

# SVNRT Repository Remediation and Expansion

## Executive Summary

### Introduction

This Preliminary (30%) Remedial Design (RD) report has been prepared to address the metals-loading problems associated with the Silver Valley Natural Resources Trustees (SVNRT) Repository and for development of the site for additional waste repository capacity within the Canyon Creek watershed. This reclamation and development of additional repository capacity is referred to as the Lower Burke Canyon Repository (LBCR) Annex in the preliminary (30%) design.

The SVNRT Repository site encompasses approximately 8 acres and is composed of two sections, the main repository (southern section/large mound), and the annex (northern section/flat area). The SVNRT Repository is located near Woodland Park, Idaho, in Shoshone County; in the Canyon Creek Basin within the Upper Basin of the Coeur d'Alene River in northern Idaho (Upper Basin) (see Figure ES-1). The SVNRT Repository is bounded by Highway 4 (a.k.a., Burke Road) to the west, Lower Burke Canyon Repository (LBCR) and Gray's Bridge Road to the north, and Canyon Creek to the west and south. Canyon Creek is a tributary to the South Fork of the Coeur d'Alene River (SFCDR), which it intersects approximately 1.5 miles downstream from the repository site near Wallace, Idaho.

The SVNRT Repository was developed in 1995 as a repository to manage approximately 610,000 loose cubic yards (lcy) of tailings and mine wastes removed from the Canyon Creek floodplain. The SVNRT Repository has been identified as a significant source of long-term metals loading source to Canyon Creek. Shortly after construction of the repository, visible red staining from metals laden groundwater seeping through the repository were seen at the toe, which indicates unsuccessful isolation of mine waste from groundwater.

The selected alternative to address the metals-loading issues associated with the SVNRT Repository is to develop the LBCR Annex. This will be accomplished by moving SVNRT Repository waste into the newly constructed, adjacent repository. The LBCR Annex is designed to securely contain mine waste generated during remediation activities within the Canyon Creek watershed. Current estimates indicate that approximately 1.8 million (M) bank cubic yards (bcy) of waste materials exist in the Canyon Creek Basin. The proposed LBCR Annex will be developed to contain approximately 1.5 M bcy of waste materials from the Canyon Creek Basin. The LBCR Annex will also be utilized to consolidate waste from several other programs including the Basin Property Remediation Program (BPRP), the Institutional Controls Program (ICP), the paved road program, and the remedy protection program, if needed.

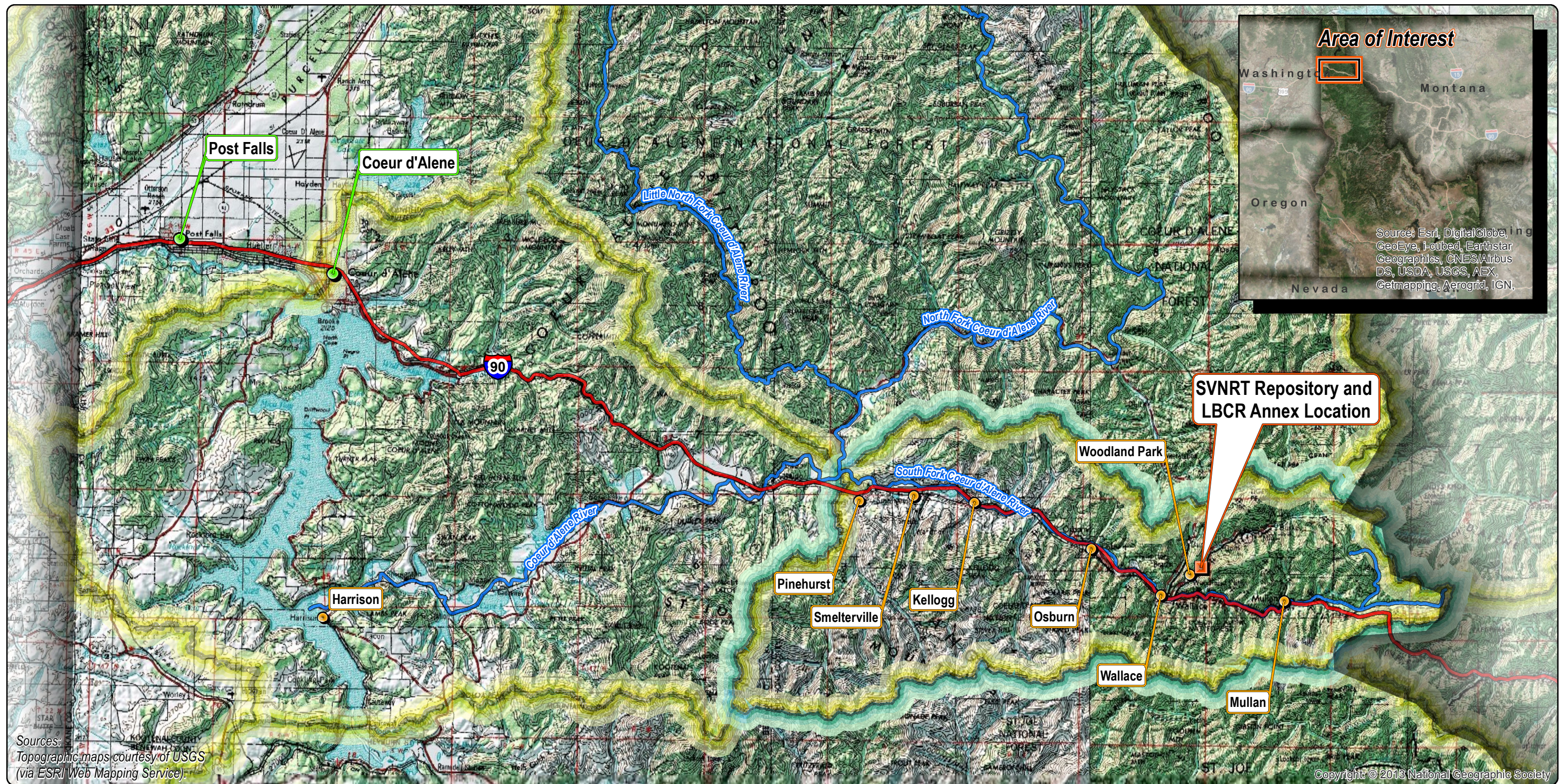
### Repository Siting and Property Ownership

