

Barker Hughesville and Carpenter Snow Creek Mining District Superfund Sites



Site Overview

- Mining began in late 1800s and experienced several boom and bust cycles
- During the 1920s, lead and zinc were mined from low grade ore at Block P Mine (Barker Hughesville) and the Silver Dyke Mine (Carpenter Snow Creek)
 - Resulted in over 1 million cubic yards of tailings, mine waste, and streamside deposits at each site
 - Numerous adits discharge low pH/high metals into nearby surface waters
- State conducted an inventory of the abandoned mines in the 1990s
- Superfund listing in 2001

Neihart (circa 1900)

view toward the south



The Montana Abandoned Mine Reclamation Bureau State Inventory



46 inactive mines investigated in 1990, 1993, 1994 and 1995 at Barker Hughesville and Carpenter Snow Creek

Abandoned Mines and State Ranking

| Rank | Site Name | Score |
|------|--------------------------------|---------------|
| • 9 | <u>BLOCK P TAILINGS</u> | 536.80 |
| • 16 | <u>BLOCK P MINE</u> | 326.17 |
| • 30 | SILVER DYKE ADIT | 160.86 |
| • 31 | <u>EDWARDS</u> | 152.66 |
| • 36 | CARPENTER CREEK TAILINGS | 103.53 |
| • 48 | SILVER DYKE TAILINGS | 68.15 |
| • 64 | QUEEN OF THE HILLS | 40.68 |
| • 69 | <u>NEIHART TAILINGS</u> | 37.58 |
| • 74 | <u>WRIGHT LODGE</u> | 29.30 |
| • 77 | SILVER DYKE MILL | 28.33 |
| • 79 | TIGER | 27.04 |
| • 84 | DACOTAH | 22.91 |

Red highlighted mines located in Barker Hughesville
Bolded & underlined sites had mine waste cleaned up

It's all about the water



Background Data Source:
Topographic map courtesy
of National Geographic (via
Esri Web Mapping Service)

BARKER HUGHESVILLE

Monarch

Proposed 2009
RI boundary

Gold Run
Creek

Dry Fork Belt Creek

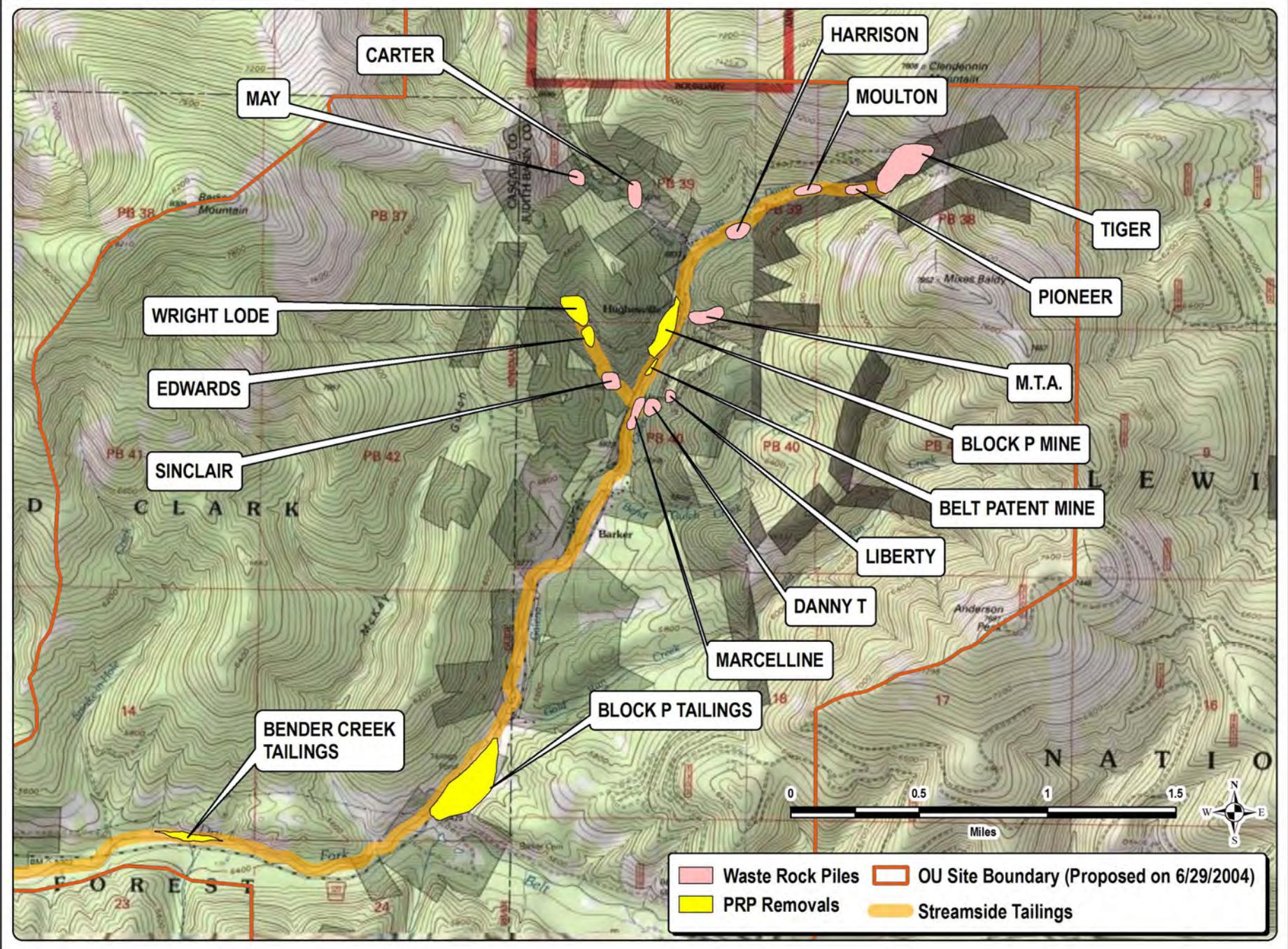
Galena Creek

Site Layout (Existing and Proposed)
Barker-Hughesville Mining District NPL Site



Remedial Investigation
Study Area





Key Activities through 2013

- USFS placed Doe Run Resources under order for an Engineering Evaluation/Cost Analysis (EE/CA) (2002-2004) followed by a removal action at Block P Mill tailings (2004 – 2005)
- Watershed wide sampling of surface water, groundwater, mine waste and sediment ongoing since 2009 (Remedial Investigation)
- EPA places Doe Run Resources under order for an EE/CA for the Block P Mine (2008 – 2010) followed by a removal action (2011-2013)

