. Ch. 83 § 2648) regulates the management of slash and other woody debris from forestry and land clearing, to reduce fire risks to roadways and abutting properties. As part of the response action, slash will be removed for a distance of 50 feet from the right-of-way of any public highway or from the boundary lines of woodlots owned by adjoining property owners.

6. Project Schedule

Upon the Division Director's signature of this Action Memorandum, EPA intends to begin implementation of the design for the NTCRA with federal funds in 2022. The NTCRA construction activities could begin in early 2024.

B. Estimated Costs

Extramural Costs	
Regional Removal Allowance Costs (Money from national cleanup fund with contingency)	$18,000,000
Other extramural costs	
State of Vermont Cooperative Agreement	$200,000
Total Extramural Costs	$18,200,000
Total Removal Projected Ceiling	$18,200,000

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the NTCRA is not implemented, the contaminants will continue to leach from the tailings and waste rock into the surface water of Pike Hill Brook and Cookville Brook Tributary #4. These impacts have resulted in the first mile of Pike Hill Brook being biologically dead and a significant impairment for additional miles along with a several hundred-yard section of Cookville Brook Tributary #4. The entire length of Pike Hill Brook and a section of Cookville Brook Tributary #4 exceed Vermont Water Quality Standards and are listed as impaired waters. The cleanup plan described in this Action Memorandum would significantly reduce the impacts from the Site to the Pike Hill Brook and Cookville Brook Tributary #4. EPA also believes that the cleanup fully considers the historic value of the site and the presence of endangered and threatened bat species and includes all reasonable measures to minimize the adverse effect to the historic resources and endangered species. The cleanup will also have a high degree of long-term effectiveness. The cleanup is consistent with EPA's program management goal of reducing the risk to ecological receptors to levels that will result in the recovery and maintenance of healthy local populations and communities of biota.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

Additional information on the enforcement strategy for this case is contained in Attachment 9 (Enforcement Confidential - Not for Public Release).

The total EPA costs for this removal action based on full-cost accounting practices (including both direct and indirect costs) that will be eligible for cost recovery are estimated to be $27,914,600. Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

X. RECOMMENDATION

This decision document represents the selected removal action for the Pike Hill Copper Mine Superfund Site, in Corinth, Orange County, Vermont, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site.

Conditions at the Site meet the NCP criteria for a removal action as specified at 40 C.F.R. § 300.415(b)(2). I recommend your approval of the proposed removal action. The total project ceiling for the NTCRA, if approved, will be $18,200,000. I also recommend and request your approval of a "consistency" exemption to the statutory limits of $2 million and one year on removal actions.

Approve ✓ Disapprove _____

BRYAN OLSON Digitally signed by BRYAN OLSON
Date: 2022.09.30 13:23:23 -04'00'

Bryan Olson, Director
Superfund and Emergency Management Division

Date:_____

Elizabeth Mine Superfund Site - Action Memorandum

List of Attachments

Attachment 1 - Tables and Figures

Attachment 2 - EE/CA Approval Memo

Attachment 3 - ARARS Tables

Attachment 4 - EE/CA Fact Sheet

Attachment 5 - Response to Comments

Attachment 6 - Public Hearing Transcript

Attachment 7- Administrative Record Index

Attachment 8 - Concurrence Letter from VT ANR

Attachment 9 - Confidential Enforcement Addendum

ATTACHMENT 1

TABLES and FIGURES

TABLE 1
FIELD pH MEASUREMENT SUMMARY
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT

ID	pH (SU)					Location
	May-21	Oct-21	Nov-21	Aug-22	Average	
SW01			6.20		6.20	
SW02	4.26	3.81	3.53	3.75	3.84	USGS weir at S end of site
SW06	3.92	3.78	3.28	3.33	3.58	upstream of FL-02 USGS weir
SW12			3.63		3.63	seep northeast of WRP-01
SW14	6.46	6.82		5.93	6.40	head of ES 4, downstream of WRP-04
SW16			4.39		4.39	PHB Tributary west of ES-6
SW17	2.67				2.67	seep downstream of BFTP-02
SW19	3.97	4.44			4.21	spring downstream of MSTP-03
SW27			3.99	2.89	3.44	Eureka Lower Adit
SW28			2.55		2.55	Eureka Lower Shaft
SW29			2.14		2.14	Smith Adit pond
SWA			3.28	3.37	3.33	PHB Tributary between SW-02 and SW-06
SWB			3.12	3.22	3.17	PHB Tributary at proposed FL-02
SWC			2.74	3.41	3.08	PHB Tributary immed. north of WRP-07
SWD			2.79	3.41	3.10	PHB Tributary - dam east of WRP-03
SWE			3.65	4.35	4.00	PHB Tributary south of WRP-03
SWF			2.55	4.42	3.49	ES-6 between WRP-2 and MSTP-3
SWG			1.75		1.75	seep between MSWM and flotation tailings
SWH			3.60		3.60	ES-6 just north of Road 2
SWI			2.70		2.70	south of SW-27, next to Road 4
SWJ			6.50	6.40	6.45	seepage into Open Cut 4 portal
SWK			6.40		6.40	seepage west of Berm 3 and Road 2
SWL			7.29		7.29	seepage east of Berm 3
SWM			6.78		6.78	boggy area northwest of parking lot
SWN			6.14		6.14	seep on road northeast of WRP-38
SWO			7.12		7.12	drainage west of Smith access road, north of WRP-38
SWP			7.17		7.17	drainage on west side of Smith access road

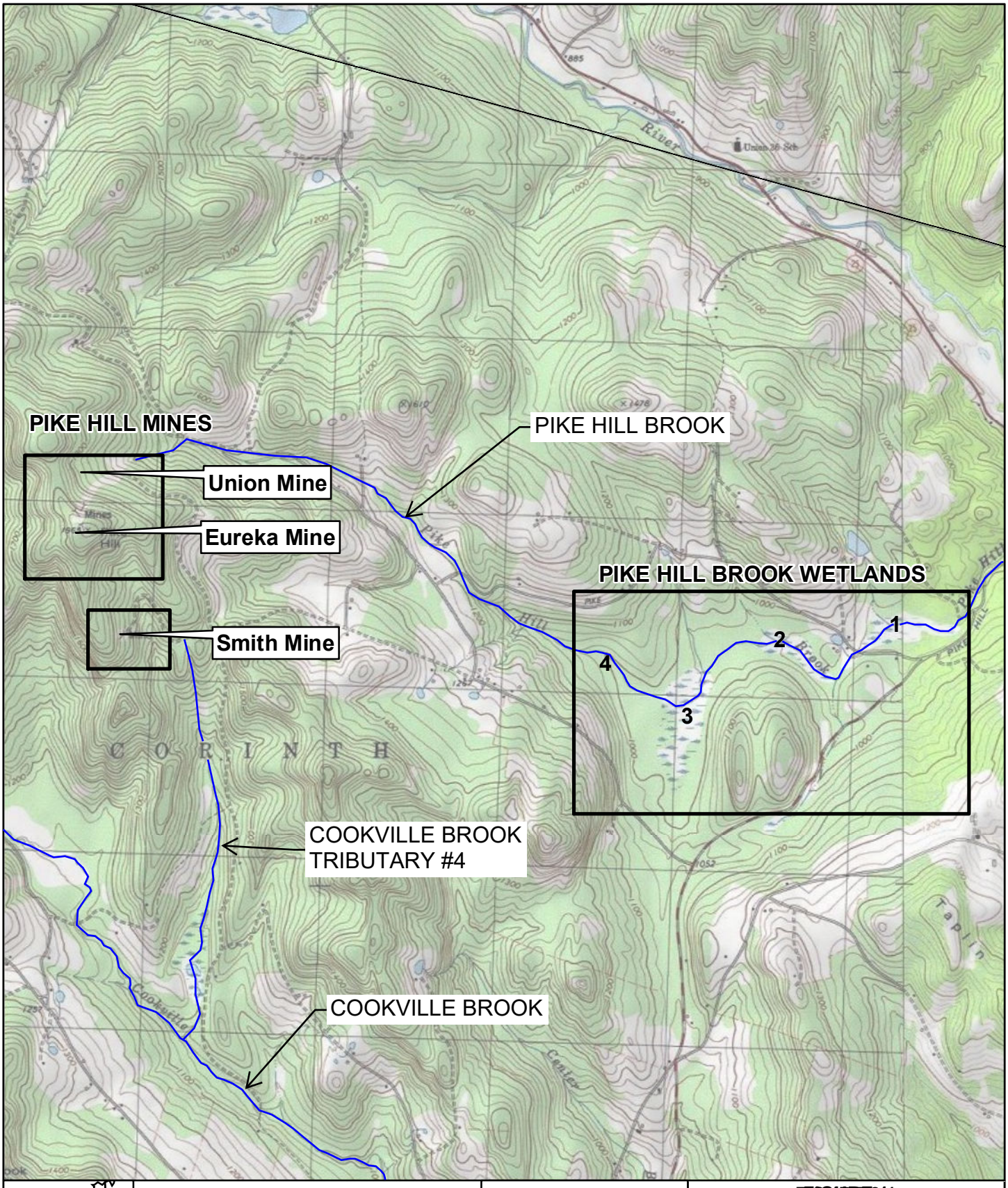
= pH < 3
= pH ≥ 3 ≤ 4.5
= pH > 4.5

TABLE 2
ESTIMATED WASTE EXCAVATION VOLUMES AND AREAS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT

Waste Area	Description	Waste Waste Excavation Volume (CY)		Disturbed Area (Acres) (barren areas and tree clearing)	
Sediment Area	Sediment in and Adjacent to the Unnamed Tributary to Pike Hill Brook	3,300		1.3	
Lower Waste Area	WRP-01 through WRP-07 Berm 3, 4, 5, & 6 Adjacent Waste Lenses	31,800		5.3	
Processed Waste Area	Flotation Tailings Piles Magnetic Separation Tailing Piles Adjacent Waste Lenses	10,600		2.1	
Central Waste Area	WRP-09 through WRP-20 Adjacent Waste Lenses	15,300		1.9	
Eureka Waste Area	Exposed Setions of WRP-21, WRP-22, WRP-25, & WRP-28	700		0.3	
Upper Waste Area	Exposed sections of WRP-30, WRP-32 & Adjacent Exposed Waste	900		0.2	
Smith Waste Area	WRP-38 & Adjacent Exposed Waste	1,900		0.5	
Total Estimated Waste Volume and Clearing Area		**64,500**	**CY**	**11.6**	**Acres**
Clearing Area (open and wooded area) for Waste Containment Cell				**5.3**	**Acres**
Total Disturbed Area Subject to Clearing, Excavation, or Placement of Waste Containment Cell				**16.9**	**Acres**

Notes:

1. "CY" = Cubic Yards
2. "SF" = Square Feet
3. Estimated waste volumes shown hereon based on a combination of previously defined waste piles, visibile waste limits, and assmued waste lenses surrounding the visible waste.
4. Refer to Drawings titled "Conceptual Waste Excavation Plan" for a color coded legend of estimated waste depths in each waste area.
5. Additional field investigation necessary to determine actual waste depths and waste extents throughout
6. "Disturbed Area" includes exposed/barren waste piles and proposed clearing areas within each waste area.



Map Location

USGS Topographic Map
West Topsham, VT.
Revised 1981

0 1,000 2,000 4,000
Feet 1 inch = 2,500 feet

N

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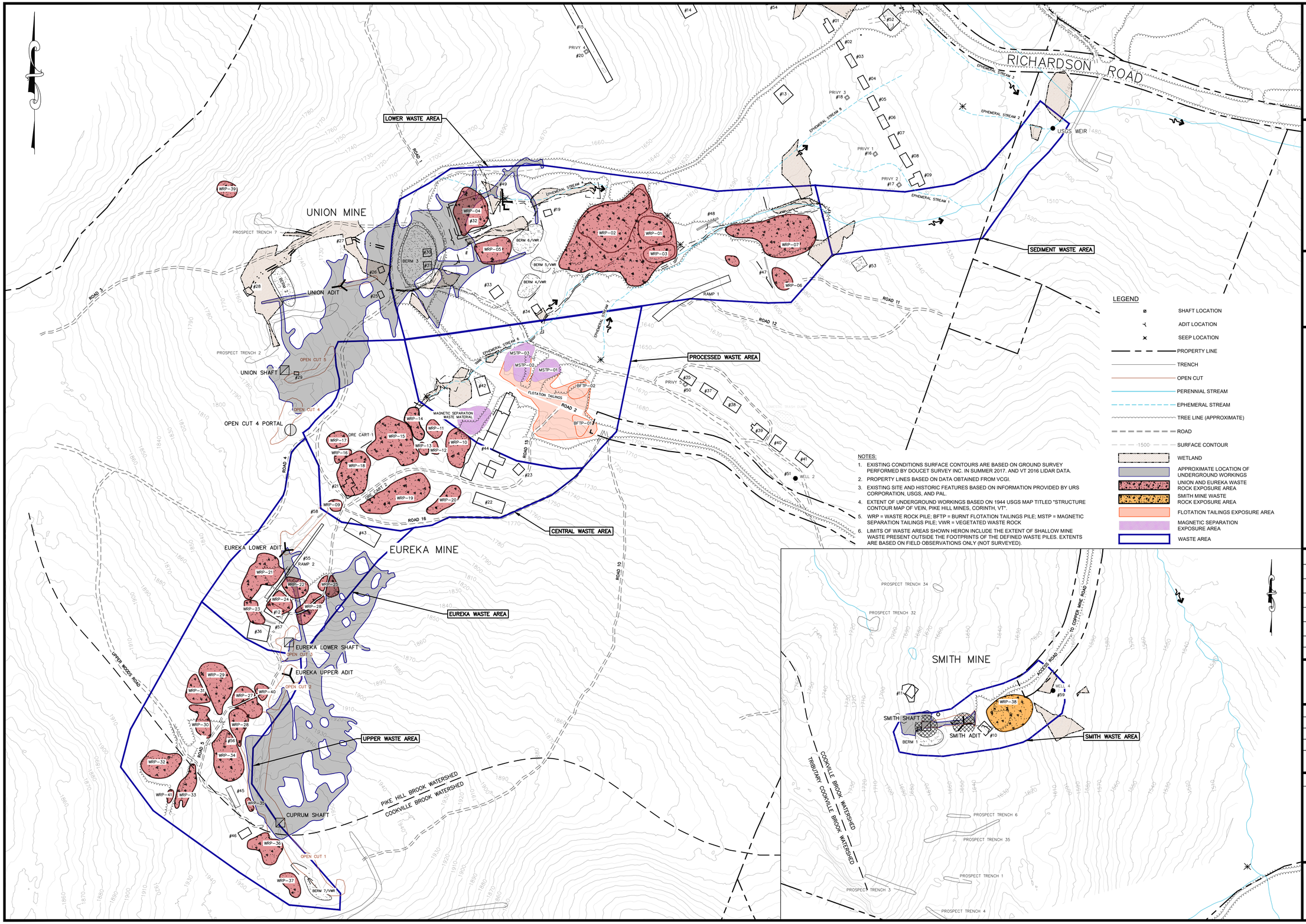
FIGURE 2-1

SITE LOCATION PLAN
PIKE HILL COPPER MINE
SUPERFUND SITE
CORINTH, VERMONT

PREPARED BY: JH	CHECKED BY: JL
PROJECT NO. 80111	DATE: APRIL 2017

Path: R:\80000 Task Orders\80111 Pike Hill Copper Mine\GIS\Figures\Figure 2-1 Pike Hill Locus.mxd Date Printed: 4/5/2017



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CONCEPTUAL
EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

0 100' 200'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.18
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

SHEET TITLE

SITE SKETCH

SHEET
2 OF 2

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AREA OF POTENTIAL EFFECTS INCREASED
FROM PREVIOUS (2011) VERSION
~162,000 SF (3.7 ACRES)

RICHARDSON ROAD

TRIBUTARY TO
PIKE HILL BROOK

AREA OF POTENTIAL EFFECTS INCREASED
FROM PREVIOUS (2011) VERSION
~32,700 SF (0.75 ACRES)

PIKE HILL BROOK

UNION MINE

EUREKA MINE

EUREKA AND UNION MINE
AREA OF POTENTIAL EFFECTS
~4,016,000 SF (92.2 ACRES)

PIKE HILL BROOK WATERSHED
COOKVILLE BROOK WATERSHED

SMITH MINE

COOKVILLE BROOK
TRIBUTARY #4

SMITH MINE
AREA OF POTENTIAL EFFECTS
~983,200 SF (22.6 ACRES)

N

0 125' 250'
GRAPHIC SCALE

NOTES:
1. EXISTING CONDITIONS SURFACE CONTOURS ARE BASED ON 2016 VT LIDAR DATA.
2. EXISTING SITE AND HISTORIC FEATURES BASED ON INFORMATION PROVIDED BY URS CORPORATION, USGS, AND PAL.
3. EXTENT OF UNDERGROUND WORKINGS BASED ON 1944 USGS MAP TITLED "STRUCTURE CONTOUR MAP OF VEIN, PIKE HILL MINES, CORINTH, VT".
4. WRP = WASTE ROCK PILE; BFTP = BURNT FLOTATION TAILINGS PILE; MSTP =MAGNETIC SEPARATION TAILINGS PILE; VWR = VEGETATED WASTE ROCK.
5. WETLANDS SHOWN HEREON WERE DELINEATION BY NORTH WOODS ECOLOGICAL CONSULTING IN MAY 2022 AND FIELD LOCATED BY NOBIS IN JUNE 2022 USING A TRIMBLE 7X HANDHELD GPS.

~~FIGURE 2-6~~

AREA OF POTENTIAL EFFECT AND WETLAND IMPACTS
PIKE HILL MINE
SUPERFUND SITE
CORINTH, VERMONT

DRAWN BY:	ATB	CHECKED BY:	BJK
PROJECT NO.	93201.18	DATE:	JULY 2022

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LEGEND

- SHAFT LOCATION
- ADIT LOCATION
- SEEP LOCATION
- PROPERTY LINE
- PERENNIAL STREAM
- EPHEMERAL STREAM
- TREE LINE (APPROXIMATE)
- ROAD
- 1500 SURFACE CONTOUR
- AREA OF POTENTIAL EFFECT
- UNALTERED WETLAND AREA
- FEDERAL / STATE JURISDICTIONAL WETLAND PROPOSED IMPACT AREA
- STATE JURISDICTIONAL WETLAND PROPOSED IMPACT AREA
- APPROXIMATE LOCATION OF UNDERGROUND WORKINGS
- UNION AND EUREKA WASTE ROCK EXPOSURE AREA
- SMITH MINE WASTE ROCK EXPOSURE AREA
- FLOTATION TAILINGS EXPOSURE AREA
- MAGNETIC SEPARATION EXPOSURE AREA

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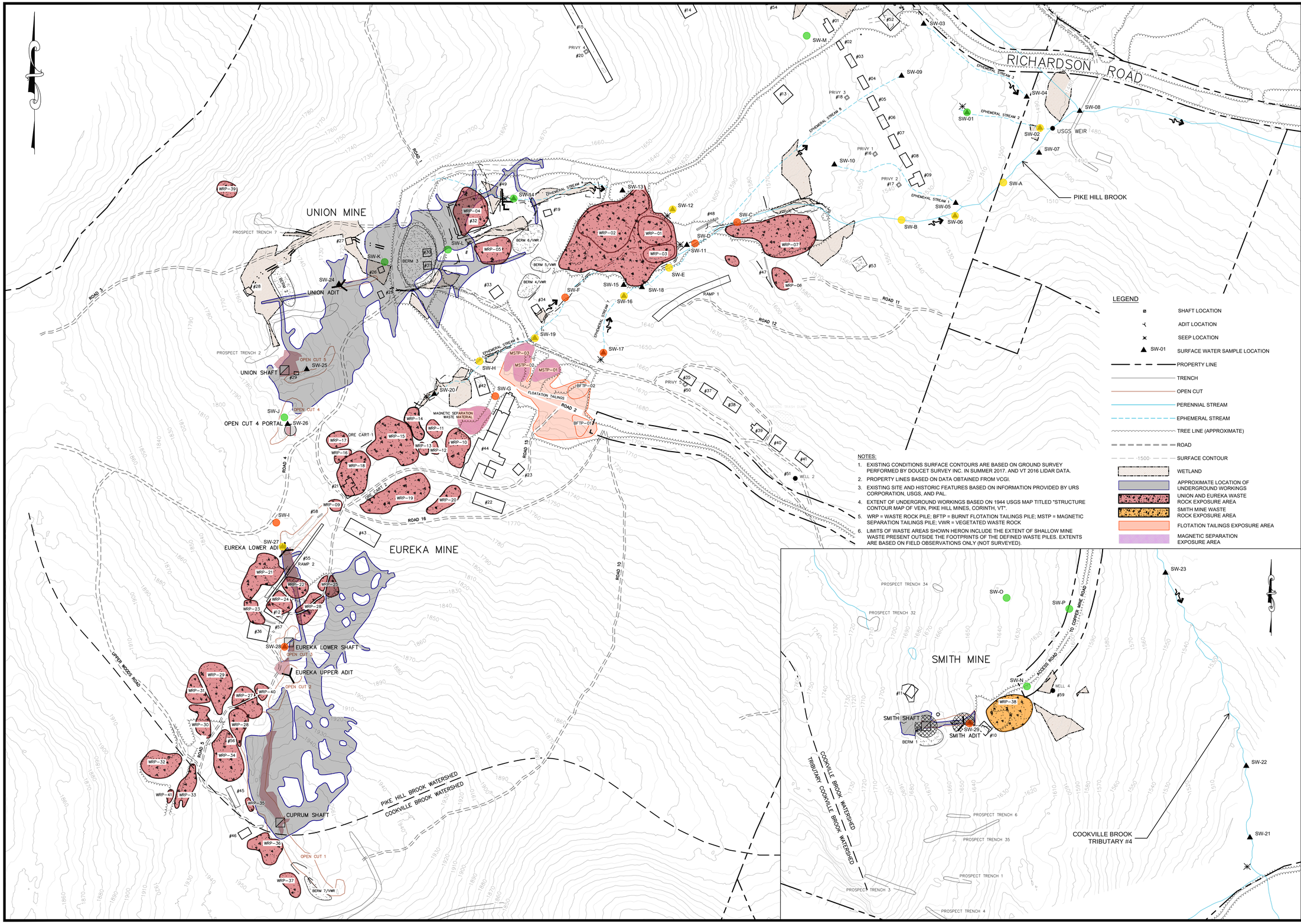