The Idaho Department of Environmental Quality (IDEQ)-led repository siting process has been ongoing since 2007. The Citizens Criteria Repository Site Ranking Summary (CH2M Hill 2010) identified eight (8) sites as meeting the initial siting criteria of not being actively used by its

owners and having a capacity of at least 500,000 bcy. Additional criteria were developed through a public input process, as documented in the Site Ranking Summary. The United States Environmental Protection Agency (EPA) considered these criteria in addition to previous site screening work performed in 2002 when considering the SVNRT Repository location. During 2002, the site was given an overall score of average, and received a poor rating for the proximity to local residences. The poor rating was based on the distance to the single residence at the end of Gray's Bridge Road. The EPA and the Successor Coeur d'Alene Custodial and Work Trust (Coeur d'Alene Trust) are working closely with the nearby residents to address this concern and will include design features that mitigate potential impacts from the repository site, which may include purchasing the closest resident's property.






The Coeur d'Alene Trust is evaluating purchases of the several properties in the nearby vicinity to support remediation of the SVNRT Repository and development of the LBCR Annex. Currently, Granada Silver owns two parcels and one parcel is owned by Hinsz. The Coeur d'Alene Trust is working closely with the Granada Silver and Hinsz owners to transfer ownership of the parcels to the Coeur d'Alene Trust. The finalized property boundary will be determined after the option for remediation of the SVNRT Repository is selected (as discussed in the next section under "Full-Scale Development").






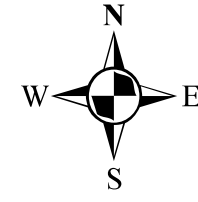
**Figure ES-1**  
**Site Location**

**SVNRT Repository and LBCR Annex**  
**Shoshone County, Idaho**

	SVNRT Repository and LBCR Annex Site Location		Site Watershed
	City		Watershed Boundary
	Town		River
	Interstate		



Miles





## Phased Consolidation and Development Approach

The annual anticipated waste volumes and lifespan of the LBCR Annex are uncertain at this time. The Coeur d'Alene Trust and the EPA are currently developing a plan for the timing of the remedial action (RA) in the Canyon Creek Basin. More specific annual waste consolidation plans will be developed as the RA schedule is determined.

**Initial Development:** Preliminary estimates indicate the area would be capable of producing 44,000 bcy of borrow material while providing the needed 527,400 bcy (based on further evaluation of data from the 2015 site investigation) of capacity for the consolidation of the SVNRT Repository waste. The following conceptual development sequence was considered:

