

# **Findings of Fact & Reclassification Order**

## **Groundwater Reclassification for Elizabeth Mine Superfund Site South Stafford, Vermont**

Draft dated June 5, 2026

**Final date to be determined after public comment**

Prepared by:

The Vermont Agency of Natural Resources

**Findings of Fact & Reclassification Order  
Groundwater Reclassification for  
Elizabeth Mine Superfund Site  
Strafford, Vermont**

## **INTRODUCTION**

This document represents the Vermont Agency of Natural Resources (ANR) findings and determination (Reclassification Order) to reclassify groundwater from Class III (potable) to Class IV (non-potable), and is divided into the following sections:

- **Introduction**
- **Overview**- explains the reasons groundwater is being reclassified and the rationale for the reclassification order.
- **Background**
- **Petition and Supporting Documents**-provides a description of the groundwater reclassification petition and the documents that supported this petition and order.
- **Class IV area designated in the petition**-describes how Class IV boundaries were determined.
- **Monitoring Requirements**-describes the monitoring that will take place within the reclassification area.
- **Public Notification**-describes the public notification process for the reclassification.
- **The Finding of Facts and the Reclassification Order**-which is the formal reclassification order that reclassifies the groundwater from Class III to Class IV, along with any conditions.

The sections leading up to the Finding of Facts and the Reclassification Order supplement the formal order by providing context for the groundwater reclassification.

## **OVERVIEW**

The proposed groundwater reclassification addresses the presence of groundwater contamination that includes groundwater within the Underground Workings (Mine Pools) and waste management areas (WMA) that have been in direct contact with the sulfide rocks and other waste associated with the abandoned Elizabeth Copper mine and have become unsuitable for human consumption due to elevated metals. These naturally occurring, inorganic metals include cadmium, copper, manganese, mercury, and nickel.

This groundwater reclassification is in response to the groundwater reclassification petition, dated June 2, 2026, submitted by the Vermont Department of Environmental Conservation. This petition was submitted to meet the requirements specified in the following documents related to groundwater reclassification and institutional controls:

- The Vermont Groundwater Protection Rule and Strategy, effective January 31, 2026; and
- The Elizabeth Mine Record of Decision; EPA Region 1; September 2006, and revised based on three Explanation of Significant Differences (ESDs) issued in 2008, 2015, and 2019

As stated in the Record of Decision, the selected remedy focused on consolidating, capping, and treating mine waste to prevent acid rock drainage, as well as the use of institutional controls in the form of land use restrictions to prevent the future use of groundwater beneath and adjacent to TP-1, TP-2, and TP-3.

#### *Reasons and Purpose of this Class IV Designation*

Groundwater in Vermont, by default, is considered Class III groundwater, which means it is suitable for being used as drinking water, that is, a potable or public water supply. Reclassification of groundwater from a Class III to a Class IV designates and maps groundwater as non-potable, which means, under Vermont regulations, that groundwater is expected to exceed groundwater enforcement standards for more than five years.

Various metals, including aluminum, cadmium, chromium, cobalt, copper, iron, manganese, nickel, and zinc were detected at concentrations that exceed their respective groundwater compliance monitoring levels (See Table A-1 in Appendix A of the Petition for Class IV Groundwater Reclassification, Elizabeth Mine Superfund Site, dated June 2026), and it is expected that this contamination will persist above the Vermont groundwater enforcement standards for over five years, and potentially decades in the proposed Class IV area.

The boundaries of the proposed reclassification area encompass the extent of the contaminated groundwater plume with various buffers to account for potential migration of dissolved metals within fractured bedrock. The reclassification boundaries have been adjusted to match existing parcel boundaries where appropriate for ease of field verification. In other areas where the reclassification boundary transects a parcel, the boundary line has been surveyed, and groundwater use on these transected parcels is additionally limited through a grant of environmental easement and is included within the parcel Deed.

The main purpose for reclassifying the groundwater to Class IV within the area shown on the map in Attachment A is to protect human health and the environment by providing an institutional control that notifies landowners, well drillers, and regulatory agencies that groundwater is or may be contaminated.

Within the overall Class IV Groundwater Area shown in Attachment A, there are two distinct designations: non-conditional (purple area) and conditional (green area). Areas identified as non-conditional indicate that the use of groundwater as a potable or public water supply is prohibited, however, some agricultural, industrial or commercial uses of groundwater within this reclassification area may be considered by the Secretary. Areas identified as conditional indicate that the use of groundwater as a potable supply may be considered on a case-by-case basis by the Secretary, and a demonstration that a potable supply well within the conditional area would not cause contamination to spread, further degrade groundwater quality, or will not pose a risk to human health or the environment.