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OCTOBER-NOVEMBER 2021
FIELD pH MEASUREMENTS

- = pH < 3
- = pH 3 - 4.5
- = pH >4.5

CONCEPTUAL
EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

0 100' 200'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.18
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

SHEET TITLE

FALL 2021 FIELD pH MEASUREMENT LOCATIONS

~~FIGURE~~
B43

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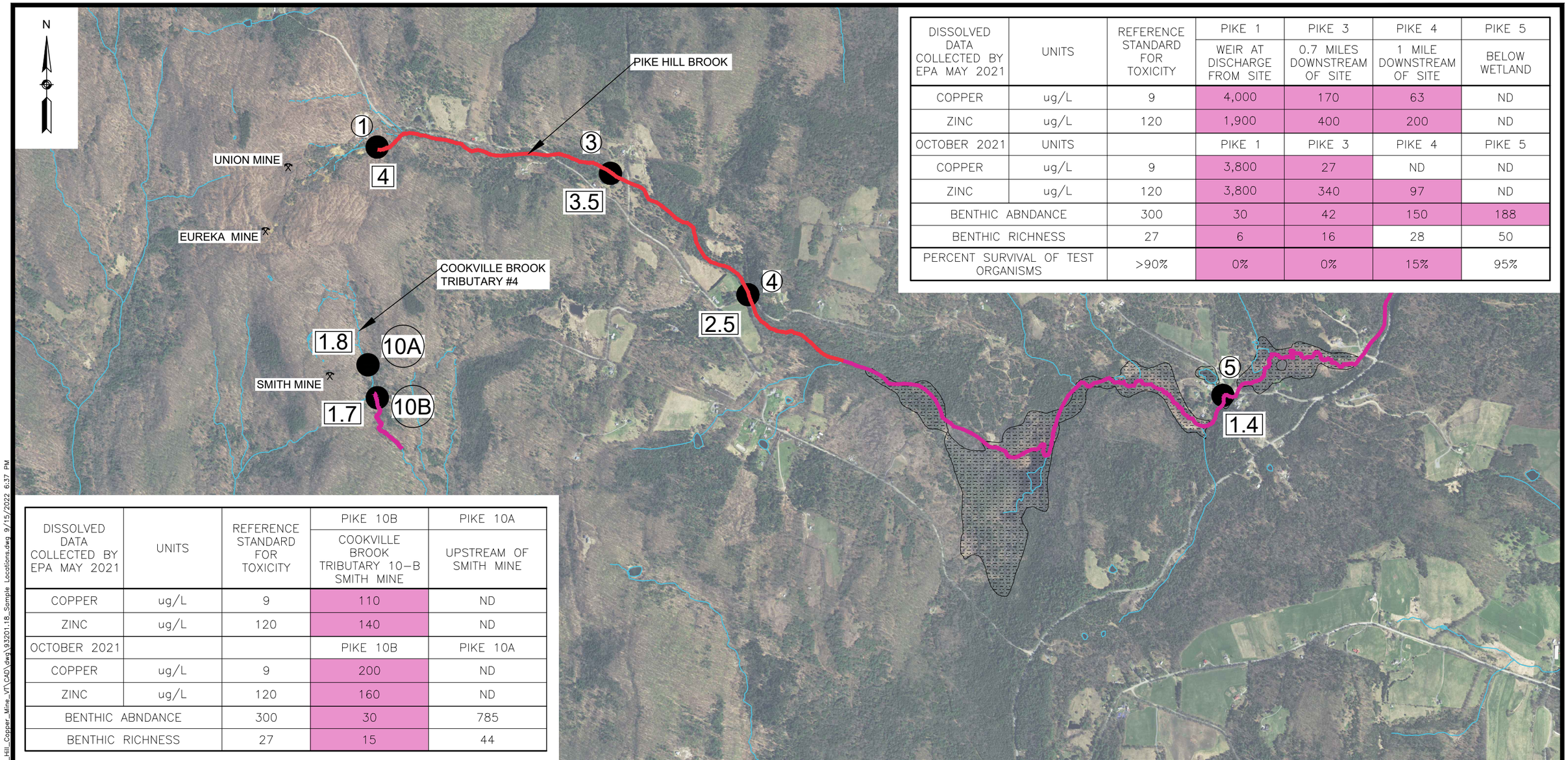

DISSOLVED DATA COLLECTED BY EPA MAY 2021	UNITS	REFERENCE STANDARD FOR TOXICITY	PIKE 1 WEIR AT DISCHARGE FROM SITE	PIKE 3 0.7 MILES DOWNSTREAM OF SITE	PIKE 4 1 MILE DOWNSTREAM OF SITE	PIKE 5 BELOW WETLAND
COPPER	ug/L	9	4,000	170	63	ND
ZINC	ug/L	120	1,900	400	200	ND
OCTOBER 2021	UNITS		PIKE 1	PIKE 3	PIKE 4	PIKE 5
COPPER	ug/L	9	3,800	27	ND	ND
ZINC	ug/L	120	3,800	340	97	ND
BENTHIC ABNDANCE		300	30	42	150	188
BENTHIC RICHNESS		27	6	16	28	50
PERCENT SURVIVAL OF TEST ORGANISMS		>90%	0%	0%	15%	95%

DISSOLVED DATA COLLECTED BY EPA MAY 2021	UNITS	REFERENCE STANDARD FOR TOXICITY	PIKE 10B COOKVILLE BROOK TRIBUTARY 10-B SMITH MINE	PIKE 10A UPSTREAM OF SMITH MINE
COPPER	ug/L	9	110	ND
ZINC	ug/L	120	140	ND
OCTOBER 2021			PIKE 10B	PIKE 10A
COPPER	ug/L	9	200	ND
ZINC	ug/L	120	160	ND
BENTHIC ABNDANCE		300	30	785
BENTHIC RICHNESS		27	15	44

LEGEND

- STREAM
- EPHEMERAL STREAM
- SEVERE IMPAIRMENT
- VARIABLE IMPAIRMENT
- WETLAND
- MINE
- SAMPLE SITE
- (10A) DESIGNATES A SURFACE WATER CHEMISTRY SAMPLE LOCATION
- [1.8] DESIGNATES A VTDEC/USGS BENTHIC AND/OR FISH COMMUNITY ASSESSMENT LOCATION

0 2500' 5000'
GRAPHIC SCALE

NOTES:
1. THE SAMPLING LOCATIONS SHOWN HEREON WERE TRANSCRIBED FROM FIGURES 1 AND 2 OF THE USGS SCIENTIFIC INVESTIGATIONS REPORT 2012-5288 AND FIGURES 2 AND 3 OF THE USGS SCIENTIFIC INVESTIGATIONS REPORT 2006-5303.
2. AERIAL IMAGES, STREAMS, AND WETLANDS SHOWN WERE OBTAINED FROM THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).

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FIGURE 5

WATER CHEMISTRY AND SURFACE WATER TOXICITY
PIKE HILL COPPER MINE
SUPERFUND SITE
CORINTH, VERMONT

DRAWN BY:	ATB	CHECKED BY:	BJK
PROJECT NO.	93201.18	DATE:	SEPTEMBER 2022

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Figure 6 - Pike Hill Brook Density of Benthic Organisms

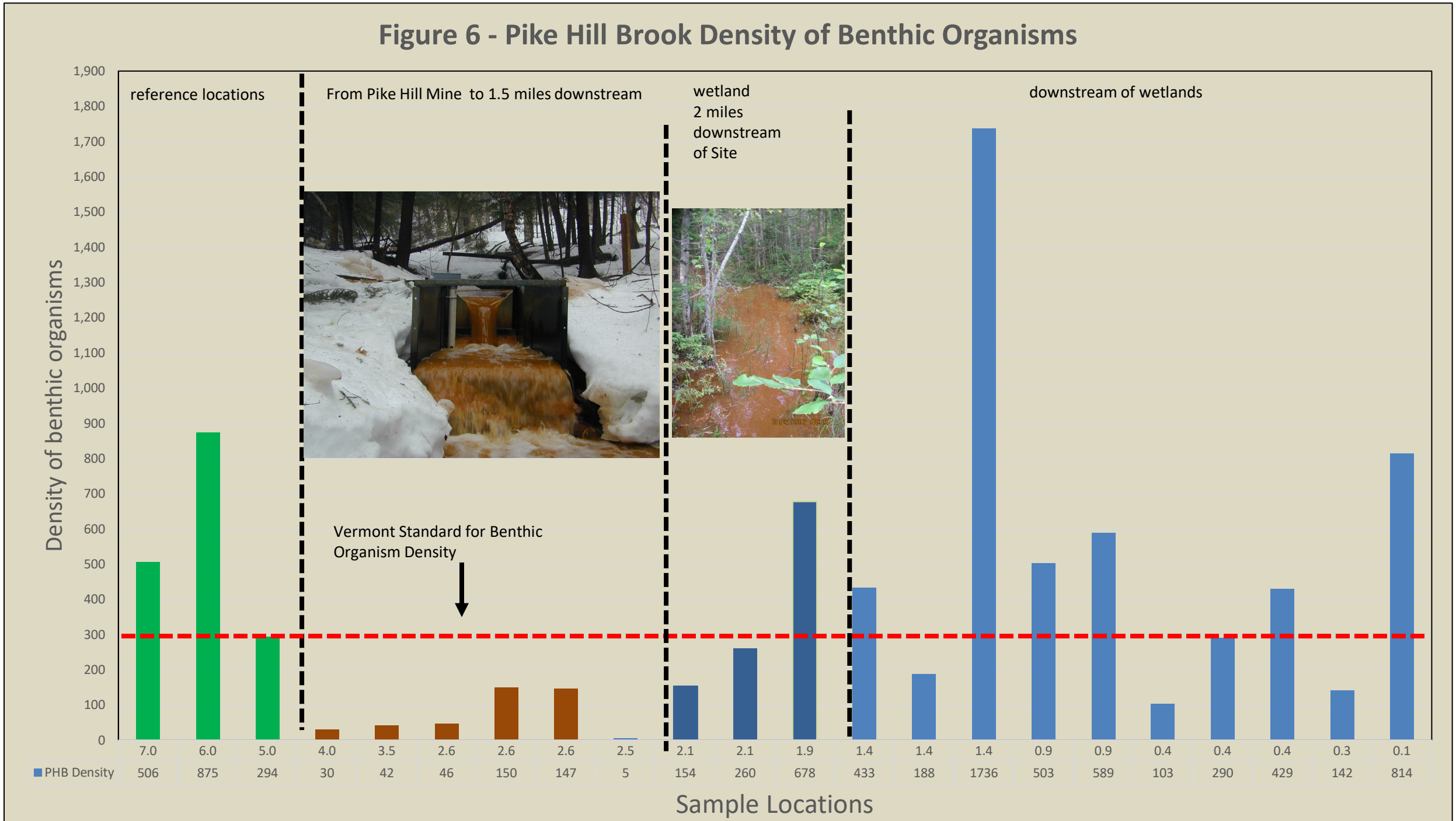
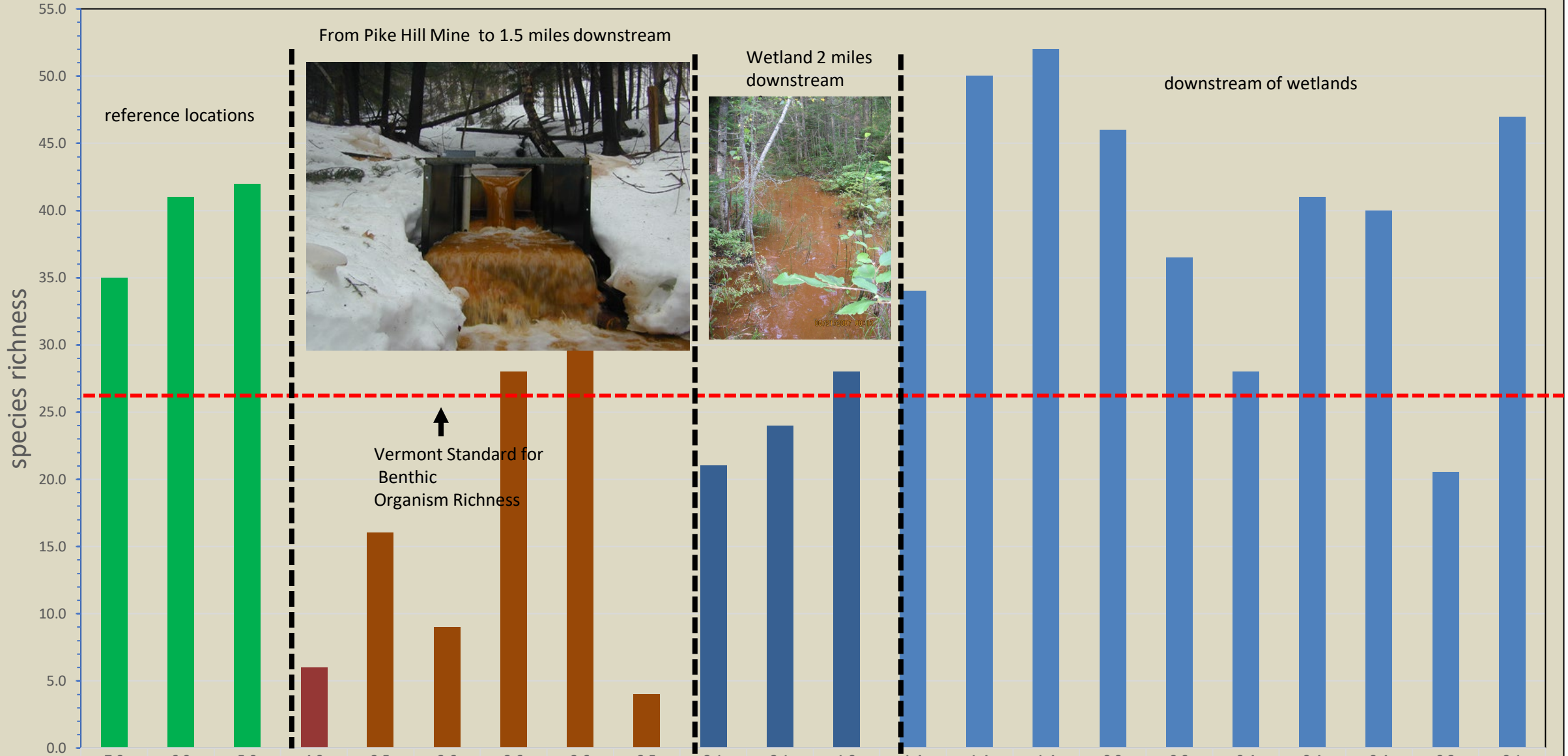
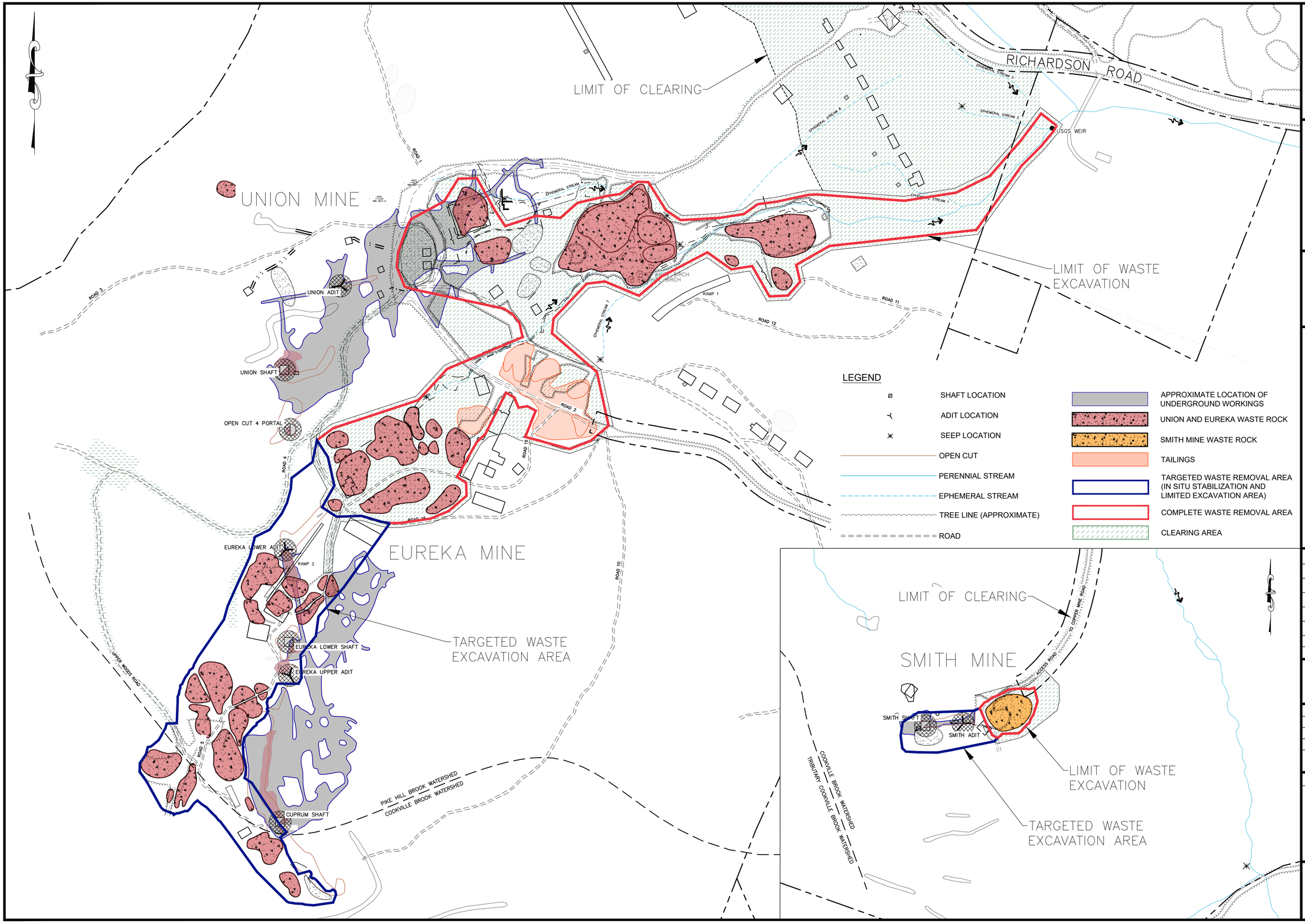


Figure 7 - Pike Hill Brook Richness (number of different species)





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CONCEPTUAL EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

0 100' 200'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.18
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

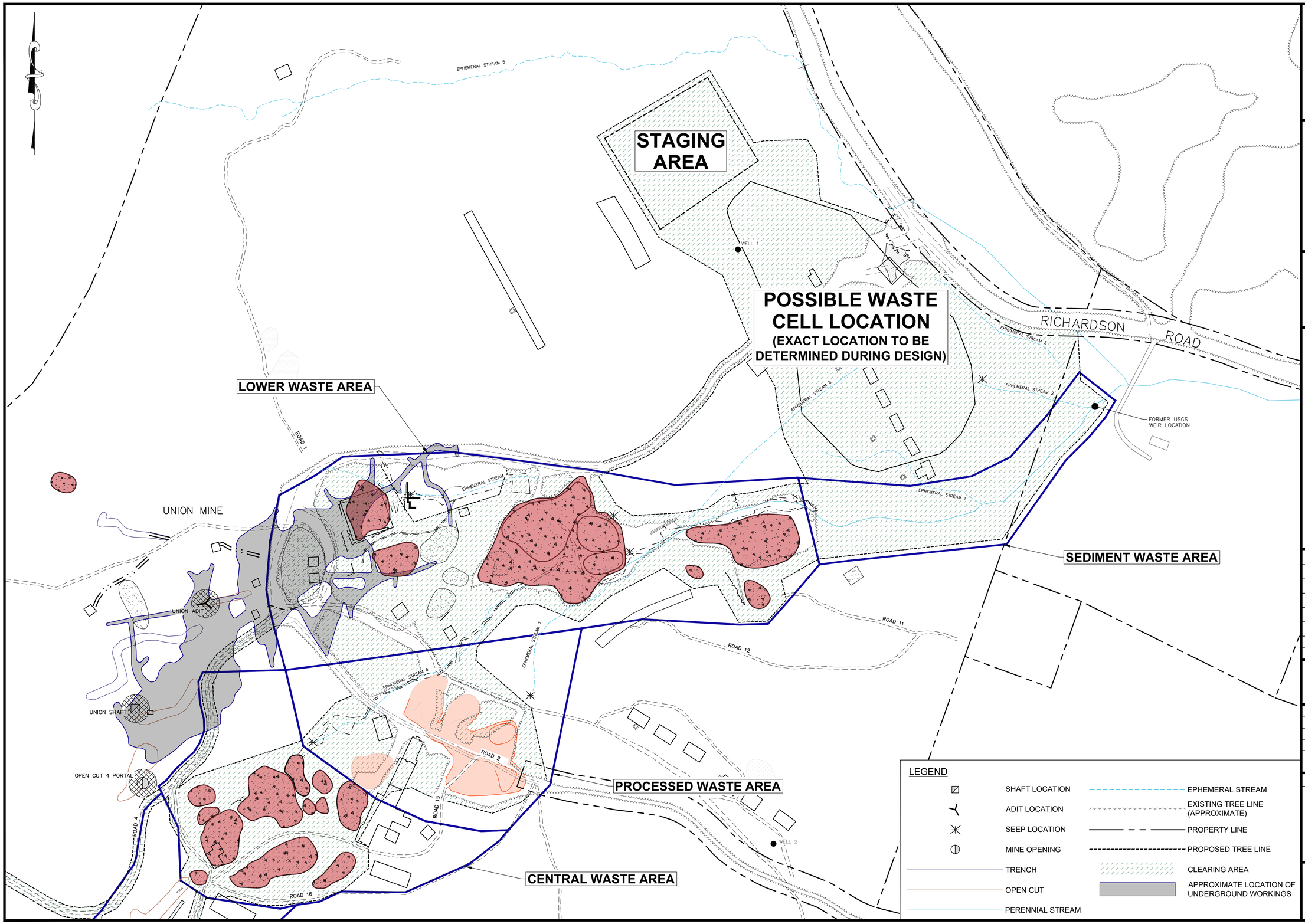
SHEET TITLE

WASTE EXCAVATION AND CLEARING AREAS

ISSUE

ES-2

J:\93201.00 - START Contract - Task Order 01\93201.18_Pike_Hill_Copper_Mine_VT\CAD\dwg\93201.18_SITE.dwg 7/15/2022 10:36 AM



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CONCEPTUAL
EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

0 80' 160'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.18
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

SHEET TITLE

PRELIMINARY WASTE CONTAINMENT CELL AND STAGING AREAS

SHEET
9

ATTACHMENT 2

EE/CA APPROVAL MEMORANDUM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 Post Office Square, Suite 100
Boston, MA 02109-3912

DATE: **See E-Signature Block Below**

SUBJ: Pike Hill Copper Mine - Approval to perform an Engineering Evaluation/Cost Analysis for a Non-Time-Critical Removal Action

FROM: Edward Hathaway, Remedial Project Manager
ME/VT/CT Superfund Section

EDWARD HATHAWAY Digitally signed by EDWARD HATHAWAY Date: 2021.11.22 08:02:26 -05'00'

THRU: Bob Cianciarulo, Chief
Remediation Branch

ROBERT CIANCIARULO Digitally signed by ROBERT CIANCIARULO Date: 2021.12.01 10:29:53 -05'00'

Carol Tucker, Chief
Superfund Emergency Planning and Response Branch

CAROL TUCKER Digitally signed by CAROL TUCKER Date: 2021.12.01 10:35:38 -05'00'

TO: Karen McGuire, Director
Enforcement and Compliance Assistance Division
for Bryan Olson, Director, Superfund and Emergency Management Division
EPA Region 1

I. Subject

The purpose of this memorandum is to request and document your approval to authorize the expenditure of federal funds to conduct an Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time-Critical Removal Action (NTCRA) at the Pike Hill Copper Mine Superfund Site (Site) in Corinth, Vermont. Based on investigations conducted by the United States Environmental Protection Agency (EPA) and the Vermont Department of Environmental Conservation (VTDEC), the Agency has determined that there has been and continues to be a release into the environment of a hazardous substance which may present an imminent and substantial danger to public health or welfare. The proposed NTCRA will reduce ecological impacts to Pike Hill Brook and a tributary of Cookville Brook by preventing the release of mining influenced water (MIW) from mine waste (waste rock and tailings) and adits and preventing the migration of mine waste from the Site. Surface water impacts include acute toxicity for aquatic biota and depletion of prey organisms that sustain federal, and state threatened and endangered bats.