- **Access Improvements 2018:** Develop access improvements to the SVNRT Repository area. Access improvements would include the installation of a stream crossing across Canyon Creek. This access road location could minimize hauling impacts to the Woodland Park community from mine sites located upstream of the area.
- **Contaminated Materials associated with Historic Flume Excavation and Hauling 2018:** Excavate the approximate 24,000 bcy of contaminated waste associated with the historical flume to the east (upgradient) of the SVNRT Repository and haul the material to the LBCR.
- **Borrow Area Development and Stockpile 2020:** Develop the area to the north of the existing SVNRT Repository as a borrow area and screen the materials for use as repository soil cover material. Excavation of the borrow area (approximately 30 to 35 feet below existing grade) would remain above the bedrock layer in preparation to install drainage system features. The approximate 44,000 bcy of borrow soil will be stockpiled at the LBCR in an area separate from active LBCR waste operations.
- **Initial Base Drainage System Installation 2020:** Prepare an initial footprint within the borrow area to the north of the current SVNRT Repository. Install hydraulic isolation features (i.e., base drainage system and seep collection system) and stormwater controls.
- **SVNRT Repository Waste Removal and Placement 2020 - 2021:** Excavate and haul the approximate 527,400 bcy of SVNRT Repository waste into the prepared footprint of the LBCR Annex. Hydraulic isolation features for the LBCR Annex footprint (i.e., base drainage system and seep collection system) and stormwater controls will be constructed in phases prior to placement of removed SVNRT to provide hydraulic isolation of the waste.
- **Install Temporary Soil Cover and Stormwater Controls 2021:** Utilize approximately 15,000 bcy of soils borrowed from the initial excavation and install a temporary soil cover over the waste. Alternatively, the temporary cover may not be installed if remedial actions at source sites in Canyon Creek are underway. Install the stormwater control channels on and around the LBCR Annex.

**Full-Scale Development:** Two options are provided in this report for the full-scale development configuration of the LBCR Annex. The two plans will allow for the placement of approximately 1.5 million bcy of waste materials in addition to the 527,400 bcy of SVNRT Repository waste for a



total of capacity of approximately 2 M bcy of waste. Option 1 provides a majority of its capacity by expanding the site to the west (uphill) of the current footprint of the SVNRT Repository, while Option 2 provides its capacity by expanding the site to the north of the existing SVNRT repository. Figures ES-2 and ES-3 show the full-scale development footprints for Option 1 and Option 2. Details of the two options are listed below.

#### **Option 1 – Develop Repository to the East**

- Capacity of up to 1.5M bcy additional capacity
- Developed upslope of the current repository
- 24-acre footprint (estimated)
- Will require placing waste over known groundwater spring locations
- Developing and maintaining public access during repository development will be difficult
- Single lane, two-way traffic required for haul trucks between repository and Gray’s Bridge Road
- Access to LBCR decontamination facilities via new access road in southeast corner of LBCR (across from existing stormwater pond)
- Multiple powerlines / power pole relocations to be coordinated with Avista

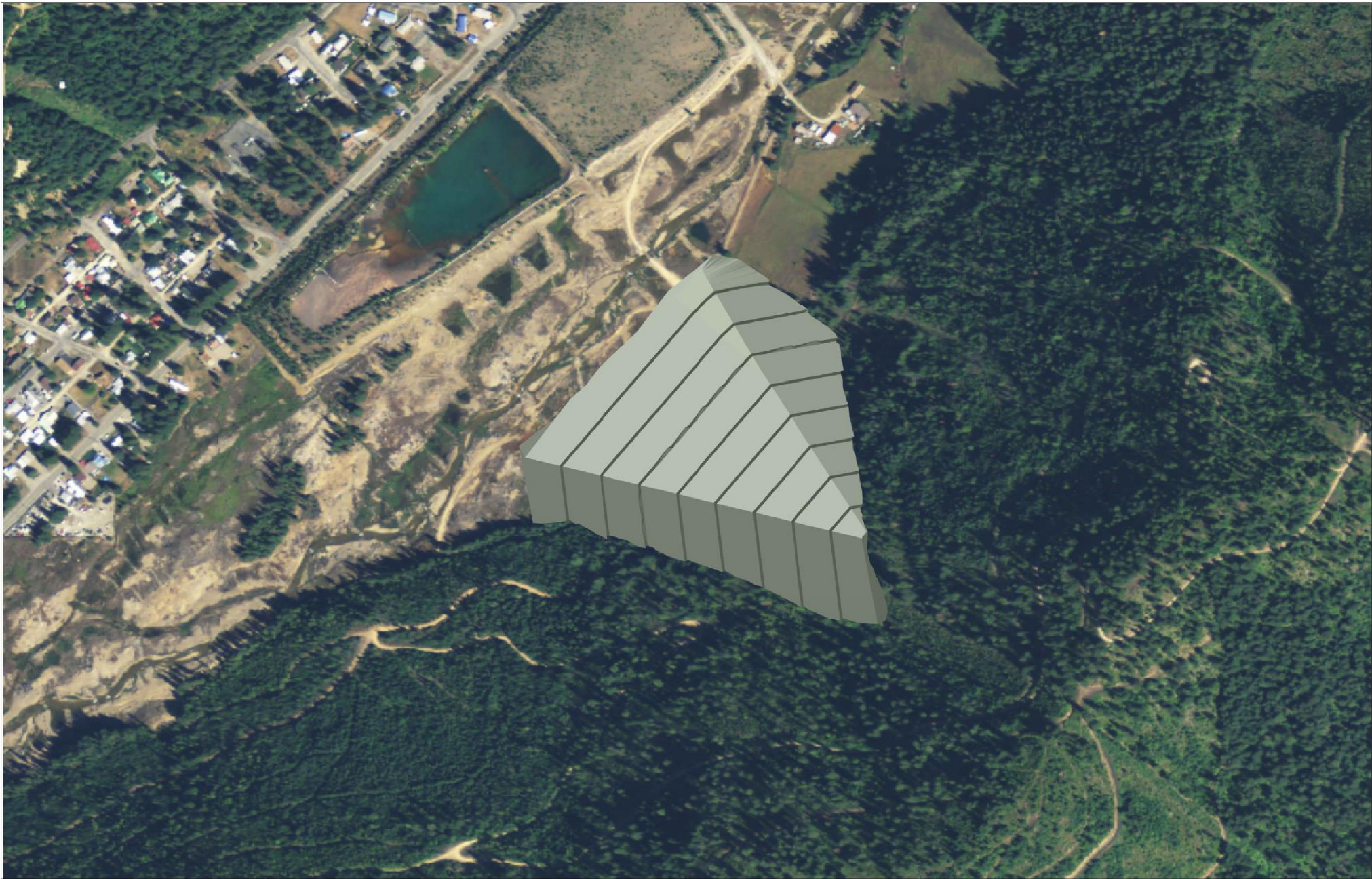
#### **Option 2 – Develop Repository to the North**