#### *Summary of supporting documentation for this Reclassification Determination*

The findings and reclassification order are based on the considerations outlined in Section 12-506 of the Vermont Groundwater Protection Rule and Strategy, effective January 31, 2026. A copy of the rule is available online at <https://dec.vermont.gov/water/groundwater> or by contacting the Department of Environmental Conservation, Waste Management and Prevention Division, One National Life Drive, Davis Building-3<sup>rd</sup> floor.

The petition to reclassify and other supporting documentation is available online at:  
<https://anrweb.vt.gov/DEC/ERT/Hazsites.aspx?site=770186>

It is also available for public notice at the Vermont Electronic Notice Bulletin at:  
<https://enb.vermont.gov/>

A list of the supporting documentation used in issuing this order is provided in Attachment B.

The petition is also available at the Strafford and Thetford town clerks offices located at:

**Strafford Town Clerks Office**

227 Justin Morrill Hwy  
Strafford, VT 05072

**Thetford Town Clerks Office**

3910 VT Route 113  
Thetford Center, VT 05075

**BACKGROUND**

The Elizabeth Mine (Site) is located in the towns of Strafford and Thetford in Orange County, and Sharon in Windsor County in east-central Vermont, approximately 2 miles southeast of the village of South Strafford. The topography of the area is steep mountainous terrain with elevations ranging from 825 feet (ft) above mean sea level (msl) at the West Branch of the Ompompanoosuc River up to 1,600 ft above msl at the top of Copperas Hill.

The United States Environmental Protection Agency (EPA) began work at the Site in 2000 and the primary onsite features were:

- A 45-acre two-tiered flotation mill tailing impoundment with a tailing dam, designated Tailing Pile-1 (TP-1) and Tailing Pile-2 (TP-2).
- Two waste rock piles, designated Tailing Pile 3 (TP-3) and Tailing Pile 4 (TP-4), along with large areas of scattered waste rock.
- Three open rock cuts (the North Open Cut, the South Open Cut, and the South Mine), two of which contained pit lakes (located at the South Open Cut and South Mine).
- An area of stone foundations and lead remaining in the soil surrounding the Copperas Factories.
- A series of World War II (WWII)-era mine support buildings.
- Underground mine workings, including Adits (horizontal mine access/passage) and shafts (vertical or sloping mine access/passage) that connect to the surface, and the associated mine pool.
- Site features of the Elizabeth Mine are described in more detail in the Petition for Groundwater Reclassification, dated April 2026.

In 2006, the EPA signed a Record of Decision (ROD) to select the Remedial Action (RA) cleanup approach for the Site. The 2006 ROD was revised based on three Explanation of Significant Differences (ESDs) issued in 2008, 2015, and 2019. The three phases of RA addressed the Copperas Factories, Lord Brook Source areas and includes site wide monitoring of the surface water, groundwater, sediments, final site restoration activities along with the implementation of

Institutional Controls, which include land use restrictions to prevent future consumption of contaminated groundwater within specific areas of the Site.

The contaminated groundwater is found within the Underground Workings of the Elizabeth Mine and within and adjacent to TP-1, TP-2, and TP-3 waste management areas. In addition to this groundwater reclassification, deed notices, and/or restrictive covenants are being established to protect public health and safety. Periodic monitoring of compliance with these restrictions will be used to provide awareness that the Underground Workings contain water that is unsuitable for ingestion and to prevent installation of a water supply well into the Underground Workings. No residential wells are currently installed into the Underground Workings.

EPA invoked a statutory Technical Impracticability Waiver, as permitted by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), for the groundwater within the Underground Workings. EPA determined that it is technically impracticable, from an engineering perspective, to achieve Federal Safe Drinking Water Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs), 40 C.F.R. Parts 141.11-.16 and 141.50-53, and the State of Vermont Primary Groundwater Quality Standards, VT Env. Prot. R. Ch. 12-702 and 703 for the water within the Underground Workings (mine pool). Therefore, EPA waived these standards as applicable or relevant and appropriate requirements (ARARs) for the groundwater within the Underground Workings. This waiver applies to all of the inorganic constituents that are present in the naturally occurring material at the Site and specifically to cadmium, copper, manganese, mercury, and nickel, which were detected in the groundwater of the Underground Workings at concentrations above either MCLs, MCLGs, or the Vermont Primary Groundwater Quality Standards.

