FORT KNOX MINE

RECLAMATION
AND CLOSURE PLAN

Prepared By:

Fairbanks Gold Mining, Inc.
(a subsidiary of Kinross Gold U.S.A. Inc.)
PO Box 73726
Fairbanks, Alaska 99707-3726

January 2020

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Submitted to:

Alaska Department of Natural Resources
Division of Mining, Land and Water
3700 Airport Way
Fairbanks, Alaska 99709

Alaska Department of Environmental Conservation
Division of Water
610 University Avenue
Fairbanks, Alaska 99709-3643

Department of the Army
U.S. Army Corps of Engineers, Alaska District Regulatory Division
2175 University Avenue, Suite #201E
Fairbanks, Alaska 99709

Submitted by:

Fairbanks Gold Mining, Inc.
A Subsidiary of Kinross Gold U.S.A. Inc.
PO Box 73726
Fairbanks, Alaska 99707-3726

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List of ACRONYMS

AAC	Alaska Administrative Code
ACOE	Army Corps of Engineers
ac-ft	acre-feet
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Division of Fish and Game
ADNR	Alaska Department of Natural Resources
ARD	acid rock drainage
ALPM	Assembly Line Preventive Maintenance
AS	Alaska Statute
BCHL	Barnes Creek Heap Leach Pad
BCWRD	Barnes Creek Waste Rock Dump
BMP	Best Management Practice
CAT	Caterpillar (equipment)
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIC	Carbon in Column
CIP	Carbon in Pulp
COO	Chief Operating Officer
cm/sec	centimeters per second
HLP	Heap Leach Pad
FA	Financial Assurance
FCWRD	Fish Creek Waste Rock Dump
FGMI	Fairbanks Gold Mining, Inc.
ft	feet
fmsl	feet above mean sea level
GM	Growth Media
GVEA	Golden Valley Electric Association
HDD	Horizontal Directional Drill
HDPE	high density polyethylene
INCO	Company name-patented cyanide destruction process
KGC	Kinross Gold Corporation
LCRS	Leachate Collection and Recovery System
LLDPE	Linear Low-Density Polyethylene
LOM	Life of Mine

MEM	Mobile Equipment Maintenance
MHTLO	Mental Health Trust Land Office
mg/L	milligrams per liter
MSHA	Mining Safety & Health Administration
MWS	Maximum Water Surface
NA	Not-applicable
NOAA	National Oceanic and Atmospheric Administration
NS	Not Sampled
PCMS	Process Component Monitoring System
PMP	Probable Maximum Precipitation
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RO	Reverse Osmosis
RVP	Regional Vice President
SAG	Semi-autogenous Grinding
SRCE	Standardized Reclamation and Closure Estimator
TDS	total dissolved solids
TSF	Tailings Storage Facility
WAD CN	weak acid dissociable cyanide
WCHL	Walter Creek Heap Leach Pad
WRD	Waste Rock Dump
WSR	Water Supply Reservoir
WQS	Water Quality Standards

1 INTRODUCTION

1.1 Purpose

Fairbanks Gold Mining Inc. (FGMI), a wholly owned subsidiary of Kinross Gold U.S.A. Inc (KGC), has prepared this Reclamation and Closure Plan (Plan) in accordance with State and Federal regulations. This Plan has been updated from previous versions to address changes to the mine plan and proposed closure strategies since the previous Plan submittal. FGMI has updated and revised the plan to address reclamation, monitoring, and post-mining land use for the Fort Knox Mine. This plan is submitted to:

- Alaska Department of Natural Resources, Division of Mining (ADNR) in accordance with AS 27.19.010 et. seq. and 11 AAC 97.100 et. seq.
- Alaska Department of Environmental Conservation (ADEC), Division of Water, as required by Waste Management Permit 2014-DB0002, Modification #2
- U.S. Army Corps of Engineers (ACOE) as required by the Clean Water Act Section 404 Permit No. N-920574, Fish Creek.

The Plan describes the procedures and processes that will be used to return land disturbed by mining operations to a stabilized condition which provides for long-term protection of land and water resources. The Plan describes the schedule for reclamation activities, general reclamation procedures, and the methods for achieving the final closure requirements and objectives. In addition, the Plan serves as a basis for calculating reclamation costs and the amount of the financial assurance.

Reclamation will include permanent stabilization of the following major facilities: Barnes Creek Waste Rock Dump and Heap Leach Pad, Fish Creek Waste Rock Dump, Walter Creek Heap Leach, Yellow Pup Waste Rock Dump, the Tailings Storage Facility (TSF), site facilities/buildings, and other disturbances within the Millsite Lease boundary. Reclamation will begin upon cessation of mining and milling operations. Final reclamation will be completed as expeditiously as feasible. Notification, in writing, of final closure will be provided to the ADNR, ADEC, and ACOE within 90 days after cessation of mining in 2030 (Millsite Permit ADL 414960 & ADL 414961, Item #15).

Pursuant to 11 AAC 97.330 (b), the Plan may be amended as deemed necessary.

Access requests to the Fort Knox Mine by Federal and State regulatory personnel for routine inspections will be honored by FGMI. All visitors are requested to contact mine security to ensure their safety. Mining is regulated under the Mine Safety and Health Administration (MSHA) and their regulations require minimum training for employees and visitors for Hazard Recognition and Safety. Visitors, as well as employees, must wear safety equipment approved by MSHA. FGMI requests that routine inspections be conducted during weekdays when administration and process managers are available to answer questions and, if necessary, accompany visitors to various process components.

1.2 Applicant Information

Fairbanks Gold Mining, Inc.

A Subsidiary of Kinross Gold USA Inc.

PO Box 73726

Fairbanks, AK 99707-3726

Telephone: (907) 488-4653

Fairbanks Gold Mining, Inc. Officer Completing Application

Name: Jeremy Brans

Title: Vice-President and General Manager

Telephone: (907) 490-2225

Designated Contact Person

Name: Bartly Kleven

Title: Environmental Manager

Telephone: (907) 490-2207

Kinross Gold Corp. Information

Address: 25 York Street (17th Floor)

Toronto, Ontario

Canada, M5J 2V5

(416) 365-5123

President & Chief Executive Officer: J. Paul Rollinson

Executive Vice President, Corporate Development,

External Relations & Chief Legal Officer: Geoffrey Gold

Executive Vice President & Chief Technical Officer: Paul Tomory

Senior Vice President & Chief Financial Officer: Andrea Freeborough

Vice President Safety and Sustainability: Ed Opitz

Alaska Registered Agent

Name: Fairbanks Gold Mining, Inc.

Address: c/o United Agent Group, Inc. (Agent)

310 K ST #200

Anchorage, Alaska 99501

1.3 Location and Land Status

The project site is located approximately 15 air miles northeast of Fairbanks, Alaska in the Fish Creek drainage, as shown on **Figure 1-1**. More specifically, the project area is in portions of Sections 4-5, 7-12, 13--23, and 26-27, T2N, R2E, Fairbanks Meridian; and Sections 7-8 and 17-19, T2N, R3E, Fairbanks Meridian.

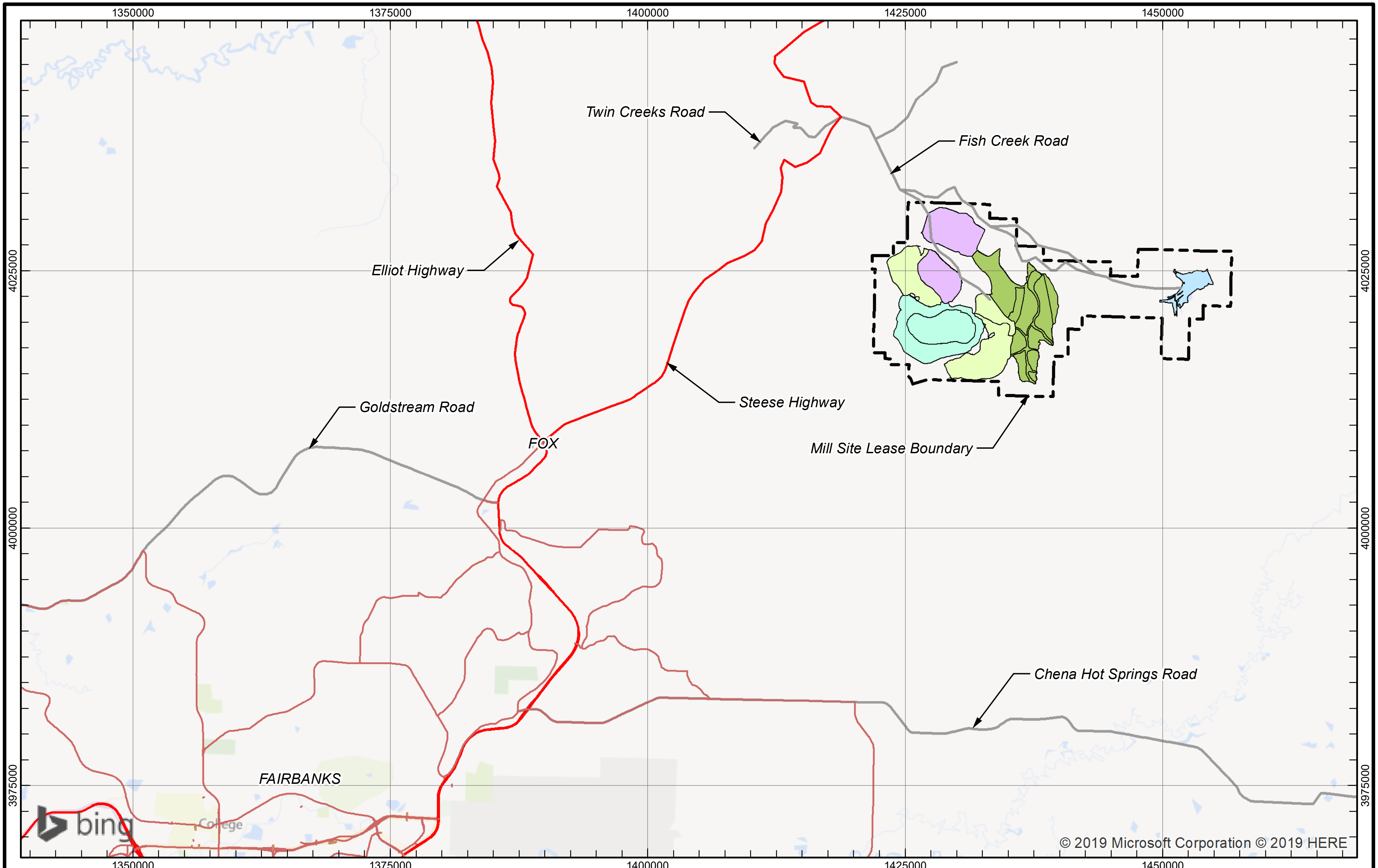
The project area encompasses approximately 8,711 acres. The project area includes the Amended and Restated Millsite Lease, the Upland Mining Lease, and private land. The Amended and Restated Millsite Lease (amending and restating the Millsite Permit effective as of February 15, 1994, ADL # 414960 & 414961) contains approximately 5,828 acres. FGMI holds 121 acres of private land, in addition, FGMI holds the surface rights to approximately 1,833 acres which were purchased from Mental Health Trust Land Office (MHTLO) in 2008. In December of 2011 an application to purchase an additional 280 acres from MHTLO was submitted as a part of Phase 8 and Heap Leach expansion projects, title of the property was conveyed to Fort Knox on December 14, 2012. Upland Mining Lease ADL # 233238 effective January 29, 2019 also known as Parcel G, is located on the western edge of the existing boundary increased the project area by approximately 709 acres.

FGMI submitted an application for an Upland Mining Lease (ADL #535408) covering tentatively approved lands on December 4, 1992. These lands include 48 state mining claims owned by Melba Creek Mining, Inc., an Alaska corporation, and FGMI, a Delaware corporation. FGMI, on December 4, 1992, applied for two surface leases; the Surface Lease A (ADL #414960) and Surface Lease B (ADL #414961) were tentatively approved in the vicinity of the Fort Knox lode gold deposit. ADNR issued a Millsite Permit (ADL Nos. 414960 and 414961) and Upland Mining Lease (ADL 535408) on February 15, 1994.

On July 8, 2002 the Amended and Restated Millsite Lease (amending and restating the Millsite Permit effective as of February 15, 1994, ADL # 414960 & 414961) became effective and authorized gold-bearing ores derived from outside the Millsite Lease area to be processed through the Fort Knox mill and tailings facilities.

Private land included within the Fort Knox project area consists of 121 acres of patented claims purchased by FGMI. The narrow block of patented claims adjacent to, but not included in, the Upland Mining Lease or the Millsite Lease, were conveyed to FGMI and Melba Creek Mining, Inc. via warranty deed in August 1993. The location of the private land is identified in Appendix C.

An agreement was reached with the National Oceanic and Atmospheric Administration (NOAA) and the Bureau of Land Management to release 63 acres from the NOAA withdrawal for expansion of the Fort Knox pit. In 2008 the land was conveyed to the State of Alaska who in turn conveyed it to the Mental Health Trust Land Office (MHTLO). As part of this agreement, a 19-acre easement was established at the ridgeline to prevent any activity that could impact the activities of NOAA. In 2008, FGMI reached an agreement with MHTLO to purchase their surface interest within the Millsite Lease area. The purchase was finalized in May 2008. Appendix C contains the claim descriptions and a detailed claim map. **Figure 1-2** illustrates the surface and private area owned by FGMI.



KINROSS Fort Knox

Project Location

Figure 1-1

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Heap Leach Pad
- Waste Rock Dump
- Reservoir
- Pit
- Tailings

N

0 1 2

1"=2 miles

Miles

NAD 1983 StatePlane Alaska 3 FIPS 5003 Feet

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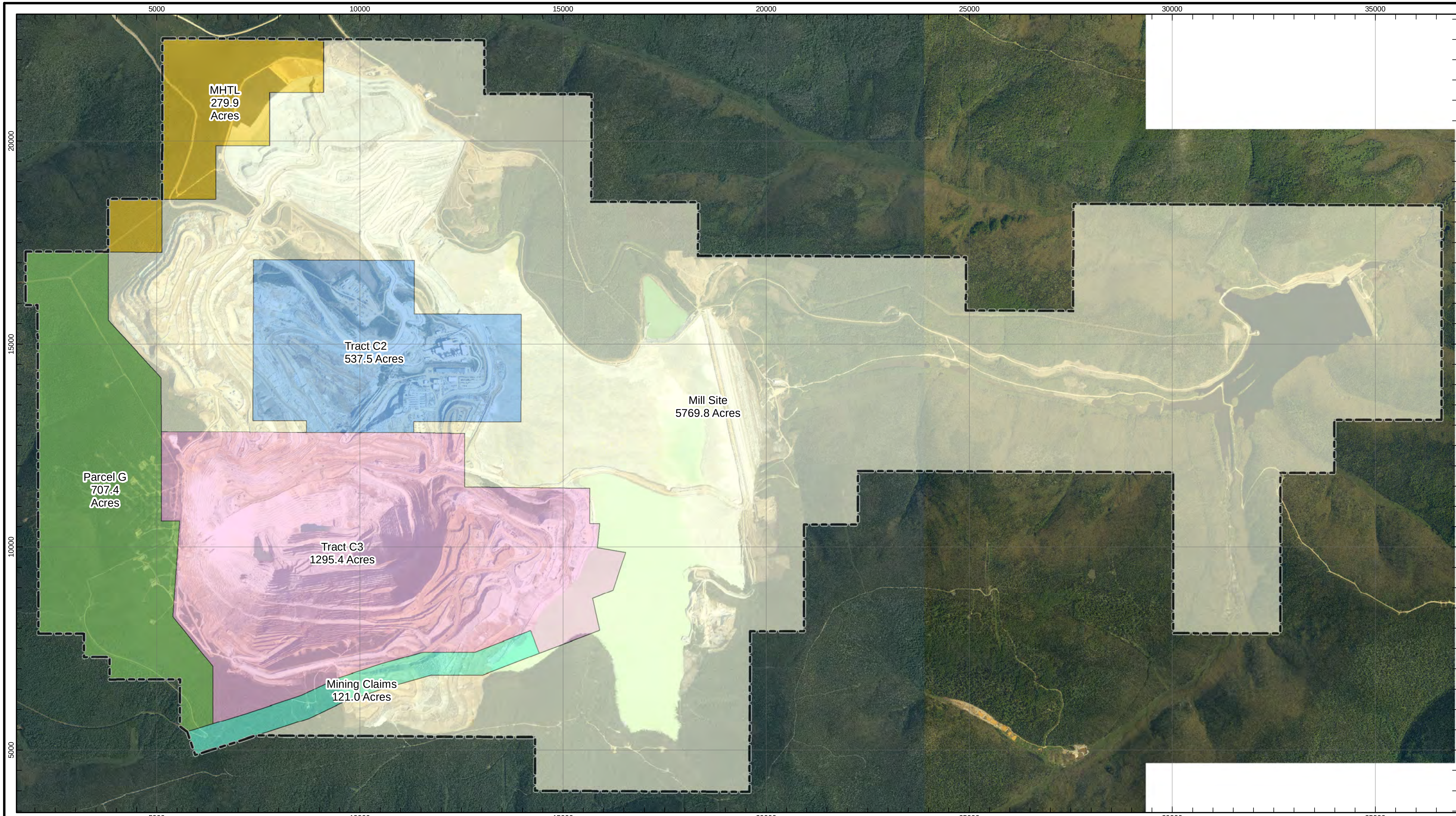


KINROSS Fort Knox

FGMI Surface Ownership

Figure 1-2

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Leased - Mill Site Boundary
- Leased - Parcel G
- FGMI Surface Ownership - Tract C2
- FGMI Surface Ownership - Tract C3
- FGMI Surface Ownership - MHTL
- FGMI Surface and Subsurface Ownership - Mining Claims

Note:
The property information shown on this figure is approximate and is intended to illustrate the location of facilities and property within the mill site permit boundary.

N

0 1100 2200 3300 4400

1"=2,200'

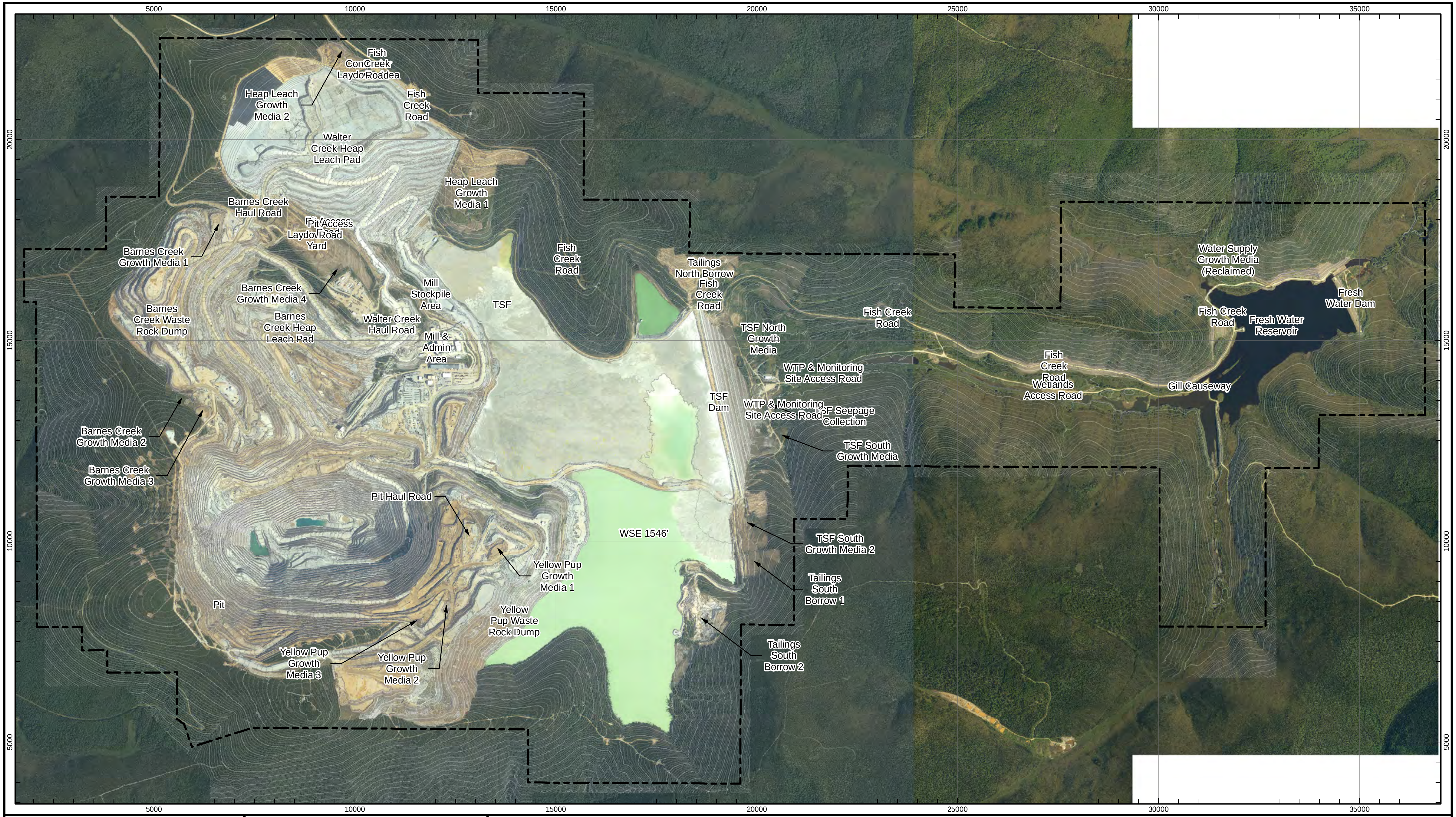
Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_200_Update_Reclamation_and_Closure_Plan\226900.020_FIG_LAND_OWNERSHIP.mxd

Federal land is not present within the project boundaries. The closest residence to the project area is approximately 1.75 miles northwest from the project boundary and is located at Cleary Summit. Surface and mineral land descriptions are provided in Appendix C.

The orebody and the majority of the project area are located on claims belonging to the State of Alaska. Private land and mineral rights in the project area along Fish Creek, which were originally patented to placer miners under the Federal Mining Law of 1872, have been purchased by FGMI. The patented private lands along Fish Creek were conveyed to the State of Alaska, at the time the Millsite Permit was issued.

The center of the ore body is located on the north side of Gilmore Dome on the ridge between Melba and Monte Cristo Creeks. The mineralized zone is elongated east-west extending across both creeks. The project is located entirely within the Fish Creek drainage. In addition to Melba and Monte Cristo Creeks, the named tributaries of Fish Creek in the project area include Barnes Creek, Pearl Creek, Yellow Pup Creek, Walter Creek, Last Chance Creek, and Solo Creek **Figure 1-3**.



KINROSS Fort Knox

Existing Disturbance

Figure 1-3

Date: December 2019

LEGEND:

Millsite Lease Boundary

Existing Topography

Contour 50'

Contour 10'

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_EXISTING_CONDITIONS.mxd

1.4 History of Fort Knox Mine

On July 22, 1902, Italian prospector Felix Pedro discovered gold in the Interior of Alaska. Just 19 days after making this initial discovery, Pedro staked a discovery claim on Fish Creek downstream from what is now known as the Fort Knox ore body. Intermittent drift mining occurred throughout Fish Creek valley prior to 1917 when a dredge was erected by the Tanana Valley Mining Co. (Shannon and Wilson 1985). In the 1930s, the upper reaches of Pearl Creek and Yellow Pup Creek were mined by slackline scraper and dragline. In 1963 hydraulic stripping and bulldozer-dragline mining took place along Fish Creek, Barnes Creek and Pearl Creek (CH2M Hill 1993). The Fairbanks Mining District has produced, from 1880 through 2004, an estimated 11,506,646 ounces of gold. Placer deposits account for 8,188,517 ounces and lode deposits for 3,318,129 ounces (Szumigala & Hughes 2004). For a more complete discussion of the placer mining history of the Fort Knox area, see History of Mining on Upper Fish Creek, Fairbanks, Alaska (Higgs and Sattler 1994).

In 1984, geologists discovered visible gold in the granite and noted the potential importance of the Fort Knox deposit. Between 1987 and 1990, Monte Cristo Mining, Inc.; the Fort Knox Limited Partnership; Gilmore Mining, Inc; Fairbanks Gold, Ltd.; Fairbanks Gold, Inc.; and Gilmore, Inc. were involved for varying lengths of time in the exploration and pre-development program. In January 1992, Amax Gold Inc. acquired ownership of the Fort Knox project, and FGMI, an Amax Gold Inc. subsidiary, was established as the project operator.

In 1994, the environmental review (CH2M Hill 1993) for Fort Knox was completed and in accordance with National Environmental Protection Act an Environmental Assessment was finalized. The required permits were issued in 1994, and the next year construction began. The first gold pour occurred in December of 1996. Kinross Gold Corp. and Amax Gold Inc. merged in 1998 and Fairbanks Gold Mining, Inc. became a wholly owned subsidiary of Kinross Gold Corporation, a Toronto based corporation. In 1999, the first million ounces of gold were produced at Fort Knox, and in 2002, the second million ounces were produced. In 2011 Fort Knox poured its 5 millionth-ounce of gold and poured its 7 millionth-ounce in 2016.

2 PROJECT DESCRIPTION

FGMI operates the Fort Knox Mine located northeast of Fairbanks, Alaska. The mine site is located in the upper headwaters of Fish Creek Valley, approximately four miles southeast of Cleary Summit. The project site is accessible by the Twin Creeks road. The Fort Knox Mine operations include an open-pit mine, heap leach facilities and related milling facilities to recover gold.

Operational designs, from 2019 and forward are based on a remaining deposit of 295 Mtons of ore. Mining production averages 179,000 tons per day (including ore and waste rock) over the life of the mine. Depending on ore-grade the mill process ore at a rate between 39,000 and 21,500 tons per day and the heap leaches are loaded at a rate between 72,000 and 77,000 tons per day. Currently milling is projected through 2021 and mining through 2027. Heap leach activities are projected to continue through 2030.

Fort Knox employs roughly 618 employees. The mine operates two shifts, 24 hours per day, 365 days per year. The majority of employees of the mine reside in Fairbanks or nearby towns, no living accommodations are located at the project site. The mine consumes between 32 and 35 Megawatts of power. Golden Valley Electric Association's (GVEA) substation at Gold Hill supplies power to the mine site, approximately 29 miles.

2.1 General Environmental Information

The Fort Knox project area is in the Yukon-Tanana Uplands, characterized by rounded, even topped ridges with gentle slopes. The deposit is located on the north flank of Gilmore Dome at elevations ranging between 1,000 and 2,100 ft.

The Fairbanks mining district is a celebrated placer gold camp. Although a significant mining district in terms of total production, it had only limited lode production until the discovery and development of the Fort Knox deposit in the 1990s. Since the 1930s, extensive placer mining occurred in the project area. Tailings piles, ponds, levees, channels and ditches were constructed along the valley floor, extending from approximately midway up Monte Cristo Creek downstream to the confluence of Solo and Fish Creeks. Monte Cristo, Barnes, Yellow Pup, Pearl, Fish and Last Chance Creeks have been placer mined in the past. As a result of this placer mining, the thick cover of loess and alluvium covering the valley floor has been removed. Solo Creek and a major portion of Upper Barnes Creek have not been impacted by placer mining.

2.1.1 Geology

The Fort Knox mine is located in the Fairbanks Mining District in the northeast part of the Yukon-Tanana Upland. The mining district is divided into four metamorphosed stratigraphic groups; the Chatanika sequence, Fairbanks Schist, Chena River sequence, and Birch Hill sequence.

The area of the mine is underlain by the Fairbanks Schist unit and the Cleary Sequence of the Fairbanks Schist unit. The Fairbanks Schist consists largely of muscovite-quartz schist and micaceous quartzite. The Cleary Sequence consists of calcareous actinolitic greenschist, impure marble, muscovite quartz schist, and potassium feldspar white schist. The schist is host to younger granitic intrusions, such as the one outcropping at the mine site. The Fairbanks Schist and other metamorphic rocks range in age from late Precambrian to lower Paleozoic. The intrusive granodiorites and quartz monzonite are most likely Cretaceous to Tertiary in age (Knight Piésold, 1994).

The Gilmore Dome pluton, which consists of granodiorite and quartz monzonite, is present in the pit area of the mine site. Prior to opening the pit, granodiorite outcropped in the Melba and

Monte Cristo Creeks and is the main host rock for the gold mineralization of the Fort Knox deposit. This pluton has intruded into the Fairbanks Schist, which makes up the upper portion of the pit wall.

Mineralization occurs in quartz and pegmatite veins, stock work zones, and mineralized shear zones. Gold occurs in and along the margins of quartz veins, quartz-filled shears, and sericite altered fractures within the granite. Pre-mineralization fractures resulting from magmatic doming provided conduits for mineralizing fluids. Stockwork veins (randomly oriented) strike west-northwest with variable dips. Shear zones generally strike northwest and dip moderately to the southwest or are northeast striking with dips northwest to southeast.

Gold mineralization in the quartz-filled shears is distributed relatively evenly, and individual gold grains are generally less than 100 microns in size.

The stockwork veins are more erratic in gold particle size and distribution. Both gold mineralized occurrences have markedly low sulfide content.

2.1.2 Climate

The site is located in the interior basin of Alaska, with a continental sub-arctic climate with the warmest summers and the lowest recorded winter temperatures in the state. Annual precipitation ranges from 13 to 22 inches (America North 1992). Historically the wettest months include June to September with August usually being the wettest. The driest months are historically February through April.

2.1.3 Vegetation, Soils and Permafrost

The area is predominantly forested. Well-drained soils of the uplands and alluvial plains are covered mainly with white spruce (*Picea glauca*) and a mixture of broadleaf trees such as paper birch (*Betula paprifera*) and quaking aspen (*Populus tremuloides*). The climax forest on well-drained soils in the area is white spruce.

The moderately well-drained and imperfectly drained soils may support forests similar to those on the well-drained soils, but more commonly black spruce (*Picea mariana*) and willow (*Salix spp.)* are found. Mosses (*Sphagnum spp.*), along with horsetail (*Equisetum spp*.) and grass typically cover the ground.

The poorly drained soils with a shallow permafrost elevation generally support communities of black spruce, willow, and alder (*Alnus spp*.). A thick moss mat, principally Sphagnum spp., covers the ground. Lichens such as *Cladonia spp*. and *Peltigera spp*. are common in the moss mat also. This mat supports a dense cover of shrubs, primarily bog birch (*Betula glandulosa*), spirea (*Spirea beauverdiana*), Labrador tea (*Ledum decumbens*), cranberry (*Vaccinium vitis-idaea*), and blueberry (*Vaccinium uliginosum*). Tussocks of cottongrass (*Eriophorum spp*.) are also common, especially along the toe slopes.

Poorly drained soils with shallow permafrost may be found on the northern exposures of the mountain slopes, especially those areas that are concave or broken. Spindly black spruce and a thick moss mat are typical on these sites. Permafrost is discontinuous throughout the project area and does not exist on some north-facing mountain slopes where it normally would be expected. South-facing slopes receive much more radiation from the sun, and generally support white spruce, paper birch, and quaking aspen (America North 1992).

Data collected from exploration boreholes and thermistors installed in the area of the tailings embankment prior to construction indicate the presence of localized permafrost. Temperature surveys of the monitoring wells indicate that frozen conditions exist mostly on north-facing slopes and in shaded areas on the valley floor. Thermistor readings indicated that temperatures ranged from 1 to 10°C. The majority of soil and rock temperatures in frozen areas ranged from 0 to -1°C indicating warm permafrost. Data collected during drilling suggests that at some locations the bedrock aquifer may be frozen to significant depths (in excess of 100 ft). Frozen bedrock in the embankment area was left in place prior to construction. Areas of warm permafrost likely experienced rapid thaw once seepage from the facility began (Knight Piésold 1994).

There are no known federal or state threatened or endangered plants or wildlife species inhabiting any portion of the Fort Knox site (ENSR Corporation 2006).

2.1.4 Surface Water

The principal surface water features in the mine area include:

- Solo Creek
- Last Chance Creek
- Fish Creek
- Barnes Creek
- Pearl Creek
- Monte Cristo Creek
- Melba Creek
- Walter Creek
- Yellow Pup Creek
- Tom Creek

Fish Creek is the major stream in the area and all the other streams except for Tom Creek are tributary to it. As a result of the extensive historic placer mining, the morphology of the drainage bottoms of several of the creeks have been significantly altered. The upper reaches of Tom Creek drains to Gilmore Creek. Tom Creek will not be disturbed by mining of the Fort Knox open pit.

Mine development to date, places site facilities in the drainages named above. The open pit sits in the historic location of the Melba and Monte Cristo Creek beds. The Barnes Creek and Yellow Pup WRDs and the Walter Creek Heap Leach are named for the creek beds where they are located. The TSF embankment crosses the Fish Creek Drainage with tailings and decant water extending into the Pearl Creek, Yellow Pup Creek, Barnes Creek, and Walter Creek tributaries. Solo Creek and Last Chance Creek enter the Fish Creek Drainage downstream of the TSF, at the location of the Fresh Water Reservoir.

2.1.5 Groundwater

The groundwater conditions across the site have been defined through various investigations prior to and during operations. Preliminary work was completed during pre-feasibility (EBA, 1990) and initial design activities (JCHA, 1992a, 1992b, and 1996). The two principal hydrostratigraphic units in the mine area are the alluvium that underlies stream valleys and the fractured bedrock. The following sections provide a detailed description of each unit.

2.1.6 Alluvium

In its undisturbed state, the alluvium typically consists of a thin layer of organic soils, moss and vegetation, underlain by organic silts with occasional channel deposits of sand and gravel, which is then underlain by a layer of poorly-sorted gravel.

The surficial thin layer of organic soils, moss and vegetation contains the modern-day drainage systems. Underlying the surficial layer is a 25 to 35-ft thick layer of organic silt with occasional channel deposits of sand and gravel. This deposit of organic silt is also restricted to the valley floor and ranges in width from approximately 400 to 1,800-ft and has an estimated maximum thickness of up to 35-ft. Grain sizes in the underlying gravel material range from as large as 1 to 2-ft diameter boulders, to sand and gravel in a matrix of fine silts and clay overlying an erosional, mineralized surface of weathered bedrock. Restricted to the valley floor, this mineralized, gold-bearing gravel deposit varies in width from an estimated 200 ft up to 1,200 ft and has an estimated thickness of up to 25-ft along the valley axis. The basal gravel layer pinches out along the valley edges. It is reported that both the basal gravel and the overlying organic silts had been mostly permanently frozen in their undisturbed state.

As the basal gravel deposits have historically been the primary economic placer gold-bearing deposit in the region, most of the valley fill described above has been modified. Soils and the organic silts have been removed to access the gold-bearing gravels. The gold-bearing gravels in turn were reworked and washed to remove the gold. The tailings produced from this procedure were deposited in the mined-out portions of the valley. In many places these tailings were used to construct settling ponds to settle out silt and clay from placer mining discharge. As a result, much of the modern-day alluvium consists of a heterogeneous mix of poorly sorted material grading from coarse gravel to fine silts and clay often found in a somewhat inverted stratigraphy where the course-grained gravels overlie fine-grained silts and sands. Numerous pockets of predominantly fine-grained materials from the old settling ponds exist throughout the valley. Similarly, local lenses of well-sorted and well-stratified sands and gravel deposited by stream flow are also present. Much of this reworked valley fill may now be thawed and subject only to seasonal frost action (Water Management Consultants 2005).

2.1.7 Bedrock

The underlying bedrock aquifer consists primarily of schist (referred to as the Fairbanks schist). This schist is host to younger granitic intrusions, such as the one outcropping at the Fort Knox mine site.

The upper portion of the bedrock (ranging up to 100 ft in thickness) is highly weathered. The degree of weathering depends on the original lithologic content of the bedrock and exposure. Weathering characteristics consist of intense fracturing, alteration of primary minerals to clays and oxides (such as iron oxide), dislocation from soil creep and the filling of fractures with sand, silt, and clay.

Movement of groundwater in the bedrock aquifer occurs down valley through structural zones that act as conduits. The degree of fracturing observed during the drilling of bedrock monitoring wells was variable, as indicated by the range of hydraulic conductivities calculated from pump test data ranging from 280 to 0.28 ft/day. The greatest fracturing, and hence higher hydraulic conductivities, are found in the valley floor locations. Hydraulic conductivities are observed to be lower in wells completed at the hillside locations. This is related to two factors:

1. The greater degree of fracturing observed in the valley floor is related to the shallow depth to bedrock and more intense weathering.
2. The greater degree of fracturing observed in the valley floor is likely related to shear zones that control the development of local drainages. Based on drilling completed as part of initial site characterization, the estimated depth of effective fracturing below the permafrost in the bedrock is expected to be 300 to 500 ft. Below this depth, fracture frequency and permeability decrease significantly.

Data from pumping tests indicate that the bedrock fracture systems are directly connected with the overlying alluvial aquifer system in most locations. Water level declines observed in alluvial wells completed adjacent to bedrock pumping wells were relatively instantaneous and similar in magnitude, suggesting a strong hydraulic connection between the alluvial system and the underlying fractured bedrock (Water Management Consultants 2005 and 2009).

2.1.8 Background Water Chemistry

Background chemistry for surface water and groundwater reflects the mineralized nature of the rocks within the Fish Creek drainage and the historical placer mining activity that occurred in the area. Pre-mining groundwater within the Fish Creek drainage has circum-neutral pH values and is generally a calcium-bicarbonate compositional type. Values of TDS and alkalinity are low to moderate. Shallow bedrock and alluvial groundwater compositions are generally similar as a result of the hydraulic connection between the two systems. Deep bedrock groundwater tends to be more variable in composition as a result of compartmentalization. Background sampling indicates that metals present in concentrations above the Alaska state water quality standards include arsenic, cadmium, copper, iron, manganese, and zinc. (Water Management Consultants 2005).

2.2 Existing Facilities and Conditions

2.2.1 Mill Facilities

As part of the beneficiation process, the higher-grade gold ore mined from the Fort Knox pit is processed by the mill or stockpiled for future processing. The ore is delivered to a gyratory crusher with a crushing capacity of 72,000 tons per day. The crushed ore is transported by conveyor belt to the coarse ore stockpile, and then conveyed to a SAG (Semi-Autogenous Grinding) mill. The product discharged from the SAG mill reports to a double deck screen deck for reprocessing or rejection. The rejected material is stockpiled for use as over-liner drainage rock on the heap leach pads. The fine material from the SAG screen deck, and discharge from the two ball mills, is pumped into a series of hydrocyclones. The overflow of the cyclones reports to a pre-leach thickener for leaching, and underflow reports to two ball mills for further particle size reduction.

The ore slurry from the pre-leach thickener is sent through a series of seven leach tanks where the gold is extracted with a cyanide solution. The pregnant solution from the leach circuit passes through a series of six Carbon in Pulp (CIP) tanks containing activated carbon, which absorbs the gold. Gold is removed from the carbon through a process of stripping, using an elevated concentration of cyanide, increased temperature, and pressure. The gold is then recovered from solution by electrowinning.

After leaching and gold recovery the remaining slurry goes to a tailings wash thickener where cyanide and heat is recovered and returned to the grinding circuit. The slurry from the underflow of the thickener is diluted with supernatant water from the TSF. The cyanide concentration in tailings material discharged to the TSF complies with requirements of the Waste Management Permit which limits the weak acid dissociable cyanide (WAD CN) concentration to a monthly average of 10 parts per million (ppm) and a maximum of 25 ppm.

The cyanide concentration in the tailings is maintained within permit limits by recovering cyanide solution in the process, diluting with fresh water, or using the INCO process when necessary. The INCO process combines sodium meta-bisulfite and copper sulfate with air, in an agitated tank, to destroy the cyanide. Typically, maintaining the cyanide concentration in discharged tailings material does not require the use of the INCO process, but is controlled by the recovery of cyanide solution and the additional water to the thickened tailings. Tailings are piped to the TSF from the mill and deposited sub-aerially using multiple discharge points.

The condition of the structures associated with the mill facility and solution processing are in sound working order. Most of the structures were a part of the original mill construction with exception to the Carbon in Column 1 and 2 (CIC) and the tailings thickener **Figure 2-1** identifies the major structures which make up the mill complex.

KINROSS Fort Knox

Mill Complex

Figure 2-1

Date: December 2019

N

1"=120'

0 60 120 180 240

Fort Knox Local Grid Final

2.2.2 Tailings Storage Facility

The permitted area of the tailings impoundment encompasses approximately 1,556 acres including areas of tailings material deposition, the tailings embankment, and the interceptor well system below the embankment. The Phase 1 Causeway, the Yellow Pup Waste Rock Dump (WRD) and the Fish Creek Expansion WRD will encroach upon the TSF footprint. The resulting area of the TSF excluding the WRD footprints is approximately 1,019 acres. The final placement of tailings material is projected to cover approximately 903 acres.

The embankment has been raised in stages over the life of the mine, and in 2006, it reached its originally designed final elevation of 1,494 feet above mean sea level (amsl), which included 6 feet of frost protection over a top of seal zone crest elevation of 1,488 fmsl. Until then, the embankment was built following downstream construction methods with additional fill being placed on underlying compacted, engineered fill. Since then, the embankment has been raised 69 feet, using modified centerline construction methods, to a top of seal zone crest elevation of 1,557 fmsl and a top of frost protection elevation of 1,566 fmsl. The final raise to the embankment was completed in the summer of 2017. A 3-foot-high camber was also constructed, thereby bringing the seal zone to crest elevation 1,560 fmsl at the maximum section in the center of the Fish Creek valley. The intent of the camber is to provide accommodation for post-construction settlement and potential earthquake induced deformations. The embankment crest, including the camber, is covered by an additional 6 feet of frost protection. In its 1,559.5 fmsl configuration, the embankment is 386 feet high (excluding camber and frost protection) above a downstream toe elevation of 1,174 fmsl (KP 2018)

A primary purpose of the TSF is to safely store processed tailings. To achieve this objective, FGMI:

1. Elevated the design standard performance from Class II to Class I;
2. Implemented a rigorous quality assurance and quality control (QA/QC) program to ensure adherence of engineering design and specifications during construction;
3. Manages the water quantity in the TSF using a comprehensive water balance model;
4. Maintains an emergency action plan;
5. Performs daily inspections of the dam;
6. Requires the Engineer of Record to review the geotechnical and instrumentation data quarterly;
7. Requires the Engineer of Record to inspect the dam annually;
8. Requires a Periodic Dam Safety Inspection be performed every three years by the Engineer of Record; and
9. Maintains a TSF Operations and Maintenance manual.

During operations, the water in the TSF is used in the mill process and contains higher levels of certain analytes (above Alaska Water Quality Standards), therefore, the tailings impoundment water is not discharged without treatment.

Seepage through the bottom of the tailings impoundment mixes with near surface groundwater and is collected by the underdrain and interceptor wells near the toe of the TSF Dam. In addition, water passing through the rock fill of the TSF dam is collected in the filter zone and transits through the highly fractured bedrock beneath the dam. Both the seepage below the TSF and through the dam are collected by interceptor wells immediately downstream of the dam and pumped back to either the TSF, the mill or a treatment facility. To assist with long-term seepage reduction, a tailings beach has been spigotted off the face of the TSF dam.

Prior to closure of the facility, FGMI will construct a spillway adjacent to the TSF dam. However, this spillway will not be used for water discharge until the tailings facility has been reclaimed and closed. After reclamation is completed, stormwater collected on top of the TSF will be allowed to discharge into Fish Creek. The estimated average annual flow for the basin above the TSF prior to disturbance was estimated to be approximately 8,730 ac-ft (JCHA 1992b).

Phase 1 Causeway

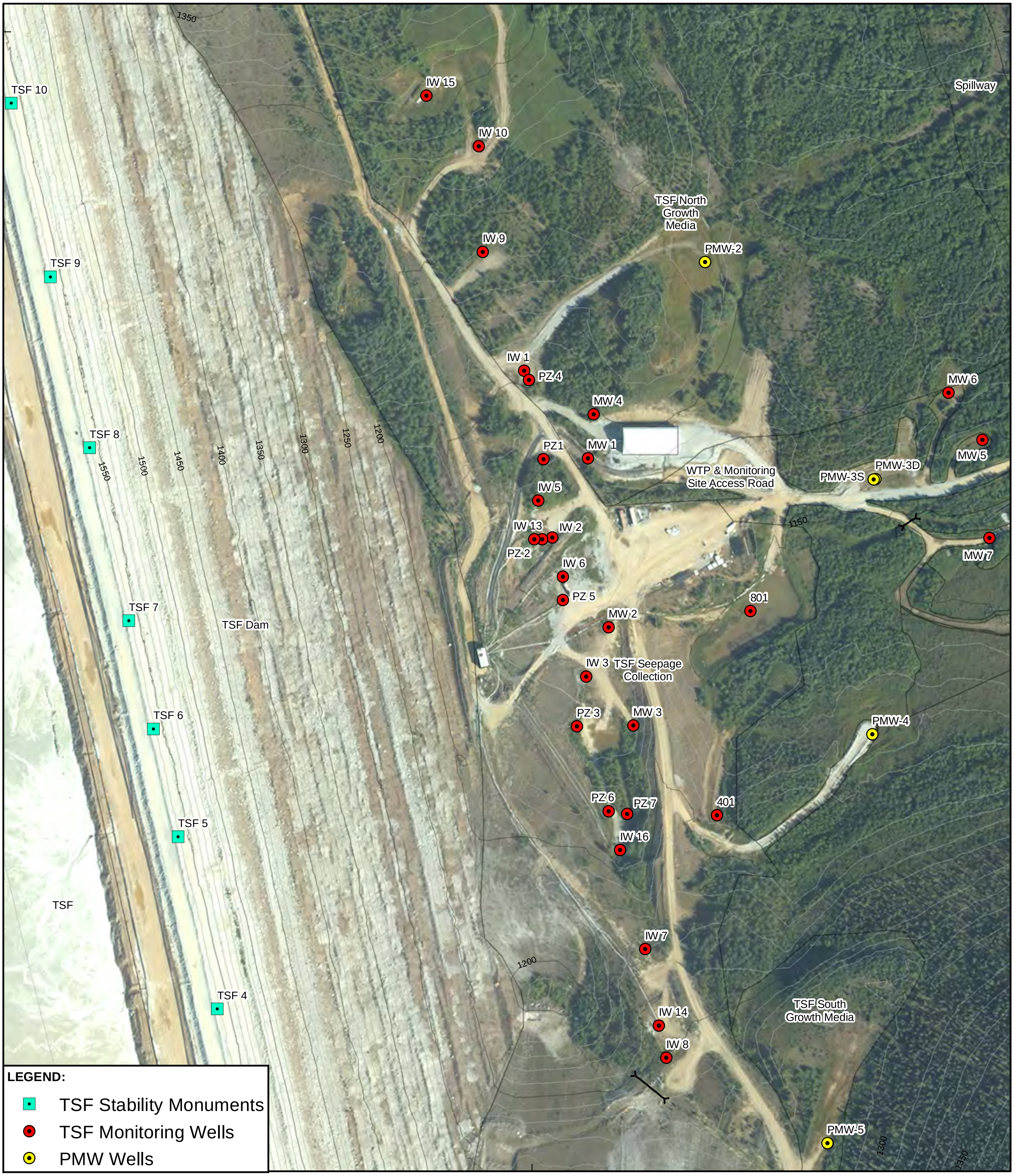
The Phase 1 Causeway tailings deposition will be varied to achieve operational changes and deposition plans for tailings to meet closure obligations for the TSF.

Barge and Pipeline

A floating barge located in the northeast corner of the tailing pond is used to pump water from the barge pond to the mill. The barge is equipped with four, 400 hp pumps pumping at approximately 10,000 gpm. Pumping occurs on an as need basis with the pumping controlled by wireless Ethernet and fiber optic cable from the mill or manually by the Pond Operator. Additionally, the barge is equipped with a flow meter, pressure gauges, a surge anticipator, and a pond deicing system that allows high-pressure water to be released through jets around the barge. The barge is enclosed by a heated building. Reclaim water is pumped to the process water tank at the mill through a 20-inch (O.D.) HDPE pipeline. Automatic and manual drain valves allow the entire reclaim pipe line to be drained during power outages, maintenance, and barge relocations.

Seepage Collection System

The seepage moves through the fractured bedrock and is captured by a large lined sump at the downstream toe of the tailings dam. An interceptor system consisting of a series of drains and wells is designed to capture any seepage that is not collected by the sump. The seepage water from the interceptor system is pumped to the lined sump at the toe of the dam. The interceptor system consists of a series of ten pump-back wells and a dedicated drain immediately down gradient of the tailings dam. Water from the sump is pumped to the seepage treatment plant or back to the tailings impoundment at a rate of approximately 2,040 gpm. **Figure 2-2** presents an overview of the interceptor and monitoring well locations. Immediately downstream from the interceptor system are three monitoring wells that monitor groundwater quality to ensure that no process solution escapes the interceptor system. These wells also serve as regulatory compliance points.



KINROSS Fort Knox

Interceptor and Monitoring Wells

Figure 2-2

Date: December 2019

N

1"=300'

0 150 300 Feet

Fort Knox Local Grid Final

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2.2.3 Decant Water

Water is used to slurry tailings discharged to the tailings impoundment by either gravity flow or pumping. Water accumulates in the North Pond, South Pond, and Barge Pond where it is ultimately pumped back to the mill for reuse in the processing of ore. Water quality in all three of these ponds is controlled by the following factors:

1. chemistry of the mill feed (ore);
2. chemical reagents used to process the ore;
3. effluent treatment processes;
4. dilution by the freshwater reservoir when makeup water is added;
5. up gradient run-on;
6. direct precipitation;
7. geochemical processes; and
8. seasonal effects (ice cover, sublimation and evaporation).

Decant water quality has changed over time due principally to the mill feed. From 1996 until early 2001, the mill feed was exclusively Fort Knox ore. Decant water quality in the tailings impoundment during this period was characterized by an alkaline pH of 8.8, total dissolved solids (TDS) concentration of approximately 800 milligrams per liter (mg/L) and relatively low concentrations of metals.

From early 2001 until January 2005, the mill processed a mixture of ore from the Fort Knox deposit and from the nearby True North deposit. True North tailings contained higher concentrations of antimony, selenium, and arsenic relative to historical levels. The True North ore required additional cyanide to process the ore. To minimize the concentrations of free and WAD CN in the decant water, the INCO cyanide detoxification unit was used more frequently. This process is catalyzed by copper ions, which are added to the detoxification unit as copper sulfate and resulted in increased copper concentrations in the decant water. The INCO treatment for the blended ore also increased the sulfate and nitrate concentrations in the decant water. In 2002, FGMI minimized the use of the detoxification unit and managed cyanide through the use of tailings thickeners and volatilization. This led to a reduction in ammonia concentrations.

From 2006 to present, the decant water quality reflects exclusively Fort Knox ore feed. Concentrations of constituents, including sulfate, nitrate, ammonia, antimony, arsenic, copper, and selenium, have returned to pre-True North levels.

Analytes concentrations of the decant water also change over time as the volume of impounded water changes. During the winter, dilution from surface water run-on and rainfall is at a minimum, which results in increased concentrations of analytes. During the spring breakup, concentrations tend to decrease in response to dilution from surface water run-on. After breakup, concentrations vary with the amount of fresh make-up water added from the freshwater reservoir as make up for the mill (Water Management Consultants 2005).

2.2.4 Seepage Water

The seepage flow regime through the engineered filter zones and along the geosynthetic lined toe drain is collected in a geosynthetic lined sump at the toe of the dam. The seepage that combines with groundwater and migrates around the primary collection zone is captured downgradient by a series of ten interceptor wells and the 501 drain. Surface water is collected in site 801. All seepage captured by the interceptor system is pumped back to the lined seepage collection sump that in turn pumps seepage water back to the Barge Pond or water treatment plant. Groundwater quality samples collected from MW-5, MW-6 and MW-7 confirm that all seepage continues to be captured.

Composite seepage water quality samples for total concentrations have been collected quarterly for the waste management permit since the tailings impoundment went into operation in 1996. Samples for dissolved concentrations were collected from 1996 until August of 2003.

Based on a comparison of the seepage and decant water chemistries, the bulk of the water entering the seepage recovery system originates from the tailings impoundment. A comparison of the current chloride concentrations in the decant and seepage water suggests that groundwater from beneath the tailings impoundment is mixing with the seepage of the decant water. The strong correlation between temporal variations in chloride concentration also indicates a relatively short travel time through the drain system. The short travel time is due to the direct connection of the decant water with the drain system for the tailings dam. The 2018 seepage evaluation for the interim closure configuration. The modeling criteria includes the 130-foot-wide tailing beach between the seepage reduction berm and the embankment. It did not include the TSF closure spillway. The results indicate seepage reporting to the toe drain will decrease up to 30 percent. At this point and the water quality at the toe of the dam will be influenced more heavily by the groundwater water quality.

The seepage has an average pH of approximately 7.2 and an average TDS of 581 mg/L. Seepage water is a calcium/sodium-sulfate type solution. The water quality of the seepage is generally better than the decant water. The difference in concentrations between the decant water and the seepage water for a given constituent vary considerably. Several of the constituents are attenuated through the tailings, including: ammonia, copper, cyanide (total and WAD), iron, and manganese.

Table 2-1 summarizes the differences for selected parameters measured in the decant and seepage water. The information provided in the table is sourced from water quality data collected and managed by FGMI.

Table 2-1: Comparison of Decant Water and Seepage Water

Parameter	Decant Water (mg/L) Average (1996-2019)	Seepage Water (mg/L) Average (1996-2019)
pH (H^+ ion)	7.93	7.06
Chloride	35.89	26.61
Sulfate	246.77	232.06
Ammonia as N	10.1	1.14
WAD Cyanide	0.54	0.03
Total Antimony	0.03	0.03
Total Arsenic	0.15	0.01
Total Cadmium	0.01	0.01
Total Copper	0.33	0.02
Total Iron	0.66	0.24
Total Manganese	0.08	0.41
Total Selenium	0.01	0.01

The manganese concentrations increase between the decant water and seepage water; this is due to elevated background concentrations of manganese in groundwater.

2.2.5 Water Reservoir

The downstream water reservoir including the dam, causeway, and spillway complex, encompasses approximately 173 acres and is located on Fish Creek approximately three miles below the tailings impoundment.

The fresh water reservoir dam is a zoned fill embankment that contains a relatively impervious seal zone constructed of highly weathered schist Sand filter zones are located upstream and downstream of the seal zone followed by upstream and downstream transition zones constructed of weathered schist. Upstream and downstream random rockfill zones complete the embankment cross section. The upstream face has a riprap layer of wave erosion protection. The embankment includes a grout curtain installed in the bedrock below the seal zone cut off trench and a gravel drain incorporated into the downstream toe of the embankment. The toe drain is directed to a sump to collect seepage passing through the embankment for recycling back to the reservoir if required.

There is a concrete open channel spillway with a low flow channel adjacent to the dam. The low flow channel provides protection by reducing the build-up of ice in the spillway chute during winter months.

A low-level outlet system consisting of a primary valve on the upstream end of a 30-inch outlet pipe located in a valve house situated on the dam crest adjacent to the spillway. The valve is manually operated and is provided for drainage of the reservoir for maintenance and repairs and can provide additional drainage in emergency situations.

Solo Creek Causeway is an embankment crossing Solo Creek to accommodate the access road to the dam. A single galvanized corrugated steel pipe was installed to carry flow from Solo Creek to the reservoir.

The Fresh Water Pump House contains the infrastructure that pumps make-up water from the reservoir to the Barge Pond and mill. There are two lines, one for each destination. The make-up water is used for the beneficiation process of the gold ore. The two lines run parallel to the Fish Creek Road on the surface.

2.2.6 Walter Creek Heap Leach Pad

The Walter Creek Heap Leach Pad (WCHL) is located in the upper end of the Walter Creek drainage and is upstream from the tailings impoundment. Excluding the haul road and access roads, the WCHL covers approximately 435 acres and has processing capacity for approximately 307 million tons. Ore placed on the WCHL consists of run-of-mine rock from the Fort Knox Pit and various stockpiles.

Process solution is applied on WCHL using drip emitters. As solution gravity drains through the ore, gold is dissolved into solution. Eventually the solution reaches the in-heap storage reservoir, which has a maximum capacity of 113,800,000 gallons. Solution collected in the in-heap storage reservoir is pumped to the Carbon-In-Columns (CIC) plants for processing. Loaded carbon is processed in the Fort Knox mill facilities.

2.2.7 Barnes Creek Heap Leach Pad

The Barnes Creek Heap Leach Pad (BCHL) is located south of WCHL in the adjacent Barnes Creek drainage. Construction started in 2019 and loading of the pad is scheduled to start in 2020. As WCHL space is exhausted, low-grade ore from the pit will be processed on BCHL.

Approximately 214 million tons of ore will be placed on BCHL and it will cover an approximate area of 297 acres.

Mill reject is primarily used in heap leach construction activities. Currently this material is stockpiled and FGMI anticipates sufficient quantities will be present to complete BCHL construction prior to mill closure.

Similar to WCHL, process solution is applied to the heap leach pad using drip emitters and collected in gravity drains. The in-heap storage reservoir has a maximum capacity of 122,000,000 gallons. Solution is pumped to the CIC plants for processing and gold recovery.

2.2.8 Water and Solution Storage

During operations, the North Pond, South Pond and the Barge Pond will be managed to provide storage for operations and events while maintaining 3 ft of freeboard (Knight Piésold 2018). The volume includes:

- Operations Pond storage volume (14,881 ac-ft)
- The 100-year, 24-hour, rain-on-snow storm event (1,119 ac-ft)
- Walter Creek Heap Leach design release event (331 ac-ft)

The TSF will be operated such that there is always available storage volume for the WCHL design release event, providing for complete storage of solution from the heap leach pad in the TSF (downstream of the heap leach pad) should there be a complete failure of the Walter Creek in-heap storage dam liner system. The design, location, and nature of the heap leach pad material results in negligible risk of a 'landslide' type of wave exceeding the 3-ft freeboard depth.

Based on the BCHL spillway elevation and location the BCHL release volume will report to the pit and does not impact the TSF required storage volume.

2.2.9 Waste Rock Dumps

Waste rock from development of the pit is classified as non-acid generating and is placed in one of the following waste rock dumps (WRD): Yellow Pup, Fish Creek, or Barnes Creek. Construction of all WRDs is similar and generally involves end dumping truck loads in a benched configuration. The benches are developed to allow for regrading at closure and provide a consistently sloped surface from top to bottom of the dump. **Figure 2-3** depicts the final configuration and locations of the WRDs.

Yellow Pup WRD

The Yellow Pup WRD is located between the pit and TSF facility, near the southern boundary of the Mill Lease Site permit boundary. The dump will reach an ultimate elevation of 2,350 fmsl and will have a footprint of approximately 480 acres. A portion of the dump will be placed on deposited tailings along the western boundary of the TSF.

Barnes Creek WRD

The Barnes Creek WRD (BCWRD) is located on the north side of the pit between the western boundary of the Mill Lease Site permit boundary and the BCHL. The dump will reach an ultimate elevation of 2,600 fmsl and will have a footprint of approximately 357 acres.

Fish Creek WRD and Expansion

The Fish Creek WRD (FCWRD) is located Northeast of the pit rim and is partially situated over deposited tailings. The dump will reach an ultimate elevation of approximately 1,700 fmsl and will have a footprint of approximately 150 acres.

In-Pit Waste Rock Dumps

Over the course of mining, approximately 18 million tons of waste rock will be placed within the lower elevations of the eastern pit bottom. The backfill geometry is illustrated in **Figure 2-4**. The crest elevation of the waste rock will be below the final pit lake surface.

2.2.10 Roads

Service roads and major trails are identified in **Figure 2-5**. Due to the changing nature of haul roads, only the permanent roads and major haul roads are included in this figure. FGMI will continue to work with ADNR Easement Section to resolve trail easement issues.

2.2.11 Buildings and Laydown Areas

Administration Area

The administration area depicted in **Figure 2-6** includes the administration offices, warehouse, and mobile equipment maintenance shops. Additionally, several support outbuildings and spaces have been reconfigured as needed to accommodate the operation. The buildings are located on property owned by FGMI and may remain at closure or be decommissioned/salvaged. For the purpose of the FA reclamation estimate, all buildings are assumed to be demolished at closure.

Laydown Yard

The laydown yard located northeast of BCHL (**Figure 2-6**) houses the exploration Core Shed, heap leach operations storage tent, miscellaneous Conex storage, and drill contractor laydown yard. In closure, the Core Shed may remain for future use or be demolished. Temporary tent buildings and Conex units will be relocated, salvaged, or disposed of appropriately. The laydown yard is located on FGMI property.

Leach Pad Structures

Miscellaneous structures are located on the crest of the BCHL and WCHL solution pond embankments. The structures house pumping equipment, enclosures for wellheads and valves, and emergency backup generators. The equipment will be removed at the end of leaching operations and after installation of closure drainage pipes for each location.

2.2.12 Petroleum Aboveground Storage Tanks

There are multiple storage tanks around the facility that store petroleum in strategic locations as noted in **Figure 2-7** and **Figure 2-8**. All fuels, oils, solvents, and other automotive-related chemicals are stored under cover and within a secondary containment system (or stored in a tank with build-in secondary containment) to prevent mixing with storm water.

2.2.13 Miscellaneous Sites

Pipelines

The major pipelines on the site are the dewatering, freshwater, heap leach, decant, and seepage reclaim lines. Depending on operations the pipelines have been reconfigured to serve operational requirements. Internal operations and maintenance programs ensure the integrity of all lines. The lines are located around the perimeter of the TSF.