- Capacity of 1.5M bcy additional capacity, and potentially expandable beyond 1.5M
- Developed to the North and slightly upslope of the current repository
- 32-acre footprint (estimated)
- Will not require placing waste over the known groundwater spring locations
- Public access road coordination would be easier; likely able to provide a public access road installed during initial development that can stay in place throughout life of repository
- Two lane, two-way traffic would be used for haul trucks between the repository and the STI 4 entrance
- Access to LBCR decontamination facilities via new access road either in the southeast corner of LBCR or along Canyon Creek side of LBCR; access would be easier and more cost effective
- Single powerline / power pole relocation and coordination with Avista
- Extra ‘borrow material’ (clean soil for capping repositories and remediation sites) readily available and easily accessible
- Easily accessible/developable salvaged soil stockpile location

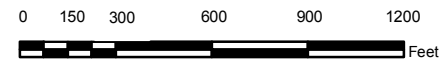


The timeline for Canyon Creek RA execution is subject to change based on funding, work execution progress, and adaptive management implementation. In addition, either option would require the purchase of additional adjacent property by the Coeur d'Alene Trust as discussed previously.

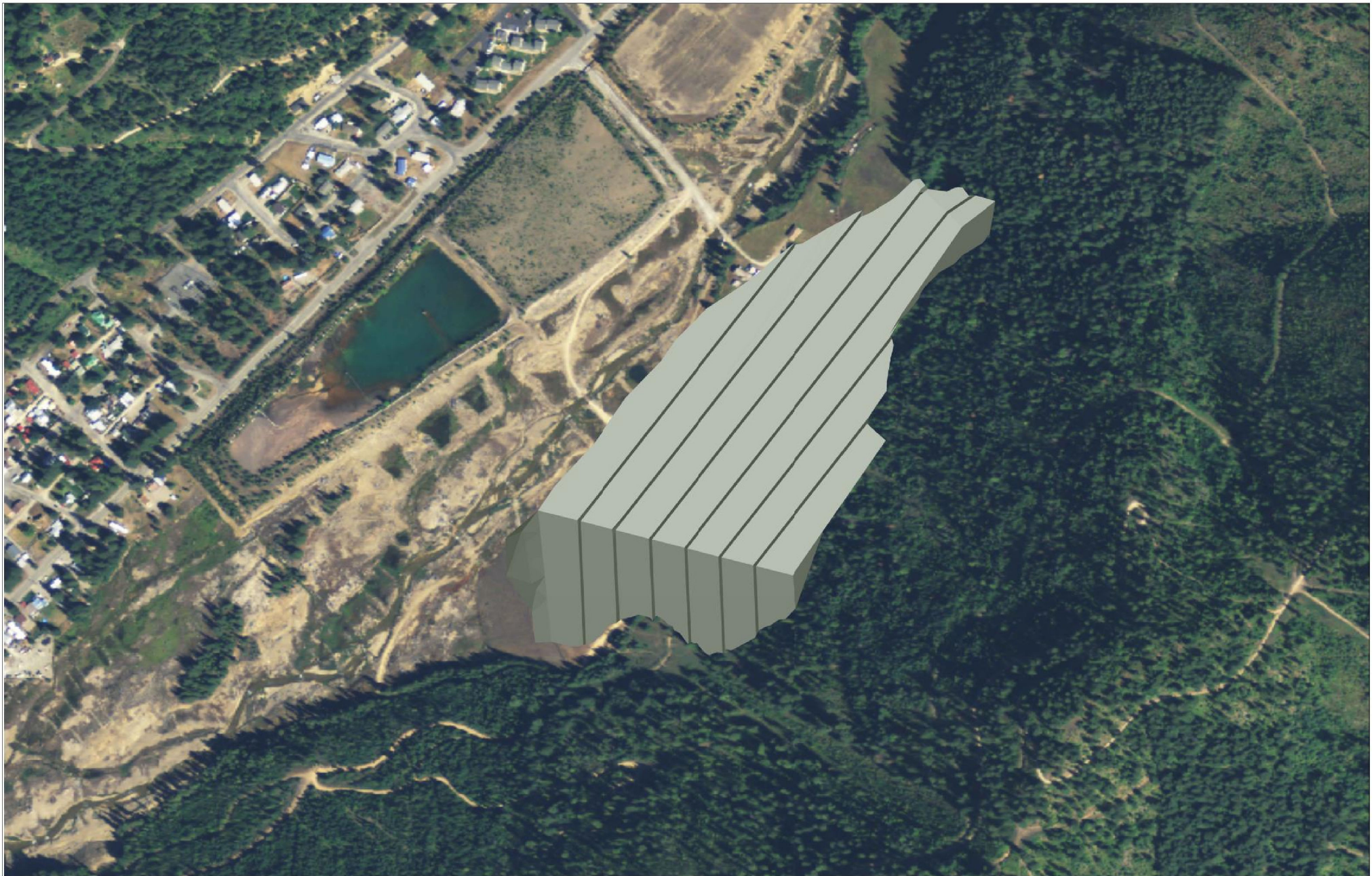




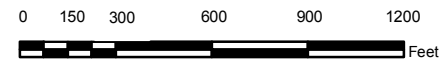
**Figure ES-2**  
**Full-Scale Repository Option 1**  
**SVNRT Repository and LBCR Annex**  
**Shoshone County, Idaho**







**Figure ES-3**  
**Full-Scale Repository Option 2**  
**SVNRT Repository and LBCR Annex**  
**Shoshone County, Idaho**





## Design Approach

The 2002 ROD and the 2012 Interim ROD Amendment have identified the requirements and criteria for designing repositories such as the LBCR Annex. The requirements include remedial action objectives (RAOs), such as protection of human health and the environment, cleanup levels, and other requirements including applicable or relevant and appropriate