The groundwater contamination associated with TP-1, TP-2, and TP-3 is restricted to the area under the WMA and the underground workings. The Institutional Controls, which include this groundwater reclassification, will protect the integrity and long-term effectiveness of the response actions.

## **PETITION AND SUPPORTING DOCUMENTS**

ANR has determined that the Groundwater Reclassification Petition prepared by Vermont Department of Environmental Conservation (VTDEC), dated June 2026, is administratively and technically complete. The petition is consistent with the reclassification requirements specified in Subchapter 5-in the Vermont Groundwater Protection Rule and Strategy, effective January 31, 2026, and the Vermont Procedure for Class IV Groundwater Reclassification, effective July 5, 2018. The petition provides the technical basis for this reclassification and addresses the technical information required in Section 12-503(c) and Section 12-504 (c) of the Vermont Groundwater Protection Rule and Strategy, dated January 31, 2026. Supporting documents are listed in Attachment B.

## **CLASS IV AREA DESIGNATED IN THE PETITION**

The Class IV boundary reflects the current knowledge about the degree and extent of total and dissolved metals contamination in groundwater from the mine pool and its movement through the environment obtained from the *Nobis, Final Data Report, Elizabeth Mine Superfund Site, Strafford, Vermont*. Dated May 2, 2023.

Areas mapped within the Class IV reclassification as WMA are non-conditional; they are reclassified to Class IV groundwater, and potable water supplies are not permitted. Other mapped areas within

the Class IV groundwater use restrictions are conditional, and supplies may be considered on a case-by-case basis by the Secretary.

The aerial extent of where institutional controls are needed to prevent groundwater use includes the Technical Impracticability Zone, the WMA, and a buffer zone along the Underground Workings that uses site specific factors to create a protective offset. A buffer zone was also presented for the WMA to address the limited areas of groundwater contamination that may extend outside the WMA.

Attachment A contains a map that depicts the proposed Class IV boundaries.

## **MONITORING REQUIREMENTS**

As part of the requirements of the 2006 Record of Decision, long-term groundwater monitoring will occur at the boundaries of the site to ensure that the contaminant plume is not migrating, and reviews will occur at least every 5 years to ensure that the remedy remains protective of human health and the environment.

The final Site-Wide Long-Term Monitoring (LTM) & Operation & Maintenance Plan (O&M Plan) prepared by Nobis (Nobis, 2023) details the Site-wide O&M tasks that include compliance monitoring and sampling at the points of compliance in Copperas Brook and the unnamed tributaries to Lord Brook (surface water sampling locations), groundwater monitoring wells on-site, residential drinking water wells on properties adjacent to the Site, and the TP-1 Passive Treatment System.

The long-term monitoring will provide the data to help assess whether adjustments to the Class IV reclassification boundary will be needed in the future. These adjustments (if necessary) could be to expand, contract, or reclassify the Class IV area as demonstrated by future monitoring data, new technical information, or both.

## **PUBLIC NOTIFICATION**

The public notification of the administratively complete petition and the draft reclassification order shall follow the public participation requirements in Section 12-505 of the Vermont Groundwater Protection Rule and Strategy and Vermont Procedures for Class IV Groundwater Reclassification, which consists of the following:

- Notification of the Petition and Draft order on the Vermont Environmental Notice Bulletin (ENB);
- Written notice to all property owners within and immediately adjacent to the proposed groundwater reclassification area (list of properties can be found in the petition);
- Advertisement in the Valley News about the proposed reclassification.
- Written Notice to the town clerk for Strafford and Thetford;
- Written Notice to the Two Rivers-Ottawaquechee Regional Commission (TRORC).
- Written Notice to the Vermont Groundwater Coordinating Committee.

The deadline to receive public comment is 30 days from when the draft order is placed on the Environmental Notice Bulletin (ENB). Comments can be submitted through the ENB or directly to Charlie Lawrence (see contact info below). Once a final decision on the petition, this finding of fact and reclassification order is reached, a notice of the final decision and response to comments submitted during the public comment period will be posted to the ENB.