Explosive Storage

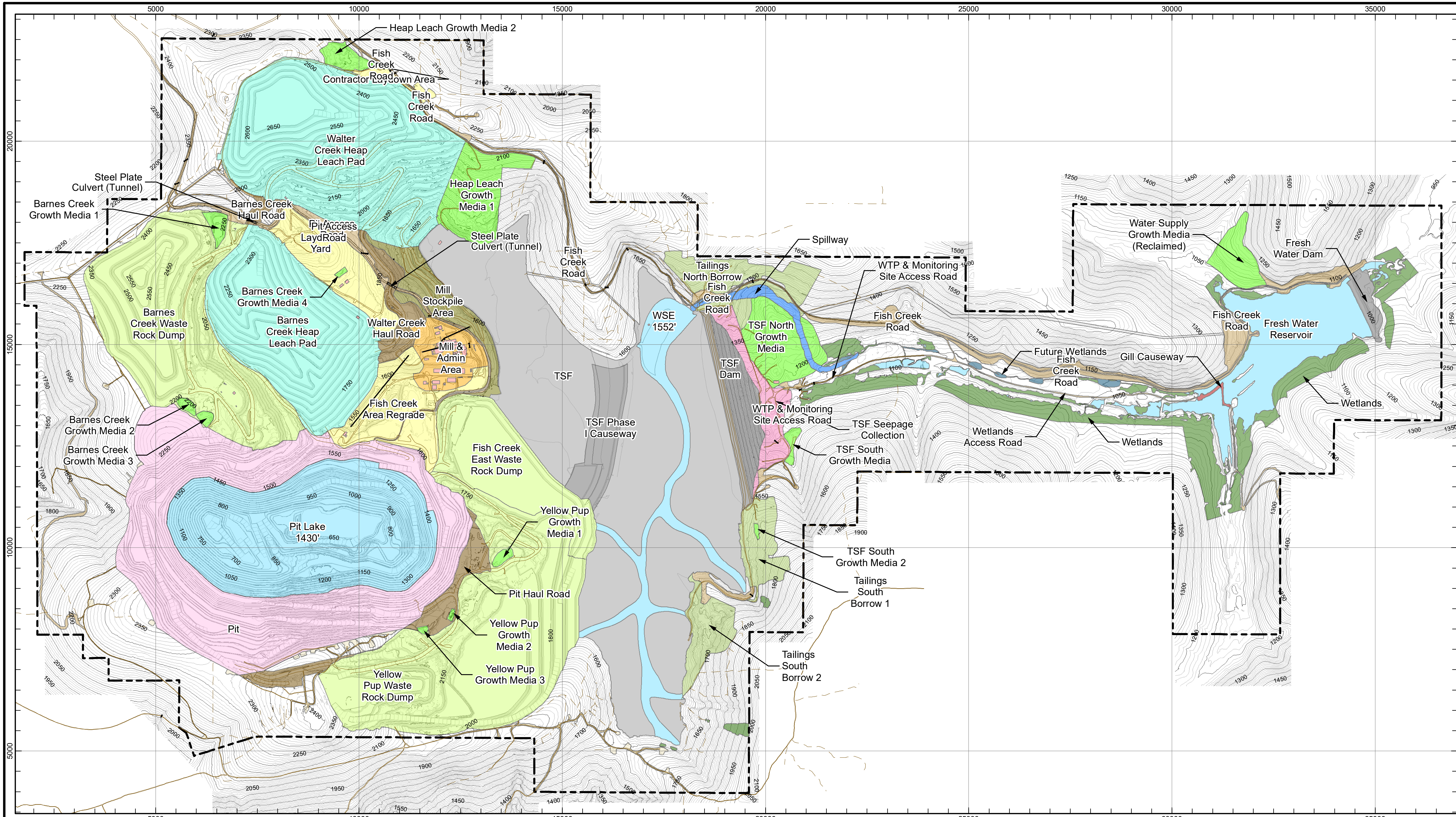
The powder magazine area depicted in **Figure 2-9** is located on the BCWRD near the north pit rim. All explosives are stored within the fenced area and are restricted to authorized personnel. The reclamation of this area is included with the BCWRD. The structures associated with the powder magazine area are either mobile or temporary and will be removed at the end of mining activity or when no longer needed.

Material and Borrow Areas

Material borrow areas were developed for the construction of various facilities. The material borrowed consisted of suitable rock or soils for construction activities. Stockpiles of growth media for reclamation are also located around the site. The sites are depicted in **Figure 2-10**.

Power Distribution

Power is provided to the site by GVEA. A service line is located along the northern boundary of the mine, with feeder lines providing power to transformers located near the Millsite. Power is distributed throughout the mine via overhead and buried lines to service panels or secondary transformers.



LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Waste Rock Dump
- Heap Leach Pad
- Pit
- Dam
- Tailings
- TSF Seepage Collection
- Spillway
- Mill/Admin Area
- Yards
- Buildings
- Stockpile
- Borrow
- Growth Media
- Gill Causeway
- Haul Road
- Access Road
- Exploration Road
- Reservoir
- Powerlines
- Wetlands
- Future Wetlands

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

KINROSS Fort Knox

Post Mining Topography

Figure 2-3

Date: December 2019

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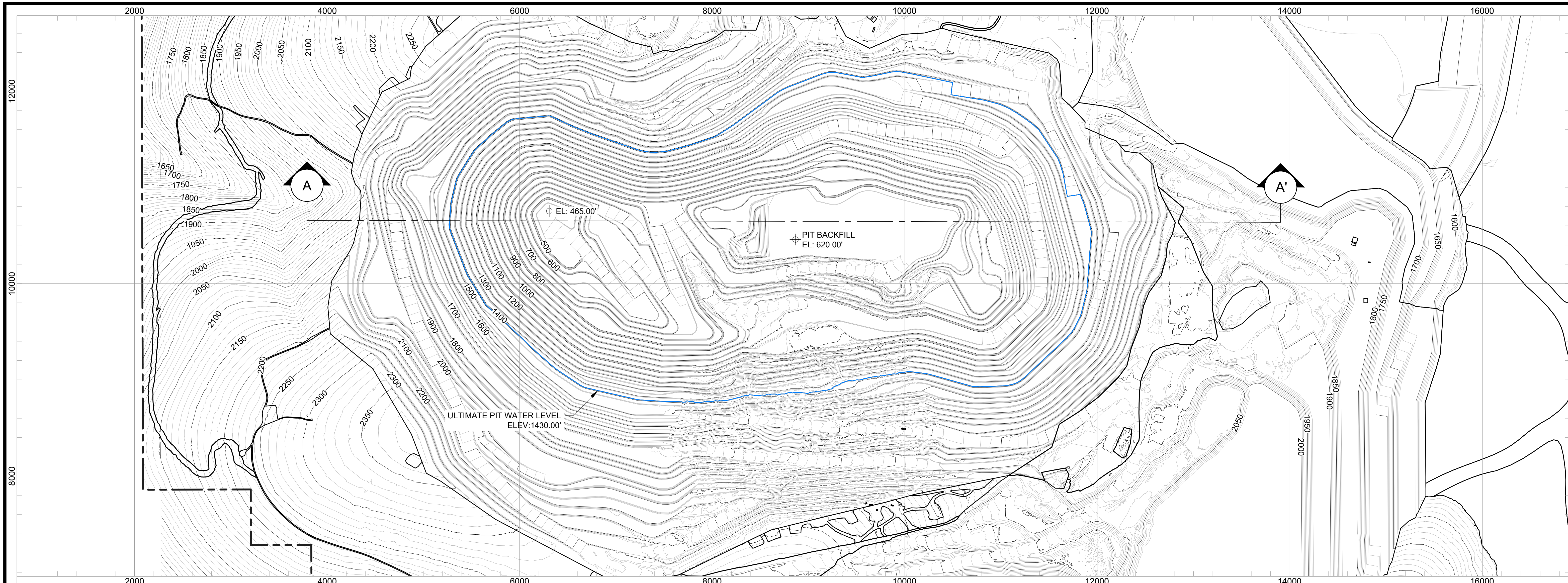
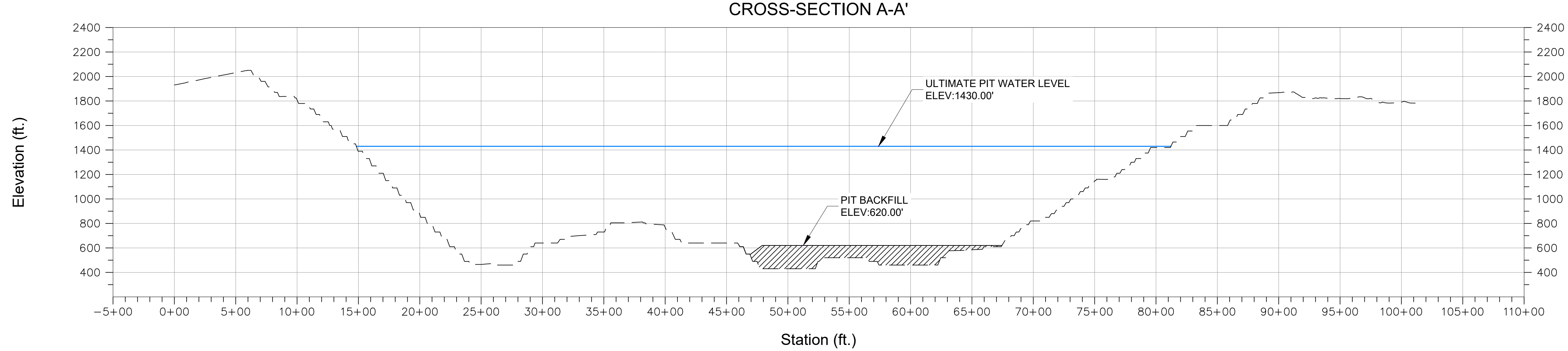


CROSS-SECTION A-A'

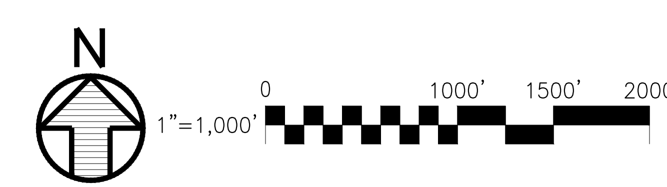


Pit Lake Cross-Section

Figure 2-4

Date: December 2019

KINROSS Fort Knox



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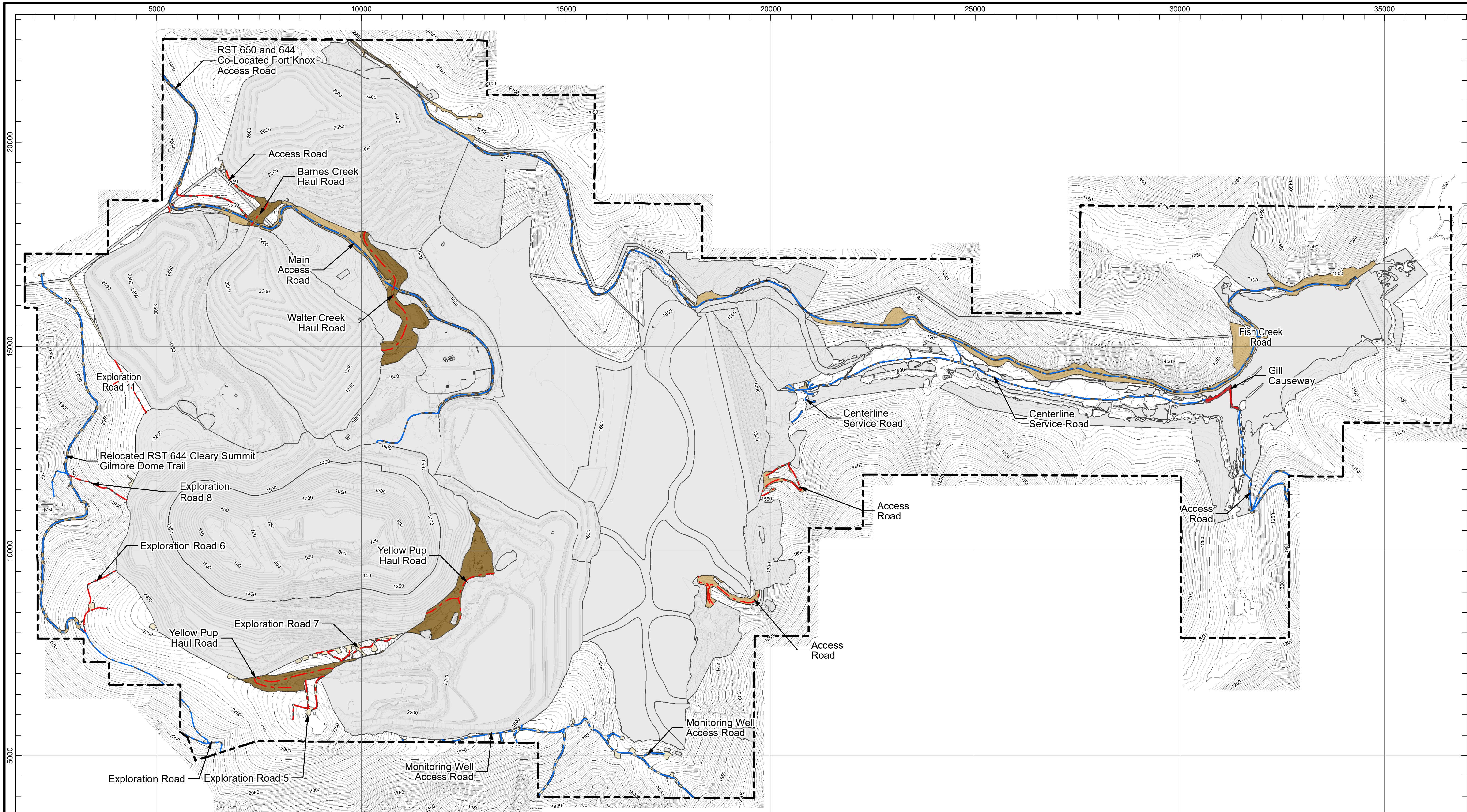

KINROSS Fort Knox

Roads & Trails

Figure 2-5

Date: December 2019

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KINROSS Fort Knox

Admin and Laydown Area

Figure 2-6

Date: December 2019

LEGEND:

2018 Property boundary | Buildings

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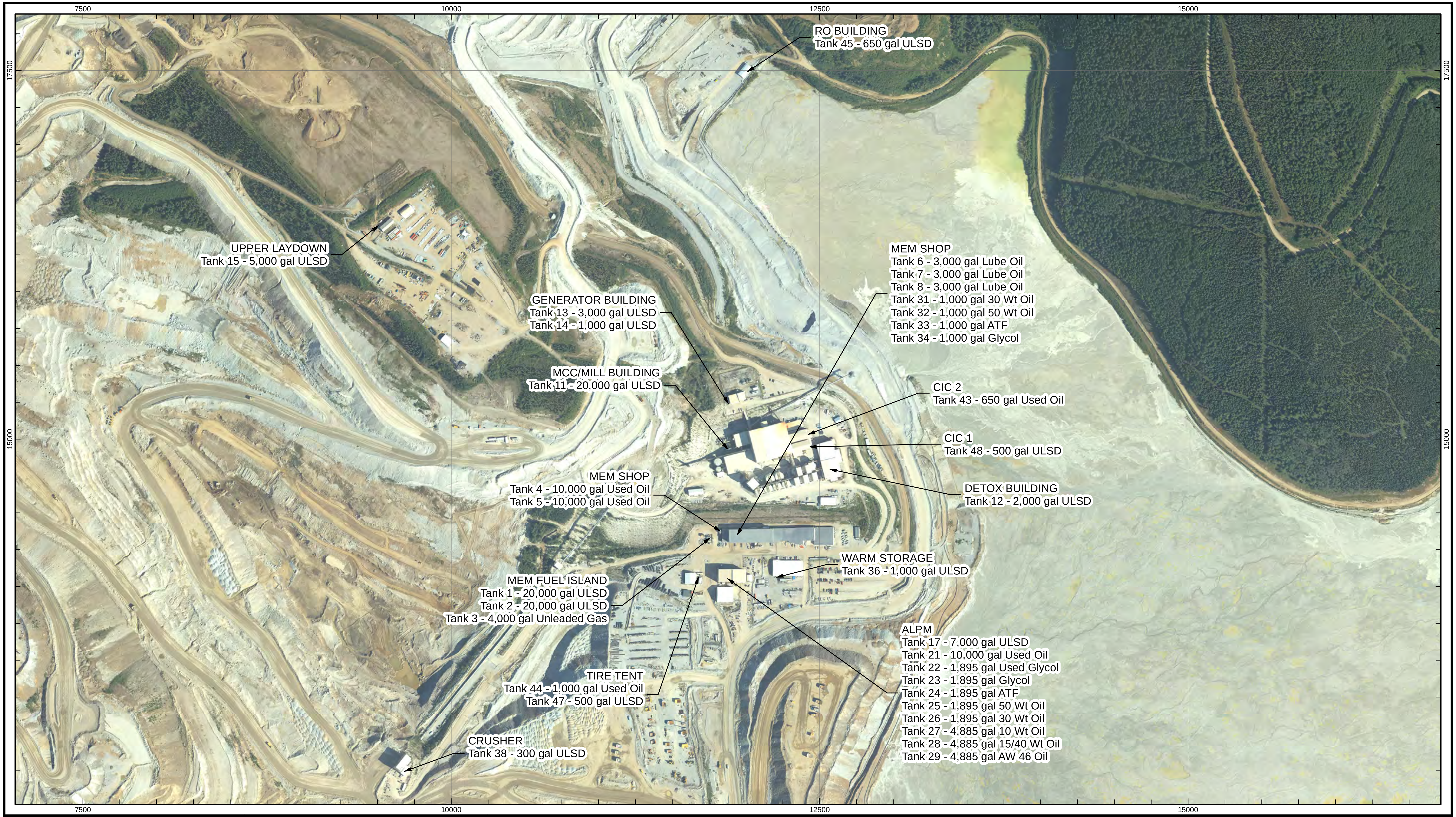
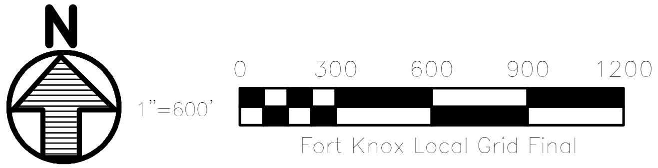


KINROSS Fort Knox

Above Ground Storage Tanks
(1 of 2)

Figure 2-7

Date: December 2019



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KINROSS Fort Knox

Above Ground Storage Tanks
(2 of 2)

Figure 2-8

Date: December 2019

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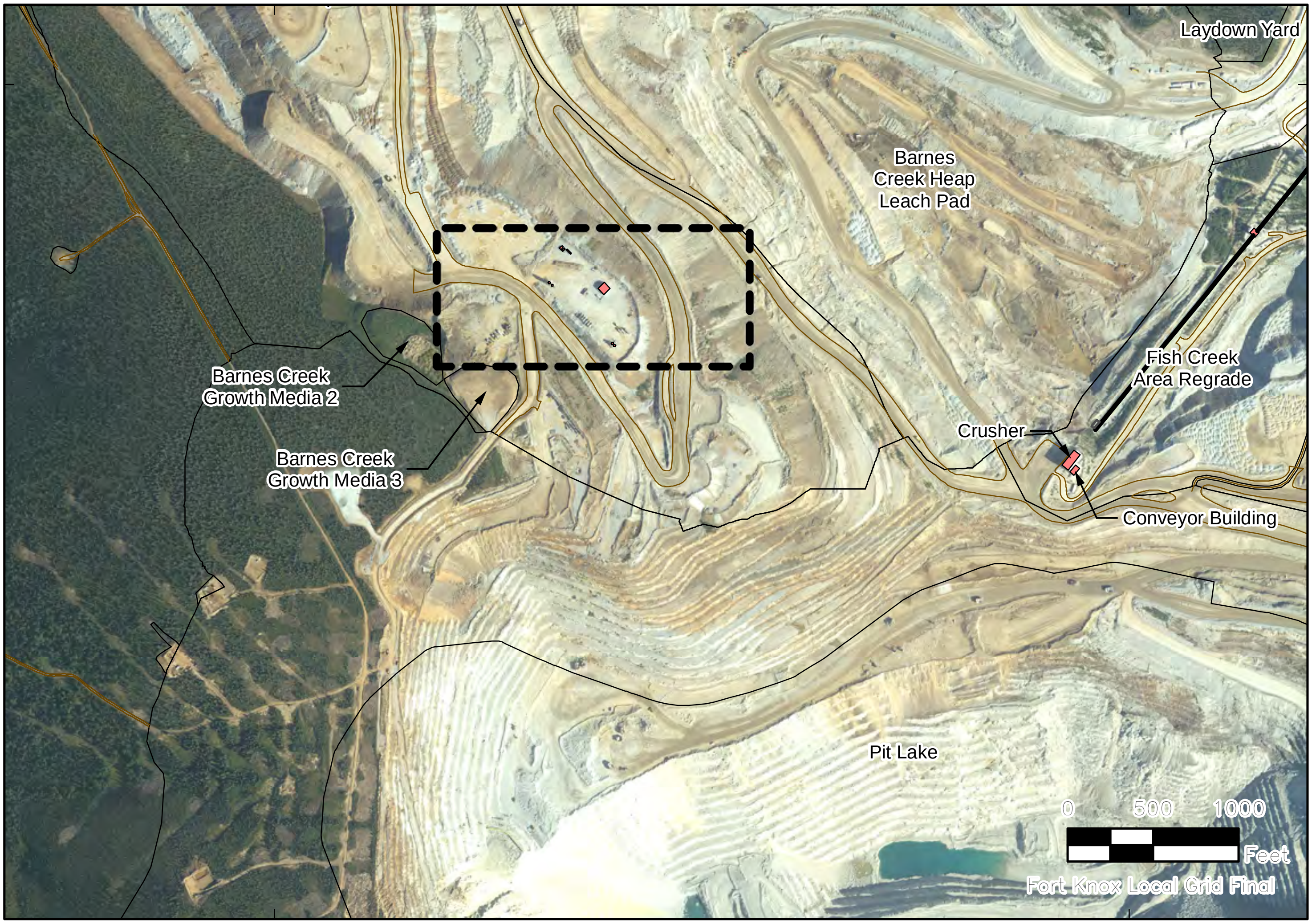

KINROSS Fort Knox

Explosives Storage

Figure 2-9

Date: December 2019

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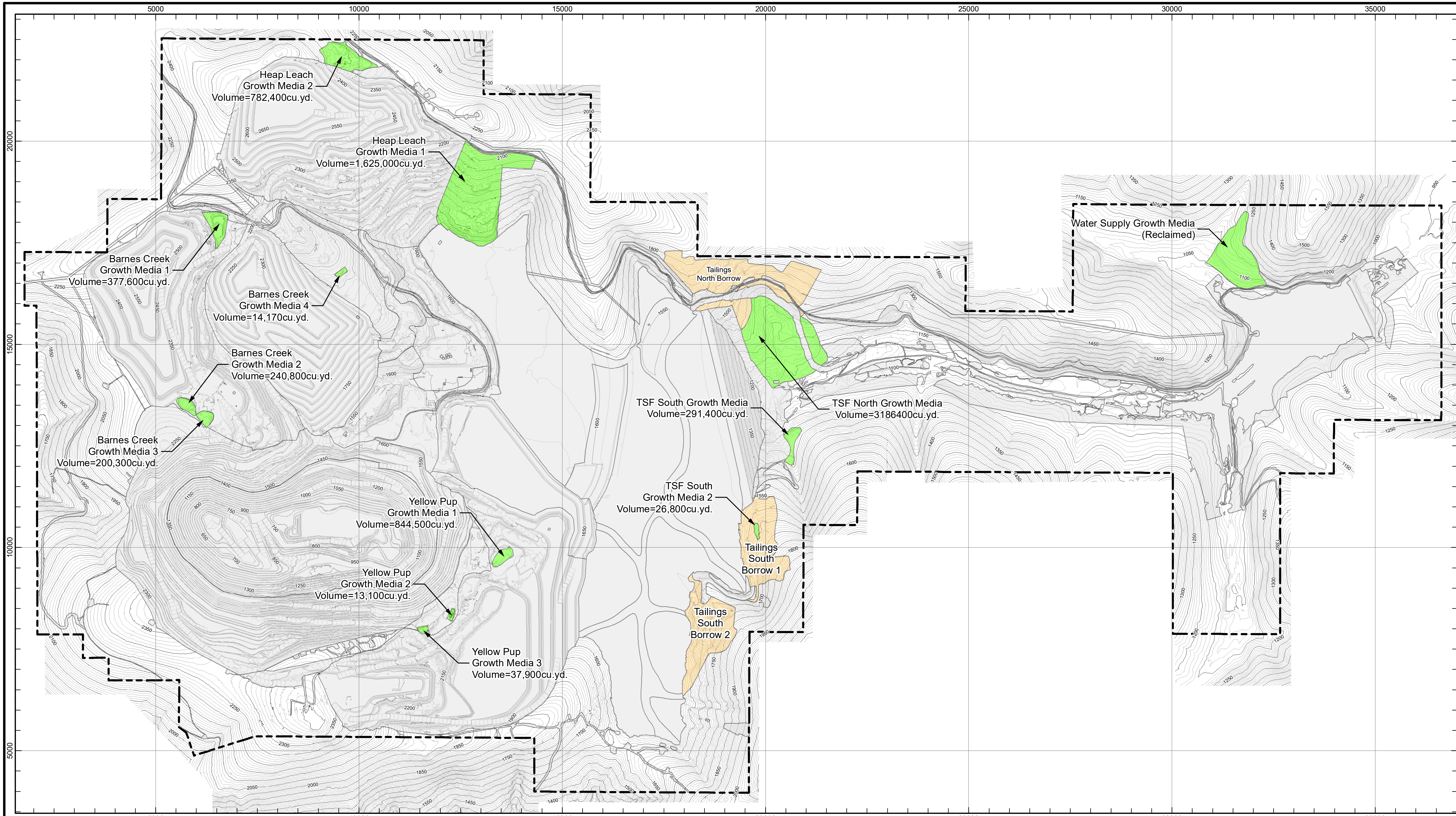

KINROSS Fort Knox

Growth Media and Borrow Sources

Figure 2-10

Date: December 2019

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3 WETLANDS

3.1 Department of the Army Section 404 Permit

The original 404 permit POA-1992-574, was issued to Fairbanks Gold Mining Inc. on May 5, 1994, subsequent modifications have been issued as operational needs and mine configuration changed. Including all modifications to the 404 Permit, FGMI is responsible to restore, enhance or create 229.3 acres of wetlands. To date, 218.5 acres of wetlands have been developed, leaving an additional 10.8 acres left for restoration, development or enhancement. **Figure 3-1** identifies the developed wetlands and proposed wetlands to be created.

In 2018, an updated mitigation plan was prepared by Michael Baker International (Michael Baker 2018). The plan details wetland previously developed and identifies areas available for enhancement, restoration or creation within the Fish Creek Valley.

Permit modification requests for future disturbances will continue to be submitted to ADNR and Corps of Engineers for review and evaluation.

3.2 Fish Creek Valley Developed Wetlands Delineation

Mitigation requirements of the Section 404 permit began in 1997 by creation and enhancement of wetlands and other waters on the Fort Knox Mine site.

Historical placer mining operations along the south side of the Fish Creek Valley were modified to pond water in the area between the tailings monitoring wells and the upper limit of the water supply reservoir. These wetlands and ponds were designed to offset wetland impacts from previous disturbance and the construction of project components. In addition, this wetland area was created to assist in the enhancement and maintenance of the long-term water quality in Fish Creek. Development and enhancement of the wetlands included construction of new ponds and improving existing ponds. A total of six ponds were developed that promoted development of wetland vegetation (emergent, riparian shrub scrub and forested).

The south pond system was created through the general steps described below:

1. Recontouring of placer mining disturbances has established a series of channels, wetlands and shallow ponds in Fish Creek between the tailings impoundment and the water reservoir.
2. Organic material cleared from past placer mining activities was placed in designated portions of the ponded areas to aid in the re-establishment of vegetation.
3. Natural invasion by native species was encouraged and has been successful in the creation of this wetland.
4. Flow-through structures have been designed as passive sediment traps and to decrease velocity of channel flows sufficiently to prevent down cutting and channel migration.
5. Continuous monitoring of these structures allows for modification and improvement prior to final closure. The flow regime through these developed wetlands will remain constant throughout the mine life and after final closure.

Areas identified for the development and enhancement of wetlands and water resources include:

1. A series of wetlands and connecting channels designated as Ponds A-F created in the Fish Creek valley between the tailings dam and the Water Supply Reservoir (WSR).
2. The WSR and stilling basin.
3. Last Chance Creek floodplain enhancement activities.

3.3 Engineered Wetland System on the North Side of Fish Creek

Part of the TSF closure plan will be to construct a design that integrates flows from the TSF spillway and energy dissipation basin into a new northern wetlands complex; this is illustrated in **Figure 3-1**. In addition to the creation of more wetland habitat, the integrated design will help to dissipate energy from stormwater runoff and minimize impacts on the existing developed wetlands along the south side of the valley. All elements of the design will be based on periods of increased flow such as spring breakup or storm events. Construction of the wetlands complex will be separated from the developed ponds on the south side of the drainage by an existing ridge.

The envisioned northern wetland system will consist of a series of interconnected detention basins, which will ultimately terminate above the freshwater reservoir. The series of basins and channels will provide retention volume for sediment control and also create distinct zones of aerobic or anaerobic conditions. The wetland system will discharge into the west end of the Fresh Water Reservoir.

Depending on the local topography, the basins will be excavated to depths ranging from 3 to 6 ft and will hold approximately 5 to 7 ac-ft. The geometry of the basins has been defined based on the existing topography and drainage gradients. The conveyance channel interconnecting the basins will be approximately 14-ft wide with a trapezoidal cross-section. The channel side slopes will be 3H:1V. It is likely that the channel bottom will be comprised of placer tailings (coarse gravel to cobbles) and will not require significant armoring or erosion control. Riprap will be placed where local ground conditions require stabilization and erosion control.

The contoured slopes along the edges of the wetland system may be seeded and fertilized to encourage the growth of native species. Past experience confirms that growth was successful without any soil amendments.

3.4 Fishery Development and Enhancement

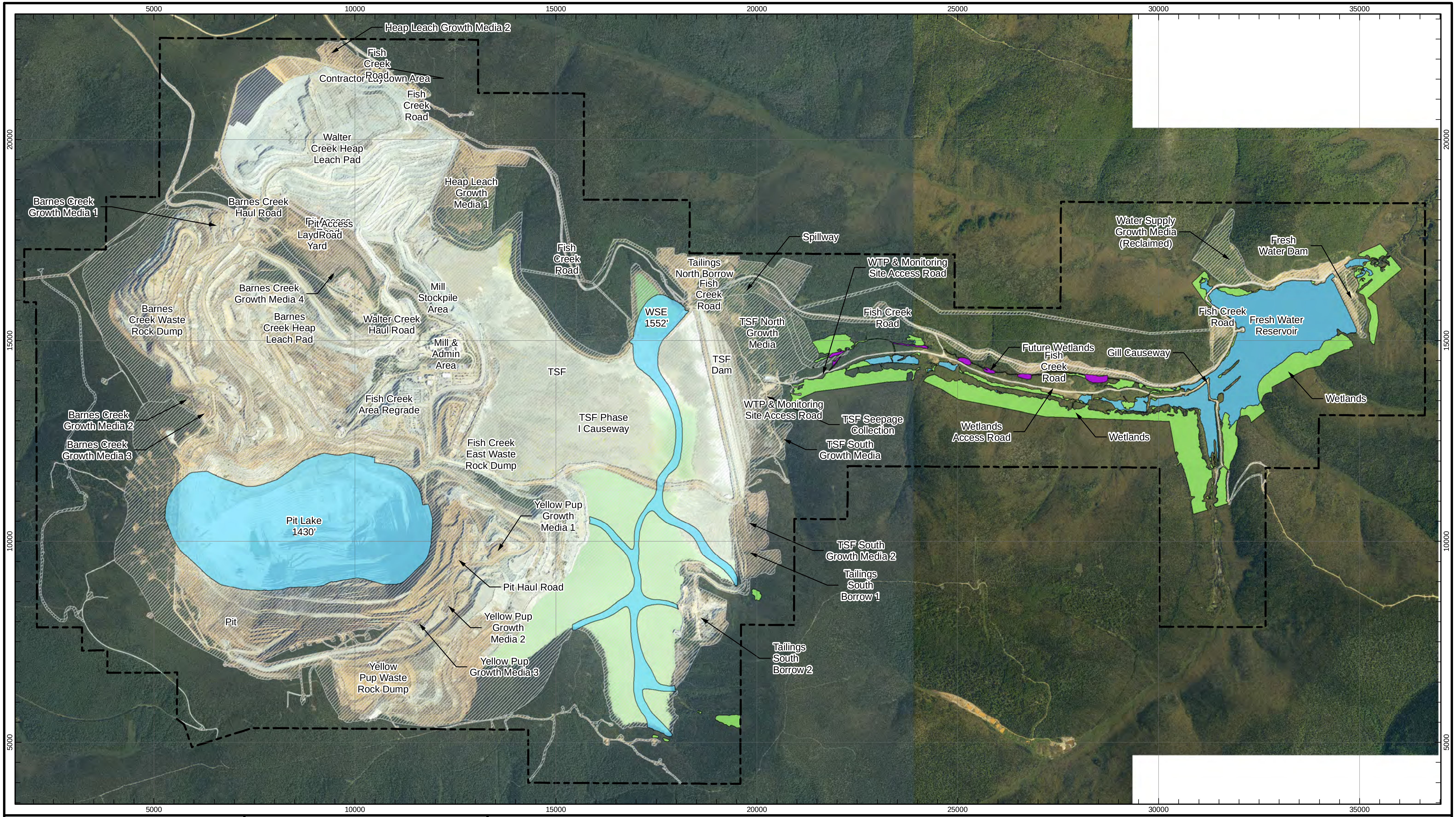
The primary land use objectives identified for reclamation are the development of wildlife habitat and potential fisheries throughout the mine site. Fishery potential is greatest in the developed Fish Creek wetlands and the water supply reservoir. In cooperation with ADF&G, Division of Habitat and ADNR, FGMI has strived to maximize the potential for development of a fishery resource within the WSR and the associated Fish Creek wetlands. Design of the project facilities (i.e., road crossing of Solo Creek, development of wetlands upstream of the freshwater lake, material borrow sites adjacent to and connected to the reservoir lake) and the construction plans for the freshwater dam were developed to facilitate the establishment of a fishery resource in the water supply reservoir. The long-term goal is to establish a productive and sustaining fishery resource upon completion of mining and reclamation.

A two-year fisheries study, initiated in 1992, was conducted to gather baseline data on fisheries resources, water quality, water quantity, and benthic invertebrates in the portion of Fish Creek proposed for mine development. Based on sample results, it was documented that, Arctic grayling (Thymallus arcticus), burbot (Lota lota), slimy sculpin (*Cottus cognatus*) and round whitefish (Prosopium cylindracuem) occur in a limited area of Fish Creek upstream of the proposed water supply reservoir. Arctic grayling spawn, rear, and over-winter in the upstream area of Fish Creek drainage near Solo and Last Chance Creeks. Spawning was confirmed by the presence of adult and young-of-the-year Arctic grayling.

Since November 1995, when FGMI began impounding water in the WSR, the Alaska Division of Fish and Game (ADF&G, Division of Habitat) has been monitoring both the fishery and water quality. Arctic grayling have successfully spawned in the wetland complex every year since 1999 and have used most of the wetland complex in the majority of years, but in 2002, 2006 and 2007, access to spawning habitat was limited. In 2004 and 2005, Arctic grayling successfully spawned in Last Chance Creek. The decrease of spawning habitat in the wetland complex and the lack of spawning in Last Chance Creek during other years was due to the presence of beaver dams and cold-water temperatures caused by extensive aufeis that lasted beyond the Arctic grayling spring spawning period.

Self-sustaining populations of Arctic grayling and burbot have been established in the developed wetlands and the WSR. The post-mining goal for the Arctic grayling population was set at 800 to 1,600 fish >200 mm prior to construction, the spring 2017 estimated population for Arctic grayling >200 mm was 7,141 fish (using spring 2017 as the mark event and spring 2018 as the recapture event). As predicted based on the spring catch in 2017 (Burrows and Bear 2019), the Arctic grayling population increased substantially since the 2010 estimate of 3,223 fish. The 2018 population estimate is slightly less than the highest estimate of 7,926 fish in 2005.

A goal for the burbot population was not set prior to construction. In 2018 a total of 213 burbot were caught in the WSR and developed wetlands. The burbot ranged from 110 to 849 mm with an average length of 359 mm. The population estimate (>400 mm) was 201, the greatest since sampling began in 1996. (Burrows and Bear 2019)



KINROSS Fort Knox

Existing and Future Wetlands

Figure 3-1

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Facility disturbance
- Wetlands
- Future Wetlands to be Constructed
- Reservoir

Note: The Wetland areas shown are approximate, see (Baker 2018) for further detail.

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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4 SURFACE DISTURBANCE AND LAND USE

4.1 Surface Disturbance

4.1.1 Placer and Other Mining Disturbances as of August 1992

Placer mining that occurred in the project area since 1917 disturbed a substantial portion of the valley bottom along the entire length of Fish Creek. Considerable placer mining disturbance was also apparent along Monte Cristo, Barnes, Pearl, Yellow Pup, and Last Chance Creeks. Generally, the disturbances extended across valley bottoms and ranged in depth from about 10 to 40 ft. Many of these areas had ice-rich permafrost that was thawed by hydraulic mining. Year-round placer operations occurred during 1991, 1992, and 1993.

Prior to construction of the Fort Knox Mine facilities, placer or other mining activity had disturbed approximately 904 acres within the Millsite Permit area. Of this, approximately 367 acres was classified as historically disturbed (characterized by some revegetation), and 511 acres as recently disturbed (characterized by a lack of vegetation). An additional 26 acres were characterized by large sediment settling ponds. These acreage figures did not include areas encompassed by roads, trails, historic ditches, cabin sites, and small, localized disturbances.

4.1.2 Reclamation of Pre-mining Disturbances

Construction of the tailings impoundment and the WSR has stabilized the existing placer disturbances and greatly improved water quality. Both structures have increased the retention time of average surface flows and storm events, thus moderating total suspended solids and turbidity in Fish Creek. Reclamation during and directly after construction of the dams concentrated on the existing placer disturbances between the tailings impoundment and the WSR. Construction, development and enhancement of the area resulted in a wetland complex that includes a series of sedimentation ponds and the revegetation of the area.

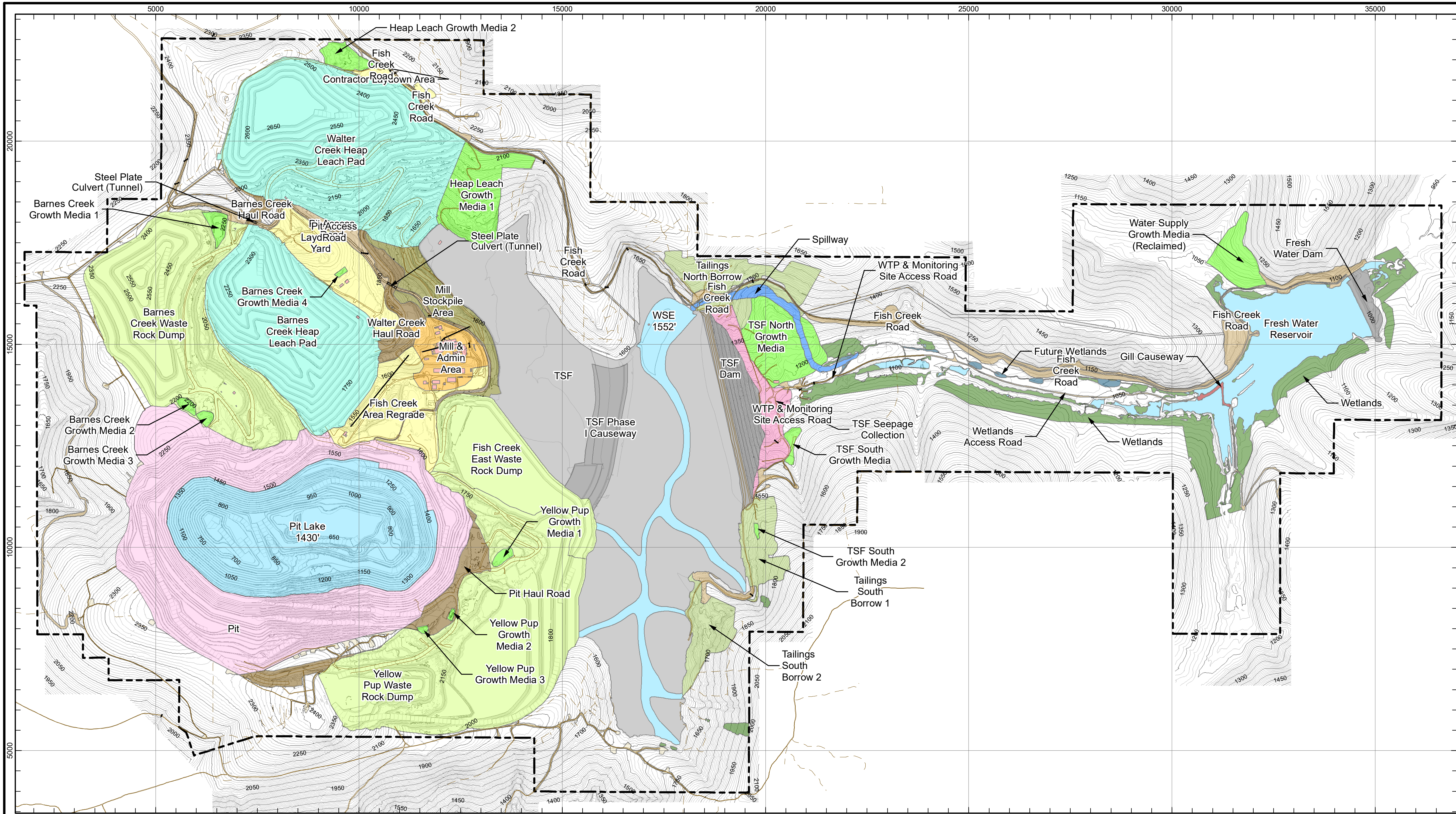
4.1.3 Fort Knox Mine Disturbance

The two-dimensional area disturbances listed in **Table 4-1** include State and private lands over the life-of-mine of the Fort Knox Mine operations. These acreages reflect life-of-mine disturbance within the Millsite Lease boundary. **Figure 4-1** illustrates the corresponding disturbance areas.

Table 4-1: Disturbance Area at LOM

Location	Acres Disturbed
Waste Rock Dumps	987.3
Heap Leach	731.7
Roads	301.2
Pit	893
Buildings Complexes and Laydown yards	252.2
GM Stockpiles and GM Borrow areas	208.2
Borrow Areas	163.1
TSF Surface	897.9
Phase 1 Causeway	85

Location	Acres Disturbed
TSF Dam Crest and Surrounding Area	115.9
Ore Stockpiles	55.9
FGMI Power Lines	40.7
Developed Wetlands	218.5
Water Supply Reservoir & Dam	207.1
Total	**5,157.7**



LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Waste Rock Dump
- Heap Leach Pad
- Pit
- Dam
- Tailings
- TSF Seepage Collection
- Spillway
- Mill/Admin Area
- Yards
- Buildings
- Stockpile
- Borrow
- Growth Media
- Gill Causeway
- Haul Road
- Access Road
- Exploration Road
- Reservoir
- Powerlines
- Wetlands
- Future Wetlands

0 1100 2200 3300 4400
1"=2,200'
Fort Knox Local Grid Final

KINROSS Fort Knox

Post Mining Topography

Figure 4-1

Date: December 2019

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4.2 Land Use

4.2.1 Land Use Prior to Fort Knox

Mining activities have been continuous in the Fish Creek drainage since 1902. Mineral exploration and placer mining produced the greatest visible impact to surface features including cuts, tailings mounds, sediment ponds and areas damaged by erosion. Recreational uses of the area included hiking, biking, berry picking, cross country skiing, snowmobiling, dog mushing, horseback riding, trapping, and small/large game hunting.

The site supports those wildlife species typically inhabiting taiga (sub-arctic evergreen forest). Avian species include numerous migratory birds and raptors. Mammals range from small shrews, voles, mice, lemmings, red squirrels, porcupine, and snowshoe hare to larger species including fox, wolves, black bear, brown bear, and moose.

4.2.2 Land Use during Fort Knox Operations

State surface land use authorizations allow limited access by the public. Restricted access is due to the inherent hazards associated with the operation of large mine equipment and process components. Compliance with requirements of MSHA regulations limits access to personnel that have been trained to recognize hazards and observe safety rules that insure the health and safety of employees and visitors. To ensure the safety of mine employees and the public, all hunting, fishing, and trapping within the Millsite Lease area is prohibited.

4.2.3 Post-mining Land Uses

The Fort Knox operation will alter the landscape of the site for the long-term. The pit will have a footprint of approximately 893 acres. Within that footprint a 402-acre pit lake will form, creating a source of open water in a landscape that contains very few large bodies of water.

The WSR and developed wetlands with their associated open water have altered, diversified, and increased the functional value (Buell & Moody 2005) of the reclaimed area.

These areas will continue to be of great interest to ADF&G and the ACOE for their potential fish and wildlife resources. Future reclamation will produce both wetland and upland sites to increase productivity of post-mining land use as wildlife habitat.

5 RECLAMATION PRACTICES

FGMI's long-term goals for reclamation performed during and after mining and milling operations are to contour, stabilize, and revegetate disturbed areas in order to return the land to a safe, stable and productive condition. FGMI is contouring and stabilizing disturbed areas to create ground conditions that promote vegetation development and provide conditions for colonization by native species. Native grass species available commercially are used for rapid soil stabilization.

The objectives of the reclamation and closure plan are:

1. Stabilization and protection of soil materials from wind and water erosion.
2. Stabilization of steep slopes through contouring to provide land forms similar to existing terrain.
3. Establishment of long-term, self-sustaining vegetation communities conducive to natural invasion and succession.

FGMI will continue working with ADNR, Division of Agriculture Plant Materials Center, and Alaska Department of Fish and Game to achieve the successful implementation and subsequent evaluation of both concurrent and long-term reclamation activities. FGMI considers reclamation to be a progressive process that includes the design, construction, operation, and closure of the mining operation. Reclamation will or has occurred in the following phases, with some overlap:

1. Reclamation completed during and directly after process component construction (includes interim reclamation to stabilize and maintain viability of topsoil stockpiles).
2. Reclamation concurrent with mining.
3. Active reclamation (Phase I Reclamation defined in Agreement for Funding Post-Reclamation Obligations, February 15, 1994) will immediately commence upon cessation of mining, milling and heap leach operations and be completed within two years. Final reclamation will include removal of process components, contouring, and placement of growth media unless otherwise approved by ADNR, and revegetation.
4. Passive reclamation (Phase II Reclamation defined in Agreement for Funding Post-Reclamation Obligations, February 15, 1994) will consist of monitoring and maintenance, including water management as necessary, until the reclamation performance standards and the water quality standards established by the Waste Management Permit issued by the Alaska Department of Environmental Conservation are achieved. After water quality standard and revegetation requirements are achieved, the Agreement for Funding Post-Reclamation Obligations (Appendix B) is triggered.

The general reclamation procedures are discussed in Section 5.2. The details and procedures for area specific reclamation such as the pit, waste rock dumps, tailings impoundment, heap leach pad, etc. are discussed in Section 6.

5.1 Schedule of Reclamation Activities

5.1.1 Reclamation Schedule

The planned schedule for major reclamation activities is provided in Appendix A. The current mine plan includes milling until year 2021 and stacking on the heap leaches until 2027. Solution application on the heap leach pads (HLP) will continue through 2030. Three months of draindown is expected in the heap leach pads, during this time the facility will be regraded, and growth media placed. Closure of the HLP are projected to be completed in 2031.

In 2021 or later, the crusher and the conveyor will be removed, and the areas reclaimed. When the pit dewatering wells are no longer required, they will be decommissioned, this activity is currently scheduled to start in 2028. The waste rock dumps are scheduled for reclamation starting in 2021 and commencing with final revegetation in 2026.

Cover placement on the tailings impoundment is projected to begin in 2021 and end in 2026. The placement of growth media and revegetation of the upland area of the tailings surface will occur as conditions allow following placement of waste rock cover. The tailings impoundment dam crest will remain intact to provide emergency containment for the heap leach for so long as the heap leach is in operation. Seepage collected at the toe of the tailing dam will be returned to the Barge Pond then pumped to the pit or treated and discharged until acceptable water quality for discharge has been achieved, at which point the seepage pump house complex can be demolished. The tailings barge will be removed after pumping from the Barge Pond to the pit is no longer required. The TSF closure spillway construction activities will start in 2020.

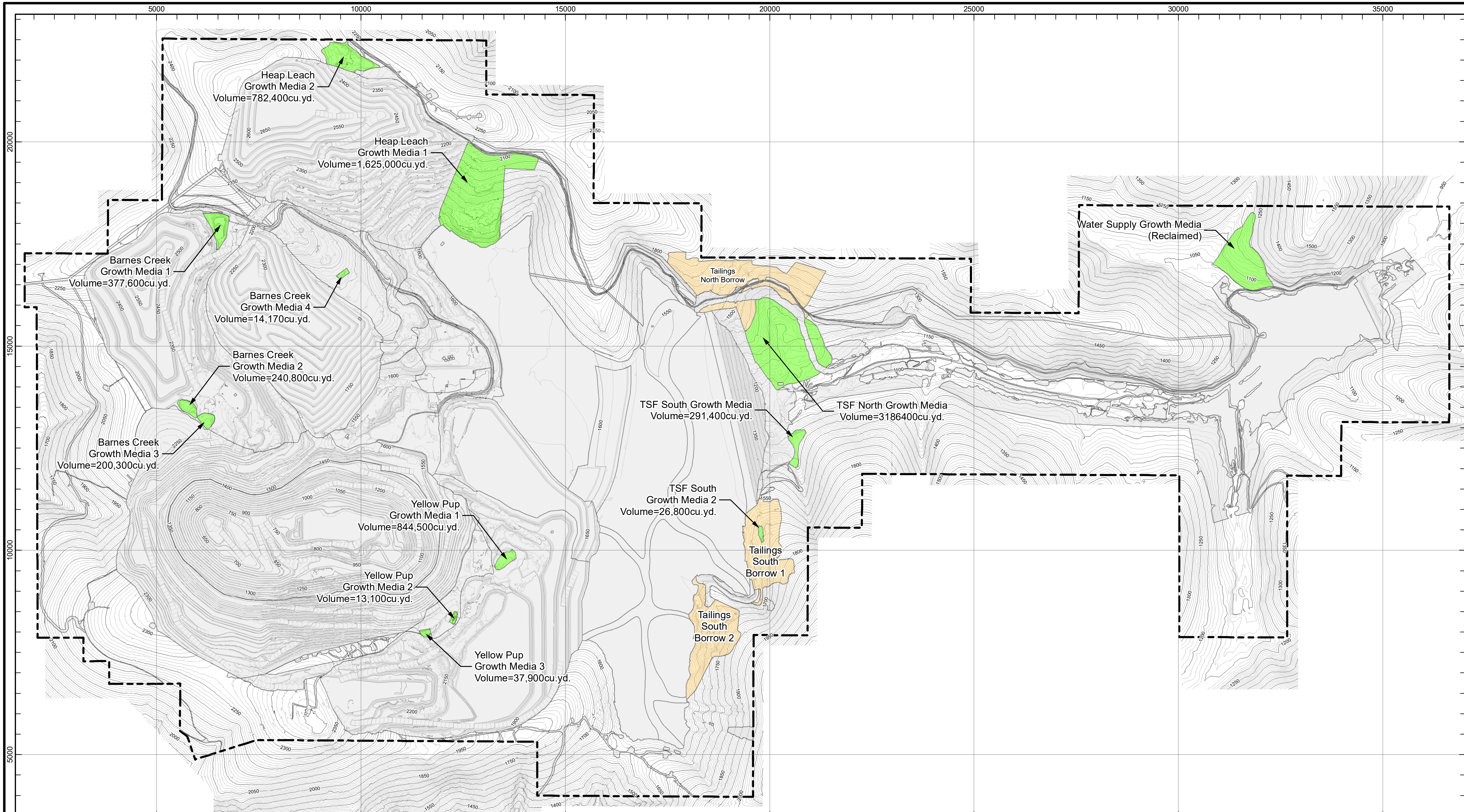
Drainage systems connecting the HLP with the pit will be constructed during reclamation of each heap leach. Various laydown areas, haul roads, and ancillary roads will be reclaimed as they become unnecessary for operations. An area between BCHL, the administration building, and the pit will be regraded to provide positive drainage of surface water to the pit in conjunction with closure of BCHL.

Various roads remaining on the mine site will be reclaimed (pending agreement with ADNR) when they are no longer required for mining, reclamation, or post-closure activities. Some roads will remain in place following reclamation to provide access to the reclaimed mine site for monitoring or public access to the Freshwater Pond, etc.

Post-closure monitoring will begin for each mine facility when reclamation of that facility is successfully completed and will continue until final bond release. After ten years of post-closure monitoring demonstrating successful reclamation and closure, that area subject to the Agreement for Funding Post Reclamation Obligations and any future amendments (Appendix B) will be turned over to the Organization in accordance with the agreement.

5.1.2 Reclamation of Construction Sites

During stripping operations for construction (tailings dam, freshwater dam, mill site, crusher, heap leach pad, maintenance shops, etc.) growth media was selectively stockpiled. Topsoil and overburden stripping will continue as the ore body, waste rock dumps and heap leach facilities are fully developed. Growth media will continue to be stockpiled throughout the mine life. Growth media stockpiles will be located near their sites of origin or in areas of future need. **Figure 5-1** illustrates the location of existing and planned growth media stockpiles. Interim seeding and fertilizing of the growth media stockpiles will occur to stabilize and protect stockpiled material for use during final reclamation. Areas disturbed during construction that will not be re-disturbed during operations have been concurrently reclaimed, as will be any future areas that may be disturbed for construction.



Growth Media and Borrow Sources

Figure 5-1

Date: December 2019

KINROSS Fort Knox

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Other Facilities
- Growth Media
- Borrow

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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5.1.3 Concurrent Reclamation

FGMI currently implements interim reclamation at inactive areas within the mine site, such as borrow areas, until final reclamation can be completed. Soil stabilization and erosion control measures are used on all disturbed and unprotected areas prior to the end of a normal operating season. Opportunities for concurrent reclamation of waste rock dumps and overburden dumps have not occurred to date, as these sites have remained active. Small areas of the waste rock dumps have been used for temporary revegetation trial plots. However, these sites have become active again. Trial plots on deposited tailings have been short lived since tailings deposition has not reached its maximum elevation. Successful trials for tailings revegetation have been conducted near the toe of the WCHL pond embankment. Concurrent reclamation will take place when opportunity allows. These opportunities will increase as Fort Knox nears the end of mine life.

5.1.4 Final Reclamation

Under the current mine plan, milling is projected to continue through 2021, mining will continue through 2027 and production from the heap leaches is planned through 2030. Final reclamation, including contouring, placement of growth media (unless otherwise approved by ADNR), and revegetation will be initiated immediately after cessation of mining, heap leaching, or milling operations at each facility. Completion of final reclamation within 2 to 5 years of the initiation of closure activities at each facility is anticipated for all facilities. Reclamation will be implemented concurrently with operations as mining activities allow. Written notification of final closure will be given to the ADNR and ACOE within 90 days after cessation of mining, heap leaching, and milling operations. The notice will state the date on which final reclamation activities will begin.

5.1.5 Temporary Closure

Temporary closure means the cessation of the mining, heap leaching, and milling operations for a period of not more than three years. If conditions require temporary closure to extend beyond three years, final reclamation will begin, unless an extension is requested by FGMI and approved by ADNR. Temporary closure scenarios that require modifications to the plan of operations, reclamation plan or 404 Permit will be coordinated with the appropriate Federal and State agencies for approval.

Temporary closure may include planned or unplanned cessation of the mining, heap leaching, and milling processes. Planned temporary closures, which have specific conditions defining their beginning and end, include, but are not limited to, the following:

1. Interruptions in the active beneficiation processes to provide planned periods of inactivity for metallurgical or operating reasons.
2. Any other planned condition that would interrupt the active beneficiation process including modification to process components or suppressed metal market conditions.
3. Change in ownership requiring the temporary cessation of operations while operating permits are transferred to the new owner/operator.

Unplanned temporary closures may include, but are not limited to, the following:

1. Closure because of unforeseen weather events.
2. A failure in a major system component or a process failure that causes the fluid management system, or a portion of it, to shut down.
3. The cessation of operations due to litigation.

Pursuant to Approval No. F20149852RCP, FGMI shall notify the Authorized Officer (ADNR, the Director of the Division of Mining, Land and Water or a designee) in writing at least 30 days prior to any planned temporary closure of 90 days or longer. FGMI shall notify the Authorized Officer of any unanticipated temporary closure expected to last 90 days or more within 10 days of the first day of the temporary closure. The notice shall state the nature and reason for the temporary closure, the anticipated duration of the temporary closure, what actions will be taken to maintain compliance with project permits and plan approvals, and any event which would reasonably be anticipated to result in the resumption of mining or the permanent cessation of mining. Mining operations must resume for not less than 90 consecutive days in order to terminate the running of the temporary closure.

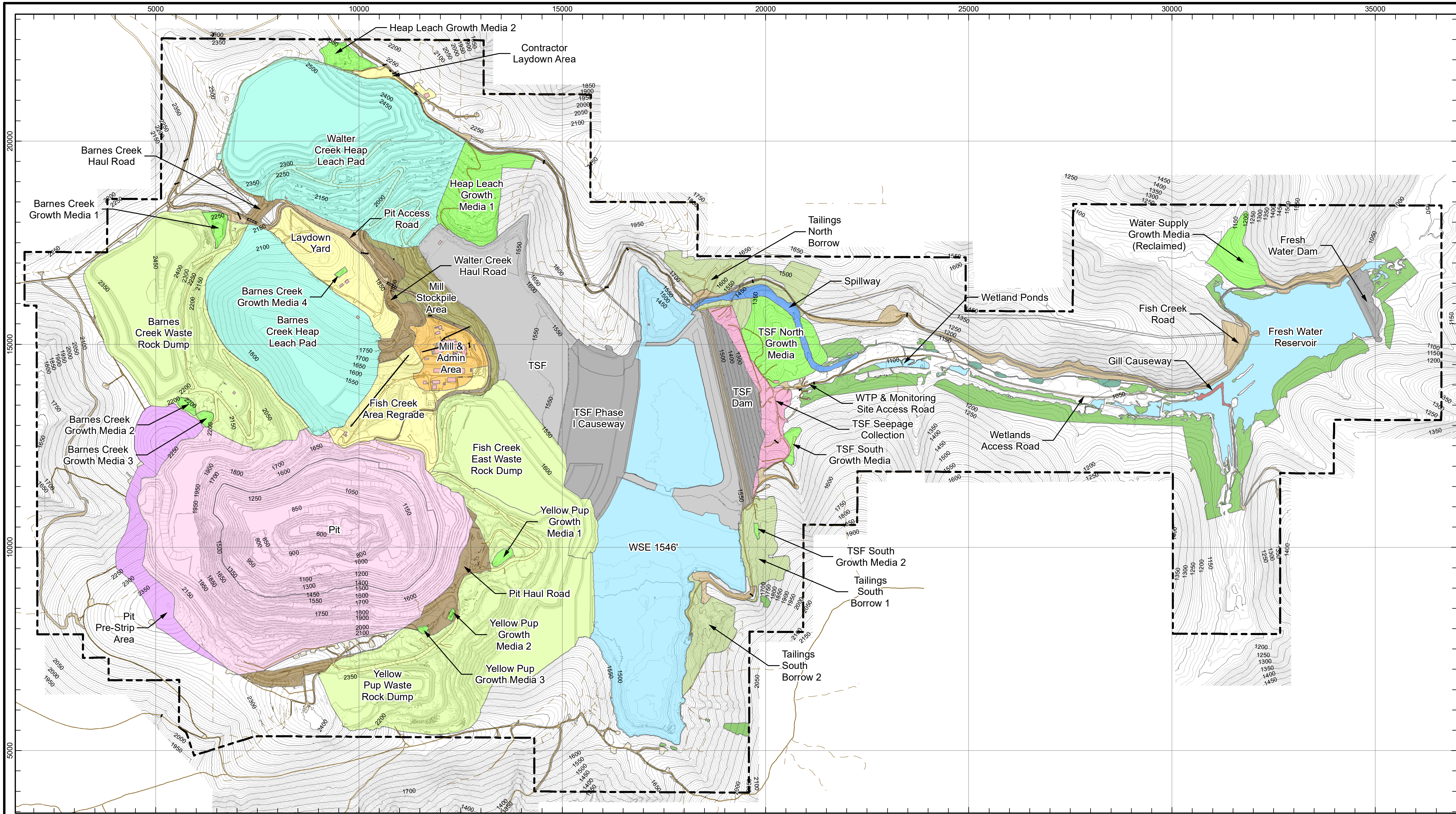
5.1.6 Premature Closure

11 AAC 97.400 requires that an operation post a bond for largest probable liability. Like temporary closure noted above, if the mine should close prematurely due to unforeseen circumstances (operating costs, gold price, weather, etc.), closure practices and procedures would be implemented. Procedures for the reclamation of each facility are described in Section 6 below. In the event of a premature closure scenario, each facility would be reclaimed in the same manner, however the reclaimed configuration would be slightly different than the life of mine (LOM) scenario due to stages of construction as implemented throughout the course of mining operations.