requirements (ARARs). The design approach addressing the SVNRT Repository was developed to achieve the RAOs, as no site-specific RAOs have been established by the EPA for either the SVNRT Repository or the LBCR Annex. At this time, the objectives that the Coeur d'Alene Trust have for this design are: mitigating SVNRT Repository source loading through waste removal and hydraulic isolation, expanding waste capacity, and providing clean cover soils for the LBCR and the LBCR Annex. The following components of the SVNRT Repository remediation and LBCR Annex expansion are taken into consideration during the design process, and will be further developed in later design stages:

- Groundwater and Surface Water Protection
- Air Quality Protection
- Historical, Archeological, and Cultural Resource Protection
- Wetlands Protection
- Threatened and Endangered Species Protection
- Migratory Birds
- Protection of Flood Plains

The LBCR Annex design also incorporates requirements provided in the Implementation Framework and Statement of Work for Remedial Design, Remedial Action, and Long-Term Operation, Maintenance, and Monitoring (Statement of Work) between the EPA and the Coeur d'Alene Trust. The Interim ROD Amendment specifies that contaminated soil and sediment will be removed from residential and select non-residential areas to protect Silver Valley residents from exposure to metals. The contaminated soils will be placed in secure repositories designed, operated, and maintained for that purpose.

The LBCR Annex is designed to accept waste materials generated from cleanup of Canyon Creek mine sites and other programs identified in the introduction (i.e., BPRP, ICP, Paved Roads). The approximate LBCR Annex waste capacity of 2M bcy is greater than the 500,000 bcy as required in the IDEQ-led repository siting criteria. Phased construction and operation of the LBCR Annex will provide flexibility to accommodate changes in cleanup schedules and the waste consolidation approach as it continues to be developed by the EPA.