Block P Mill Removal Action 2004 - 2005

**Residual groundwater contamination
continues to be monitored**



2004



2013

**USFS placed Doe Run Resources under
order to complete an EE/CA and the
removal action**

**160,000 cys excavated and placed in on
Site repository**

Block P Mine Removal Action 2011 - 2013

July 2011



Almost 230,000 cubic yards of waste rock were excavated and placed in a nearby repository

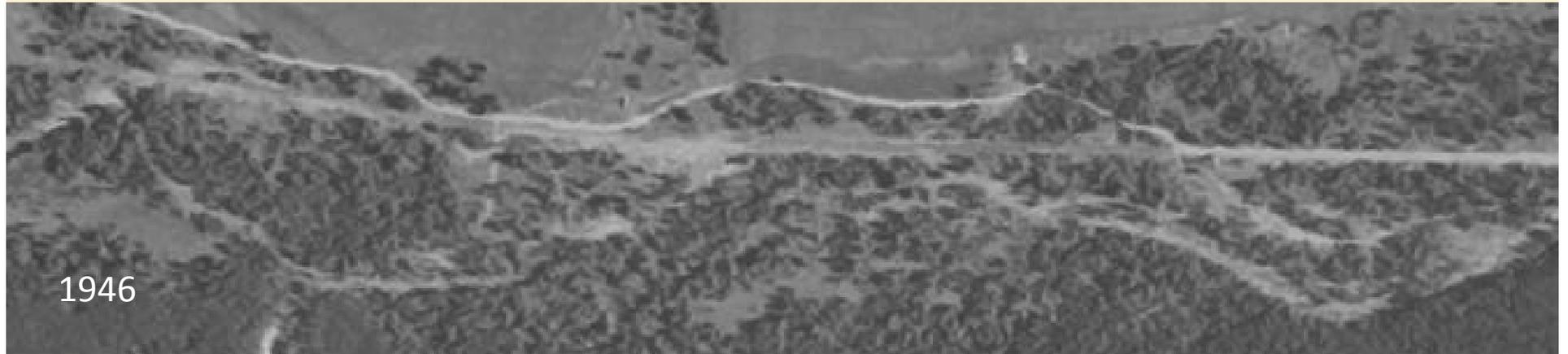
October 2012



EPA placed Doe Run Resources under order to complete an EE/CA and the removal action

Ongoing Monitoring of Seep and Adit discharges

Effect of 1953 Flood in Dry Fork Belt Creek



Residential Property Sampling in Monarch

13 residences and the historic rail depot were sampled in Monarch



Barker Hughesville Floodplain Investigation



Approximately 100 test pits completed and surface soils taken to determine vertical and horizontal extent of contamination.