FGMI staff reviewed future mine plans and determined that a configuration in year 2020 would result in the largest probable liability in terms of reclamation requirements. The previous reclamation plan and subsequent revisions assumed mining operations would cease in year 2019, and reclamation activities would commence. Additional expansions to the pit have allowed operations to continue through 2027. Consequently, expansion of some facilities and construction of new facilities including: Phase 1 Causeway, BCHL, and FCWRD; have increased the mine life, and thus increased the liability for bonding prior to closure. The major difference between the LOM closure scenario and the premature closure scenario is the unrealized liability associated with closure of the TSF. This is due in part to the continued milling of ore and expansion of tailings storage requirements beyond the previous mine life. **Figure 5-2** represents the probable premature closure scenario. The following items are a list of major deviations from the LOM closure scenario.

Premature Closure Scenario 2020 requirements include:

1. TSF spillway construction;
2. Capping TSF with waste rock, growth media and revegetation;
3. Regrading Phase 1 Causeway to provide drainage;
4. Transfer of supernatant water from TSF to Pit; and
5. Breaching Pearl Creek Causeway



KINROSS Fort Knox

Premature Closure
Post Mining Topography

Figure 5-2

Date: December 2019

LEGEND:

Millsite Lease Boundary	Waste Rock Dump	TSF Seepage Collection	Borrow	Reservoir
2020 Post-Mining Topo	Heap Leach Pad	Spillway	Growth Media	Powerlines
Contour 50'	Pit	Mill/Admin Area	Gill Causeway	Wetlands
Contour 10'	Pit Pre-Strip Area	Yards	Haul Road	Future Wetlands
	Dam	Buildings	Access Road	
	Tailings	Stockpile	Exploration Road	

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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5.2 General Reclamation Procedures

The primary components in reclamation for the Fort Knox Reclamation Plan include earthwork, growth media placement, seedbed preparation, fertilizing, seeding, and monitoring. FGMI will manage these components keeping in mind that the ultimate goal is to achieve a stable, revegetated post-mining land surface that will promote natural invasion by native plants. FGMI will continue to work in coordination with ADF&G, Division of Habitat to develop and enhance the fish and wildlife potential throughout the project area.

5.2.1 Earthwork

Waste rock dumps and the HLP will require major grading, contouring, and revegetation. Other disturbed areas will be revegetated; some may require regrading. Growth media will be applied if revegetation efforts are not successful. Generally, slopes will be graded to 2.5H:1V or flatter. For the purposes of FA calculations a slope of 3H:1V are considered resulting in a more conservative estimate of earthwork volumes.

Earthwork will utilize heavy equipment typical to the industry. It is anticipated that the equipment list will include (or equivalents thereof): Caterpillar D10, D9, D8, rubber-tired scraper, water truck, and motor graders. Other equipment such as (but not limited to) front-end loaders, track and tire mounted backhoes, and haul trucks may be substituted for or included with this general equipment list. Equipment needed for reclamation and operations will remain dynamic, as specific conditions require different equipment during implementation of the plan.

5.2.2 Control of Sedimentation

Implementation of Best Management Practices (BMPs) to control erosion during active mining will be designed to minimize re-disturbance during reclamation. The BMPs will be consistent with those measures and practices identified in Alaska Department of Transportation and Public Facilities, *Alaska Storm Water Guide*, December 2011.

Temporary sediment and erosion control devices will be maintained until site-specific potential for erosion has been minimized through earthwork or revegetation. Removal of devices will be determined by field conditions.

5.2.3 Growth Media

"Growth media" is defined herein as all material with the physical and chemical properties capable of germinating and sustaining vegetation growth with or without amendments. At the Fort Knox site, the term "growth media" is interchangeable with the terms "topsoil" and "overburden". Overburden material, suitable for use as growth media, is the unconsolidated material that lies between the topsoil horizons (where present) and bedrock and exhibits no chemical characteristics that will inhibit vegetation development.

Growth media (topsoil and overburden) will be stockpiled at Fort Knox in anticipation of future reclamation needs. Growth media will be applied in areas where needed to support revegetation. The FA accounts for 12-inches of growth media. Growth media will be hauled and placed by dump truck and spread by a dozer. Highly compacted areas such as equipment lots and roads will be ripped in a linear fashion prior to growth media placement if it is required. **Figure 5-1** illustrates the location of growth media stockpiles and borrows areas that exist and are planned. **Table 5-1** provides a summary of growth media salvaged and potential borrow sources.

The Standard Reclamation Cost Estimator (SRCE) Model calculates the true volume of cover and topsoil required based on the slope area resulting in a slightly higher volume vs 2D plan area. A detailed volume break-down for available growth media is listed in **Table 5-1** LOM requirement **Table 5-2** and **Table 5-3** represent a summary of calculated growth media volumes calculated using SRCE.

Table 5-1: Estimated Growth Media Volumes

Site (Stockpile or Borrow Area)	Volume Available (CY)
WC Heap Leach GM 1 (stockpile)	782,400
Barnes Creek GM 1 (stockpile)	377,600
Barnes Creek GM 2 (stockpile)	240,800
Barnes Creek GM 3 (stockpile)	200,300
Barnes Creek GM 4 (stockpile)	14,170
Yellow Pup GM 1 (stockpile)	844,500
Yellow Pup GM 2 (stockpile)	13,100
Yellow Pup GM 3 (stockpile)	37,900
TSF South GM 1 (stockpile)	291,400
TSF South GM 2 (stockpile)	26,800
TSF North GM (borrow area)	3,186,400
WC Heap Leach GM 2 (borrow area)	1,625,000
Total Stockpile	**2,828,970**
Total Borrow Available	**4,811,400**
Total Available	**7,640,370**

Table 5-2: Growth Media Requirement for Life of Mine

Facility	Volume Required (CY)
Waste Rock Dumps	1,724,748
Tailings Storage Facility	1,641,083
Heap Leach Pads	1,234,286
Yards/Laydown Areas	159,026
Wetland Areas	17,424
Total	**4,776,567**

Table 5-3: Topsoil Requirement Premature Closure

Facility	Volume Required (CY)
Waste Rock Dumps	1,735,523
Tailings Storage Facility	1,565,081
Heap Leach Pads	1,202,757
Yards/Laydown Areas	32,428
Wetland Areas	17,424
Total	**4,553,213**

5.2.4 Seedbed Preparation

Mine and mine related disturbances can result in compacted surfaces unsuitable for revegetation. Thus, preparation of a seedbed suitable for plant germination and growth can be a critical task in any successful land reclamation project.

At Fort Knox, the general method of seedbed preparation will be ripping or scarifying on the contour 12 to 18 inches deep using a D8, D9, or D10 CAT (or equivalent) equipped with a 2 or 3-shank ripper. The FA accounts for the use of a D10 CAT.

Ripping will occur along contours of sloped areas to promote erosion control in addition to creating a suitable seedbed. The specific site will be prepared for seeding by ripping on the contour to roughen the surface. A broken, roughened surface will serve to trap moisture, reduce wind shear, minimize surface erosion by increasing infiltration, and create micro-habitats conducive to seed germination and development.

5.2.5 Fertilizer and Fertilization

Prepared seedbeds will be fertilized prior to, after, or during the seeding operation. Specific fertilization requirements will depend on the quality of growth media used. Growth media will be tested for standard soil agricultural constituents including nitrogen, phosphorus and potassium. Based on available field-testing and soil test results at Fort Knox, the general recommended rate of fertilizer application will range from 100 to 300 pounds per acre of 20N-20P-10K for a spring seeding or 10N-20P-10K for a fall seeding. The FA accounts for 300 pounds per acre and the spring fertilizer ratio. Final fertilizer and application rates for the tailings will consider information acquired from current reclamation and soil tests.

5.2.6 Seed and Seeding

The grass seed mix presently used at Fort Knox is listed in **Table 5-4** The primary purpose of this seed mix is to achieve quick vegetative cover that will help minimize soil erosion. Forb species that may be considered in the future for revegetation include: Silverberry, Lupin, Oxytropis, Wild Sweet Pea, Sweetbroom, Burnet, Siberian Aster, Goldenrod, Alpine Milk Vetch, Wild Sage, Dragonshead Mint and Wild Rhubarb. However, these varieties are not currently available commercially, and a commercial source must be located if they are to be incorporated in the seeding mix. The seed mix may change over time in response to such factors as internal and external research results, changes in technology, changes in land management philosophy, and commercial availability. Native species will be the preferred mix. However, other species may be used in some years due to availability or if deemed to better meet the post-mining land use criteria and approved by ADNR.

Table 5-4: Seed Mix

Seed Type	Mix %
Arctared Fescue	50%
Gruening Alpine Bluegrass	20%
Tundra Glaucous Bluegrass	20%
Nortran Tufted Hairgrass	10%

Seeding will be accomplished using broadcast methods that may include but not be limited to hand broadcasting, dozer or off-road vehicle mounted broadcasting, and aerial broadcast application. The application rate for broadcast seeding using the presently proposed grass seed mix will be 9 pounds of pure live seed per acre. The rate has been reduced based on successful results of revegetation efforts at True North and discussions with Plant Materials Center. The need for mulch application will be evaluated if seed germination becomes a limiting factor in the reestablishment of vegetation.

5.2.7 Revegetation Timing

Seeding will be conducted as soon as possible following seedbed preparation. Ground conditions suitable for large scale earthwork occur primarily during the spring and summer months. Research and experience with concurrent reclamation will be used to evaluate the potential of dormant seeding. Generally, seeding is implemented after spring break up until mid-July. Such seeding allows the seed to take advantage of the summer moisture period. However, actual experience has shown that all seedbed preparation on large-scale mine reclamation projects cannot and does not occur at one point in time. Thus, while every effort will be made to conduct the majority of seeding after spring breakup and before mid-July, seeding actually may occur during spring, summer or fall. If a seeding is unsuccessful for any reason, the area will be reseeded the following year.

5.2.8 Fort Knox Vegetative Restoration Studies

FGMI currently uses a native grass seed mix ratio, seed application rate and fertilizer rate recommended by the Plant Materials Center with approval from ADNR. The grass mix was developed during the construction of the wetlands below the tailings impoundment and is still being used for concurrent reclamation projects. Planting of dormant willow cuttings and encouraging the natural invasion of adjacent native species are methods used in the past to promote species diversity. However, an increase in plant species diversity was recommended to improve the wildlife habitat surrounding the developed wetlands in the environmental audit of 2003 (Golder 2004). Opportunities to increase species diversity in all areas of the mine site will continue to be pursued.

5.2.9 Revegetation Cover Criteria

A vegetative cover criterion of 70% will be achieved prior to requesting final release of FA for each reclaimed area. The 70% vegetative cover criteria shall be determined a minimum of three years after the last application of topsoil, seed, fertilizer, or any water in addition to natural precipitation. A method approved by ADNR will be used to determine percent cover. The 70% cover criteria may be waived upon the concurrence of ADNR or the land owner for specific areas that are deemed stable, have minimal potential to adversely impact surface water quality, and are consistent with the post mining land use.

For an unsuccessful seeding event, FGMI will implement appropriate action, which could include reseeding the area, fertilization, and/or placement of growth media on the site.

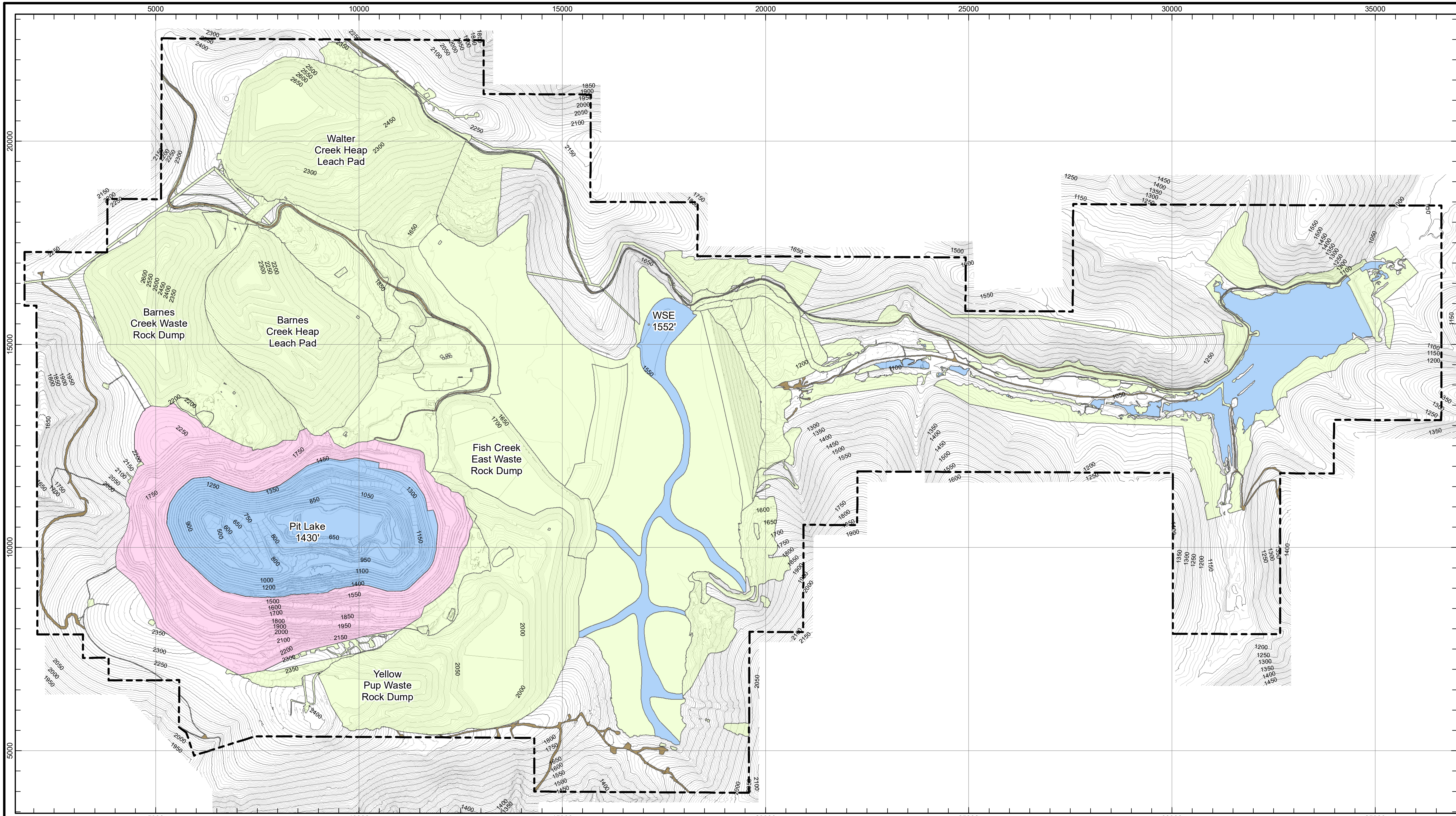
5.3 Topography

Figure 5-3 represents an aerial photo of the Fish Creek Valley showing pre-development ground conditions and topography at the Fort Knox Mine site.

Figure 5-3: Predevelopment Condition

Figure 5-4 illustrates the conceptual topography after reclamation occurs. The post-reclamation topography consists of a rolling landform which blends with the hills along the south and north sides of Fish Creek. The creation of open water areas within the pit, developed wetlands in the Fish Creek Valley, and revegetated upland landforms will diversify the post-mining topography and habitat.

Figure 5-5 represents the conceptual topography after reclamation for the premature closure scenario. The final configuration will be similar to the planed life of mine closure plan.



KINROSS Fort Knox

Post Reclamation Topography

Figure 5-4

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Revegetated Areas
- Pit
- Reservoir
- Roads to Remain

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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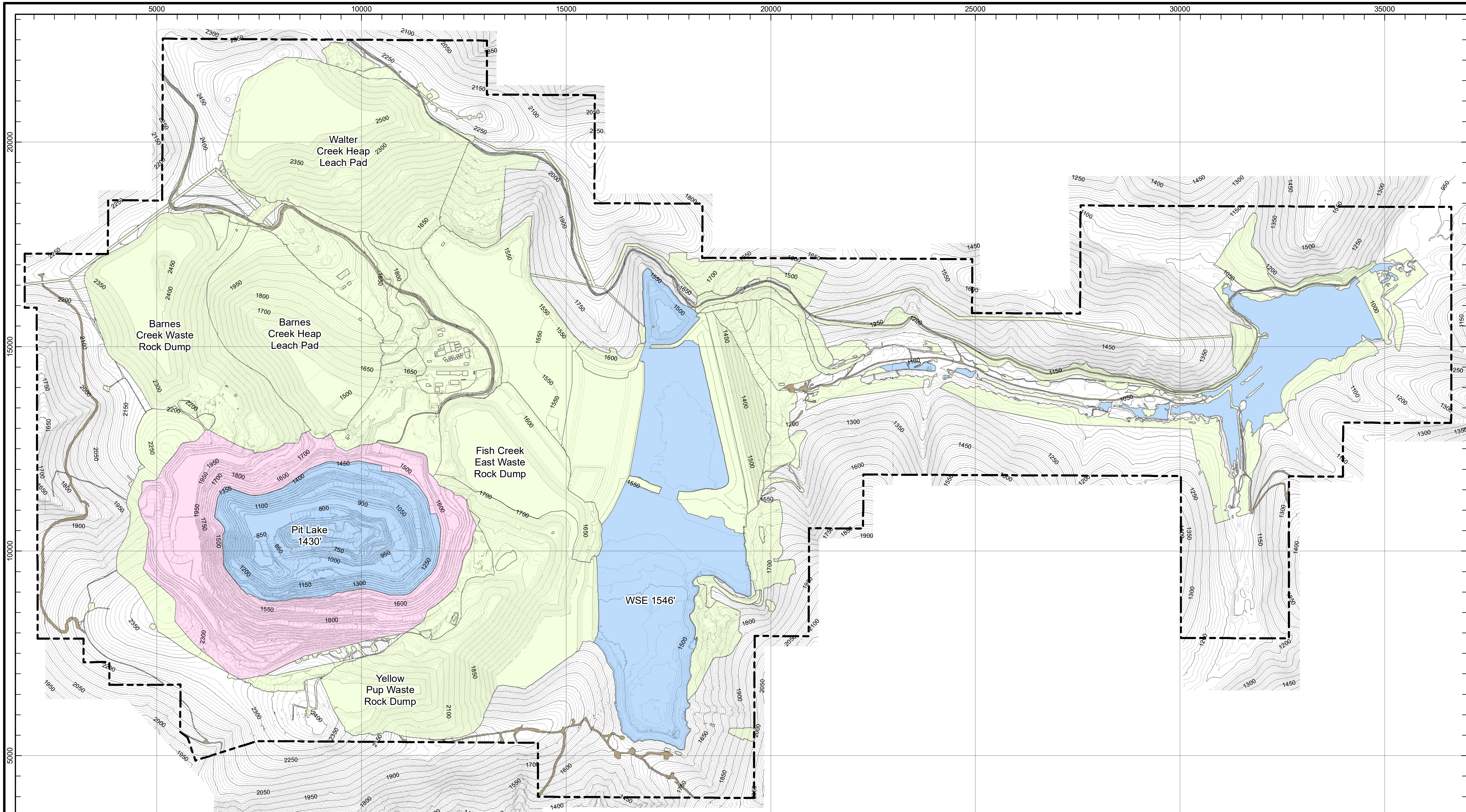

KINROSS Fort Knox

Premature Closure
Post Reclamation Topography

Figure 5-5

Date: December 2019

LEGEND:

Millsite Lease Boundary

2020 Post-Reclamation Topo

Contour 50'

Contour 10'

Revegetated Areas

Pit

Reservoir

Roads to Remain

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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5.3.1 Drainage

Site drainage was and remains eastwards down Fish Creek Valley to the confluence with Fairbanks Creek and eventually to the Little Chena River. Melba and Monte Cristo Creeks, Barnes, Pearl, Yellow Pup, Walter, Last Chance, and Solo Creeks are all named tributaries to Fish Creek within the project boundaries. Post-mining drainage patterns will be similar in overall gradient and direction (**Figure 5-6**).

Surface water within the pit catchment area will be diverted into the pit and combine with groundwater inflows after pit dewatering ceases. Decant water from the TSF will be pumped to the pit prior to closure along with draindown and seepage from the heap leaches. All water collected within the pit will form a lake, eventually discharging into the groundwater system (1430 fmsl) through the fractured bedrock and alluvium. The current pit lake water model estimates 64 years for the pit to fill to its discharge elevation assuming average climate data. (HydroGeoLogica 2019)

Surface water will be routed to the perimeter of the heap leaches to stabilized channels. In limited events, water which does not evaporate or runoff on the surface will infiltrate the growth media cover. Excess water will migrate through the rock on the pad and be absorbed with any remaining seepage reporting to the sump of each leach pad. The sumps will drain by gravity to the pit through pipes installed at closure.

Pearl Creek and Yellow Pup Creek will have tailings deposited in the lower reaches of their drainage basin. In addition, a portion of the Yellow Pup drainage will be filled with waste rock. Surface and groundwater will continue to flow from the drainage basins into the tailings impoundment.

The area south west of the Admin area will be regraded to direct surface drainage to the pit, while infiltrated water will ultimately report to Fish Creek through the fractured bedrock and alluvium below the TSF. Surface drainage must be directed toward the pit because the closure configuration of the TSF is higher than the Admin area, creating a low point. Consequently, drainage must either be directed to the pit or a pond will potentially form against the TSF fill.

Pit lake formation is expected to stop at approximately 1430 fmsl, the intersection of the bedrock with the alluvial/placer layer in the pit highwall. When water exceeds 1430 fmsl it will report through the alluvium layer and drain subsurface gradually towards the toe-drain of the TSF. No surface water is expected to flow from the closed TSF to the pit as grading directs water to the spillway on the north abutment.

Construction of the Phase 1 Causeway divides, the North Pond into an upper and lower level. Small channels will be graded into the upper level to control runoff and route stormwater to a channel along the northwest boundary of the TSF. **Figure 5-6** illustrates the proposed drainage pattern through the TSF. Portions of the upper level may develop into wetlands over time in areas where small amounts of water may concentrate seasonally or in areas of localized settlement creating depressions that may temporarily impound water. Noting the ponded water would likely occur in the spring when the surface soils are frozen or when they are saturated.

The lower level of the North and South Ponds includes construction of a wide-channeled, sinuous, wetland area lake, with a large pool located near the spillway in the area of the current Barge Pond. The causeway between the current North and South Ponds will be breached to allow water to freely flow between the North and South Ponds. Currently a jetty separates the barge pond from the North Pond, acting as retention dyke, but allowing subsurface water to freely flow between North Pond and the Barge Pond. For closure, the barge jetty will be breached allowing water to freely flow from the extreme south end of the TSF to the barge pond and ultimately through the spillway. The meteoric water collected and conveyed through the channels of the TSF closure cap may encourage wetland habitat creation.

Snowmelt and stormwater will be routed throughout the mine site and be directed to either the pit or the TSF. Water collected in the pit will eventually enter the groundwater aquifer, while the water collected on the reclaimed TSF will discharge through the spillway (scheduled to be completed in year 2021). Water will flow from the spillway into constructed wetlands on the north side of the Fish Creek channel and continue to the WSR. Solo Creek and Last Chance Creek will continue to discharge into the WSR. The WSR will discharge through the spillway at the north end of the dam to lower Fish Creek at the eastern property boundary.

The TSF closure cap and the TSF spillway design will continue to be evaluated and approved through the Alaska Dam Safety program.

In the event of the premature closure scenario, the drainage regime will be the same, however the TSF will be in a slightly different configuration resulting in a larger pond downstream of the Phase 1 Causeway (**Figure 5-7**).

Water management of TSF decant water, and heap leach seepage will be the same for both the planned and premature closure scenarios. Decant water will be pumped to the pit prior to closure to facilitate placement of cover on the TSF, while drains will be installed in the heap leaches to collect and convey seepage water to the pit via gravity drains. The combined seepage from the WCHL and BCHL is expected to be an average monthly flow of 510 gpm with a peak rate of 1,152 gpm during August (HydroGeoLogica 2019).

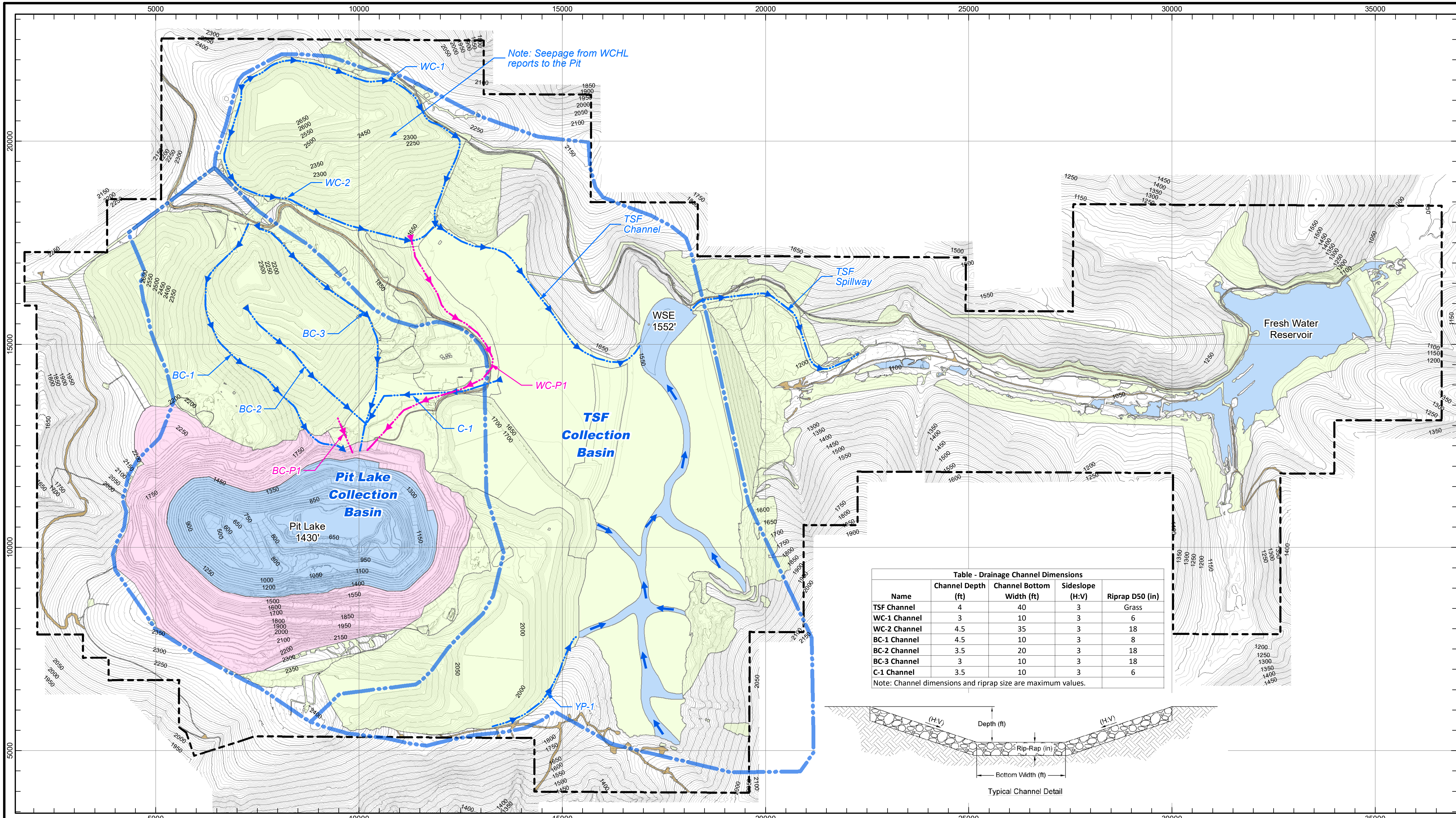

Table - Drainage Channel Dimensions

Name	Channel Depth (ft)	Channel Bottom Width (ft)	Sideslope (H:V)	Riprap D50 (in)
TSF Channel	4	40	3	Grass
WC-1 Channel	3	10	3	6
WC-2 Channel	4.5	35	3	18
BC-1 Channel	4.5	10	3	8
BC-2 Channel	3.5	20	3	18
BC-3 Channel	3	10	3	18
C-1 Channel	3.5	10	3	6

Note: Channel dimensions and riprap size are maximum values.

KINROSS Fort Knox

Post Reclamation Drainage

Figure 5-6

Date: December 2019

LEGEND:
- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Revegetated Areas
- Pit
- Reservoir
- Roads to Remain
- Drainage Basin
- HLP Seepage Collection Drain Pipe (12" HDPE)
- Drainage Channel
- Flow Direction

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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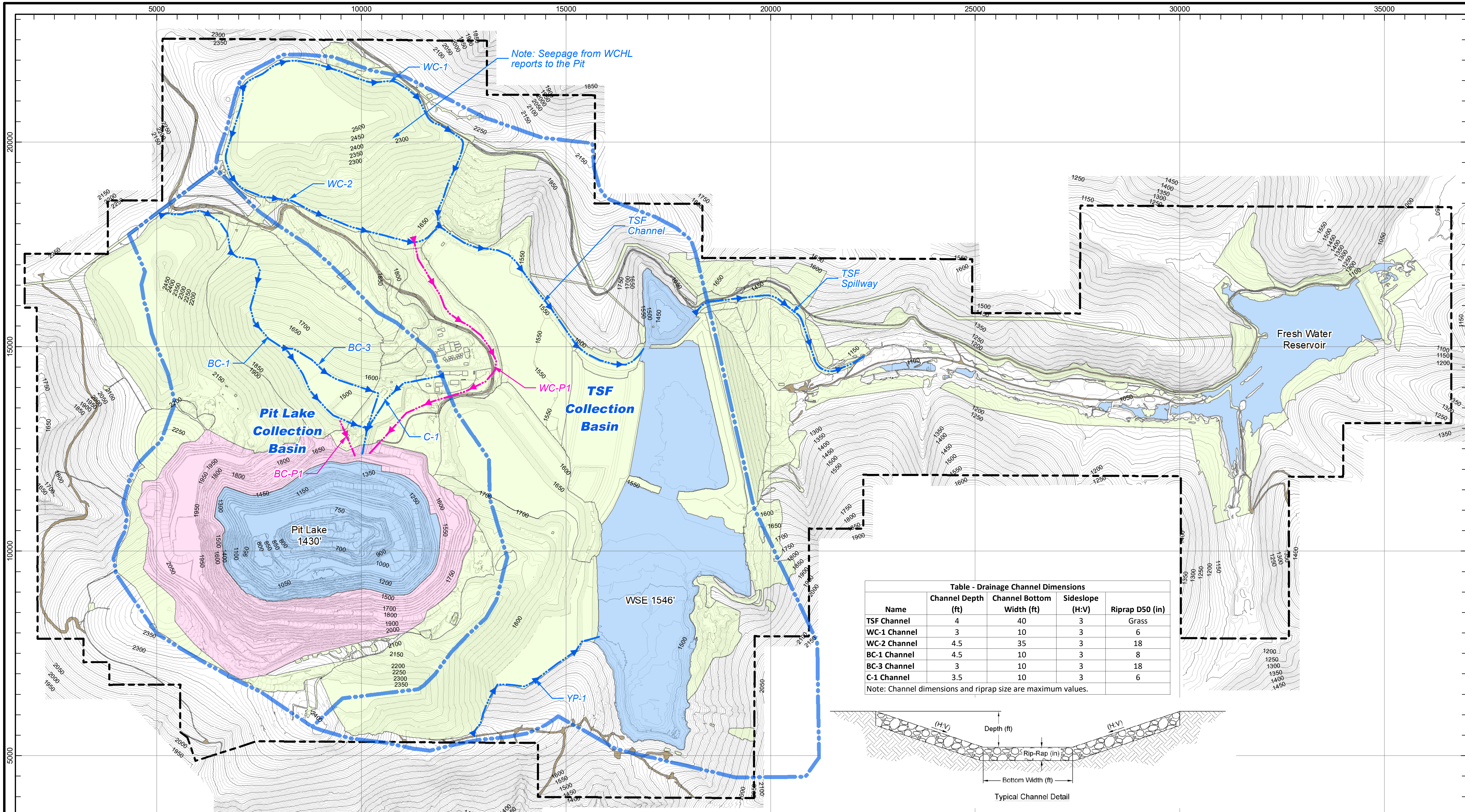

Table - Drainage Channel Dimensions

Name	Channel Depth (ft)	Channel Bottom Width (ft)	Sideslope (H:V)	Riprap D50 (in)
TSF Channel	4	40	3	Grass
WC-1 Channel	3	10	3	6
WC-2 Channel	4.5	35	3	18
BC-1 Channel	4.5	10	3	8
BC-3 Channel	3	10	3	18
C-1 Channel	3.5	10	3	6

Note: Channel dimensions and riprap size are maximum values.

KINROSS Fort Knox

Premature Closure Drainage

Figure 5-7

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- **2020 Post-Reclamation Topo**
- Contour 50'
- Contour 10'
- Revegetated Areas
- Pit
- Reservoir
- Roads to Remain
- Drainage Basin
- HLP Seepage Collection Drain Pipe (12" HDPE)
- Drainage Channel

N

1"=2,200'

0 1100 2200 3300 4400

Fort Knox Local Grid Final

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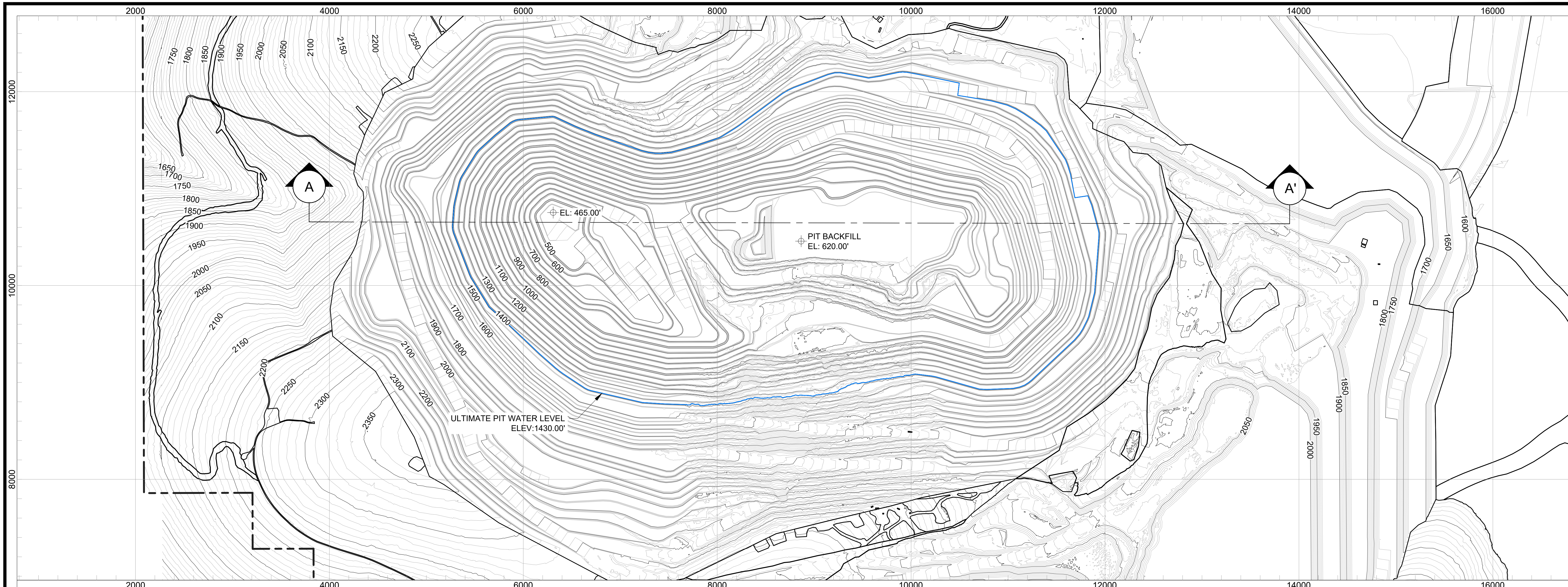
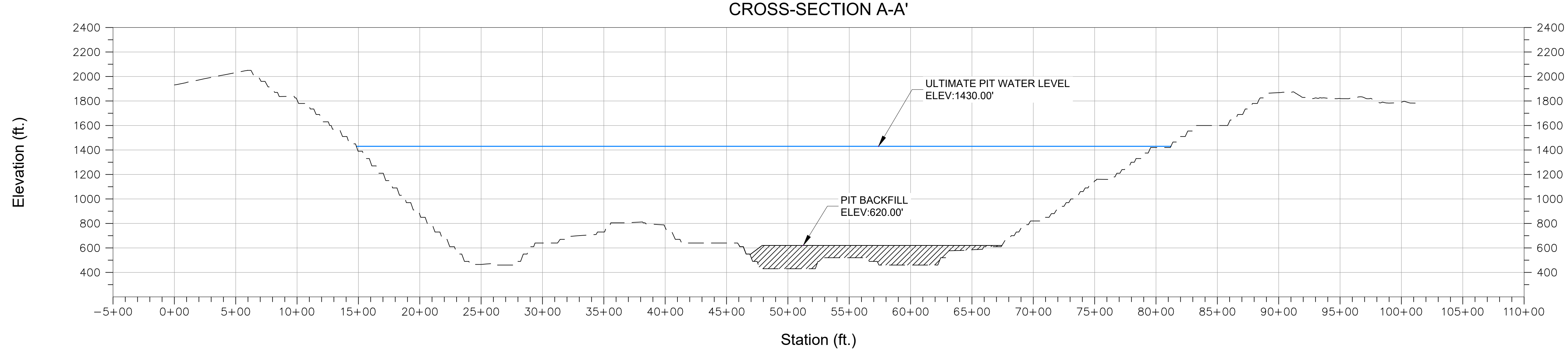
5.3.2 Pit Slope Stability

Pit slopes are designed to maintain safe operating conditions during mining. The pit has two different rock types. In the upper reaches of the pit is schist, which is removed as waste rock. Benches in the schist are 30-45 ft tall and have catch benches that are generally 20-40 ft wide. The overall slope in the schist is generally in the range of 25-35-degrees. Underlying the schist is the granite rock type where benches are 30-60 ft tall and have catch benches that are 15-40 ft wide. The overall slope in the granite varies according to geologic conditions and is within the range of 45-49 degrees overall.

Figure 5-8 illustrates a cross section of the final mine pit (post reclamation) with the pit lake water level at 1,430-foot elevation. As the pit fills with water, the walls of the pit will be subject to localized failures. While the pit is filling to its final elevation, the pore pressure will increase within the pit walls creating unstable conditions. Once the pit lake reaches its final elevation, the pore pressure within the pit walls will equilibrate resulting in stable pit walls and water will start to flow through the fractured bedrock under the TSF.



CROSS-SECTION A-A'



KINROSS Fort Knox

Pit Lake Cross-Section

Figure 5-8

Date: December 2019

N

1"=1,000'

0 1000' 1500' 2000'

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5.3.3 Acid Rock Drainage Potential

FGMI has evaluated overburden, ore, and waste rock for the potential to generate acid rock drainage (ARD). The acid/base accounting analysis and humidity cell testing during baseline studies indicated no potential for acid generation. Both static and kinetic testing of materials indicates no potential for acid formation in the waste rock, open pit or tailings impoundment. Results of analysis from baseline studies are further supported by the quarterly submittals of the Fort Knox Mine Compliance Sampling Data.

Water quality will continue to be monitored and annual characterization of overburden, waste rock, and ore will continue over the life of the operation and throughout final reclamation. Historical data confirms there is low ARD potential. If FGMI becomes aware of acid formation occurring or the potential thereof, the issue will be managed according to BMPs specific to ARD. If routine characterization of material indicates a potential for acid rock drainage, then a specific management plan for material handling will be developed by FGMI. This plan will be submitted to ADNR and ADEC for approval, and the reclamation plan modified according to 11 AAC 97.240.

5.4 Public Access

Public access to the Fort Knox site will be restricted until both reclamation and closure are complete after which FGMI will public access to the site will be managed and maintained by the Alaska Department of Transportation. The existing Fish Creek road will remain to provide access to the WSR. Roads to be left in place following completion of reclamation will be determined by Fort Knox and ADNR.

Public safety is a principal concern in closure and reclamation of mining operations. The Fort Knox pit high wall safety berms will remain in place to restrict access to the pit area. Generally, berms 4-6 feet in height will be utilized to restrict access to the steeper highwall sections of the pit and other potentially hazardous areas. Signs will be posted to provide additional warning of potentially hazardous areas.

Pre-mining public easements or RS2477 trails that have been disturbed due to mining activities are addressed with the ADNR Easement Section. Working with the ADNR, FGMI has identified routes that provide equal or better access than the original trails. All impacted trails will be reconstructed to reestablish access. Any future impacts will undergo the same process for reestablishment.

5.5 Financial Assurance Release

As reclamation activities progress, FGMI will submit a request for partial bond release of the reclamation financial assurance. FGMI utilizes the SRCE Model, to calculate the FA for reclamation activities. Successful reclamation interpretation comes from Article 02 Reclamation Performance Standards 11AAC97.200. Section 8 of this plan provides details and assumptions for FA calculations.

6 FACILITY SPECIFIC RECLAMATION AND CLOSURE

A comprehensive water balance model has been used to evaluate the reclamation alternatives for specific facilities. Based upon the results of this evaluation, an overall, integrated water management and reclamation strategy has been developed to ensure runoff and drainage water quality will not adversely impact designated use standards in the receiving waters. In the long term, the general reclamation activities described in Sections 4 and 5 are directed at creating self-sustaining vegetation communities that will provide protection for water resources. The objective of this strategy is to allow Fort Knox to achieve the designated post-mining land uses as soon as possible after mining and milling are finished.

6.1 Water Management

The goal of the water management plan will be to protect designated use standards in the receiving water and protect life and property downstream. The closure strategy is based on predictions from three models that contribute to the overall water inventory picture. The Operations Water Balance is calibrated on a quarterly basis, the pit lake model is updated every other year, and a closure water balance which is used to evaluate different closer configurations. All the models go through a QA/QC process and are refined as necessary.

6.1.1 Receiving Water Beneficial Use

By default, natural waters in Alaska are protected for all designated uses established by regulation. Prior to construction of the Fort Knox mine, baseline water quality in Fish Creek was affected by naturally occurring iron, manganese, and arsenic as well as by extensive historic alluvial placer mining operations, with seven parameters having values exceeding the state maximum contaminant levels for drinking water, and three others just below those levels (CH2M Hill 1993). Since construction of the mine, surface water quality in Fish Creek has improved, in large part due to successful reclamation of pre-existing placer mining disturbance in the Fish Creek drainage between the Fort Knox tailings storage facility and the WSR. It now supports a robust population of grayling and burbot as noted in Section 3.4.

6.1.2 Mine Site Surface Water

The tailings impoundment is considered a treatment facility during operation and closure. Excess water in the TSF is either recirculated through the mill or heap leach processing circuits or treated and discharged into Fish Creek. There may be some constituents in which the pre-existing condition of the groundwater and surface water in Fish Creek is of lower quality than the criteria for discharge. As a result, site-specific criteria for some constituents that take into account background conditions as outlined in 18 AAC 60.825 may be established.

Seasonal discharges through the TSF spillway will be routed to a wetland system developed on the north side of Fish Creek. The wetland system will not be used as a means of treatment to meet water quality standards. All water reporting to the wetlands will meet standards prior to discharge from the tailings impoundment. When standards are achieved, the mine will enter the post-closure monitoring phase. Incorporation of the wetland system will not influence the post-closure monitoring period since it is planned to receive water that meets water quality standards.

6.1.3 Mine Site Water Management Strategy Summary

Fort Knox utilizes an Operational Water Balance model that maps past and current water flows throughout the site to predict future water volumes for water operations and management purposes. The Closure Water Balance model was created by modifying the current Operational

Water Balance model to reflect closure and post-closure site water flows and is described in the Fort Knox Pit Lake Evaluation, 2019 Update (HydroGeoLogica 2019). A timeline of major activities and the corresponding water transfers are summarized in **Table 6-1** and **Table 6-2**.

Referencing the above noted Pit Lake Evaluation. Current water quality predictions (HydroGeoloLogica 2019), estimate that the pit water will achieve water quality standards prior to discharging into the ground water aquifer. A simple schematic showing water transfers and long-term seepage collection routing is depicted in **Figure 6-1**.

In the event of a premature closure scenario, similar volume transfers would be required from each facility as part of the closure sequence. Water transferred from the TSF will be slightly greater in volume but slightly better water quality due to a reduction of RO brine in the TSF. The volume increase (from the TSF) will be offset by a reduction of water transferred from BCHL. Also, water quality from the volume transferred from the heap leaches would likely have less effect on the pit lake due to reduced volume of constituents. The reduction of mined volume (assuming the 2020 closure) will result in a smaller pit lake volume, however that will also be offset by the scheduled construction of in-pit waste rock dump having not been constructed.

The key current, closure and post-closure water flows and water management activities across the mine site designed to protect all designated uses in the WSR on Fish Creek and captured in the Closure Water Balance are as follows (HydroGeoLogica 2019):

Current Water Flow Onsite

Current Operations through Mill Closure (2019 – 2021). The mine will continue to operate under current conditions through 2021, with active mining in the current pit, leaching operations at Walter Creek/Barnes Creek heap leach facilities, and milling/tailings deposition in the tailings storage facility (TSF). The June 2019 bathymetric survey estimated the operational volume of the TSF decant ponds (combined) at 5,872 acre-feet. Water treatment systems are operating to discharge water off-site and reduce water inventory prior to closure. Production water from pit dewatering wells was being treated by a reverse osmosis (RO) system; currently, dewatering water is being discharged off-site after blending with other discharge waters to meet discharge permit standards.

An interception system collects TSF seepage water (and some groundwater) downgradient of the TSF; a portion of this water is being treated by a second RO system as of February 2019 for off-site discharge, while excess seepage water is recycled directly back to the TSF decant ponds. A third RO system has been operating since June 2019. It treats decant pond water directly for off-site discharge. The brine (concentrate) from the individual RO systems is being/will be directed to the TSF decant ponds. The three RO systems will cease operation at the end of 2027 or sooner depending on water management needs.

Pit Expansion and Mill Closure (2022)

During 2022, mining will continue; however, the milling operations will shut down. Planned reclamation of the north TSF decant pond will be completed, and surface water diversion will be initiated. Post 2022, mining of the open pit will continue and extend to the west into the Gilmore expansion area. There will be a ridge of unmined material between the completed (eastern) pit bottom and the development of a western pit bottom in the Gilmore expansion. Ore from the Gilmore expansion will be placed on the BCHL for leaching. A portion of the waste rock from the Gilmore expansion may be placed in the eastern pit bottom. Pit Lake (initial filling period; 2022-2027)

During 2022, water from the TSF north decant pond may be transferred to the, eastern pit bottom based on water management goals creating an initial ‘east’ pit lake. Runoff to the north TSF area will be diverted and reclamation (growth media cover/revegetation) of this area will continue. Pit dewatering will continue throughout this period as needed to provide slope stability and continued mining in the Gilmore area. However, some natural groundwater inflow, direct precipitation, and pit wall runoff water will accumulate in the east pit lake. In 2027, the water remaining in the TSF south decant pond is estimated to be 1,200 acre-ft and will be transferred to the pit lake so that reclamation activities at the TSF may be completed.

Runoff to all areas of the TSF will be diverted, allowing for a dry closure of the TSF. TSF seepage from the interception system will be pumped to the pit lake at this time; pumpback to the pit will continue as long as necessary, until water quality standards are met. Mining will be completed in the 2027. The pit lake will continue to fill up to the elevation of the ridge separating the Gilmore west pit bottom, at which point the pit lake will overflow into the west pit area, eventually combining to create a single pit lake.

Active Leaching (ongoing – 2030)

Leaching at WCHL and BCHL facilities will continue through approximately 2030. After the end of economic leaching, an initial draindown from the HLP will be pumped to the pit lake for a period of 2 to 3 months. After the initial transfer, residual draindown from the heap leach facilities will gravity-flow from underdrains installed in the heap leaches to the pit throughout the post-closure period.

Closure (2032 – post-closure period)

After the end of mining and active transfers to the pit lake, the pit lake will continue to fill with water from natural discharges including: pit-area groundwater inflow, direct precipitation to the pit lake, pit wall runoff, and runoff from disturbed/undisturbed areas above the pit rim that have not been diverted. The pit lake is expected to fill over several decades up to the contact with the Fish Creek alluvium, at which point the pit lake water is predicted to flow into the downgradient groundwater. The final pit lake elevation will be controlled by contact with the alluvium, estimated at an elevation of 1,430 ft fmsl.

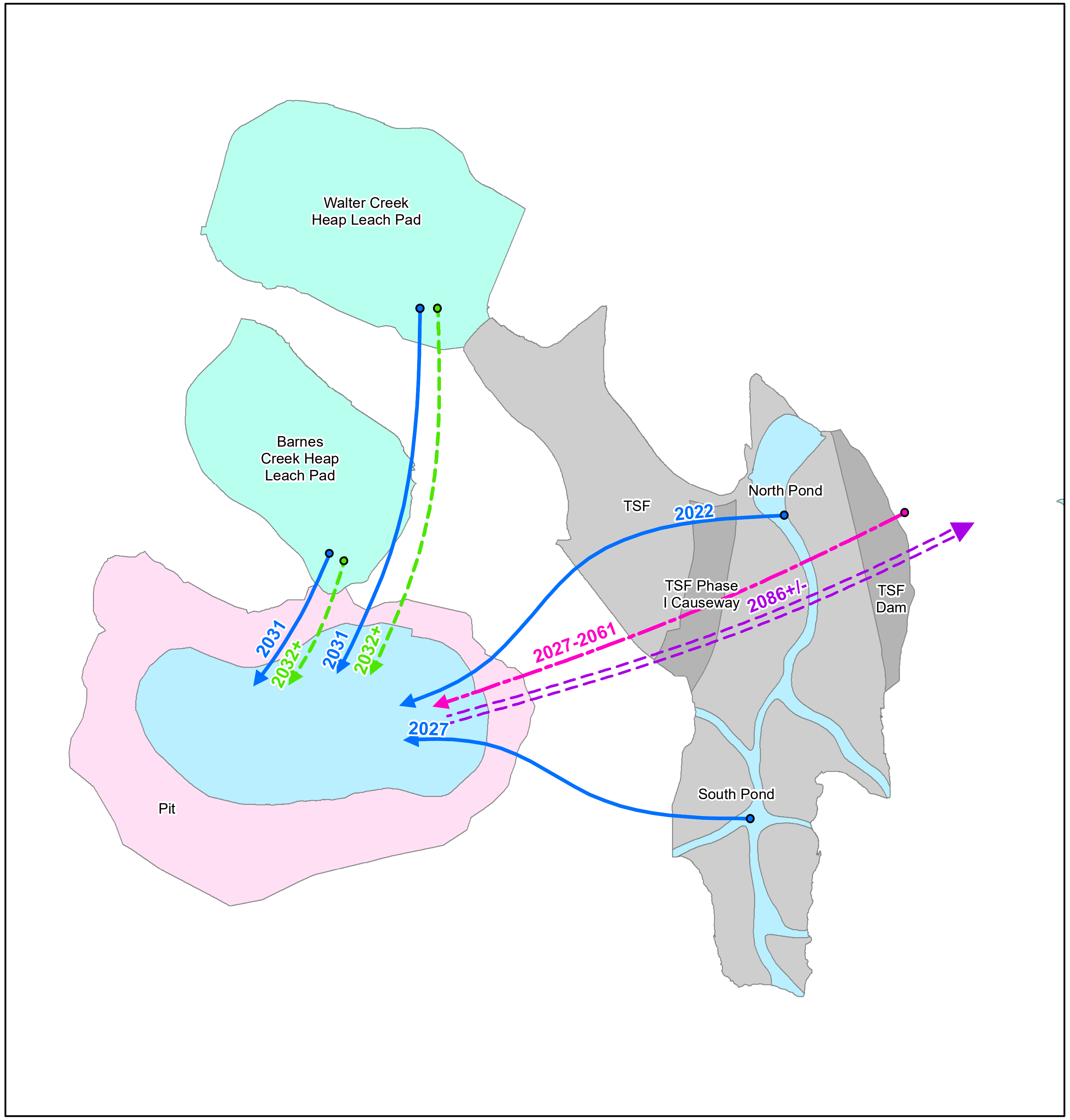
A water balance for the premature closure scenario was not calculated to predict volumes or timing for pit spilling. The LOM scenario accounts for larger catchment areas and water transfer volumes. For the FA calculations the LOM transfer volumes were assumed, but timing of transfer was initiated at time of closure, without the phased approach as shown in the schedule. The volume of the pit is slightly less in the premature closure period; thus the pit may fill marginally faster prior to discharging into the alluvium and fractured bedrock. Water quality predictions were not estimated for the premature closure scenario, but the estimated load will be less than the LOM WQ prediction due to reduction of seepage from heap leach transfers.

Table 6-1: Pit Lake Transfer Summary – Life of Mine

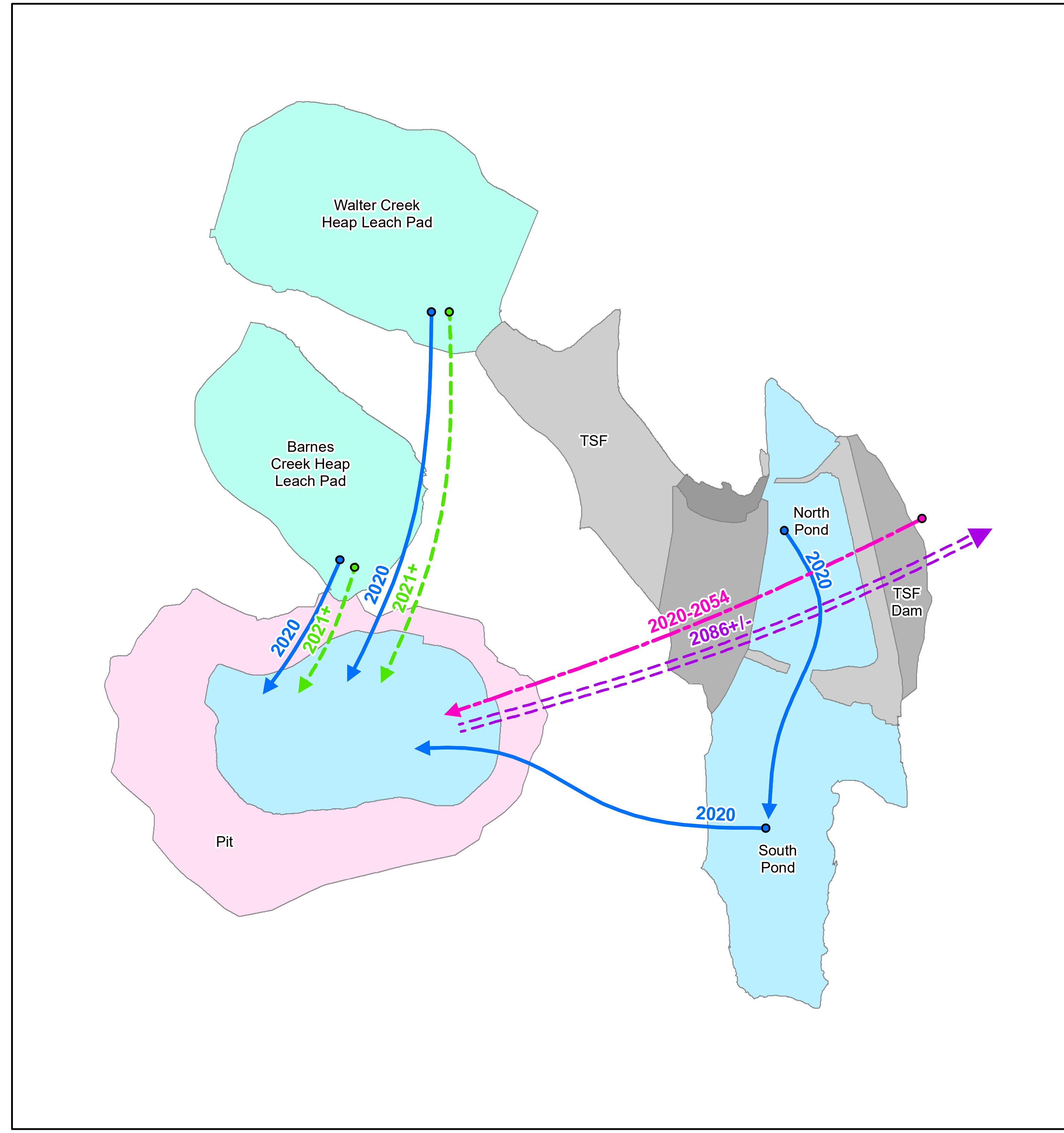
Transfer	Period	TSF Decant Pond Transfers	TSF Seepage System Pumping	Heap Leach Facility Transfers
		Ac-ft		
TSF to Pit	2022	2,032	-	-
TSF to Pit	2023- 2026	2,459	-	-
TSF to Pit	2027- 2030	1,000	2421	-
HLP Draindown and TSF seepage to Pit	2031	-	807	2,929
TSF seepage to Pit	2031- 2061	-	4,851	-

Table 6-2 Pit Lake Transfer Summary - Premature Closure

Transfer	Period	TSF Decant Pond Transfers	TSF Seepage System Pumping	Heap Leach Facility Transfers
		Ac-ft		
TSF to Pit	2020	5,872	-	-
HLP Draindown	2020	-	-	2,929
TSF seepage to Pit	2020-2054	-	8,079	



LOM Water Balance



Premature Closure Water Balance

KINROSS Fort Knox

Water Balance Schematics

Figure 6-1

Date: December 2019

LEGEND:

- Water Transfer Flow Path
- Gravity Seepage Collection Flow Path
- TSF Seepage Collection Flow Path
- Ultimate Pit Spillpoint Flow Path

N

0 1250 2500 3750 5000

1"=2,500'

Fort Knox Local Grid Final

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6.2 Tailings Storage Facility Reclamation and Closure

The tailings impoundment and associated appurtenances are permitted under Waste Management Permit 2014DB0002, Modification #2 by ADEC for operation, closure (reclamation), and post-closure monitoring. Reclamation goals for the tailings impoundment are as follows:

1. Establish upland habitat
2. Ensure that water quality meets applicable standards
3. Establish a productive post-mining land use (wildlife habitat)

Closure activities will begin when milling ceases.

6.2.1 Closure Sequence

1. Reclamation of the tailings impoundment will be integrated with the overall mine water management strategy. Operational measures during the last two to three years of mill production will be implemented to prepare for efficient closure of the tailings.
2. During operations, tailings will be deposited from the upstream face of the tailings dam in order to create a “beach” along the dam. This will push the North Pond away from the dam, reducing seepage through the dam and enhance the long-term stability of the dam.
3. Water in the TSF will be managed and reduced to allow waste rock to be placed on the TSF surface after milling is complete. Water will be treated and discharged to reduce the volume in the TSF to allow for additional waste rock cover and revegetation to occur.
4. During operations, use of fresh water for process make-up will be reduced or eliminated. The goal at closure is to minimize the volume of water in the Barge Pond to the operational minimum.
5. The TSF Pond water quality will improve as the impoundment fills with runoff from precipitation. Water collected in the pond is expected to meet water quality standards soon after revegetation.
6. Spillway construction is planned to be completed in 2021.
7. The Barge Pond will fill to the level of the spillway invert elevation allowing water to pass through and migrate to the north wetlands complex. The source of fresh water will be precipitation and runoff from areas upgradient of the tailings impoundment.
8. The surface of the tailings will be reclaimed to include upland (dry cover) vegetation.

6.2.2 Tailings Surface

The maximum elevation of tailings against the upstream face of the Tailings Dam is approximately 1,557 fmsl. South of the Pearl Creek Causeway, tailings deposition will be performed such that a low point is created in roughly the middle of the pond area.

The tailing deposition plan include the following objectives:

1. Accommodate tailing facility operations with planned construction.
2. Optimize tailing deposition and storage in the heads of the Barnes Creek and Walter Creek drainages without trapping water on the north side of the Phase 1 Causeway.
3. Optimize tailing deposition South of Pearl Creek Causeway to fill in the deepest areas of the pond and reduce the required depth of fill for the final closure cap.
4. Deposit tailings from the crest of the Tailings Dam embankment to minimize seepage and buttress the upstream face for slope stability. As of Fall-2018, the final tailings beach to

elevation 1556 fmsl has been deposited and is in the final configuration. The beach is approximately 120’ wide and extends the length of the embankment.

Once milling ceases a waste rock cover will be placed on tailings to provide positive drainage creating a sinuous channel connecting the North and South basins to the Barge ponds, into a single drainage (**Figure 5-6**). The channel width varies in width from 100 to approximately 200 feet and the length is approximately 9,000 ft. The depth of the channel will range from 1 to 5 ft depending on the depth of tailings and waste rock deposition. The channel will be constructed by placing waste rock on tailings, and grading growth media to accommodate drainage. The south end of the channel is located near the head of Pearl Creek, it will cut through the rockfill structure of the Pearl Creek Causeway and Barge Pond Jetty, connecting all three basins together. The channel will maintain a small pond at elevation 1,552 or below based on the spillway invert elevation.