The Fund-lead remedial investigation/feasibility study (RI/FS) for the Site is ongoing. The proposed NTCRA will allow EPA to address more quickly the main source of the MIW that is impacting the surface water, sediment, and downstream wetland areas while the full nature and extent of contamination associated with the Site is defined. The decision to proceed with an EE/CA to support the NTCRA is consistent with the long-term Site remedial strategy to minimize both exposures to, and migration of, contaminants (e.g., aluminum, copper, iron and zinc) associated with mine waste and MIW, and the associated environmental impacts to Pike Hill Brook and a tributary of Cookville Brook. The mine waste is also a source of groundwater contamination, and drainage from the mine pool within the Underground Workings through the adits is a source of surface water contamination.

Because the NTCRA may require funding in excess of $6 million, EPA New England Region has consulted with EPA Headquarters prior to authorizing this Approval Memorandum.

II. Background

A. Site Description and History

City and State: Corinth, VT
County: Orange
EPA ID: VTD988366720
Final NPL Listing: Federal Register / Vol. 69, No. 140 / Thursday, July 22, 2004
Latitude: 44° 03' 26.4" N Longitude: 72° 18' 24.9" W

The Pike Hill Copper Mine Superfund Site is an abandoned copper mine located in the Town of Corinth, Orange County, Vermont. It includes the Union, Eureka (also known as Corinth), and Smith (also known as Bicknell) mines. The entire Site encompasses about 216 acres and contains approximately 50,000-100,000 tons of waste rock and tailings that are acting as a continuing source of contamination for the surface water of Pike Hill Brook, a tributary to Cookville Brook, and the groundwater. The mine waste generates a low pH leachate with elevated metals, particularly aluminum, copper, iron and zinc. Together, the Pike Hill Mines are the most northerly of the copper mines comprising the larger Orange County Copper District. The other mines in the district include the Elizabeth Mine and the Ely Mine are both also NPL Superfund sites, Elizabeth Mine Superfund Site and Ely Copper Mine Superfund Site in Strafford/Thetford and Vershire, Vermont, respectively. The Orange County Copper District is approximately 25 miles long and 5 miles wide.

Copper ore was initially discovered in the vicinity of the Smith Mine on Pike Hill in 1845. In about 1853, mining of the Eureka deposit began at the peak of Pike Hill. Underground operations at the Eureka and Union Mines began in 1863. In 1881, the known portion of the ore body at the Union Mine was exhausted. The Smith Mine closed in 1882, leaving a relatively small area of waste rock piles and underground workings. The Eureka Mine ore mill closed in 1907 and

activities are poorly documented between 1907 and 1915, suggesting limited mining took place there. Operations at the Eureka and Union Mines resumed under a single company (Pike Hill Mines Company) between 1916 and 1919, when approximately 842,000 pounds of copper were produced using flotation processes with pine oil as an additive. The underground workings were never reopened, but during the late 1940s and early 1950s, portions of the ore dumps were trucked to the Elizabeth Mine mill for processing. The only remaining Site buildings were destroyed by fire in 1960.

In 1954, the Site property was sold by Vermont Copper Company to Appalachian Sulphides, Inc., which subsequently sold the property to Pat Mines, Inc., in 1962. All three of these companies are now defunct.

Currently, there are two owners of the Site property. One parcel, including the Union and Eureka Mines and is now owned by Second Growth Holdings, LLC, which acquired the property from LBI Timber LLC (LBI Timber) in approximately 2012. The location of the Smith Mine is owned by a private entity which has owned this parcel since 1983.

The remedial investigation, to date, has included a number of studies to define the nature and extent of contamination at the site. EPA, through an inter-agency agreement with the United States Geological Survey (USGS) performed a series of investigations from 2004 through 2007. These investigations included surface-water sampling and flow measurements, sediment sampling, mine-waste characterization, benthic community and fish community studies, and surface water toxicity testing. EPA has also completed a baseline historic resource characterization and topographic surveys for the Pike Hill Copper Mine. EPA sampled surface water and mine waste in 2021 to confirm that site conditions had not changed during the time interval from 2007 until 2021. The following documents have been completed to date for the Pike Hill Copper Mine.

- Draft Remedial Investigation Field Investigation Plan, Pike Hill Copper Mine Superfund Site Operable Unit 01, Corinth, Vermont. July.
- Failure Modes and Effects Analysis at Pike Hill Copper Mines Superfund Site. August.
- Aquatic Assessment of the Pike Hill Copper Mine Superfund Site, Corinth, Vermont. USGS Scientific Investigations Report 2012-5288.
- Final Report, Historic/Archaeological Mapping and Testing, Pike Hill Mines Site. February 2011.
- Draft Conceptual Site Model Technical Memorandum. Pike Hill Copper Mine Site, Corinth, Vermont. June.
- Surface-Water Hydrology and Quality at the Pike Hill Superfund Site, Corinth, Vermont, October 2004 to December 2005. USGS Scientific Investigations Report 2007- 5003.

- Geochemical Characterization of Mine Waste, Mine Drainage, and Stream Sediments at the Pike Hill Copper Mine Superfund Site, Orange County, Vermont. USGS Scientific Investigations Report 2006-5303.
- Sequential Extraction Results and Mineralogy of Mine Wastes and Stream Sediments Associated with Metal Mines in Vermont, Maine and New Zealand. USGS Open-File Report 07-1063.
- Surface-Water Hydrology and Quality at the Pike Hill Superfund Site, Corinth, Vermont.

B. Nature and Extent of Contamination

The primary source of impacts to surface water at the Site is derived from the interaction of water from snow melt, rain, and groundwater percolating through the piles of waste rock and tailings which subsequently transports low pH, metal-laden water and sediment downgradient into Pike Hill Brook and the tributary to Cookville Brook. Pike Hill Brook extends approximately 4.3 miles from the Site to the confluence with the Waits River. There are two distinct source areas at the Pike Hill Mine Superfund Site. One area related to the Eureka and Union mines is located along northeast slope of Pike Hill. The discharge from the associated waste piles impact Pike Hill Brook. The Smith Mine is in a separate drainage on the south slope of Pike Hill and the discharge associated with the Smith Mine impacts a tributary to Cookville Brook. Both Pike Hill Brook and Cookville Brook are tributaries to the Waits River. The Waits River is a tributary of the Connecticut River.

The Eureka and Union Mine areas of the Pike Hill Mine Superfund Site are located in a broad but well-defined, moderately sloping valley which forms a major portion of the headwaters to Pike Hill Brook. The surface water flow from this area of the Pike Hill Mine Superfund Site was measured at a gauge with a range of flow between 0.01 and 2.5 cfs prior to entering Pike Hill Brook.

The impacts to Pike Hill Brook from the Union and Eureka mines at the Pike Hill Mine Superfund Site have been documented through several studies performed by the Vermont Agency of Natural Resources (VTANR), EPA and by the United States Geological Survey (USGS) working for EPA. The key finding of these studies are:

- The discharge from the Pike Hill Mine Superfund Site is causing acute toxicity (100% mortality) in surface water toxicity tests performed in surface water in the tributary from the Pike Hill Mine Superfund Site that drains into Pike Hill Brook and in Pike Hill Brook after the confluence with the discharge from the Pike Hill Mine Superfund Site.
- Copper concentrations in the water of the tributary to Pike Hill Brook and in Pike Hill Brook after the confluence with the discharge from the Pike Hill Mine Superfund Site exceed Vermont Water Quality numerical standards and federal Clean Water Act National Recommended Water Quality Criteria.
- The benthic community and fish community of Pike Hill Brook are severely impaired by

the release from the Pike Hill Superfund Site for several miles below the confluence of the water from the Pike Hill Mine Superfund Site with Pike Hill Brook.

Copper concentrations in surface water entering Pike Hill Brook from the Site range from 1,940 to 30,800 ppb. The range of pH measured in the tributary to Pike Hill Brook within the Pike Hill Superfund Site was between 2.7 and 4.4 standard units. The sediment in this same tributary downgradient of the waste rock piles has a copper concentration of 8,070 ppm. This is the same concentration as the waste rock and indicates that erosion has transported mine waste into Pike Hill Brook.

The Smith Mine area is located along the western flank of a narrow south-facing valley drained by a 1 mile long tributary to Cookville Brook. The headwater to this tributary is located upgradient of the Smith Mine area and does not appear to have any significant branches in the vicinity of the mine. This tributary passes within 500 ft of the mine waste rock piles and at least one significant seep has been identified along the bank of this tributary downslope of the Smith Mine. Stream flow of this tributary was estimated between 0.19 and 0.63 cfs during two observations by USGS. While the extent of the area impacted by the release from the Smith Mine area of the Pike Hill Mine Superfund Site is less extensive, the surface water in the tributary to Cookville Brook where the Smith Mine leachate discharges contains elevated levels of copper and has caused documented reductions in the benthic community.

III. Threat to Public Health, Welfare, or the Environment

Consistent with Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Agency considered the following factors in determining whether a removal action is appropriate for the Site, including:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants – The Site contains sulfidic mine waste that creates low pH leachate and which also contains elevated levels of metals toxic to aquatic organisms, particularly aluminum, copper and zinc. For the areas within the Site and immediately down gradient the low pH water and elevated metals are causing severe impacts to aquatic organisms as indicated by 100% mortality in surface water toxicity tests. The metals impacts extend downstream as evidenced by toxicity of the surface water that extends for a mile downstream of the Site.

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems – The mine waste at the Site is causing contamination to sensitive ecosystems, including surface water bodies supporting federal and state threatened and endangered bats. The impacts to the surface water at the Site deplete the available prey for the threatened and endangered bats. Pike Hill Mine is a very unique hibernation site for bats in Vermont. It is colder and drier than many other hibernation sites and hosts the largest known concentration of state-threatened eastern small-footed bats in Vermont.

(iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release – There are no drums, tanks or other bulk storage containers at the Site.

(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate – High levels of hazardous pollutants or contaminants, particularly copper and zinc are largely at or near the surface in the mine waste piles and are actively migrating into the surface water of Pike Hill Brook creating contaminated surface water and sediment. These pollutants or contaminants are also migrating into downstream wetlands and contaminating these areas.

(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released – The exposed nature of the mine waste materials creates a situation where significant rain or snowmelt events will cause a release of contaminated MIW and sediments.

(vi) Threat of fire or explosion – There was a documented occurrence of a fire from spontaneous combustion of the sulfide mine waste. This could re-occur unless the waste material is contained.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release – Due to the potential high costs associated with the NTCRA, there are likely no State response mechanisms available with sufficient funding to perform a NTCRA to respond to the threats posed by the mine waste materials. PRP search activities are completed and no viable liable PRPs have been identified.

(viii) Other situations or factors that may pose threats to public health or welfare or the environment – The major threats are discussed above and relate to the release of low pH leachate with elevated metals concentrations severely degrading the biological communities in Pike Hill Brook and a tributary to Cookville Brook.

In addition to the Section 300.415(b)(2) factors discussed above, the Agency also considered the: (1) time-sensitivity of the response; (2) the complexity of both the problems to be addressed and the action to be taken; (3) the comprehensiveness of the proposed action and (4) the likely cost of the action to support initiation of a NCTRA at the Site.

If this response action is not implemented, the severe impacts to the aquatic biota of Pike Hill Brook will continue and additional mine waste will erode and be transported into Pike Hill Brook and the downstream wetlands. The adverse impact on the food chain caused by MIW reduces the availability of prey organisms for federal and state threatened and endangered bats.

The source control action under consideration would address the most significant source material at the Site and will be a component of the larger cleanup for the Site to be addressed through a future remedial action. It is anticipated, however, that beyond the source control action, the

remaining cleanup actions involving sediments, wetlands, underground mine workings and groundwater will require several years of additional field investigations (once funding is available) to address these components of the Site cleanup. Based on the experience gained in addressing all three of the Vermont copper mining sites, the Region expects the remedy for the Pike Hill Copper Mine Site would necessarily include the source control action (to be developed in the EE/CA) and if undertaken pursuant to a NTCRA can be accomplished considerably more quickly than it would take to develop the comprehensive Site remedy. This would similar and nature, but smaller in scope, as the source control actions taken at the other two Vermont mining sites suggesting that this cleanup approach is technically appropriate and not overly complex in scope supporting that it can be implemented as a NTCRA.

One or more of the 11 EJSCREEN application's EJ Indices is at or above the 80th percentile at the state average level, thus Region 1 considers this to be an Environmental Justice site.

The State of Vermont fully supports development of an EE/CA and an early action at this Site.

This removal is designated as non-time-critical because more than six months of planning time will be required prior to initiation of on-Site activities. Prior to the actual performance of a non-time critical removal at this Site, Section 300.415(b)(4) of the NCP requires that an EE/CA be performed in order to weigh different response options.

IV. Endangerment Determination

Actual or threatened releases of hazardous substances or pollutants or contaminants from this Site, if not addressed, may present an imminent and substantial endangerment to public health, welfare, or the environment. In accordance with Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA, OSWER Directive 9360.0-34 (August 19, 1993), an endangerment determination by an EPA risk assessor will be included in the EE/CA based on existing sampling data collected for the Site.

V. Scope of the EE/CA

The purpose of the EE/CA will be to evaluate alternatives for response measures to address the release of MIW from mine waste material. The EE/CA here benefits greatly from the Region's experience gained at the other two Vermont copper mining Sites.[1] The EE/CA will consider alternatives which meet the following general removal action objectives:

- Prevent, to the extent practicable, the release of MIW from the mine waste at the Site by isolating the waste material from water and oxygen.
- Prevent, to the extent practicable, the off-site transport of mine waste as a result of erosion and sediment transport processes.
- Implement the response action in a manner that will minimize, to the extent practical, impacts to federal and state threatened and endangered bats.
- Implement the response action in a manner that will minimize, to the extent practical, impacts to historic resources at the Site.

Pursuant to EPA guidance on EE/CAs, alternatives will be evaluated based upon effectiveness, implementability, cost and compliance with Applicable or Relevant and Appropriate Requirements (ARARs) to the extent practicable. The alternatives that will be proposed in the EE/CA range from in-situ stabilization of the mine waste or consolidation and containment on-site to off-site disposal of the mine waste material. Alternatives will also evaluate passive treatment technologies to reduce the toxicity of any residual mine drainage from the mine waste or the adits. It is estimated that any alternatives to address mine waste and adits will exceed $2 million dollars and therefore they will be evaluated to determine their consistency with future remedial actions to be taken at the Site.

In developing the range of alternatives to be evaluated in the EE/CA, EPA will, pursuant to Section 300.415(d) of the NCP, consider actions that shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the releases concerned, as well as other relevant guidance.

VI. Enforcement Strategy

EPA has concluded that there are no viable, liable PRPs available to perform or contribute to the cleanup at this Site.

[1] The three copper mine sites are substantially similarly with respect to minerology and operational history, but vary in terms of size. Elizabeth Mine, listed on the NPL in 2001 is the largest, containing several million cubic yards of mine waste. Ely Mine, also listed on the NPL in 2001, follows with about 200,000 cubic yards of waste mater. Cleanup at Elizabeth proceeded under a NTCRA to address the main source areas and this work has been recently completed. Similarly, the design for the cleanup at Ely Mine has been completed and is awaiting funding. As noted above, Pike Hill is the smallest of the three Sites.

VII. Estimated Costs

Costs associated with the preparation of the EE/CA(s) described above, including community relations activities and further development of an Administrative Record, are expected to be approximately $400,000. Based upon preliminary estimates, costs associated with containment of the mine waste and treatment of the MIW is estimated to be in the $15,000,000 range. This estimate will be fully developed during in the EE/CA.

The EE/CA for the proposed NTCRA at the Site will be performed by EPA as a fund lead response action. Therefore, federal funds for the performance of an EE/CA are requested at this time. As noted above in Section VI, EPA has completed the PRP search activities and no viable PRPs have been identified.

IX. Headquarters Consultation

In accordance with the national guidance document, Use of Non-Time-Critical Removal Authority in Superfund Response Actions dated February 14, 2000, EPA Region 1 has consulted with the Office of Superfund Remediation and Technology Innovation (OSRTI) based on the anticipated cost of the NTCRA being greater than $6 million. The Region received email concurrence to proceed with the Approval Memorandum on November 19, 2021.

X. Recommendation

Ongoing investigations have determined that there has been a release of hazardous substances to the environment. Additionally, conditions at the Site meet the NCP Section 300.415(b) criteria for a removal. Consistent with Section 104(b) of CERCLA and NCP Section 300.415(b)(4), further investigation is necessary to plan and direct the future removal action. We recommend your approval of this request to perform an EE/CA at the Pike Hill Mine Superfund Site. The total estimated cost incurred for performing the EE/CA is approximately $400,000.

Approved:

KAREN MCGUIRE Digitally signed by KAREN MCGUIRE
Date: 2021.12.01 17:22:07 -05'00'

Karen McGuire, Director
Enforcement and Compliance Assurance Division for
Bryan Olson, Director, Superfund and Emergency Management Division

ATTACHMENT 3

ARAR TABLES

ATTACHMENT 3, TABLE 1
LOCATION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
STATE	Vermont State Land Use and Development Plans Law (Act 250), 10 V.S.A. ch. 151; Natural Resource Board Act 250 Rules (December 4, 2015)	Applicable	Issues to be addressed in assessing compliance with Act 250 include substantive environmental and facility siting requirements necessary to demonstrate that the activity: • will not result in undue water and air pollution, taking into consideration elevation, flood plains, nature of soils and subsoils and their ability to support waste disposal, slope of the land and its effect on effluents, and the availability of streams for disposal of effluents. (criterion 1); • will protect headwaters (criterion 1(A)); • will meet all standards for disposal of wastes (criterion 1(B)); • will protect floodways (criterion 1(D)); • will, whenever feasible, maintain the natural condition of streams (criterion 1(E)); • will not violate the rules relating to significant wetlands (criterion 1(G)); • will not cause unreasonable soil erosion (criterion 4); • will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, rare and irreplaceable natural areas (criterion 8); • will not destroy or significantly imperil necessary wildlife habitat or any endangered species (criterion 8(A)); • extraction of earth resources will not have an unduly harmful impact upon the environment or surrounding land uses and development and upon completion of the extracting or processing operation the site will be left in a condition suited for an approved alternative use or development (criterion 9(E)); • will be designed and operated to conserve energy, to the extent practicable (criterion 9(F)); and • will protect public investments (roads) (criterion 9(K)).
STATE	Regulation of Stream Flow Act, 10 V.S.A. § 1027 and 10 V.S.A. Chapter 41; Stream Alteration Rule, Env. Prot. R. Ch. 27, § 27-101 through 27-706 (March 10, 2017)	Applicable	Regulates and permits activities that interrupt the natural flow of water in watercourses to protect against damage to aquatic life, prevent creation of flood hazards, and protect from damaging the rights of riparian owners.
STATE	Vermont Obstruction of Streams, 10 V.S.A. Chapter 111, § 4607;	Applicable	Regulation of obstructions that prevent the passing of fish in a stream or the outlet or inlet of a natural or artificial pond on a public stream, by means of a rack, screen, weir or other obstruction.