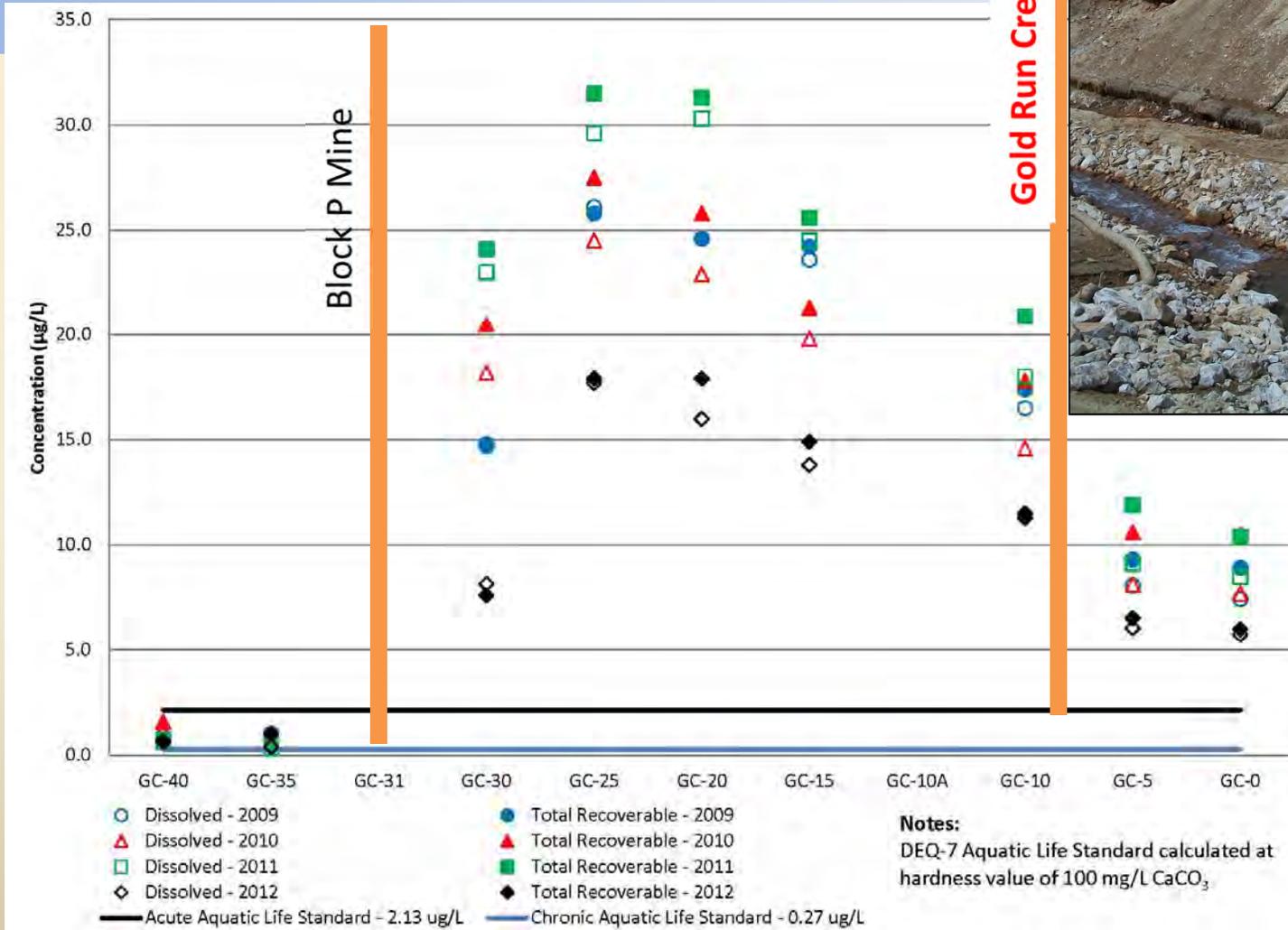
Almost 1000 samples analyzed



Over 110,000 cubic yards (cys) estimated in Galena Creek

Between 180,000 and 370,000 cys estimated in Dry Fork Belt Creek

Fall Cadmium Concentrations in Galena Creek



Block P mine water now discharges at creek level

Continuous Monitoring



Danny T Adit Water Pilot Study

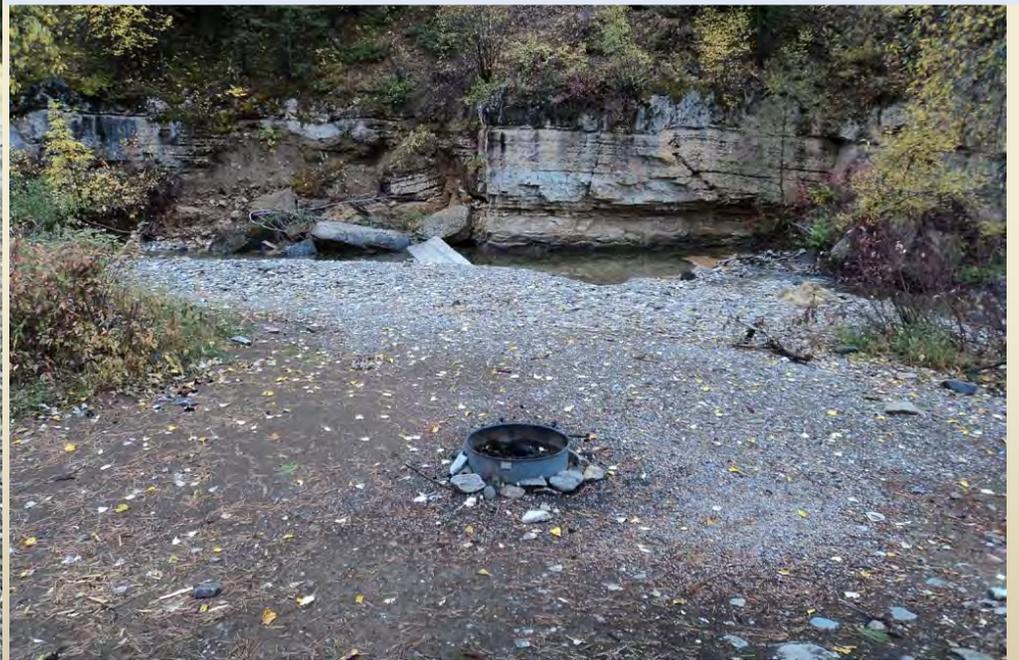


Barker Hughesville 2014 Field Activities

- Monitoring of Mine Influenced Waters
 - Danny T, Tiger Mine and Galena Creek
 - Surface water, adit discharges, and groundwater sampling
- Ongoing Treatability Studies
 - Soil amendment and revegetation plots
 - Passive treatment of Mine Influenced Waters at Tiger Mine and Danny T
 - Rerouting of clean surface water

Multiple campgrounds along Dry Fork Belt Creek

USFS received funding to improve some campsites to minimize human health impacts in 2014