## Design Components

The full development of LBCR Annex will not be entirely sited within the Coeur d'Alene Trust currently owned property, as stated previously. The two options for full development presented in this 30% design require property acquisition to move forward. Prior to the intermediate design phase, one of the two full development options will be selected to move forward through the design.

Preliminary LBCR Annex capacity estimates based on the 30% drawings indicate a final development waste disposal capacity of approximately 2 M bcy. The repository configuration shown in the preliminary design is intended to maximize waste disposal capacity while achieving the design criteria described above. The LBCR Annex is under design because the projected waste volumes generated from remedial activities at Canyon Creek source sites will likely be greater than the estimated disposal capacity of the LBCR, creating the need for another repository with additional capacity. In addition, utilizing the LBCR Annex for Canyon Creek wastes will allow for long-term use of the LBCR for ICP wastes.

**Geotechnical Design:** To achieve general slope stability of the LBCR Annex, the consolidated mine waste and cover grading plans were developed using a maximum slope of 3 feet horizontal to 1 foot vertical (3H:1V). Given the maximum slope angles used in the design, it is anticipated that the repository design will meet or exceed the target Factors of Safety (FS). A slope stability analysis will be conducted as part of the intermediate design to verify that the repository design meets the minimum FS. In general, waste materials will be placed in lifts (no thicker than two times the largest diameter rock) and be machine compacted (i.e., padded drum roller) to improve the stability of the facility.

**Drainage Control:** Temporary stormwater drainage and erosion controls will be designed to convey and retain the peak discharge from a 25-year, 24-hour storm event and the 100-year snowmelt event (rain-on-snow condition) during operation of the LBCR Annex. After the LBCR Annex is filled and closed, drainage controls will be designed for peak discharges from the 100-year storm event and the 100-year snowmelt event (100-year rain-on-snow condition). During the operational phase of the LBCR Annex, temporary stormwater control channels, and possibly a stormwater control pond, will be constructed to capture and retain runoff onsite. Upon installation of the of the final cover over the LBCR Annex, the temporary channels and stormwater control ponds will be reclaimed and reconfigured to their permanent configurations and lined with clean gravels or riprap.

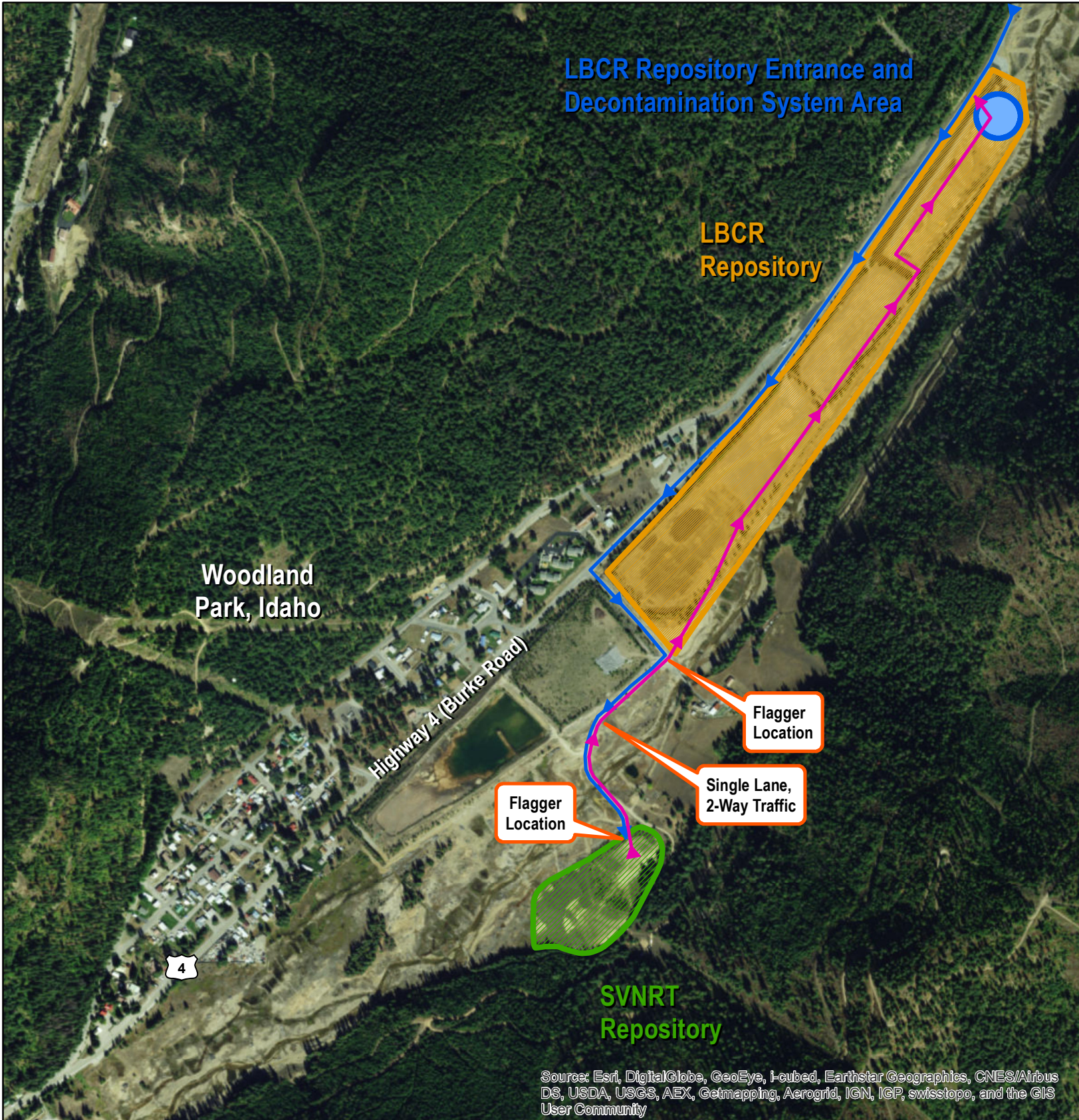
**Erosion and Dust Control:** Silt fences or similar Best Management Practices (BMPs) will be constructed around the perimeter of the LBCR Annex to provide initial, temporary erosion control. Additional erosion control measures such as perimeter diversion dikes, hydroseeding or spray-on type soil stabilizers, and covering with polyethylene sheeting may also be used during the operational lifecycle of the LBCR Annex as necessary.