ATTACHMENT 3, TABLE 1
LOCATION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
STATE	Vermont Wetlands Protection And Water Resources Management Act; Vermont Wetland Rules 10 V.S.A. ch. 37; Env. Prot. R. Ch. 30 (January 21, 2020)	Applicable	These standards establish criteria for delineating and classifying Class One and Class Two wetlands, which are considered significant wetlands, and set forth allowed and conditional uses for these wetlands. Jurisdiction under the Rules includes within a 50 foot buffer zone to Class Two wetlands. The activities must not have undue adverse impacts on the significant functions of the wetland. Class Three wetlands are defined, but are not protected under these rules (they are addressed under Title 10 V.S.A. Chapter 151, above).
STATE	Flood Hazard Areas, 10 V.S.A. Chapter 32, § 754(a)(1); Vermont Flood Hazard and River Corridor Rule, Env. Prot. R. Ch. 29 (March 1, 2015)	Relevant and Appropriate	Regulates and permits development that is exempt from municipal regulation and located in flood hazard areas and river corridors to require compliance with National Flood Insurance Program criteria, ensure design and creation of structures is consistent with public health and saftey, and enhance flood reslience.
STATE	Vermont Historic Preservation Act, 22 V.S.A. Chapter 14, §§ 743(4), 761, 763, and 767.	Relevant and Appropriate	Places controls on actions conducted by the state that may impact historic, scientific, or archaeological sites and data. Provides mechanism for desgination of an archaeological site as a state archeological landmark.
STATE	Vermont Protection of Endangered Species Act, 10 V.S.A. Chapter 123, §§ 5401, 5403-5408, 5410	Applicable	This statute outlines the definition of endangered and threatened and the species listed as endangered or threatened. The statute prohibits the taking, possession or transport of wildlife or plants that are members of an endangered or threatened species without complying with the Act. Bat species that have been documented as occurring or may occur on the Site that are listed as threatened or endangered species in Vermont: the Eastern Small-Footed Bat, Little Brown Bat, and the Northern Long-eared Bat.
STATE	Vermont ANR Guidance on Riparian Buffers (December 9, 2005)	To Be Considered	This guidance provides technical information on the functions and values of riparian buffers, as well as describing acceptable activities within buffer zones. It recommends the establishment of 100 foot buffer zones to streams under circumstances where there is an increased risk of erosion and/or potential for overland flow of pollutants.
STATE	Vermont ANR Riparian Management Guidelines for Agency of Natural Resources Lands (December 2015)	To Be Considered	This guidance provides ANR land managers a full understanding of the function and values of riparian areas, stategies and considerations for identifying, managing, restoring, and enhancing riparian areas

ATTACHMENT 3, TABLE 1
LOCATION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
FEDERAL	Floodplain Management and Protection of Wetlands, 44 C.F.R. 9	Relevant and Appropriate	Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.
FEDERAL	Federal Endangered Species Act of 1973 (ESA), 16 U.S.C. 1531 *et seq* .; 33 C.F.R. Part 320 50 CFR Part 17(o) Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat	Applicable	The purpose of the ESA is to "conserve the ecosystems upon with threatened and endangered species depend" and to conserve and recover listed species. Federal agencies must consult with the U.S. Fish and Wildlife Service to ensure that the actions they authorize, fund, or carry out will not jeopardize listed species. The law provides for critical habitat designations for listed species. Critical habitat designations affect Federal agency actions and federally funded or permitted activities. The Northern long-eared bat (*Myotis septentrionalis*) is listed as federally threatened. The Northern long-eared bat has been documented at the Site. The U.S. Fish and Wildlife Service (Service), finalized a rule under authority of section 4(d) of the Endangered Species Act of 1973 (Act), as amended, that provides measures that are necessary and advisable to provide for the conservation of the Northern long-eared bat. These rules became effective February 16, 2016.
FEDERAL	National Historic Preservation Act (NHPA), 54 U.S.C. § 300101 *et seq* ., 36 C.F.R. Part 800	Applicable	Section 106 of the NHPA requires EPA to take into account the effect of all of its actions on historic properties in consultation with the Vermont Division for Historic Preservation (VDHP), serving as the State Historic Preservation Officer (SHPO). A determination has been made that the Pike Hill Mine Site is eligible for the National Register of Historic Places. The consultation is to identify potential adverse effects on historic properties and seek ways to avoid, minimize or mitigrate any such effects on historic properties.
FEDERAL	Archeological and Historic Preservation Act, 54 U.S.C. Ch. 312501 *et seq* ., 36 C.F.R. Part 65	Applicable	This standard requires that, whenever any federal agency finds or is made aware that its activity in connection with any construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, pre-historical, historical, or archeological data such agency shall undertake the recovery, protection, and preservation of such data or notify the Secretary of the Interior. The undertaking could include a preliminary survey (or other investigation as needed) and analysis and publication of the reports resulting from such investigation.

ATTACHMENT 3, TABLE 2
CHEMICAL SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
STATE	Vermont Investigation & Remediation of Contaminated Properties Rule, VT Env. Prot. R. Chapter 35, Appendix A and Appendix B (July 6, 2019)	Applicable	Standards establish human health-based criteria for soils and vapor intrusion, ecological health-based criteria for sediment. Promulgated standards that are more stringent than federal standards may be used as soil cleanup standards to the extent practicable.
FEDERAL	*Preliminary Remediation Goals for Ecological Endpoints* , Efroymson et al., August 1997	To Be Considered	This technical memorandum presents recommended preliminary remediation goals (PRGs) for ecological endpoints for risk assessments and decision making at CERCLA sites.

ATTACHMENT 3, TABLE 3
ACTION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
STATE	Vermont Pollution Control Act, 10 V.S.A. Ch. 47 §§1263(g), 1258; Vermont Water Quality Standards, VT Env. Prot. R. Ch. 29(a), Ch. 1, 2, and 3 and Appendix C and D (January 2017)	Applicable	Establishes water quality standards for surface waters and applies to alternatives that call for monitoring surface water bodies on and off of the Site.
STATE	Vermont Pollution Control Act, 10 V.S.A. Ch. 47 §§1263(g), 1258; Water Pollution Control Permit Regulations, VT Env. Prot. R. Ch. 13 (February 26, 1974)	Applicable	Stipulates requirements for discharges to surface waters, compliance with NPDES standards, and meeting stormwater management requirements.
STATE	Vermont Stormwater Management Act, 10 V.S.A. §§ 1263 and 1264; Vermont Stormwater Management Rule, VT Env. Prot. R. Ch. 18 (July 1, 2017)	Applicable	Requires the most effective stormwater treatment practices (STPs) for new development and re-development to imporve the quality of STPs, specifically in regard to performance, longevity, safety, ease of maintenance, community acceptance, and environmental benefits. Activities that create more than 1/2 acre of impervious surfaces, including roads and expansions to existing impervious surfaces that result in a total of 1/2 acre of impervious surfaces or more, must implement measures to address the stormwater from the impervious surfaces. Also includes requirements for erosion prevention and sediment control plans needed for construction-related stormwater discharge permitting
STATE	Vermont Stormwater Management Act, 10 V.S.A. §§ 1263 and 1264; Vermont Stormwater Management Manual Rule, VT Env. Prot. R. Ch. 36	Applicable	These standards more fully integrates approaches for designing and sizing STPs for water quality treatment, groundwater recharge, downstream channel protection, and flood protection. In addition, these standards provide instruction on a range of site planning and green stormwater infrastructure design practices for minimizing the generation of runoff.
STATE	Vermont Waste Management Act, 10 V.S.A. Chapter 159; Hazardous Waste Management Regulations, VT Env. Prot. R. Ch. 7 (February 1, 2022)	Applicable	Establishes requirements for the identification and management of hazardous waste. These regulations apply to solutions having pH less than 2 or contaminated media that exceeds toxicity standards under these regulations. Treatment media or any other wastes that are disposed of off-site will be tested to determine if it exceeds the standards to be managed and disposed of as hazardous waste. Incorporates requirements of the federal Resource Conservation and Recovery Act regulations, 40 C.F.R. 264.

ATTACHMENT 3, TABLE 3
ACTION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
STATE	Vermont Waste Management Act,10 V.S.A. Chapter 159; Vermont Solid Waste Management Rules (VSWMR), Env. Prot. R. Ch. 6 (October 31, 2020)	Applicable	These substantive requirements under these rules regulate any tailing wastes and roast bed material that were produced as part of the benefication of ore at the Site, but the rules do not apply to unprocessed waste rock. However, Section 6-303 permits the waiver of technical and siting requirements of these rules provided there is a response action under CERCLA to a release or threatened release of hazardous substances or materials; the proposed response action will not adversely affect public health, safety or the environment; and the technical and siting requirements will be complied with to the extent practical in light of the overall objectives of the response. The rule also stipulates a written determination is needed granting a variance to any technical and siting requirements that are waived, consistent, with Section 6-605.
STATE	Vermont Air Pollution Control Act, 10 V.S.A. Ch. 23; Air Pollution Control Regulations, VT Env. Prot. R. Ch. 5 (December 13, 2018)	Applicable	Establishes standards for air pollution prevention, abatement and control. List prohibited activities and establishes primary and secondary ambient air quality standards for specific pollutants. Includes dust control standards.
STATE	Vermont Slash Removal, 10 V.S.A. § 2648	Applicable	Forest growth may only be cut if all slash adjoining the right-of-way of any public highway, or the boundary lines of woodlots owned by adjoining property owners, is removed for a distance of 50 feet from the right-of-way of any public highway or from the boundary lines of woodlots owned by adjoining property owners. Furthermore, main roads through cut-over areas must be kept free from slash so that there is unobstructed access for fire fighting equipment and fire suppression crews.
FEDERAL	Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.* ; 40 C.F.R. Part 264	Applicable	Vermont is delegated to implement these standards through its Hazardous Waste Management Regulations (see reference Vermont Waste Management Act, 10 V.S.A. Chapter 159; Hazardous Waste Management Regulations, VT Env. Prot. R. Ch. 7 above).
FEDERAL	National Recommended Water Quality Criteria (NRWQC)	To Be Considered	This guidance is used to develop numerical and biological water quality standards for monitoring surface water quality.
FEDERAL	Federal Clean Water Act, Section 402, 33 U.S.C. § 1342; National Pollution Discharge Elimination System (NPDES) 40 CFR 122-135, 131	Applicable	These regulations contain discharge limitations, monitoring requirements, and best management practices (BMPs) for discharges into navigable waters, i.e., surface waters. These regulations would be applicable to remedial strategies involving discharge to surface waters.

ATTACHMENT 3, TABLE 3
ACTION SPECIFIC ARARS
PIKE HILL COPPER MINE SUPERFUND SITE
CORINTH, VERMONT
JULY 27, 2022

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS
FEDERAL	Federal Clean Water Act, § 1342; Stormwater Requirements for Construction Sites; 40 C.F.R. 122.26	Applicable	Regulates stormwater discharge from construction activity including clearing, grading and excavation for operations that result in the disturbance of over one acre of total land area. The standards are relevant and appropriate for alternatives that will disturb less than an acre of land.

ATTACHMENT 4

EE/CA FACT SHEET

SUPERFUND

SITE UPDATE

Pike Hill Copper Mine Site
Corinth, VT

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND

THE SUPERFUND PROGRAM protects human health and the environment by investigating and cleaning up often-abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and groundwater to productive use.

INTRODUCTION

The United States Environmental Protection Agency (EPA) is proposing to implement a cleanup action to address the ongoing release of contaminated water from the Pike Hill Copper Mine site into Pike Hill Brook and Cookville Brook Tributary #4. The reasons for the cleanup along with the cleanup alternatives considered are summarized in this fact sheet and documented in a report, called an Engineering Evaluation/Cost Analysis (EE/CA). *The EE/CA is being released for public comment. EPA wants to hear your opinion on these options. Comments from the community will be accepted from August 3, 2022 to September 2, 2022. EPA is also requesting public comment regarding impacts to on-site wetlands/waterways, downstream floodplains and historic resources at the Site. See page 7 for information about how to submit a comment.*

Public Hearing for the Engineering Evaluation/Cost Analysis
Corinth Town Office - August 23, 2022 at 7:00pm
1387 Cookeville Road, Corinth, VT 05039

WHY CLEANUP IS NEEDED AT THIS SITE?

Historic mining operations at Site have left behind sulfide-containing waste rock and mine tailings that are releasing low-pH (acidic) contaminated water (known as mining-influenced water or MIW) with elevated levels of metals that is highly toxic to many aquatic organisms. This release is causing the following impacts:

- The fish and benthic organisms (aquatic bugs) in Pike Hill Brook are significantly depleted for about 1.5 miles below the Site and do not fully recover to reference (or unimpacted) levels for the remaining 2.5 miles of Pike Hill Brook, with a total length of fish and benthic impacts of 4 miles. Cookville Brook Tributary #4 below the Smith Mine is impaired for 0.7 miles.

continued >

KEY CONTACTS

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617-918-1065
swatts.darriel@epa.gov

EDWARD HATHAWAY
US EPA Project Manager
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hathaway.ed@epa.gov

JOHN SCHMELTZER
Project Manager
VTDEC
802-241-5620
john.schmeltzer@vermont.gov

EPA TOLL-FREE CUSTOMER SERVICE
1-888-EPA-7341

LEARN MORE AT
www.epa.gov/superfund/pikehill

WHY CLEANUP IS NEEDED AT THIS SITE? *continued*

- The concentration of copper being released from the Site exceeds federal and state water quality standards designed to protect aquatic biota (i.e., fish and other aquatic life) in both Pike Hill Brook and Cookville Brook Tributary #4.
- The contaminated water for the stretch of Pike Hill Brook from the Site extending 0.5 miles downstream of the Site killed 100% of the fish exposed to this water in laboratory tests. Only 15% of the fish survived when exposed to water from a location 1.5 miles downstream of the Site. For comparison, 95% of the fish survived when exposed to water in Pike Hill Brook downstream of the wetland and in an unimpacted tributary of Pike Hill Brook. Toxicity tests were not performed for the water in Cookville Brook Tributary #4.

The Vermont Department of Environmental Conservation (VTDEC) has identified the entire 4-mile reach of Pike Hill Brook from the Site to the Waits River and the 0.7-mile reach of Cookville Brook Tributary #4 downstream of the Smith Mine as impaired in the 2020 303(d) list of impaired waters, which was approved by EPA Region 1 on September 17, 2020. Figure 1 shows the location of the Pike Hill Copper Mine Superfund Site along with the extent of the impairment in Pike Hill Brook and Cookville Brook Tributary #4.

Figure 1 shows the extent of the impairment in Pike Hill Brook itself and Cookville Brook Tributary #4 and the loca-tion of the Pike Hill Copper Mine Superfund Site

CLEANUP ALTERNATIVES EVALUATED IN THE EE/C A

Two cleanup alternatives were evaluated in the EE/CA:

Alternative 1: Excavation and on-site consolidation/capping of mine waste with in-situ stabilization of select areas of mine waste.

Alternative 2: Excavation and off-site disposal of mine waste with in-situ stabilization of select areas of mine waste. Non-Time Critical Removal Action (NTCRA)

NON-TIME CRITICAL REMOVAL ACTION (NTCRA)

EPA is using its authority to perform a type of clean-up, called a Non-Time Critical Removal Action (NTCRA), to advance the clean-up at the Site substantially at this time. The use of a NTCRA is authorized under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (popularly known as "Superfund") and regulations issued under the statute entitled the National Contingency Plan (NCP). Accordingly, on December 1, 2021, EPA issued an Approval Memorandum to commence this EE/CA, which identifies and evaluates alternative and recommends the cleanup approach to be implemented in the NTCRA. The EE/CA evaluated the alternatives listed in the sections below using three criteria (effectiveness, implementability, and cost) to identify the recommended alternative. The NTCRA is expected to be a complimentary part of the overall comprehensive remedial action (site cleanup) and the alternatives considered here are all consistent with and would not conflict with any reasonably anticipated remedial action at the Site.

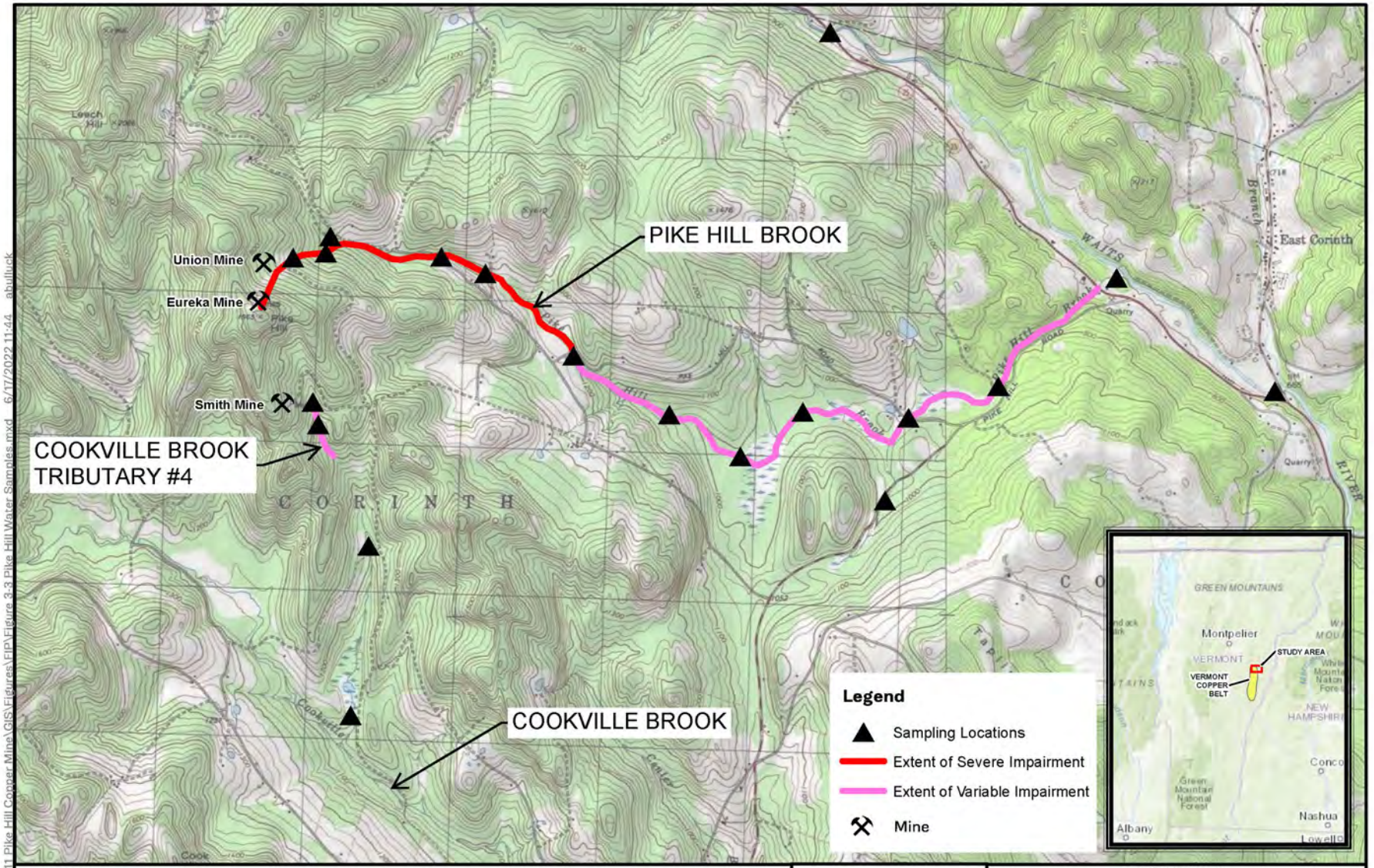
PIKE HILL BROOK
COOKVILLE BROOK
COOKVILLE BROOK TRIBUTARY #4
Union Mine
Eureka Mine
Smith Mine
C O R I N T H
East Corinth
Legend
Sampling Locations
Extent of Severe Impairment
Extent of Variable Impairment
Mine
GREEN MOUNTAINS
Montpelier
VERMONT
STUDY AREA
VERMONT COPPER BELT
NEW HAMPSHIRE
Albany
Nashua
Lowell
Notes:
1. This figure was developed from information found within the "USGS Surface-Water Hydrology and Quality at the Pike Hill Superfund Site, Corinth, Vermont, October 2004 to December 2005 Scientific Investigations Report 2007-5003."
2. Base from US Geological Survey, West Topsham, 1981 and East Corinth, 1973.
N
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FIGURE 1
SITE LOCATION AND EXTENT OF STREAM IMPAIRMENT
PIKE HILL COPPER MINE
SUPERFUND SITE
CORINTH, VERMONT
PREPARED BY: ATB
CHECKED BY: BJK
PROJECT NO. 80111
DATE: JUNE 2022
F:\80000 Task Orders\80111 Pike Hill Copper Mine\GIS\Figures\FIP\Figure 3-3 Pike Hill Water Samples.mxd 6/17/2022 11:44 abulluck

Removal Action Objectives

The EE/CA identified the Removal Action Objectives for the NTCRA, which are listed below:

- Control/reduce the release of MIW from mine waste to improve the composition and density of the aquatic community and reduce toxicity to the biota in Pike Hill Brook, Cookville Brook Tributary #4, and associated wetlands.
- Control/reduce the release of MIW from mine waste to reduce the loading of copper into Pike Hill Brook and Cookville Brook Tributary #4 and to lessen the area exceeding surface water quality standards.
- Control the erosion of mine waste into Pike Hill Brook to reduce the transport of contaminants into Pike Hill Brook, reduce toxicity to biota, and improve the composition and density of the aquatic community in Pike Hill Brook.
- Implement the response action in a manner that will minimize, to the extent practicable, impacts to federal and state threatened and endangered bats.
- Implement the response action in a manner that will minimize, to the extent practicable, impacts to historic resources at the Site.

Alternative 1: Excavation and on-site consolidation/capping of mine waste with in-situ stabilization of select areas of mine waste (EPA's Recommended Alternative)

Alternative 1 includes two methods to address the release of contaminated water from the Site:

(1) The majority of the mine waste (approximately 64,500 cubic yards) will be excavated and consolidated into an engineered waste containment cell (or multiple cells) The waste containment cell cover system will include an infiltration barrier (geomembrane) that will be covered by sufficient material to protect the barrier layer and promote run-off. The top layer of the cover system can be vegetated or stone armored. Specific details of the waste cell and cover system will be determined during the NTCRA Design.

(2) For areas of the Site that are close to historic resources (foundations/features) or the mine openings that provide important habitat for threatened and endangered bats, the mine waste (approximately 20,500 cubic yards) may be managed in place by placing a soil cover with treatment additives over the mine waste to limit the release of MIW. The soil amendments could include lime and/or organic material to promote healthy vegetation.

Alternative 1 also includes:

- Construction of surface water diversion channels; restoration of disturbed areas outside of the disposal cell(s); further historic documentation, data recovery, construction monitoring for historic resources that may be disturbed; and mitigation measures to address the permanent or temporary alteration of wetlands, waterways, and wildlife habitat (including subsurface and above ground bat habitat).
- The quantity of materials required to perform the cleanup could require about 5,000 truckloads of clean material (soil, stone, geosynthetics) to be brought to the Site. This is assuming all of the material needed for the cleanup is imported from off-site locations and on-site soil is not available for use.