Construction of Fish Barrier along Dry Fork Belt Creek



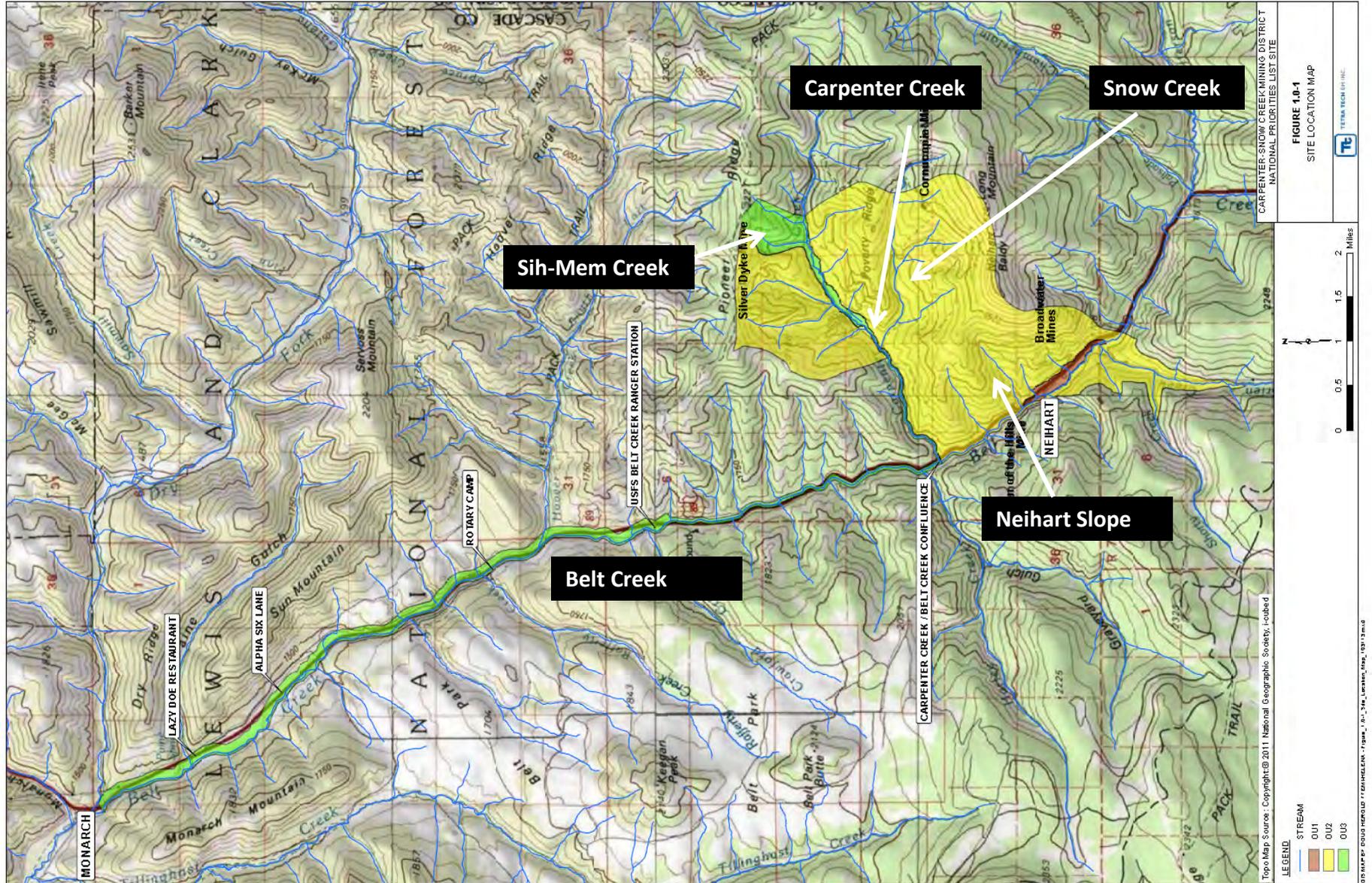
Major Reports

- Draft and Final Remedial Investigation Report(s)
 - Available late 2014/early 2015
 - Looks at nature and extent of contamination
 - Includes Human Health and Ecological Risk Assessments
 - Sitewide report evaluates data collected through 2012
- Site Broken into Two Management Units (OUs)
 - Galena Creek watershed & Dry Fork Belt Creek floodplain
- Draft Feasibility Study
 - Evaluate options for cleanup of mine waste, water and streamside tailings in Galena Creek
 - Designated as Operable Unit 1
- Record of Decision Anticipated in 2016

Questions or Comments



Draft Carpenter Snow Creek Boundaries



Key Activities Through 2013

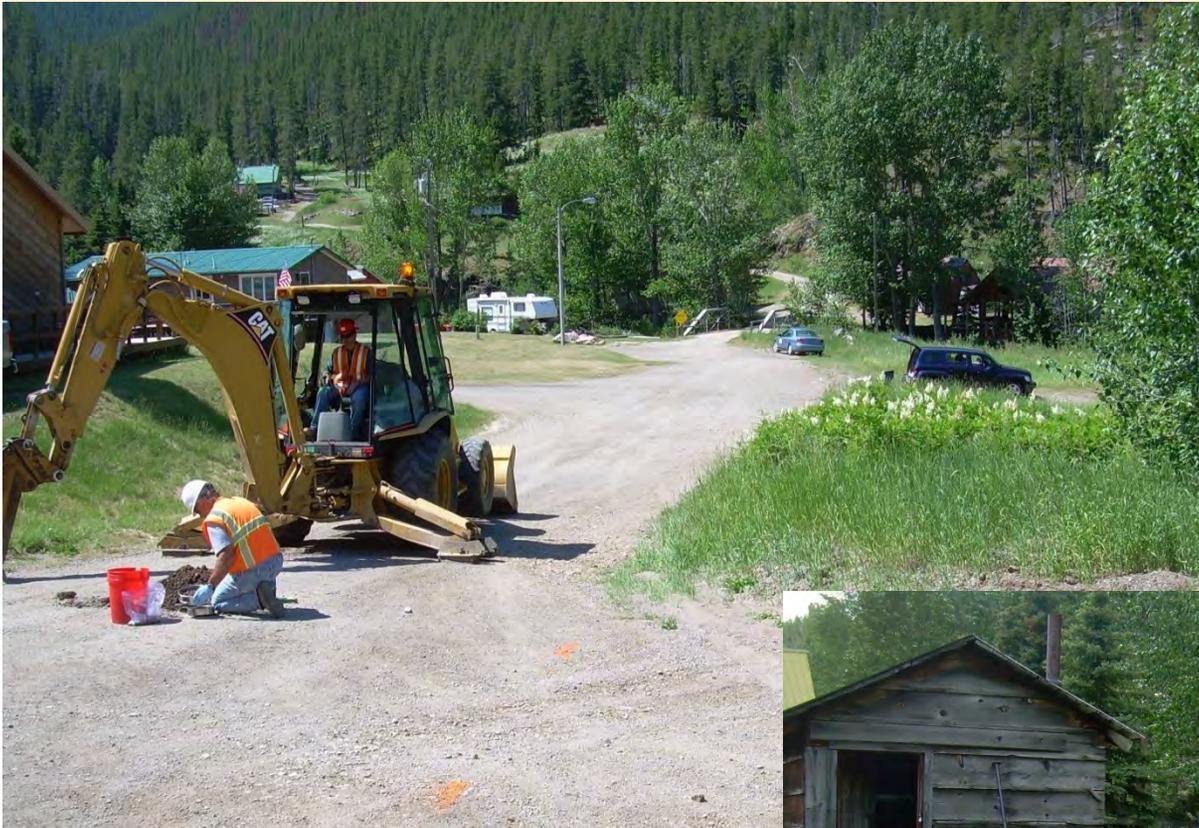
- Forest Service conducted investigation of Upper Carpenter Creek Tailings impoundment 2002 - 2005
- Investigation of nature and extent of contamination in Neihart began in 2004
 - EPA completes action of Neihart Tailings – 2004
- EPA issues Town of Neihart Record of Decision in 2009
 - Remedial Design ongoing
- Watershed sampling of surface water, groundwater, sediment and mine waste ongoing since 2009
 - EPA provided funding to state to hire Tetra Tech in 2011

