

Elizabeth Mine Site Update

2014 Summary:

The 2014 activities at the Elizabeth Mine were focused on monitoring, water treatment, cover system maintenance, and ecological restoration.

Specific activities included:

- Continued monitoring of the surface water and groundwater;
- Operation of the TP-1 leachate treatment system;
- Maintenance of the TP-1/TP-2 cover system (seeding a few limited areas with sparse grass and mowing);
- Further ecological restoration activities for the area surrounding TP-1 and TP-2 (tree and shrub planting and wetland creation);
- Further stabilization of the soil stockpiles remaining after the cover system installation;
- Vermont ANR bio-monitoring;
- VT ANR cleaning of the toe drains and horizontal drains;
- Completion of the Remedial Design for the Phase 2 Remedial Action: Lord Brook Source Areas (South Mine and South Open Cut);
- The first Five Year Review for the Elizabeth Mine was completed and can be viewed at <http://www.epa.gov/region1/superfund/sites/elizmine/538671.pdf>; and
- Completion of several documents relating the historic significance of the Elizabeth Mine, including the Popular Report summarizing the Site history and cleanup. The reports can be viewed at <http://www.epa.gov/region1/superfund/sites/elizmine/history.html>.

Cleanup Assessment:

The monitoring data continues to show substantial improvement at the Site. The Vermont ANR biological monitoring has shown full recovery in the West Branch with respect to benthic organisms for the past two years. The water quality monitoring continues to document a dramatic reduction in the metal concentrations and pH. Copper concentrations at the mouth of Copperas Brook are dropped to 1% of the long-term average (3,240 ug/l before the cleanup 25 ug/l avg. for 2014 using total metal analysis – all filtered results were non-detect). The annual average pH has increased from 2.5 to 7.2. The flow of leachate from TP-1 has reduced from 55 gallons per minute to 17.5 gallons per minute as of December 2014. The iron load discharging from TP-1 has dropped from the average daily load of 675 pounds per day in 2007 to an average daily load of 65 pounds per day in 2014. The cover system looks good with no significant problems through December 2014. For the South Mine, the copper concentration in surface water as measured at location SM1 averaged 2,215 ug/l for 2014. For the South Open Cut, the copper concentration in surface water as measured at location SC4 averaged 110 ug/l for 2014. The state of Vermont delisted the Ompompanoosuc River and Lords Brook from the Clean Water Act section 303(d) impaired water list in 2014, a fact sheet about that action can be found at http://water.epa.gov/polwaste/nps/success319/vt_lords.cfm.

Expected Activities for 2015

The expected activities for 2015 include:

- Operation of the water treatment system;
- Surface water and groundwater monitoring (The surface water monitoring for 2015 will begin in spring 2015);
- Mowing and other maintenance activities (drain cleaning);
- Site inspections;
- Completion of the Explanation of Significant Differences to document the changes in the cleanup plan for the Phase 2 Remedial Action (Lord Brook Source Areas), including releasing a draft document for public comment;
- Continued work on the design for land-use restrictions to protect the cleanup actions and prevent consumption of contaminated groundwater; and
- Completion of a series of interpretive panels about the historic features of the Elizabeth Mine.