The final TSF pond will fluctuate seasonally depending on precipitation and evaporation with an average full pool elevation controlled by the spillway invert at 1,552 fmsl and a corresponding surface area of the full pool pond is approximately 113 acres.

Upland vegetation will be established throughout most of the facility and will mainly be present where the closure cover is above the embankment crest at 1557 fmsl. Reclamation of upland areas will utilize the general reclamation techniques described in Section 5, with the addition of at minimum 2 ft of waste rock overlaying the tailings. The Pearl Creek Causeway will be ripped prior to growth media placement.

Growth media will be placed over the top of the waste rock cover (including Pearl Creek Causeway) to encourage vegetative growth. If additional growth media is required to establish a vegetative cover, the remaining growth media stockpiles will be utilized. This reclamation method will provide suitable growth media, woody debris on the tailings surface, and open the borrow areas to the establishment of early succession vegetation (grasses and willows) that has a higher habitat value for the larger terrestrial species present at the site. Small ponds may form in the low-lying channel across the facility. Spatially, these ponds will not contact the upstream dam face, thus reducing seepage through the dam. Wetland vegetation will form in the channel area and in regions below the embankment crest.

6.2.3 Tailings Spillway

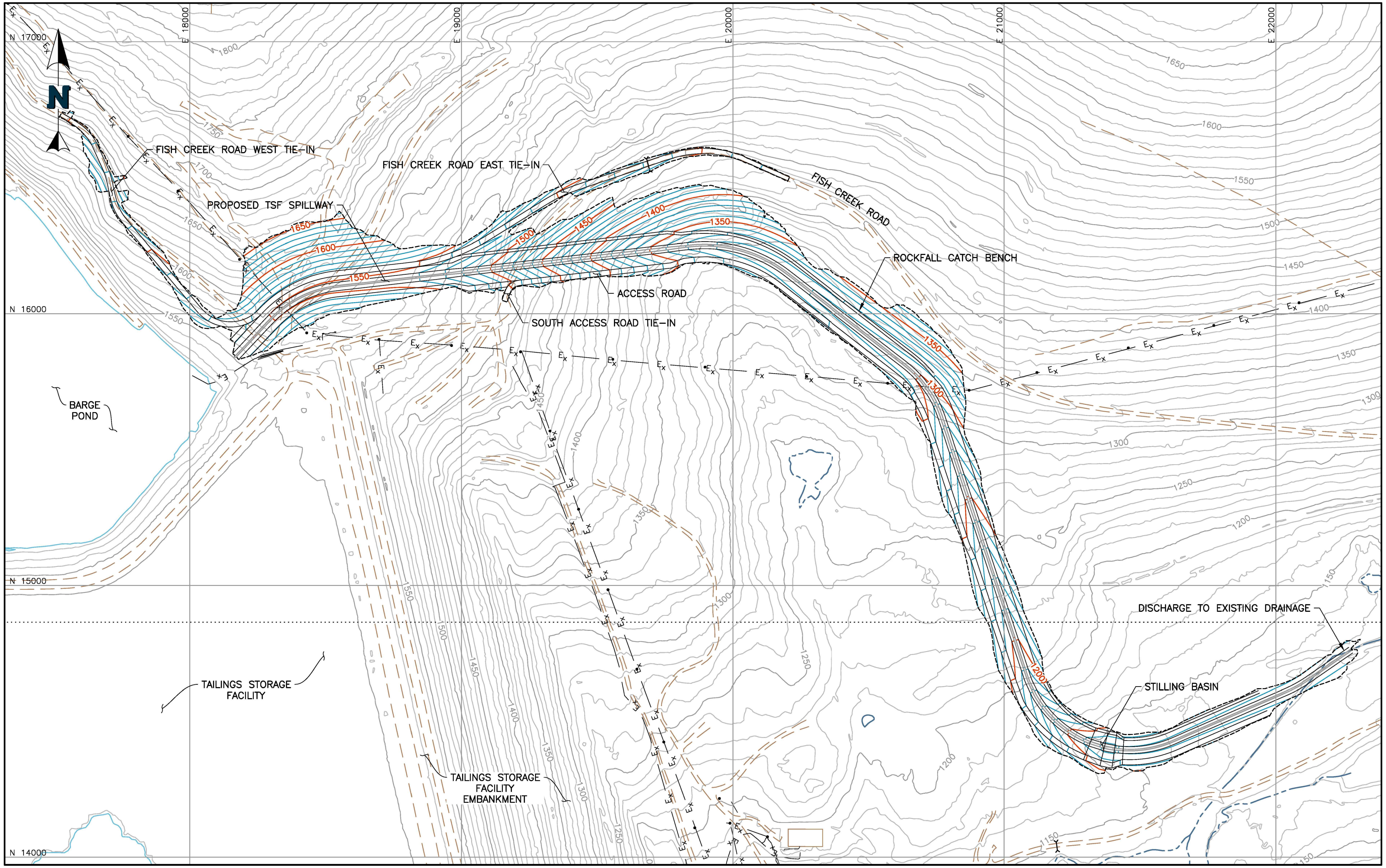
The spillway design is intended to provide a concept level design and the basis for FA calculations. At no time will water be allowed to enter Fish Creek until water quality standards have been met. A detailed design is currently being developed for proposed closure conditions. The concept design represents a probable design and is used for calculating FA obligations.

FGMI will continue to work through the Alaska Dam Safety program for approval of the spillway design. The spillway design objective is to ensure the safety of the public and property downstream of the dam and includes the following objectives:

1. Pass the design storm below the dam seal zone with adequate freeboard.
2. Prevent erosion of the spillway and associated conveyance channels while routing the design storm over the TSF dam embankment and abutments.
3. Minimize the volume of water retained behind the dam.
4. Reduce construction costs associated with earthworks and erosion protection in the spillway and outlet channels.
5. Provide a spillway structure that will not require frequent and intensive maintenance.
6. Construct the spillway channel in competent bedrock to the maximum extent practical.

The spillway is approximately 5,300 feet long and an elevation change of approximately -425 feet. The invert of the spillway is located approximately 350 ft north of the north TSF abutment connecting the Barge Pond to Fish Creek below. The entry and exit slopes inverts are set at 1% with slopes between varying from 1% to 27%. **Figure 6-2** and illustrates the plan view of the concept spillway design.

The cross-sectional shape of the spillway is generally the same for the entire length with average bottom width of 24 ft and depth of 8 ft. Riprap armoring varies in size depending on the slope of the channel (and corresponding velocity dissipation required) for various segments, see **Figure 6-3**. for typical cross sections, and design details of the spillway.



0 200 400 FEET

LEGEND:

EXISTING GROUND CONTOURS
PROPOSED GROUND CONTOURS
EXISTING ROADS/TRAILS
EXISTING DRAINAGES
SECTION LINES
EXISTING FENCE
EXISTING WATER LINE
EXISTING POWERPOLE
EXISTING POWER LINE
EXISTING CULVERT

EXISTING TOPOGRAPHY PROVIDED BY KINROSS IN OCTOBER 2018 FROM FILE FK18_MS_Plan and Topo_Local.dwg. DRAWINGS USE A LOCAL COORDINATE SYSTEM TRANSFORMED FROM NAD27SPD3FT. VERTICAL DATUM IN BASED ON NAVD88.

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KINROSS Fort Knox

Concept Spillway Design

Figure 6-2

Date: December 2019

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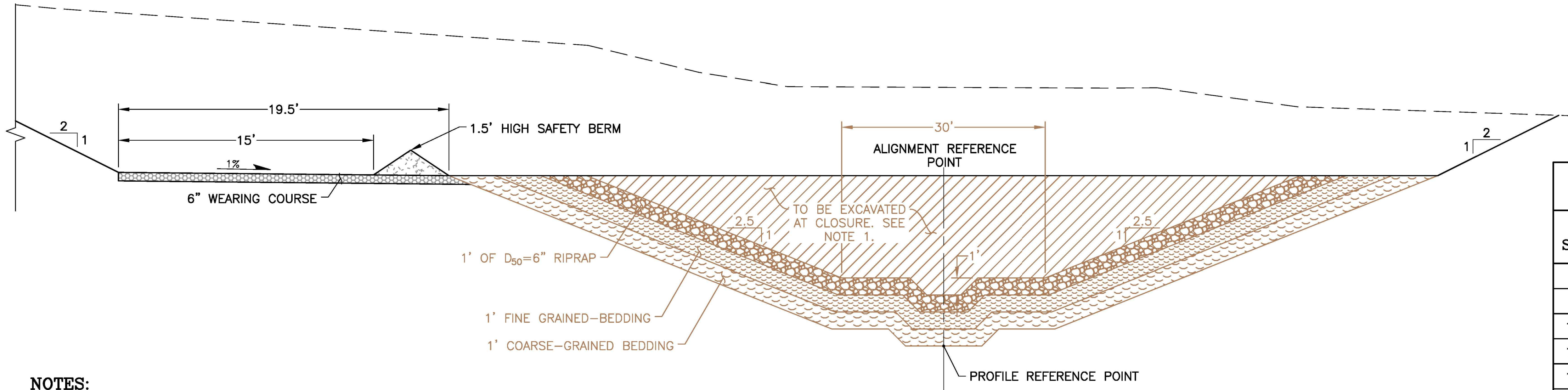
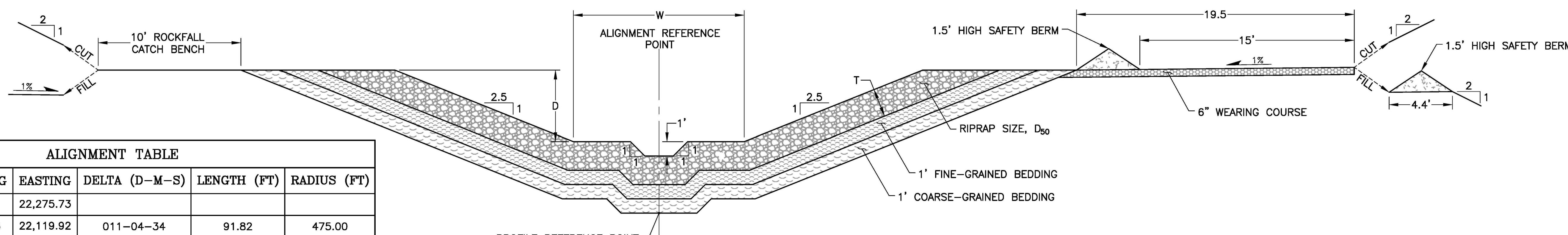


A
A100
TSF SPILLWAY TYPICAL INLET SECTION
SEE NOTE 1

NOTES:

1. CERTAIN TSF SPILLWAY FEATURES FROM STATION 44+50 TO 53+50 WILL NOT BE CONSTRUCTED UNTIL MINE CLOSURE. THESE FEATURES ARE SHOWN IN BROWN.

SPILLWAY DESIGN					
START STATION	END STATION	WIDTH, W (FT)	DEPTH, D (FT)	RIPRAP SIZE, D_{50} (IN)	RIPRAP THICKNESS, T (FT)
0+00.0	9+25.0	24	6	6	1
9+25.0	10+50.0	24	8	30	5
10+50.0	13+25.0	24	8	24	4
13+25.0	13+75.0	TRANSITION			
13+75.0	18+75.0	24	8	12	2
18+75.0	19+25.0	TRANSITION			
19+75.0	24+50.0	24	8	24	4
24+50.0	25+00.0	TRANSITION			
25+00.0	36+00.0	24	8	12	2
36+00.0	36+50.0	TRANSITION			
36+50.0	44+00.0	24	8	36	6
44+00.0	44+50.0	TRANSITION			
44+50.0	53+50.0	30	6	6	1



B A100 B A102
TSF SPILLWAY TYPICAL SECTION

ALIGNMENT TABLE						
	STATION	NORTHING	EASTING	DELTA (D–M–S)	LENGTH (FT)	RADIUS (FT)
PT	0+00.00	14,761.61	22,275.73			
PC	1+89.37	14,653.98	22,119.92	011–04–34	91.82	475.00
PT	2+81.20	14,609.39	22,039.81			
PC	7+36.26	14,427.50	21,622.69	095–18–59	665.43	400.00
PT	14+01.69	14,668.93	21,082.91			
PC	24+03.39	15,620.27	20,769.31	033–56–48	236.99	400.00
PT	26+40.38	15,811.07	20,634.63			
PC	31+88.62	16,147.16	20,201.49	044–21–20	387.08	500.00
PT	35+75.70	16,248.87	19,837.97			
PC	48+80.77	16,100.08	18,541.41	040–11–58	280.64	400.00
PT	51+61.41	15,976.78	18,295.68			
PI	53+50.02	15,839.41	18,166.44			

NOT FOR CONSTRUCTION

KINROSS Fort Knox

Concept Spillway Details

Figure 6-3

Date: December 2019

6.2.4 Tailings Embankment

The downstream face of the tailings embankment is constructed of run of mine material that is durable rock, resilient to erosion. The downstream face of the tailings embankment will not be capped with growth media. Vegetation is unlikely to invade and propagate on the TSF face due to the coarse rock fill, however native species, if they take hold, will be allowed to grow.

6.3 Seepage Interception System

The water quality in the seepage interception system reflects both natural groundwater and tailings seepage quality. Water quality modeling indicates that development of a tailings beach, as described in Section 8, reduces the rate of seepage from the tailings and consequently improve seepage water quality in the short term. Seepage water quality is predicted to further improve in the initial period following cessation of operations. The seepage interception system will continue to operate, and the seepage water will be pumped to the Barge Pond or directly to the Pit until water quality standards have been met.

If during the initial closure period water quality trends indicate discontinuation of seepage collection, then passive treatment alternatives will be evaluated.

Closure of the seepage collection system will include:

1. Discontinuation of pumping from the seepage collection gallery and wells.
2. Removal of pumps, piping, and surface structures for salvage or disposal.
3. Plugging and decommission of the seepage collection wells.
4. Puncture the underdrain liner at frequencies and locations that will accommodate the maximum discharge at closure and long-term seepage estimates.

6.4 Pit Lake

Excavation of the pit creates a hydraulic sink collecting upgradient ground and surface water flows. The pit will fill relatively quickly at the beginning of closure due to the volume of water pumped from the Barge Pond and draindown water from the heap leach pads. Once the pit lake has reached the final elevation of 1,430 the water will flow through the fractured bedrock and under the TSF.

Table 6-3 provides a summary of the expected pit lake water quality in year 2086, prior to spilling into alluvium, for the base case model.

Table 6-3: Predicted pit lake quality at full recovery

Parameter	Water Quality Standard (mg/L)	2019 Model Predicted (Yr 2086) Pit lake concentration (mg/L)
pH (su)	*6.5 -8.5*	8.2
Alkalinity as $CaCO_3$	*> 20*	106
Aluminum	*0.75*	0.010
Ammonia	*1.11 - 1.79*	<0.01
Antimony	*0.006*	0.0045
Arsenic	*0.01*	0.0087

Parameter	Water Quality Standard (mg/L)	2019 Model Predicted (Yr 2086) Pit lake concentration (mg/L)
Barium	*2*	0.0045
Cadmium	*0.00027*	0.00012
Calcium	*NS*	32
Chloride	*230*	4.0
Chromium	*0.1*	<0.01
Copper	*0.0092*	<0.005
WAD-cyanide	*0.0052*	<0.001
Fluoride	*1*	0.30
Iron	*1*	<0.01
Lead	*0.0031*	0.00010
Magnesium	*NS*	4.6
Manganese	*0.050*	0.050
Mercury	*0.000050*	0.000026
Nickel	*0.051*	0.016
Nitrate, as N	*10*	3.3
Nitrite, as N	*1*	<0.01
Phosphorus	*NS*	0.021
Potassium	*NS*	2.7
Selenium	*0.0050*	0.00057
Silver	*0.0039*	<0.001
Sodium	*NS*	18
Sulfate	*250*	64
Zinc	*0.12*	0.015
TDS	*500*	194

A pit lake water quality evaluation has been submitted to state regulatory agencies from 2006 through 2019. Similar pit lake evaluations are anticipated to be conducted periodically, as new data becomes available, study goals are to:

1. Provide a summary of site conditions relevant to short- and long-term pit lake quality using updated information (i.e. water quality data, mine plans, etc.).
2. Illustrate the data and methodology used to evaluate pit lake quality.
3. Evaluate the sensitivity of the pit lake quality evaluations in terms of waters projected to be pumped to the pit in the near future and pit wall runoff water quality.
4. Demonstrate the viability of the current reclamation approach from a water quality perspective.
5. Identify an appropriate treatment and/or management alternative that can be implemented to manage water quality, if required.

For the FA calculations, a pit lake study and evaluation will be conducted every 5 years for the first 10 years, and then every 10 years until the lake reaches WQ standards.

6.5 Heap Leach Closure

Prior to initiation of reclamation of the heap leach pads, FGMI shall submit to ADNR final facility closure plans and schedule, for review and approval. The final facility closure plans shall include consideration of water quality monitoring including draindown quality and quantity, required ore geochemical characterization, and the results of any environmental audits. If seepage or run-off from the HLP exceed water quality standards, ADNR may require the reclamation of the heap leach to minimize infiltration and / or impacts from run-off and may require the cover to include a low-permeability layer, growth media replacement, seed / fertilizer application and surface diversion ditches.

Closure for the Fort Knox HLP is based on site-specific conditions, facility design, currently available test work, and the technical analyses completed as part of closure planning. Key aspects of the site and operation that are considered for closure include the following:

1. The climate at the site is characterized by moderate precipitation, moderate evaporation, and cold temperatures. As a result, the long-term drainage from the heap leach after closure is predicted to be minimal.
2. Laboratory test work shows that cyanide concentrations will decrease rapidly as seepage is drawn down through the HLPs.
3. To facilitate closure management, seepage from the heap leaches will be combined with pit lake water after leaching has ended.
4. The facility will be regraded to an overall 3:1 slope and covered with growth media. The regrading design will include erosion control measures as necessary to avoid loss of growth media.

The underdrain water quality will be monitored by wells in the following locations:

- Water Creek Heap Leach Pad;
- The base platform;
- The bench of the in-heap storage pond embankment; and
- The crest of the in-heap storage pond embankment.
- Barnes Creek Heap Leach Pad
- Upstream of the pit dewatering wells through the crest of the existing conveyor causeway; and
- Its foundation just below the interface with the original Barnes Creek ground surface.

In addition, monitoring will continue in the PCMS and LCRS systems during early stages of closure. Post-closure discharge from the drainage system will be monitored.

6.5.1 Heap Leach Pads Closure Procedures and Schedules

The closure schedule will include the following schedule of activities:

1. Leaching will continue through the end of year 2030.
2. Stop application of solution.
3. Pump draindown to treatment plant and discharge to the pit.
4. Install gravity underdrains in the in-heap storage ponds to allow seepage water to freely flow to the pit.

5. Remove redundant structures associated with pumping operations. Reconfigure pumping as required to maintain minimal seepage water stored in the in-heap ponds until gravity underdrains are installed.
6. Regrade the pad, place growth media, and scarify and seed.

6.5.2 Initial Draindown and Transfer to Pit Lake

Once processing of the leach solution is no longer economic, leaching will cease, and the residual solution will be allowed to draindown in the heap leaches. The draindown from the pads will be pumped to the pit, as well as the volume of solution stored in the in-heap ponds (358 acre-feet and 409 acre-feet stored in the Walter Creek and Barnes Creek heap leach ponds, respectively). The process solution draindown rates are based on the WCHL draindown analyses developed in 2013 (Knight Piésold 2013b). The draindown rates were increased by a factor of 1.66 to estimate the draindown from BCHL, based on its larger pad footprint. The majority of the process water will drain in the first few months, and residual process water will gravity-drain and be routed to the pit through the post-closure period; this flow rate is estimated to decrease over time to approximately 4 gpm. Infiltration of direct precipitation and snowmelt through the pads will also be collected in the heap leach ponds and will be transferred to the pit throughout closure/post-closure, at an average annual rate of approximately 510 gpm. This flow rate is estimated based on direct precipitation/snowmelt rate onto the pad footprints, less effective evaporation (estimated as 25% of monthly pan evaporation rates). Long-term process flow rates and net flow from precipitation are presented in **Table 6-4** (HydroGeoLogica 2019).

Table 6-4: Precipitation and Residual Flow through the Heap Leach Pads

Month	Precipitation Through the Pads (gpm)	Residual Process Flow (gpm)
Jan	396	4
Feb	290	4
Mar	271	3
Apr	118	5
May	325	11
Jun	353	3
Jul	914	3
Aug	1152	4
Sep	911	5
Oct	535	4
Nov	449	4
Dec	376	3
Average	**510**	**4**

The water chemistry of the process water portion of heap leach transferred to the pit lake was estimated for water quality modeling based on analyses of pregnant leach solution from 2017 through early 2019. This water chemistry indicates elevated concentrations of antimony, arsenic, cadmium, copper, iron, mercury, nickel, selenium, silver, zinc, TDS, WAD-cyanide, ammonia, nitrate, and nitrite compared to Alaska reference standards (HydroGeoLogica 2019). It is likely that the actual heap process water will have lower metals and nitrogen compound concentrations as it enters the pit because the water will be first run through the CIC plant prior to discharge. As a conservative assumption, this water chemistry estimate is applied to the process water throughout the post-closure period.

6.5.3 Transfer of Long-Term Seepage to Pit

Long-term seepage from the HLP will collect within the sumps and be conveyed to the pit by gravity flow pipes. A horizontal direction drill (HDD) will be implemented to install gravity drains into the HLP sumps. Installation of the drains include, boring holes through the embankment at an elevation which will allow seepage to freely flow to the pit. The HDD will penetrate the upstream face of the HLP sumps near the lowest point in the sump. As noted in the Section 6.5.2 seepage is estimated to be 510 gpm on average with an estimated average maximum flow of 1,152 gpm for both HLPs combined.

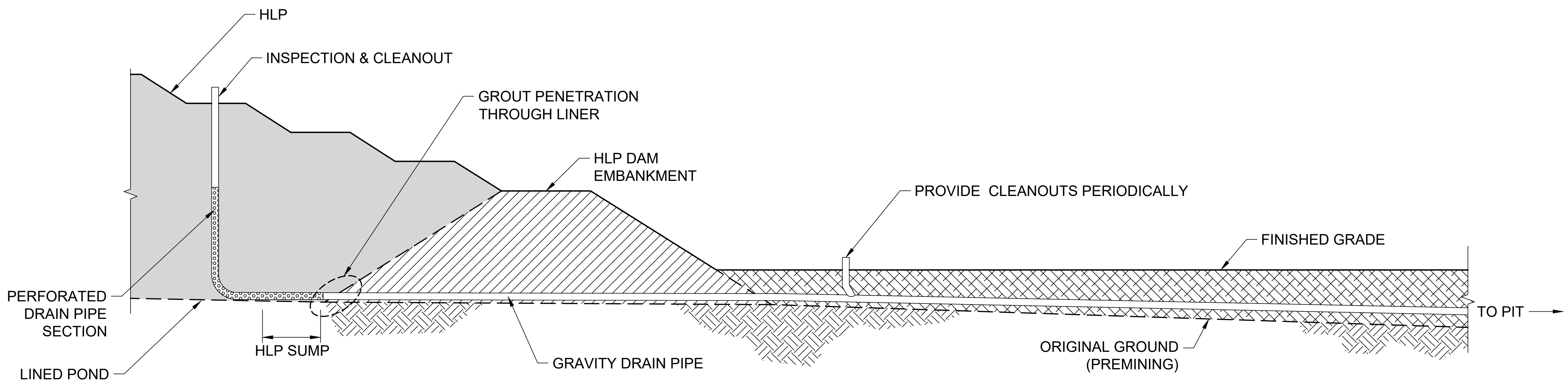
Assuming the flows are split 60/40 by corresponding area of WCHL and BCHL respectively, the seepage flow rates are estimated to be 305 and 205 gpm for average flow and 690 and 462 for high average flows. A 12-inch perforated drain will be installed in each HLP which will provide capacity to handle larger flows. A 12-inch pipe laid at 0.5% has a capacity of approximately 1650 gpm, or nearly three times the expected peak seepage rate. **Table 6-5** below summarizes the seepage and capacity of the drains.

Table 6-5: Heap Leach Pad Seepage and Drain Rate Summary

Heap Leach Pad	Average Seepage (gpm)	Peak Seepage Rate (gpm)	12-inch Drain Capacity @ 0.5% Slope (gpm)
Walter Creek	305	690	1650
Barnes Creek	205	462	1650
Average	**510**	**1152**	

Some seepage could escape near the penetration of the liner during installation of the standpipes. Seepage at the penetration could be reduced by grouting the pipe in place near the penetration of the liner when it’s installed. **Figure 6-4** depicts a concept design for gravity draining seepage collected in the HLPs to the Pit. **Figure 5-6** identifies the potential routing for the gravity pipe network from the HLPs to the pit.

At least one solution draw-down well will remain in each heap leach. The well will provide access to the in-heap pond for pumping should the drains fail or plug. Mobile pumps could be used to pump seepage water into one of the gravity-drain pipes or directly to the pit.



CONCEPT CLOSURE DRAIN
FOR HEAP LEACH PADS
(N.T.S.)

KINROSS Fort Knox

Concept HLP Gravity Drain

Figure 6-4

Date: December 2019

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6.5.4 Regrading and Cover

Following completion of leaching, the heap leaches will be regraded to an overall slope of 3H:1V (accounted for in the FA calculation). Approximately twelve inches of growth media will be placed. The growth media will be sourced from stockpiles created during facility construction. The growth media will be scarified and seeded subsequent to placement. An erosion control method is to scarify and seed the growth media, which slows down water migration and allows the water to permeate the ground aiding the success of revegetation. The FA accounts for 12-inches of growth media.

6.6 Haul Road Tunnels

Following regrading and growth media placement on the WCHL, reclamation of tunnels will begin. The material overlaying the multi-plate tunnels will be excavated to allow for disassembly and salvage of the plates. Excavated material will be graded into the surrounding area and access road. The plates will be removed from site and salvaged or disposed of appropriately. Concrete foundations will be broken and buried in place and covered with at least two ft of soil. Growth media placement (if needed) in this area will occur at the same time that the remainder of the heap leach is reclaimed. The growth media will be sourced from stockpiles created during facility construction. The growth media will be ripped, seeded and fertilized subsequent to placement.

6.7 Water Supply Reservoir, Solo Creek Causeway and Gil Causeway

FGMI will leave the WSR and Solo Creek causeway in place to allow for the long-term use (and maintenance) as a recreational lake and wetland area. Following reclamation and closure of the project process components, the dam, access road and Solo Creek Causeway will be maintained according to the terms defined in the Agreement for Funding Post-Reclamation Obligations and any future amendments between FGMI, ADNR and ADF&G (Appendix B).

The Gil Causeway (**Figure 6-5**) will be breached to allow the free movement of fish from the main lake body into upper reaches of the lake and Last Chance Creek. The Gil Causeway Reclamation Plan (**Appendix D**) was submitted to ADF&G, Division of Habitat on March 29, 2001. It describes the removal of the existing four culverts along the Gill Causeway to restore the original Fish Creek channel as nearly as can be replicated while working below the level of the water in the reservoir. Material removed will be placed along remaining portions of the causeway to create additional shoreline, which will be contoured, ripped and seeded if required. The remaining road surface and safety berms will be graded and revegetated.

The lake will not be available for public use until final reclamation and a period of post-closure monitoring (approximately ten years) is complete and the area is transferred to the State.

Gil Causeway

Figure 6-5

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Buildings
- Gil Causeway
- Access Road
- Exploration Road
- Reservoir
- Powerlines
- Wetlands
- Future Wetlands

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N

1"=400'

0 200 400 600 800

Fort Knox Local Grid Final

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6.8 Roads

The roads to be reclaimed will be determined by FGMI and ADNR. For purpose of this reclamation plan, FGMI has assumed the following:

1. Access to the mine pit and mill areas will be provided via service roads. These roads will consist of the Fort Knox access road and a service road (Mill-Pit Service Road) from the mill complex to the pit. Access to the developed wetlands and WSR will be available using the Fish Creek Road and Centerline Service Road. A service road linking various points within the site will be necessary to provide access for maintenance and long-term monitoring. These permanent roads and access roads are illustrated in **Figure 5-4**.
2. Roads planned for reclamation are identified in **Figure 4-1**. Roads will be individually analyzed by ADNR and FGMI to determine which will remain permanently.
3. Reclamation procedures will be similar for all types of roads that are to be reclaimed. Culverts will be removed; natural drainage paths restored or stabilized, and roadbeds will be graded where necessary to provide adequate drainage. Following grading, roadbeds will be scarified/ripped and revegetated. Any suitable material located within proximity to the road embankment or on the embankment (i.e. safety berms) will be used for growth media. Check dams to manage surface runoff and control erosion, and berms to restrict human access will be incorporated where necessary to prevent runoff from concentrating along the length of the roadways.
4. Fish Creek Road, RST 650 Gilmore Trail-Fairbanks Creek Connector Trail, and RST 644 Cleary Summit-Gilmore Dome Trail will remain after closure.
5. Spur roads and locking gates off Fish Creek Road will be installed. Gates that are currently used around the mine site will be removed and relocated for this purpose. Long term maintenance of the spur roads is included in the FA calculation.

6.9 Waste Rock Dumps

Reclamation of waste rock dumps will be initiated once that they are no longer required for waste rock disposal. FGMI will concurrently reclaim inactive dumps that will not be subject to future disturbance. Based on the current mining schedule, concurrent reclamation of waste rock dumps is scheduled to begin in 2021 and finish in 2026. The area calculated for FA and regrading volume is based on current life of mine plans. The SRCE model estimates the waste rock dumps cover approximately 987 acres.

Reclamation of the waste rock dumps includes recontouring and growth media placement. The crests of the waste rock dumps will be rounded with material pushed outward to establish a slope of approximately 2.5H:1V or flatter (FA calculations uses a final slope of 3H:1V). Large boulders that are uncovered during sloping may be left on the surface to provide topographic diversity, microhabitats for wildlife and vegetation, and to break the linear appearance of the final slope. Growth media will be placed at a depth (assumed 12-inches) which will promote successful revegetation.

When final sloping, contouring, and growth media placement have been completed, waste rock dumps will be ripped along the contour. Contour ripping will reduce the erosion potential by reducing smooth slope length with the series of furrows created that will also increase infiltration. Ripping on the contour will provide micro-habitats for increased moisture retention and seed germination. Long slopes may need to be re-dressed periodically during revegetation to reduce runoff riling, and erosion. Wattles, sediment control blankets or other forms of soil stabilization may be required in problematic areas as vegetation is established. Brush berms and/or sedimentation berms will be constructed at the toe of dumps where feasible to reduce sediment transport.

Waste rock dumps will be revegetated following completion of earthwork. Due to the rocky, irregular nature of the final slopes, broadcast-seeding (by hand, equipment, or aerial) methods will be utilized. Seed and fertilizer will be applied as discussed in Section 5.2.

6.10 Building and Equipment Sites

Buildings will be selectively demolished as they are no longer needed for operation, **Table 6-6** summarizes demolition timing for each structure. As facility components of the site are decommissioned, materials, equipment, and some buildings will be removed, and the building structures demolished and deposited in an approved landfill. Most of the buildings and structures are located within FGMI surface ownership boundaries (**Figure 2-1** and **Figure 2-6**). Equipment, and piping not needed for the reclamation and monitoring process will be utilized at another mining site, sold, salvaged or disposed in an approved manner. Past experience indicates that most equipment will be either utilized at other facilities or sold.

Reclamation of building and equipment sites outside FGMI surface ownership areas will follow procedures as previously outlined. Sites will be graded for proper drainage, ripped and scarified, and revegetated. Reclamation of the building and equipment sites will include placement of growth media where necessary to support vegetation and revegetation. Sites will be revegetated following procedures previously outlined.

6.11 Petroleum Aboveground Storage Tanks

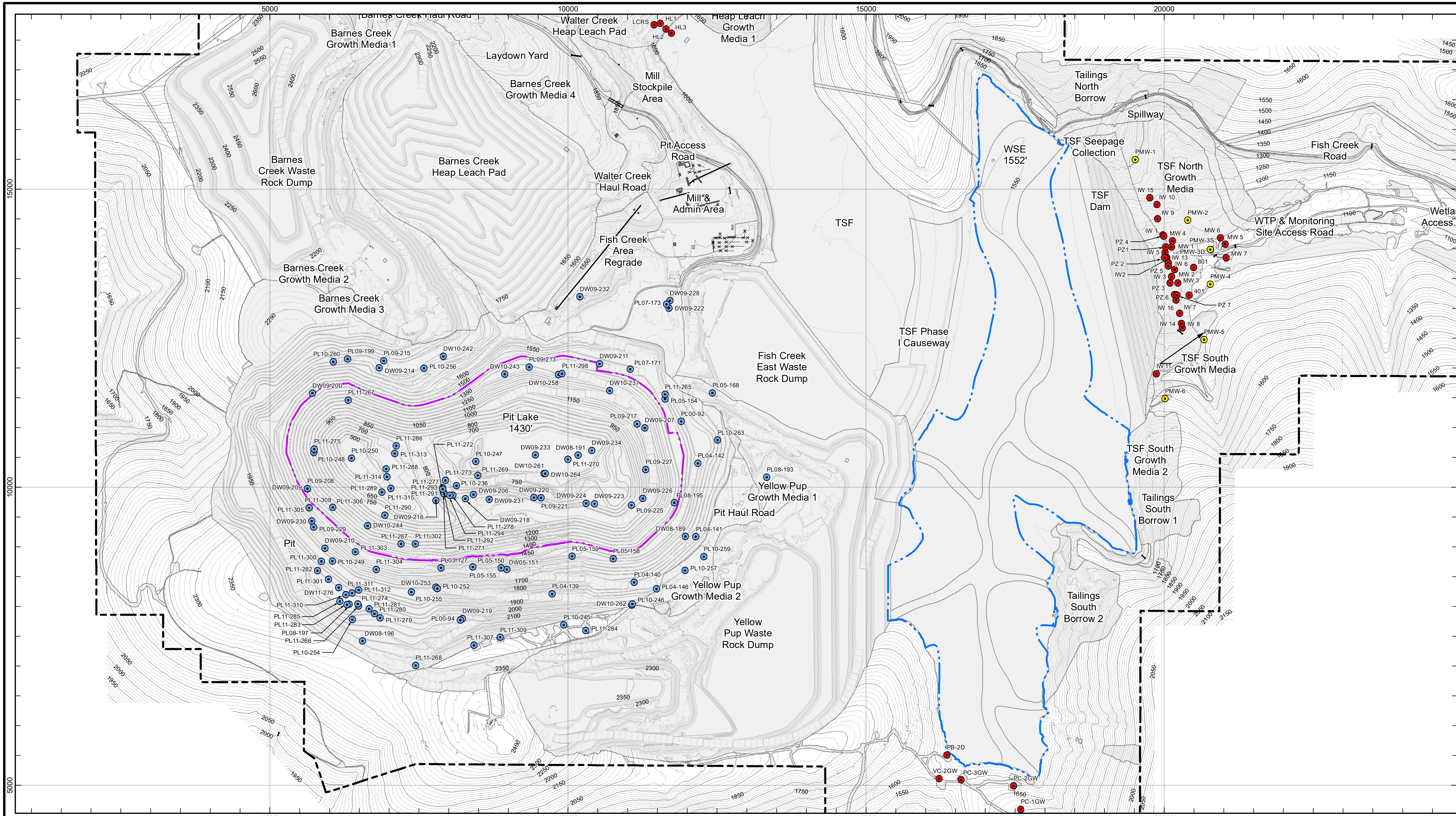
At time of the mine's closure, FGMI will investigate the mine's petroleum aboveground storage tanks for spills and leakage. Appropriate investigation will be performed to determine whether spills or leakage has occurred at the gasoline and diesel storage tank locations. Investigation activities will include visual observations and if necessary, soil sampling will be performed for benzene, toluene, ethyl benzene, and xylene (BTEX) at gasoline storage tank area(s) and diesel range organics for diesel storage tank areas. Other petroleum storage tank areas will be investigated based upon the tank(s) constituents. Appropriate actions and cleanup will be taken based upon investigation activities. Tank locations are shown in **Figure 2-7** and **Figure 2-8**.

6.12 Well Closure

Wells used for dewatering of groundwater within and surrounding the pit have been drilled over the life of the operation. All wells existing at the time of closure will be plugged and decommissioned when no longer required. **Figure 6-6** shows current locations of existing pit dewatering wells. In addition to dewatering wells, monitoring wells, heap leach collection wells, seepage collection wells, and selective piezometers will be demolished. Currently, FGMI maintains approximately 110 wells. The FA calculations assumes the current number of dewatering wells will be maintained throughout operations but understands that wells will be installed and decommissioned throughout operations. Well decommissioning will be conducted according to ADEC regulations (18 AAC 80.015) in effect for all wells at the time of decommissioning.

Decommissioning procedures will include:

1. Removal of pumps and piping
2. Plugging of the well with an approved sealing material at total depth
3. Removal of the collar
4. Minor grading around the well site
5. Revegetation



KINROSS Fort Knox

Dewatering Wells

Figure 6-6

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Facility disturbance
- 1430' Pit Lake
- 1557' TSF Lake Max Elevation
- Dewatering Wells
- TSF Monitoring Wells
- PMW Wells

N

0 750 1500 2250 3000

1"=1,500'

Fort Knox Local Grid Final

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6.13 Miscellaneous Sites

6.13.1 Fence Removal

The mill, MEM shop, explosives area is fenced. with approximately. 2,500 ft of 8-foot high chain-link. The fencing will be removed and salvaged, buried in the permitted landfill or buried in an approved landfill.

6.13.2 Power Distribution

One primary substation and two secondary substations service Fort Knox. From the substations there are numerous transformers that distribute power further. When electrical power is no longer needed, the overhead power lines and transformers located outside FGMI surface ownership boundary will be removed from the site. The transformers that will be removed include one from each of the following sites: heap leach, freshwater reservoir, seepage reclaim building and Barge Pond. All overhead power lines located on the Millsite Lease will be removed unless approved to remain by ADNR and agreed to by FGMI. All materials removed will be salvaged or disposed in an approved facility.

6.13.3 Material Borrow Areas

During initial site construction and periodic raises to the tailings dam, several material borrow areas were used to provide the necessary construction material (road base, riprap, seal, and filter materials). Borrow sites will be regraded to provide adequate drainage, scarified as needed and reseeded. Highwalls or step cuts will be reduced to stable slopes. All borrow areas disturbed will be reclaimed with the exception of the following:

1. Borrow Area #8 is located adjacent to the north side of the water reservoir spillway. This rock-terraced area provides potential nesting habitat for swallows and raptors.
2. Borrow Area #11, located directly west of the fresh water pump station, has been designated as a post-closure parking area for day users expected at the water supply reservoir.

6.14 Summary Of Facility Closures

Table 6-6 Summarizes the approximate demolition schedule all facilities and structures located within the permit boundary . A detailed schedule can be found in **Appendix A**.

Table 6-6: Structures and Facility Demolition Schedule

Facility/Building	Reclamation/Demo Year
Tailings Storage Facility	2021-2027
Walter Creek HLP	2031
Barnes Creek HLP	2031
Yellow Pup WRD	2025
Barnes Creek WRD	2025
Fish Creek WRD	2022
Borrow Areas	2022
Haul Roads	2028
Building and Laydown Yards	2028-2032
Install Pit Berms	2028
Lower Fish Creek (below TSF)	2028

Facility/Building	Reclamation/Demo Year
Above Ground Storage Tanks	2032
Well Closure	2028-2038
Fence Removal	2032
Power Distribution (Selective)	2032-2055
Material Borrow Areas	2032
Mill (selective)	2022-2031
Crusher	2028
Conveyor	2028
Mill Cold Storage	2031
Tailings Barge	2031
RO1, RO2, RO3	2027
Leach Tanks	2031
CN Detox	2031
Reagent Storage	2028
Refinery	2031
Assay Lab	2031
CIL Tanks (6 total)	2031
Warehouse	2028
Mobile Equipment Maint.	2028
Admin Building	2028
Mil Final Demo	2031
Freshwater Pump House	2028
Seepage Pumphouse	2042
Generator Building	2042

7 MONITORING

The Fort Knox Mine Monitoring Plan (FGMI Inc. 2019) gives a detailed description of the monitoring requirements for the site, including the TSF, the heap leach, the pit lake, the stream corridor/wetlands and the water supply reservoir. The monitoring plan includes:

1. Water quality sampling procedures and analytical profiles and sampling schedules.
2. Characterization of acid rock drainage and processed tailings.
3. Monitoring of inert solid waste landfills.
4. Potable water monitoring requirements.
5. Wildlife mortality reporting procedures.
6. Documentation, record keeping and reporting requirements.
7. Quality assurance/quality control manual.

The closure monitoring plan will include water quality sampling, water level measurements, and observations of the success of revegetation. The frequency of sampling events will be adjusted as appropriate between the reclamation and closure, and post-closure phases based on observed improvements in water quality. **Table 7-1** summarizes the monitoring program.

During the closure process, groundwater quality will continue to be assessed at the existing monitoring wells.

During the reclamation and closure phase, the Barge Pond will be sampled on a quarterly basis. After pre-stabilization, seasonal water discharges will begin from the TSF impoundment (Section 6.2). Discharges will flow into the wetland system on the north side of Fish Creek Valley. Currently, there is minimal water flow in the north side of Fish Creek and it is expected take a number of years, depending on the seasonal water flow, for the wetland system to reach hydraulic equilibrium. During this phase, water may not be present at the terminus of the northern wetland system.

Table 7-1: Summary of Closure Monitoring

Monitoring Location	0 to 2 years		3 to 5 years		6+ years	
	Frequency	Parameter List	Frequency	Parameter List	Frequency	Parameter List
Decant Pond	Quarterly	Complete	Quarterly	Complete	Quarterly	Complete
Pit Lake	Annual	Complete	Annual	Complete	Annual	Complete
Seepage Collection System	Monthly	Indicator	Quarterly[1]	Complete	NA	NA
Compliance Wells	Monthly	Indicator	Quarterly	Complete	Annual	Complete
Surface Water Compliance Point	NA	NA	NA	NA	Monthly[2]	Indicator

1 Only if operational
2 Discharges predicted to begin after about 12 years

After seasonal discharge through the TSF spillway begins, it is estimated that 2 to 3 years will be required for the wetland system to reach equilibrium and allow monitoring at the terminus of the system on a consistent basis. Once this occurs, water quality will be monitored near the terminus of the wetland system at a surface water monitoring point (a point of monitoring to be specified by ADEC) monthly during active flow for the first two years. Monthly samples will be analyzed for the indicator parameters summarized in **Table 7-1** and **Table 7-2**.

The interceptor and monitoring wells will be sampled quarterly until the seepage collection system is decommissioned. Once the seepage collection system is shutdown, the monitoring wells will be sampled quarterly for the following two years. At the end of two years and pending demonstration that the system will not be required in the future, the interceptor wells will be decommissioned per ADEC regulations. The monitoring wells will be sampled annually beginning in year six. All samples will be analyzed for analytes in **Table 7-1**. The water quality in the pit will be monitored on a quarterly basis throughout the reclamation and closure period when the decant water and residual heap leach water is going to the pit. Sampling will occur annually thereafter.

Water Level Monitoring

Groundwater levels will be monitored in the interceptor wells and monitoring wells on a quarterly basis. Prior to decommissioning the interceptor well system, water levels will be monitored concurrent with each water quality sampling event. Pond elevations will be measured on a quarterly frequency until the spillway invert elevation is reached.

Inspection of Surface Stabilization

Visual observation of revegetation success will be performed on an annual basis during the pre-stabilization phase. Inspection for erosion and formation of gullies will be completed quarterly.

Heap Leach Pads

The Fort Knox Monitoring Plan, (FGMI Inc. 2017) outlines the operational monitoring and response plan in detail. The principal components of the operational monitoring plan include the LCRS, PCMS, underdrain system, pregnant solution composition and pond levels.

Table 7-2: Summary of Monthly and Quarterly Analyte Lists

Monthly Samples	Quarterly Samples	
pH	pH	Copper
TDS	TDS	Iron
Sulfate	TSS	Manganese
Alkalinity	Calcium	Selenium
Arsenic	Magnesium	Zinc
Antimony	Sodium	Nitrate
Cadmium	Potassium	Nitrite
Copper	Chloride	Ammonia
Iron	Sulfate	Total cyanide
Manganese	Alkalinity	WAD cyanide
Selenium	Arsenic	
Total cyanide	Antimony	
WAD cyanide	Cadmium	

*Note: Monthly sampling analyte list will be used as indicator parameters per **Table 7-1**.*

The operational monitoring of solution chemistry and levels will continue while draindown of the heap leach is in progress. During the draindown period samples will be collected on a quarterly basis to assess the composition and the rate at which the solution chemistry is improving.

Once solution composition is suitable for discharge to the pit, monitoring of the heap leach LCRS and PCMS and the underdrain system will no longer be required (**Table 7-3**). The underdrain system will be sampled on a semi-annual basis for the Profile II list of analytes (**Table 7-4**). The underdrain system will be sampled via monitoring wells in the heap leach embankment base platform, bench, and crest. These monitoring wells will be used to monitor the waters in the underdrain during the active life of the heap leach pad ending the quarter after water quality standards have been met.

Table 7-3: Summary of Heap Leach Closure Monitoring Requirements

Identification	Parameter	Frequency
LCRS	WAD CN/pH	Monthly
PCMS	WAD CN/pH	Monthly
Under drain– HL1, HL2, HL3	Profile II	Quarterly
Pregnant Solution	WAD CN/pH	Quarterly
In-Heap Storage Pond	Elevation	Continuous Automatic Monitoring

Table 7-4: Analytical Profile II–Groundwater Inorganic Parameters

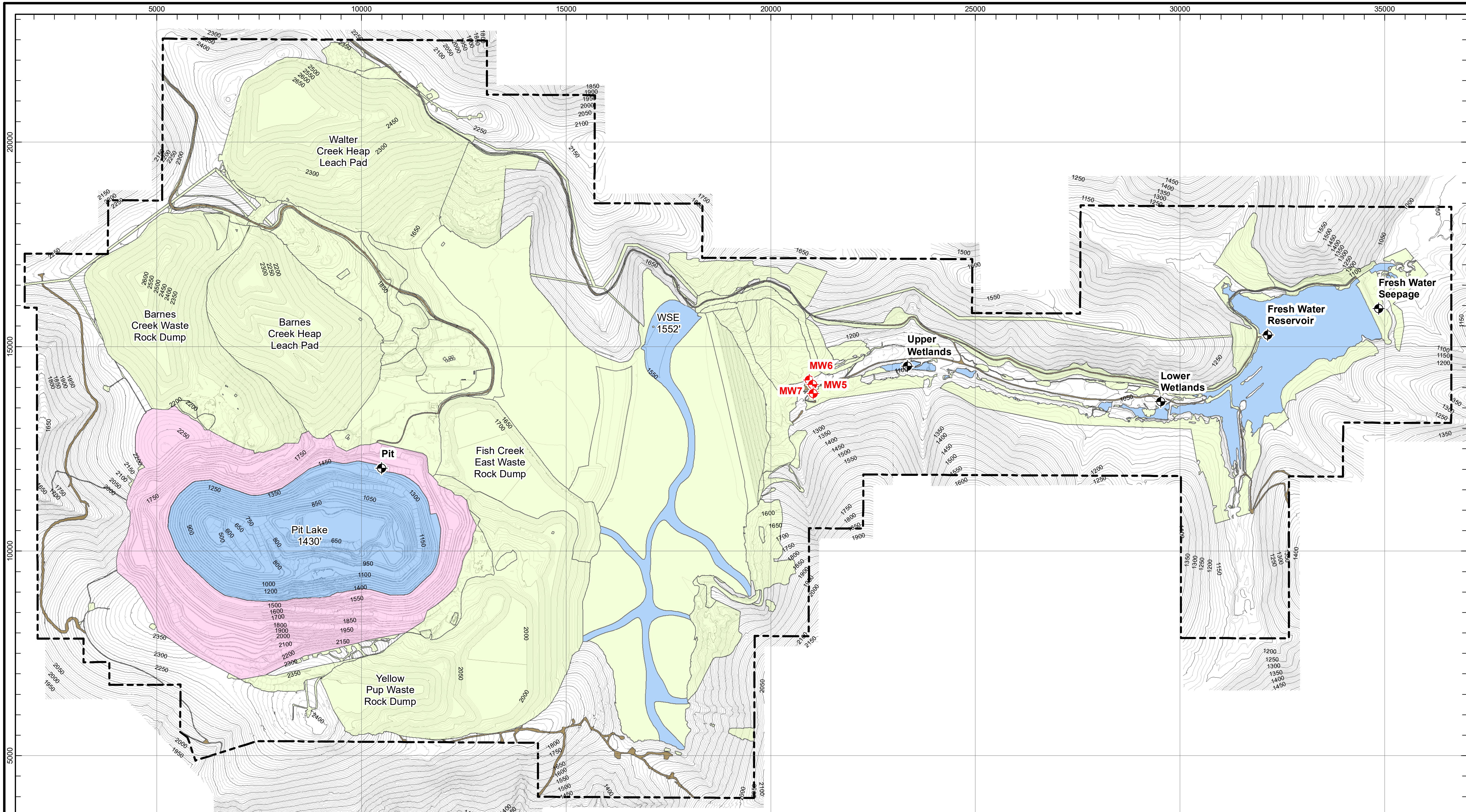
General Chemistry and Major Ions		Trace Metal Chemistry
Lab pH	Alkalinity (as CaCO3)	Antimony*
Lab Conductivity	Bicarbonate	Arsenic*
Temperature (field)	Chloride	Barium*
Turbidity	Fluoride	Bismuth*
Total Suspended Solids	Nitrogen, Ammonia	Cadmium*
Total Dissolved Solids	Nitrate as Nitrogen	Chromium*
Total Hardness	Nitrite as Nitrogen	Copper*
	Total Phosphorus	Iron*
	Sulfate	Lead*
Total cyanide	Sulfide	Manganese*
WAD Cyanide	Calcium*	Mercury*
	Magnesium*	Nickel*
	Potassium*	Selenium*
	Sodium*	Silver*
	Silicon*	Zinc*

* Dissolved

7.1 Post-Closure Maintenance and Monitoring

7.1.1 Post Closure Monitoring

Monitoring systems for process components will remain in place until each specific facility has been chemically stabilized to the satisfaction of the agencies. The long-term monitoring will occur in the Barge Pond and down gradient of the facility at the surface water and groundwater monitoring points and the pit. The water quality monitoring locations, roads that will remain and dam security access gates and spur roads are illustrated on **Figure 7-1**.



KINROSS Fort Knox

Monitoring Points

Figure 7-1

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Revegetated Areas
- Pit
- Reservoir
- Roads to Remain
- Ground Water Compliance Sample Site
- Surface Water Compliance Sample Site

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

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7.1.2 Post Closure Maintenance

Once physical reclamation has started, temporary diversions and sedimentation control systems will be monitored on a routine basis by FGMI personnel. These systems will be cleaned, repaired, and altered as necessary. Long-term or permanent diversions and the signage will be monitored and maintained as needed until the FA is released.

Success of reclamation will be monitored by visual observation to identify erosion problems. Remedial action to correct instability will be taken as soon as feasible following detection of substantial erosion or loss of growth media. Vegetation success will be monitored qualitatively by visual inspection on an on-going basis by FGMI and ADNR personnel. When warranted, quantitative data will be collected. Quantitative analyses will be conducted late in the growing season (August).

7.1.3 Long Term Inspections, Maintenance and Repair

The Fort Knox Tailings Storage Facility Dam and the Freshwater Reservoir Dam will remain in place after closure. An application to for a Certificate of Approval to Abandon a Dam will be submitted to Alaska Dam Safety for the TSF Dam upon acceptance by Dam Safety that the structure no longer constitutes a jurisdictional dam. The Fresh Water Dam will remain in place indefinitely, with ownership will be transferred to the Organization (Appendix B). In general, the long-term inspection, maintenance and repair scope for both dams will be the same throughout their life. Of significance is the inspection occurring on annual basis.

A 100-year schedule of maintenance and repair activities has been developed, however the annual inspection may dictate a change to the schedule. The items identified for maintenance and repair costs are, erosion repair, clearing woody growth, rill erosion repair, replacement of armor stone, dam crest repair, seal cracks, refurbish spalling, replace spillway, repair spillway erosion, repair construction joints, repair channel rip rap and maintain spur roads and security gates that provide access to the dam crest and toe. The exclusive purpose for these activities is to maintain dam safety indefinitely. The funding for these items is discussed in subsection 8.2.1.

The mine site is surrounded by State lands accessible to the general public. For their safety, warning signs will be installed around the pit rim perimeter warning of the dangers. The signs will be installed on 500-foot intervals in front of the safety berm. The funding for the initial installation, long term annual inspection, maintenance and repair is included in the FA calculation.

8 ESTIMATE OF RECLAMATION AND CLOSURE COSTS

8.1 Reclamation Cost Estimates and Adjustment

The total estimated cost to reclaim the Fort Knox site is **$100,619,418** based on the premature closure scenario in year 2020 and long-term post closure agreement. The cashflows for post closure years 11-100 are discounted at a rate of 4.3% as noted below. FGMI reviewed the next 5 years' mine plans (2019-2023) and determined the largest liability is in year 2020. As mining activities continue following year 2020 and throughout the LOM plan, reclamation quantities will decrease as closure actives are executed, or facilities mature towards their designed closure form. As facilities mature, the cost of reclamation will decrease (e.g. cover placement on the TSF, regrading the HLPs, etc.).

Table 8-1 provides a summary of activity costs from the SRCE model. Planned closure costs are also presented in in the table to emphasize the difference between a premature closure scenario and the liabilities which are reduced through the mine plan. As the planned closure period approaches the liabilities for some facilities will be reduced substantially. A detailed FA model can be found in **Appendix E**.

Table 8-1: Reclamation and Closure Cost Estimate

	Phase I Costs (undiscounted)	Phase II Costs (discounted)	Total
Waste Rock Dumps	$8,349,884	$0	$8,349,884
Heap Leach Pad	$3,117,208	$0	$3,117,208
Solution Management	$11,314,900	$925,175	$12,240,075
Pit	$214,927	$27,527	$242,454
Yards	$990,576	$0	$990,576
Roads	$113,630	$0	$113,630
Borrow Area	$69,385	$0	$69,385
Tailings	$9,675,304	$0	$9,675,304
Buildings	$3,957,079	$0	$3,957,079
Other Demo	$596,045	$0	$596,045
Sediment and Drainage Control	$12,935,352	$0	$12,935,352
TSF Spillway	$2,917,129	$0	$2,917,129
Linear Structures	$5,814	$717,643	$723,457
Monitoring	$1,861,786	$461,170	$2,322,956
Road Maintenance	$215,784	$0	$215,784
Well Abandonment	$433,580	$0	$433,580
Water Fees	$1,650	$0	$1,650
Long-term Maintenance and Repair	$217,240	$1,766,469	$1,983,709
Mobilization-demobilization	$1,805,692	$0	$1,805,692
Active Reclamation	$6,544,241	$0	$6,544,241
Closure Monitoring	$463,600	$137,101	$600,701
Solid Waste Disposal	$764,870	$0	$764,870
Reclamation Maintenance	$999,060	$0	$999,060
Tanks	$642,724	$0	$642,724
Total Direct	$68,207,462	$4,035,086	$72,242,548
Engineering, Design and Construction Plan	$2,046,224	$121,056	$2,167,280
Contingency	$10,913,194	$645,619	$11,558,813
Contractor OH and Profit	$10,231,119	$605,264	$10,836,383
Contract Administration	$3,601,353	$213,057	$3,814,410
Grand Total	**$94,999,352**	**$5,620,066**	**$100,619,418**

Note: See User Sheet 5 in SRCE model. DRAFT_Fort_Knox_Phased_226900_020_V18_ft_IJC_20200128.xlsm

Direct costs were calculated using quotes from local contractors, RS Means tables, and Alaska Department of Labor Pamphlet 600 wage rates. These estimates include contractor profit and overhead, mobilization and demobilization fees, and contingencies. We will account for inflation by increasing our FA by the CPI-U for Anchorage of the previous year.

FGMI will reclaim affected land as contemporaneously as practicable. The plan and cost estimate provide the ADNR, ADEC and FGMI an opportunity to review and, if necessary, modify the reclamation plan as required under provision of the Millsite Lease and Waste Management Permit.

Under the provisions of 11 AAC 97.0320.(a), FGMI will file an Annual Activity Report that includes the volume of material mined in that year, the total acreage reclaimed in that year, and a statement as to whether the reclamation plan is on schedule.

Reclamation plans typically are updated to account for the additional disturbance planned to occur during the next five years. Section 5.1.6 identifies the Premature Closure configuration and how it differs from the Life of Mine closure sequence. Reclamation actives are consistent between both the Life of Mine and Premature closure scenario, completion progress of various facilities differs. The cost estimates provided represent the Premature Closure scenario and the largest finical liability of proposed activity throughout the remainder of the Life of Mine plan. As mining advances liabilities will be reduced by completing reclamation obligations outlined above. In the case that obligations are deferred to a later time, the FA will be recalculated to account for changes and bonding adjusted accordingly.

The reclamation-related area within the boundaries covered by Waste Management Permit 2014DB0002, Modification # 2 for the purposes of reclamation and post-closure monitoring as illustrated in **Figure 5-2**, will be held by ADEC, as permitted under 11 AAC 97.400 (3). The reclamation estimate, and FA amount can be adjusted each year, or be adjusted as needed within the five-year permit cycle. A review and update of the FA should be provided for each significant change in the Plan of Operations.

Since the various facilities such as the pit, the tailings impoundment, the waste rock dumps, and the WSR have different reclamation requirements, successful reclamation will be achieved much more rapidly for some facilities than others. FGMI will seek surety release as successful reclamation is completed as required in 11 AAC 97.435. In no event will the release of FA requested reduce the FA amount to less than the estimated cost of completing reclamation and closure responsibilities

8.2 Agreement for Funding Post-reclamation Obligations

FGMI, ADNR and ADF&G have entered into an agreement (Appendix B) for funding post-reclamation obligations. These obligations include functions that would not have been FGMI's responsibility in absence of the agreement. The agreement calls for the establishment of an “Organization” to be utilized for the purpose of determining, financing and carrying out all maintenance obligations reasonably required to be performed after completion of final reclamation and post-closure monitoring. The bonding obligation began following the issuance of the Dam Safety Certificate of Approval to operate the WSR dam. Agreement for Funding Post-reclamation Obligations may be amended in the future as agreed upon by the parties of the Agreement for Funding Post-reclamation Obligations.

8.2.1 Long Term Maintenance and Repair of TSF and WSR

A detailed estimate of reasonable repairs and long-term maintenance has been estimated and is included in the FA calculations (**Appendix E**). FGMI identified the tasks that would be necessary to provide an estimate of the long-term maintenance and repair costs for the TSF and WSR dams. For each task identified, the frequency of occurrences was identified and estimated out for 100 years. The inspection costs for the dams are based on recent payments FGMI has provided for these services. Long term costs are included in the SRCE model with cashflows in corresponding years out to 100 years.

To determine the level of initial funding required ensuring that funds will be available for the identified costs related to closure and in perpetuity, methodology similar to what was done for Red Dog Mine was utilized. The following assumptions were used to arrive at the fund value:

- The State of Alaska can achieve a nominal rate of return of 8% on the invested fund.
- The long-term inflation rate will be 3.5%.
- The management and treasury fees will be 0.2%
- The real rate of return will be 4.3%.
- The NPV was based on 100 years.

The actual cost to maintain the dams will be agreed upon at later date. The FA calculation assumes a reasonable value for the items previously identified for funding. The long-term costs are inclusive to the FA calculations.

9 ACKNOWLEDGEMENTS

A. It is understood that should the nature of the operation change a modified or supplemental plan of operations and reclamation may be required.

B. It is understood that approval of this reclamation plan does not constitute:

1. Certification of ownership to any person named herein; and
2. Recognition of the validity of any mining claim herein.

C. It is understood that a FA equivalent to the estimated cost of performing the agreed upon reclamation measures will be required before this plan can be approved. FA and any FA reduction amounts will be set on a site-specific basis by ADNR in coordination with the cooperating agencies.

D. It is understood that any information provided with this plan or provided in the future, that is marked Confidential will be treated as such by the agency in accordance with that agency's laws, rules and regulations.

E. FGMI will fund the required Environmental Audit to determine if any environmental liabilities exist as a direct or indirect result of the Fort Knox Mine.

Fairbanks Gold Mining, Inc. has reviewed and agrees to comply with all conditions in the plan of reclamation. Fairbanks Gold Mining, Inc. understands that the bond will not be released until ADNR gives written approval of the reclamation work.

FAIRBANKS GOLD MINING, INC.

By: BARTLY KLEVEN

Title: ENVIRONMENTAL MANAGER

Signature: Bartly K

Date: 1/30/2020

APPLICANT STATEMENT OF RESPONSIBILITY

FGMI recognizes its responsibility in the use of public (State) lands and accepts that responsibility in agreeing to reclaim the Fort Knox site. FGMI will meet the requirements of its reclamation plan and return the site to a safe and stable condition consistent with the approved post-mining land use. FGMI will meet required local, State, and Federal regulations regarding reclamation of any surface area affected by the mining and processing operations. Reclamation activities and post-reclamation maintenance of remaining structures (tailings dam, water supply reservoir, Solo Creek causeway, and access roads) are FGMI's responsibility. In the event a new operator/land owner assumes control of the Fort Knox Mine, at that time, the new operator or land owner will agree to assume responsibility for the reclamation and maintenance of any affected land and structures that are the subject of this plan or existing permits. The new operator/land owner will request transfer of all applicable state and federal permits. The new operator/land owner will provide evidence that a surety acceptable to the ACOE will be filed with ADNR that will cover reclamation of disturbed land, including privately owned and State land and post-reclamation maintenance of remaining structures.