Neihart Removal Action in 2004



35,000 cubic yards placed in a temporary repository along Belt Creek

Design Level Data Collection in Neihart OU1



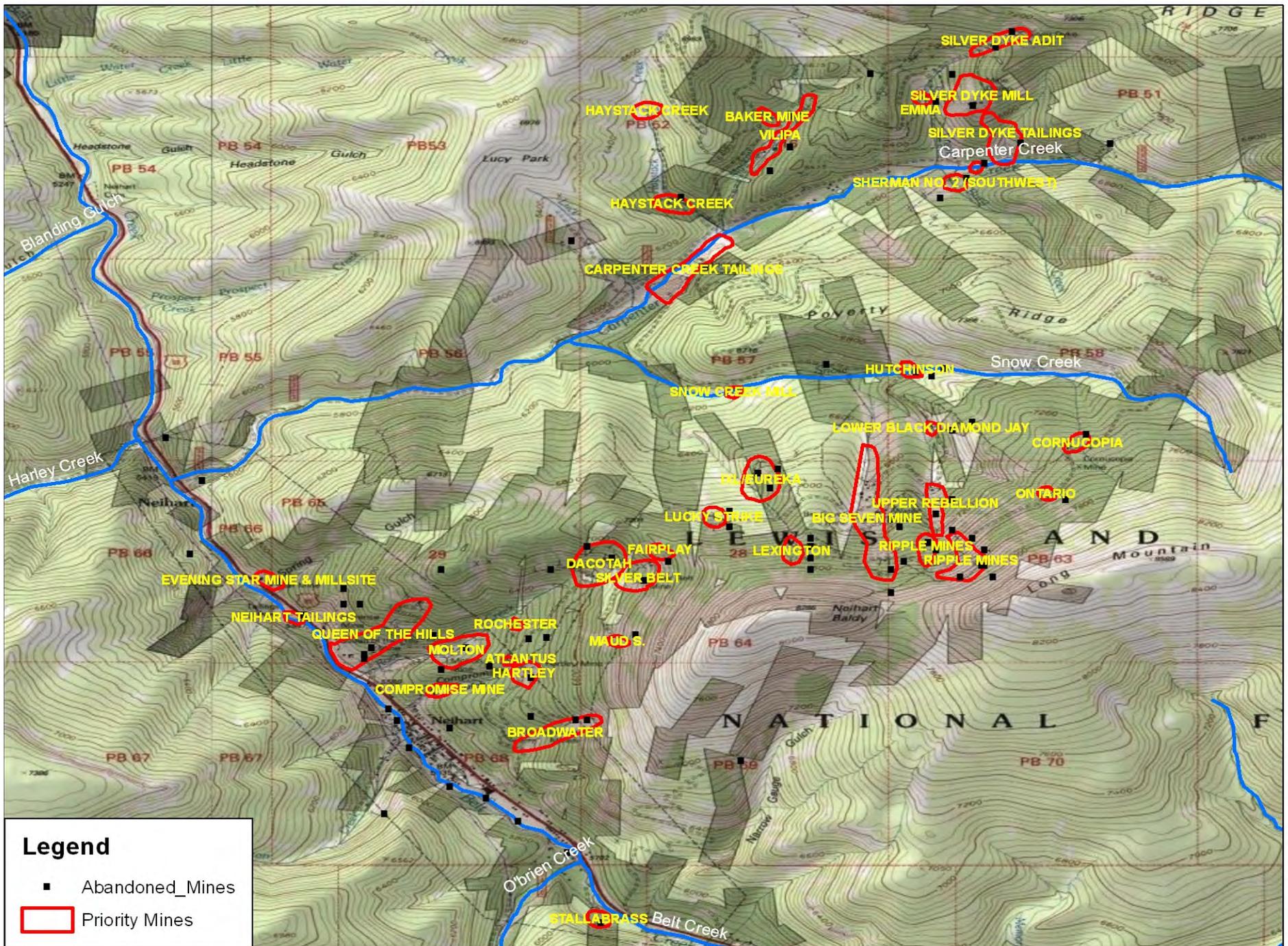
Approx 96 PROPERTIES

Approx 45 ROAD SEGMENTS

**Approximately 120,000
cubic yards**

***Cleanup start contingent on
selecting a repository***



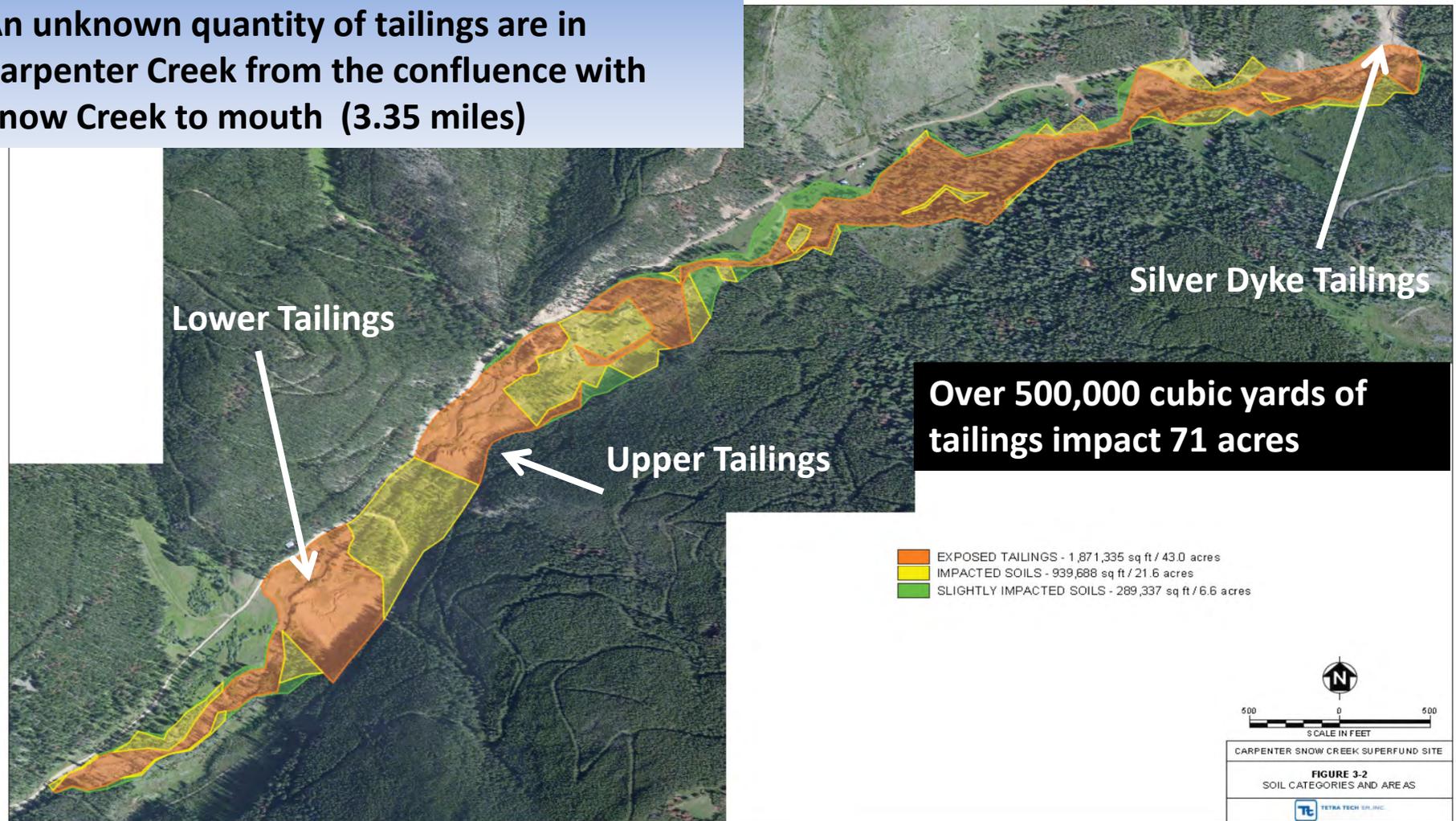


Legend

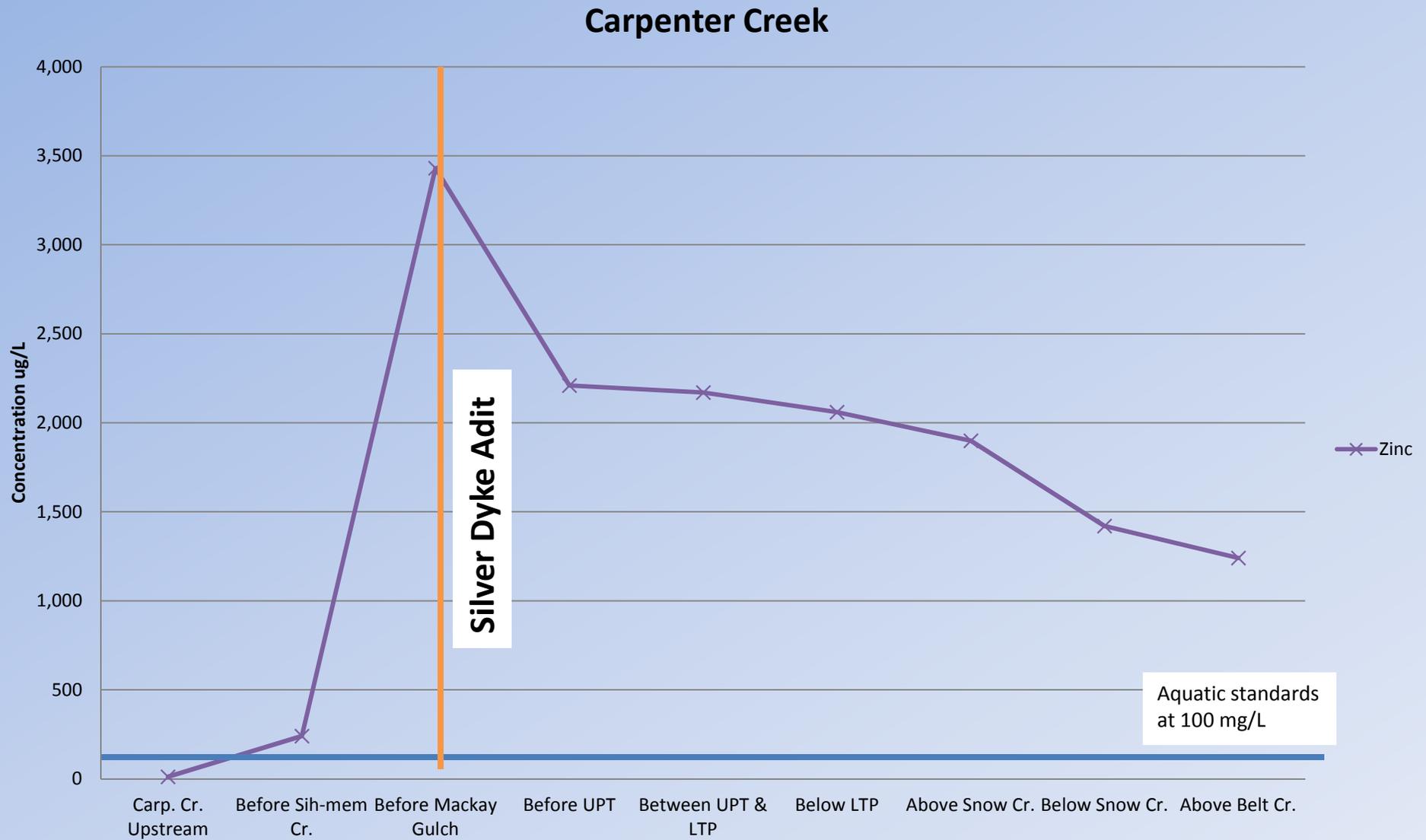
- Abandoned_Mines
- Priority Mines

Carpenter Creek Floodplain Investigation

An unknown quantity of tailings are in Carpenter Creek from the confluence with Snow Creek to mouth (3.35 miles)



Dissolved Zinc Concentrations in Carpenter Creek (Sept 2013)



Carpenter Creek Tailings Stabilization

USFS initiated an interim action in 2013 to prevent storm flows and snow melt from eroding tailings



Installed clean water diversions, erosion check dams and berms

Also installed fencing around tailings to prevent ATV use

Testing of Mine Influenced Waters



Carpenter Snow Creek 2014 Field Activities

- Complete Neihart Remedial Design
- Monitoring of Mine Influenced Waters
 - Water balance study of the Silver Dyke Mine
 - Tracer dye studies at Silver Dyke Glory Hole
 - Continuous monitoring at several adits
 - Surface water and groundwater sampling
- Ongoing Treatability Studies
 - Soil amendment and revegetation plots
 - Slope stabilization studies
 - Passive treatment options for the Silver Dyke Adit