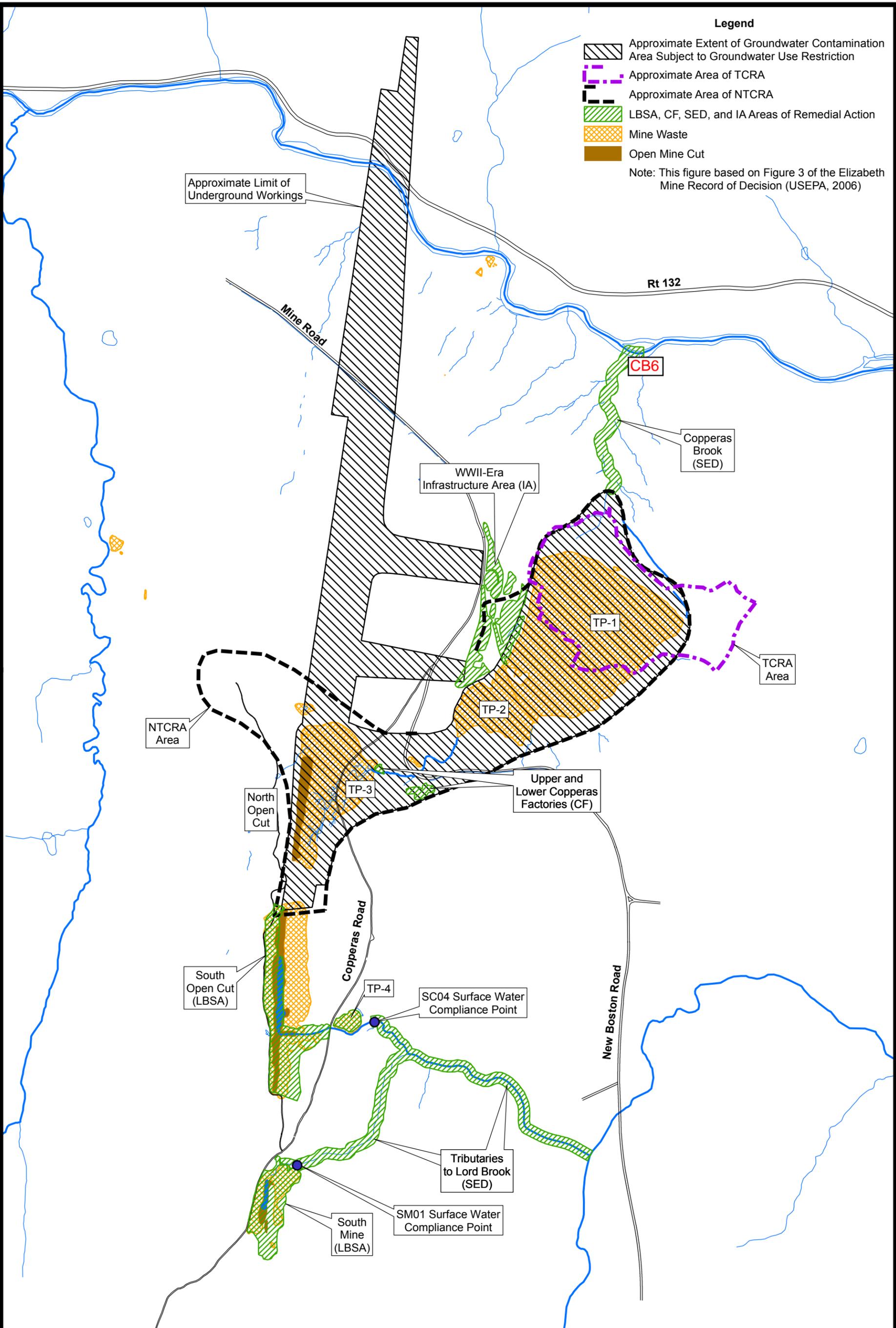
EPA identified several changes to the 2006 cleanup plan that was documented in the 2006 Record of Decision. The changes are being documented in a Draft Explanation of Significant Differences (ESD) that EPA will be releasing for a 30 day public comment period this Summer. After considering any comments received and making any modifications to the document that may be called for, the Explanation of Significant Differences will be finalized in 2015. The changes to the cleanup that will be discussed in the Draft Explanation of Significant Differences are summarized below:

- As a result of the NTCRA, all of the material in TP-4, the majority of the waste rock at the South Mine, and the waste rock found along the outlet haulage-way for the South Open Cut was removed and disposed of under the engineered covers at TP-1 and TP-2, rather than in the South Open Cut as called for in the ROD;
- The South Open Cut and South Mine pit lakes will be eliminated by placing fill in the South Open Cut and South Mine to significantly reduce the source of acid mine drainage;
- Excavation of an additional volume of mine waste from the South Mine and South Open Cut. This material will be consolidated beneath soil covers to be installed at the South Open Cut and South Mine (wetlands may be established on top of the covers in each area);
- Treated water from the dewatering of the South Open Cut and South Mine pit lakes during the implementation of the Remedial Action may be discharged to Copperas Brook, tributaries of Lord Brook, and/or the underground workings rather than only into the tributaries of Lord Brook, as called for in the ROD;
- Updated analysis of ARARs compliance regarding the ESD modifications to the remedy in the South Open and South Mine pit lakes areas; and
- Updated cost for the Phase 2 component of the 2006 ROD, based on the ESD modifications to the remedy.

More information about the Elizabeth Mine Superfund Site can be found at:

<http://www.epa.gov/region1/superfund/sites/elizmine>.