Charlie Lawrence  
1 National Life Drive, Davis 3  
Montpelier, Vermont 05620  
charlie.lawrence@vermont.gov

*The drafted finding of fact and reclassification order, as found below, serve as the basis for a final decision and reclassification area. Changes from this draft language may be made to any final decision based upon public comments and will be addressed in a posted responsiveness summary, Attachment C.*

### **Findings of Fact**

- The Vermont Department of Environmental Conservation has submitted an administratively complete reclassification petition. The petition was determined administratively and technically complete on June 2, 2026.
- The ANR has reviewed the petition and determined that the factual information provided in the petition and other documents referenced in the petition or this Decision Document is in accordance with the requirements of Sections 12-503 and 12-504 of the Vermont Groundwater Protection Rule & Strategy and 10 V.S.A. Chapter 48. This information supports the reclassification of groundwater to Class IV as shown on the map located in Attachment A. The final approved Class IV boundary will be available on the ANR Atlas or other Agency supported digital mapping tool.
- Extensive environmental investigations, as summarized in the petition, have identified a zone of total and dissolved metals within groundwater that exceeds groundwater enforcement standards. The major source of groundwater contamination is from the historical use of the Elizabeth Mine and the resultant mine pools within the underground working, which are the remnants of the mining operations.
- Per the requirements in Section 12-502 of the Groundwater Protection Rule & Strategy, reclassification is required because groundwater quality within the proposed Class IV boundary area (See figure in Attachment A) exceeds the Vermont Groundwater Enforcement Standards for total and dissolved metals and contamination in groundwater is predicted to persist for more than five years; likely decades.
- Within the proposed Class IV Groundwater Areas mapped within the WMA (See figure in Attachment A) the Class IV designation is non-conditional and potable water supplies will not be considered within these areas. Other areas within the Class IV reclassification are conditional, and supplies may be considered on a case-by-case basis by the Secretary.

## Reclassification Order

The Secretary of the ANR hereby makes the Findings of Fact identified above and reclassifies the groundwater to Class IV for the area identified on the map in Attachment A subject to the following conditions:

1. Areas mapped within the WMA of the Class IV designation are non-conditional and potable water supplies will not be considered within these areas.
2. Areas mapped outside of the WMA within the Class IV Groundwater Area are conditional, and potable water supplies may be considered on a case-by-case basis by the Secretary following a thorough demonstration to the Secretary that:
  - a. The installation of a supply well would not cause contamination to spread,
  - b. The supply well will not further degrade groundwater quality, and
  - c. The supply well will not pose a risk to human health or the environment.
3. Long-term monitoring within and adjacent to the Class IV area will provide groundwater data to assess whether adjustment (expansion, contraction, or reclassification back) of the Class IV designation is warranted.