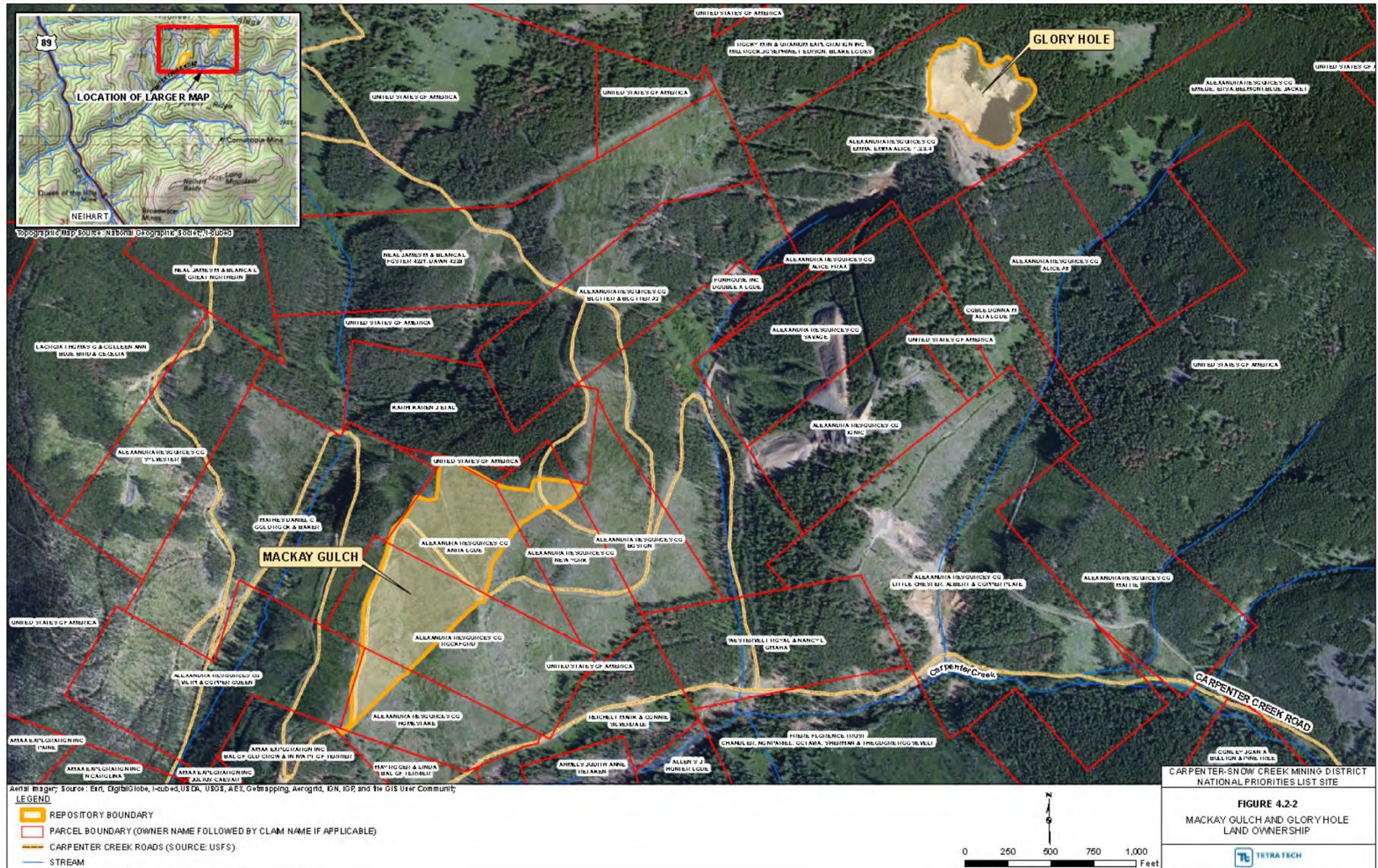
Major Reports

- **Draft and Final Remedial Investigation Report(s)**
 - Available late 2014/early 2015
 - Looks at nature and extent of contamination
 - Includes Human Health and Ecological Risk Assessments
 - Sitewide report evaluates data collected through 2012
- **Draft Feasibility Study**
 - Evaluate options for cleanup of mine waste, mine influenced water and tailings associated with the Silver Dyke Mine and Carpenter Creek Tailings
 - Volume estimated at approximately 700,000 cubic yards
 - Silver Dyke Adit contributes 30,000 lbs/year of zinc to Carpenter Creek
- **Record of Decision anticipated in 2016**
 - Designated as Operable Unit 3

Select Repository Location in 2014