The repository contractor will visually monitor for dust generated by vehicles onsite. To maintain compliance with state air quality regulations and prevent fugitive dust, water trucks will be onsite during the operational season. If dust is observed, the contractor will take immediate steps to control it. Water trucks will make multiple passes during the day to keep driving surfaces

wetted. In the event of excessive dust conditions, hauling and placement operations will be suspended.

**LBCR Annex Facilities:** The LBCR Annex will utilize the existing facilities located at the LBCR to support LBCR Annex operations. Access gates and perimeter fencing will be installed around the LBCR Annex to prevent inadvertent entry into the repository and reduce recreation or other casual traffic through the area. To minimize impacts to the community of Woodland Park and the surrounding area, two potential haul route options have been developed. Figures ES-4 and ES-5 show the haul routes being considered for each full-scale design option. Trucks will be decontaminated at the LBCR decontamination facilities before returning to public roads, and truck drivers will adhere to appropriate safety procedures outlined by the Coeur d'Alene Trust and the EPA.





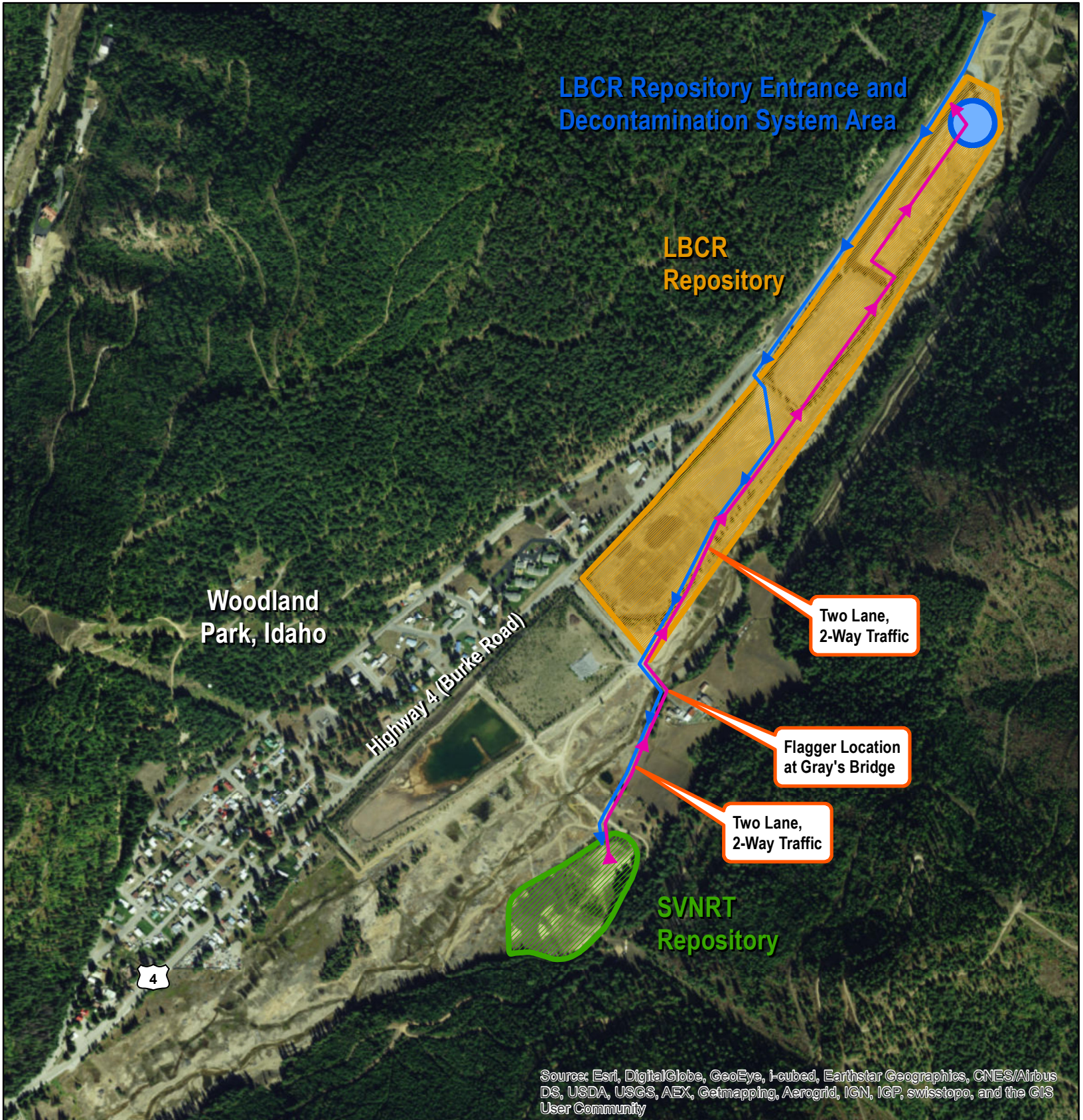
**Figure ES-4**  
**Repository Access Haul Route**  
**Option 1**



**SVNRT Repository and LBCR Annex**  
**Shoshone County, Idaho**







**Figure ES-5**  
**Repository Access Haul Route**  
**Option 2**

**SVNRT Repository and LBCR Annex**  
**Shoshone County, Idaho**



**Base Drainage Layer Design:** The LBCR Annex will incorporate a minimum of 2-foot thick drainage rock layer along with seep collection systems to separate the consolidated mine waste at least 5 feet from the groundwater surface underlying the repository. The base drainage layer will be constructed with drain rock, a material likely to be screened to a 1 – 6-inch rock with less than 5 percent fines by