- A traffic control plan would be developed and implemented to manage the truck traffic and any damage to public roads would be repaired.
- The extent of clearing and general disturbance would be approximately sixteen (16) acres.

The approximate cost of this proposed cleanup plan (Alternative 1) is $18 million. The cleanup would require 2-3 years to complete. Upon completion of the NTCRA, Post-Removal Site Control would be implemented to inspect and maintain the cover system and other engineered features. Figures 2 and 3 show the areas that will be included in the cleanup.

Alternative 2: Excavation and off-site disposal of mine waste with in-situ stabilization of select areas of mine waste.

Alternative 2 has the same components as Alternative 1 except that the mine waste material would be brought to a licensed off-site landfill rather than consolidated and capped on-site. Specific components of the Alternative 2 that are different from Alternative 1 are:

- The quantity of materials required to perform the cleanup could require 4,300 truck-loads of contaminated material to be trucked out to an off-site disposal facility and an additional 2,375 truck-loads of clean material to be trucked in to restore the disturbed areas of the Site (for a total of 6,675 truck-loads). The estimated volume of clean material to be transported to the site assumes all of the material needed for the cleanup is imported from off-site locations and on-site soil is not available for use. A traffic control plan would be developed and implemented to manage the truck traffic and any damage to public roads would be repaired.
- The extent of clearing and general disturbance would be approximately ten (10) acres.

The approximate cost of this proposed cleanup plan (Alternative 2) is $28 million. The cleanup would require 2-3 years to complete. Upon completion of the NTCRA, Post-Removal Site Control would be implemented to inspect and maintain the cover system and other engineered features. Figures 2 and 3 show the areas that will be included in the cleanup.

COMPARATIVE ANALYSIS OF THE ALTERNATIVES

A comparison of Alternative 1 with Alternative 2 and the reasons for selecting Alternative 1 are summarized below.

Alternative 1 and Alternative 2 would be equally effective in achieving the Removal Action Objectives for the Site to protect public health and the environment. They would also comply with the applicable or relevant and appropriate requirements, and they are similar with respect to the long-term effectiveness and permanence of the cleanup. Both alternatives are not inconsistent with any future final Superfund clean-up plan developed for the Site.

The excavation of the mining waste, together with either capping on-site (Alternative 1) or offsite disposal (Alternative 2) would prevent the release of MIW into Pike Hill Brook and Cookville Brook Tributary #4. The in-situ stabilization of select areas near/around sensitive bat habitat and cultural resources under both alternatives would also limit the generation of MIW from these areas.

Alternative 1 has less undesirable short-term impact because large quantities of mine waste would not be transported over public roads and the alternative would require fewer truck trips to and from the Site. Both alternatives would have unavoidable impacts to wetlands/waterways and historic resources in order to prevent the release of MIW and restore the significantly degraded aquatic

environment. While both alternatives have equal impacts to federal jurisdictional wetlands, Alternative 1 was determined to be the "Least Environmentally Damaging Practicable Alternative" (LEDPA) under the federal Clean Water Act, due to the lower short-term impacts and substantially lower cost. Both alternatives would restore impacted wetlands and waterways and implement best management practices with respect to stormwater management, sediment and erosion controls, and protection of the threatened and endangered bats.

Alternative 1 is considered to be more implementable than Alternative 2 as the off-site disposal of the mine waste is dependent upon, and thus could also be limited by, the available capacity at operating off-site landfill facilities.

Alternative 1 ($18 million) is also less expensive than Alternative 2 ($28 million).

Based on the comparative analysis summarized above and detailed in the EE/CA, EPA recommends Alternative 1 as the preferred approach for the NTCRA.

IMPACTS TO WETLANDS/WATERWAYS AND FLOODPLAINS

Section 404 of the Clean Water Act and Executive Orders 11990 (Protection of Wetlands) and 11988 (Protection of Floodplains), as incorporated under Federal Emergency Management Agency (FEMA) regulations that are relevant and appropriate to the cleanup, require a determination that there is no practical alternative to taking federal actions affecting federal jurisdictional wetlands and aquatic habitats. EPA has made the following determinations:

- The proposed cleanup will involve dredging and filling activities within on-site wetland areas and aquatic habitats.
- Site cleanup measures will be designed and implemented to minimize the destruction, loss, or degradation of these on-site wetlands and aquatic habitats and will preserve and enhance their natural and beneficial values.
- There is no federally identified floodplain within the NTCRA, and the cleanup will be conducted such that it does not pose any risk to downstream floodplain resources.

EPA is specifically requesting public comment concerning its determination that the chosen alternative is the LEDPA under the federal Clean Water Act for protecting wetland resources. Specifically, that the removal of the primary source of MIW that is significantly impairing the current wetlands and waterways will allow for the reestablishment of biota to those wetlands/waterways to be altered and then restored under the preferred alternative. While both alternatives have equal impacts to federal jurisdictional wetlands, Alternative 1 was determined to be the LEDPA due to the lower short-term impacts and substantially lower cost. Site wetland areas along with unavoidable wetland/waterway impacts on-site that are associated with Alternative 1 are shown in Figure 4.

IMPACTS TO HISTORIC RESOURCES

Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101 *et seq.*), requires EPA to take into account the effects of all actions on historic properties that are eligible for the National Register of Historic Places.

- EPA, in consultation with the Vermont Division for Historic Preservation (VDHP), serving as the State Historic Preservation Office (SHPO), has determined that Pike Hill Copper Mine is eligible for the National Register of Historic Places.
- EPA has also determined that the construction activities required to implement this clean-up action would have unavoidable direct and indirect impacts on historic features at the Site, but that these impacts are necessary to protect human health and the environment.

The area potentially affected is shown on Figure 4. More detailed information on impacts to historic resources at the Site can be found in the EE/CA. EPA will take mitigation measures to address impacts to historic features.

NEXT STEPS

The EE/CA report is out for public comment for 30 days. EPA will document and respond to all public comments in a Responsiveness Summary, which will become part of the Administrative Record. Based on the comments received, EPA may modify or change the recommended alternative. EPA will then issue an Action Memorandum, with the Responsiveness Summary attached, which authorizes and initiates the removal action process. After the Action Memorandum is signed, EPA will perform a detailed design for the clean-up action and work with the community to address their concerns and provides updates regarding the details and schedule for the cleanup. The design activities could require 1-2 years to complete. After completion of the design, EPA will hire a contractor to perform the clean-up work. As a result, the actual cleanup is not likely to begin before 2024. Once a contract is awarded to perform the work, the cleanup will likely require 2-3 years of construction activities.

HISTORY OF THE PIKE HILL COPPER MINE:

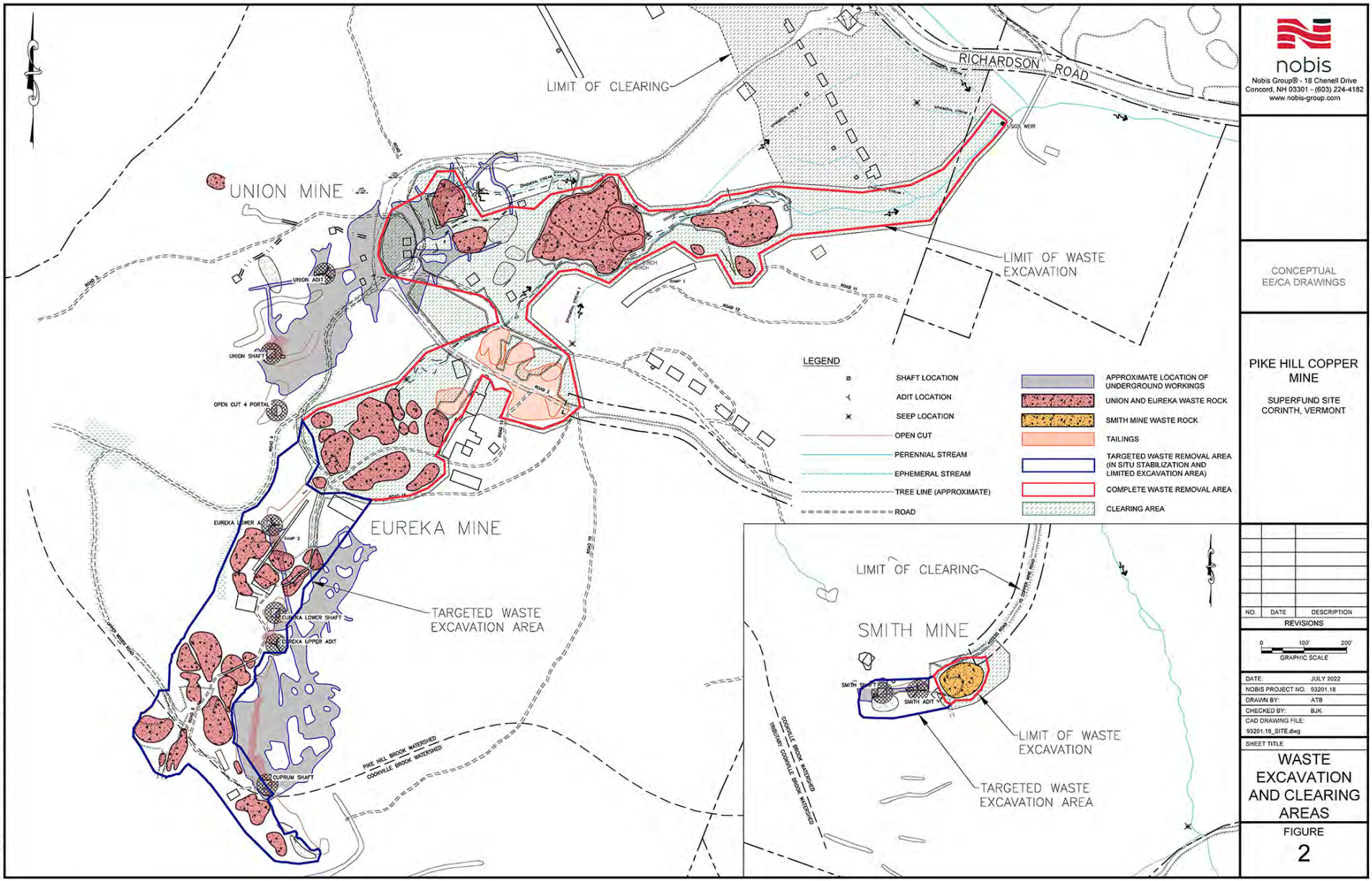
The Pike Hill Copper Mine Superfund Site consists of three abandoned copper mines (Eureka Mine, Union Mine, and Smith Mine) located in the Town of Corinth, Orange County, Vermont that were operated intermittently from 1853 until 1919. The Site was added to the EPA National Priorities List (Superfund List) in July 2004. The entire Site encompasses about 216 acres and contains approximately 85,000 cubic yards of waste rock and tailings.

Copper ore was initially discovered in the vicinity of the Smith Mine on Pike Hill in 1845. In about 1853, mining of the Eureka deposit began at the peak of Pike Hill. Underground operations at the Eureka and Union Mines began in 1863. In 1881, the known portion of the ore body at the Union Mine was exhausted. The Smith Mine closed in 1882, leaving a relatively small area of waste rock piles and underground workings. The Eureka Mine ore mill closed in 1907 and activities are poorly documented between 1907 and 1915, suggesting limited mining took place there. Operations at the Eureka and Union Mines resumed under a single company (Pike Hill Mines Company) between 1916 and 1919, when approximately 842,000 pounds of copper were produced using flotation processes with pine oil as an additive. The underground workings were never reopened, but during the late 1940s and early 1950s, portions of the ore dumps were trucked to the Elizabeth Mine mill for processing. The only remaining Site buildings were destroyed by fire in 1960. In 1954, the Site property was sold by Vermont Copper Company to Appalachian Sulphides, Inc., which subsequently sold the property to Pat Mines, Inc., in 1962. The Site is currently owned by private entities unaffiliated with the past operators.

FOR MORE INFORMATION AND COMMENT SUBMISSION

To view the EE/CA and other Site reports online please visit www.epa.gov/superfund/pikehill
Comments should be submitted via email to hathaway.ed@epa.gov or mail to:

Edward Hathaway, ME/VT/CT Superfund Section
5 Post Office Square, Suite 100, Mail Code: 07-1
Boston, MA 02109-3912



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CONCEPTUAL EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

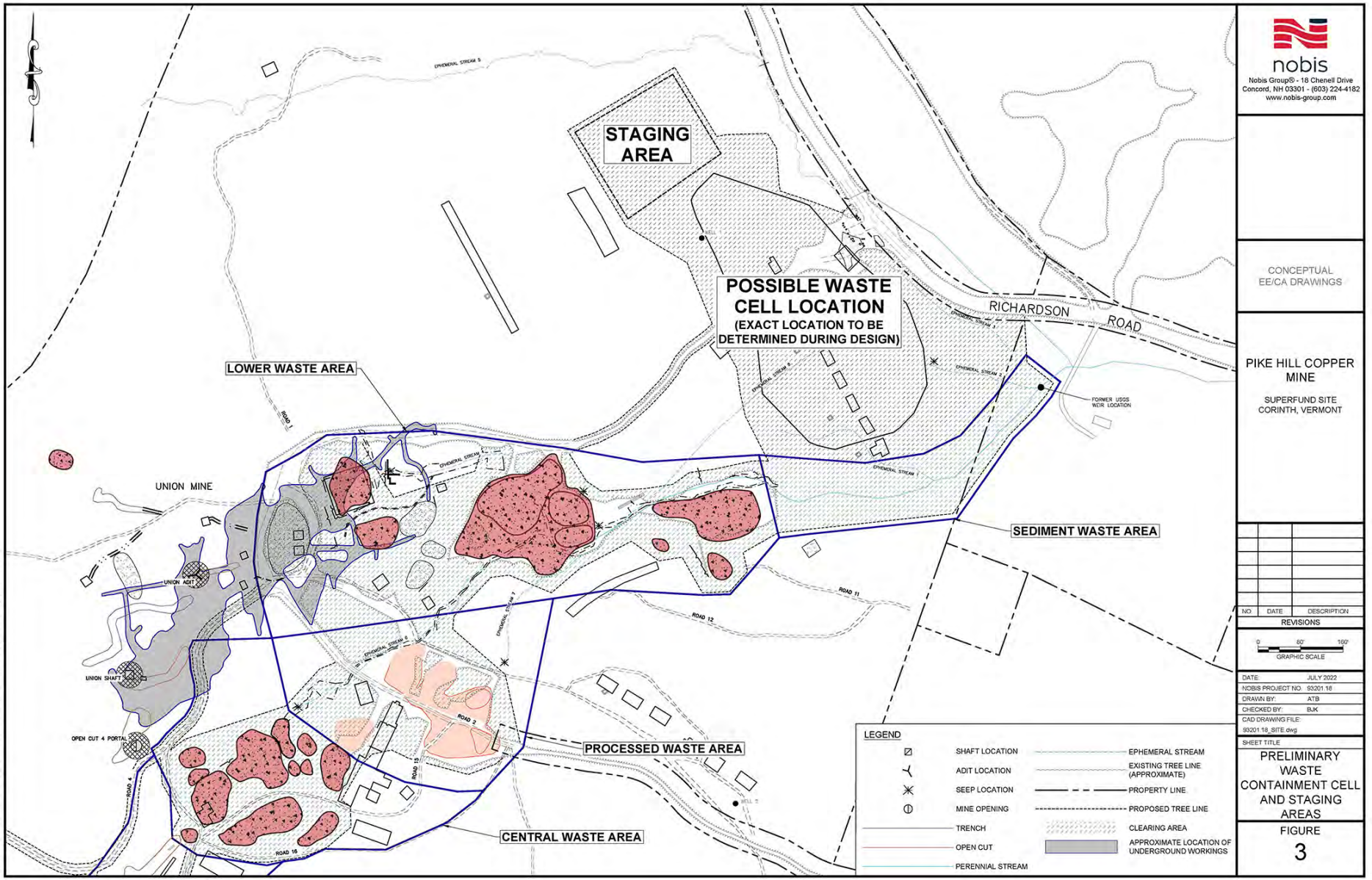
0 100' 200'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.18
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

SHEET TITLE

WASTE EXCAVATION AND CLEARING AREAS

FIGURE
2



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CONCEPTUAL EE/CA DRAWINGS

PIKE HILL COPPER MINE

SUPERFUND SITE
CORINTH, VERMONT

NO.	DATE	DESCRIPTION

REVISIONS

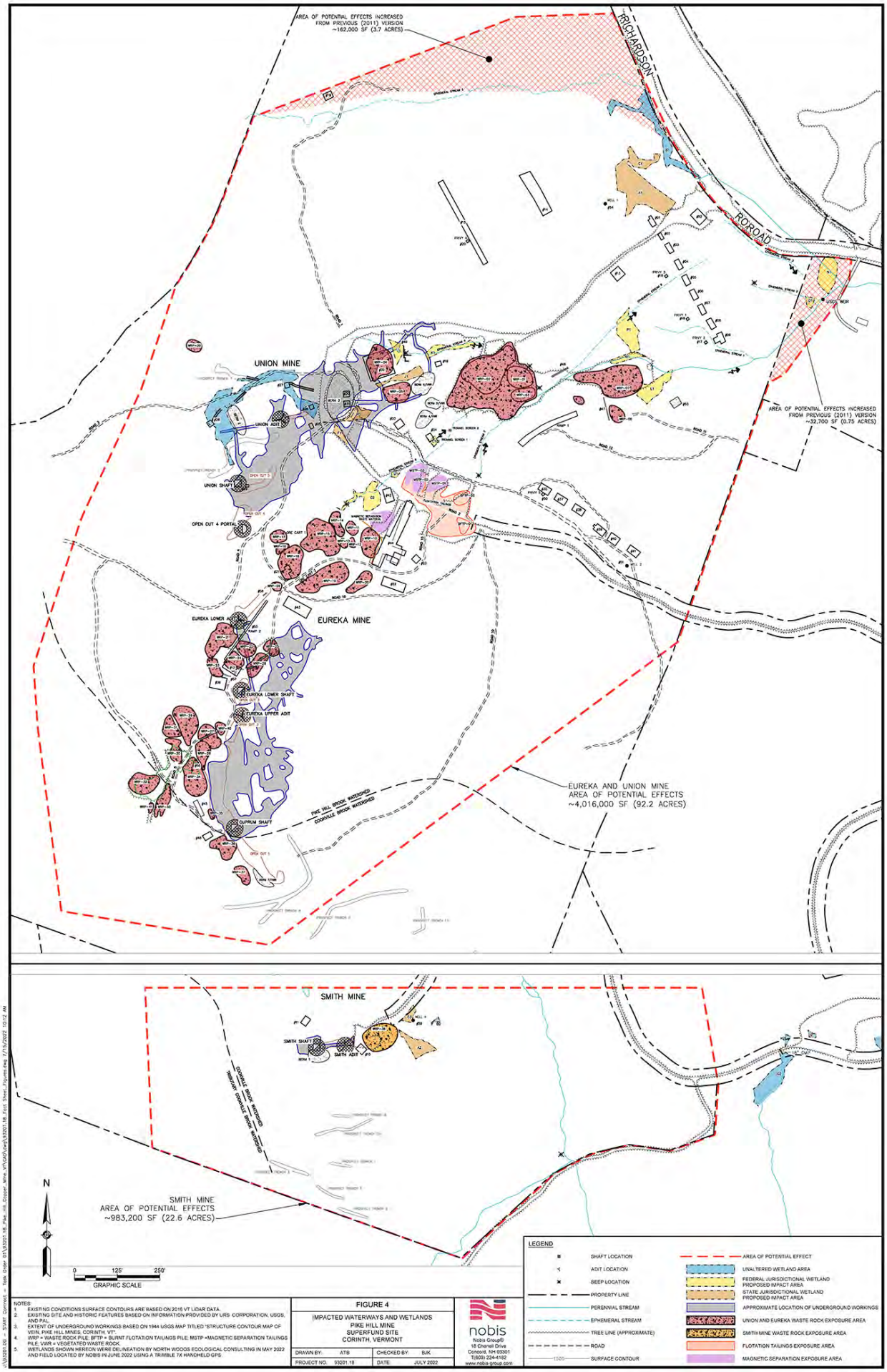
0 80' 160'
GRAPHIC SCALE

DATE:	JULY 2022
NOBIS PROJECT NO.	93201.16
DRAWN BY:	ATB
CHECKED BY:	BJK
CAD DRAWING FILE:	93201.18_SITE.dwg

SHEET TITLE

PRELIMINARY WASTE CONTAINMENT CELL AND STAGING AREAS

FIGURE
3



NOTES:
1. EXISTING CONDITIONS SURFACE CONTOURS ARE BASED ON 2016 VT LIDAR DATA.
2. EXISTING SITE AND HISTORIC FEATURES BASED ON INFORMATION PROVIDED BY URS CORPORATION, USGS, AND PAL.
3. EXTENT OF UNDERGROUND WORKINGS BASED ON 1944 USGS MAP TITLED "STRUCTURE CONTOUR MAP OF VEIN, PIKE HILL MINES, CORINTH, VT".
4. WRP = WASTE ROCK PILE; BFTP = BURNT FLOTATION TAILINGS PILE; MSTP =MAGNETIC SEPARATION TAILINGS PILE; VWR = VEGETATED WASTE ROCK.
5. WETLANDS SHOWN HEREON WERE DELINEATION BY NORTH WOODS ECOLOGICAL CONSULTING IN MAY 2022 AND FIELD LOCATED BY NOBIS IN JUNE 2022 USING A TRIMBLE TX HANDHELD GPS.

FIGURE 4

IMPACTED WATERWAYS AND WETLANDS
PIKE HILL MINE
SUPERFUND SITE
CORINTH, VERMONT

DRAWN BY:	ATB	CHECKED BY:	BJK
PROJECT NO.	93201.18	DATE:	JULY 2022

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ATTACHMENT 5

RESPONSE TO COMMENTS

THE RESPONSIVENESS SUMMARY FOR THE ENGINEERING EVALUATION AND COST ANALYSIS FOR THE PIKE HILL COPPER MINE SUPERFUND SITE

A. INTRODUCTION

The purpose of this Responsiveness Summary is to document EPA's responses to the questions and comments raised during the public comment period. EPA considered all of the comments submitted to EPA during the public comment period concerning the Pike Hill Mine Superfund Site Engineering Evaluation and Cost Analysis (EE/CA), the EE/CA Fact Sheet, and associated Administrative Record for a Non-Time Critical Removal Action (NTCRA). Attachment A to the Responsiveness Summary contains a copy of the transcript from the public hearing held on Tuesday, August 23, 2022, at the Corinth Town Office in Corinth, Vermont.