10 REFERENCES

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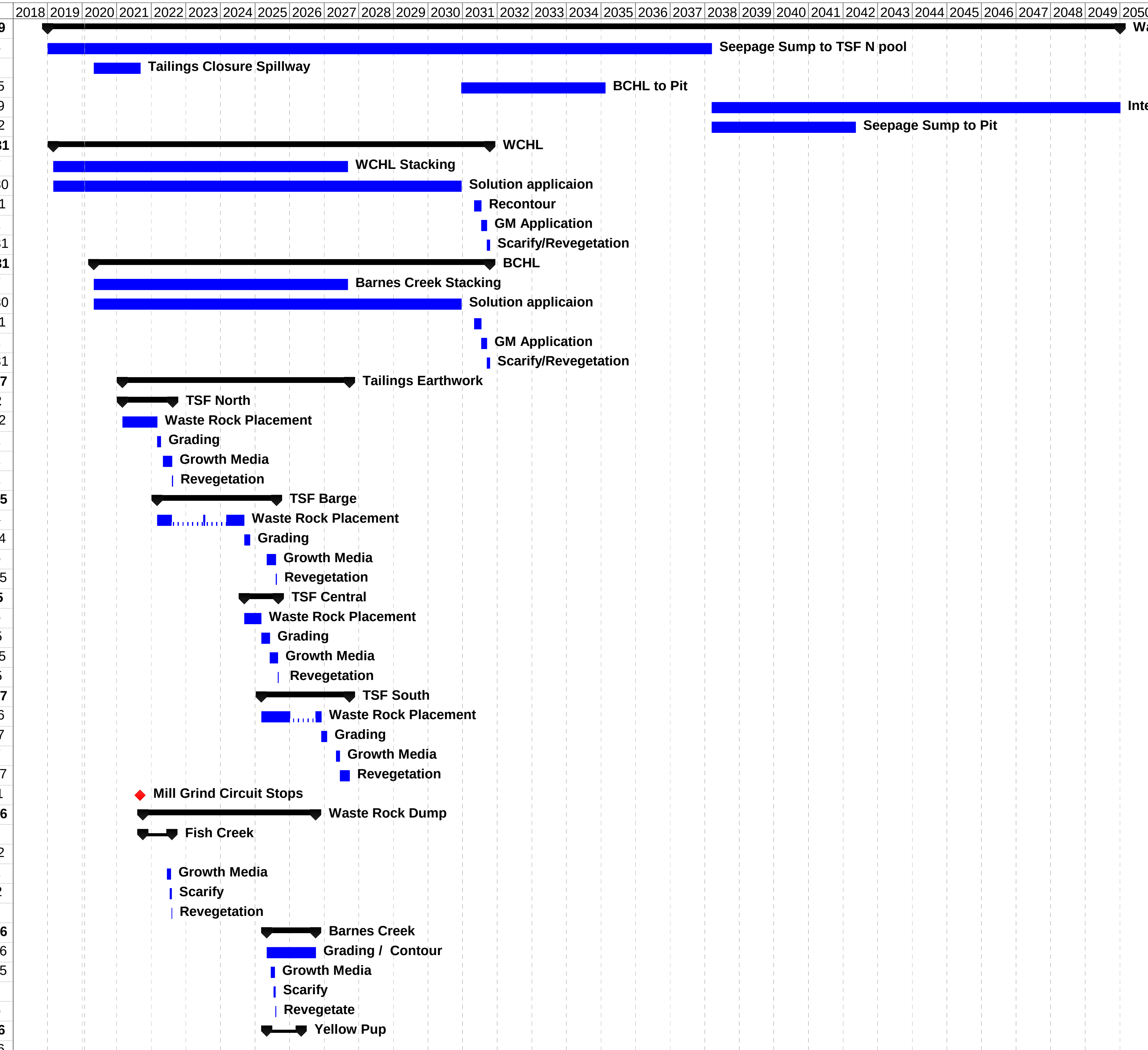
Appendix A
Reclamation Schedule

ID	Task Name	Start	Finish
3	**Water Management**	**Tue 1/1/19**	**Fri 12/31/49**
6	Seepage Sump to TSF N pool	Tue 1/1/19	Fri 3/12/38
4	Tailings Closure Spillway	Fri 5/1/20	Fri 9/3/21
5	BCHL to Pit	Sun 12/15/30	Tue 2/13/35
7	Interceptor wells to seepage sump	Fri 3/12/38	Fri 12/31/49
8	Seepage Sump to Pit	Fri 3/12/38	Sun 5/11/42
112	**WCHL**	**Fri 3/1/19**	**Sun 10/12/31**
113	WCHL Stacking	Fri 3/1/19	Thu 9/2/27
114	Solution applicaion	Fri 3/1/19	Sun 12/15/30
115	Recontour	Thu 5/1/31	Mon 7/14/31
116	GM Application	Mon 7/14/31	Fri 9/12/31
117	Scarify/Revegetation	Fri 9/12/31	Sun 10/12/31
126	**BCHL**	**Fri 5/1/20**	**Sun 10/12/31**
127	Barnes Creek Stacking	Fri 5/1/20	Thu 9/2/27
128	Solution applicaion	Fri 5/1/20	Sun 12/15/30
129	Recontour	Thu 5/1/31	Mon 7/14/31
130	GM Application	Mon 7/14/31	Fri 9/12/31
131	Scarify/Revegetation	Fri 9/12/31	Sun 10/12/31
57	**Tailings Earthwork**	**Mon 3/1/21**	**Wed 9/22/27**
58	**TSF North**	**Mon 3/1/21**	**Fri 8/12/22**
59	Waste Rock Placement	Mon 3/1/21	Mon 2/28/22
60	Grading	Tue 3/1/22	Thu 4/7/22
61	Growth Media	Mon 5/2/22	Thu 8/4/22
62	Revegetation	Thu 8/4/22	Fri 8/12/22
63	**TSF Barge**	**Tue 3/1/22**	**Wed 8/13/25**
64	Waste Rock Placement	Tue 3/1/22	Thu 9/5/24
65	Grading	Fri 9/6/24	Mon 11/4/24
66	Growth Media	Thu 5/1/25	Tue 8/5/25
67	Revegetation	Tue 8/5/25	Wed 8/13/25
73	**TSF Central**	**Fri 9/6/24**	**Mon 9/1/25**
74	Waste Rock Placement	Fri 9/6/24	Tue 3/4/25
75	Grading	Wed 3/5/25	Mon 6/2/25
76	Growth Media	Tue 6/3/25	Mon 8/25/25
77	Revegetation	Mon 8/25/25	Mon 9/1/25
68	**TSF South**	**Wed 3/5/25**	**Wed 9/22/27**
69	Waste Rock Placement	Wed 3/5/25	Fri 11/27/26
70	Grading	Sat 11/28/26	Tue 1/26/27
71	Growth Media	Mon 5/3/27	Fri 6/11/27
72	Revegetation	Mon 6/14/27	Wed 9/22/27
1	Mill Grind Circuit Stops	Wed 9/1/21	Wed 9/1/21
15	**Waste Rock Dump**	**Fri 10/1/21**	**Wed 9/30/26**
21	**Fish Creek**	**Fri 10/1/21**	**Fri 8/5/22**
22	Grading / Contour	Fri 10/1/21	Tue 3/29/22
23	Growth Media	Mon 6/13/22	Fri 7/22/22
24	Scarify	Wed 7/13/22	Mon 8/1/22
25	Revegetation	Mon 8/1/22	Fri 8/5/22
16	**Barnes Creek**	**Thu 5/1/25**	**Wed 9/30/26**
17	Grading / Contour	Thu 5/1/25	Wed 9/30/26
18	Growth Media	Thu 6/12/25	Wed 7/23/25
19	Scarify	Sat 7/12/25	Fri 8/1/25
20	Revegetate	Fri 8/1/25	Thu 8/7/25
26	**Yellow Pup**	**Thu 5/1/25**	**Thu 4/30/26**
27	Grading / Contour	Thu 5/1/25	Thu 4/30/26



Project: Reclamation Schedule safe
Date: Thu 1/30/20

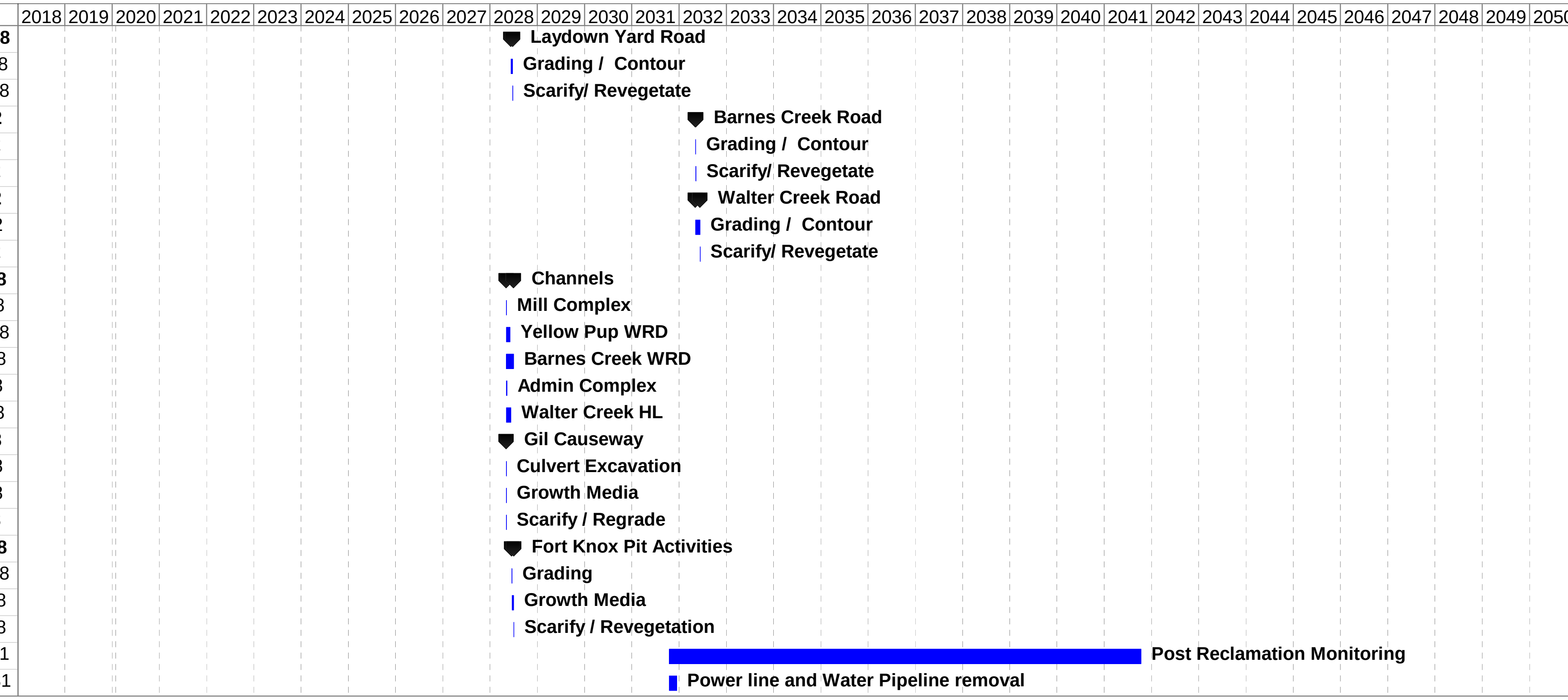
Task	Project Summary	Inactive Milestone	Manual Summary Rollup
Split	External Tasks	Inactive Summary	Manual Summary
Milestone	External Milestone	Manual Task	Start-only
Summary	Inactive Task	Duration-only	Finish-only
Progress	Deadline		

ID	Task Name	Start	Finish
28	Growth Media	Thu 6/12/25	Wed 7/23/25
29	Scarify	Thu 7/24/25	Wed 8/20/25
30	Revegetation	Wed 8/20/25	Tue 8/26/25
95	**Borrow Area**	**Thu 4/7/22**	**Tue 4/12/22**
96	**Barns Creek Borrow**	**Thu 4/7/22**	**Tue 4/12/22**
97	Scarify/ Revegetate	Thu 4/7/22	Tue 4/12/22
98	**Power line Borrow**	**Thu 4/7/22**	**Sun 4/10/22**
99	Scarify/ Revegetate	Thu 4/7/22	Sun 4/10/22
100	**Filter Material Borrow**	**Thu 4/7/22**	**Sat 4/9/22**
101	Scarify/ Revegetate	Thu 4/7/22	Sat 4/9/22
118	**Growth Media Stockpiles**	**Fri 6/11/27**	**Sun 9/14/31**
119	Barnes Creek	Fri 6/11/27	Sat 6/12/27
120	Yellow Pup	Fri 6/11/27	Sun 6/13/27
121	Tailings South	Fri 6/11/27	Sat 6/12/27
122	Tailings North	Fri 6/11/27	Sat 6/19/27
123	Walter Creek	Fri 9/12/31	Sun 9/14/31
2	Mining Complete	Wed 12/15/27	Wed 12/15/27
36	**Demolition**	**Wed 12/15/27**	**Sun 5/11/42**
54	RO-1, RO-2 and RO-3	Wed 12/15/27	Wed 12/15/27
41	**Mill Demolition**	**Mon 5/1/28**	**Mon 5/3/32**
42	Leach Tanks 7 total	Thu 5/1/31	Mon 5/3/32
43	CN Detox	Thu 5/1/31	Mon 5/3/32
44	Reagent Stroage	Mon 5/1/28	Fri 9/29/28
45	Refinery Decommission	Thu 5/1/31	Mon 5/3/32
46	Assay Lab	Thu 5/1/31	Mon 5/3/32
47	CIL Tanks 6 total	Thu 5/1/31	Mon 5/3/32
48	Warehouse	Mon 5/1/28	Fri 9/29/28
49	MEM	Mon 5/1/28	Tue 6/20/28
50	Admin Building	Mon 5/1/28	Tue 6/20/28
51	Mill Final Demo	Mon 5/1/28	Fri 9/29/28
37	**Mill Selective Demolition**	**Fri 12/1/28**	**Fri 8/10/29**
38	Crusher	Fri 12/1/28	Wed 2/28/29
40	Belt Conveyor	Thu 3/1/29	Tue 5/29/29
39	Mill Cold Storage Demolition (Former Core Shack)	Tue 5/1/29	Fri 8/10/29
55	Tailings Barge	Fri 5/2/31	Mon 5/5/31
53	Fresh Water Pump House	Fri 3/12/38	Fri 3/12/38
52	Seepage Pump House	Sun 5/11/42	Sun 5/11/42
56	Generator Building	Sun 5/11/42	Sun 5/11/42
9	**Laydown Yard**	**Mon 5/1/28**	**Tue 6/20/28**
10	Clear area	Mon 5/1/28	Tue 6/20/28
11	Demo mill warm storage	Mon 5/1/28	Wed 5/24/28
12	Grading / Contour	Wed 5/24/28	Tue 6/6/28
13	Growth Media	Tue 6/6/28	Thu 6/15/28
14	Scarify/ Revegetate	Thu 6/15/28	Mon 6/19/28
31	**Well Decommissioning**	**Mon 5/1/28**	**Fri 5/14/38**
32	Wells Decommissioned- Dewatering	Mon 5/1/28	Mon 6/12/28
34	Well Decommissioning- Heap Leach	Thu 5/1/31	Tue 9/30/31
35	Wells Decommissioned - Monitoring	Fri 3/12/38	Fri 3/12/38
33	Well Decommissioning - Interceptor	Mon 5/3/38	Fri 5/14/38
78	**Roads**	**Mon 5/1/28**	**Tue 6/8/32**
85	**Borrow Road**	**Mon 5/1/28**	**Wed 5/3/28**
86	Grading / Contour	Mon 5/1/28	Tue 5/2/28
87	Scarify/ Revegetate	Tue 5/2/28	Wed 5/3/28

Project: Reclamation Schedule safe
Date: Thu 1/30/20

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Progress | Deadline

ID	Task Name	Start	Finish
79	**Laydown Yard Road**	**Tue 6/6/28**	**Wed 6/21/28**
80	Grading / Contour	Tue 6/6/28	Mon 6/19/28
81	Scarify/ Revegetate	Mon 6/19/28	Wed 6/21/28
82	**Barnes Creek Road**	**Mon 5/3/32**	**Thu 5/6/32**
83	Grading / Contour	Mon 5/3/32	Tue 5/4/32
84	Scarify/ Revegetate	Wed 5/5/32	Thu 5/6/32
88	**Walter Creek Road**	**Mon 5/3/32**	**Tue 6/8/32**
89	Grading / Contour	Mon 5/3/32	Mon 6/7/32
90	Scarify/ Revegetate	Mon 6/7/32	Tue 6/8/32
102	**Channels**	**Mon 5/1/28**	**Tue 6/27/28**
103	Mill Complex	Mon 5/1/28	Wed 5/3/28
104	Yellow Pup WRD	Mon 5/1/28	Wed 5/31/28
105	Barnes Creek WRD	Mon 5/1/28	Tue 6/27/28
106	Admin Complex	Mon 5/1/28	Mon 5/8/28
107	Walter Creek HL	Mon 5/1/28	Wed 6/7/28
108	**Gil Causeway**	**Mon 5/1/28**	**Tue 5/2/28**
109	Culvert Excavation	Mon 5/1/28	Mon 5/1/28
110	Growth Media	Mon 5/1/28	Mon 5/1/28
111	Scarify / Regrade	Tue 5/2/28	Tue 5/2/28
91	**Fort Knox Pit Activities**	**Mon 6/12/28**	**Thu 6/29/28**
92	Grading	Mon 6/12/28	Wed 6/14/28
93	Growth Media	Wed 6/14/28	Tue 6/27/28
94	Scarify / Revegetation	Tue 6/27/28	Thu 6/29/28
124	Post Reclamation Monitoring	Sun 10/12/31	Wed 10/9/41
125	Power line and Water Pipeline removal	Sun 10/12/31	Thu 12/11/31



Project: Reclamation Schedule safe
Date: Thu 1/30/20

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Progress
Split	External Tasks	Inactive Summary	Manual Summary	Deadline
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

Appendix B
Agreement for Funding Post-Reclamation Obligations

Appendix B – Agreement for Funding Post-Reclamation Obligations

AGREEMENT FOR FUNDING POST-RECLAMATION OBLIGATIONS

This agreement is made and entered into this 15TH day of FEBRUARY, 1994, by and between FAIRBANKS GOLD MINING, INC. ("FGMI"), a Delaware corporation, and the STATE OF ALASKA, Department of Natural Resources, Divisions of Land and Mining ("DNR") and the Department of Fish and Game ("ADF&G").

R E C I T A L S:

WHEREAS, pursuant to AS 38.05.255, FGMI has applied for a millsite permit from DNR for operation of the Fort Knox Mine Project ("the Project"); and

WHEREAS, in accordance with such application DNR has issued FGMI Millsite Permit ADL Nos. 414960 and 414961 (the "Millsite Permit"); and

WHEREAS, pursuant to AS 27.19 and the Reclamation Plan, FGMI is required to perform reclamation on lands which are subject to the Millsite Permit (the "Permit Area"), which Permit Area is depicted on Exhibit A hereto; and

WHEREAS, the Project requires the construction of a tailings dam, a water supply dam, and certain other facilities within the Permit Area, all of which facilities are depicted on Exhibit B hereto; and

WHEREAS, construction, operation and maintenance of such facilities require: a permit from the Army Corps of Engineers ("COE") pursuant to Section 404 of the Clean Water Act ("the Section 404 Permit"); Certificates of Approval to Operate the water supply dam (the "Water Dam Approval to Operate") and the tailings dam, conveyer crossing and Melba/Monte Cristo Rock Dump (collectively the "Tailings Dam Approval to Operate") from DNR, three Fish Habitat Permits (the "Fish Habitat Permits") from ADF&G; and a Solid Waste Disposal Permit ("the Solid Waste Disposal Permit") from the Alaska Department of Environmental Conservation ("DEC") for a tailings impoundment (collectively the "Permits"); and

WHEREAS, AS 27.19.030(b) provides:

> In reviewing a reclamation plan for state, federal, or municipal land under (a) of this section, the commissioner may consider, after consultation with the Commissioners of Environmental Conservation and Fish & Game and with the concurrence of the miner and landowner, uses to which the land may be put after mining has been completed, including trails, lakes, recreation sites, fish and wildlife enhancement, commercial, and agricultural uses;

and

WHEREAS, the Reclamation Plan provides that following cessation of mining and milling operations in the Permit Area, FGMI will immediately initiate and complete within two years active reclamation ("Phase I Reclamation") followed by a period of passive reclamation now estimated to be 10 years ("Phase II Reclamation"), such reclamation phases having the meanings set forth in the Reclamation Plan; and

WHEREAS, DNR, ADF&G, and FGMI desire that the portion of the Permit Area depicted on Exhibit C hereto, or an area substantially similar thereto, be managed as a public use/recreation site (the "Public Use Site") following completion of Phase II Reclamation by FGMI; and

WHEREAS, DNR has issued a Final Finding and Decision that the Project is in the best interests of the State of Alaska and has agreed to use its best efforts to amend the Tanana Basin Area Plan to classify the Public Use Site as public recreation and wildlife habitat to facilitate its eventual use by the public; and

WHEREAS, use of the area as a public use/recreation site requires the construction of a more substantial water supply dam than would otherwise be required by the Project, which dam, along with certain other facilities, hereinafter defined as "Improvements", will require monitoring and maintenance after DNR approval of completion of Phase II Reclamation by FGMI; and

WHEREAS, the parties desire to leave the water supply dam and lake in place in perpetuity, to provide mitigation that might otherwise be required under the Section 404 Permit and the Fish Habitat Permits under AS 16.05.840-.850; and

WHEREAS, the fulfillment of all provisions of this agreement satisfies Sections 4.2.4(3) and 4.2.6(2) and (3) of the Reclamation Plan; and

WHEREAS, it is thus in the mutual benefit of the State and FGMI that the Improvements remain in place; and

WHEREAS, it is not in the best interests of the State for the monitoring and maintenance of the Improvements and the Permits to create a financial burden on the State; and

WHEREAS, FGMI is willing to construct the Improvements and provide funds for the monitoring and maintenance thereof following completion of Phase II Reclamation only on the condition that FGMI be released from any and all Future Obligations, as hereinafter defined, under the Transferred Permits, as hereinafter defined, pursuant to Sections 4 and 5 hereto, including any future reclamation obligations; and

WHEREAS, the Solid Waste Disposal Permit and the Reclamation Plan provide that post-closure monitoring and maintenance may be required to continue in the Permit Area, which activities may continue for a period of thirty (30) years or longer; and

WHEREAS, FGMI, ADF&G, and DNR have agreed that the most desirable form of organization to accomplish the post-closure monitoring and maintenance in the Permit Area following completion of Phase II Reclamation by FGMI, would be best determined in the latter stages of Phase II Reclamation.

NOW, THEREFORE, the parties agrees as follows:

1. Definitions.

(a) "Maintenance Obligations" means the performance of all inspections, repairs and other activities that would be FGMI's obligations in the absence of this Agreement necessary to (1) maintain the Improvements in a condition for the protection of the public health and safety and (2) maintain the Transferred Permits in compliance with applicable law until termination or expiration. Exhibit D attached hereto contains a list of

Maintenance Obligations currently contemplated. This list may be revised during the term of this Agreement as mutually agreed between DNR and FGMI or as determined through arbitration as hereinafter provided.

(b) "Post-closure monitoring and maintenance" means monitoring and maintenance occurring after DEC's determination under the Solid Waste Disposal Permit that the criteria for permanent closure have been met and after the 70% vegetative cover criteria has been achieved pursuant to the Reclamation Plan.

(c) "Reclamation Plan" means the Fort Knox Project Reclamation Plan as approved by DNR and COE prior to or concurrently with the execution hereof and as amended and approved by DNR from time to time hereafter.

(d) "State" means DNR for all purposes of administering this Agreement.

(e) "Transferred Permits" has the meaning set forth in Section 4.1.

(f) "Future Obligations" means those legally enforceable duties under the Transferred Permits that arise following the fulfillment of all conditions under Sections 4 and 5 of this agreement (hereinafter referred to as the "Effective Date of Transfer") except that FGMI is not relieved of liability that accrues following the Effective Date of Transfer which arises out of operations conducted under the Transferred Permits prior to the Effective Date of Transfer.

(g) "Improvements" means those facilities identified in Exhibit B.

2. FORMATION OF ORGANIZATION. Not less than 90 days prior to the anticipated completion of Phase II Reclamation, the State and FGMI shall agree upon the organization to perform the Maintenance Obligations as provided in this Agreement and to hold and invest principal and to disburse the income from FGMI's funding of the post-reclamation expenses as set forth in this Agreement. The State and FGMI may elect (i) to form a nonprofit corporation at FGMI's expense; (ii) that FGMI endow a statutory fund (such as, but not limited to, the "fish and game fund" under AS 16.05.100 (Section 17 art I ch 9 SLA 1959; am Section 3 ch 132 SLA 1984)); (iii) to use a combination of the above or (iv) to use another mutually agreeable organizational form (the preferred funding mechanism being hereafter referred to as "Organization"). The State and FGMI intend that such Organization shall be formulated so that it shall not be considered the alter ego of FGMI under Alaska law. Within 10 days following the decision on the form of the Organization, the State and FGMI shall commence establishment of the Organization and diligently proceed to create the Organization, if necessary. If a nonprofit corporation is utilized the State and FGMI shall agree upon the contents of the Articles of Incorporation and Bylaws that are consistent with this Agreement unless otherwise agreed. If a statutory fund is to be endowed or other organization utilized, the endowment shall not be used except as specified in this Agreement unless the DNR and the agency with control over the

statutory fund utilized and FGMI agree otherwise. If a statutory fund is utilized the agency controlling the statutory fund shall agree to the terms of the endowment

2.1 Purpose. Subject to the terms of this Agreement, the Organization shall be utilized for the purpose of determining and financing all Maintenance Obligations reasonably required to be performed under this Agreement after completion of Phase II Reclamation by FGMI, and to perform those administrative functions necessary and directly related to the existence and purpose of the Organization.

3. APPLICATIONS BY FGMI. Not more than 180 days after the State and FGMI determine and create the Organization pursuant to section 2, FGMI shall diligently and in good faith make all applications and take all reasonable steps necessary (a) to obtain termination or abandonment of the Millsite Permit, the Tailings Dam Approval to Operate and the Fish Habitat Permit for the wetlands and fish barrier; (b) to obtain, to the fullest extent possible, termination or abandonment of the Section 404 Permit and the Solid Waste Disposal Permit, and, to the extent FGMI is unable to obtain full termination and abandonment of such permits, to seek transfer to the Organization of the unterminated and unabandoned portion of such permits; and (c) to seek transfer to the Organization of the Water Dam Approval to Operate, the Fish Habitat Permits for the Solo Creek Causeway and culvert battery and the water supply dam. FGMI may transfer the permits listed in (b) and (c) above to the Organization provided that the Organization is adequately funded as

provided in this Agreement and that the relevant agency approves transfer. The transfer shall be subject to Section 5.2 of this Agreement. The State shall cooperate fully and in good faith with FGMI to effect the transfer of the permits as provided in this Agreement.

4. TRANSFERS. Subject to Sections 3 and 5, FGMI shall transfer to the Organization the following:

4.1 Permits. The permits listed in Section 3 (b) and (c) above (the "Transferred Permits"). The Organization shall assume all Future Obligations under such permits from and after the Effective Date of Transfer.

4.2 Funds. The sum established in accordance with Section 7 of this Agreement, which shall be deposited into a mutually acceptable depository in the name of the Organization;

4.3 Maintenance Records. FGMI's historical records relating to Maintenance Obligations; and

4.4 Other Obligations. Such other permits or obligations, other than Maintenance Obligations, which may arise during the course of the Project provided that the State and FGMI agree in writing and the additional responsibilities are adequately funded as provided in this Agreement.

5. CONDITIONS TO TRANSFER. FGMI's obligation to make the transfers set forth in Section 4 is subject to the satisfaction of the following conditions prior to or simultaneously with FGMI's satisfaction of its obligations under Section 4.

5.1 Termination of Permits. The permits listed in Section 3(a), and, to the extent not transferred to the Organization under Section 4.1, the permits listed in Section 3(b), shall have been terminated or abandoned.

5.2 Transfer of Permits. The Transferred Permits shall have been transferred to the Organization in accordance with Section 4.1 and FGMI released from Future Obligations thereunder. FGMI shall be responsible for satisfying any reasonable conditions required or permitted by law imposed by the permitting agency for transfer of the permits.

5.3 Release of Reclamation Bond. DNR shall have released FGMI from any undertaking or security posted pursuant to the Millsite Permit and given written approval of the reclamation work.

5.4 Release of Solid Waste Disposal Permit Bond. DEC shall have released FGMI from any undertaking or security pursuant to the Solid Waste Disposal Permit.

5.5 Release of Bond Under Section 6 of this Agreement. DNR shall have released FGMI from the undertaking set forth in Section 6 of this Agreement.

5.6 Final Determination of Funding Amount. The amount to be transferred to the Organization by FGMI pursuant to Section 4.2 of this Agreement shall have been finally determined in accordance with Section 7 of this Agreement.

6. SECURITY FOR FUNDING. Upon the issuance of the Water Dam Approval to Operate, FGMI shall deliver to DNR a bond in

the amount of $667,000 as security for FGMI's funding obligation pursuant to Section 4.2 of this Agreement. The $667,000 bond amount covers FGMI's bonding obligation under this section for the first year following issuance of the Water Dam Approval to Operate. The bond shall be adjusted annually for years 2 through the first five year anniversary of the Millsite Permit for inflation and such other factors as DNR and FGMI agree. Subsequently the amount of such bond shall be adjusted as follows:

(a) Not less than 90 days prior to the fifth anniversary of the issuance of the Millsite Permit, and each successive fifth year anniversary thereafter until its termination, FGMI shall transmit to DNR all historical records and future projections of costs, if any, relating to Maintenance Obligations which have not been previously transmitted under this Section 6 (a).

(b) Not more than 30 days after transmittal of the records pursuant to Section 6 (a), DNR and FGMI shall meet for the purpose of adjusting the anticipated amount of funding which, if invested on the expiration date of the succeeding bond, would be sufficient to generate an amount of income that would adequately fund the Maintenance Obligations in perpetuity. This process will yield an anticipated bond amount for the first year of each five year period. DNR and FGMI shall meet annually within each five year period to adjust the amount of the bond based upon then current information on inflation and upon such other factors as DNR and FGMI may agree. If DNR and FGMI reach an agreement on the amount, the amount of the succeeding bond shall be adjusted to the agreed upon amount.

(c) If DNR and FGMI are unable to reach agreement under Section 6 (b), the adjusted amount of the bond shall be determined under the Alaska Uniform Arbitration Act, in accordance with Section 8 of this Agreement.

(d) The bond proceeds shall be payable to DNR upon the occurrence of any of the following:

(1) the filing of a petition in bankruptcy by or against FGMI, or the commencement of any proceeding by or against FGMI under any federal or state insolvency or other law for the relief of debtors, in either case which is not dismissed within 60 days, or the insolvency of FGMI;

(2) DNR's termination of the Millsite Permit for breach thereof;

(3) FGMI's material breach of this Agreement; or

(4) failure of FGMI or its successors to renew the bond prior to fifteen (15) days before the bond's expiration. In the event the adjusted amount of the bond is in arbitration at such time, the bond shall be initially renewed at the existing amount and subsequently adjusted as determined by the arbiter.

(e) Any proceeds from the bond described in this section shall be applied to FGMI's obligations under this Agreement.

7. <u>PROCEDURE FOR DETERMINING AMOUNT OF FUNDING</u>. The sum to be transferred to the Organization under Section 4.2 of this Agreement shall be an amount which, if invested at the time of such funding, shall be sufficient to adequately fund the Organization's Maintenance Obligations in perpetuity, as determined in accordance with this Section 7.

(a) For the purpose of assisting DNR and FGMI in determining the adequacy of funding of the Organization, the parties shall use the information obtained in (1) the environmental audits required under Section 12 (Environmental Audit) of the Millsite Permit and (2) other appropriate audit performed by a contractor hired by FGMI and approved by DNR to give an opinion concerning (i) the costs to be incurred by the Organization in performing the Maintenance Obligations and (ii) such other matters as agreed upon by DNR and FGMI, which may include the need for insurance. The contractor shall be hired not less than 180 days prior to the completion of Phase II Reclamation.

(b) Not more than 180 or less than 120 days prior to completion of Phase II Reclamation by FGMI, FGMI shall transmit to DNR all historic records and projections of future costs relating to Maintenance Obligations, which have not previously been transmitted pursuant to Section 6 (a) of this Agreement.

(c) Not more than 30 days after transmittal of the records pursuant to Section 7 (a), the State and FGMI shall meet for the purpose of determining the amount to be transferred to the Organization pursuant to Section 4.2 of this Agreement.

(d) If the State and FGMI reach agreement under Section 7 (c), the amount to be transferred shall be the amount agreed upon. If the State and FGMI are unable to agree on the amount to be transferred to the Organization under Section 4.2 and this Section 7, the State and FGMI shall proceed to arbitrate the dispute under Section 8. The arbitration shall determine the amount which, if invested at the time of transfer, would be sufficient to generate an amount of income adequate to fully fund the Maintenance Obligations in perpetuity.

8. Arbitration. (a) If the State and FGMI are unable to agree on the scope of Maintenance Obligations under section 1(a), the annual inflation adjustment of the bond under Section 6, the adjusted bond amount at five-year intervals under Section 6 or the amount of funding of the Organization under Section 7 (including the need for insurance), the State and FGMI shall arbitrate the dispute under the Alaska Uniform Arbitration Act. The State and FGMI each party shall select an arbiter and the two arbiters shall jointly select a third arbiter.

(b) When resolving the foregoing disputes the State and FGMI and the arbiters shall use the following principles:

(1) The total funding shall be the sum of the following:

(a) A principal amount sufficient to generate income on a continuing basis and in perpetuity to pay those costs reasonably anticipated to perform the Maintenance Obligations;

(b) A principal amount reasonably anticipated to generate sufficient annual income to invest in principal at the end of each fiscal year to offset the effect of inflation on the principal; and

(c) An amount to be used to pay the Maintenance Obligations until the Organization can accumulate sufficient income to pay the reasonably anticipated Maintenance Obligations as they arise, if any such monies are needed.

(2) All Maintenance Obligations shall be performed in accordance with local, state, and federal laws and to protect the public health and safety.

(3) The costs shall be based on contracting with third parties to perform the Maintenance Obligations, or on having the work performed by government employees, as appropriate.

(4) A reasonable estimate of future inflation shall be utilized.

(5) A reasonable rate of net return on principal resulting from conservative investments shall be utilized.

(6) Only income from the principal may be used to fund expenses and inflation proof.

(7) Any responsibility that is undertaken by the Organization that would be the responsibility of FGMI in the absence of this Agreement shall be adequately funded.

(8) FGMI shall not be required to fund any function that would not have been its responsibility in the absence of this Agreement.

(9) The scope of the Maintenance Obligations shall be those functions (a) necessary for physical maintenance of the

Improvements for the protection of the public health and safety; (b) required to maintain the Transferred Permits in compliance with applicable law; and (c) those administrative functions necessary and directly related to the existence and purpose of the Organization.

(10) When determining the need for insurance the parties and arbiters shall consider applicable law requiring insurance, insurance or self-insurance carried by or available to the Organization and the cost thereof, the likelihood of the event or activities that the insurance would cover, the cost of the insurance and such other reasonable considerations as the parties or arbiters deem appropriate. The intent of this provision is not to require insurance but to ensure that the need for insurance is adequately assessed and appropriate funding required if insurance is so determined to be needed by the Organization.

(11) The monitoring and maintenance of the Improvements and the Transferred Permits shall not create a financial burden on the State.

9. FAILURE OF CONDITIONS PRECEDENT. In the event that any of the conditions set forth in Section 5 of this Agreement remain unsatisfied as of one year after completion of Phase II Reclamation by FGMI, unless such period is extended by mutual agreement or unless such condition shall have been waived in writing by the State and/or FGMI, as appropriate, FGMI shall prepare an amendment to the Reclamation Plan to provide for post-closure monitoring and maintenance in substitution of this

Agreement within 180 days of the above date and the bond requirements under Section 6 shall remain in effect until DNR's approval of the amendment to the Reclamation Plan.

10. Mutual Indemnity. Simultaneously with the satisfaction of the requirements under Sections 4 and 5 thereof, the Organization and FGMI shall provide the following indemnifications. The Organization shall defend and indemnify FGMI against any and all claims, liabilities, demands, causes of action, damages, judgments, penalties, fines, and administrative actions resulting from the acts or omissions of the Organization within or relating to the Permit Area from and after the transfer of the Transferred Permits to the Organization. FGMI shall defend and indemnify the Organization against any and all claims, liabilities, demands, causes of action, damages, judgments, penalties, fines, and administrative actions resulting from the acts or omissions of FGMI within or relating to the Permit Area prior to the transfer of the Transferred Permits to the Organization.

11. Public Use Site. DNR shall seek to amend the Tanana Basin Area Plan to classify the Public Use Site as public recreation and wildlife habitat to facilitate public access and recreation. DNR agrees that following Phase II Reclamation the public shall be granted access for public use and recreation to the maximum extent allowed by law.

12. Notice: Administering Agency. DNR is the agency responsible for administering this Agreement and is the agency FGMI shall contact concerning any questions arising hereunder. DNR

shall contact and coordinate with such other state agencies as necessary for implementation of or questions arising under this Agreement. Any Notices to be given under this Agreement shall be given to FGMI at 701 Bidwill Avenue, Fairbanks, Alaska 99701 (for UPS delivery), or P.O. Box 73726, Fairbanks, Alaska 99707 (for mail delivery), or FAX no (907) 451-4305, and to DNR at: Department of Natural Resources, Division of Mining, Attention: Director, 3601 "C" Street, Suite 880, Anchorage, AK 99501, or P.O. Box 107016, Anchorage, Alaska 99510-7016 (for mail delivery), or FAX no. (907) 563-1853 or such other address as provided in writing to the other party.

13. Assignment. FGMI may assign all or part of its rights and delegate its obligations under this agreement solely as provided in this section. FGMI only may assign its rights and delegate its obligations under this agreement to the assignee of its interest under the Millsite Permit and in the same proportion as thereunder. No transfer permitted by this section shall, as between the State and FGMI, relieve FGMI of any liability, whether accruing before or after such transfer, which arise out of Permit operations conducted prior to such transfer. No transfer of an interest under this agreement is binding on the State without the express written approval of DNR. In the event of a transfer by FGMI of less than its entire undivided interest in, to, or under this agreement, FGMI and its transferee shall act and be treated as one party, except that DNR shall be required to deliver copies of all notices permitted or required under this agreement to all

parties holding interests under this agreement pursuant to transfers which have been approved by DNR as provided in this section. Transfer of all or any of FGMI's interest in, to, or under this Agreement does not relieve Amax Gold Inc. or any succeeding guarantor under the guaranty executed in conjunction with the Millsite Permit unless the requirements for such transfer of the guaranty as provided therein have been satisfied.

14. Successors. This agreement shall be binding on and inure to the benefit of the parties and their successors.

15. Monies Payable in U.S. Money. All sums payable under this agreement must be paid in money of the United States of America.

16. Severability of Clauses of Agreement. If any clause, or provision, herein contained, shall be adjudged to be invalid, it shall not affect the validity of any other clause or provision of this agreement.

17. Waiver. No delay or omission in the exercise of any right or remedy of either party shall impair such right or remedy or be construed as a waiver of such right or remedy.

18. Corporate or Partnership Authority. FGMI shall deliver to DNR upon the execution of this agreement a certified copy of a resolution of its board of directors authorizing execution of this agreement and naming the officers that are authorized to execute this agreement on behalf of the corporation. The State shall be entitled to rely upon the authority of the persons identified in the resolution to continue to act on behalf

of the corporation until otherwise notified in writing by the corporation.

19. Venue; Controlling Law. The venue for any administrative appeal or civil action relating to this agreement shall be in Fairbanks, Alaska. This agreement shall be interpreted in accordance with the law of the State of Alaska.

20. Modification of Agreement. This agreement shall not be modified except in writing executed by the parties.

21. Exhibits. All exhibits referred to herein are attached to this agreement and incorporated by reference.

22. Interpretation. This agreement shall be interpreted according to the fair intent of the agreement as a whole. This agreement has been jointly drafted by the parties following negotiations and the rule of contract interpretation construing an instrument against the drafter shall not be applied.

23. Headings. The section headings in this agreement shall have no effect on its interpretation.

STATE OF ALASKA
Department of Fish and Game

By: ______________________________ Date: ____________
Frank Rue
Director, Habitat and Restoration Division

ACKNOWLEDGMENT

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

The foregoing instrument was acknowledged before me this ________________ (date) by Frank Rue, Director, Habitat and Restoration Division.

SUBSCRIBED AND SWORN TO before me this _____ day of ______________, 1994

____
Notary Public, State of Alaska
My commission expires: ____________

STATE OF ALASKA
Department of Natural Resources

By: ______________________________ Date: Feb. 15, 1994
Richard A. LeFebvre
Project Manager

ACKNOWLEDGMENT

STATE OF ALASKA)
fourth
~~THIRD~~ JUDICIAL DISTRICT) ss.
)

The foregoing instrument was acknowledged before me this February 15, 1994 (date) by Richard A. LeFebvre, Project Manager, Department of Natural Resources

~~SUBSCRIBED AND SWORN TO before me this _____ day of~~

~~_______________________ 1994~~

Christopher C Muller
Notary Public, State of Alaska
My commission expires: *1-31-95*

FAIRBANKS GOLD MINING, INC.
a Delaware corporation

By: *Kenneth R Pohle* Date: *Feb. 15, 1994*
Kenneth R. Pohle
President

ACKNOWLEDGMENT

STATE OF ALASKA)
) ss.
FOURTH JUDICIAL DISTRICT)

The foregoing instrument was acknowledged before me this *February 15, 1994* (date) by Kenneth R. Pohle, President of Fairbanks Gold Mining, Inc., a Delaware corporation, on behalf of the corporation.

Christopher C Muller
Notary Public, State of Alaska
My commission expires: *1-31-95*

Exhibit "A"

Attached to and made part of the Agreement For Funding Post-Reclamation Obligations between Fairbanks Gold Mining, Inc. and the State of Alaska, Department of Natural Resources, Divisions of Land and Mining and the Department of Fish and Game dated February 15, 1994.

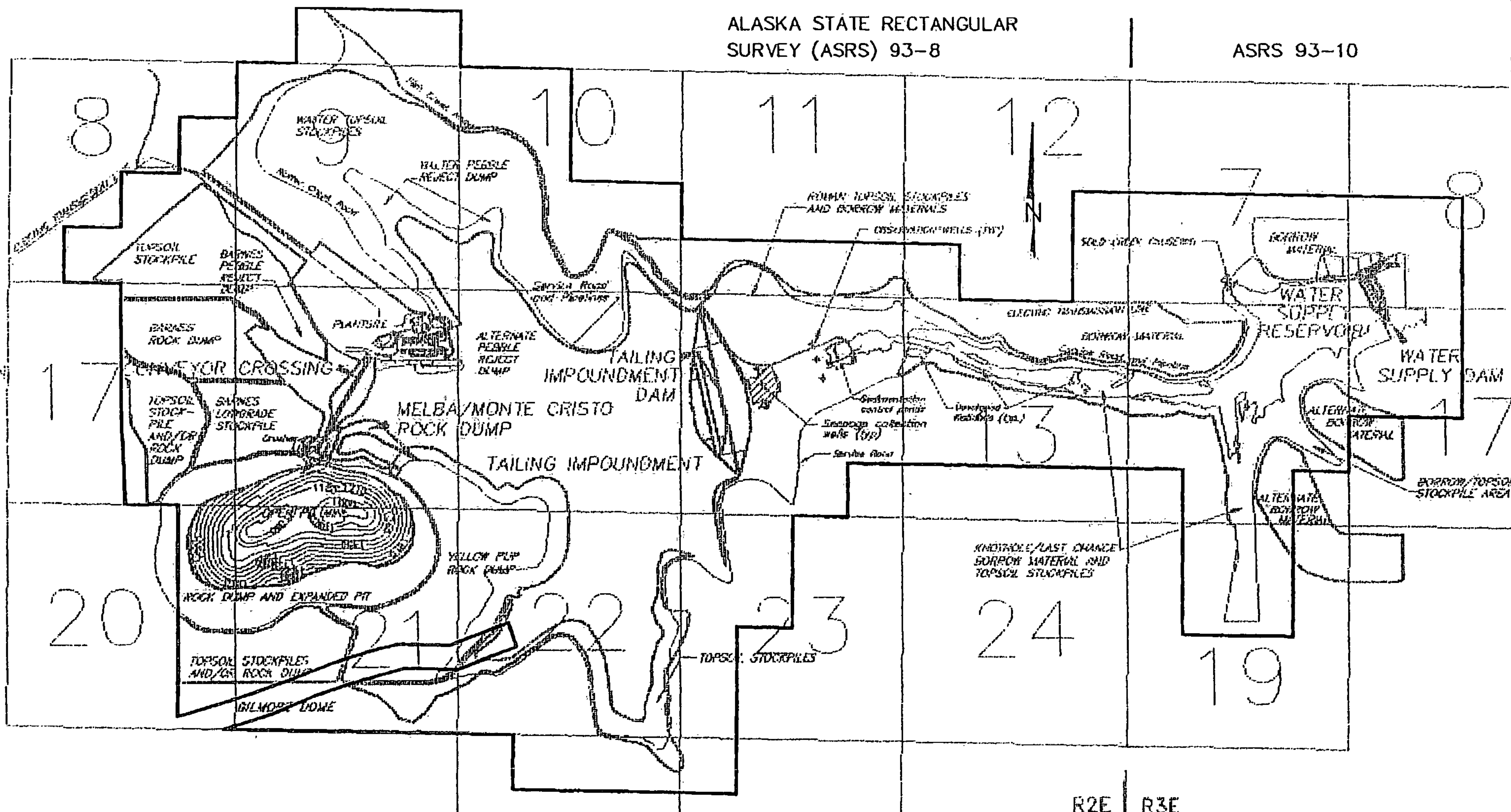
The Permit Area is that real property identified on the plat appended to this exhibit.

MILLSITE PERMIT AREA

ADL 414960
ADL 414961

ALASKA STATE RECTANGULAR SURVEY (ASRS) 93-8

ASRS 93-10



FAIRBANKS GOLD MINING, INC.
FORT KNOX PROJECT
FAIRBANKS, ALASKA

MILLSITE PERMIT AREA
EXHIBIT A

DRAWING NUMBER	SCALE	DATE
MPEXHA.DWG	1" = 3500'	2/8/94

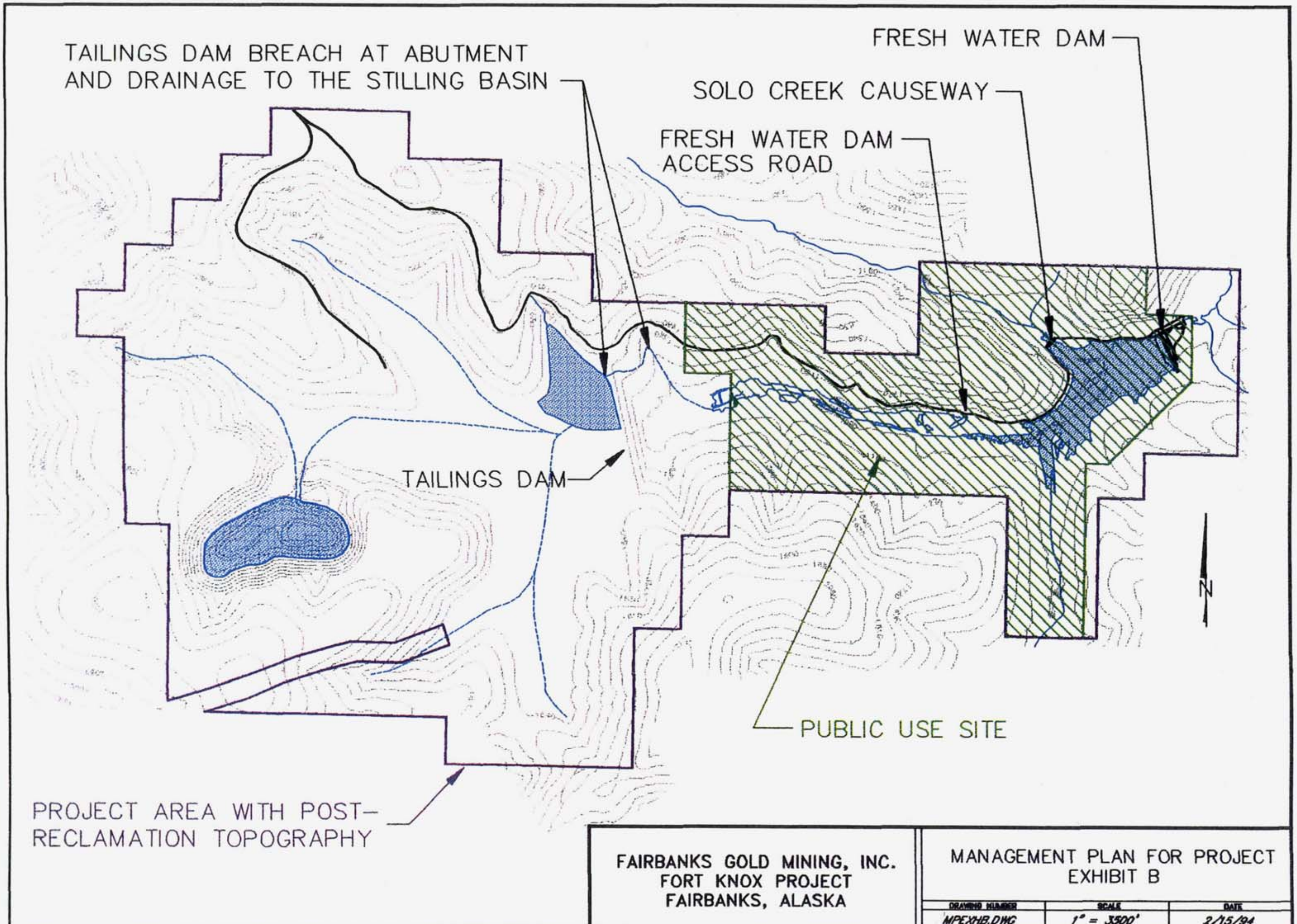
Exhibit "B"

Attached to and made part of the Agreement For Funding Post-Reclamation Obligations between Fairbanks Gold Mining, Inc. and the State of Alaska, Department of Natural Resources, Divisions of Land and Mining and the Department of Fish and Game dated February 15, 1994.

The Improvements are:

1. Fresh water dam
2. Fresh water dam access road
3. Solo Creek Causeway
4. Tailings dam
5. Tailings dam breach at abutment
6. Tailings dam drainage to the stilling basin
7. Such other roads as are necessary for access to the Improvements as determined by the parties upon implementation of this agreement.

The Improvements identified as 1 and 4 above are depicted on the plat attached to Exhibit A. The Improvements identified as 5 and 6 above are shown on the plat attached to Exhibit B. The Improvements identified as 2, 3, and 7 are not specifically identified on the plats attached to the Exhibits.



FAIRBANKS GOLD MINING, INC.
FORT KNOX PROJECT
FAIRBANKS, ALASKA

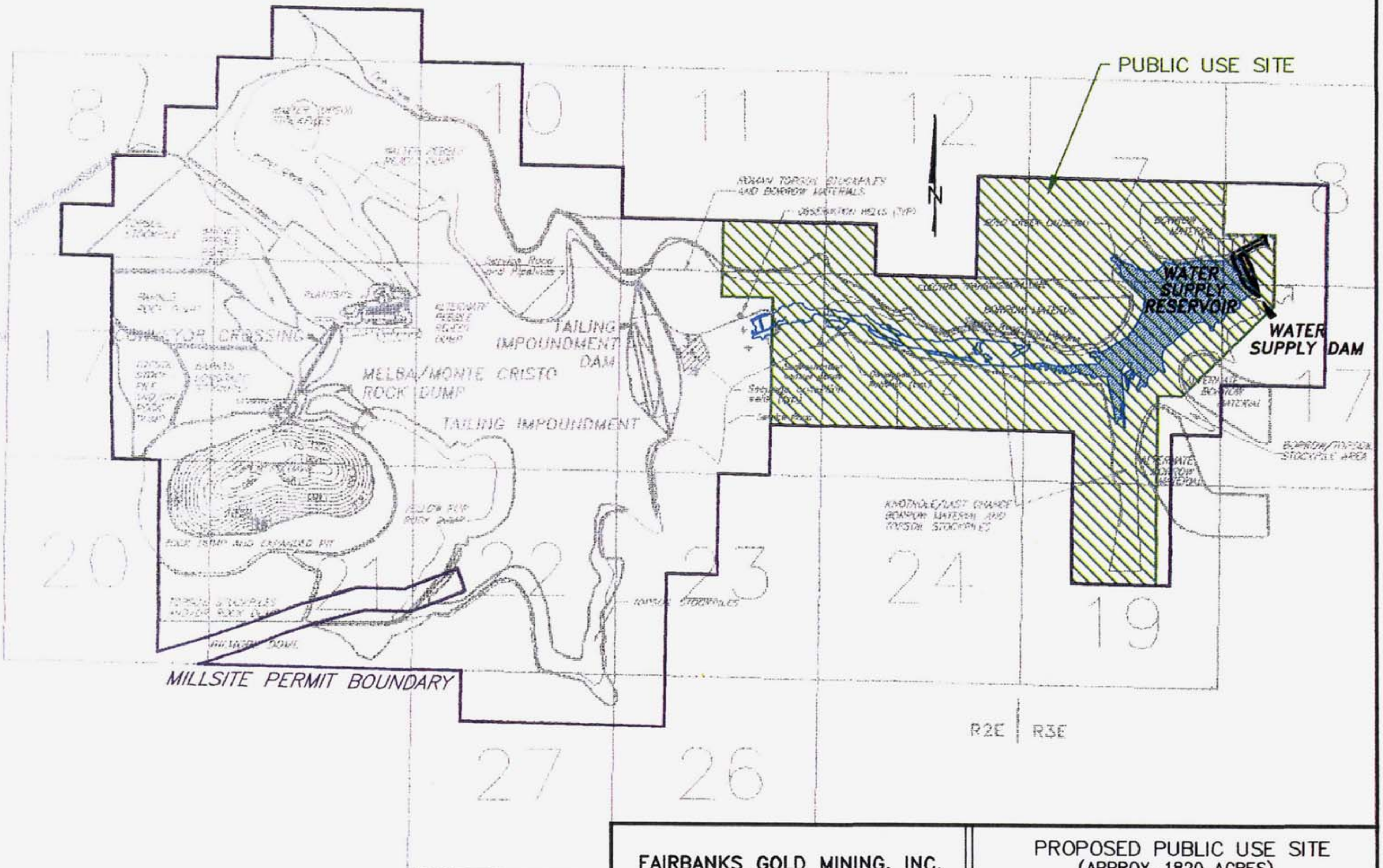
MANAGEMENT PLAN FOR PROJECT
EXHIBIT B

DRAWING NUMBER	SCALE	DATE
MPEXHB.DWG	1" = 3500'	2/15/94

Exhibit "C"

Attached to and made part of the Agreement For Funding Post-Reclamation Obligations between Fairbanks Gold Mining, Inc. and the State of Alaska, Department of Natural Resources, Divisions of Land and Mining and the Department of Fish and Game dated February 15TH, 1994.

That portion of the Permit Area desired as a Public Use Site by the parties is identified on the attachment to this exhibit.



FAIRBANKS GOLD MINING, INC. FORT KNOX PROJECT FAIRBANKS, ALASKA	PROPOSED PUBLIC USE SITE (APPROX. 1820 ACRES) EXHIBIT C		
	DRAWING NUMBER	SCALE	DATE
	MPEXHC.DWG	1" = 3500'	2/15/94

Exhibit "D"

Attached to and made part of the Agreement For Funding Post-Reclamation Obligations between Fairbanks Gold Mining, Inc. and the State of Alaska, Department of Natural Resources, Divisions of Land and Mining and the Department of Fish and Game dated February 15, 1994.