- A Record of Decision is required to select a repository location before waste can be placed there
 - 2009 Town of Neihart ROD deferred selection of the repository to Remedial Design
 - A Draft Remedial Investigation/Feasibility Study Report is currently being reviewed by the Agencies.
 - Repository investigations have already been documented in previous reports and the RI/FS summarizes these documents
- 2 locations in Carpenter Creek Drainage look promising
- Proposed plan anticipated in summer 2014 followed by a Record of Decision

Carpenter Creek Repository Locations

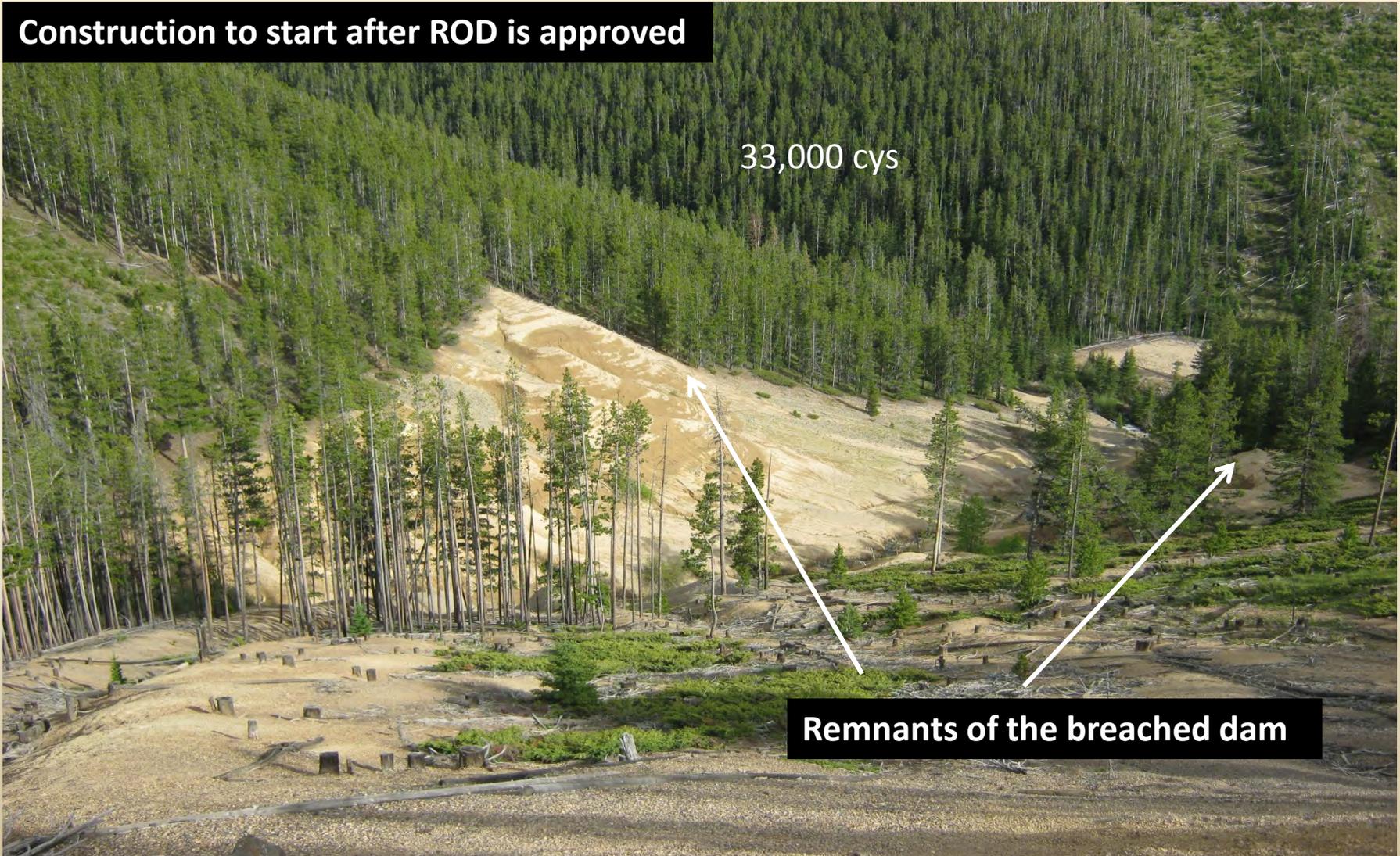


Silver Dyke Tailings Removal Action

Construction to start after ROD is approved

33,000 cys

Remnants of the breached dam



Questions or Comments



Silver Dyke Mill