EPA published the notice of availability of the EE/CA, the EE/CA Fact Sheet, and the associated administrative record in the Valley News and in the Journal Opinion, both publications on July 22, 2022. The EE/CA, the EE/CA Fact Sheet and the associated administrative record were made available to the public by posting a publicly accessible link on EPA's website. In addition, EPA provided the EE/CA and the EE/CA Fact Sheet to Corinth Town Office and Blake Memorial Library in Corinth, Vermont.

Prior to the comment period, on March 14, 2022, EPA participated in a meeting with the Corinth Selectboard to provide notice of EPA's intent to develop an EE/CA and informing that Selectboard and the meeting participants that supporting technical information was available on the EPA Pike Hill Copper Mine website. EPA also held a public information meeting on June 21, 2022, to present the information that supported the need for a response action. EPA also developed a Community Involvement Plan with input from interviews with the local community performed on June 21-22, 2022. EPA held a public information to present the EE/CA and recommended cleanup approach on July 19, 2022.

The Site and meetings to present information about the proposed cleanup received local and state media coverage: Vermont Public Radio published a story of (dated August 26, 2022) on their website. News stories about the site and the plan for a cleanup were also published in the Journal Opinion on March 23, 2022, June 29, 2022, August 17, 2022. WCAX also published a story online and on the TV and radio on August 29, 2022. Articles were also published in the Valley News on July 9 and August 22, 2022.

From August 3, 2022 through September 2, 2022, EPA held a thirty-day public comment period to accept public comments on the EE/CA, the EE/CA Fact Sheet and documents in the Administrative Record. On August 23, 2022, EPA held a public informational meeting to describe the proposed cleanup approach, immediately followed by a Public Hearing to accept any oral or written comments. The meeting was held at the Corinth Town Offices, 1387 Cookeville Road, Corinth, Vermont.

The full text of both the written and oral comments received during the comment period has been included in the Administrative Record for the Site. The community feedback during the public comment period has communicated the following concerns and comments:

- Individuals within the community and in Town government supported the need to take some actions to address the contamination impacting Pike Hill Brook and Tributary #4 of Cookville Brook.
- The general sentiment expressed is that the traffic impacts associated with any cleanup actions would be a major concern for the community; many individuals expressed concern regarding traffic safety, dust, road impacts, and other associated issues.
- There was an expressed desire by a number of commenters to not alter the local roads in a manner that would encourage and result in vehicles traveling faster on the roads, and also that the rural setting characteristics of the roads be maintained.
- Members of the community want to be sure that any cleanup action does not impact the threatened and endangered bats and minimizes impacts to the historic resources at the Pike Hill Copper Mine Superfund Site.
- There are some members of the community who feel the general disturbance associated with the truck traffic outweighs any benefit from the cleanup actions.
- There were also concerns about trespassing and unpermitted use of the Site by recreational vehicles (all-terrain vehicles) and damage to any cleanup actions.
- The sense from the input is that the community would like to be well informed and have the opportunity to have meaningful input regarding the plans for the traffic control and other aspects of the cleanup that could impact their daily activities.

All references to roads and Legal Trails are based on the information provided on the Vermont General Highway Map for the Town of Corinth, Orange County prepared by Transportation District #7 of the Vermont Agency of Transportation, Division of Policy, Planning and Intermodal Development in cooperation with the US Department of Transportation Federal Highway Administration dated June 29, 2022.

B. PUBLIC COMMENTS AND EPA RESPONSES

Comments from Public Hearing:

1. The State of Vermont indicated that they are providing provisional support for the EPA's preferred removal alternative but wanted to review public comments prior to making a final decision.

Response: Comment Noted.

2. One individual at the hearing requested clarification when the public comment period would end.

Response: The public comment period ended September 2, 2022. The individual was informed of the comment period dates at the hearing.

3. An individual asked why Richardson Road was identified as the likely route for incoming traffic and not Pike Hill Road.

Response: There is limited access to the mines at the Pike Hill Copper Mine Superfund Site. The Union and Eureka mines are located on Richardson Road. To access the Union and Eureka mines area of the Site from Route 25, vehicles would travel Brook Road and then either travel Pike Hill Road to Richardson Road or follow Brook Road to Richardson Road. Both Richardson Road and Pike Hill Road are gravel roads that are generally tree lined and narrow. The tree cover along Pike Hill Road is much more extensive and there are more branches that may require trimming if that road is used for access. Both were under consideration during the EE/CA and the design phase of the NTCRA (the NTCRA Design) will re-evaluate these routes. The access to the Union and Eureka mines area of the Site from the north via Pike Hill Road and then Pike Hill Road West or Pike Hill Road East (which originate in Topsham) was not considered viable due to the width and condition of these roads and the associated Class 4 road sections that would not be passable in a large truck.

The Smith Mine is located about 2,500 feet down Legal Trail #8 off Copper Mine Road. To access the Smith Mine the most likely route is via Richardson Road down a short section of Copper Mine Road to the Legal Trail #8. There is another trail (Legal Trail #9) that extends from Legal Trail #8 to the Union and Eureka mines without accessing either Copper Mine Road or Richardson Road. This route would be evaluated to bring the mine waste from the Smith Mine to the Waste Containment Cell. This access route will also be further evaluated during the NTCRA Design.

4. An individual suggested using Copper Mine Road to access the legal trail (Legal Trail #9) that leads to the Site.

Response: The NTCRA Design will evaluate all potential access routes. Legal Trail #9 does provide a more direct route from the Smith Mine to the Eureka and Union mines. To route truck traffic off Richardson Road to Legal Trail #9 would require traffic to travel a short section of Copper Mine Road. This option will also be evaluated during the NTCRA Design.

5. An individual questioned the location of the Waste Containment Cell, was concerned about the visual impacts of that, and questioned why the material could not be covered in place or in locations closer to the waste areas. Also, this individual asked specifically as to what issues associated there may be with the bats influenced the Waste Containment Cell location.

Response: The Design will seek to identify the best location for the Waste Containment Cell. The area at the Site entrance along Richardson Road is less steep than the other areas mentioned by the commenter and provides sufficient space for the Waste Containment Cell. Covering more material in place will be evaluated but may not reduce the overall number of truck trips to and from the Site because covering additional material in place at the Site may also require additional clean cover to be transported to the Site for that purpose. The Waste Containment Cells will be visible from the road as a large mound extending over about 3 acres and about 40 feet high that will either be grass covered or stone covered. A grass-covered mound will resemble a field and a stone-covered mound would contrast more with the adjacent areas but may be an approach that could reduce truck traffic. The Waste Containment Cells and other activities will be designed to

minimize impacts on the bat populations. This would involve protecting habitat around the mine openings and managing tree cutting to periods when the bats are less active.

6. An individual asked questions about the State's role, Act 250, and where information about State requirements can be found.

Response: The Vermont Department of Environmental Conservation worked closely with EPA in the development of the EE/CA and will be reviewing the design and the other aspects of the implementation of the NTCRA. EPA is required to comply with the substantive, but not the administrative, requirements of federal environmental and state environmental and facility siting laws and regulations, including Act 250. For Act 250, EPA will evaluate the relevant criteria within Act 250, including standards for water and air pollution, protection of headwaters, waste disposal, floodways, streams, wetlands, soil erosion, historic sites, endangered species, and extraction of earth resources, energy conservation, and protecting public investments, and design the NTCRA to comply with these criteria to the extent practicable. A full discussion of statutory and regulatory compliance can be found in the EE/CA and Action Memorandum.

7. Several individuals made comments with concerns regarding the truck traffic, particularly the potential for dust, traffic impacts on the local community, safety concerns, vibration impacts, health impacts, and general disturbance to a quiet community with minimal current traffic.

Response: The Design will evaluate options to reduce the volume of truck traffic to import material to the Site for the cleanup activities. There will clearly be some short-term impacts associated with the traffic and dust. A traffic control plan will be developed, in consultation with the Town, to address safety concerns and to establish protocols to reduce the potential impacts. The roads may be periodically sprayed with water to reduce dust. Traffic controls would be put in place to manage the truck traffic to address safety concerns.

8. An individual commented that the impacts from the Site are small compared to the impacts of the truck traffic on the community.

Response: The Pike Hill Copper Mine is having a significant impact on Pike Hill Brook. The release from the Site violates state and federal water quality laws. While the short-term impacts to the community are a significant issue that will be addressed as part of the implementation of the cleanup, the cleanup must also address the release of the toxic leachate over the long term. EPA believes that the cleanup to mitigate the long-term environmental impacts will have significant long-term benefits to the environment and the community that outweigh the short-term impacts noted by the commenter, as long as those impacts are properly managed as called for in the Action Memorandum.

9. An individual asked about the visual impact of site controls and post-removal site control activities.

Response: The Waste Containment Cell, if it remains at the Site entrance, would be visible to those traveling on Richardson Road. It would appear as a 40-ft high mound at the Site entrance and be covered with grass or stone. The Site would also have gates and signs to minimize disturbance to the cleanup work. These items effect a limited area along Richardson Road. Long-term site control will be addressed as part of the final remedial action to be conducted at the site in the future.

10. An individual asked when the cost estimate in the EE/CA was developed and did it consider recent increases in fuel costs.

Response: The cost estimate was developed in the April-June 2022 time period and does reflect some of the recent cost increases due to fuel and other factors. A large contingency was added to address such issues. More detail on the cost estimate is in the Administrative Record

11. An individual asked why there was not a "No Action" option.

Response: EPA evaluated the Site conditions and prepared an Approval Memorandum in December 2021 that identified the need for a cleanup action. "No Action" alternatives are a baseline for the evaluation of alternatives when selecting a remedial action at Superfund sites in accordance with EPA's regulations, in this case the National Contingency Plan or NCP. This more elaborate decision-making process is applicable for remedial sites where long-term, final remedies are selected. At this Site, EPA has chosen to commence the cleanup work at the Site now under its removal authority. Under this approach, including for a NTCRA, EPA does not need to include a "No Action" option in the evaluation of the alternatives because it is assumed that some action at the Site is required once the decision to proceed with a removal action is made. EPA has determined that the Site represents an unacceptable threat to the environment that warrants the implementation of this NTCRA.

12. Two individuals asked whether the contamination could be cleaned up using sand and gravel to clean up the contamination.

Response: While a graded filter using sand and gravel may be helpful for some water quality issues, such as turbidity, such an approach would not be effective treating the mine drainage at this Site. The sand and gravel would not stop the formation of the toxic leachate from the waste piles, it would not neutralize the acid water or remove the dissolved phase contaminants from the water. In addition, it is very difficult to treat surface water flow due to the wide range in flow volumes resulting from rain events and snow melt. Such a treatment system would require a significant amount of storage and would require large areas to be cleared for the storage basins.

13. An individual asked for EPA to clarify the location of the mine and the potential impact of the cleanup on their property.

Response: The Union and Eureka mines at the Site are located at 2025 Richardson Road. The Smith Mine is located on a large parcel with the address of 2527 Copper Mine Road, but it is actually located on Legal Trail #8 about 2,500 feet from Copper Mine Road.

14. Several individuals commented about potential changes to the road. They opposed paving, widening, and other substantial changes and wanted to maintain the current characteristics of the road.

Response: The Design will evaluate what measures will be taken to address the identified concerns regarding truck traffic and safety, dust and other concerns. Any changes to the roads would need to be approved by the Town of Corinth (the owner of the roads) and would be presented to the public prior to implementation. Possible measures to improve traffic flow could be installation of turn out locations to allow trucks to pull over and let local traffic pass and selective trimming of branches or trees in locations where visibility is impaired with respect to oncoming traffic.

15. An individual commented that EPA should not cleanup the Site and just leave it alone and accept that humans have "screwed it up".

Response: The Pike Hill Copper Mine Superfund Site was subject to an evaluation that resulted in the Site being placed on the EPA National Priorities List in 2004. The National Priorities List is the list of locations that are eligible for federal funding to perform a cleanup under the Superfund Law. EPA has a mandate under the federal Superfund law to address areas of contamination that represents an unacceptable threat to human health and the environment. The Site has been documented to present a significant threat to Pike Hill Brook that represents an unacceptable threat to the environment due to the impairment to the fish and benthic community and the acute toxicity of the water released from the Site. EPA will work to minimize, to the extent practicable, the short-term impacts associated with the truck traffic while seeking to achieve the long-term remediation of Pike Hill Brook.

16. An individual questioned how trespass use with off-road vehicles would be restricted to avoid damaging the cleanup.

Response: The protection of the cleanup from disturbance and damage will be a major focus of the Design and Post Removal Site Control efforts. If necessary and appropriate, permanent controls at the Site would be established and enforced as part of a final remedial action for the Site. It can be very difficult to prevent trespass to a remote site but measures that include large rock barriers, fencing, and public outreach have been successful at other sites.

17. An individual asked about the impact to Copper Mine Road.

Response: There would be some truck traffic along a short section of Copper Mine Road from Richardson Road to the Legal Trail #8 that leads to the Smith Mine. The NTCRA Design will evaluate the extent of potential truck traffic and its potential impacts associated with this section of Copper Mine Road.

18. An individual indicated that they had not received any notice regarding the proposed cleanup action

Response: EPA made significant attempts to inform the community about the proposed cleanup. EPA participated in a Selectboard meeting on March 14, 2022 and held public information meetings on June 21, 2022 and July 19, 2022. For the meetings, EPA mailed a meeting notice to all mailing addresses in the Town of Corinth and East Corinth. A notice of the meeting was also posted on the Town website and community list serve, which is a local email subscription service that provides information and dialogue within the community. EPA also published legal notices regarding the cleanup in two local newspapers (Journal Opinion and Valley News). In addition to EPA's efforts, stories regarding the EPA activities were published in the Valley News, Journal Opinion, Vermont Public Radio, and on station WCAX (radio and TV). Any individual who wants to receive future notices (and hasn't received them to date) should contact the community involvement coordinator, Darriel Swatts at swatts.darriel@epa.gov or the EPA project manager, Edward Hathaway at hathaway.ed@epa.gov.

19. An individual asked how much longer the waste piles are expected to leach and was it possible that it will not last much longer.

Response: Unfortunately, the waste piles, if they are not isolated from water and oxygen, will continue to leach for many decades and probably longer. Despite the fact that the waste piles have been leaching for over 100 years, they are still releasing low pH (acidic) toxic water. Samples taken by EPA over time show no improvement in the water quality despite relatively long intervals between samples.

20. An individual commented that they did not like that EPA could not respond to their questions during the hearing.

Response: The public hearing format is designed to allow individuals in the community to have their spoken comments recorded and entered into the public record. EPA then reviews each comment and develops the response to comments. The procedure is designed to ensure meaningful public participation in EPA's decision-making process, and that all comments received by EPA are fully considered. EPA looks forward to engaging the community in discussions regarding their comments at future meetings which, unlike a formal public hearing, EPA will be able to respond to comments at the event.

21. An individual expressed support for the cleanup indicating the need to clean the brook and noting the success at the Elizabeth Mine.

Response: Comment noted.

22. An individual commented that there are no fish in the brook due to low water levels and the cleanup to restore the brook is not worth the disruption to those living near the Site.

Response: While the upper reaches of Pike Hill Brook may not support a fishery, the toxic water flows downstream and impacts sections of the Brook where fish and benthic organisms should be present, but presently aren't or where only present in limited numbers.

23. An individual asked for the scientific background regarding how the bats will be protected.

Response: EPA has experience working near bats caves from the work at Elizabeth Mine and Ely Copper Mine. EPA also works closely with the endangered species experts at the U.S. Fish and Wildlife Service and the Vermont Fish & Wildlife Department, in addition to hiring bat experts to advise the NTCRA Design and implementation activities. To assess potential impacts on bats, EPA will be performing studies during the NTCRA Design. EPA performed studies at the Ely Copper Mine to assess vibration from drilling and construction activities, the use of the Site by bats during the year, which included both acoustic tracking and radio telemetry tracking. The information collected at the Ely Copper Mine will be helpful to the design of the work at the Pike Hill Copper Mine.

Comments submitted in writing:

24. A property owner at the Site noted that the road that extends to the Smith Mine is not a public road and that the actual location of the public road should be determined. The individual also expressed support for Alternative 2 for the Smith Mine, complete removal and activities to protect bat habitat and restrict future access. The individual also expressed a desire to be involved in the community involvement plan.

Response: EPA will evaluate access to the Smith Mine as part of the NTCRA Design to make sure that access is obtained from all the appropriate property owners. EPA's Alternative 1 does include the removal and relocation of the waste piles at the Smith Mine except for any mine waste in close proximity to bat habitat, in particular near the mine openings. This limited area of mine waste near the bat habitat will be stabilized in place.

25. An individual expressed a concern regarding dust from the truck traffic.

Response: As stated in response to previous comments, EPA will address truck traffic, including dust and other related issues, as part of the NTCRA Design. The traffic plan will include measures to reduce dust generation, which often includes spraying water on the roads as a dust suppressant.

26. An individual expressed an opinion that Richardson Road should not be paved and that the cleanup may make the situation worse.

Response: The NTCRA Design will evaluate what measures would address the identified concerns regarding truck traffic and safety, dust and other concerns. Any changes to the roads would need to be approved by the Town of Corinth (the owner of the roads) and would be presented to the public prior to implementation.

27. An individual asked several questions regarding the historic resources: why does the Waste Containment Cell need to be located in the proposed location; will any of the mine openings be impacted; will access controls be installed at the mine openings; the need for pre-disturbance documentation, and a request for informational meetings regarding the site history.

Response: The design of the NTCRA will focus on siting the Waste Containment Cell in an area that provides sufficient space and allows the mine waste to be isolated from water and oxygen. The NTCRA Design will evaluate if other locations within the Site can meet the performance objectives and also avoid adverse impacts to bat habitat. As part of the NTCRA, EPA may install bat grates to restrict human access to the mine openings, while allowing the bats access. The NTCRA Design will include pre-disturbance documentation. EPA agrees that a future meeting to discuss the Site history is a good idea, and that EPA will try to arrange such a meeting.

28. An individual asked "What public or community concern would terminate the Pike Hill Copper Mine cleanup program/process immediately before anything more is done on the project?"

Response: There were no public comment or community concerns identified that would cause the termination of the cleanup immediately. EPA has a mandate under the federal Superfund law to address areas where the release of contamination that represents an unacceptable threat to human health and the environment. If some unforeseen event occurred that called into question the protectiveness of the proposed removal action, EPA would evaluate what measures would be required to address the issue, including potentially modifying the removal action or developing a new removal action.

29. Two individuals submitted a letter repeating comments regarding the impacts of truck traffic that they made at the public hearing and adding additional comments, including:
    a. Not undertaking activities in places on or off the mine site that make insignificant overall improvement to either the site itself or the downstream areas.
    b. Leaving and treating as much material as possible in its current location.
    c. Using more treatment additives on and off site to improve downstream water quality.
    d. Using as much on-site material as possible, including soil and crushed rock (if suitable rock is available on site).
    e. Consider building such cells where the mine waste is now located. Bringing vegetative growth back to those barren areas
    f. Reducing the volume of material that is placed in cells that require importing topsoil for growth of grass and protection of their plastic caps.

Response: The NTCRA Design will focus on addressing the material that is creating the leachate that is impacting the surface water. If some areas are not contributing to the leachate, they could be left undisturbed. The NTCRA Design will also evaluate whether on-site material could be utilized, which would be preferred to importing material. Another objective of the NTCRA Design will be to evaluate the balance of *in-situ* stabilization versus excavation and

containment and to evaluate whether multiple smaller cells in the areas where the waste is currently located would meet the objectives of the cleanup and reduce truck traffic. The NTCRA Design will re-evaluate the quantity of material required to construct the cover and base layer for the waste in the Waste Containment Cell. Standard practice is for the cover to be thick enough to provide frost protection for the geomembrane, but a lesser thickness may be acceptable. The design will also evaluate whether a thin stone cover over the geomembrane would meet the performance objectives.

30. Members of the Corinth Planning Commission submitted comments (which are repeated here verbatim):
    a. We support alternative 1 as having the lesser impact on the town in general.
    b. Site security should prevent unauthorized use or access to the site during the expected 24 month construction period.
    c. We recommend that the final design should minimize local traffic by developing a local borrow pit and use of local materials, and mitigation of dust associated with truck traffic. Every yard of fill obtained on- or near-site will help reduce impacts to nearby residents.
    d. Final reclamation should be consistent with the town Plan. No access road should remain unless under town control, in order to avoid development that would not normally occur otherwise. The site should be returned to its pre-mining state, with the possible exception of a new foot-trail system connected to existing trails.
    e. The site is part of a larger forest block that should be preserved. Except for the actual seeded cap, forested areas of the site should remain, and non-forested areas other than the cap should be planted with native species.
    f. The site has important historical value. As much as possible, structures and foundations should be left in their current state. Any removal or modifications should be done with approval by the Corinth Historical Society and the Town.
    g. There should be no barrier(s) to the natural movement of wildlife. Final plans for the adits and shafts should favor preservation of historical value as well as wildlife (e.g. bats) value.

Response: EPA is generally in agreement with these comments. Alternative 1 is the preferred cleanup approach. Protecting the cleanup measures will be an important consideration as will truck traffic along with the associated impacts. EPA would prefer an on-site source of materials or a nearby landowner willing to allow material to be mined from their property. The NTCRA Design will include consultation with the Town, the Site's owners, and solicitation of additional public comment regarding access, future use, reforestation, coordination with the Historical Society, and maintenance of wildlife corridors. However, under the federal Superfund law EPA does not obtain "approval" from the Town or meet "Town Plan" requirements for any of the on-site components of the cleanup work. Town approval is considered required and will be sought by EPA in conjunction with any plans for modification, enhancement, or alteration of Town roads.

31. Two individuals expressed support for alternative 2, to fully remove the waste material to a secure landfill. They also expressed support for the cleanup of the Site.

Response: EPA has recommended Alternative 1 as the more implementable and cost-effective approach, with the comparisons between Alternative 1 and Alternative 2 document in the EE/CA. While physically removing the material would remove the mine waste from the Site, the additional truck traffic and cost do not support taking this approach. Support for the cleanup is noted.

32. An individual expressed support for the cleanup.

Response: Comment noted.