[FTKNOX] A:LONGTERM.5

ESTIMATED LONG-TERM DAM MAINTENANCE SCHEDULE & COSTS

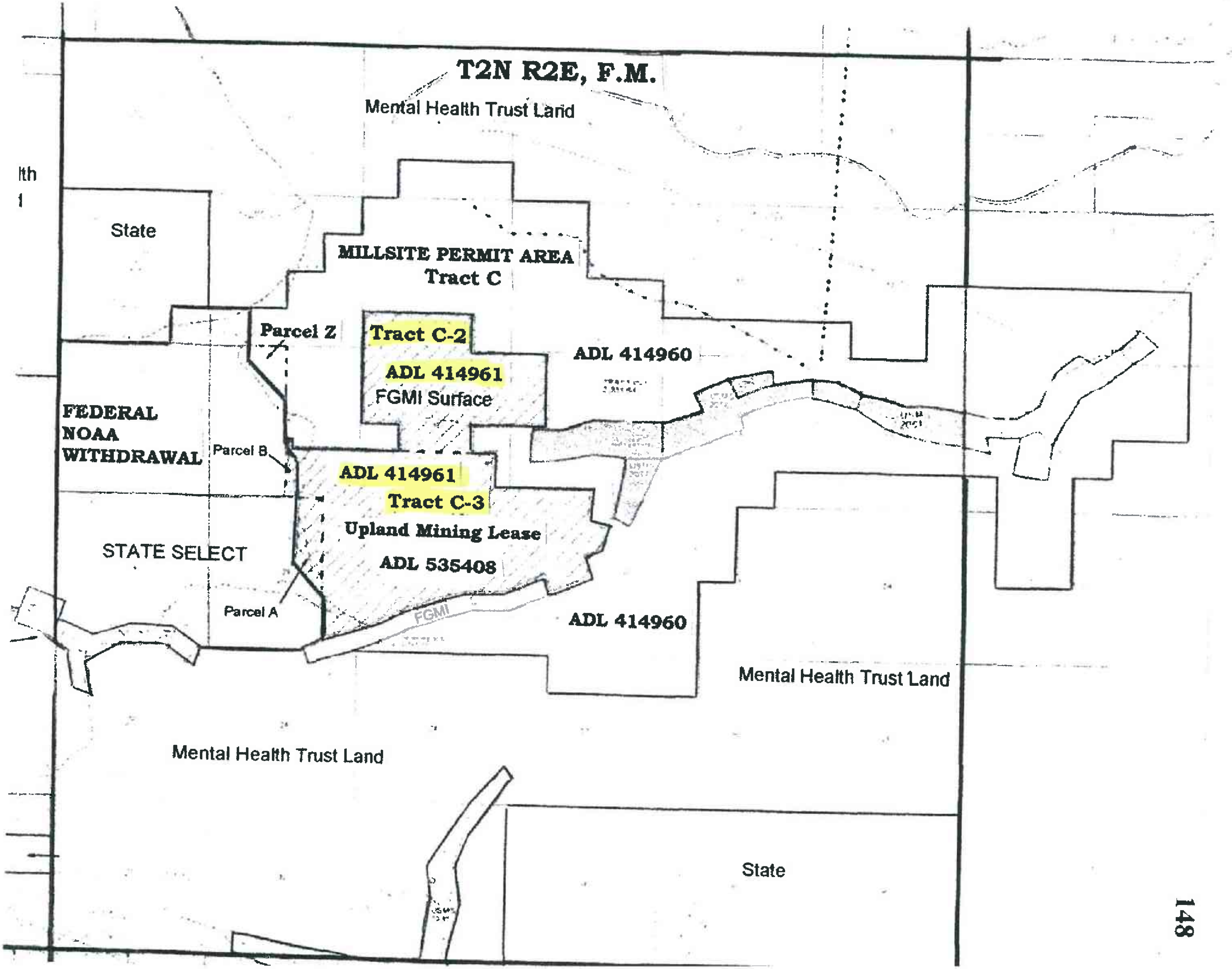
Item	Interval (frequency)	Unit	Price (US$/unit)	Quantity (units)	Cost (US$)	Cost Subtotals (US$)
Monitoring – Piezometer	3 per Year	HR	$40	6	$240	$720
Monitoring – Survey	2 per Year	HR	$100	8	$800	$1,600
Inspection & Evaluation	3 Years	LS	$2,333	1	$2,333	$2,333
Maintenance Supervision	1 per Year	HR	$47	16	$747	$747
Maintenance 140G Motor Grader	1 per Year	HR	$76.05	32	$2,434	$2,434
Maintenance 950F Loader	1 per Year	HR	$72.97	32	$2,335	$2,335
Maintenance D5H Dozer	1 per Year	HR	$66.37	32	$2,124	$2,124
Mobilize/Demobilize	1 per Year	LS	$750.00	1	$750	$750
Tax Return & Audit	1 per Year	LS	$1,000.00	1	$1,000	$1,000
Subtotal 1 Year						*$14,043*
Surface Water Monitoring & Labor	5 Years	LS	$1,100	1	$1,100	
Subtotal 5 Year						*$1,100*
Clean & Repair Weep Holes	10 Years	LS	$3,800	1	$3,800	
Subtotal 10 Year						*$3,800*
Repair/Replace Gate	30 Years	LS	$2,600	1	$2,600	
Subtotal 30 Year						*$2,600*
Install/Replace Outlet Insert	50 Years	FT	$52	565	$29,380	
Repair Spillway Concrete/Joints	50 Years	CY	$371	678	$251,353	
Repair Stilling Basin Concrete	50 Years	CY	$371	53	$19,478	
Repair/Replace Trash Racks	50 Years	LS	$3,140	1	$3,140	
Subtotal 50 Year						*$303,350*
Clean & Repair Dam Faces	100 Years	AC	$2,500	7	$17,500	
Subtotal 100 Year						*$17,500*
Other Maintenance	Unknown					
Subtotal Other						

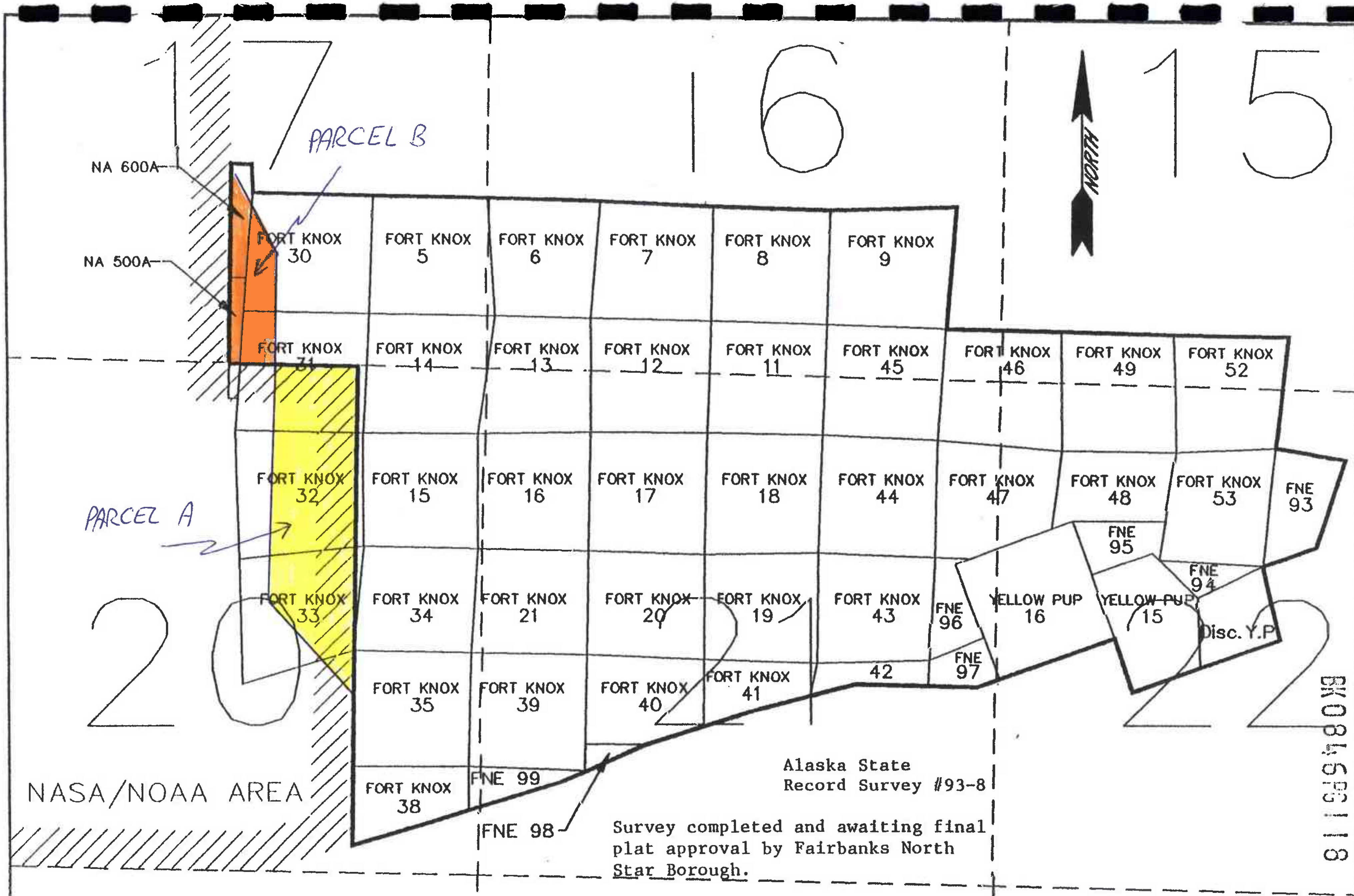
ASSUMPTIONS:

1. Only routine maintenance is required, with trouble shooting completed during mine life (approximately 16 years).
2. Engineer/Piezometer Technician includes travel (2 hr.), recording piezometers (2 hr.), and inspect (2 hr.) tailing and water dams.
   Surveying includes travel (2 men @ 2 hr.), surveying (2 men @ 5 hr.), and note reduction and brief report (1 man @ 2 hr.).
3. Inspection includes analysis and report at 3 year intervals. (3*$2,333=$7,000 per inspection)
4. Equipment rates in the Fairbanks Mining District with salvage, interest, insurance, fuel, lube, tires, cutting edges, operator, fringe benifits, and ten percent profit.
5. Maintain 4000 feet of road, tailings diversion, stilling basins and causeways.
6. 380 weep holes, approximately 2 ft. each, redrill at $5.00 per foot.
7. Gate (intake) is rebuilt for new cost ($2,600 new cost).
8. Valve (outlet) is removed during reclamation ($14,500 new cost).
9. Repair trash racks (1256 lb.) at $2.50 per pound.
10. 28 in., SDR 32.5, 50 psi, HDPE Plexco outlet pipe insert ($40/ft new cost, $12/ft installation).
11. Remove ($71/cy) and replace ($300/cy) 25% of original spillway and stilling basin reinforced concrete.
12. Water monitoring occurs in years 5, 10, 15 and 20 only.

01/25/94 K. Brown

Appendix C
Surface and Mineral Land Descriptions and Claims Map

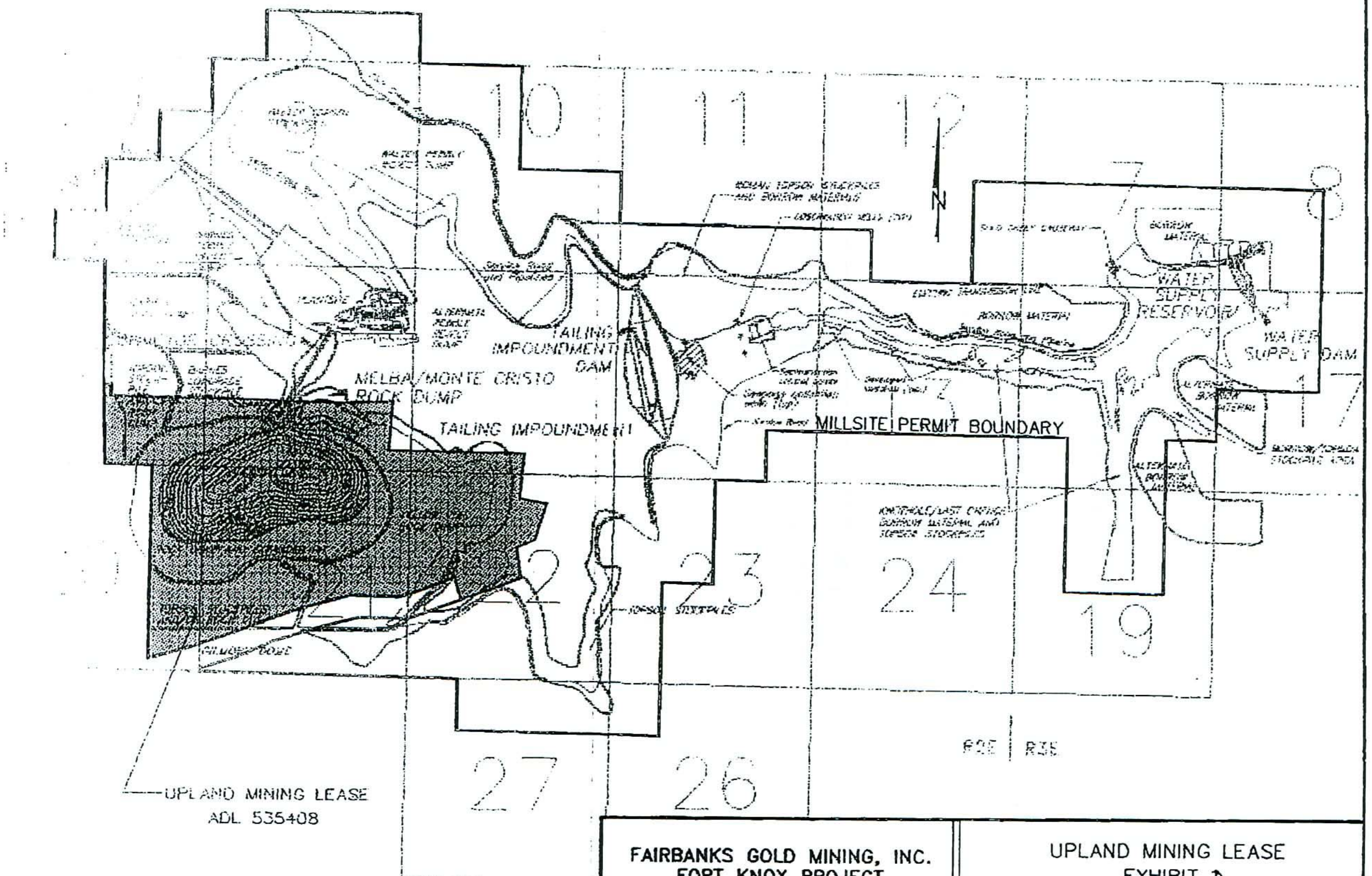

T2N R2E, F.M.
Mental Health Trust Land
State
MILLSITE PERMIT AREA
Tract C
Parcel Z
Tract C-2
ADL 414961
FGMI Surface
ADL 414960
FEDERAL
NOAA
WITHDRAWAL
Parcel B
ADL 414961
Tract C-3
Upland Mining Lease
ADL 535408
STATE SELECT
Parcel A
FGMI
ADL 414960
Mental Health Trust Land
Mental Health Trust Land
State



FAIRBANKS GOLD MINING, INC.
FORT KNOX PROJECT
FAIRBANKS, ALASKA

UPLAND MINING LEASE
EXHIBIT A

DRAWING NUMBER	SCALE	DATE
ML940202.DWG	1" = 1/4 MILE	1/31/94



FAIRBANKS GOLD MINING, INC. FORT KNOX PROJECT FAIRBANKS, ALASKA	UPLAND MINING LEASE EXHIBIT A		
	DRAWING NUMBER	SCALE	DATE
	UPLEASE.DWG	1" = 3500'	2/15/94

State of Alaska
Alaska Mental Health Trust Authority
Quitclaim Deed

Record this document in the
Fairbanks Recording District

No. 676

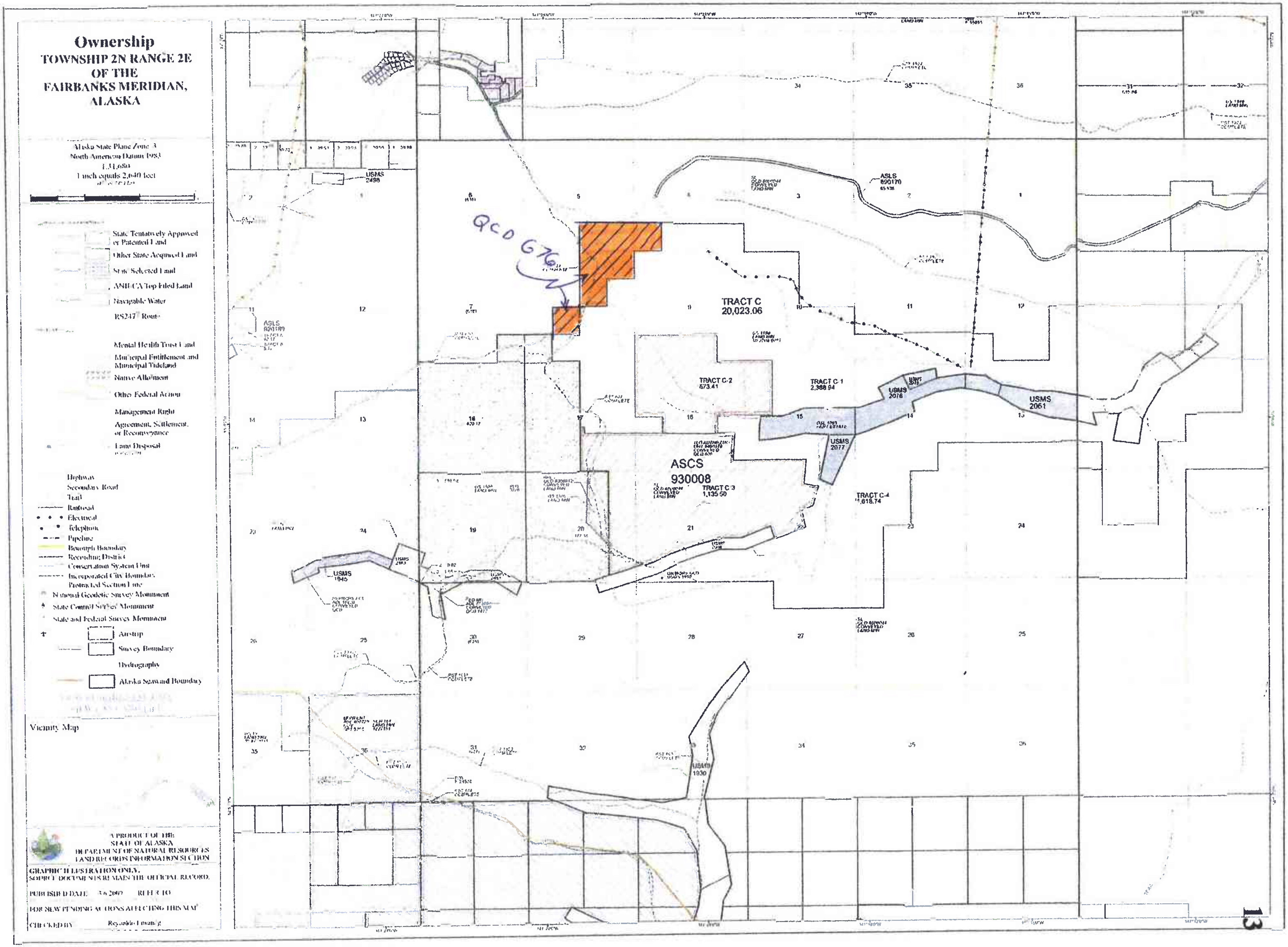
The GRANTOR, the **ALASKA MENTAL HEALTH TRUST AUTHORITY**, a public corporation within the Department of Revenue (AS 47.30.011 et seq.), by its agent pursuant to AS 37.14.009(a)(2), the Alaska Mental Health Trust Land Office, Department of Natural Resources, whose address is 2600 Cordova Street, Suite 100, Anchorage, AK 99503, pursuant to AS 38.05.801 and regulations promulgated thereunder, for TEN AND NO/100 DOLLARS and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, hereby conveys and quitclaims to the GRANTEE, **FAIRBANKS GOLD MINING, INC.**, without warranty, all right, title and interest of the Grantor, if any, in the following described real property situated in Sections 4, 5, and 8, Township 2 North, Range 2 East, Fairbanks Meridian, in the Fairbanks Recording District, Fourth Judicial District, State of Alaska, and more particularly described as follows:

SW1/4SW1/4 SECTION 4; S1/2SE1/4 SECTION 5; AND N1/2NE1/4, SW1/4NE1/4, NE1/4SW1/4 SECTION 8, TOWNSHIP 2 NORTH, RANGE 2 EAST, FAIRBANKS MERIDIAN CONTAINING 280 ACRES, MORE OR LESS.

TOGETHER with all the tenements thereon, if any; and all rights of the Grantor to any and all hereditaments and appurtenances thereto belonging or in anyway appertaining.

SUBJECT to valid existing rights, including reservations, easements, and exceptions in the U.S. Patent or other state or federal conveyance, and in acts authorizing the issue thereof; easements, rights-of-way, covenants, conditions, reservations, notes on the plat, and restrictions of record, if any; and encumbrances or interests of record noted on the records maintained by the Department of Natural Resources, or otherwise existing on or before June 24, 1994, the date that the land was designated as Mental Health Trust Land pursuant to Section 40, Chapter 5 FSSLA 1994, as amended by Chapter 1, SSSLA 1994.

In particular, the property is encumbered by upland mining lease MHT 9400275 in SW1/4SW1/4 Section 4 and S1/2SE1/4 Section 5, and state mining claims ADL 321158, 321159, 321165, and 321169 in N1/2NE1/4, SW1/4NE1/4. NE1/4SW1/4 Section 6, Township 2 North, Range 2 East, Fairbanks Meridian.


Ownership
TOWNSHIP 2N RANGE 2E
OF THE
FAIRBANKS MERIDIAN,
ALASKA
Alaska State Plane Zone 3
North American Datum 1983
1 inch equals 2,640 feet
State Tentatively Approved or Patented Land
Other State Acquired Land
State Selected Land
ANILCA Top Filed Land
Navigable Water
RS2477 Route
Mental Health Trust Land
Municipal Entitlement and Municipal Tideland
Native Allotment
Other Federal Action
Management Right
Agreement, Settlement, or Reconveyance
Land Disposal
Highway
Secondary Road
Trail
Railroad
Electrical
Telephone
Pipeline
Borough Boundary
Recording District
Conservation System Unit
Incorporated City Boundary
Protracted Section Line
National Geodetic Survey Monument
State Control Survey Monument
State and Federal Survey Monument
Airstrip
Survey Boundary
Hydrography
Alaska Seaward Boundary
Vicinity Map
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Fairbanks Gold Mining, Inc.
5075 South Syracuse St., Suite 800
Denver, CO 80237

(Revised April, 2005)
DNR 10-4024

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER

Upland Mining Lease

Lease ADL #: 233238

This lease is entered into between the State of Alaska (referred to in this lease as "the state") and **Melba Creek Mining, Inc. (MCMI) and Fairbanks Gold Mining, Inc. (FGMI)** (referred to in this lease as "the lessee", whether one or more), whose address is

PO Box 73726
Fairbanks, Alaska 99707-3726

The state and the lessee agree as follows:

1. GRANT. (a) Subject to the provisions of this lease, including stipulation(s) **1-4** attached to this lease, the state grants to the lessee

(1) the exclusive right to mine, extract, remove and dispose of all minerals subject to AS 38.05.185--AS 38.05.275 (referred to in this lease as "locatable minerals"), in or upon the following described tract of land:

> **Located in the Fairbanks Meridian; Township 002 North; Range 002 East; Sections 7, 8, 17, 18, 19, and 20.**
>
> **Converting claims; ADL 352809 – 352810, 352817, 527258 – 527273, 527275 – 527278, 530533, 530545, 530549, 530554, 530559, 530564, 530569, 530574, 530898 – 530900, 531607, 531609 – 531612, 531615, 531890, 559460 – 559463, 616801, 616802, and 727739.**

containing approximately **709** acres, more or less (referred to in this lease as the "leased area");

(2) the exclusive right to explore for locatable minerals within the leased area; and

(3) subject to the lessee obtaining all required and necessary permits and approvals and subject to all other terms of this lease, the right to mine and produce locatable minerals from the leased ground and where necessary to place, construct, erect, install, maintain, repair, use, replace, and remove excavations, openings, shafts, ditches, drains, settling ponds, dams,

Initial: MDL

MINING CLAIM(S) AND ADL NUMBER(S) CONVERTED OR PARTIALLY CONVERTED TO THIS LEASE

NAME	ADL	NAME	ADL
Fort Knox #23	352809	NA 302	530545
Fort Knox #24	352810	NA 402	530549
Fort Knox #31	352817	NA 502	530554
NA 100	527258	NA 602	530559
NA 101	527259	NA 702	530564
NA 200	527260	NA 802	530569
NA 201	527261	NA 903	530574
NA 300	527262	Fort Knox #32	530898
NA 301	527263	Fort Knox #33	530899
NA 400	527264	Fort Knox #36	530900
NA 401	527265	NA 100A	531607
NA 500	527266	NA 200A	531609
NA 501	527267	NA 300A	531610
NA 600	527268	NA 400A	531611
NA 601	527269	NA 500A	531612
NA 700	527270	NA 800A	531615
NA 701	527271	Fort Knox #37	531890
NA 800	527272	JJP 31	559460
NA 801	527273	JJP 32	559461
NA 901	527275	JJP 33	559462
NA 902	527276	JJP 500A	559463
NA 1000	527277	DNA-2	616801
NA 1001	527278	DNA-3	616802
NA 9	530533	GG1	727739

LEGAL DESCRIPTION

Township 002 North, Range 002 East, Fairbanks Meridian, Section 7 SE1/4 SE1/4; Section 8 SW1/4 SW1/4; Section 17 W1/2; Section 18 E1/2 E1/2; Section 19 E1/2 NE1/4, NE1/4 SE1/4; Section 20 NW1/4, N1/2 SW1/4, W1/2 E1/2.

The land package for this lease can also be described as follows (all bearings are based on the Alaska State Plane Coordinate System (NAD 83, Zone 3, 2011):

Initial WL

Commencing at the South West 1/16 Corner of said section 8 and the **Point of Beginning** of the herein described parcel;

Thence S 00°12'28" E along the 1/16 line, a distance of 1320.74 feet to the West 1/16 corner of said Sections 8 and 17, said corner also being the North West corner of PLO 7763. Thence continuing S 00°12'28" E along the westerly line of PLO 7763 a distance of 330.00 feet to the south westerly corner of PLO 7763;

Thence S 42°47'04" E along the southerly line of said PLO 7763, for a distance of 1950.25 feet to the southerly corner of PLO 7763 on the N – S center ¼ line of said Section 17;

Thence S 00°10'47" E along N – S center ¼ line of Section 17 a distance of 3517.92 feet to the ¼ corner between Section 17 and said Section 20;

Thence N 89°53'20" E with the common south line of Section 17 and north line of Section 20 for a distance of 478.71 feet to the northwest corner of PLO 7682;

Thence S 03°22'04" W along the westerly line of said PLO 7682 for a distance of 2360.42 feet to the southwesterly corner;

Thence S 40°05'00" E along the southerly line of PLO 7682 for a distance of 1541.97 feet to the most southeasterly corner;

Thence S 00°08'36" E a distance of 1455.29 feet to the northerly line of the Scheelite claim of MS 2008;

Thence S 72°19'41" W along the northerly line of said Scheelite Claim a distance of 685.63 feet to its northwest corner;

Thence N 55°58'55" W for a distance of 231.00 feet;

Thence N 00°15'04" E for a distance of 1154.78 feet;

Thence S 89°36'39" W for a distance of 1740.61 feet;

Thence N 00°23'40" W for a distance of 555.25 feet;

Thence S 89°36'14" W for a distance of 627.91 feet;

Thence N 00°23'53" W for a distance of 578.37 feet;

Thence S 89°35'55" W for a distance of 1119.46 feet;

Initial MDC

Thence N 00°24'18" W for a distance of 8103.74 feet;

Thence S 89°35'38" W for a distance of 292.78 feet;

Thence N 00°24'25" W for a distance of 1304.71 feet to the S 1/16 line of said Section 7;

Thence S 89°54'39" E along 1/16 line a distance of 694.20 feet to the S 1/16 corner between Section 7 and 8;

Thence N 89°59'47" E along the S 1/16 line of Section 8, a distance of1319.11 feet to the **Point of Beginning**.

Containing 709.17' Acres, more or less.

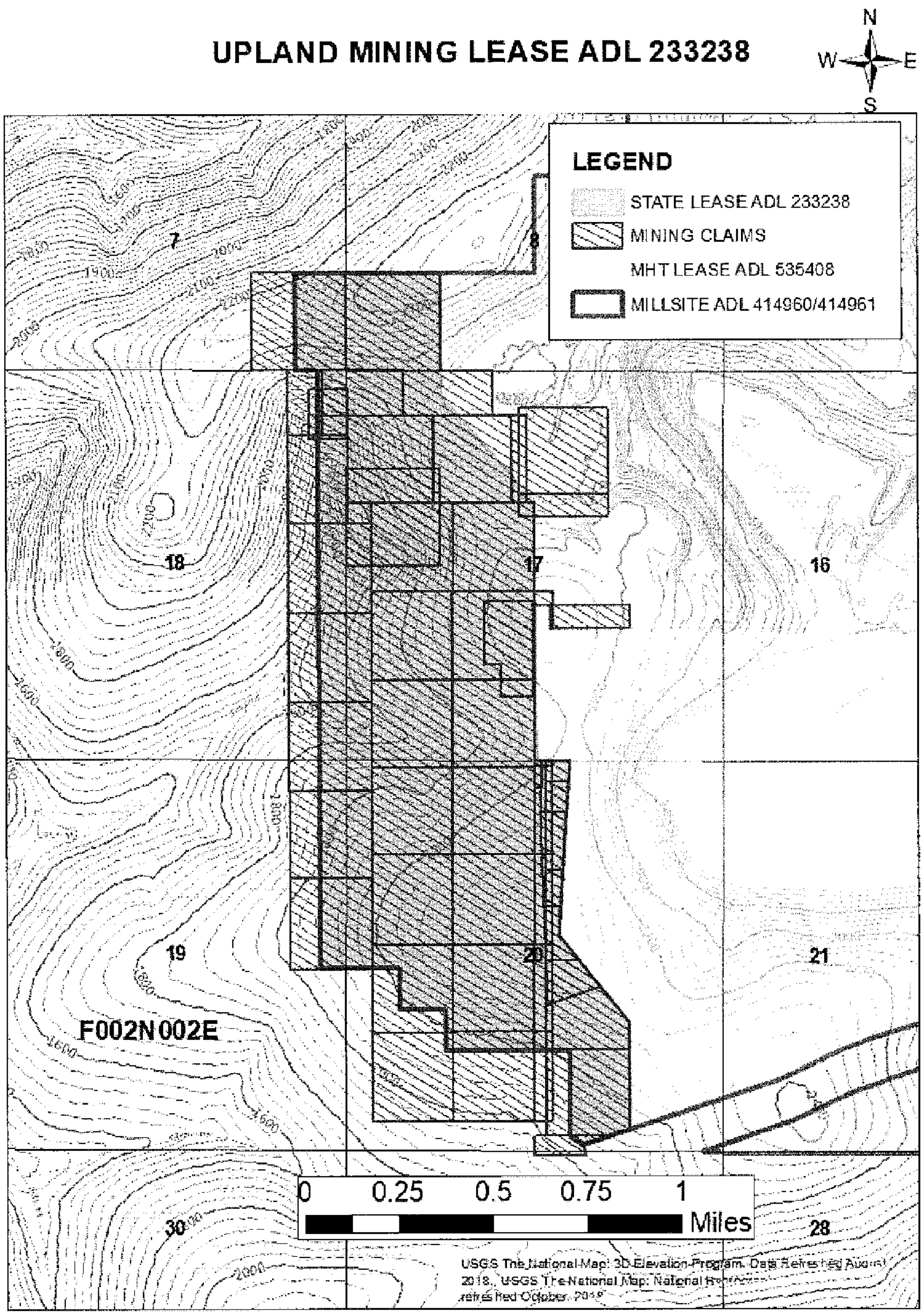
This mineral lease is located on the same area that is outlined in red on the attached map.

LEASE MAP

(See Next Page)

Initial MDC

UPLAND MINING LEASE ADL 233238



Appendix D
Gil Causeway Reclamation Plan

APPENDIX D

Gil Causeway Reclamation Plan

FAIRBANKS GOLD MINING, INC.

a subsidiary of

KINROSS GOLD CORP.

FORT KNOX MINE

March 29, 2001

Mr. Alvin G. Ott
Regional Supervisor, Habitat Division
Alaska Department of Fish & Game
1300 College Road
Fairbanks, AK 99701-1599

RE: Gil Causeway Reclamation Plan

Dear Mr. Ott:

Fairbanks Gold Mining, Inc. (FGMI) constructed and currently maintains the Gil Causeway through the water storage reservoir (WSR) as authorized by the Alaska Department of Fish and Game (ADF&G) in Fish Habitat Permit FG98-III-0109. Fish Habitat Permit FG98-III-0109 has been amended four times to allow for additional culverts being placed in the causeway. Currently the causeway contains a 78-inch diameter culvert at approximately elevation 1007 M.S.E., two 48-inch culverts at the 1016 elevation, and one 10-foot culvert at the 1010 elevation. The road elevation is currently constructed to the 1022 elevation where it crosses the old Fish Creek channel. This letter is being submitted to fulfill the requirements of Fish Habitat Permit FG98-III-0109 requiring FGMI to submit a rehabilitation plan for the causeway. FGMI currently intends to use the causeway for several more years to facilitate ongoing exploration drilling at the Gil project. ADF&G will be given a minimum of 30 days advance notice prior to rehabilitation work commencing at the Gil causeway.

The Fort Knox Mine location is shown on the attached Figure 1. Figure 2 shows the location of the Gil Causeway in relation to the WSR, developed wetlands, tailing impoundment, and the Fort Knox mining/milling operation. FGMI will remove the existing culverts from the causeway and restore the original Fish Creek channel as nearly as can be replicated while working below the water level in the reservoir. FGMI intends to remove the soil in the causeway, near the 78-inch culvert, to the lowest level possible using a CAT 350 track mounted excavator, bottom of the channel is expected to be at approximately the 1007 elevation. By removing the soil in the vicinity of the 78-inch culvert, FGMI will re-establish fish passage through the causeway in the area of the old Fish Creek channel. The slopes of the excavation required to re-establish the Fish Creek drainage would be constructed at a maximum of 3 horizontal to 1 vertical. A cross section showing the proposed excavation of the causeway in the vicinity of the 78-inch culvert has been included as Figure 3. Material removed from the causeway will be placed along the remaining portions of the causeway to create additional shoreline. Once the excavated material has dried sufficiently, final contouring of the material will commence, followed by contour ripping of the area and seeding, if required, with the approved FGMI seed mix.

Safety Berms along the existing roadway above the high water mark will be graded to blend into existing topography. The road surface will be ripped on the contour to provide a suitable seed bed and the roads seeded with the approved FGMI seed mix. Broadcast seeding methods will be utilized for both the excavated material and the roadways with an application rate of 11 pounds per acre.

To clarify the sequence of reclamation activities, FGMI will begin the reclamation process by removing the ten-foot diameter culvert, re-contouring the area on the south side of the causeway up to the 78-inch culvert, ripping the area and roadway as needed, and broadcast seeding as required. Removal of the 78-inch culvert and excavation of the soil in the causeway would follow completion of the reclamation on the south side of the causeway. The material excavated would be placed along the existing roadway north and west of the 78-inch culvert. Following the excavation of the causeway near the existing 78-inch culvert, the two 48-inch culverts would be removed and the excavated area backfilled. The excavated material would be allowed to dry and graded in conjunction with the surrounding area, ripped on the contour, and seeded as required.

FGMI appreciates the assistance and cooperation the Alaska Department of Fish and Game has rendered in developing the fishery in the Water Storage Reservoir and developed wetlands, along with the wildlife and waterfowl habitat in these areas. FGMI anticipates a continued cooperative effort through operation and reclamation of the Fort Knox Mine site. If you have any questions or require additional information, please call me at (907) 488-4653.

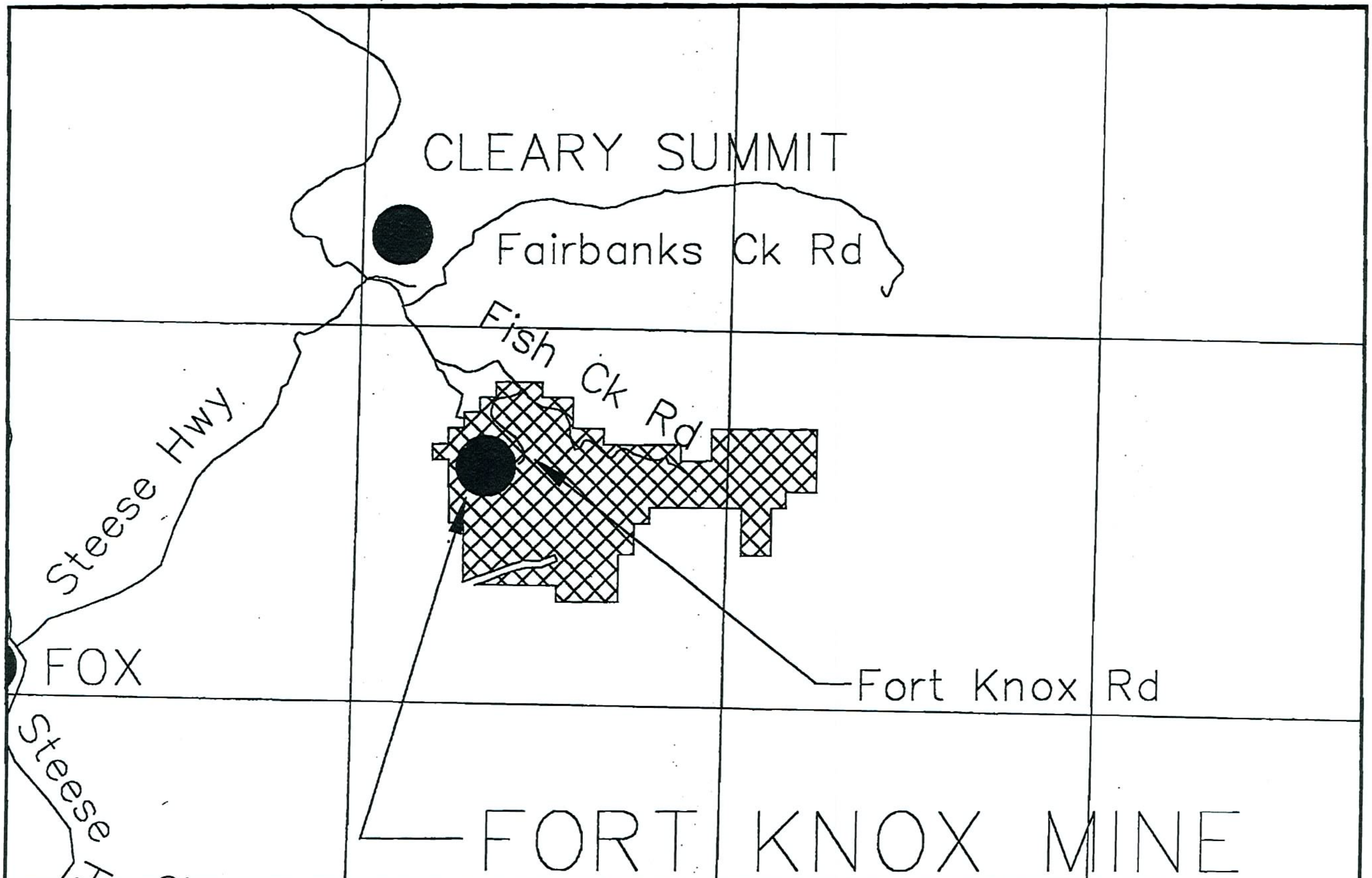
Respectfully,

Clyde D. Gillespie

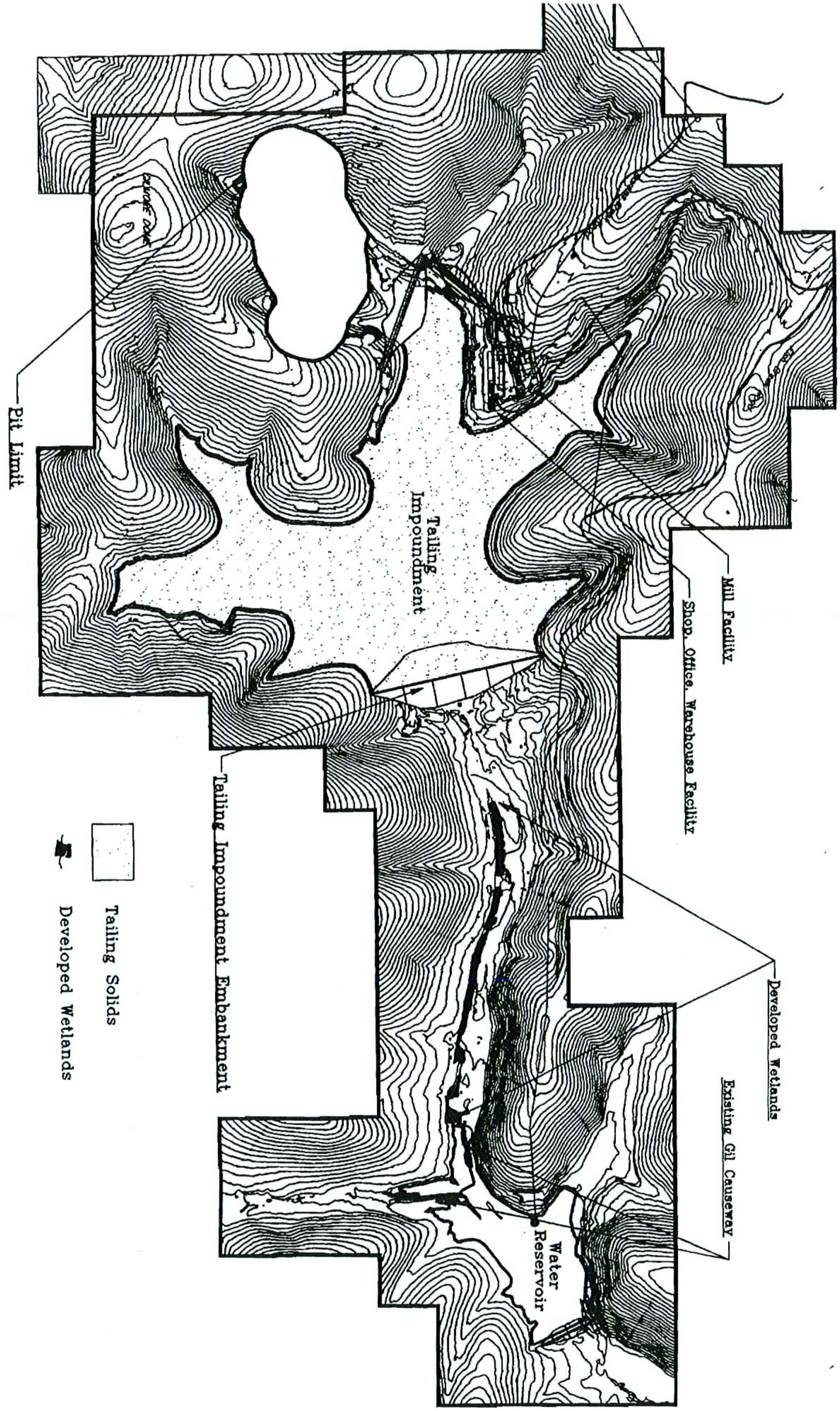
Clyde D. Gillespie
Senior Environmental Engineer

xc: (with attachments)
Steve Planchon, ADNR, Mental Health Land Trust Unit, Anchorage
Richard LeFebvre, ADNR, Division of Land, Anchorage
Bob Loeffler, ADNR, Division of Mining & Water Management, Anchorage

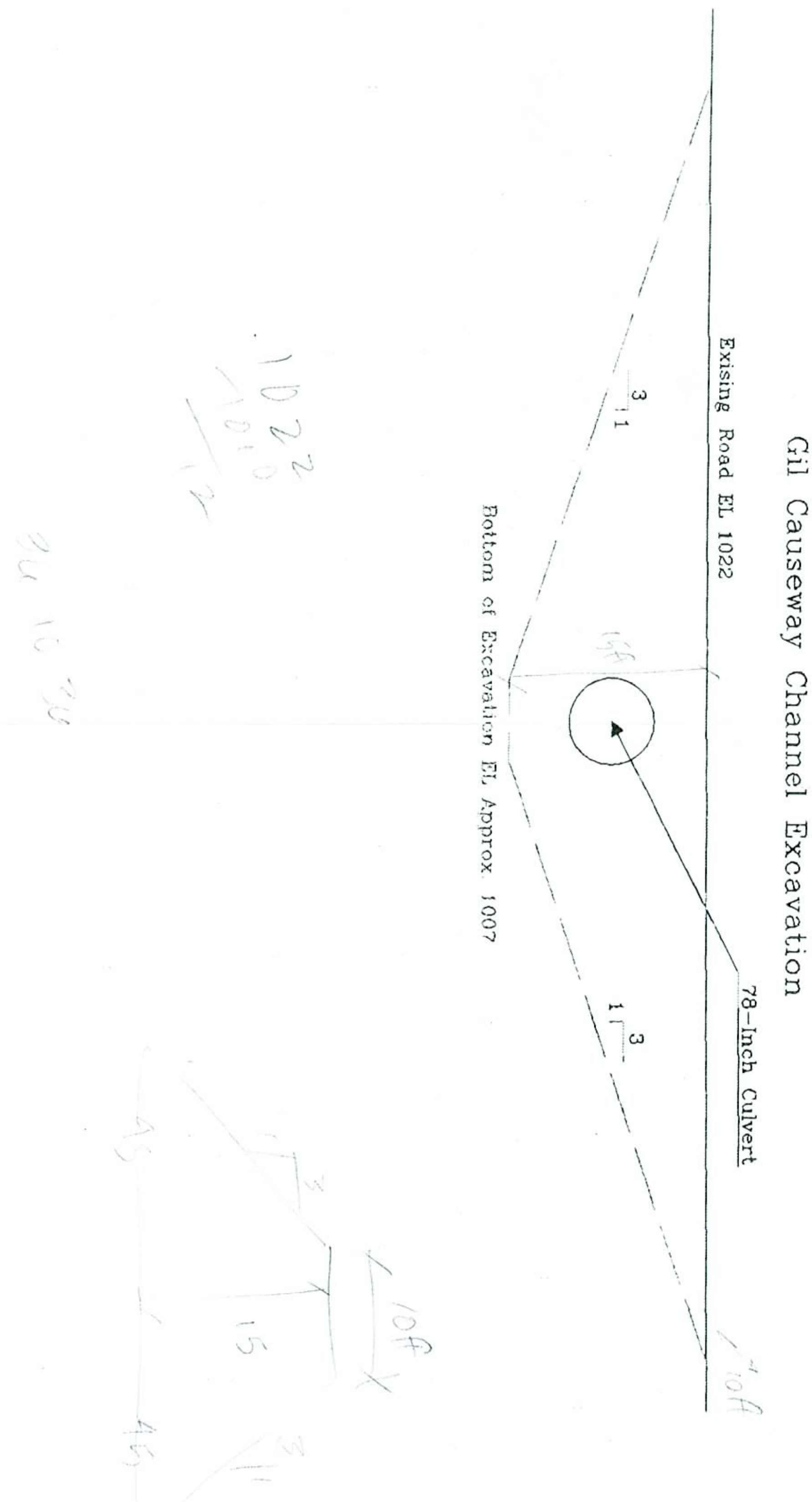
Jim Voden, ADNR, Division of Mining & Water Management , Fairbanks
Pete McGee, ADEC, Fairbanks
Leroy Phillips, U.S. Army Corps of Engineer, Fairbanks
Cindi Godsey, U.S. Environmental Protection Agency, Anchorage
Keith Mueller, U. S. Fish & Wildlife Service, Fairbanks
Rick Baker, FGMI
Bob Farneski, FGMI
Tom Irwin, FGMI
Bill Jeffress, FGMI
Doug Nicholson, FGMI
Dawn Sofich, FGMI
Warren Woods, FGMI



Fairbanks Gold Mining, Inc. a subsidiary of Kinross Gold U.S.A. Inc.	Fort Knox Mine	FORT KNOX MINE SITE LOCATION MAP
	Dwg:ftkxloc.dwg	Date:3/12/01 Scale:1"=30,000' Figure 1



Fairbanks Gold Mining, Inc.	Fort Knox Mine	FORT KNOX MINE GIL CAUSEWAY REHABILITATION



Fairbanks Gold Mining, Inc. Kinross Gold U.S.A., Inc.	Fort Knox Mine	FORT KNOX MINE GIL CAUSEWAY REHABILITATION Date:03/28/01 Scale: 1" = 10' Figure 3

Appendix E
Reclamation and Closure Cost Estimate

Fort Knox
Premature Closure Cost Estimate Discussion and Documentation

Report Prepared for

Fairbanks Gold Mining, Inc.

KINROSS

Report Prepared by

srk consulting

SRK Consulting (U.S.), Inc.
226900.020
January 2020

Fort Knox
Premature Closure Cost Estimate Discussion and Documentation

Fairbanks Gold Mining, Inc.

Fairbanks Gold Mining, Inc.
PO Box 73726
Fairbanks, Alaska 99707-3726

SRK Consulting (U.S.), Inc.
5250 Neil Road
Suite 300
Reno, NV 89502

e-mail: reno@srk.com
website: www.srk.com

Tel: (775) 828-6800
Fax: (775) 828-6820

SRK Project Number 226900.020
December 2019

Author:
Filiz Toprak
Mining Consultant

Peer Reviewed by:
Ivan Clark
Senior Consultant

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1 Introduction and Scope of Report

SRK Consulting (U.S.) Inc. (SRK) has been retained by Fairbanks Gold Mining, Inc. (FGMI) to compile the pre-mature closure (PMC) cost estimate for the Fort Knox Mine using Standardized Reclamation Cost Estimator (SRCE) Version 2.0. The below headings describe the estimation approach and source of data and costs as well as the assumptions for premature closure in how they may differ from the approach for the life of mine (LOM) for certain facilities. Refer to Attachment A for the estimate and Attachment B for figures documenting of inputs.

2 Reclamation and Closure Actions and Estimate

2.1 Waste Rock Dumps

The Fort Knox mine has three waste rock dumps: Yellow Pup, Fish Creek, and Barnes Creek. Reclamation of the waste rock dumps will consist of regrading lift slopes to 3H:1V and placing growth media. Growth media will be placed at a depth that will promote successful revegetation. For the purposes of this estimate, the thickness of growth media is input as 12 inches.

When final sloping, contouring, and growth media placement have been completed, waste rock dumps will be ripped along the contour to reduce the erosion potential. This will be followed by revegetation. SRCE inputs consist of midbench lengths for each lift, lift height, approximate ripping distance, and final (regraded) lift area to estimate regrading volumes and final revegetation area.

Growth media haul distances are documented in User 13.

Relevant SRCE Sheet(s): Waste Rock Dumps; User 13.

2.2 Heap Leach Pad

The Fort Knox mine has two heap leach pads (HLP): Walter Creek and Barnes Creek. In the event of premature closure, solution application will cease, and drain-down solution will be circulated through the mill for cyanide destruction and gold recovery then pumped to the pit. After drain-down is complete, seepage through the HLP will reduce to background seepage from surface and subsurface sources. The discussion regarding heap leach pad solution management is described in Section 2.3.

The HLPs will be regraded to an overall slope of 3H:1V. Growth media will be placed at a depth that will promote successful revegetation. For the purposes of this estimate, the thickness of growth media is input as 12 inches, unless otherwise approved by the Alaska Department of Natural Resources (ADNR). Growth media will be sourced from stockpiles created during facility construction. The growth media will be scarified and seeded subsequent to placement. Erosion will be controlled by scarifying and seeding the growth media, which slows down water migration and allows the water to permeate the ground aiding the success of revegetation.

SRCE inputs for heap leach pad physical reclamation consist of midbench lengths for each lift, lift height, approximate ripping distance, and final (regraded) lift area to estimate regrading volumes and final revegetation area.

Growth media haul distances are documented in User 13.

Relevant SRCE Sheet(s): Heap Leach; Other User; User 02; User 13.

2.3 Solution Management

Solution management costs have been estimated based on the HydroGeoLogica (2019) technical memorandum and adjusted for the pre-mature closure scenario.

In the event of premature closure, an initial draindown from the heap leach pads will be pumped to the pit lake for a period of 2 to 3 months. After the initial transfer, residual draindown from the heap leach facilities will gravity-flow to the pit throughout the post-closure period.

The pit lake will continue to fill with water from natural discharges including: pit-area groundwater inflow, direct precipitation to the pit lake, pit wall runoff, and runoff from disturbed/undisturbed areas above the pit rim that have not been diverted. The pit lake is expected to fill over several decades up to the contact with the Fish Creek alluvium, at which point the pit lake water is predicted to flow into the downgradient groundwater. The final pit lake elevation will be controlled by contact with the alluvium, estimated at an elevation of 1,430 feet above mean sea level (ft amsl).

Water from the TSF decant pond will be pumped to the pit lake. TSF seepage from the interception system will also be pumped to the pit lake.

Relevant SRCE Sheet(s): Solution Management; User 06.

2.4 Open Pit

A pit berm will be constructed around the perimeter of the pit. Costs to construct this berm are included in the “Pits” worksheet. Signs will be posted along the perimeter. Pit signage installation and maintenance costs are estimated in “User 09.”

Relevant SRCE Sheet(s): Pits; Other User; User 09.

2.5 Yards

Reclamation costs for miscellaneous disturbances are included in the “Yards” worksheet. These facilities include, but are not necessarily limited to, the laydown yard, borrow areas, growth media stockpiles, mill and admin area, etc. Costs are included for nominal volumes of regrading to smooth the mostly flat areas and will be revegetated where applicable.

Growth media haul distances are documented in User 13.

Relevant SRCE Sheet(s): Yards; User 13.

2.6 Roads

Roads that will not remain for long-term use will be reclaimed. Costs include regrading and growth media placement.

This estimate also includes removal of culverts on the GIL causeway.

Relevant SRCE Sheet(s): Roads; Exploration Roads; Misc. Costs\Culvert & Buried Pipe Removal.

2.7 Tailings Storage Facility

The surface of the tailings storage facility (TSF) will be reclaimed to include upland (dry cover). A spillway will be constructed during operations. At premature closure, the causeway between the north and south ponds and the Phase 1 Causeway will be breached.

SRCE inputs consist of the final tailings surface area and the thickness of growth media to be placed. Causeway breach earthworks for quantities are provided in User 17.

TSF north borrow distance is documented in User 13.

Relevant SRCE Sheet(s): Haul Materials; Other User; Sediment & Drainage Control; User 17; User 13.

2.8 Buildings

SRCE estimates time to demolish buildings through RSMeans productivities that focus on building volume, wall area, and slab volume. Fleet hours are estimated and multiplied by crew rates.

SRCE assumes two dump trucks will be used to haul the debris for disposal offsite.

In addition to the cost of demolishing buildings, this estimate includes costs to remove equipment in the “Other Demo” worksheet using RSMeans crews for small or large buildings (B-3 and B-8, respectively). Hours per item and the crews used in the estimate are based on those used in the 2013 estimate.

Relevant SRCE Sheet(s): Foundations & Buildings; Other Demo.

2.9 Water Supply Reservoir

The water supply reservoir will not be reclaimed and the Solo Creek causeway will be left in place to allow for the long-term use as a recreational lake and wetland area. Therefore, this estimate does not include costs to reclaim these two facilities.

2.10 Miscellaneous

2.10.1 Surface Pipe Removal

Surface pipe between various facilities will be removed and disposed offsite.

Relevant SRCE Sheet(s): Misc. Costs\Surface Pipe Removal.

2.10.2 Power Distribution

This estimate assumes that all power distribution items (powerlines, substations, etc.) will be removed.

Relevant SRCE Sheet(s): Misc. Costs\Powerline and Substation Removal.

2.11 Monitoring

2.11.1 Water Quality

Monitoring locations, frequencies, and durations have been provided by FGMI. These will include pit lake water, tailings decant, wetlands, freshwater reservoir and seepage, TSF seepage, and wells.

Relevant SRCE Sheet(s): Monitoring\Water and Rock Sample Analysis.

2.11.2 Inspection of Surface Stabilization

Visual observation of revegetation success will be performed on an annual basis during the pre-stabilization phase. Inspection for erosion and formation of gullies will be completed quarterly. Costs are included for carrying out these activities for five years.

Relevant SRCE Sheet(s): Monitoring\Reclamation Monitoring.

2.12 Road Maintenance

Construction management is included for the duration of the closure period and includes a water truck and grader .

Relevant SRCE Sheet(s): Construction Management.

2.13 Well Abandonment

Well closure includes pit dewatering wells, piezometers, interceptor wells, and monitoring wells. Wells will be backfilled with a stemming/bentonite clay mixture and sealed at the surface with a bentonite clay surface seal.

All wells existing at the time of closure will be plugged and decommissioned when no longer required. A list of wells and their dimensions was provided by FGMI.

Relevant SRCE Sheet(s): Other User; User 03.

2.14 Water Rights

Water rights have been estimated as general and administration costs.

Relevant SRCE Sheet(s): G&A

2.15 Post-Closure Maintenance and Monitoring

2.15.1 Long-Term TSF Dam Maintenance and Repair Costs

Costs provided in the 2013 estimate were updated as described in “User 07.”

Relevant SRCE Sheet(s): Other User; User 07.

2.15.2 Long-Term WSR Dam Maintenance and Repair Costs

Costs provided in the 2013 estimate were updated as described in “User 08.”

Relevant SRCE Sheet(s): Other User; User 08.

2.16 Channels

In addition to the TSF spillway, a number of channels around the waste rock dumps and heap leach pads will be constructed during operations and closure. For the purposes of this estimate, those that would be constructed during operations over the course of the mine life are assumed to require construction in the event of premature closure.

Relevant SRCE Sheet(s): Sediment & Drainage Control; User 14.

2.17 Mobilization/Demobilization

Mobilization costs are based on the reclamation activities and their relative timing during the closure and post-closure periods. Mobilization and demobilization have been assumed to be carried out in two campaigns (for activities during the closure period and after the closure period).

Relevant SRCE Sheet(s): Mobilization; User 01.

2.18 Indirect Costs

Indirect costs have been applied based on DOWL (2015). The categories are presented in Table 2-1.

Table 2-1 Categories of Indirect Costs in DOWL (2015) and in Fort Knox SRCE Estimate

DOWL (2015) Indirect Category	SRCE "User 12" Worksheet (Indirects)	SRCE "FA Schedule" Worksheet Indirect Categories
Contractor profit	Contractor profit	Contractor overhead and profit
Contractor overhead	Contractor overhead	
Performance/payment bonds	Performance/payment bonds	Contract administration
Liability insurance	Liability insurance	
Contract administration	Contract administration	
Engineering redesign	Engineering, Design and Construction (ED&C) Plan	Engineering, Design and Construction (ED&C) Plan
Contingency: scope	Contingency	Contingency
Contingency: bid		

In order to apply 1.5% liability insurance to labor costs, SRK compiled labor costs in relevant SRCE sheets in User 11 to estimate the share of labor costs relative to the total direct costs. The 1.5% liability insurance rate was then multiplied by this percentage in User 12 and then linked to the "FA Schedule" sheet for Engineering, Design and Construction Plan; Contingency; Contractor OH and Profit; and Contract Administration.

Relevant SRCE Sheet(s): User 12; User 11; FA Schedule.

3 Cost Data File

The below headings provide information on the approach used in inputting rates and unit costs into the SRCE. Refer to Attachment C.

3.1 Labor Rates

Labor rates have been taken from Pamphlet 600, Issue 38, effective May 1, 2019.

Relevant CDF Sheet(s): Labor Rates.

3.2 Equipment Rates

Equipment rates for off-highway equipment have been obtained from NC Machinery. Others were provided by United Rentals.(See Attachment C.1.)

Relevant CDF Sheet(s): Equipment Costs.

3.3 Material, Labor, and Equipment Unit Costs

3.3.1 Seed Material Unit Costs

Seed costs are based on provided by FGMI. A summary of these cost is provided in the Excel file "Monitoring.xlsx". These costs provided by Pathfinder Aviation in 2014 costs are adjusted for inflation to current costs by applying a 2% inflation factor per annum. Costs include; profit, aircraft, fuel, support equipment and crew, and mob/demob. (See Attachment C.2.)

Relevant CDF Sheet(s): Reclamation Material Costs.

3.3.2 Revegetation Labor and Equipment Unit Costs

Labor and equipment costs were included in the seed costs discussed in Section 3.3.1. Therefore, these costs have been input as zero.

Relevant CDF Sheet(s): Misc. Unit Costs.

3.3.3 Diesel Price

The diesel material unit cost has been estimated by using public data (GasBuddy August 2019) (Attachment C.3) and subtracting on-road tax and surcharge (per Alaska Dept. of Revenue Tax Division).

Relevant CDF Sheet(s): Reclamation Material Costs.

3.3.4 Power Price

Power price has been determined by public data (GVEA, 2019). (See Attachment C.2.)

Relevant CDF Sheet(s): Reclamation Material Costs.

3.3.5 Analysis Costs

Laboratory analysis costs have been estimated from a quote from ACZ laboratories (Attachment C.5).

Relevant CDF Sheet(s): Reclamation Material Costs.

4 Results

4.1 Undiscounted Costs

The direct costs for the premature closure scenario are $111.0M. With indirect costs of $43.6.0M at 39.3%, the grand total is $154.7M (in current USD). Refer to Table 4-1 for breakdowns by activity and/or facility.

4.2 Net Present Value

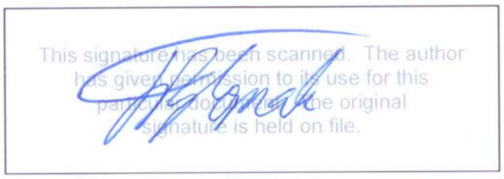
The undiscounted Phase I costs are $94.1 M and the net present value of the Phase II costs is $6.2 M.