weight, and include a 16 ounce per square yard non-woven geotextile fabric separation/filtration layer placed between the drain rock and underlying native soil. The geotextile layer will also be placed between the drain rock and the overlying waste. The drainage layer design also utilizes secondary drainage pipe trenches and piping within the LBCR Annex footprint. Drainage pipes will outlet into the LBCR Annex perimeter run-on/runoff control swales.

**Cover Design:** The proposed LBCR Annex cover system consists of 3 feet of cover soil (2 feet of 3-inch minus growth media on top of 12 inches of 1-inch minus cushion material), underlain by a geocomposite drainage layer, and lastly a cushion layer. Infiltrating surface water will be drained from the cover system by a geocomposite drainage layer placed on the surface of a geomembrane liner. The geomembrane will be placed on a non-woven geotextile underlain by roller-compacted material with a maximum particle size of 1 inch. As much cover soil as practicable will be salvaged on-site and generated during initial development activities.

## Preliminary Schedule

The Coeur d’Alene Trust has developed a preliminary project schedule for the SVNRT Repository Remediation and LBCR Annex Expansion design, which includes the following general milestones for the project:

- February 2017: Submit the preliminary (30%) design to the EPA
- April 5, 2017: Public Meeting
- September 2017: Submit the intermediate (60%) design to the EPA
- October 2017: Initiate pre-final (90%) design activities
- January 2018: Submit the pre-final (90%) design to the EPA
- Spring 2018: Initiate final (100%) design activities

Although this preliminary design provides information on the long-term LBCR Annex design, such as the LBCR Annex configuration to manage long-term waste capacity and borrow material requirements, the long-term sequencing, development and use of LBCR Annex is currently under development by the Coeur d’Alene Trust and EPA.