ATTACHMENT 6

PUBLIC HEARING TRANSCRIPT

RE: PIKE HILL MINE SUPERFUND SITE

PUBLIC HEARING

August 23, 2022

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US ENVIRONMENTAL PROTECTION AGENCY

AND VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ENGINEERING EVALUATION AND COST ANALYSIS

PUBLIC HEARING RE: PIKE HILL MINE SUPERFUND SITE

Town Hall, Corinth, Vermont

August 23, 2022

HEARING OFFICER KEEFE: We will now begin the public comment portion of the formal hearing. I'll ask if anybody would like to provide an oral comment. I'll call based on, to signal you'd like to provide an oral comment, please raise your hand. For those attending online, we'll canvass the room first, and then we'll return to the community online.

SPEAKER: Good evening. My name is Patricia Coppolino. I am the Senior Environmental Program Manager in the State's Management Section of the Waste Management and Prevention Division at the Vermont Department of Environmental Conservation.

The Vermont DEC has reviewed the Engineering Evaluation and Cost Analysis and offers provisional support for EPA's preferred Removal Alternative. We reserve our full support of EPA's preferred alternative until we have reviewed public comments and EPA's response to these comments.

SPEAKER: Testing 1, 2, 3. It's on. Okay. Just for the record, September 3rd is the final

date for any comments? Is that correct? That's all I wanted to ask.

HEARING OFFICER KEEFE: Just to clarify, the question was when is the final date for submitting reports to the EPA, written comments, and that date is September 2nd.

Those wishing to make a comment by show of hands?

SPEAKER: My name is Brad Caswell. I'm a 30-plus year resident of Richardson Road. I currently live on property adjacent to the mine, sharing a property line. I have a number of questions, and I will just pose them, and you can answer later.

Access route. You have chosen, as far as I understand, Richardson Road from the Brook Road to the site. That means that the Pike Hill Road route which is closer to Route 25 has not been chosen. I'd like to know why. Of course there are more residents there. More people to be injured perhaps by the traffic.

There is a third road route in that I think should be considered, and that is really you

can, you turn and go up Copper Mine Road and there's a road where you turn to go to the Smith mine that goes right onto the mine property, and all your traffic would be onsite rather than on Richardson Road. I've been on that road many a time on foot, on horseback, I know it's there. You can do it quite easily.

The area chosen for erecting your cell or cells is essentially adjacent to Richardson Road. It is the old mine entrance, the main area where the store used to be, subsequently was used for a logging landing so it's quite open and flat. Had some bulldozing done on it. You have abandoned the idea of building your cells within the mine area itself, and the reason posed is that there are bats. What drew you to that decision? What studies of bats made you feel that it's impossible to leave the material in place, not disturb it all over again, and move it close to Richardson Road where we're all going to have to look at it.

It's going to be a 40-foot-high hill, treeless. Maybe we don't want to see that. The

whole mine today is rather hidden and any of us who've lived here a long time have probably just probed around in that mine probably because it was quite fascinating from a geologic perspective and an archeological perspective. Great deal of it has been destroyed by cutting trees and driving skidders all over everything, but that's beside the point.

I'm interested in what the State has imposed as controls over your operations on that site. We have, for example, Act 250. Are any of these things active in your decisions. What role has the State played? I have not been able to find it in the literature that you provided. I think we should know what that is.

Finally, it's just the impacts to our residential community in what I call the project area which is from Brook Road on both sides of Richardson Road all the way to the mining site, all the old mining property, and the lands that share a common boundary with that property. They are to me the project site.

All of us living in that area are going to

be impacted by this operation that now has been hinted at three years, and you've talked about 5,000 trucks. Fortunately, tonight you added loads. That's 10,000 trips. That's a lot of trucks over two or three years, whatever it will be, and that has an impact.

That traffic is going to raise dust everywhere the trucks are from the entrance to the road all the way up into the mine site, and that is going to be a problem. The trucks, just the traffic is going to interrupt all of us. How are you going to function with that. You've talked about traffic control and so forth, but still, these trucks go by our houses, our driveways, we're trying to get in and out and it's not just loads of dirt. It's going to be everybody in their pickup, everybody in their car, probably the trailers you move in.

I mean, there's a whole lot to a project like this that's going to impact a neighborhood. Houses, some of them very close to the road because they're so old, they're going to have you rolling by, spewing up dust, how are you

going to approach that. What can you do to help to lessen the impact on those who live here.

There's some small impact that we who live here see from this old mine site. I've looked at it all. My background is hydrogeology. I've looked at the acid mine drainage and what's there and downstream and the coating on the rocks and what's in the mine itself and so on so I'm familiar with what you've seen, and the impact seems small to me, smaller than the impact you're going to have on our community. I think that has to be taken into account.

Finally, I mentioned it before, visual change. I can envision seeing a big hill, all process on top, grass, no trees, suddenly arising from the Richardson Road on a piece of land we've all driven by a zillion times, and it's just part of our community the way we like it.

What are you going to do about that, if anything? Why have you made the decision to pick up all that material and move it, cover it, and treat it the way you do which is all fine,

but why there where we have to see it forever.

We're going to have to also see all of your site access controls, whatever they might be. Fences, who knows. And annual or whatever the time period access to the site to recondition it and mow it, whatever you have to do with a site like that. How are you going to lessen that impact on those of us who have to look at it most every day.

Remember we're not just sitting in our driveways waiting to escape around your traffic load. We go back and forth all kinds of odd times of the day, and it's difficult for you to control all of that traffic to a way that keeps us from being injured in some way.

I'm looking for those kinds of answers. Thank you.

HEARING OFFICER KEEFE: Thank you.

SPEAKER: Thank you. My name is Mike Tagliavia. I don't live very near to where this activity is going to be. It will probably not have a very large impact on me, but this is a small town. This is one of the reasons why I

moved here because it's a nice, quaint, quiet small town. I'm hearing a lot of apprehension at this meeting, and I've heard it at one other meeting that I went to.

I've got a couple of questions. Number one, when was the budget done? One of those said I believe 18 million and the other was 28 million, and you were talking about like this gentleman said very smartly 5,000 truckloads which means 10,000 trips. If this budget was done last year that was before the price of diesel tripled. That means your budget is blown already. Blown. So how can we believe that $18 million budget. I can't. Simply because of the fuel. And that's not just the trucks. You've got massive diesel-powered equipment. So your budget is going to be blown.

And why not an Option 3? Do nothing. It sounds like this is not a "may" happen. This is a "it's going to happen, like it or not," and I don't understand why not an Option 3. Do nothing. Is the pollution so bad that the residents who are very concerned here are going

to be forced to endure what this project may put upon them. Thank you.

HEARING OFFICER KEEFE: Others in person who would like to make a comment?

SPEAKER: My name is Susan Fortunati. My husband owns property adjacent to the site that you're going to clean up. My question is isn't gravel and sand a natural filtration for cleaning water? And if it is, why don't you just bring in clean gravel and sand to the point of where that wastewater comes out of the mine and have that water flow through that natural material and have it clean itself naturally rather than doing all this other work?

HEARING OFFICER KEEFE: Others wishing to make a formal comment?

SPEAKER ONLINE: I'm online. Can you hear me? I don't know why I can't be heard.

SPEAKER: My name is Jane, and I live on Richardson Road. I guess my comment would be again how would it impact my land. Would you have to widen the road for the equipment. And another thing, I was looking at the map, I'm

fairly new to the area, and I'm trying to figure out where the mine is relative to my property. So I was looking for maybe numbers or something on the map that would pinpoint that stuff so I would be more well informed.

I think that's the only thing I had other than I know the brook runs down below my property, and I didn't know how that would impact below or above the waterway. Would it be sending silt and blocking things and things like that. You know. Just common things like that. All right? Thank you.

HEARING OFFICER KEEFE: Others here in person wishing to make a comment before we go online? Darriel, do you want to open it up?

For those online wishing to make a comment, we'll be taking those comments now. Wendy, please?

SPEAKER ONLINE: Hi, I'm Wendy Wieland-Alter, and I live on the sharp corner of Richardson Road and Flanders Lane, and I'm not too happy about the number of trucks that are going to be going up and down the road, and I

really think that leaving the mines alone may be a better ecological impact than all of the diesel fumes and changing the landscape and you know, it's really not that much brook that's been impacted. It's been impacted for over 100 years. Maybe we as humans need to just accept the fact that we have screwed things up, and we should just leave things well enough alone and let us just continue in our nice community with our quiet and safe roads and not have four years or three years of projected disruption to our lives. Thank you.

HEARING OFFICER KEEFE: Thank you.

SPEAKER ONLINE: Can I speak? Can you hear me?

HEARING OFFICER KEEFE: Yes, next up is Elizabeth.

SPEAKER ONLINE: How do I get me name off there?

SPEAKER ONLINE: This is Elizabeth's husband, Edward Childs, at 1804 Pike Hill Road. Can you guys hear me?

HEARING OFFICER KEEFE: Yes, we can hear

you.

SPEAKER ONLINE: Thanks. So my main concern is that that whole mining area is used a lot by recreational vehicles and off-road vehicles, and my main concern is that your careful work of constructing that mound could really be disrupted unless there's some kind of plan to, you know, provide a path or something like that. Otherwise, if it's disrupted kind of randomly by these vehicles, it will kind of leave the site in a worst condition than what it's in now. Thank you.

HEARING OFFICER KEEFE: Thank you. The next commenter is logged in by phone ending in 1981.

SPEAKER ONLINE: Right. Thank you. Can you hear me?

HEARING OFFICER KEEFE: Yes. We can hear you.

SPEAKER ONLINE: My name is Karen Kennedy, and my family has lived on Copper Mine Road for over 70 years so I've listened to all the different comments, and I know my mom is, you

know, elderly and in the audience, but I'm wondering what the impact on Copper Mine Road, and the gentleman had mentioned that Copper Mine Road is another access. Yeah, well, that is an access, but it's an easy access maybe to Smith mine but not to the other two mines, and I'm just wondering, she has never gotten any information about any of the plans for this and why all those who could be impacted were not informed by mail versus having to read it in the newspaper, especially for elderly people who have lived there for 70 years-plus.

So there's a big impact of people who have lived there long periods of time, and as the woman who previously to this said she had no idea where the mines were, this is something that I feel like the EPA has lacked in giving information out to the community versus having to put it in the paper. I just think that the information should have been handled in a different way so people are more informed and more educated on what you're trying to do.

I also believe that people have lived there

for hundreds of years, my family living there for 70 years, and we've never been impacted by this, the mine, and as the gentleman just said before, ATV vehicles and motorcycles are up in that area all the time, and they've tried to ban them in the past. How is the EPA going to prevent their mound of protective soil from being disturbed by something like that.

So those are some things the EPA needs to consider, and I would like to know what impact the roads are going to cause to people's property. Thank you.

HEARING OFFICER KEEFE: Thank you. Others online? Is there anybody else here in person? Anybody else here in person that wants an opportunity to comment on record?

SPEAKER: My name is Irene Mann. I live on Taplin Hill. I'm not that close to the mines, but my question is these mines were last used I think you said in 1940. That's, you know, we're talking 60-plus years here. How much more can this leach? You know, won't this be over with pretty soon? How much more leaching can there

be?

And I thought Susan Fortunati's comment about trying to use sand and whatever natural resources we have to clean this before it gets into the streams, and I think I asked before if any of those wells were contaminated of the people that live close by, and I believe the answer was no. Am I correct? Well, if the water level isn't, it's mostly the fish and the streams. If we can get that cleared up some way without, you know, and actually I just wish a geologist could answer my question. How much more leaching can there be. It's been a hundred years. I mean, 60 since 1940 but there wasn't heavy mining at that time.

And I have another comment. I'm not exactly happy with the way you do your forums. Excuse me, EPA. I hope I don't offend you, but we're asking questions, but we don't get answers. We have to wait. Now, I realize maybe on some you couldn't answer immediately, but for the ones you can I would have appreciated an answer now because sometimes answers lead to

more questions. So you're just dragging it out longer I feel, but I may be wrong. Thank you.

HEARING OFFICER KEEFE: Thank you, ma'am.

SPEAKER ONLINE: I'd like to bring another point up that we have not yet seen the actual scientific background --

SPEAKER: My name is Virginia Barlow. I don't live on Richardson Road. Our property almost abuts the Smith mine from the other side but not quite, but I would have to say I'm really impressed with your presentation. I don't live on Richardson Road, I know, and it's going to be horrible for a couple of years, but I think cleaning up the mine is super important. I mean it's a toxic site, and it should be cleaned up, and it's affecting the ecology downstream in a way that can be fixed, and also if you look at the Elizabeth mine which I don't know too much about, but I've been reading about it in the papers for I don't know how many years, it was a massive operation and it succeeded. There's no more pollution from that mine into the surrounding watershed.

So I just want to say, unlike everybody else, I think you're doing a really good job and I think the information has been super, incredible, and that website has, I don't know, a hundred times more information. So that's it.

HEARING OFFICER KEEFE: Thank you. We'll go back to online comments.

SPEAKER: Oh, Virginia, I have to disagree with you. I'm going to go along with the rest of the group here. I own the property adjacent to the mine. I've been there 47 years, I think. I've never heard of anyone complaining about anything except one person who has moved from the area who said gee, there are no fish in the brook. Well, the truth is I live next to a brook, and there are no fish in my brook, and I live beyond the mines, and the problem might be that there's hardly any water, and there's not going to be that much water, and it seems like we're making this enormous effort to what? Restore something that never existed? This broad expanse full of fish and people running around catching them. It doesn't make any

sense.

So I've written down some comments. Anyway, my comment is does this whole operation with its woefully avoidable and probably unavoidable and probably impact on humans and animal health, breathing particulates from 5,000 or more truck loads, 10,000 trips? Of material. And the trucks themselves along with the disruption and most probably ill effects on the historic Robie neighborhood which if you are aware of it, and I think we all are, is this tiny little beautiful enclave with this little narrow lane barely passable, and this beautiful approach from the road, but anyway, so what's going to happen to the Robie neighborhood, and again that's the houses close to the road. Noise, debris, upheaval of the road, proximity to some homes to said road, et cetera. Does it make any sense? Who is complaining. And again, it seems like we're addressing this to some fish that might be 6 inches long, but in 47 years I have never seen a fish in my brook, and I'm beyond the mines.

HEARING OFFICER KEEFE: Thank you. Any additional questions online? Wendy?

SPEAKER ONLINE: Yes. I would like to see the scientific backing for how you're going to actually protect the bat species. I know that Fish & Wildlife may have some research on this, but I'm not sure what the extent of the research is on our particular bat species in this situation, and I would like someone to address that.

HEARING OFFICER KEEFE: Thank you. One last call for comments either online or in person? Okay. Thank you for participating this evening. Remember that the public comment period for making written comments closes on September 2nd. Please see any of the EPA representatives if you have any questions on how to submit a formal comment, and I will now officially close the hearing.

(Hearing closed at 7:49 p.m.)

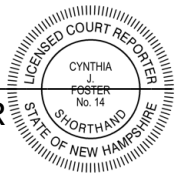
C E R T I F I C A T E.

I, Cynthia Foster, Registered Professional Reporter and Licensed Court Reporter, duly authorized to practice Shorthand Court Reporting in the State of New Hampshire, do hereby certify that the foregoing transcript is a true and accurate transcription of the within proceeding, to the best of my knowledge, skill, ability, and belief.

THE FOREGOING CERTIFICATION OF THIS TRANSCRIPT DOES NOT APPLY TO ANY REPRODUCTION OF THE SAME BY ANY MEANS UNLESS UNDER THE DIRECT CONTROL AND/OR DIRECTION OF THE CERTIFYING REPORTER.

Dated at Wells, Maine, this 6th day of September, 2022.

Cynthia Foster, LCR



ATTACHMENT 7

ADMINISTRATIVE RECORD INDEX

AR 67207, 67208, & 67209 **Non-Time Critcal Removal Action (NTCRA)** **September 2022**

Document ID	Title	Document Date	Page Count	Author	Addressee	Resource Type	Program Information	Access Control	Region	URL
	ACTION MEMORANDUM - NON TIME CRITICAL REMOVAL ACTION (NTCRA)									
100022054	LETTER REGARDING SUPPORT FOR A NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	9/29/2022	2	R01: Chapman, Matthew (VT AGENCY OF NATURAL RESOURCES)	R01: Cianciarulo, Robert G (US EPA REGION 1)	LTR / Letter	054-REMOVAL/0541-Removal Responses/02.09-ACTION MEMORANDA	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100022054
100021963	EMAIL CONFIRMING NO PUBLIC COMMENTS FROM CORINTH SELECTBOARD ON THE ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) (EMAIL HISTORY ATTACHED) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	9/9/2022	1	R01: Cawley, Rick (CORINTH (VT) TOWN OF)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021963
100021816	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	9/2/2022	1	R01: Holmes, Matthew C (CORINTH (VT) RESIDENT), R01: Zawadski Holmes, Cynthia (CORINTH (VT) RESIDENT)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021816
100021815	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	9/2/2022	1	R01: Kelley, Dick (CORINTH PLANNING COMMISSION), R01: Margolis, Anne (CORINTH PLANNING COMMISSION), R01: Pazrdov, Russ (CORINTH PLANNING COMMISSION)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021815
100021824	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA) (09/06/2022 TRANSMITTAL EMAIL ATTACHED)	9/1/2022	1	R01: Pellagrino, Glynn (CORINTH (VT) RESIDENT)	R01: Swatts, Darriel (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021824
100021814	LETTER REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	8/31/2022	2	R01: Casswell, Carrie A (CORINTH (VT) RESIDENT), R01: Kessler, W Bradford (CORINTH (VT) RESIDENT)	R01: Hathaway, Edward (US EPA REGION 1)	LTR / Letter	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021814
100021821	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	8/30/2022	1	R01: Fortunati, Susan (CORINTH (VT) TOWN OF)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021821
100021856	TRANSCRIPT OF PUBLIC HEARING FOR ENGINEERING EVALUATION / COST ANALYSIS (EE/CA)	8/23/2022	25	R01: (AVICORE REPORTING)		MTG / Meeting Document	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.04-PUBLIC MEETINGS/HEARINGS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021856
100021823	LIST OF VIRTUAL ATTENDEES FOR PUBLIC HEARING	8/23/2022	1	R01: (US EPA REGION 1)		MTG / Meeting Document	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.04-PUBLIC MEETINGS/HEARINGS	PRVY(Controlled/General Privacy)	1	N/A
100021707	PRESENTATION SLIDES: ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) PUBLIC HEARING	8/23/2022	20	R01: (US EPA REGION 1)		MTG / Meeting Document	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.04-PUBLIC MEETINGS/HEARINGS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021707
100021818	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	8/22/2022	1	R01: Collette, Norm (CORINTH HISTORICAL SOCIETY)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021818
100021822	EMAIL REGARDING PUBLIC COMMENT REGARDING COMMUNITY INVOLVEMENT PLAN (CIP)	8/17/2022	1	R01: Bahlkow, Gary (SMITH MINE PROPERTY OWNER)	R01: Swatts, Darriel (US EPA REGION 1)	EML / Email	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.02-COMMUNITY RELATIONS PLANS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021822
100021820	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA) (EMAIL TRANSMITTAL AND HISTORY ATTACHED)	8/12/2022	2	R01: Wieland-Alter, Wendy (CORINTH (VT) RESIDENT)	R01: Swatts, Darriel (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021820
100021817	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	8/4/2022	2	R01: Bahlkow, Gary (SMITH MINE PROPERTY OWNER)	R01: Hathaway, Edward (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021817
100021593	DRAFT COMMUNITY INVOLVEMENT PLAN (CIP)	8/3/2022	31	R01: (US EPA REGION 1)		WP / Work Plan	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.02-COMMUNITY RELATIONS PLANS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021593
100021594	TRUSTEE NOTIFICATION LETTER REGARDING PROPOSED CLEANUP AT SITE	8/3/2022	1	R01: Hathaway, Edward (US EPA REGION 1)	R01: Finkelstein, Kenneth (US NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION)	LTR / Letter	053-REMEDIAL/0531-Remedy Characterization/16.01-CORRESPONDENCE (NATURAL RESOURCE TRUSTEE)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021594
100021597	TRUSTEE NOTIFICATION LETTER REGARDING PROPOSED CLEANUP AT SITE	8/3/2022	1	R01: Hathaway, Edward (US EPA REGION 1)	R01: Raddant, Andrew (US DEPT OF INTERIOR)	LTR / Letter	053-REMEDIAL/0531-Remedy Characterization/16.01-CORRESPONDENCE (NATURAL RESOURCE TRUSTEE)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021594
666836	ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) REPORT	7/27/2022	367	R01: (NOBIS GROUP)	R01: (US EPA REGION 1)	RPT / Report	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/666836
100021574	PUBLIC NOTICE AS APPEARING IN VALLEY NEWS: PIKE HILL COPPER MINE SUPERFUND SITE, COMMENT PERIOD FOR PROPOSED CLEANUP FACT SHEET AND ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PUBLIC HEARING NOTICE	7/27/2022	1	R01: (US EPA REGION 1), R01: (VALLEY NEWS)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.03-NEWS CLIPPINGS/PRESS RELEASES	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021574
100021560	PUBLIC NOTICE AS APPEARING IN JOURNAL OPINION: PIKE HILL COPPER MINE SUPERFUND SITE, COMMENT PERIOD FOR PROPOSED CLEANUP FACT SHEET AND ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PUBLIC HEARING NOTICE	7/27/2022	1	R01: (US EPA REGION 1), R01: (JOURNAL OPINION)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.03-NEWS CLIPPINGS/PRESS RELEASES	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021560
100021530	ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) FACT SHEET FOR PROPOSED NON-TIME CRITICAL REMOVAL ACION (NTCRA) CLEANUP	7/26/2022	10	R01: (US EPA REGION 1)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.05-FACT SHEETS/INFORMATION UPDATES	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021530
100021819	EMAIL REGARDING PUBLIC COMMENTS ON ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) AND PROPOSED NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	7/20/2022	1	R01: Bahlkow, Gary (SMITH MINE PROPERTY OWNER)	R01: Swatts, Darriel (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021819
100021509	PUBLIC MEETING PRESENTATION - SITE INFORMATION UPDATE	7/19/2022	24	R01: (US EPA REGION 1)		MTG / Meeting Document	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.04-PUBLIC MEETINGS/HEARINGS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021509
666140	NEWS ARTICLE: EPA, CORINTH PREPARE FOR THE UPPER VALLEY'S NEXT MINE CLEANUP	7/9/2022	4	R01: Mize, Frances (VALLEY NEWS)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.03-NEWS CLIPPINGS/PRESS RELEASES	COPY(Controlled/Copyright)	1	https://www.vnews.com/EPA-Hosts-Pike-Hill-Mine-Site-Informational-Meeting-46891456
100021902	VERMONT GENERAL HIGHWAY MAP - TOWN OF CORINTH	6/29/2022	1	R01: (VT AGENCY OF TRANSPORTATION)		FIG / Figure/Map/ Drawing	056-SITE SUPPORT/0561-Administrative Support/17.08-FEDERAL AND LOCAL TECHNICAL AND HISTORICAL RECORDS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021902
100021307	NEWS ARTICLE: PIKE HILL MINE MEETING HELD	6/29/2022	1	R01: Biasi, Alex Nuti-de (JOURNAL OPINION)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.03-NEWS CLIPPINGS/PRESS RELEASES	COPY(Controlled/Copyright)	1	http://online.jonews.com/
100021193	PRESENTATION SLIDES: INFORMATION UPDATE PUBLIC MEETING	6/21/2022	25	R01: (US EPA REGION 1)		MTG / Meeting Document	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.04-PUBLIC MEETINGS/HEARINGS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021193