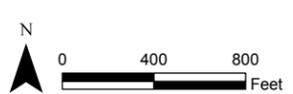
Document: P:\Projects\USACE\Elizabeth Mine 36121215717_0_GIS\MapDocuments\Phase 2 RA ESD\Phase2_RA_ESD_11x17P.mxd PDF: P:\Projects\USACE\Elizabeth Mine 36121215717_0_Deliverables\4.1_Reports\ESD_Figures\June 2015\Figure 2.pdf 06/12/2015 9:26 AM brian.peters



Legend

- Approximate Extent of Groundwater Contamination Area Subject to Groundwater Use Restriction
- Approximate Area of TCRA
- Approximate Area of NTCRA
- LBSA, CF, SED, and IA Areas of Remedial Action
- Mine Waste
- Open Mine Cut

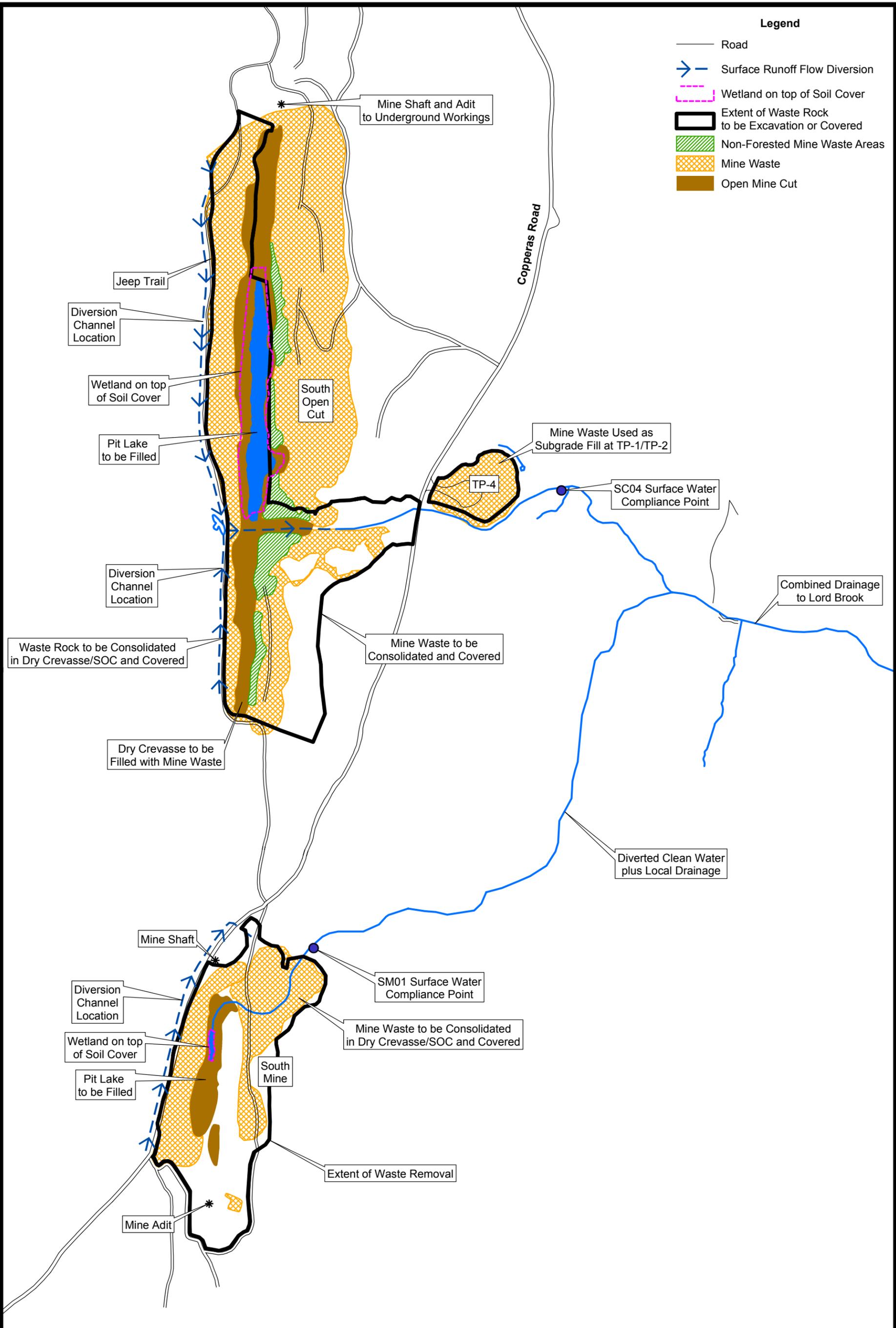
Note: This figure based on Figure 3 of the Elizabeth Mine Record of Decision (USEPA, 2006)