\_\_\_\_\_  
Julie Moore, Secretary  
Agency of Natural Resources

Date \_\_\_\_\_

**Attachment A**

**Map Showing Class IV Boundary**  
*(Figure 5 from Petition)*



NOT ISSUED  
 FOR  
 CONSTRUCTION

**ELIZABETH MINE  
 SUPERFUND SITE**

INSTITUTIONAL CONTROL  
 ZONES

MINE ROAD  
 SOUTH STRAFFORD,  
 VERMONT

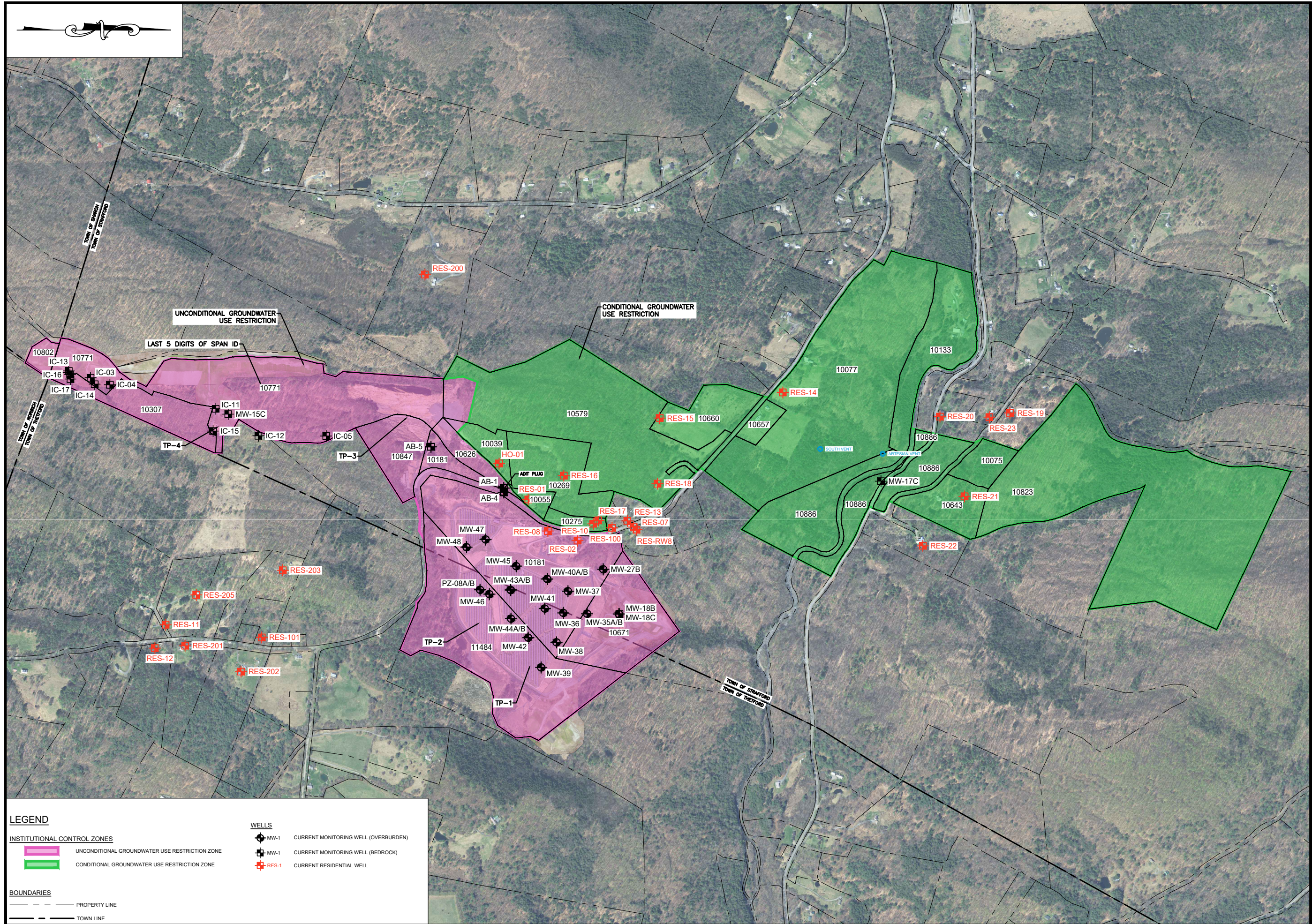

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DATE:	JUNE 2026
NOBIS PROJECT NO.:	94507.00
DRAWN BY:	AB
CHECKED BY:	BK
CAD DRAWING FILE:	ICZ Figures-2026-06-04.dwg
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**RECOMMENDED  
 GROUNDWATER  
 RECLASSIFICATION  
 AREA**

FIGURE  
**5**



**LEGEND**

**INSTITUTIONAL CONTROL ZONES**

- UNCONDITIONAL GROUNDWATER USE RESTRICTION ZONE
- CONDITIONAL GROUNDWATER USE RESTRICTION ZONE

**BOUNDARIES**

- PROPERTY LINE
- TOWN LINE

**WELLS**

- MW-1 CURRENT MONITORING WELL (OVERBURDEN)
- MW-1 CURRENT MONITORING WELL (BEDROCK)
- RES-1 CURRENT RESIDENTIAL WELL

J:\94501.00 - Elizabeth Mine - Lord Brook Source Area\CAD\Map\ICZ Support\ICZ Figures-2026-06-04.dwg 6/4/2026 11:44 AM

## **Attachment B References**

EPA, 2006. Record of Decision, Elizabeth Mine. U.S. Environmental Protection Agency, EPA New England, September 28.

Nobis, 2020b. Conceptual Site Model Update & Institutional Control Zone Report, Elizabeth Mine Superfund Site, Strafford, Vermont. September 18.

Nobis, 2023. Conceptual Site Model Update & Institutional Control Zone Report, Elizabeth Mine Superfund Site, Strafford, Vermont. March 31.

Nobis, 2021b. Site-Wide Closure Activities Completion Report, Elizabeth Mine Superfund Site, 181 Mine Road, South Strafford, Vermont. November.

Nobis, 2023. Adit Closure Completion Report, Elizabeth Mine Superfund Site, Strafford, Vermont. March.

Nobis, 2023a Final Data Report, Elizabeth Mine Superfund Site, Strafford, Vermont. April.

VTDEC, 2020. <https://dec.vermont.gov/water/groundwater/reclassification>.

**Attachment C**  
**Responsiveness Summary**

*To be completed following the public comment period*