100021194	NOTICES OF 06/21/2022 PUBLIC MEETING FROM TOWN OF CORINTH WEBSITE	6/15/2022	7	R01: (CORINTH (VT) TOWN OF)		PUB / Publication	051-COMMUNITY INVOLVEMENT/0511-Community Involvement Activities/13.03-NEWS CLIPPINGS/PRESS RELEASES	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021194
100021117	MEMO REGARDING AQUATIC BIOTA IMPAIRMENT OF STREAMS DRAINING PIKE HILL COPPER MINE	6/14/2022	2	R01: (VT DEPT OF ENVIRONMENTAL CONSERVATION)		MEMO / Memorandum	053-REMEDIAL/0531-Remedy Characterization/03.10-ENDANGERMENT/BASELINE RISK ASSESSMENTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021117
100020815	EMAIL REGARDING NOTIFICATION OF ADVERSE EFFECTS TO HISTORIC PROPERTIES TO ADVISORY COUNCIL FOR HISTORIC PRESERVATION (EMAIL RESPONSE, 05/2022 MAP AND 106E FORM ATTACHED)	6/6/2022	9	R01: Hathaway, Edward (US EPA REGION 1)		EML / Email	053-REMEDIAL/0531-Remedy Characterization/16.01-CORRESPONDENCE (NATURAL RESOURCE TRUSTEE)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020815
100020664	MEMO REGARDING VT DEPT OF ENVIRONMENTAL CONSERVATION (VT DEC) BASS INVERTEBRATE AND FISH COMMUNITY ASSESSMENT (DATA ATTACHED)	5/13/2022	77	R01: Hathaway, Edward (US EPA REGION 1)		MEMO / Memorandum	053-REMEDIAL/0531-Remedy Characterization/03.02-SAMPLING & ANALYSIS DATA (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020664
666834	REGION 1 REGIONAL SCREENING LEVELS (RSL) - GENERIC TABLES	5/1/2022	7	R01: (US EPA REGION 1)		PUB / Publication	056-SITE SUPPORT/0561-Administrative Support/17.07-REFERENCE DOCUMENTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/666834
100020665	SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN (QAPP)	2/14/2022	21	R01: (NOBIS GROUP)	R01: (US EPA REGION 1)	WP / Work Plan	053-REMEDIAL/0531-Remedy Characterization/03.07-WORK PLANS & PROGRESS REPORTS (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020665
100019517	APPROVAL MEMO TO PERFORM ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	12/1/2021	9	R01: (US EPA REGION 1)		MEMO / Memorandum	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100019517
100019384	EMAIL REGARDING CONCURRENCE WITH DRAFT APPROVAL MEMO TO PERFORM ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA)	11/19/2021	2	R01: Douchand, Larry E (US EPA)	R01: Mcguire, Karen (US EPA REGION 1)	EML / Email	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100019384
100019385	RISK SUMMARY PRESENTATION	10/5/2021	52	R01: (US EPA REGION 1)		MTG / Meeting Document	054-REMOVAL/0541-Removal Responses/02.02-REMOVAL RESPONSE REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100019385
100002586	Best Practices to Prevent Releases from Impoundments at Abandoned Mine Sites While Conducting CERCLA Response Actions - OLEM 9285.2-14	10/1/2020	64	R11: (U.S. EPA)		LAWS / Laws/Regulations/Guidance	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.4 - Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/100002586
100021308	2020 303(D) LIST OF IMPAIRED WATERS, STATE OF VERMONT, PART A. IMPAIRED SURFACE WATERS IN NEED OF TOTAL MAXIMUM DAILY LOADS (TMDL)	9/17/2020	10	R01I (VT DEPT OF ENVIRONMENTAL CONSERVATION)		RPT / Report	056-SITE SUPPORT/0563-State/Tribal Involvement/09.10-STATE TECHNICAL AND HISTORICAL RECORDS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100021308
100013088	FIELD INVESTIGATION PLAN (FIP)	9/1/2019	303	R01: (NOBIS GROUP)	R01: (US EPA REGION 1)	WP / Work Plan	053-REMEDIAL/0531-Remedy Characterization/03.07-WORK PLANS & PROGRESS REPORTS (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100013088
100002212	Use of Early Actions at Superfund National Priorities List Sites and Sites with Superfund Alternative Approach Agreements 8-23-2019	8/23/2019	5	R11: Woolford, James, E (Environmental Protection Agency), R11: (OSRTI-IO), R11: (OSRTI-SARDB), R11: (OSRTI-TAB)	R11: (Regional Superfund Program Management Branch Chiefs (Regions I-X)), R11: (Regional Superfund Policy Managers (Regions I-X)), R11: (Office of Regional Counsels (Regions I-X))	MEMO / Memorandum	055-SITE EVALUATION/0551-Pre-Remedial Site Evaluation/A1.3-Site Screening, 056-SITE SUPPORT/0567-Forward Planning/Redevelopment/Reuse/A4.9-Reuse & Revitalization, 058-PROGRAM SUPPORT/0588-Planning and Resource Allocation/B6.1-Program Development	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/100002212
176382	PLANNING FOR RESPONSE ACTIONS AT ABANDONED MINES WITH UNDERGROUND WORKINGS: BEST PRACTICES FOR PREVENTING SUDDEN, UNCONTROLLED FLUID MINING WASTE RELEASES (WITH DISTRIBUTION MEMORANDUM ATTACHED)	7/21/2017	70	R11: (US ENVIRONMENTAL PROTECTION AGENCY)		LAWS / Laws/Regulations/Guidance	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/176382
100000037	EPA WORK ACTIVITIES AT ABANDONED HARDROCK MINING AND MINERAL PROCESSING SITES IN PREPARATION FOR THE FISCAL YEAR 2016 CONSTRUCTION SEASON	3/29/2016	12	R11: (US ENVIRONMENTAL PROTECTION AGENCY)		MEMO / Memorandum	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines, 058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.4 - Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/100000037
100020656	AQUATIC ASSESSMENT REPORT 2012-5288: APPENDIXES 2 TO 14	1/1/2013	65	R01: (US GEOLOGICAL SURVEY)		PUB / Publication	053-REMEDIAL, 054-REMOVAL	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020656
549000	AQUATIC ASSESSMENT REPORT 2012-5288	1/1/2013	123	R01: (US DEPT OF INTERIOR), R01: (US GEOLOGICAL SURVEY)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.06-REMEDIAL INVESTIGATION REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/549000
100020227	FINAL REPORT FOR HISTORIC/ARCHAEOLOGICAL MAPPING AND TESTING - MAIN REPORT [APPENDICES SEPARATE]	2/1/2011	290	R01: (PAL)	R01: (US ARMY CORPS OF ENGINEERS)	RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.04-INTERIM DELIVERABLES (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020227
100020228	FINAL REPORT FOR HISTORIC/ARCHAEOLOGICAL MAPPING AND TESTING - APPENDICES A AND C-E	2/1/2011	41	R01: (PAL)	R01: (US ARMY CORPS OF ENGINEERS)	RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.04-INTERIM DELIVERABLES (RI)	LGL(Controlled/Legal)	1	N/A
100020229	FINAL REPORT FOR HISTORIC/ARCHAEOLOGICAL MAPPING AND TESTING - APPENDIX B	2/1/2011	2	R01: (PAL)	R01: (US ARMY CORPS OF ENGINEERS)	RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.04-INTERIM DELIVERABLES (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020227
190041	SUPERFUND REMOVAL GUIDANCE FOR PREPARING ACTION MEMORANDA	9/1/2009	75			RPT / Report	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/190041
140338	GREEN REMEDIATION: BEST MANAGEMENT PRACTICES FOR EXCAVATION AND SURFACE RESTORATION	12/1/2008	4			PUB / Publication	056-SITE SUPPORT/0522-Negotiations/A8.4-Interagency Agreements, Site-Specific, 058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines, 058-PROGRAM SUPPORT/0587-Public Affairs	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/140338
529097	DRAFT CONCEPTUAL SITE MODEL TECHNICAL MEMORANDUM (06/25/2008 TRANSMITTAL LETTER ATTACHED)	6/1/2008	140	R01: (NOBIS ENGINEERING INC)	R01: (US EPA REGION 1)	MEMO / Memorandum	053-REMEDIAL/0531-Remedy Characterization/03.07-WORK PLANS & PROGRESS REPORTS (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/529097
100020681	TOXICITY TESTING RESULTS USING SEDIMENT SAMPLES FROM STIE (TRANSMITTAL LETTER ATTACHED)	1/17/2008	35	R01: (TECHLAW INC), R01: (ENVIRONMENTAL SERVICES ASSISTANCE TEAM (ESAT) - REGION 1)	R01: (US EPA REGION 1)	RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.02-SAMPLING & ANALYSIS DATA (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020681
529096	REPORT ON SURFACE-WATER HYDROLOGY AND QUALITY AT THE PIKE HILL SUPERFUND SITE, CORINTH, VERMONT, OCTOBER 2004 TO DECEMBER 2005	1/1/2007	72	R01: Deacon, Jeffrey R (US GEOLOGICAL SURVEY), R01: Kiah, Richard G (US GEOLOGICAL SURVEY), R01: Coles, James F (USGS), R01: Hammarstrom, Jane M (USGS), R01: Piatak, Nadine M (USGS), R01: Seal Ii, Robert R (USGS)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.07-WORK PLANS & PROGRESS REPORTS (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/529096
529098	SEQUENTIAL EXTRACTION RESULTS AND MINERALOGY OF MINE WASTE AND STREAM SEDIMENTS ASSOCIATED WITH METAL MINES IN VERMONT, MAINE, AND NEW ZEALAND	1/1/2007	38	R01: Adams, M (USGS), R01: Piatak, Nadine M (USGS), R01: Lamothe, P J (USGS), R01: Sanzolone, R F (USGS), R01: Seal Ii, Robert R (USGS), R01: Brown, Z A (USGS)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.06-REMEDIAL INVESTIGATION REPORTS	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/529098
100020667	WATER RESOURCES DATA AT SITE - 10/2004-09/2005	9/1/2006	157	R01: (US EPA REGION 1), R01: (US DOI/US GEOLOGICAL SURVEY), R01: (US ARMY CORPS ENGINEERS)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.02-SAMPLING & ANALYSIS DATA (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020667
100020680	TOXICITY TESTING RESULTS USING SURFACE WATER SAMPLES COLLECTED FROM SITE (TRANSMITTAL LETTER ATTACHED)	8/10/2006	73	R01: (TECHLAW INC), R01: (ENVIRONMENTAL SERVICES ASSISTANCE TEAM (ESAT) - REGION 1)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.02-SAMPLING & ANALYSIS DATA (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020680

100020666	MEMO REGARDING INTERPRETATION OF BIOLOGICAL ASSESSMENT DATA ON PIKE HILL BROOK THROUGH 2005	7/12/2006	9	R01: Langdon, Richard (VT DEPT OF ENVIRONMENTAL CONSERVATION), R01: Fiske, Steve (VT DEPT OF ENVIRONMENTAL CONSERVATION)		MEMO / Memorandum	053-REMEDIAL/0531-Remedy Characterization/03.02-SAMPLING & ANALYSIS DATA (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/100020666
529095	GEOCHEMICAL CHARACTERIZATION OF MINE WASTE, MINE DRAINAGE, AND STREAM SEDIMENTS AT THE PIKE HILL COPPER MINE SUPERFUND SITE, ORANGE COUNTY, VERMONT	1/1/2006	131	R01: Deacon, Jeffrey R (US GEOLOGICAL SURVEY), R01: Kiah, Richard G (US GEOLOGICAL SURVEY), R01: Coles, James F (USGS), R01: Hammarstrom, Jane M (USGS), R01: Piatak, Nadine M (USGS), R01: Briggs, Paul H (USGS), R01: Seal Ii, Robert R (USGS)		RPT / Report	053-REMEDIAL/0531-Remedy Characterization/03.07-WORK PLANS & PROGRESS REPORTS (RI)	UCTL(Uncontrolled)	1	https://semspub.epa.gov/src/document/01/529095
134525	EPA Requirement for Quality Assurance Projects Plans, EPA/240/B-01/003	3/1/2001	40			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/134525
174437	ABANDONED MINE SITE CHARACTERIZATION AND CLEANUP HANDBOOK, EPA 910-B-00-001	8/1/2000	129			RPT / Report	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174437
129447	Memorandum concerning Use of Non-Time-Critical Removal Authority in Superfund Response Actions, 9360.0-40P	2/14/2000	7	R11: Luftig, Stephen, D (Office of Emergency and Remedial Response), R11: Breen, Barry, N (Office of Site Remediation Enforcement)		LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines, 058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/129447
176028	REPORT - EPA'S HARD ROCK MINING FRAMEWORK	9/1/1997	14			RPT / Report	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/176028
175671	GUIDANCE ABOUT CONSIDERING WETLANDS AT CERCLA SITES OSWER 9280.0-03 EPA 540-R-94-019 PB-94-963242	5/1/1994	46			PUB / Publication	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/175671
175656	QUICK REFERENCE FACT SHEET: CONDUCTING NON-TIME-CRITICAL REMOVAL ACTIONS UNDER CERCLA OSWER 9360.0-32FS EPA 540-F-94-009 PB93-963422	12/1/1993	4			LAWS / Laws/Regulations/Guidance	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/175656
123480	Memorandum concerning Determination of Imminent and Substantial Endangerment for Removal Actions, OSWER Directive 9360.0-34	8/19/1993	2	R11: Longest, Henry, L (Office of Emergency and Remedial Response), R11: Diamond, Bruce (Office of Waste Programs Enforcement)		LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/123480
122068	Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA, 9360.0-32	8/1/1993	69			LAWS / Laws/Regulations/Guidance	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines, 058 - PROGRAM SUPPORT / 5810 - Financial Management / C2.3 - Budget Records	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/122068
173899	Permits and Permit Equivalency Processes for CERCLA On-site Response Actions [OSWER # 9355.7-03]	2/19/1992	8			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/173899
174497	QUICK REFERENCE FACT SHEET: ARARS Q'S AND A'S: GENERAL POLICY, RCRA, CWA, SDWA, POST-ROD INFORMATION, AND CONTINGENT WAIVERS OSWER 9234.2-01-FS-A	7/1/1991	5			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174497
174501	QUICK REFERENCE FACT SHEET: CERCLA COMPLIANCE WITH OTHER LAWS MANUAL ON SUMMARY OF PART II ON CERCLA COMPLIANCE WITH THE CAA, TSCA, AND OTHER STATUTES OSWER 9234.2-07FS	4/1/1990	8			PUB / Publication	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174501
101233	OSWER Directive 9234.2-06/FS: CERCLA Compliance with the CWA and SDWA; Compendium 3010	2/1/1990	7			RPT / Report	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/101233
198901	CERCLA Compliance with Other Laws Manual Overview of ARARs Focus on ARAR Waivers	12/28/1989	6			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/198901
101232	OSWER Directive 9234.2-05/FS: CERCLA Compliance with State Requirements; Compendium 3009	12/1/1989	5			RPT / Report	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/101232
174077	CERCLA COMPLIANCE WITH OTHER LAWS MANUAL: PART II. CLEAN AIR ACT AND OTHER ENVIRONMENTAL STATUTES AND STATE REQUIREMENTS - EPA/540/G-89/009 OSWER Directive 9234.1-02	8/1/1989	175			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174077
174424	MEMORANDUM REGARDING FINAL GUIDANCE ON IMPLEMENTATION OF THE 'CONSISTENCY' EXCEPTION TO THE STATUTORY LIMITS ON REMOVAL ACTIONS, OSWER 9360.0-12A	6/12/1989	5			LAWS / Laws/Regulations/Guidance	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.4 - Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174424
500008227	ARARs O's & A's OSWER Directive 9323.2-01FS	5/1/1989	8			LAWS / Laws/Regulations/Guidance	053-REMEDIAL, 053-REMEDIAL/0533-Remedial Action/A4.4-Remedial Action	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/500008227
174425	MEMORANDUM REGARDING GUIDANCE ON NON-NPL REMOVAL ACTIONS INVOLVING NATIONALLY SIGNIFICANT OR PRECEDENT-SETTING ISSUES, OSWER 9360.0-19 (FORM MEMORANDUM ATTACHED)	3/3/1989	9			MEMO / Memorandum	058 - PROGRAM SUPPORT / 0583 - Regulatory Development / B8.1 - Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174425
175875	CERCLA COMPLIANCE WITH OTHER LAWS MANUAL: INTERIM FINAL - EPA/540/G-89/006	8/1/1988	243			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.1-Regulations, Standards & Guidelines	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/175875
174442	ABANDONED MINE SITE CHARACTERIZATION AND CLEANUP HANDBOOK, EPA 910-B-00-001: APPENDICES A-M	Undated	280			LAWS / Laws/Regulations/Guidance	058-PROGRAM SUPPORT/0583-Regulatory Development/B8.4-Directives and Policy Guidance Documents	UCTL(Uncontrolled)	11	https://semspub.epa.gov/src/document/11/174442

ATTACHMENT 8

STATE LETTER OF CONCURRENCE

VERMONT

Vermont Department of Environmental Conservation *Agency of Natural Resources*
Waste Management and Prevention Division
One National Life Drive - Davis 1 [phone] 802-828-1138
Montpelier, VT 05620-3521
www.dec.vermont.gov/waste-management

September 29, 2022

Mr. Robert Cianciarulo,
Chief Remediation 1 Branch
US EPA Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3919

RE: SUPPORT FOR A NON-TIME CRITICAL REMOVAL ACTION AT THE PIKE HILL COPPER MINE SUPERFUND SITE, CORINTH, VERMONT (VT SITE #1977-0191).

Dear Mr. Cianciarulo:

The Vermont Department of Environmental Conservation (VT DEC) has reviewed the US Environmental Protection Agency (EPA) Action Memorandum for approval and funding of Non-Time Critical Removal Action (NTCRA) at the Pike Hill Copper Mine Superfund Site ("Site"), Corinth, Vermont. This NTCRA is being performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 et seq. Given the overall cleanup costs including removal actions, no viable responsible party, and lack of state resources, the State of Vermont supports managing this site through the NTCRA process. We are grateful for the EPA's continued attention to this project to meet our shared goals of protecting human health and the environment.

We understand that the objective of the NTCRA is to control the primary sources of contaminated mining influenced water (MIW). Two removal action alternatives were evaluated in the Engineering Evaluation/Cost Evaluation (Nobis, July 27, 2022). Alternative 2, included off-site disposal of mine waste, and was rejected due to risks associated with off-site haulage and the higher overall cost.

The EPA Action Memo, summarizes the selected NTCRA Alternative 1, which includes:

- On-Site Consolidation and Capping of mine waste, and
- In-Situ Stabilization of mine waste around historic resources and sensitive bat habitat.

The intention of these actions is to significantly improve the water quality of Pike Hill Brook and the impacted portions of Cookville Brook Tributary #4. We have previously worked with the EPA to develop, review, and agree upon the NTCRA-specific Applicable or Relevant Appropriate Requirements (ARARs) which are attached to the Action Memo. VT DEC agrees with this NTCRA approach outlined in the EPA Action Memo and supports development of the NTCRA detailed design.

VT DEC understands that by participating in this NTCRA, the State of Vermont will be responsible for Post-Removal Site Control (PRSC) until the selected final remedial action is implemented i.e., the actions necessary to ensure the effectiveness and integrity of the removal action. The PRSC will include inspection and maintenance of the engineered waste cell cover system and other engineered features.

At this time, the PRSC costs have not been sanctioned by the Vermont Legislature. The VT DEC is committed to work diligently with the Legislature to establish the required level and system of funding to meet the PRSC obligations. VT DEC also understands that a Memorandum of Agreement (MOA) must be signed between the State and EPA outlining the responsibilities of both parties concerning the NTCRA.

VT DEC will cooperate with the EPA, providing timely input and review, during the NTCRA design. In return, VT DEC trusts EPA will:

- Demonstrate through performance monitoring that the removal actions, including the engineered waste cell cover system and other engineered features installed as part of the NTCRA can achieve the design requirements, consistent with the ARARs

- Ensure that the NTCRA design addresses the concerns raised by the local community during the public comment period and will focus on design factors that reduce off-site truck traffic to mitigate safety and nuisance hazards to residents during construction.

- Continue to work with the community and VT DEC to reduce operational and financial impacts to residents during NTCRA implementation.

VT DEC considers the proposed NTCRA to be a significant and important opportunity to control the primary sources of MIW and restore Pike Hill Brook and Cookville Brook at a manageable cost to the State of Vermont. Thank you for your continued work and diligent efforts to address the legacy of mining related contamination at Pike Hill Copper Mine in Vermont. Please don't hesitate to contact me should you have any questions.

Sincerely,

Matthew A. Chapman, Director
Waste Management and Prevention Division
Department of Environmental Conservation

cc: Corinth, Select Board
Edward Hathaway, EPA Remedial Project Manager
Patricia Coppolino, WMPD SMS Senior Program Manager
Graham Bradley, WMPD SMS Sites Manager

ATTACHMENT 9

ENFORCEMENT ADDENDUM

(CONFIDENTIAL)