Phase 2 RA Explanation of Significant Differences
Elizabeth Mine Superfund Site
South Strafford, Vermont

TCRA, NTCRA, and Remedial Action Areas
Figure 2

Document: P:\Projects\USACE\Elizabeth Mine 36121121574.0_GIS\MapDocuments\Phase 2 RA ESD\Phase2_RA_ESD_11x17P.mxd PDF: P:\Projects\USACE\Elizabeth Mine 36121121574.0_Deliverables\4.1_Reports\ESD_Figures\June 2015\Figure 4.pdf 06/12/2015 9:28 AM brian.peters

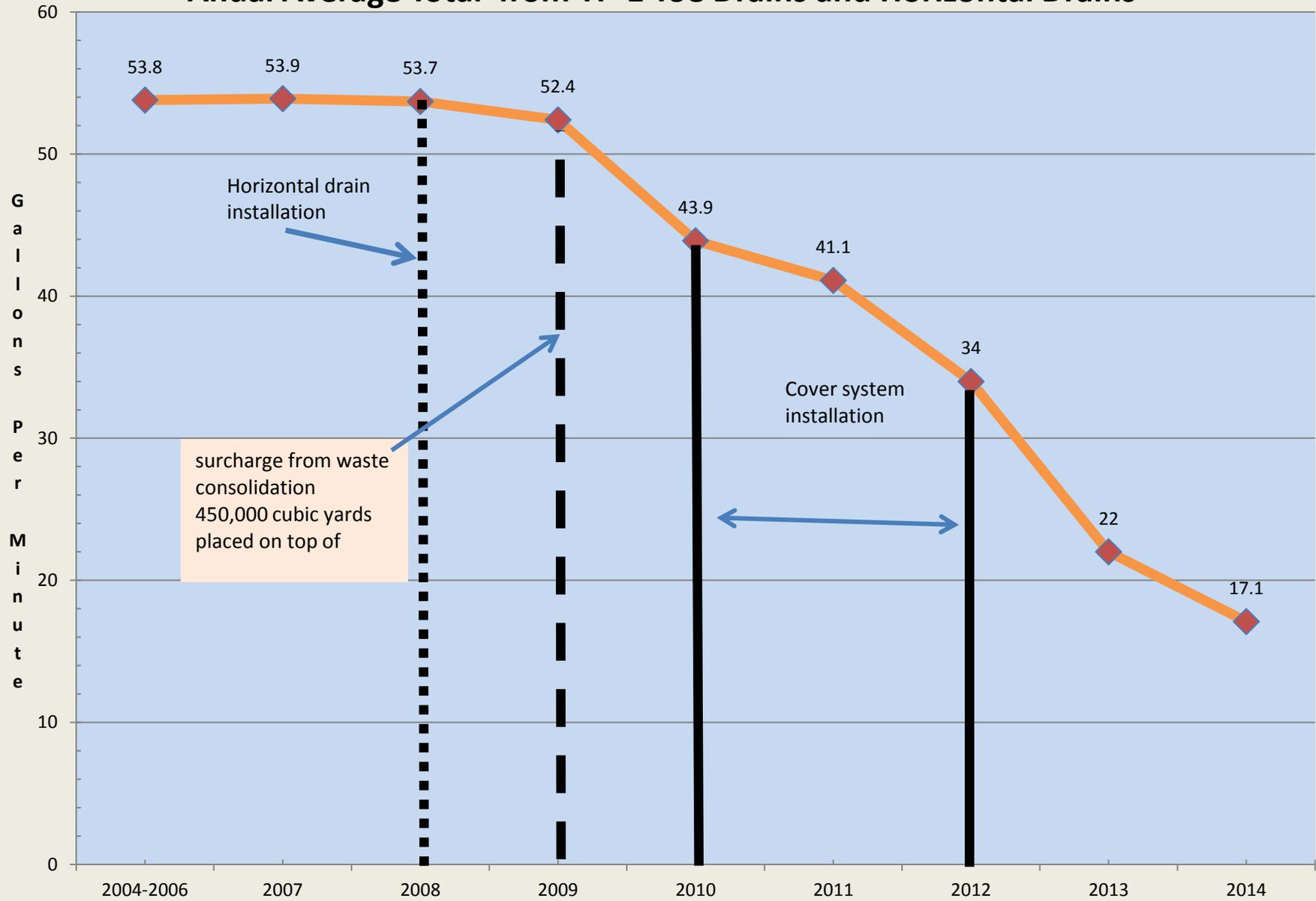


Phase 2 RA Explanation of Significant Differences
Elizabeth Mine Superfund Site
South Strafford, Vermont