Table 4-1 Cost Summary for Premature Closure Scenario

	Activity/Facility	Phase I Costs (undiscounted)	Phase II Costs (discounted)	Total
1	Waste Rock Dumps	$8,349,884	$0	$8,349,884
2	Heap Leach Pad	$3,117,208	$0	$3,117,208
3	Solution Management	$11,314,900	$925,175	$12,240,075
4	Pit	$214,927	$27,527	$242,454
5	Yards	$990,576	$0	$990,576
6	Roads	$113,630	$0	$113,630
7	Borrow Area	$69,385	$0	$69,385
8	Tailings	$9,675,304	$0	$9,675,304
9	Buildings	$3,957,079	$0	$3,957,079
10	Other Demo	$596,045	$0	$596,045
11	Sediment and Drainage Control	$12,935,352	$0	$12,935,352
12	TSF Spillway	$2,917,129	$0	$2,917,129
13	Linear Structures	$5,814	$717,643	$723,457
14	Monitoring	$1,861,786	$461,170	$2,322,956
15	Road Maintenance	$215,784	$0	$215,784
16	Well Abandonment	$433,580	$0	$433,580
17	Water Fees	$1,650	$0	$1,650
18	Long-term Maintenance and Repair	$217,240	$1,766,469	$1,983,709
19	Mobilization-demobilization	$1,805,692	$0	$1,805,692
20	Active Reclamation	$6,544,241	$0	$6,544,241
21	Closure Monitoring	$463,600	$137,101	$600,701
22	Solid Waste Disposal	$764,870	$0	$764,870
23	Reclamation Maintenance	$999,060	$0	$999,060
24	Tanks	$642,724	$0	$642,724
	Total Direct Costs			
	Engineering, Design and Construction Plan	$2,046,224	$121,056	$2,167,280
	Contingency	$10,913,194	$645,619	$11,558,813
	Contractor OH and Profit	$10,231,119	$605,264	$10,836,383
	Contract Administration	$3,601,353	$213,057	$3,814,410
	Grand Total	$94,999,352	$5,620,066	$100,619,418

Source: SRCE “Acct Codes” and “User 05”

Prepared by



Filiz Toprak

Mining Consultant

Reviewed by

Ivan Clark

Senior Consultant

5 References

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U.S. Energy Information Administration, October 2018

Attachments

Attachment A

Standardized Reclamation Cost Estimator (SRCE) File for Fort Knox Premature Closure Scenario (2019)

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 2.0
Build - Beta 01E

COST DATA FILE INFORMATION			
File Name:	DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm		
Cost Data File:	CDF_226900_020_FNL_ft_ism.xlsm		
Cost Data Date:	February 11, 2019		
Cost Data Basis:	User Data	Data Cost Units:	Imperial
Author/Source:	FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes		

PROJECT INFORMATION			
Property/Mine Name:	Fort Knox	Property Code:	
Project Name:	Fort Knox Phased Estimate		
Date of Submittal:	December 2019	Average Elevation	1600 ft.
Units of Measure:	○ Metric (m, km, ha, etc.)	◉ Imperial (ft, mi, acres, etc.)	
Currency Symbol:	Dollar (US)		
Project Type:	Mine Operations Plan		
Land Type:	Private Land		
Cost Basis Category:	Fort Knox		
Cost Basis Description:	**Fairbanks North Star Borough, Alaska**		

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

	Facility/Activity Type	Acct Code	Total Cost	FA Cost	Scheduled FA Cost	Plan Year	10	11	12	13
						Closure Year	-1	1	2	3
						Calendar Year	2019	2020	2021	2022
			$		$		$	$	$	$
1	Waste Rock Dumps		8,349,884	8,349,884	8,349,884		0	4,174,942	4,174,942	0
2	Heap Leach Pad		3,117,208	3,117,208	3,117,208		0	1,558,604	1,558,604	0
3	Solution Management		13,668,364	13,668,364	13,668,364		0	8,256,680	665,604	665,604
4	Pit		339,927	339,927	339,927		0	131,045	0	33,882
5	Yards		990,576	990,576	990,576		0	0	0	990,576
6	Roads		113,630	113,630	113,630		0	16,345	0	97,285
7	Borrow Area		69,385	69,385	69,385		0	0	0	69,385
8	Tailings		9,675,304	9,675,304	9,675,304		0	5,351,299	4,324,005	0
9	Buildings		3,957,079	3,957,079	3,957,079		0	1,325,059	1,286,087	1,286,087
10	Other Demo		596,045	596,045	596,045		0	559,663	0	36,382
11	Sediment and Drainage Control		12,935,352	12,935,352	12,935,352		0	2,499,906	1,070,706	9,364,740
12	TSF Spillway		2,917,129	2,917,129	2,917,129		0	1,458,565	1,458,565	0
13	Linear Structures		1,650,123	1,650,123	1,650,123		0	0	0	5,814
14	Monitoring		2,699,861	2,699,861	2,699,861		0	162,713	162,713	162,713
15	Road Maintenance		215,784	215,784	215,784		0	73,367	71,209	71,209
16	Well Abandonment		433,580	433,580	433,580		0	289,915	0	90,188
17	Water Fees		1,650	1,650	1,650		0	550	550	550
18	Long-term Maintenance and Repair		37,902,545	37,902,545	37,902,545		0	0	0	0
19	Mobilization-demobilization		1,805,692	1,805,692	1,805,692		0	894,988	0	910,705
20	Active Reclamation		6,544,241	6,544,241	6,544,241		0	2,181,414	2,181,414	2,181,414
21	Closure Monitoring		695,400	695,400	695,400		0	0	0	0
22	Solid Waste Disposal		764,870	764,870	764,870		0	827	803	763,240
23	Reclamation Maintenance		999,060	999,060	999,060		0	499,530	249,765	249,765
24	Tanks		642,724	642,724	642,724		0	283,826	179,449	179,449
		TOTALS	**111,085,415**	**111,085,415**	**111,085,415**		**0**	**29,719,237**	**17,384,414**	**17,158,987**

Engineering, Design and Construction Plan		**3,332,562**	**3,332,562**	**3,332,562**		**0**	**891,577**	**521,532**	**514,770**
Contingency		**17,773,666**	**17,773,666**	**17,773,666**		**0**	**4,755,078**	**2,781,506**	**2,745,438**
Contractor OH and Profit		**16,662,812**	**16,662,812**	**16,662,812**		**0**	**4,457,886**	**2,607,662**	**2,573,848**
Contract Administration		**5,865,310**	**5,865,310**	**5,865,310**		**0**	**1,569,176**	**917,897**	**905,994**
	TOTAL COST	**154,719,765**	**154,719,765**	**154,719,765**		**0**	**41,392,954**	**24,213,011**	**23,899,037**

Discounted Cash Flow:		**0**	**41,392,954**	**24,213,011**	**23,899,037**
NPV:	**154,719,783**				

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

	Facility/Activity Type	14	15	16	17	18	19	20	21	22
		4	5	6	7	8	9	10	11	12
		2023	2024	2025	2026	2027	2028	2029	2030	2031
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	504,205	494,206	74,686	74,686	74,686	74,686	74,686	355,175	74,686
4	Pit	0	0	25,000	0	0	0	0	25,000	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	59,847	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	177,102	177,102	177,102	177,102	177,102	162,713	162,713	162,713	173,291
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	41,516	11,961	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	17,155	17,155	97,155	17,155	17,155	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	57,950	57,950	57,950	57,950	57,950	57,950	57,950	57,950	57,950
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		857,774	**758,374**	**351,893**	**326,893**	**406,893**	**312,503**	**312,503**	**617,993**	**323,082**
	Engineering, Design and Construction Plan	**25,733**	**22,751**	**10,557**	**9,807**	**12,207**	**9,375**	**9,375**	**18,540**	**9,692**
	Contingency	**137,244**	**121,340**	**56,303**	**52,303**	**65,103**	**50,000**	**50,000**	**98,879**	**51,693**
	Contractor OH and Profit	**128,666**	**113,756**	**52,784**	**49,034**	**61,034**	**46,875**	**46,875**	**92,699**	**48,462**
	Contract Administration	**45,290**	**40,042**	**18,580**	**17,260**	**21,484**	**16,500**	**16,500**	**32,630**	**17,059**
		1,194,707	**1,056,263**	**490,117**	**455,297**	**566,721**	**435,253**	**435,253**	**860,741**	**449,988**
		1,194,707	**1,056,263**	**490,117**	**455,297**	**566,721**	**435,253**	**435,253**	**860,741**	**449,988**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatio
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v1
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		23	24	25	26	27	28	29	30	31
		13	14	15	16	17	18	19	20	21
	Facility/Activity Type	2032	2033	2034	2035	2036	2037	2038	2039	2040
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	74,686	74,686	74,686	74,686	74,686	74,686	74,686	74,686	355,175
4	Pit	0	0	0	0	0	0	0	0	25,000
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	1,028,587	0	0	0	0	0	0
14	Monitoring	173,291	173,291	32,700	32,700	32,700	32,700	32,700	32,700	32,700
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	138,121	17,155	17,155	17,155	17,155	97,155	17,155	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	57,950	57,950	57,950	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		444,048	**323,082**	**1,211,078**	**124,541**	**124,541**	**204,541**	**124,541**	**124,541**	**430,030**
	Engineering, Design and Construction Plan	**13,321**	**9,692**	**36,332**	**3,736**	**3,736**	**6,136**	**3,736**	**3,736**	**12,901**
	Contingency	**71,048**	**51,693**	**193,772**	**19,927**	**19,927**	**32,727**	**19,927**	**19,927**	**68,805**
	Contractor OH and Profit	**66,607**	**48,462**	**181,662**	**18,681**	**18,681**	**30,681**	**18,681**	**18,681**	**64,505**
	Contract Administration	**23,446**	**17,059**	**63,945**	**6,576**	**6,576**	**10,800**	**6,576**	**6,576**	**22,706**
		618,470	**449,988**	**1,686,789**	**173,461**	**173,461**	**284,885**	**173,461**	**173,461**	**598,947**
		618,470	**449,988**	**1,686,789**	**173,461**	**173,461**	**284,885**	**173,461**	**173,461**	**598,947**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		32	33	34	35	36	37	38	39	40
		22	23	24	25	26	27	28	29	30
	Facility/Activity Type	2041	2042	2043	2044	2045	2046	2047	2048	2049
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	74,686	74,686	74,686	74,686	74,686	74,686	74,686	74,686	74,686
4	Pit	0	0	0	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	32,700	18,867	18,867	18,867	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	491,335	17,155	17,155	17,155	17,155	150,446	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		124,541	**584,887**	**110,707**	**110,707**	**91,841**	**91,841**	**225,132**	**91,841**	**91,841**
	Engineering, Design and Construction Plan	**3,736**	**17,547**	**3,321**	**3,321**	**2,755**	**2,755**	**6,754**	**2,755**	**2,755**
	Contingency	**19,927**	**93,582**	**17,713**	**17,713**	**14,694**	**14,694**	**36,021**	**14,694**	**14,694**
	Contractor OH and Profit	**18,681**	**87,733**	**16,606**	**16,606**	**13,776**	**13,776**	**33,770**	**13,776**	**13,776**
	Contract Administration	**6,576**	**30,882**	**5,845**	**5,845**	**4,849**	**4,849**	**11,887**	**4,849**	**4,849**
		173,461	**814,631**	**154,192**	**154,192**	**127,915**	**127,915**	**313,564**	**127,915**	**127,915**
		173,461	**814,631**	**154,192**	**154,192**	**127,915**	**127,915**	**313,564**	**127,915**	**127,915**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		41	42	43	44	45	46	47	48	49
		31	32	33	34	35	36	37	38	39
	Facility/Activity Type	2050	2051	2052	2053	2054	2055	2056	2057	2058
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	355,175	74,686	74,686	74,686	74,719	0	0	0	0
4	Pit	25,000	0	0	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	615,722	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	138,121	17,155	17,155	17,155	17,155	97,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		397,330	**91,841**	**212,807**	**91,841**	**707,596**	**17,155**	**17,155**	**97,155**	**17,155**
	Engineering, Design and Construction Plan	**11,920**	**2,755**	**6,384**	**2,755**	**21,228**	**515**	**515**	**2,915**	**515**
	Contingency	**63,573**	**14,694**	**34,049**	**14,694**	**113,215**	**2,745**	**2,745**	**15,545**	**2,745**
	Contractor OH and Profit	**59,600**	**13,776**	**31,921**	**13,776**	**106,139**	**2,573**	**2,573**	**14,573**	**2,573**
	Contract Administration	**20,979**	**4,849**	**11,236**	**4,849**	**37,361**	**906**	**906**	**5,130**	**906**
		553,402	**127,915**	**296,397**	**127,915**	**985,539**	**23,894**	**23,894**	**135,318**	**23,894**
		553,402	**127,915**	**296,397**	**127,915**	**985,539**	**23,894**	**23,894**	**135,318**	**23,894**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatio
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		50	51	52	53	54	55	56	57	58
		40	41	42	43	44	45	46	47	48
	Facility/Activity Type	2059	2060	2061	2062	2063	2064	2065	2066	2067
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0	0	0	0
4	Pit	0	25,000	0	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	17,155	491,335	17,155	17,155	17,155	17,155	97,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		17,155	**42,155**	**17,155**	**491,335**	**17,155**	**17,155**	**17,155**	**17,155**	**97,155**
	Engineering, Design and Construction Plan	**515**	**1,265**	**515**	**14,740**	**515**	**515**	**515**	**515**	**2,915**
	Contingency	**2,745**	**6,745**	**2,745**	**78,614**	**2,745**	**2,745**	**2,745**	**2,745**	**15,545**
	Contractor OH and Profit	**2,573**	**6,323**	**2,573**	**73,700**	**2,573**	**2,573**	**2,573**	**2,573**	**14,573**
	Contract Administration	**906**	**2,226**	**906**	**25,942**	**906**	**906**	**906**	**906**	**5,130**
		23,894	**58,714**	**23,894**	**684,331**	**23,894**	**23,894**	**23,894**	**23,894**	**135,318**
		23,894	**58,714**	**23,894**	**684,331**	**23,894**	**23,894**	**23,894**	**23,894**	**135,318**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatio
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		59	60	61	62	63	64	65	66	67
		49	50	51	52	53	54	55	56	57
	Facility/Activity Type	2068	2069	2070	2071	2072	2073	2074	2075	2076
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0	0	0	0
4	Pit	0	0	25,000	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	17,155	17,155	1,940,368	17,155	17,155	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		17,155	**17,155**	**42,155**	**17,155**	**1,940,368**	**17,155**	**17,155**	**17,155**	**17,155**
	Engineering, Design and Construction Plan	**515**	**515**	**1,265**	**515**	**58,211**	**515**	**515**	**515**	**515**
	Contingency	**2,745**	**2,745**	**6,745**	**2,745**	**310,459**	**2,745**	**2,745**	**2,745**	**2,745**
	Contractor OH and Profit	**2,573**	**2,573**	**6,323**	**2,573**	**291,055**	**2,573**	**2,573**	**2,573**	**2,573**
	Contract Administration	**906**	**906**	**2,226**	**906**	**102,451**	**906**	**906**	**906**	**906**
		23,894	**23,894**	**58,714**	**23,894**	**2,702,544**	**23,894**	**23,894**	**23,894**	**23,894**
		23,894	**23,894**	**58,714**	**23,894**	**2,702,544**	**23,894**	**23,894**	**23,894**	**23,894**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		68	69	70	71	72	73	74	75	76
		58	59	60	61	62	63	64	65	66
	Facility/Activity Type	2077	2078	2079	2080	2081	2082	2083	2084	2085
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0	0	0	0
4	Pit	0	0	0	25,000	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	97,155	17,155	17,155	17,155	17,155	491,335	17,155	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		97,155	**17,155**	**17,155**	**42,155**	**17,155**	**491,335**	**17,155**	**17,155**	**17,155**
	Engineering, Design and Construction Plan	**2,915**	**515**	**515**	**1,265**	**515**	**14,740**	**515**	**515**	**515**
	Contingency	**15,545**	**2,745**	**2,745**	**6,745**	**2,745**	**78,614**	**2,745**	**2,745**	**2,745**
	Contractor OH and Profit	**14,573**	**2,573**	**2,573**	**6,323**	**2,573**	**73,700**	**2,573**	**2,573**	**2,573**
	Contract Administration	**5,130**	**906**	**906**	**2,226**	**906**	**25,942**	**906**	**906**	**906**
		135,318	**23,894**	**23,894**	**58,714**	**23,894**	**684,331**	**23,894**	**23,894**	**23,894**
		135,318	**23,894**	**23,894**	**58,714**	**23,894**	**684,331**	**23,894**	**23,894**	**23,894**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatio
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		77	78	79	80	81	82	83	84	85
		67	68	69	70	71	72	73	74	75
	Facility/Activity Type	2086	2087	2088	2089	2090	2091	2092	2093	2094
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0	0	0	0
4	Pit	0	0	0	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	97,155	17,155	17,155	17,155	17,155	138,121	17,155	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		17,155	**97,155**	**17,155**	**17,155**	**17,155**	**17,155**	**138,121**	**17,155**	**17,155**
	Engineering, Design and Construction Plan	**515**	**2,915**	**515**	**515**	**515**	**515**	**4,144**	**515**	**515**
	Contingency	**2,745**	**15,545**	**2,745**	**2,745**	**2,745**	**2,745**	**22,099**	**2,745**	**2,745**
	Contractor OH and Profit	**2,573**	**14,573**	**2,573**	**2,573**	**2,573**	**2,573**	**20,718**	**2,573**	**2,573**
	Contract Administration	**906**	**5,130**	**906**	**906**	**906**	**906**	**7,293**	**906**	**906**
		23,894	**135,318**	**23,894**	**23,894**	**23,894**	**23,894**	**192,375**	**23,894**	**23,894**
		23,894	**135,318**	**23,894**	**23,894**	**23,894**	**23,894**	**192,375**	**23,894**	**23,894**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		86	87	88	89	90	91	92	93	94
		76	77	78	79	80	81	82	83	84
	Facility/Activity Type	2095	2096	2097	2098	2099	2100	2101	2102	2103
		$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0	0	0	0
4	Pit	0	0	0	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	150,446	17,155	17,155	17,155	17,155	491,335	17,155
19	Mobilization-demobilization	0	0	0	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0	0	0	0
		17,155	**17,155**	**150,446**	**17,155**	**17,155**	**17,155**	**17,155**	**491,335**	**17,155**
	Engineering, Design and Construction Plan	**515**	**515**	**4,513**	**515**	**515**	**515**	**515**	**14,740**	**515**
	Contingency	**2,745**	**2,745**	**24,071**	**2,745**	**2,745**	**2,745**	**2,745**	**78,614**	**2,745**
	Contractor OH and Profit	**2,573**	**2,573**	**22,567**	**2,573**	**2,573**	**2,573**	**2,573**	**73,700**	**2,573**
	Contract Administration	**906**	**906**	**7,944**	**906**	**906**	**906**	**906**	**25,942**	**906**
		23,894	**23,894**	**209,541**	**23,894**	**23,894**	**23,894**	**23,894**	**684,331**	**23,894**
		23,894	**23,894**	**209,541**	**23,894**	**23,894**	**23,894**	**23,894**	**684,331**	**23,894**

Closure Cost Estimate
Acct Codes

Project Name: Fort Knox Phased Estimate - Reclamatior
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

		95	96	97	98	99	100
		85	86	87	88	89	90
	Facility/Activity Type	2104	2105	2106	2107	2108	2109
		$	$	$	$	$	$
1	Waste Rock Dumps	0	0	0	0	0	0
2	Heap Leach Pad	0	0	0	0	0	0
3	Solution Management	0	0	0	0	0	0
4	Pit	0	0	0	0	0	0
5	Yards	0	0	0	0	0	0
6	Roads	0	0	0	0	0	0
7	Borrow Area	0	0	0	0	0	0
8	Tailings	0	0	0	0	0	0
9	Buildings	0	0	0	0	0	0
10	Other Demo	0	0	0	0	0	0
11	Sediment and Drainage Control	0	0	0	0	0	0
12	TSF Spillway	0	0	0	0	0	0
13	Linear Structures	0	0	0	0	0	0
14	Monitoring	0	0	0	0	0	0
15	Road Maintenance	0	0	0	0	0	0
16	Well Abandonment	0	0	0	0	0	0
17	Water Fees	0	0	0	0	0	0
18	Long-term Maintenance and Repair	17,155	17,155	17,155	97,155	17,155	31,417,802
19	Mobilization-demobilization	0	0	0	0	0	0
20	Active Reclamation	0	0	0	0	0	0
21	Closure Monitoring	0	0	0	0	0	0
22	Solid Waste Disposal	0	0	0	0	0	0
23	Reclamation Maintenance	0	0	0	0	0	0
24	Tanks	0	0	0	0	0	0
		17,155	**17,155**	**17,155**	**97,155**	**17,155**	**31,417,802**
	Engineering, Design and Construction Plan	**515**	**515**	**515**	**2,915**	**515**	**942,534**
	Contingency	**2,745**	**2,745**	**2,745**	**15,545**	**2,745**	**5,026,848**
	Contractor OH and Profit	**2,573**	**2,573**	**2,573**	**14,573**	**2,573**	**4,712,670**
	Contract Administration	**906**	**906**	**906**	**5,130**	**906**	**1,658,860**
		23,894	**23,894**	**23,894**	**135,318**	**23,894**	**43,758,714**
		23,894	**23,894**	**23,894**	**135,318**	**23,894**	**43,758,714**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description								Physical - MANDATORY									Cover 1				Cover 2				Growth Media			
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Lift (dump) Height ft	Mid-Bench Length ft	Average Long Dimension (ripping distance) ft	Final (Regraded) Footprint acres	Regrade Volume (1) (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Yellow Pup WRF - 1	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	5.0	1.3	3.0	0.0	40	2,001	2,000	10.06										12.0	12.0	7,420	0.6
2	Yellow Pup WRF - 2	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	42	2,107	2,100	26.39										12.0	12.0	7,420	0.6
3	Yellow Pup WRF - 3	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	1,808	1,800	17.76										12.0	12.0	7,420	0.6
4	Yellow Pup WRF - 4	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	1,204	1,200	20.73										12.0	12.0	7,420	0.6
5	Yellow Pup WRF - 5	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	2.9	3.0	0.0	130	689	600	6.68										12.0	12.0	7,420	0.6
6	Yellow Pup WRF - 6	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	2.5	3.0	0.0	80	510	500	3.75										12.0	12.0	7,420	0.6
7	Yellow Pup WRF - 7	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	90	3,487	3,400	27.81										12.0	12.0	7,420	0.6
8	Yellow Pup WRF - 8	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	14.0	1.4	3.0	0.0	50	795	700	5.15										12.0	12.0	7,420	0.6
9	Yellow Pup WRF - 9	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	1.0	1.3	3.0	0.0	60	1,199	1,100	5.94										12.0	12.0	7,420	0.6
10	Yellow Pup WRF - 10	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	10.0	1.9	3.0	0.0	32	1,412	1,400	5.97										12.0	12.0	7,420	0.6
11	Yellow Pup WRF - 11	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	48	1,422	1,400	8.67										12.0	12.0	7,420	0.6
12	Yellow Pup WRF - 12	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	506	500	4.06										12.0	12.0	7,420	0.6
13	Yellow Pup WRF - 13	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	5.0	1.3	3.0	0.0	74	519	500	3.02										12.0	12.0	7,420	0.6
14	Yellow Pup WRF - 14	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	6.0	1.3	3.0	0.0	180	363	300	2.34										12.0	12.0	7,420	0.6
15	Yellow Pup WRF - 15	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	8.0	1.3	3.0	0.0	274	419	400	7.41										12.0	12.0	7,420	0.6
16	Yellow Pup WRF - 16	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	6.0	1.3	3.0	0.0	54	332	300	3.84										12.0	12.0	7,420	0.6
17	Yellow Pup WRF - 17	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	44	492	400	1.98										12.0	12.0	7,420	0.6
18	Yellow Pup WRF - 18	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	18	253	200	1.67										12.0	12.0	7,420	0.6
19	Yellow Pup WRF - 19	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	2.4	3.0	0.0	18	340	300	4.46										12.0	12.0	7,420	0.6
20	Yellow Pup WRF - 20	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	48	936	900	6.52										12.0	12.0	7,420	0.6
21	Yellow Pup WRF - 21	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	36	402	400	1.75										12.0	12.0	7,420	0.6
22	Yellow Pup WRF - 22	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	6.0	1.3	3.0	0.0	40	994	900	4.77										12.0	12.0	7,420	0.6
23	Yellow Pup WRF - 23	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	4.0	1.3	3.0	0.0	44	1,115	1,100	8.75										12.0	12.0	7,420	0.6
24	Yellow Pup WRF - 24	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	2.0	1.3	3.0	0.0	20	348	300	3.00										12.0	12.0	7,420	0.6
25	Yellow Pup WRF - 25	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	3.0	1.3	3.0	0.0	36	509	500	4.11										12.0	12.0	7,420	0.6
26	Yellow Pup WRF - 26	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	7.0	1.3	3.0	0.0	38	902	900	4.76										12.0	12.0	7,420	0.6
27	Yellow Pup WRF - 27	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	2.0	1.2	3.0	0.0	50	292	200	2.23										12.0	12.0	7,420	0.6
28	Yellow Pup WRF - 28	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	10.0	1.4	3.0	0.0	28	1,041	1,000	6.59										12.0	12.0	7,420	0.6
29	Yellow Pup WRF - 29	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	12.0	1.3	3.0	0.0	74	1,365	1,300	8.64										12.0	12.0	7,420	0.6
30	Yellow Pup WRF - 30	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	2.0	1.7	3.0	0.0	38	353	300	1.87										12.0	12.0	7,420	0.6
31	Yellow Pup WRF - 31	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.6	3.0	0.0	42	786	700	4.45										12.0	12.0	7,420	0.6
32	Yellow Pup WRF - 32	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.9	2.5	0.0	478	1,968	1,900	55.85										12.0	12.0	7,420	0.6
33	Yellow Pup WRF - 33	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.9	2.5	0.0	336	766	700	12.59										12.0	12.0	7,420	0.6
34	Yellow Pup WRF - 34	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.9	2.5	0.0	62	813	800	4.74										12.0	12.0	7,420	0.6
35	Yellow Pup WRF - 35	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	2,388	2,300	18.25										12.0	12.0	7,420	0.6
36	Yellow Pup WRF - 36	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	2,270	2,200	16.45										12.0	12.0	7,420	0.6
37	Yellow Pup WRF - 37	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	15.0	1.3	3.0	0.0	50	456	400	1.97										12.0	12.0	7,420	0.6
38	Yellow Pup WRF - 38	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	8.0	1.3	3.0	0.0	90	554	500	3.30										12.0	12.0	7,420	0.6
39	Yellow Pup WRF - 39	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	13.0	1.4	3.0	0.0	32	310	300	1.11										12.0	12.0	7,420	0.6
40	Yellow Pup WRF - 40	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	3.0	1.3	3.0	0.0	40	496	400	1.84										12.0	12.0	7,420	0.6
41	Yellow Pup WRF - 41	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	10.0	1.3	3.0	0.0	34	221	200	1.66										12.0	12.0	7,420	0.6
42	Yellow Pup WRF - 42	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	10.0	1.3	3.0	0.0	76	384	300	1.78										12.0	12.0	7,420	0.6
43	Yellow Pup WRF - 43	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	46	444	400	1.76										12.0	12.0	7,420	0.6
44	Yellow Pup WRF - 44	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	106	3,447	3,400	18.12										12.0	12.0	7,420	0.6
45	Yellow Pup WRF - 45	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4,313	4,300	41.86										12.0	12.0	7,420	0.6
46	Yellow Pup WRF - 46	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.6	3.0	0.0	48	485	400	2.61										12.0	12.0	7,420	0.6
47	Yellow Pup WRF - 47	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	5.0	1.3	3.0	0.0	56	458	400	2.96										12.0	12.0	7,420	0.6
48	Yellow Pup WRF - 48	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-6.0	1.6	3.0	0.0	74	269	200	1.26										12.0	12.0	7,420	0.6
49	Yellow Pup WRF - 49	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	2.0	1.7	3.0	0.0	18	268	200	0.98										12.0	12.0	7,420	0.6
50	Yellow Pup WRF - 50	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	40	525	500	2.40										12.0	12.0	7,420	0.6
51	Yellow Pup WRF - 51	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	3.0	1.4	3.0	0.0	54	1,196	1,100	5.56										12.0	12.0	7,420	0.6
52	Yellow Pup WRF - 52	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	20	388	300	1.39										12.0	12.0	7,420	0.6
53	Yellow Pup WRF - 53	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	40	668	600	2.73										12.0	12.0	7,420	0.6
54	Yellow Pup WRF - 54	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	5.0	1.3	3.0	0.0	40	1,044	1,000	5.43										12.0	12.0	7,420	0.6
55	Yellow Pup WRF - 55	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	6.0	1.4	3.0	0.0	38	1,505	1,500	5.64										12.0	12.0	7,420	0.6
56	Yellow Pup WRF - 56	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-4.0	1.3	3.0	0.0	38	1,404	1,400	6.09										12.0	12.0	7,420	0.6
57	Yellow Pup WRF - 57	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-3.0	1.3	3.0	0.0	40	1,247	1,200	5.39										12.0	12.0	7,420	0.6
58	Yellow Pup WRF - 58	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-7.0	1.3	3.0	0.0	40	475	400	7.24										12.0	12.0	7,420	0.6
59	Yellow Pup Expansion/Fish Creek WRF - 1	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	44	798	700	2.32										12.0	12.0	1,007	-1.0
60	Yellow Pup Expansion/Fish Creek WRF - 2	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	20	1,497	1,400	4.97										12.0	12.0	1,007	-1.0
61	Yellow Pup Expansion/Fish Creek WRF - 3	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	1,479	1,400	5.37										12.0	12.0	1,007	-1.0
62	Yellow Pup Expansion/Fish Creek WRF - 4	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	14	506	500	1.17										12.0	12.0	1,007	-1.0
63	Yellow Pup Expansion/Fish Creek WRF - 5	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	22	2,445	2,400	6.93										12.0	12.0	1,007	-1.0
64	Yellow Pup Expansion/Fish Creek WRF - 6	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	24	2,785	2,700	18.80										12.0	12.0	1,007	-1.0
65	Yellow Pup Expansion/Fish Creek WRF - 7	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4,993	4,900	26.82										12.0	12.0	1,007	-1.0
66	Yellow Pup Expansion/Fish Creek WRF - 8	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	5,896	5,800	76.11										12.0	12.0	1,007	-1.0
67	Yellow Pup Expansion/Fish Creek WRF - 9	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	4.0	1.4	3.0	0.0	60	930	900	13.14										12.0	12.0	1,008	-2.0
68	Yellow Pup Expansion/Fish Creek WRF - 10	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	40	306	300	2.54										12.0	12.0	1,008	-2.0
69	Yellow Pup Expansion/Fish Creek WRF - 11	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	40	231	200	6.93										12.0	12.0	1,008	-2.0
70	Yellow Pup Expansion/Fish Creek WRF - 12	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	4.0	1.4	3.0	0.0	34	503	500	2.96										12.0	12.0	1,008	-2.0
71	Yellow Pup Expansion/Fish Creek WRF - 13	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	40	783	700	20.81										12.0	12.0	1,008	-2.0
72	Barnes Creek WRF - 1	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	22.0	1.3	3.0	0.0	140	418	400	7.60										12.0	12.0	6,201	-2.4
73	Barnes Creek WRF - 2	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	18.0	1.3	3.0	0.0	220	1,353	1,300	18.35										12.0	12.0	6,201	-2.4
74	Barnes Creek WRF - 3	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	11.0	1.3	3.0	0.0	100	657	600	7.36										12.0	12.0	6,201	-2.4
75	Barnes Creek WRF - 4	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	4.0	1.4	3.0	0.0	40	402	400	2.65										12.0	12.0	6,201	-2.4
76	Barnes Creek WRF - 5	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	5.0	1.4	3.0	0.0	56	963	900	7.71										12.0	12.0	6,201	-2.4
77	Barnes Creek WRF - 6	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-4.0	1.5	3.0	0.0	60	600	600	14.25										12.0	12.0	6,201	-2.4
78	Barnes Creek WRF - 7	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	9.0	1.4	3.0	0.0	100	953	900	16.35										12.0	12.0	6,201	-2.4
79	Barnes Creek WRF - 8	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	6.0	1.4	3.0	0.0	190	786	700	11.01										12.0	12.0	6,201	-2.4
80	Barnes Creek WRF - 9	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	2.0	1.5	3.0	0.0	60	1,238	1,200	10.69										12.0	12.0	6,201	-2.4
81	Barnes Creek WRF - 10	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	110	2,107	2,100	12.23										12.0	12.0	6,201	-2.4
82	Barnes Creek WRF - 11	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	124	666	600	4.75										12.0	12.0	6,201	-2.4
83	Barnes Creek WRF - 12	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	44	2,455	2,400	15.58										12.0	12.0	6,201	-2.4
84	Barnes Creek WRF - 13	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	56	2,597	2,500	11.25										12.0	12.0	6,201	-2.4
85	Barnes Creek WRF - 14	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	18	1,062	1,000	3.48										12.0	12.0	6,201	-2.4
86	Barnes Creek WRF - 15	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-12.0	1.3	3.0	0.0	14	393	300	10.53										12.0	12.0	6,201	-2.4
87	Barnes Creek WRF - 16	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-5.0	1.3	3.0	0.0	54	2,961	2,900	12.62										12.0	12.0	6,201	-2.4
88	Barnes Creek WRF - 17	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	4,575	4,500	29.62										12.0	12.0	3,919	-4.8
89	Barnes Creek WRF - 18	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	4,986	4,900	61.98										12.0	12.0	3,919	-4.8
90	Barnes Creek WRF - 19	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	66	563	500	5.86										12.0	12.0	3,919	-4.8
91	Barnes Creek WRF - 20	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	50	1,025	1,000	3.70										12.0	12.0	3,919	-4.8
92	Barnes Creek WRF - 21	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	44	1,020	1,000	6.17										12.0	12.0	3,919	-4.8
93	Barnes Creek WRF - 22	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	7.0	1.5	3.0	0.0	32	230	200	10.27										12.0	12.0	3,919	-4.8
94	Barnes Creek WRF - 23	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	46	645	600	3.38										12.0	12.0	3,919	-4.8
95	Barnes Creek WRF - 24	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	10.0	1.4	3.0	0.0	30	582	500	4.71										12.0	12.0	3,919	-4.8
96	Barnes Creek WRF - 25	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	80	329	300	3.24										12.0	12.0	3,919	-4.8
97	Barnes Creek WRF - 26	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	48	801	800	2.92										12.0	12.0	3,919	-4.8
98	Barnes Creek WRF - 27	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	881	800	3.16										12.0	12.0	3,919	-4.8
99	Barnes Creek WRF - 28	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	90	774	700	5.93										12.0	12.0	3,919	-4.8
100	Barnes Creek WRF - 29	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	-7.0	1.3	3.0	0.0	60	1,757	1,700	21.57										12.0	12.0	3,919	-4.8
101	Barnes Creek WRF - 30	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	613	600	5.98										12.0	12.0	3,919	-4.8
102	Barnes Creek WRF - 31	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	782	700	5.78										12.0	12.0	3,919	-4.8
103	Barnes Creek WRF - 32	6.9		Waste Rock Dumps	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	100	1,996	1,900	30.04										12.0	12.0	3,919	-4.8

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed and/or screened.
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Underlying ground slope is 0, because target grading surface is the bench below, which has a zero slope
Dump material is a schist, shale was chosen since it has the closest properties to schist on site

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - User Input (Cont.)

Facility Description		Cover 1 - Crushing & Screening										Cover 2 - Crushing & Screening									
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope to Crusher % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope to Crusher % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Yellow Pup WRF - 1																				
2	Yellow Pup WRF - 2																				
3	Yellow Pup WRF - 3																				
4	Yellow Pup WRF - 4																				
5	Yellow Pup WRF - 5																				
6	Yellow Pup WRF - 6																				
7	Yellow Pup WRF - 7																				
8	Yellow Pup WRF - 8																				
9	Yellow Pup WRF - 9																				
10	Yellow Pup WRF - 10																				
11	Yellow Pup WRF - 11																				
12	Yellow Pup WRF - 12																				
13	Yellow Pup WRF - 13																				
14	Yellow Pup WRF - 14																				
15	Yellow Pup WRF - 15																				
16	Yellow Pup WRF - 16																				
17	Yellow Pup WRF - 17																				
18	Yellow Pup WRF - 18																				
19	Yellow Pup WRF - 19																				
20	Yellow Pup WRF - 20																				
21	Yellow Pup WRF - 21																				
22	Yellow Pup WRF - 22																				
23	Yellow Pup WRF - 23																				
24	Yellow Pup WRF - 24																				
25	Yellow Pup WRF - 25																				
26	Yellow Pup WRF - 26																				
27	Yellow Pup WRF - 27																				
28	Yellow Pup WRF - 28																				
29	Yellow Pup WRF - 29																				
30	Yellow Pup WRF - 30																				
31	Yellow Pup WRF - 31																				
32	Yellow Pup WRF - 32																				
33	Yellow Pup WRF - 33																				
34	Yellow Pup WRF - 34																				
35	Yellow Pup WRF - 35																				
36	Yellow Pup WRF - 36																				
37	Yellow Pup WRF - 37																				
38	Yellow Pup WRF - 38																				
39	Yellow Pup WRF - 39																				
40	Yellow Pup WRF - 40																				
41	Yellow Pup WRF - 41																				
42	Yellow Pup WRF - 42																				
43	Yellow Pup WRF - 43																				
44	Yellow Pup WRF - 44																				
45	Yellow Pup WRF - 45																				
46	Yellow Pup WRF - 46																				
47	Yellow Pup WRF - 47																				
48	Yellow Pup WRF - 48																				
49	Yellow Pup WRF - 49																				
50	Yellow Pup WRF - 50																				
51	Yellow Pup WRF - 51																				
52	Yellow Pup WRF - 52																				
53	Yellow Pup WRF - 53																				
54	Yellow Pup WRF - 54																				
55	Yellow Pup WRF - 55																				
56	Yellow Pup WRF - 56																				
57	Yellow Pup WRF - 57																				
58	Yellow Pup WRF - 58																				
59	Yellow Pup Expansion/Fish Creek WRF - 1																				
60	Yellow Pup Expansion/Fish Creek WRF - 2																				
61	Yellow Pup Expansion/Fish Creek WRF - 3																				
62	Yellow Pup Expansion/Fish Creek WRF - 4																				
63	Yellow Pup Expansion/Fish Creek WRF - 5																				
64	Yellow Pup Expansion/Fish Creek WRF - 6																				
65	Yellow Pup Expansion/Fish Creek WRF - 7																				
66	Yellow Pup Expansion/Fish Creek WRF - 8																				
67	Yellow Pup Expansion/Fish Creek WRF - 9																				
68	Yellow Pup Expansion/Fish Creek WRF - 10																				
69	Yellow Pup Expansion/Fish Creek WRF - 11																				
70	Yellow Pup Expansion/Fish Creek WRF - 12																				
71	Yellow Pup Expansion/Fish Creek WRF - 13																				
72	Barnes Creek WRF - 1																				
73	Barnes Creek WRF - 2																				
74	Barnes Creek WRF - 3																				
75	Barnes Creek WRF - 4																				
76	Barnes Creek WRF - 5																				
77	Barnes Creek WRF - 6																				
78	Barnes Creek WRF - 7																				
79	Barnes Creek WRF - 8																				
80	Barnes Creek WRF - 9																				
81	Barnes Creek WRF - 10																				
82	Barnes Creek WRF - 11																				
83	Barnes Creek WRF - 12																				
84	Barnes Creek WRF - 13																				
85	Barnes Creek WRF - 14																				
86	Barnes Creek WRF - 15																				
87	Barnes Creek WRF - 16																				
88	Barnes Creek WRF - 17																				
89	Barnes Creek WRF - 18																				
90	Barnes Creek WRF - 19																				
91	Barnes Creek WRF - 20																				
92	Barnes Creek WRF - 21																				
93	Barnes Creek WRF - 22																				
94	Barnes Creek WRF - 23																				
95	Barnes Creek WRF - 24																				
96	Barnes Creek WRF - 25																				
97	Barnes Creek WRF - 26																				
98	Barnes Creek WRF - 27																				
99	Barnes Creek WRF - 28																				
100	Barnes Creek WRF - 29																				
101	Barnes Creek WRF - 30																				
102	Barnes Creek WRF - 31																				
103	Barnes Creek WRF - 32																				

Notes:
1. Input distance to crusher if material to be crushed
2. if distance from borrow <820 ft (250 m) must select loader fleet

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - User Input (Cont.)

You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover 1				Cover 2				Growth Media				Revegetation								
	Description (required)	Dozing Material Condition (select)	Material Type (select)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	Yellow Pup WRF - 1	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
2	Yellow Pup WRF - 2	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
3	Yellow Pup WRF - 3	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
4	Yellow Pup WRF - 4	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
5	Yellow Pup WRF - 5	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
6	Yellow Pup WRF - 6	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
7	Yellow Pup WRF - 7	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
8	Yellow Pup WRF - 8	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
9	Yellow Pup WRF - 9	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
10	Yellow Pup WRF - 10	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
11	Yellow Pup WRF - 11	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
12	Yellow Pup WRF - 12	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
13	Yellow Pup WRF - 13	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
14	Yellow Pup WRF - 14	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
15	Yellow Pup WRF - 15	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
16	Yellow Pup WRF - 16	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
17	Yellow Pup WRF - 17	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
18	Yellow Pup WRF - 18	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
19	Yellow Pup WRF - 19	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
20	Yellow Pup WRF - 20	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
21	Yellow Pup WRF - 21	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
22	Yellow Pup WRF - 22	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
23	Yellow Pup WRF - 23	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
24	Yellow Pup WRF - 24	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
25	Yellow Pup WRF - 25	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
26	Yellow Pup WRF - 26	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
27	Yellow Pup WRF - 27	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
28	Yellow Pup WRF - 28	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
29	Yellow Pup WRF - 29	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
30	Yellow Pup WRF - 30	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
31	Yellow Pup WRF - 31	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
32	Yellow Pup WRF - 32	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
33	Yellow Pup WRF - 33	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
34	Yellow Pup WRF - 34	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
35	Yellow Pup WRF - 35	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
36	Yellow Pup WRF - 36	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
37	Yellow Pup WRF - 37	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
38	Yellow Pup WRF - 38	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
39	Yellow Pup WRF - 39	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
40	Yellow Pup WRF - 40	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
41	Yellow Pup WRF - 41	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
42	Yellow Pup WRF - 42	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
43	Yellow Pup WRF - 43	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
44	Yellow Pup WRF - 44	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
45	Yellow Pup WRF - 45	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
46	Yellow Pup WRF - 46	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
47	Yellow Pup WRF - 47	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
48	Yellow Pup WRF - 48	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
49	Yellow Pup WRF - 49	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
50	Yellow Pup WRF - 50	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
51	Yellow Pup WRF - 51	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
52	Yellow Pup WRF - 52	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
53	Yellow Pup WRF - 53	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
54	Yellow Pup WRF - 54	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
55	Yellow Pup WRF - 55	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
56	Yellow Pup WRF - 56	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
57	Yellow Pup WRF - 57	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
58	Yellow Pup WRF - 58	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
59	Yellow Pup Expansion/Fish Creek WRF - 1	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
60	Yellow Pup Expansion/Fish Creek WRF - 2	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
61	Yellow Pup Expansion/Fish Creek WRF - 3	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
62	Yellow Pup Expansion/Fish Creek WRF - 4	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
63	Yellow Pup Expansion/Fish Creek WRF - 5	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
64	Yellow Pup Expansion/Fish Creek WRF - 6	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
65	Yellow Pup Expansion/Fish Creek WRF - 7	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
66	Yellow Pup Expansion/Fish Creek WRF - 8	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
67	Yellow Pup Expansion/Fish Creek WRF - 9	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
68	Yellow Pup Expansion/Fish Creek WRF - 10	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
69	Yellow Pup Expansion/Fish Creek WRF - 11	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
70	Yellow Pup Expansion/Fish Creek WRF - 12	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
71	Yellow Pup Expansion/Fish Creek WRF - 13	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
72	Barnes Creek WRF - 1	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
73	Barnes Creek WRF - 2	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
74	Barnes Creek WRF - 3	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
75	Barnes Creek WRF - 4	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
76	Barnes Creek WRF - 5	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
77	Barnes Creek WRF - 6	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
78	Barnes Creek WRF - 7	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
79	Barnes Creek WRF - 8	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
80	Barnes Creek WRF - 9	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
81	Barnes Creek WRF - 10	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
82	Barnes Creek WRF - 11	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
83	Barnes Creek WRF - 12	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
84	Barnes Creek WRF - 13	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
85	Barnes Creek WRF - 14	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
86	Barnes Creek WRF - 15	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
87	Barnes Creek WRF - 16	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
88	Barnes Creek WRF - 17	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
89	Barnes Creek WRF - 18	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
90	Barnes Creek WRF - 19	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
91	Barnes Creek WRF - 20	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
92	Barnes Creek WRF - 21	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
93	Barnes Creek WRF - 22	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
94	Barnes Creek WRF - 23	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
95	Barnes Creek WRF - 24	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
96	Barnes Creek WRF - 25	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
97	Barnes Creek WRF - 26	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
98	Barnes Creek WRF - 27	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
99	Barnes Creek WRF - 28	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
100	Barnes Creek WRF - 29	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
101	Barnes Creek WRF - 30	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
102	Barnes Creek WRF - 31	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
103	Barnes Creek WRF - 32	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	Yes	Large Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - Assumptions & Calculations

Regrading Push Distance Calculation

dozing distance:
based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per dump

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation:
Minimum 1 acre revegetation crew time per area

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**Yellow Pup WRF - 1**	26,384	65	D10T2	2203	1.6	1.0	0.82	1.0	1799	15	960	3,971	4,931
2	**Yellow Pup WRF - 2**	29,264	66	D10T2	2175	1.6	1.0	0.82	1.0	1776	16	1,024	4,236	5,260
3	**Yellow Pup WRF - 3**	142,296	158	D10T2	1041	1.6	1.0	0.82	1.0	850	167	10,688	44,212	54,900
4	**Yellow Pup WRF - 4**	23,679	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	16	1,024	4,236	5,260
5	**Yellow Pup WRF - 5**	5,384	270	D10T2	662	1.6	1.0	0.82	1.0	541	10	640	2,647	3,287
6	**Yellow Pup WRF - 6**	7,556	156	D10T2	1052	1.6	1.0	0.82	1.0	859	9	576	2,383	2,959
7	**Yellow Pup WRF - 7**	222,264	142	D10T2	1139	1.6	1.0	0.82	1.0	930	239	15,296	63,273	78,569
8	**Yellow Pup WRF - 8**	17,225	90	D10T2	1674	1.6	1.0	0.82	1.0	1367	13	832	3,442	4,274
9	**Yellow Pup WRF - 9**	34,283	95	D10T2	1600	1.6	1.0	0.82	1.0	1307	26	1,664	6,883	8,547
10	**Yellow Pup WRF - 10**	7,897	59	D10T2	2391	1.6	1.0	0.82	1.0	1953	4	256	1,059	1,315
11	**Yellow Pup WRF - 11**	25,807	76	D10T2	1931	1.6	1.0	0.82	1.0	1577	16	1,024	4,236	5,260
12	**Yellow Pup WRF - 12**	39,824	158	D10T2	1041	1.6	1.0	0.82	1.0	850	47	3,008	12,443	15,451
13	**Yellow Pup WRF - 13**	23,451	121	D10T2	1304	1.6	1.0	0.82	1.0	1065	22	1,408	5,824	7,232
14	**Yellow Pup WRF - 14**	98,064	296	D10T2	613	1.6	1.0	0.82	1.0	501	196	12,544	51,889	64,433
15	**Yellow Pup WRF - 15**	268,362	458	D10T2	424	1.6	1.0	0.82	1.0	346	776	49,664	205,438	255,102
16	**Yellow Pup WRF - 16**	8,066	89	D10T2	1690	1.6	1.0	0.82	1.0	1380	6	384	1,588	1,972
17	**Yellow Pup WRF - 17**	7,489	70	D10T2	2070	1.6	1.0	0.82	1.0	1691	4	256	1,059	1,315
18	**Yellow Pup WRF - 18**	647	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
19	**Yellow Pup WRF - 19**	302	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
20	**Yellow Pup WRF - 20**	15,981	77	D10T2	1910	1.6	1.0	0.82	1.0	1560	10	640	2,647	3,287
21	**Yellow Pup WRF - 21**	4,094	57	D10T2	2462	1.6	1.0	0.82	1.0	2011	2	128	529	657
22	**Yellow Pup WRF - 22**	13,253	66	D10T2	2175	1.6	1.0	0.82	1.0	1776	7	448	1,853	2,301
23	**Yellow Pup WRF - 23**	17,634	71	D10T2	2045	1.6	1.0	0.82	1.0	1670	11	704	2,912	3,616
24	**Yellow Pup WRF - 24**	1,121	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
25	**Yellow Pup WRF - 25**	5,335	58	D10T2	2426	1.6	1.0	0.82	1.0	1981	3	192	794	986
26	**Yellow Pup WRF - 26**	10,991	63	D10T2	2262	1.6	1.0	0.82	1.0	1847	6	384	1,588	1,972
27	**Yellow Pup WRF - 27**	6,197	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	4	256	1,059	1,315
28	**Yellow Pup WRF - 28**	6,670	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	3	192	794	986
29	**Yellow Pup WRF - 29**	67,239	128	D10T2	1244	1.6	1.0	0.82	1.0	1016	66	4,224	17,473	21,697
30	**Yellow Pup WRF - 30**	3,112	65	D10T2	2203	1.6	1.0	0.82	1.0	1799	2	128	529	657
31	**Yellow Pup WRF - 31**	8,995	70	D10T2	2070	1.6	1.0	0.82	1.0	1691	5	320	1,324	1,644
32	**Yellow Pup WRF - 32**	1,249,024	770	D10T2	274	1.6	1.0	0.82	1.0	224	5,576	356,864	1,476,190	1,833,054
33	**Yellow Pup WRF - 33**	240,212	541	D10T2	368	1.6	1.0	0.82	1.0	301	798	51,072	211,263	262,335
34	**Yellow Pup WRF - 34**	8,672	100	D10T2	1532	1.6	1.0	0.82	1.0	1251	7	448	1,853	2,301
35	**Yellow Pup WRF - 35**	187,944	158	D10T2	1041	1.6	1.0	0.82	1.0	850	221	14,144	58,508	72,652
36	**Yellow Pup WRF - 36**	178,657	158	D10T2	1041	1.6	1.0	0.82	1.0	850	210	13,440	55,595	69,035
37	**Yellow Pup WRF - 37**	10,758	90	D10T2	1674	1.6	1.0	0.82	1.0	1367	8	512	2,118	2,630
38	**Yellow Pup WRF - 38**	38,288	150	D10T2	1088	1.6	1.0	0.82	1.0	889	43	2,752	11,384	14,136
39	**Yellow Pup WRF - 39**	2,710	57	D10T2	2462	1.6	1.0	0.82	1.0	2011	1	64	265	329
40	**Yellow Pup WRF - 40**	6,411	64	D10T2	2233	1.6	1.0	0.82	1.0	1824	4	256	1,059	1,315
41	**Yellow Pup WRF - 41**	2,235	58	D10T2	2426	1.6	1.0	0.82	1.0	1981	1	64	265	329
42	**Yellow Pup WRF - 42**	19,399	129	D10T2	1236	1.6	1.0	0.82	1.0	1009	19	1,216	5,030	6,246
43	**Yellow Pup WRF - 43**	7,400	73	D10T2	1998	1.6	1.0	0.82	1.0	1632	5	320	1,324	1,644
44	**Yellow Pup WRF - 44**	304,868	168	D10T2	989	1.6	1.0	0.82	1.0	808	377	24,128	99,807	123,935
45	**Yellow Pup WRF - 45**	84,822	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	56	3,584	14,825	18,409
46	**Yellow Pup WRF - 46**	7,239	80	D10T2	1849	1.6	1.0	0.82	1.0	1510	5	320	1,324	1,644
47	**Yellow Pup WRF - 47**	11,857	91	D10T2	1659	1.6	1.0	0.82	1.0	1355	9	576	2,383	2,959
48	**Yellow Pup WRF - 48**	9,196	121	D10T2	1304	1.6	1.0	0.82	1.0	1065	9	576	2,383	2,959
49	**Yellow Pup WRF - 49**	526	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
50	**Yellow Pup WRF - 50**	6,222	64	D10T2	2233	1.6	1.0	0.82	1.0	1824	3	192	794	986
51	**Yellow Pup WRF - 51**	26,489	88	D10T2	1706	1.6	1.0	0.82	1.0	1393	19	1,216	5,030	6,246
52	**Yellow Pup WRF - 52**	1,078	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
53	**Yellow Pup WRF - 53**	7,917	64	D10T2	2233	1.6	1.0	0.82	1.0	1824	4	256	1,059	1,315
54	**Yellow Pup WRF - 54**	13,765	65	D10T2	2203	1.6	1.0	0.82	1.0	1799	8	512	2,118	2,630
55	**Yellow Pup WRF - 55**	17,001	63	D10T2	2262	1.6	1.0	0.82	1.0	1847	9	576	2,383	2,959
56	**Yellow Pup WRF - 56**	15,444	59	D10T2	2391	1.6	1.0	0.82	1.0	1953	8	512	2,118	2,630
57	**Yellow Pup WRF - 57**	15,333	62	D10T2	2293	1.6	1.0	0.82	1.0	1873	8	512	2,118	2,630
58	**Yellow Pup WRF - 58**	5,682	61	D10T2	2325	1.6	1.0	0.82	1.0	1899	3	192	794	986
59	**Yellow Pup Expansion/Fish Creek WRF - 1**	10,729	72	D10T2	2021	1.6	1.0	0.82	1.0	1651	6	384	1,588	1,972
60	**Yellow Pup Expansion/Fish Creek WRF - 2**	4,713	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	2	128	529	657
61	**Yellow Pup Expansion/Fish Creek WRF - 3**	29,087	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	19	1,216	5,030	6,246
62	**Yellow Pup Expansion/Fish Creek WRF - 4**	787	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
63	**Yellow Pup Expansion/Fish Creek WRF - 5**	9,327	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	4	256	1,059	1,315
64	**Yellow Pup Expansion/Fish Creek WRF - 6**	12,584	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	6	384	1,588	1,972
65	**Yellow Pup Expansion/Fish Creek WRF - 7**	98,196	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	64	4,096	16,943	21,039
66	**Yellow Pup Expansion/Fish Creek WRF - 8**	115,955	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	76	4,864	20,120	24,984
67	**Yellow Pup Expansion/Fish Creek WRF - 9**	25,661	99	D10T2	1545	1.6	1.0	0.82	1.0	1262	20	1,280	5,295	6,575
68	**Yellow Pup Expansion/Fish Creek WRF - 10**	3,853	63	D10T2	2262	1.6	1.0	0.82	1.0	1847	2	128	529	657
69	**Yellow Pup Expansion/Fish Creek WRF - 11**	2,909	63	D10T2	2262	1.6	1.0	0.82	1.0	1847	2	128	529	657
70	**Yellow Pup Expansion/Fish Creek WRF - 12**	4,452	56	D10T2	2499	1.6	1.0	0.82	1.0	2041	2	128	529	657
71	**Yellow Pup Expansion/Fish Creek WRF - 13**	9,860	63	D10T2	2262	1.6	1.0	0.82	1.0	1847	5	320	1,324	1,644
72	**Barnes Creek WRF - 1**	90,303	287	D10T2	629	1.6	1.0	0.82	1.0	514	176	11,264	46,594	57,858
73	**Barnes Creek WRF - 2**	654,401	415	D10T2	461	1.6	1.0	0.82	1.0	377	1,736	111,104	459,589	570,693
74	**Barnes Creek WRF - 3**	58,254	172	D10T2	969	1.6	1.0	0.82	1.0	791	74	4,736	19,591	24,327
75	**Barnes Creek WRF - 4**	4,928	66	D10T2	2175	1.6	1.0	0.82	1.0	1776	3	192	794	986
76	**Barnes Creek WRF - 5**	23,397	93	D10T2	1629	1.6	1.0	0.82	1.0	1330	18	1,152	4,765	5,917
77	**Barnes Creek WRF - 6**	14,600	97	D10T2	1572	1.6	1.0	0.82	1.0	1284	11	704	2,912	3,616
78	**Barnes Creek WRF - 7**	77,087	171	D10T2	974	1.6	1.0	0.82	1.0	795	97	6,208	25,680	31,888
79	**Barnes Creek WRF - 8**	221,972	317	D10T2	579	1.6	1.0	0.82	1.0	473	469	30,016	124,163	154,179
80	**Barnes Creek WRF - 9**	31,454	99	D10T2	1545	1.6	1.0	0.82	1.0	1262	25	1,600	6,619	8,219
81	**Barnes Creek WRF - 10**	200,633	174	D10T2	960	1.6	1.0	0.82	1.0	784	256	16,384	67,773	84,157
82	**Barnes Creek WRF - 11**	75,850	200	D10T2	853	1.6	1.0	0.82	1.0	697	109	6,976	28,857	35,833
83	**Barnes Creek WRF - 12**	35,188	71	D10T2	2045	1.6	1.0	0.82	1.0	1670	21	1,344	5,560	6,904
84	**Barnes Creek WRF - 13**	64,059	89	D10T2	1690	1.6	1.0	0.82	1.0	1380	46	2,944	12,178	15,122
85	**Barnes Creek WRF - 14**	2,714	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
86	**Barnes Creek WRF - 15**	553	50	D10T2	2750	1.6	1.0	0.82	1.0	2246	1	64	265	329
87	**Barnes Creek WRF - 16**	65,361	83	D10T2	1793	1.6	1.0	0.82	1.0	1464	45	2,880	11,913	14,793
88	**Barnes Creek WRF - 17**	360,069	158	D10T2	1041	1.6	1.0	0.82	1.0	850	424	27,136	112,250	139,386
89	**Barnes Creek WRF - 18**	392,417	158	D10T2	1041	1.6	1.0	0.82	1.0	850	462	29,568	122,310	151,878
90	**Barnes Creek WRF - 19**	19,309	104	D10T2	1482	1.6	1.0	0.82	1.0	1210	16	1,024	4,236	5,260
91	**Barnes Creek WRF - 20**	18,981	81	D10T2	1830	1.6	1.0	0.82	1.0	1495	13	832	3,442	4,274
92	**Barnes Creek WRF - 21**	15,527	70	D10T2	2070	1.6	1.0	0.82	1.0	1691	9	576	2,383	2,959
93	**Barnes Creek WRF - 22**	1,738	55	D10T2	2537	1.6	1.0	0.82	1.0	2072	1	64	265	329
94	**Barnes Creek WRF - 23**	10,105	74	D10T2	1975	1.6	1.0	0.82	1.0	1613	6	384	1,588	1,972
95	**Barnes Creek WRF - 24**	4,290	52	D10T2	2660	1.6	1.0	0.82	1.0	2172	2	128	529	657
96	**Barnes Creek WRF - 25**	15,597	129	D10T2	1236	1.6	1.0	0.82	1.0	1009	15	960	3,971	4,931
97	**Barnes Creek WRF - 26**	13,676	77	D10T2	1910	1.6	1.0	0.82	1.0	1560	9	576	2,383	2,959
98	**Barnes Creek WRF - 27**	17,326	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	11	704	2,912	3,616
99	**Barnes Creek WRF - 28**	49,335	142	D10T2	1139	1.6	1.0	0.82	1.0	930	53	3,392	14,031	17,423
100	**Barnes Creek WRF - 29**	47,244	92	D10T2	1644	1.6	1.0	0.82	1.0	1343	35	2,240	9,266	11,506
101	**Barnes Creek WRF - 30**	12,056	79	D10T2	1869	1.6	1.0	0.82	1.0	1526	8	512	2,118	2,630
102	**Barnes Creek WRF - 31**	61,546	158	D10T2	1041	1.6	1.0	0.82	1.0	850	72	4,608	19,061	23,669
103	**Barnes Creek WRF - 32**	157,093	158	D10T2	1041	1.6	1.0	0.82	1.0	850	185	11,840	48,977	60,817
		6,773,191									13,735	**879,040**	**3,636,204**	**4,515,244**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - Cover 1 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Yellow Pup WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Yellow Pup WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Yellow Pup WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Yellow Pup WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Yellow Pup WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Yellow Pup WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Yellow Pup WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Yellow Pup WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Yellow Pup WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Yellow Pup WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Yellow Pup WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Yellow Pup WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Yellow Pup WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	Yellow Pup WRF - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	Yellow Pup WRF - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	Yellow Pup WRF - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Yellow Pup WRF - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Yellow Pup WRF - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Yellow Pup WRF - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Yellow Pup WRF - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Yellow Pup WRF - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
22	Yellow Pup WRF - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
23	Yellow Pup WRF - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
24	Yellow Pup WRF - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
25	Yellow Pup WRF - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
26	Yellow Pup WRF - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
27	Yellow Pup WRF - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
28	Yellow Pup WRF - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
29	Yellow Pup WRF - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
30	Yellow Pup WRF - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
31	Yellow Pup WRF - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
32	Yellow Pup WRF - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
33	Yellow Pup WRF - 33	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
34	Yellow Pup WRF - 34	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
35	Yellow Pup WRF - 35	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
36	Yellow Pup WRF - 36	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
37	Yellow Pup WRF - 37	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
38	Yellow Pup WRF - 38	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
39	Yellow Pup WRF - 39	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
40	Yellow Pup WRF - 40	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
41	Yellow Pup WRF - 41	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
42	Yellow Pup WRF - 42	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
43	Yellow Pup WRF - 43	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
44	Yellow Pup WRF - 44	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
45	Yellow Pup WRF - 45	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
46	Yellow Pup WRF - 46	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
47	Yellow Pup WRF - 47	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
48	Yellow Pup WRF - 48	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
49	Yellow Pup WRF - 49	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
50	Yellow Pup WRF - 50	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
51	Yellow Pup WRF - 51	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
52	Yellow Pup WRF - 52	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
53	Yellow Pup WRF - 53	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
54	Yellow Pup WRF - 54	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
55	Yellow Pup WRF - 55	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
56	Yellow Pup WRF - 56	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
57	Yellow Pup WRF - 57	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
58	Yellow Pup WRF - 58	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
59	Yellow Pup Expansion/Fish Creek WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
60	Yellow Pup Expansion/Fish Creek WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
61	Yellow Pup Expansion/Fish Creek WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
62	Yellow Pup Expansion/Fish Creek WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
63	Yellow Pup Expansion/Fish Creek WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
64	Yellow Pup Expansion/Fish Creek WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
65	Yellow Pup Expansion/Fish Creek WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
66	Yellow Pup Expansion/Fish Creek WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
67	Yellow Pup Expansion/Fish Creek WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
68	Yellow Pup Expansion/Fish Creek WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
69	Yellow Pup Expansion/Fish Creek WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
70	Yellow Pup Expansion/Fish Creek WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
71	Yellow Pup Expansion/Fish Creek WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
72	Barnes Creek WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
73	Barnes Creek WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
74	Barnes Creek WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
75	Barnes Creek WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
76	Barnes Creek WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
77	Barnes Creek WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
78	Barnes Creek WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
79	Barnes Creek WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
80	Barnes Creek WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
81	Barnes Creek WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
82	Barnes Creek WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
83	Barnes Creek WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
84	Barnes Creek WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
85	Barnes Creek WRF - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
86	Barnes Creek WRF - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
87	Barnes Creek WRF - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
88	Barnes Creek WRF - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
89	Barnes Creek WRF - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
90	Barnes Creek WRF - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
91	Barnes Creek WRF - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
92	Barnes Creek WRF - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
93	Barnes Creek WRF - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
94	Barnes Creek WRF - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
95	Barnes Creek WRF - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
96	Barnes Creek WRF - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
97	Barnes Creek WRF - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
98	Barnes Creek WRF - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
99	Barnes Creek WRF - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
100	Barnes Creek WRF - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
101	Barnes Creek WRF - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
102	Barnes Creek WRF - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
103	Barnes Creek WRF - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	0	0	0	0	0	0	0	0	0	0	0