Modified Lord Brook Source Areas
Alternative LBSA-4

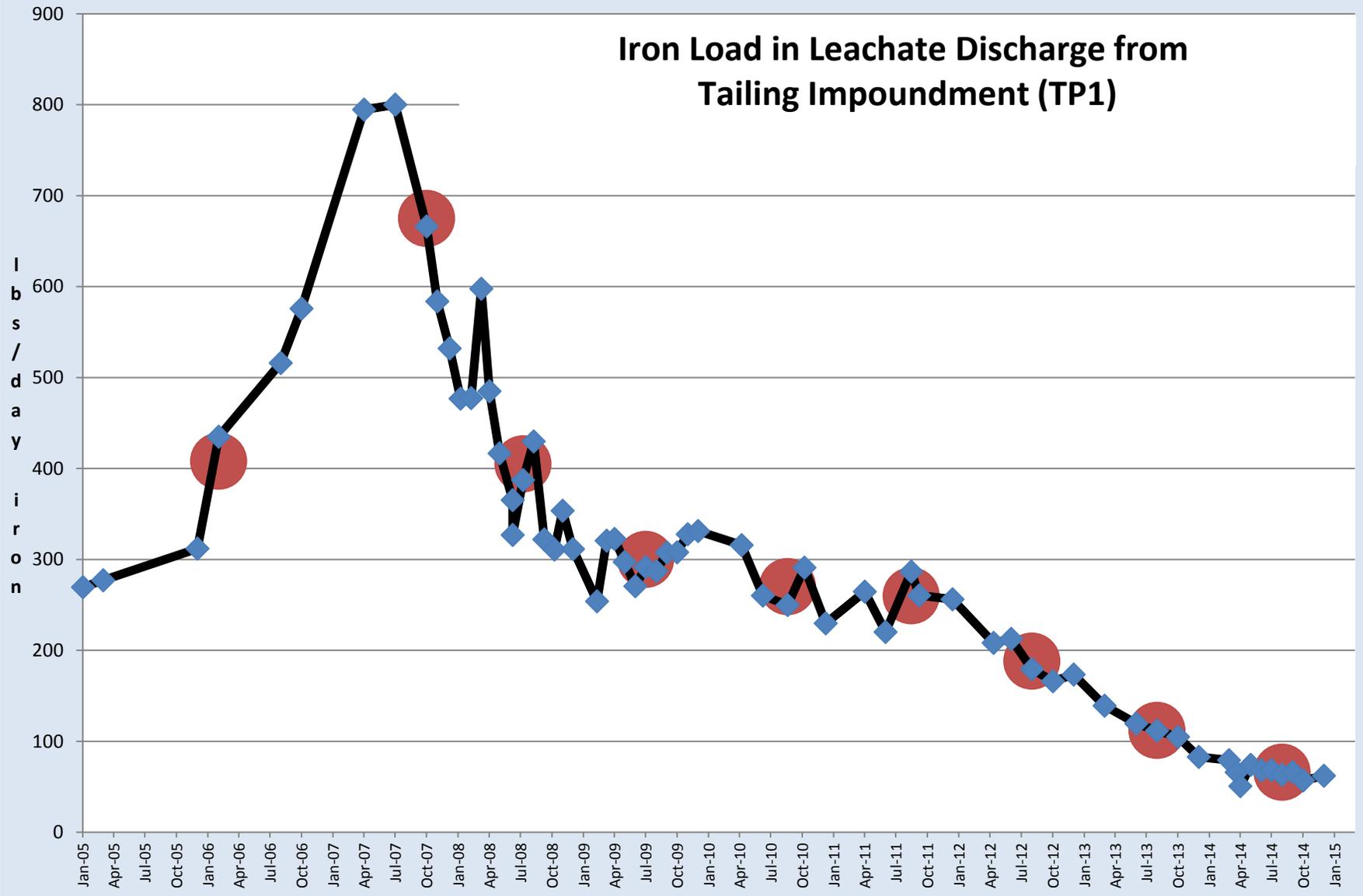
Figure 4

Annual Average Total from TP-1 Toe Drains and Horizontal Drains

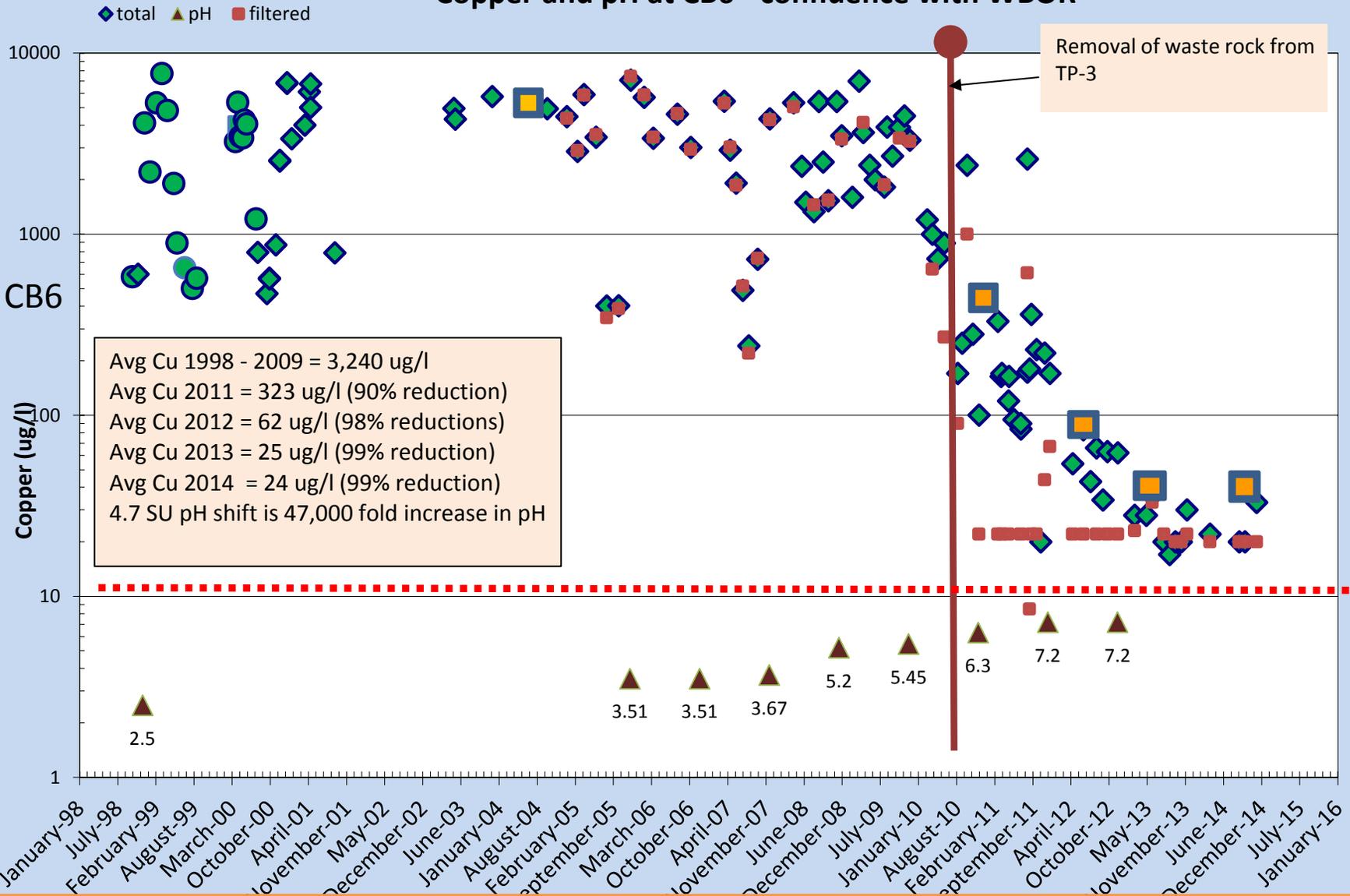


Iron Load in Leachate Discharge from Tailing Impoundment (TP1)

● avg annual iron load ◆ daily iron load lbs per day



Copper and pH at CB6 - confluence with WBOR



South Mine and South Open Cut Copper Levels

- South Mine copper levels
- ◆ South Open Cut Copper Levels