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - Cover 2 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Yellow Pup WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Yellow Pup WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Yellow Pup WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Yellow Pup WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Yellow Pup WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Yellow Pup WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Yellow Pup WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Yellow Pup WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Yellow Pup WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Yellow Pup WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Yellow Pup WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Yellow Pup WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Yellow Pup WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	Yellow Pup WRF - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	Yellow Pup WRF - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	Yellow Pup WRF - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Yellow Pup WRF - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Yellow Pup WRF - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Yellow Pup WRF - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Yellow Pup WRF - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Yellow Pup WRF - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
22	Yellow Pup WRF - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
23	Yellow Pup WRF - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
24	Yellow Pup WRF - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
25	Yellow Pup WRF - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
26	Yellow Pup WRF - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
27	Yellow Pup WRF - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
28	Yellow Pup WRF - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
29	Yellow Pup WRF - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
30	Yellow Pup WRF - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
31	Yellow Pup WRF - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
32	Yellow Pup WRF - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
33	Yellow Pup WRF - 33	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
34	Yellow Pup WRF - 34	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
35	Yellow Pup WRF - 35	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
36	Yellow Pup WRF - 36	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
37	Yellow Pup WRF - 37	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
38	Yellow Pup WRF - 38	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
39	Yellow Pup WRF - 39	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
40	Yellow Pup WRF - 40	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
41	Yellow Pup WRF - 41	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
42	Yellow Pup WRF - 42	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
43	Yellow Pup WRF - 43	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
44	Yellow Pup WRF - 44	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
45	Yellow Pup WRF - 45	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
46	Yellow Pup WRF - 46	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
47	Yellow Pup WRF - 47	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
48	Yellow Pup WRF - 48	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
49	Yellow Pup WRF - 49	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
50	Yellow Pup WRF - 50	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
51	Yellow Pup WRF - 51	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
52	Yellow Pup WRF - 52	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
53	Yellow Pup WRF - 53	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
54	Yellow Pup WRF - 54	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
55	Yellow Pup WRF - 55	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
56	Yellow Pup WRF - 56	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
57	Yellow Pup WRF - 57	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
58	Yellow Pup WRF - 58	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
59	Yellow Pup Expansion/Fish Creek WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
60	Yellow Pup Expansion/Fish Creek WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
61	Yellow Pup Expansion/Fish Creek WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
62	Yellow Pup Expansion/Fish Creek WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
63	Yellow Pup Expansion/Fish Creek WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
64	Yellow Pup Expansion/Fish Creek WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
65	Yellow Pup Expansion/Fish Creek WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
66	Yellow Pup Expansion/Fish Creek WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
67	Yellow Pup Expansion/Fish Creek WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
68	Yellow Pup Expansion/Fish Creek WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
69	Yellow Pup Expansion/Fish Creek WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
70	Yellow Pup Expansion/Fish Creek WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
71	Yellow Pup Expansion/Fish Creek WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
72	Barnes Creek WRF - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
73	Barnes Creek WRF - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
74	Barnes Creek WRF - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
75	Barnes Creek WRF - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
76	Barnes Creek WRF - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
77	Barnes Creek WRF - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
78	Barnes Creek WRF - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
79	Barnes Creek WRF - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
80	Barnes Creek WRF - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
81	Barnes Creek WRF - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
82	Barnes Creek WRF - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
83	Barnes Creek WRF - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
84	Barnes Creek WRF - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
85	Barnes Creek WRF - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
86	Barnes Creek WRF - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
87	Barnes Creek WRF - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
88	Barnes Creek WRF - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
89	Barnes Creek WRF - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
90	Barnes Creek WRF - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
91	Barnes Creek WRF - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
92	Barnes Creek WRF - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
93	Barnes Creek WRF - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
94	Barnes Creek WRF - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
95	Barnes Creek WRF - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
96	Barnes Creek WRF - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
97	Barnes Creek WRF - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
98	Barnes Creek WRF - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
99	Barnes Creek WRF - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
100	Barnes Creek WRF - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
101	Barnes Creek WRF - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
102	Barnes Creek WRF - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
103	Barnes Creek WRF - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Rock Dumps - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	Yellow Pup WRF - 1	16,310	777G/992K/D9T	12.46	4	1,066	15	5,875	24,988	30,863
2	Yellow Pup WRF - 2	42,641	777G/992K/D9T	12.46	4	1,066	40	15,666	66,635	82,301
3	Yellow Pup WRF - 3	29,234	777G/992K/D9T	12.46	4	1,066	28	10,966	46,645	57,611
4	Yellow Pup WRF - 4	34,477	777G/992K/D9T	12.46	4	1,066	33	12,925	54,974	67,899
5	Yellow Pup WRF - 5	12,100	777G/992K/D9T	12.46	4	1,066	12	4,700	19,991	24,691
6	Yellow Pup WRF - 6	6,388	777G/992K/D9T	12.46	4	1,066	6	2,350	9,995	12,345
7	Yellow Pup WRF - 7	46,480	777G/992K/D9T	12.46	4	1,066	44	17,233	73,299	90,532
8	Yellow Pup WRF - 8	8,696	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
9	Yellow Pup WRF - 9	10,099	777G/992K/D9T	12.46	4	1,066	10	3,917	16,659	20,576
10	Yellow Pup WRF - 10	10,535	777G/992K/D9T	12.46	4	1,066	10	3,917	16,659	20,576
11	Yellow Pup WRF - 11	14,455	777G/992K/D9T	12.46	4	1,066	14	5,483	23,322	28,805
12	Yellow Pup WRF - 12	7,534	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
13	Yellow Pup WRF - 13	4,711	777G/992K/D9T	12.46	4	1,066	4	1,567	6,664	8,231
14	Yellow Pup WRF - 14	8,115	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
15	Yellow Pup WRF - 15	14,601	777G/992K/D9T	12.46	4	1,066	14	5,483	23,322	28,805
16	Yellow Pup WRF - 16	7,066	777G/992K/D9T	12.46	4	1,066	7	2,742	11,661	14,403
17	Yellow Pup WRF - 17	2,533	777G/992K/D9T	12.46	4	1,066	2	783	3,332	4,115
18	Yellow Pup WRF - 18	2,145	777G/992K/D9T	12.46	4	1,066	2	783	3,332	4,115
19	Yellow Pup WRF - 19	7,163	777G/992K/D9T	12.46	4	1,066	7	2,742	11,661	14,403
20	Yellow Pup WRF - 20	10,116	777G/992K/D9T	12.46	4	1,066	10	3,917	16,659	20,576
21	Yellow Pup WRF - 21	3,307	777G/992K/D9T	12.46	4	1,066	4	1,567	6,664	8,231
22	Yellow Pup WRF - 22	8,164	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
23	Yellow Pup WRF - 23	14,020	777G/992K/D9T	12.46	4	1,066	14	5,483	23,322	28,805
24	Yellow Pup WRF - 24	5,663	777G/992K/D9T	12.46	4	1,066	6	2,350	9,995	12,345
25	Yellow Pup WRF - 25	7,050	777G/992K/D9T	12.46	4	1,066	7	2,742	11,661	14,403
26	Yellow Pup WRF - 26	7,535	777G/992K/D9T	12.46	4	1,066	7	2,742	11,661	14,403
27	Yellow Pup WRF - 27	3,355	777G/992K/D9T	12.46	4	1,066	4	1,567	6,664	8,231
28	Yellow Pup WRF - 28	10,228	777G/992K/D9T	12.46	4	1,066	10	3,917	16,659	20,576
29	Yellow Pup WRF - 29	15,213	777G/992K/D9T	12.46	4	1,066	15	5,875	24,988	30,863
30	Yellow Pup WRF - 30	3,210	777G/992K/D9T	12.46	4	1,066	3	1,175	4,998	6,173
31	Yellow Pup WRF - 31	7,099	777G/992K/D9T	12.46	4	1,066	7	2,742	11,661	14,403
32	Yellow Pup WRF - 32	97,042	777G/992K/D9T	12.46	4	1,066	91	35,641	151,595	187,236
33	Yellow Pup WRF - 33	25,668	777G/992K/D9T	12.46	4	1,066	24	9,400	39,981	49,381
34	Yellow Pup WRF - 34	8,261	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
35	Yellow Pup WRF - 35	31,170	777G/992K/D9T	12.46	4	1,066	29	11,358	48,311	59,669
36	Yellow Pup WRF - 36	28,185	777G/992K/D9T	12.46	4	1,066	27	10,575	44,979	55,554
37	Yellow Pup WRF - 37	3,227	777G/992K/D9T	12.46	4	1,066	3	1,175	4,998	6,173
38	Yellow Pup WRF - 38	6,340	777G/992K/D9T	12.46	4	1,066	6	2,350	9,995	12,345
39	Yellow Pup WRF - 39	1,339	777G/992K/D9T	12.46	4	1,066	1	392	1,666	2,058
40	Yellow Pup WRF - 40	2,388	777G/992K/D9T	12.46	4	1,066	2	783	3,332	4,115
41	Yellow Pup WRF - 41	2,597	777G/992K/D9T	12.46	4	1,066	3	1,175	4,998	6,173
42	Yellow Pup WRF - 42	3,807	777G/992K/D9T	12.46	4	1,066	4	1,567	6,664	8,231
43	Yellow Pup WRF - 43	2,388	777G/992K/D9T	12.46	4	1,066	2	783	3,332	4,115
44	Yellow Pup WRF - 44	42,769	777G/992K/D9T	12.46	4	1,066	40	15,666	66,635	82,301
45	Yellow Pup WRF - 45	68,793	777G/992K/D9T	12.46	4	1,066	65	25,458	108,282	133,740
46	Yellow Pup WRF - 46	4,340	777G/992K/D9T	12.46	4	1,066	5	1,958	8,329	10,287
47	Yellow Pup WRF - 47	4,775	777G/992K/D9T	12.46	4	1,066	5	1,958	8,329	10,287
48	Yellow Pup WRF - 48	2,259	777G/992K/D9T	12.46	4	1,066	2	783	3,332	4,115
49	Yellow Pup WRF - 49	2,194	777G/992K/D9T	12.46	4	1,066	3	1,175	4,998	6,173
50	Yellow Pup WRF - 50	4,065	777G/992K/D9T	12.46	4	1,066	4	1,567	6,664	8,231
51	Yellow Pup WRF - 51	9,357	777G/992K/D9T	12.46	4	1,066	9	3,525	14,993	18,518
52	Yellow Pup WRF - 52	2,516	777G/992K/D9T	12.46	4	1,066	3	1,175	4,998	6,173
53	Yellow Pup WRF - 53	4,727	777G/992K/D9T	12.46	4	1,066	5	1,958	8,329	10,287
54	Yellow Pup WRF - 54	8,374	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
55	Yellow Pup WRF - 55	8,696	777G/992K/D9T	12.46	4	1,066	9	3,525	14,993	18,518
56	Yellow Pup WRF - 56	10,874	777G/992K/D9T	12.46	4	1,066	11	4,308	18,325	22,633
57	Yellow Pup WRF - 57	8,906	777G/992K/D9T	12.46	4	1,066	8	3,133	13,327	16,460
58	Yellow Pup WRF - 58	11,793	777G/992K/D9T	12.46	4	1,066	11	4,308	18,325	22,633
59	Yellow Pup Expansion/Fish Creek WRF - 1	4,114	777G/992K/D9T	5.74	2	1,155	4	1,043	4,808	5,851
60	Yellow Pup Expansion/Fish Creek WRF - 2	8,341	777G/992K/D9T	5.74	2	1,155	7	1,826	8,413	10,239
61	Yellow Pup Expansion/Fish Creek WRF - 3	8,647	777G/992K/D9T	5.74	2	1,155	7	1,826	8,413	10,239
62	Yellow Pup Expansion/Fish Creek WRF - 4	2,436	777G/992K/D9T	5.74	2	1,155	2	522	2,404	2,926
63	Yellow Pup Expansion/Fish Creek WRF - 5	11,180	777G/992K/D9T	5.74	2	1,155	9	2,347	10,817	13,164
64	Yellow Pup Expansion/Fish Creek WRF - 6	30,428	777G/992K/D9T	5.74	2	1,155	27	7,042	32,452	39,494
65	Yellow Pup Expansion/Fish Creek WRF - 7	45,350	777G/992K/D9T	5.74	2	1,155	39	10,171	46,875	57,046
66	Yellow Pup Expansion/Fish Creek WRF - 8	124,856	777G/992K/D9T	5.74	2	1,155	108	28,166	129,807	157,973
67	Yellow Pup Expansion/Fish Creek WRF - 9	21,312	777G/992K/D9T	5.74	2	1,155	19	4,955	22,836	27,791
68	Yellow Pup Expansion/Fish Creek WRF - 10	4,663	777G/992K/D9T	5.74	2	1,155	4	1,043	4,808	5,851
69	Yellow Pup Expansion/Fish Creek WRF - 11	10,761	777G/992K/D9T	5.74	2	1,155	9	2,347	10,817	13,164
70	Yellow Pup Expansion/Fish Creek WRF - 12	5,292	777G/992K/D9T	5.74	2	1,155	5	1,304	6,010	7,314
71	Yellow Pup Expansion/Fish Creek WRF - 13	34,299	777G/992K/D9T	5.74	2	1,155	30	7,824	36,058	43,882
72	Barnes Creek WRF - 1	13,165	777G/992K/D9T	11.18	3	889	15	4,893	21,509	26,402
73	Barnes Creek WRF - 2	44,996	777G/992K/D9T	11.18	3	889	51	16,638	73,129	89,767
74	Barnes Creek WRF - 3	11,939	777G/992K/D9T	11.18	3	889	14	4,567	20,075	24,642
75	Barnes Creek WRF - 4	3,565	777G/992K/D9T	11.18	3	889	4	1,305	5,736	7,041
76	Barnes Creek WRF - 5	13,052	777G/992K/D9T	11.18	3	889	14	4,567	20,075	24,642
77	Barnes Creek WRF - 6	23,474	777G/992K/D9T	11.18	3	889	27	8,808	38,715	47,523
78	Barnes Creek WRF - 7	26,733	777G/992K/D9T	11.18	3	889	30	9,787	43,017	52,804
79	Barnes Creek WRF - 8	18,489	777G/992K/D9T	11.18	3	889	21	6,851	30,112	36,963
80	Barnes Creek WRF - 9	16,924	777G/992K/D9T	11.18	3	889	19	6,198	27,244	33,442
81	Barnes Creek WRF - 10	27,152	777G/992K/D9T	11.18	3	889	31	10,113	44,451	54,564
82	Barnes Creek WRF - 11	9,664	777G/992K/D9T	11.18	3	889	11	3,589	15,773	19,362
83	Barnes Creek WRF - 12	25,539	777G/992K/D9T	11.18	3	889	29	9,461	41,583	51,044
84	Barnes Creek WRF - 13	18,634	777G/992K/D9T	11.18	3	889	21	6,851	30,112	36,963
85	Barnes Creek WRF - 14	5,470	777G/992K/D9T	11.18	3	889	7	2,284	10,037	12,321
86	Barnes Creek WRF - 15	16,730	777G/992K/D9T	11.18	3	889	19	6,198	27,244	33,442
87	Barnes Creek WRF - 16	21,216	777G/992K/D9T	11.18	3	889	24	7,830	34,414	42,244
88	Barnes Creek WRF - 17	53,547	777G/992K/D9T	9.96	3	998	54	17,616	77,431	95,047
89	Barnes Creek WRF - 18	103,527	777G/992K/D9T	9.96	3	998	103	33,602	147,692	181,294
90	Barnes Creek WRF - 19	9,196	777G/992K/D9T	9.96	3	998	9	2,936	12,905	15,841
91	Barnes Creek WRF - 20	6,002	777G/992K/D9T	9.96	3	998	6	1,957	8,603	10,560
92	Barnes Creek WRF - 21	10,083	777G/992K/D9T	9.96	3	998	10	3,262	14,339	17,601
93	Barnes Creek WRF - 22	17,053	777G/992K/D9T	9.96	3	998	17	5,546	24,376	29,922
94	Barnes Creek WRF - 23	5,082	777G/992K/D9T	9.96	3	998	5	1,631	7,170	8,801
95	Barnes Creek WRF - 24	7,099	777G/992K/D9T	9.96	3	998	7	2,284	10,037	12,321
96	Barnes Creek WRF - 25	4,694	777G/992K/D9T	9.96	3	998	5	1,631	7,170	8,801
97	Barnes Creek WRF - 26	4,517	777G/992K/D9T	9.96	3	998	5	1,631	7,170	8,801
98	Barnes Creek WRF - 27	5,163	777G/992K/D9T	9.96	3	998	5	1,631	7,170	8,801
99	Barnes Creek WRF - 28	9,776	777G/992K/D9T	9.96	3	998	10	3,262	14,339	17,601
100	Barnes Creek WRF - 29	35,913	777G/992K/D9T	9.96	3	998	36	11,744	51,620	63,364
101	Barnes Creek WRF - 30	10,035	777G/992K/D9T	9.96	3	998	10	3,262	14,339	17,601
102	Barnes Creek WRF - 31	9,148	777G/992K/D9T	9.96	3	998	9	2,936	12,905	15,841
103	Barnes Creek WRF - 32	49,174	777G/992K/D9T	9.96	3	998	49	15,985	70,261	86,246
		1,735,523					1,702	**586,975**	**2,553,014**	**3,139,989**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Waste Rock Dumps - Scarify/Revegetation Costs

										Scarifying Costs			Regegetation Costs			
	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	Yellow Pup WRF - 1	6.11	4.00	10.11	133	2,000	D10T2	4	3	448	1,853	2,301	0	1,909	2,469	4,378
2	Yellow Pup WRF - 2	6.43	20.00	26.43	133	2,100	D10T2	4	13	1,088	4,501	5,589	0	4,991	6,453	11,444
3	Yellow Pup WRF - 3	13.12	5.00	18.12	316	1,800	D10T2	8	3	704	2,912	3,616	0	3,422	4,424	7,846
4	Yellow Pup WRF - 4	4.37	17.00	21.37	158	1,200	D10T2	3	11	896	3,706	4,602	0	4,036	5,217	9,253
5	Yellow Pup WRF - 5	6.50	1.00	7.50	411	600	D10T2	4	1	320	1,324	1,644	0	1,417	1,831	3,248
6	Yellow Pup WRF - 6	2.96	1.00	3.96	253	500	D10T2	2	1	192	794	986	0	748	967	1,715
7	Yellow Pup WRF - 7	22.81	6.00	28.81	285	3,400	D10T2	15	4	1,216	5,030	6,246	0	5,441	7,034	12,475
8	Yellow Pup WRF - 8	3.39	2.00	5.39	186	700	D10T2	2	1	192	794	986	0	1,018	1,316	2,334
9	Yellow Pup WRF - 9	5.26	1.00	6.26	191	1,100	D10T2	3	1	256	1,059	1,315	0	1,182	1,528	2,710
10	Yellow Pup WRF - 10	3.53	3.00	6.53	109	1,400	D10T2	2	2	256	1,059	1,315	0	1,234	1,594	2,828
11	Yellow Pup WRF - 11	4.96	4.00	8.96	152	1,400	D10T2	3	3	384	1,588	1,972	0	1,692	2,188	3,880
12	Yellow Pup WRF - 12	3.67	1.00	4.67	316	500	D10T2	2	1	192	794	986	0	882	1,140	2,022
13	Yellow Pup WRF - 13	2.92	0.00	2.92	245	500	D10T2	2	0	128	529	657	0	551	713	1,264
14	Yellow Pup WRF - 14	5.03	0.00	5.03	604	300	D10T2	3	0	192	794	986	0	950	1,229	2,179
15	Yellow Pup WRF - 15	9.05	0.00	9.05	941	400	D10T2	6	0	384	1,588	1,972	0	1,709	2,210	3,919
16	Yellow Pup WRF - 16	1.38	3.00	4.38	181	300	D10T2	1	2	192	794	986	0	828	1,069	1,897
17	Yellow Pup WRF - 17	1.57	0.00	1.57	139	400	D10T2	1	0	64	265	329	0	297	384	681
18	Yellow Pup WRF - 18	0.33	1.00	1.33	57	200	D10T2	0	1	64	265	329	0	251	325	576
19	Yellow Pup WRF - 19	0.44	4.00	4.44	57	300	D10T2	0	3	192	794	986	0	838	1,084	1,922
20	Yellow Pup WRF - 20	3.27	3.00	6.27	152	900	D10T2	2	2	256	1,059	1,315	0	1,185	1,531	2,716
21	Yellow Pup WRF - 21	1.05	1.00	2.05	114	400	D10T2	1	1	128	529	657	0	387	501	888
22	Yellow Pup WRF - 22	3.06	2.00	5.06	134	900	D10T2	2	1	192	794	986	0	956	1,235	2,191
23	Yellow Pup WRF - 23	3.69	5.00	8.69	144	1,100	D10T2	2	3	320	1,324	1,644	0	1,641	2,122	3,763
24	Yellow Pup WRF - 24	0.51	3.00	3.51	64	300	D10T2	0	2	128	529	657	0	663	857	1,520
25	Yellow Pup WRF - 25	1.37	3.00	4.37	117	500	D10T2	1	2	192	794	986	0	826	1,067	1,893
26	Yellow Pup WRF - 26	2.67	2.00	4.67	129	900	D10T2	2	1	192	794	986	0	882	1,140	2,022
27	Yellow Pup WRF - 27	1.08	1.00	2.08	161	200	D10T2	1	1	128	529	657	0	393	508	901
28	Yellow Pup WRF - 28	2.34	4.00	6.34	98	1,000	D10T2	2	3	320	1,324	1,644	0	1,197	1,548	2,745
29	Yellow Pup WRF - 29	8.43	1.00	9.43	269	1,300	D10T2	6	1	448	1,853	2,301	0	1,781	2,303	4,084
30	Yellow Pup WRF - 30	0.99	1.00	1.99	122	300	D10T2	1	1	128	529	657	0	376	486	862
31	Yellow Pup WRF - 31	2.40	2.00	4.40	133	700	D10T2	2	1	192	794	986	0	831	1,074	1,905
32	Yellow Pup WRF - 32	58.15	2.00	60.15	1,287	1,900	D10T2	37	1	2,432	10,060	12,492	0	11,360	14,685	26,045
33	Yellow Pup WRF - 33	15.91	0.00	15.91	905	700	D10T2	10	0	640	2,647	3,287	0	3,005	3,885	6,890
34	Yellow Pup WRF - 34	3.12	2.00	5.12	167	800	D10T2	2	1	192	794	986	0	967	1,250	2,217
35	Yellow Pup WRF - 35	17.32	2.00	19.32	316	2,300	D10T2	11	1	768	3,177	3,945	0	3,649	4,717	8,366
36	Yellow Pup WRF - 36	16.47	1.00	17.47	316	2,200	D10T2	10	1	704	2,912	3,616	0	3,300	4,265	7,565
37	Yellow Pup WRF - 37	2.00	0.00	2.00	191	400	D10T2	1	0	64	265	329	0	378	488	866
38	Yellow Pup WRF - 38	3.93	0.00	3.93	309	500	D10T2	3	0	192	794	986	0	742	960	1,702
39	Yellow Pup WRF - 39	0.83	0.00	0.83	117	300	D10T2	1	0	64	265	329	0	189	203	392
40	Yellow Pup WRF - 40	1.48	0.00	1.48	130	400	D10T2	1	0	64	265	329	0	280	361	641
41	Yellow Pup WRF - 41	0.61	1.00	1.61	120	200	D10T2	0	1	64	265	329	0	304	393	697
42	Yellow Pup WRF - 42	2.36	0.00	2.36	268	300	D10T2	2	0	128	529	657	0	446	576	1,022
43	Yellow Pup WRF - 43	1.48	0.00	1.48	145	400	D10T2	1	0	64	265	329	0	280	361	641
44	Yellow Pup WRF - 44	26.51	0.00	26.51	335	3,400	D10T2	17	0	1,088	4,501	5,589	0	5,007	6,473	11,480
45	Yellow Pup WRF - 45	15.64	27.00	42.64	158	4,300	D10T2	10	17	1,728	7,148	8,876	0	8,053	10,410	18,463
46	Yellow Pup WRF - 46	1.69	1.00	2.69	152	400	D10T2	1	1	128	529	657	0	508	657	1,165
47	Yellow Pup WRF - 47	1.96	1.00	2.96	186	400	D10T2	1	1	128	529	657	0	559	723	1,282
48	Yellow Pup WRF - 48	1.40	0.00	1.40	226	200	D10T2	1	0	64	265	329	0	264	342	606
49	Yellow Pup WRF - 49	0.36	1.00	1.36	58	200	D10T2	0	1	64	265	329	0	257	332	589
50	Yellow Pup WRF - 50	1.52	1.00	2.52	126	500	D10T2	1	1	128	529	657	0	476	615	1,091
51	Yellow Pup WRF - 51	4.80	1.00	5.80	175	1,100	D10T2	3	1	256	1,059	1,315	0	1,096	1,416	2,512
52	Yellow Pup WRF - 52	0.56	1.00	1.56	63	300	D10T2	0	1	64	265	329	0	295	381	676
53	Yellow Pup WRF - 53	1.93	1.00	2.93	126	600	D10T2	1	1	128	529	657	0	554	716	1,270
54	Yellow Pup WRF - 54	3.19	2.00	5.19	133	1,000	D10T2	2	1	192	794	986	0	980	1,267	2,247
55	Yellow Pup WRF - 55	4.39	1.00	5.39	127	1,500	D10T2	3	1	256	1,059	1,315	0	1,018	1,316	2,334
56	Yellow Pup WRF - 56	3.74	3.00	6.74	116	1,400	D10T2	2	2	256	1,059	1,315	0	1,273	1,645	2,918
57	Yellow Pup WRF - 57	3.52	2.00	5.52	123	1,200	D10T2	2	1	192	794	986	0	1,043	1,347	2,390
58	Yellow Pup WRF - 58	1.31	6.00	7.31	120	400	D10T2	1	4	320	1,324	1,644	0	1,380	1,785	3,165
59	Yellow Pup Expansion/Fish Creek WRF - 1	2.55	0.00	2.55	139	700	D10T2	2	0	128	529	657	0	482	623	1,105
60	Yellow Pup Expansion/Fish Creek WRF - 2	2.17	3.00	5.17	63	1,400	D10T2	1	2	192	794	986	0	977	1,262	2,239
61	Yellow Pup Expansion/Fish Creek WRF - 3	5.36	0.00	5.36	158	1,400	D10T2	3	0	192	794	986	0	1,012	1,309	2,321
62	Yellow Pup Expansion/Fish Creek WRF - 4	0.51	1.00	1.51	44	500	D10T2	0	1	64	265	329	0	285	369	654
63	Yellow Pup Expansion/Fish Creek WRF - 5	3.93	3.00	6.93	70	2,400	D10T2	2	2	256	1,059	1,315	0	1,309	1,692	3,001
64	Yellow Pup Expansion/Fish Creek WRF - 6	4.86	14.00	18.86	76	2,700	D10T2	3	9	768	3,177	3,945	0	3,562	4,605	8,167
65	Yellow Pup Expansion/Fish Creek WRF - 7	18.11	10.00	28.11	158	4,900	D10T2	11	7	1,152	4,765	5,917	0	5,309	6,863	12,172
66	Yellow Pup Expansion/Fish Creek WRF - 8	21.39	56.00	77.39	158	5,800	D10T2	13	35	3,072	12,708	15,780	0	14,616	18,895	33,511
67	Yellow Pup Expansion/Fish Creek WRF - 9	4.21	9.00	13.21	197	900	D10T2	3	6	576	2,383	2,959	0	2,495	3,225	5,720
68	Yellow Pup Expansion/Fish Creek WRF - 10	0.89	2.00	2.89	126	300	D10T2	1	1	128	529	657	0	546	706	1,252
69	Yellow Pup Expansion/Fish Creek WRF - 11	0.67	6.00	6.67	126	200	D10T2	0	4	256	1,059	1,315	0	1,260	1,629	2,889
70	Yellow Pup Expansion/Fish Creek WRF - 12	1.28	2.00	3.28	111	500	D10T2	1	1	128	529	657	0	620	800	1,420
71	Yellow Pup Expansion/Fish Creek WRF - 13	2.26	19.00	21.26	126	700	D10T2	2	12	896	3,706	4,602	0	4,015	5,191	9,206
72	Barnes Creek WRF - 1	6.16	2.00	8.16	642	400	D10T2	4	1	320	1,324	1,644	0	1,541	1,992	3,533
73	Barnes Creek WRF - 2	27.89	0.00	27.89	898	1,300	D10T2	18	0	1,152	4,765	5,917	0	5,267	6,810	12,077
74	Barnes Creek WRF - 3	5.40	2.00	7.40	358	600	D10T2	4	1	320	1,324	1,644	0	1,398	1,806	3,204
75	Barnes Creek WRF - 4	1.21	1.00	2.21	131	400	D10T2	1	1	128	529	657	0	418	540	958
76	Barnes Creek WRF - 5	4.09	4.00	8.09	185	900	D10T2	3	3	384	1,588	1,972	0	1,527	1,976	3,503
77	Barnes Creek WRF - 6	2.55	12.00	14.55	185	600	D10T2	2	8	640	2,647	3,287	0	2,748	3,553	6,301
78	Barnes Creek WRF - 7	7.57	9.00	16.57	346	900	D10T2	5	6	704	2,912	3,616	0	3,130	4,046	7,176
79	Barnes Creek WRF - 8	11.46	0.00	11.46	635	700	D10T2	7	0	448	1,853	2,301	0	2,164	2,798	4,962
80	Barnes Creek WRF - 9	5.49	5.00	10.49	193	1,200	D10T2	4	3	448	1,853	2,301	0	1,981	2,562	4,543
81	Barnes Creek WRF - 10	16.83	0.00	16.83	348	2,100	D10T2	11	0	704	2,912	3,616	0	3,179	4,109	7,288
82	Barnes Creek WRF - 11	5.99	0.00	5.99	392	600	D10T2	4	0	256	1,059	1,315	0	1,131	1,463	2,594
83	Barnes Creek WRF - 12	7.83	8.00	15.83	139	2,400	D10T2	5	5	640	2,647	3,287	0	2,990	3,865	6,855
84	Barnes Creek WRF - 13	10.55	1.00	11.55	177	2,500	D10T2	7	0	448	1,853	2,301	0	2,182	2,820	5,002
85	Barnes Creek WRF - 14	1.39	2.00	3.39	57	1,000	D10T2	1	1	128	529	657	0	641	828	1,469
86	Barnes Creek WRF - 15	0.37	10.00	10.37	41	300	D10T2	0	7	448	1,853	2,301	0	1,959	2,532	4,491
87	Barnes Creek WRF - 16	11.15	2.00	13.15	164	2,900	D10T2	7	1	512	2,118	2,630	0	2,484	3,211	5,695
88	Barnes Creek WRF - 17	33.19	0.00	33.19	316	4,500	D10T2	21	0	1,344	5,560	6,904	0	6,268	8,104	14,372
89	Barnes Creek WRF - 18	36.17	28.00	64.17	316	4,900	D10T2	23	18	2,624	10,854	13,478	0	12,119	15,667	27,786
90	Barnes Creek WRF - 19	2.70	3.00	5.70	209	500	D10T2	2	2	256	1,059	1,315	0	1,077	1,391	2,468
91	Barnes Creek WRF - 20	3.72	0.00	3.72	158	1,000	D10T2	2	0	128	529	657	0	703	908	1,611
92	Barnes Creek WRF - 21	3.25	3.00	6.25	139	1,000	D10T2	2	2	256	1,059	1,315	0	1,181	1,526	2,707
93	Barnes Creek WRF - 22	0.57	10.00	10.57	108	200	D10T2	0	7	448	1,853	2,301	0	1,997	2,581	4,578
94	Barnes Creek WRF - 23	2.15	1.00	3.15	145	600	D10T2	1	1	128	529	657	0	595	769	1,364
95	Barnes Creek WRF - 24	1.40	3.00	4.40	105	500	D10T2	1	2	192	794	986	0	831	1,074	1,905
96	Barnes Creek WRF - 25	1.91	1.00	2.91	253	300	D10T2	1	1	128	529	657	0	550	711	1,261
97	Barnes Creek WRF - 26	2.80	0.00	2.80	152	800	D10T2	2	0	128	529	657	0	529	684	1,213
98	Barnes Creek WRF - 27	3.20	0.00	3.20	158	800	D10T2	2	0	128	529	657	0	604	781	1,385
99	Barnes Creek WRF - 28	5.06	1.00	6.06	285	700	D10T2	3	1	256	1,059	1,315	0	1,145	1,479	2,624
100	Barnes Creek WRF - 29	7.26	15.00	22.26	180	1,700	D10T2	5	10	960	3,971	4,931	0	4,204	5,434	9,638
101	Barnes Creek WRF - 30	2.22	4.00	6.22	158	600	D10T2	1	3	256	1,059	1,315	0	1,174	1,519	2,693
102	Barnes Creek WRF - 31	5.67	0.00	5.67	316	700	D10T2	4	0	256	1,059	1,315	0	1,071	1,385	2,456
103	Barnes Creek WRF - 32	14.48	16.00	30.48	316	1,900	D10T2	9	10	1,216	5,030	6,246	0	5,757	7,441	13,198
		650.74	425.00	1,075.74				415	281	**44,544**	**184,247**	**228,791**	**0**	**203,210**	**262,650**	**465,860**

Notes:

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Tailings - User Input

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

	Facility Description								Physical - MANDATORY									
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Embankment Height ft	Final (Regraded) Embankment Footprint acres	Mid-Embankment Length ft	Average Long Dimension (ripping distance) ft	Slope Regrade Volume (1) (if calculated elsewhere) cy	Final Tailings Surface Area acres	Surface Regrade Volume (calculated elsewhere) cy
1	TSF-FA A-1			Tailings	Closure	Fort Knox		FA	9.0	1.8	1.8	310	69.80	3,211	3,200		588.56	
2	TSF-FA A-2a			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	7	10.00	2,344	2,300		204.98	
3	TSF-FA A-2b			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	25	8.82	2,332	2,300			
4	TSF-FA A-2c			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	25	11.77	1,967	1,900			
5	TSF-FA A-2d			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	25	66.21	1,715	1,700			
6	TSF-FA A-2e			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	25	18.32	3,409	3,400			
7	TSF-FA A-2f			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	17	18.02	1,174	1,100			
8	TSF-FA A-2g			Tailings	Closure	Fort Knox		FA	0.0	1.4	6.0	13	14.16	2,805	2,800			

		Cover 1				Cover 2				Growth Media		
	Description (required)	Embankment Cover Thickness in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Embankment Cover Thickness in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Embankment Growth Media Thickness in	Tailings Surface Growth Media Thickness in	Haul Distance to Placement Location ft
1	TSF-FA A-1		24.0	6,630	1.0						12.0	6,587
2	TSF-FA A-2a		24.0	6,630	1.0					12.0	12.0	7,626
3	TSF-FA A-2b		24.0	6,630	1.0					12.0	12.0	7,626
4	TSF-FA A-2c		24.0	6,630	1.0					12.0	12.0	7,626
5	TSF-FA A-2d		24.0	6,630	1.0					12.0	12.0	7,626
6	TSF-FA A-2e		24.0	6,630	1.0					12.0	12.0	7,626
7	TSF-FA A-2f		24.0	6,630	1.0					12.0	12.0	7,626
8	TSF-FA A-2g		24.0	6,630	1.0					12.0	12.0	7,626

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Cover: 2 ft from Yellow Pup.
Growth media: 1 ft.
See User 13 for haul info.

Tailings - User Input (Cont.)

	Facility Description	Cover 1 - Crushing & Screening										Cover 2 - Crushing & Screening									
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Cover Borrow % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Cover Borrow % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	TSF-FA A-1																				
2	TSF-FA A-2a																				
3	TSF-FA A-2b																				
4	TSF-FA A-2c																				
5	TSF-FA A-2d																				
6	TSF-FA A-2e																				
7	TSF-FA A-2f																				
8	TSF-FA A-2g																				

Notes:
1. Input distance to crusher if material to be crushed
2. if distance from borrow <820 ft (250 m) must select loader fleet

Tailings - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

		Grading				Cover 1			
	Description (required)	Dozing Material Condition (select)	Embankment Material Type (select)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	TSF-FA A-1	1	Granite - broken	Large	No	Granite - broken	Large Truck		
2	TSF-FA A-2a	1	Granite - broken	Large	No	Granite - broken	Large Truck		
3	TSF-FA A-2b	1	Granite - broken	Large	No	Granite - broken	Large Truck		
4	TSF-FA A-2c	1	Granite - broken	Large	No	Granite - broken	Large Truck		
5	TSF-FA A-2d	1	Granite - broken	Large	No	Granite - broken	Large Truck		
6	TSF-FA A-2e	1	Granite - broken	Large	No	Granite - broken	Large Truck		
7	TSF-FA A-2f	1	Granite - broken	Large	No	Granite - broken	Large Truck		
8	TSF-FA A-2g	1	Granite - broken	Large	No	Granite - broken	Large Truck		

		Cover 2				Growth Media			
	Description (required)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	TSF-FA A-1	Granite - broken	Large Truck			Topsoil	Large Truck		
2	TSF-FA A-2a	Granite - broken	Large Truck			Topsoil	Large Truck		
3	TSF-FA A-2b	Granite - broken	Large Truck			Topsoil	Large Truck		
4	TSF-FA A-2c	Granite - broken	Large Truck			Topsoil	Large Truck		
5	TSF-FA A-2d	Granite - broken	Large Truck			Topsoil	Large Truck		
6	TSF-FA A-2e	Granite - broken	Large Truck			Topsoil	Large Truck		
7	TSF-FA A-2f	Granite - broken	Large Truck			Topsoil	Large Truck		
8	TSF-FA A-2g	Granite - broken	Large Truck			Topsoil	Large Truck		

		Revegetation								
	Description (required)	Seed Mix Embankment Slope (select)	Seed Mix Tailings Surface (select)	Mulch Embankment Slopes (select)	Mulch Tailings Surface (select)	Fertilizer Embankment Slopes (select)	Fertilizer Tailing Surface (select)	Embankment Slope Scarify/ Rip? (select)	Tailings Surface Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	TSF-FA A-1	None	User Mix 5 (fron	None	None	Chemical	Chemical	No	No	Large Dozer
2	TSF-FA A-2a	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
3	TSF-FA A-2b	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
4	TSF-FA A-2c	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
5	TSF-FA A-2d	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
6	TSF-FA A-2e	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
7	TSF-FA A-2f	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer
8	TSF-FA A-2g	User Mix 5 (fron	User Mix 5 (fron	None	None	Chemical	Chemical	Yes	No	Large Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Tailings - Assumptions & Calculations

Surface Area Calculations

Top Surface Area provided by user

Grading Calculations

Grading assumed on impoundment surface only, not embankment
Average push distance assumed to be 2/3 of the 600 feet maximum from Catepillar Handbook or 400 feet
Material assumed to be loose stockile (1.2 productivity factor)
Dozing density correction based on dry sand = 2300/2400 = 0.96
Slope assumed to be 0 to 5% (1.0 productivity factor)

Ripping/Scarifying/Revegetation Calculation

Minimum 1 hr ripping/scarifying per area
Minimum 1 acre revegetation crew time per area

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Tailings - Embankment Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material Condition	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost	Total Equipment Cost	Total Regrading Cost
1	TSF-FA A-1	0									0	0	0	0
2	TSF-FA A-2a	2,431	50	D10T2	2,750	1.90	1.00	0.82	1.00	2,667	1	64	265	329
3	TSF-FA A-2b	31,007	64	D10T2	2,233	1.90	1.00	0.82	1.00	2,166	14	896	3,706	4,602
4	TSF-FA A-2c	26,154	64	D10T2	2,233	1.90	1.00	0.82	1.00	2,166	12	768	3,177	3,945
5	TSF-FA A-2d	22,803	64	D10T2	2,233	1.90	1.00	0.82	1.00	2,166	11	704	2,912	3,616
6	TSF-FA A-2e	45,327	64	D10T2	2,233	1.90	1.00	0.82	1.00	2,166	21	1,344	5,560	6,904
7	TSF-FA A-2f	7,218	50	D10T2	2,750	1.90	1.00	0.82	1.00	2,667	3	192	794	986
8	TSF-FA A-2g	10,077	50	D10T2	2,750	1.90	1.00	0.82	1.00	2,667	4	256	1,059	1,315
		145,017									66	**4,224**	**17,473**	**21,697**

Tailings - Surface Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Density Correction	Dozing Material	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost	Total Equipment Cost	Total Regrading Cost
1	TSF-FA A-1										0	0	0	0
2	TSF-FA A-2a										0	0	0	0
3	TSF-FA A-2b										0	0	0	0
4	TSF-FA A-2c										0	0	0	0
5	TSF-FA A-2d										0	0	0	0
6	TSF-FA A-2e										0	0	0	0
7	TSF-FA A-2f										0	0	0	0
8	TSF-FA A-2g										0	0	0	0
		0									0	**0**	**0**	**0**

Tailings - Cover 1 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	TSF-FA A-1	0	1,991,595					0	777G/992K/D9T	11.62	4	1,142	1,744	0	0	0	0	0	0	0	683,055	2,905,295	3,588,350	3,588,350
2	TSF-FA A-2a	0	686,377					0	777G/992K/D9T	11.62	4	1,142	601	0	0	0	0	0	0	0	235,388	1,001,194	1,236,582	1,236,582
3	TSF-FA A-2b	0	2,549					0	777G/992K/D9T	11.62	4	1,142	2	0	0	0	0	0	0	0	783	3,332	4,115	4,115
4	TSF-FA A-2c	0	16,133					0	777G/992K/D9T	11.62	4	1,142	14	0	0	0	0	0	0	0	5,483	23,322	28,805	28,805
5	TSF-FA A-2d	0	194,568					0	777G/992K/D9T	11.62	4	1,142	170	0	0	0	0	0	0	0	66,582	283,200	349,782	349,782
6	TSF-FA A-2e	0	21,231					0	777G/992K/D9T	11.62	4	1,142	19	0	0	0	0	0	0	0	7,442	31,652	39,094	39,094
7	TSF-FA A-2f	0	49,271					0	777G/992K/D9T	11.62	4	1,142	43	0	0	0	0	0	0	0	16,841	71,633	88,474	88,474
8	TSF-FA A-2g	0	29,492					0	777G/992K/D9T	11.62	4	1,142	26	0	0	0	0	0	0	0	10,183	43,313	53,496	53,496
		0	2,991,216					0					2,619	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,025,757**	**4,362,941**	**5,388,698**	**5,388,698**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Tailings - Cover 2 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	TSF-FA A-1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	TSF-FA A-2a	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	TSF-FA A-2b	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	TSF-FA A-2c	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	TSF-FA A-2d	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	TSF-FA A-2e	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	TSF-FA A-2f	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	TSF-FA A-2g	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Tailings - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	TSF-FA A-1	995,798	777G/992K/D9T	12.15	4	1,092	912	357,194	1,519,283	1,876,477
2	TSF-FA A-2a	346,915	777G/992K/D9T	12.66	4	1,049	331	129,639	551,406	681,045
3	TSF-FA A-2b	14,408	777G/992K/D9T	12.66	4	1,049	14	5,483	23,322	28,805
4	TSF-FA A-2c	19,134	777G/992K/D9T	12.66	4	1,049	19	7,442	31,652	39,094
5	TSF-FA A-2d	106,932	777G/992K/D9T	12.66	4	1,049	102	39,949	169,920	209,869
6	TSF-FA A-2e	29,815	777G/992K/D9T	12.66	4	1,049	28	10,966	46,645	57,611
7	TSF-FA A-2f	29,121	777G/992K/D9T	12.66	4	1,049	27	10,575	44,979	55,554
8	TSF-FA A-2g	22,958	777G/992K/D9T	12.66	4	1,049	22	8,617	36,649	45,266
		1,565,081					1,455	**569,865**	**2,423,856**	**2,993,721**

Tailings - Scarify/Revegetation Costs

											Scarifying Costs			Regegetation Costs			
	Description (required)	Embankment Slope Area acres	Embankment Flat Area acres	Total Embankment Surface Area acres	Total Tailings Surface Area	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	TSF-FA A-1	47.03	28.67	75.70	588.56	638			0	0	0	0	0	0	0	157,746	157,746
2	TSF-FA A-2a	2.31	7.74	10.05	204.98	43	2,300	D10T2	1	0	0	0	0	0	0	52,497	52,497
3	TSF-FA A-2b	8.14	0.79	8.93	0.00	152	2,300	D10T2	5	0	0	0	0	0	0	2,180	2,180
4	TSF-FA A-2c	6.86	5.00	11.86	0.00	152	1,900	D10T2	5	0	0	0	0	0	0	2,896	2,896
5	TSF-FA A-2d	5.98	60.30	66.28	0.00	152	1,700	D10T2	4	0	0	0	0	0	0	16,182	16,182
6	TSF-FA A-2e	11.90	6.58	18.48	0.00	152	3,400	D10T2	8	0	0	0	0	0	0	4,511	4,511
7	TSF-FA A-2f	2.78	15.27	18.05	0.00	103	1,100	D10T2	2	0	0	0	0	0	0	4,408	4,408
8	TSF-FA A-2g	5.09	9.14	14.23	0.00	79	2,800	D10T2	3	0	0	0	0	0	0	3,474	3,474
		90.09	133.49	223.58	793.54				28	0	**0**	**0**	**0**	**0**	**0**	**243,894**	**243,894**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Heap Leach Pads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each heap, lift or heap category

	Facility Description								Physical (1) - MANDATORY									Cover 1				Cover 2				Growth Media			
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % grade	Lift (heap) Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Heap Footprint acres	Regrade Volume (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope from Dump to Cover Borrow % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Walter Creek HLP - 1	6.5		Heap Leach Pad	Closure	Fort Knox		FA	10.0	1.4	3.0	0.0	22	922	900	9.22										12.0	12.0	4,305	-3.1
2	Walter Creek HLP - 2	6.5		Heap Leach Pad	Closure	Fort Knox		FA	6.0	1.4	3.0	0.0	22	256	200	1.58										12.0	12.0	4,305	-3.1
3	Walter Creek HLP - 3	6.5		Heap Leach Pad	Closure	Fort Knox		FA	5.0	1.4	3.0	0.0	44	914	900	2.66										12.0	12.0	4,305	-3.1
4	Walter Creek HLP - 4	6.5		Heap Leach Pad	Closure	Fort Knox		FA	5.0	1.4	3.0	0.0	42	652	600	2.27										12.0	12.0	4,305	-3.1
5	Walter Creek HLP - 5	6.5		Heap Leach Pad	Closure	Fort Knox		FA	9.0	1.3	3.0	0.0	30	293	200	1.06										12.0	12.0	4,305	-3.1
6	Walter Creek HLP - 6	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	20	328	300	0.89										12.0	12.0	4,305	-3.1
7	Walter Creek HLP - 7	6.5		Heap Leach Pad	Closure	Fort Knox		FA	-1.0	1.6	3.0	0.0	10	249	200	1.10										12.0	12.0	4,305	-3.1
8	Walter Creek HLP - 8	6.5		Heap Leach Pad	Closure	Fort Knox		FA	4.0	1.3	3.0	0.0	22	128	100	1.08										12.0	12.0	4,305	-3.1
9	Walter Creek HLP - 9	6.5		Heap Leach Pad	Closure	Fort Knox		FA	5.0	1.3	3.0	0.0	34	733	700	2.57										12.0	12.0	4,305	-3.1
10	Walter Creek HLP - 10	6.5		Heap Leach Pad	Closure	Fort Knox		FA	5.0	1.4	3.0	0.0	36	1152	1100	3.46										12.0	12.0	4,305	-3.1
11	Walter Creek HLP - 11	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	34	1200	1200	3.00										12.0	12.0	4,305	-3.1
12	Walter Creek HLP - 12	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	46	878	800	2.31										12.0	12.0	4,305	-3.1
13	Walter Creek HLP - 13	6.5		Heap Leach Pad	Closure	Fort Knox		FA	13.0	1.3	3.0	0.0	40	385	300	1.66										12.0	12.0	4,305	-3.1
14	Walter Creek HLP - 14	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	42	613	600	3.86										12.0	12.0	4,305	-3.1
15	Walter Creek HLP - 15	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	40	1413	1400	6.17										12.0	12.0	4,305	-3.1
16	Walter Creek HLP - 16	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	44	2828	2800	10.71										12.0	12.0	4,305	-3.1
17	Walter Creek HLP - 17	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	42	2834	2800	10.81										12.0	12.0	4,305	-3.1
18	Walter Creek HLP - 18	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.7	3.0	0.0	48	2467	2400	10.57										12.0	12.0	4,305	-3.1
19	Walter Creek HLP - 19	6.5		Heap Leach Pad	Closure	Fort Knox		FA	8.0	1.5	3.0	0.0	42	369	300	3.03										12.0	12.0	4,305	-3.1
20	Walter Creek HLP - 20	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	52	2028	2000	8.83										12.0	12.0	4,305	-3.1
21	Walter Creek HLP - 21	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	38	1466	1400	5.60										12.0	12.0	4,305	-3.1
22	Walter Creek HLP - 22	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	44	798	700	2.38										12.0	12.0	4,305	-3.1
23	Walter Creek HLP - 23	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	36	1366	1300	3.74										12.0	12.0	4,305	-3.1
24	Walter Creek HLP - 24	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	46	2032	2000	5.81										12.0	12.0	4,305	-3.1
25	Walter Creek HLP - 25	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	46	2095	2000	6.91										12.0	12.0	4,305	-3.1
26	Walter Creek HLP - 26	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	46	1830	1800	6.38										12.0	12.0	4,305	-3.1
27	Walter Creek HLP - 27	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	44	1491	1400	5.60										12.0	12.0	4,305	-3.1
28	Walter Creek HLP - 28	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	50	1159	1100	4.31										12.0	12.0	4,305	-3.1
29	Walter Creek HLP - 29	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	699	600	3.21										12.0	12.0	4,305	-3.1
30	Walter Creek HLP - 30	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	2418	2400	8.42										12.0	12.0	4,305	-3.1
31	Walter Creek HLP - 31	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	50	2840	2800	9.82										12.0	12.0	4,305	-3.1
32	Walter Creek HLP - 32	6.5		Heap Leach Pad	Closure	Fort Knox		FA	3.0	1.7	3.0	0.0	18	478	400	2.08										12.0	12.0	4,305	-3.1
33	Walter Creek HLP - 33	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.5	3.0	0.0	50	3850	3800	16.25										12.0	12.0	4,305	-3.1
34	Walter Creek HLP - 34	6.5		Heap Leach Pad	Closure	Fort Knox		FA	-11.0	1.4	3.0	0.0	30	702	700	2.49										12.0	12.0	4,305	-3.1
35	Walter Creek HLP - 35	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4655	4600	19.03										12.0	12.0	4,305	-3.1
36	Walter Creek HLP - 36	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	3866	3800	14.67										12.0	12.0	4,305	-3.1
37	Walter Creek HLP - 37	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	1283	1200	5.86										12.0	12.0	4,305	-3.1
38	Walter Creek HLP - 38	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	539	500	1.90										12.0	12.0	4,305	-3.1
39	Walter Creek HLP - 39	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.7	3.0	0.0	30	273	200	1.09										12.0	12.0	4,305	-3.1
40	Walter Creek HLP - 40	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	1847	1800	7.37										12.0	12.0	4,305	-3.1
41	Walter Creek HLP - 41	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4791	4700	18.26										12.0	12.0	4,305	-3.1
42	Walter Creek HLP - 42	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4033	4000	15.59										12.0	12.0	4,305	-3.1
43	Walter Creek HLP - 43	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	3477	3400	58.92										12.0	12.0	4,305	-3.1
44	Walter Creek HLP - 44	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.4	3.0	0.0	70	644	600	3.09										12.0	12.0	4,305	-3.1
45	Walter Creek HLP - 45	6.5		Heap Leach Pad	Closure	Fort Knox		FA	3.0	1.5	3.0	0.0	50	642	600	2.35										12.0	12.0	4,305	-3.1
46	Walter Creek HLP - 46	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	1946	1900	6.28										12.0	12.0	4,305	-3.1
47	Walter Creek HLP - 47	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	2533	2500	9.37										12.0	12.0	4,305	-3.1
48	Walter Creek HLP - 48	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	3672	3600	14.35										12.0	12.0	4,305	-3.1
49	Walter Creek HLP - 49	6.5		Heap Leach Pad	Closure	Fort Knox		FA	0.0	1.3	3.0	0.0	50	4219	4200	86.51										12.0	12.0	4,305	-3.1
50	Barnes Creek HLP - 1	6.5		Heap Leach Pad	Closure	BCHL Phase 9		FA	0.0	1.3	3.0	0.0	50	705	700	295.11										12.0	12.0	12,100	3.0

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Heap Leach - User Input (Cont.)

	Facility Description	Cover 1 - Crushing & Screening										Cover 2 - Crushing & Screening									
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Source % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Source % grade	Haul to Crusher Fleet (2) (select)	Compact Slopes After Placement? (select)	Compact Flat After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Walter Creek HLP - 1																				
2	Walter Creek HLP - 2																				
3	Walter Creek HLP - 3																				
4	Walter Creek HLP - 4																				
5	Walter Creek HLP - 5																				
6	Walter Creek HLP - 6																				
7	Walter Creek HLP - 7																				
8	Walter Creek HLP - 8																				
9	Walter Creek HLP - 9																				
10	Walter Creek HLP - 10																				
11	Walter Creek HLP - 11																				
12	Walter Creek HLP - 12																				
13	Walter Creek HLP - 13																				
14	Walter Creek HLP - 14																				
15	Walter Creek HLP - 15																				
16	Walter Creek HLP - 16																				
17	Walter Creek HLP - 17																				
18	Walter Creek HLP - 18																				
19	Walter Creek HLP - 19																				
20	Walter Creek HLP - 20																				
21	Walter Creek HLP - 21																				
22	Walter Creek HLP - 22																				
23	Walter Creek HLP - 23																				
24	Walter Creek HLP - 24																				
25	Walter Creek HLP - 25																				
26	Walter Creek HLP - 26																				
27	Walter Creek HLP - 27																				
28	Walter Creek HLP - 28																				
29	Walter Creek HLP - 29																				
30	Walter Creek HLP - 30																				
31	Walter Creek HLP - 31																				
32	Walter Creek HLP - 32																				
33	Walter Creek HLP - 33																				
34	Walter Creek HLP - 34																				
35	Walter Creek HLP - 35																				
36	Walter Creek HLP - 36																				
37	Walter Creek HLP - 37																				
38	Walter Creek HLP - 38																				
39	Walter Creek HLP - 39																				
40	Walter Creek HLP - 40																				
41	Walter Creek HLP - 41																				
42	Walter Creek HLP - 42																				
43	Walter Creek HLP - 43																				
44	Walter Creek HLP - 44																				
45	Walter Creek HLP - 45																				
46	Walter Creek HLP - 46																				
47	Walter Creek HLP - 47																				
48	Walter Creek HLP - 48																				
49	Walter Creek HLP - 49																				
50	Barnes Creek HLP - 1																				

Notes:
1. Input distance from crusher to placement location if material to be crushed, screened or compacted
2. if distance from borrow <820 ft (250 m) must select loader fleet

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Heap Leach Pads - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each heap, lift or heap category

		Grading				Cover 1				Cover 2				Growth Media				Revegetation								
	Description (required)	Dozing Material Condition (select)	Heap Material Type (select)	Grading Equipment Fleet (select)	Slot/ Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	Walter Creek HLP - 1	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
2	Walter Creek HLP - 2	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
3	Walter Creek HLP - 3	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
4	Walter Creek HLP - 4	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
5	Walter Creek HLP - 5	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
6	Walter Creek HLP - 6	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
7	Walter Creek HLP - 7	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
8	Walter Creek HLP - 8	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
9	Walter Creek HLP - 9	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
10	Walter Creek HLP - 10	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
11	Walter Creek HLP - 11	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
12	Walter Creek HLP - 12	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
13	Walter Creek HLP - 13	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
14	Walter Creek HLP - 14	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
15	Walter Creek HLP - 15	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
16	Walter Creek HLP - 16	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
17	Walter Creek HLP - 17	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
18	Walter Creek HLP - 18	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
19	Walter Creek HLP - 19	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
20	Walter Creek HLP - 20	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
21	Walter Creek HLP - 21	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
22	Walter Creek HLP - 22	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
23	Walter Creek HLP - 23	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
24	Walter Creek HLP - 24	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
25	Walter Creek HLP - 25	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
26	Walter Creek HLP - 26	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
27	Walter Creek HLP - 27	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
28	Walter Creek HLP - 28	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
29	Walter Creek HLP - 29	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
30	Walter Creek HLP - 30	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
31	Walter Creek HLP - 31	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
32	Walter Creek HLP - 32	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
33	Walter Creek HLP - 33	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
34	Walter Creek HLP - 34	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
35	Walter Creek HLP - 35	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
36	Walter Creek HLP - 36	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
37	Walter Creek HLP - 37	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
38	Walter Creek HLP - 38	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
39	Walter Creek HLP - 39	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
40	Walter Creek HLP - 40	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
41	Walter Creek HLP - 41	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
42	Walter Creek HLP - 42	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
43	Walter Creek HLP - 43	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
44	Walter Creek HLP - 44	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
45	Walter Creek HLP - 45	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
46	Walter Creek HLP - 46	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
47	Walter Creek HLP - 47	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
48	Walter Creek HLP - 48	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
49	Walter Creek HLP - 49	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer
50	Barnes Creek HLP - 1	1	Granite - broken	Large	No									Topsoil	Large Truck			User Mix 5 (fro	User Mix 5 (fro	None	None	Chemical	Chemical	Yes	Yes	Large Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Heap Leach Pads - User Input (cont.)

		Solution Collection Ditch Fill							Piping			
	Description (required)	Collection Ditch Length ft	Collection Ditch Top Width ft	Collection Ditch Depth ft	Volume (if calculated elsewhere) cy	Distance from Borrow ft	Slope to Borrow % grade	Drain Rock Equipment Fleet (select)	Solid Pipe Length ft	Solid Pipe Type (select)	Drainage Pipe Length ft	Drainage Pipe Type (select)
1	Walter Creek HLP - 1											
2	Walter Creek HLP - 2											
3	Walter Creek HLP - 3											
4	Walter Creek HLP - 4											
5	Walter Creek HLP - 5											
6	Walter Creek HLP - 6											
7	Walter Creek HLP - 7											
8	Walter Creek HLP - 8											
9	Walter Creek HLP - 9											
10	Walter Creek HLP - 10											
11	Walter Creek HLP - 11											
12	Walter Creek HLP - 12											
13	Walter Creek HLP - 13											
14	Walter Creek HLP - 14											
15	Walter Creek HLP - 15											
16	Walter Creek HLP - 16											
17	Walter Creek HLP - 17											
18	Walter Creek HLP - 18											
19	Walter Creek HLP - 19											
20	Walter Creek HLP - 20											
21	Walter Creek HLP - 21											
22	Walter Creek HLP - 22											
23	Walter Creek HLP - 23											
24	Walter Creek HLP - 24											
25	Walter Creek HLP - 25											
26	Walter Creek HLP - 26											
27	Walter Creek HLP - 27											
28	Walter Creek HLP - 28											
29	Walter Creek HLP - 29											
30	Walter Creek HLP - 30											
31	Walter Creek HLP - 31											
32	Walter Creek HLP - 32											
33	Walter Creek HLP - 33											
34	Walter Creek HLP - 34											
35	Walter Creek HLP - 35											
36	Walter Creek HLP - 36											
37	Walter Creek HLP - 37											
38	Walter Creek HLP - 38											
39	Walter Creek HLP - 39											
40	Walter Creek HLP - 40											
41	Walter Creek HLP - 41											
42	Walter Creek HLP - 42											
43	Walter Creek HLP - 43											
44	Walter Creek HLP - 44											
45	Walter Creek HLP - 45											
46	Walter Creek HLP - 46											
47	Walter Creek HLP - 47											
48	Walter Creek HLP - 48											
49	Walter Creek HLP - 49											
50	Barnes Creek HLP - 1											

Notes:

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Heap Leach - Assumptions & Calculations

Regrading Push Distance Calculation

dozing distance:
based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying per area

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation:
Minimum 1 acre revegetation crew time per area

Solution Collection Ditch Calculations

Use when existing heap material is not suitable drain rock
Assume to be constructed in existing solution channels
Assume 2H:1V ditch sideslopes
Drain rock assumed to be Gravel - Dry at 2,550 lb/cy (1,510 kg/m3) from CAT Handbook 35th Ed.

Heap Leach Pad - Drainage Channel Fill & Drainage Pipe Installation

		Drain Rock Placement								Drainpipe Installation					
	Description (required)	Drain Rock Volume cy	Drain Rock Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours hrs	Drainage Labor Cost $	Drainage Equipment Cost $	Total Drainage Cost $	Piping Crew Hours hrs	Piping Labor Cost $	Piping Equipment Cost $	Piping Material Cost $	Total Pipe Installation Cost $	Total Drainage Cost $
1	Walter Creek HLP - 1	0				0	0	0	0	0	0	0	0	0	0
2	Walter Creek HLP - 2	0				0	0	0	0	0	0	0	0	0	0
3	Walter Creek HLP - 3	0				0	0	0	0	0	0	0	0	0	0
4	Walter Creek HLP - 4	0				0	0	0	0	0	0	0	0	0	0
5	Walter Creek HLP - 5	0				0	0	0	0	0	0	0	0	0	0
6	Walter Creek HLP - 6	0				0	0	0	0	0	0	0	0	0	0
7	Walter Creek HLP - 7	0				0	0	0	0	0	0	0	0	0	0
8	Walter Creek HLP - 8	0				0	0	0	0	0	0	0	0	0	0
9	Walter Creek HLP - 9	0				0	0	0	0	0	0	0	0	0	0
10	Walter Creek HLP - 10	0				0	0	0	0	0	0	0	0	0	0
11	Walter Creek HLP - 11	0				0	0	0	0	0	0	0	0	0	0
12	Walter Creek HLP - 12	0				0	0	0	0	0	0	0	0	0	0
13	Walter Creek HLP - 13	0				0	0	0	0	0	0	0	0	0	0
14	Walter Creek HLP - 14	0				0	0	0	0	0	0	0	0	0	0
15	Walter Creek HLP - 15	0				0	0	0	0	0	0	0	0	0	0
16	Walter Creek HLP - 16	0				0	0	0	0	0	0	0	0	0	0
17	Walter Creek HLP - 17	0				0	0	0	0	0	0	0	0	0	0
18	Walter Creek HLP - 18	0				0	0	0	0	0	0	0	0	0	0
19	Walter Creek HLP - 19	0				0	0	0	0	0	0	0	0	0	0
20	Walter Creek HLP - 20	0				0	0	0	0	0	0	0	0	0	0
21	Walter Creek HLP - 21	0				0	0	0	0	0	0	0	0	0	0
22	Walter Creek HLP - 22	0				0	0	0	0	0	0	0	0	0	0
23	Walter Creek HLP - 23	0				0	0	0	0	0	0	0	0	0	0
24	Walter Creek HLP - 24	0				0	0	0	0	0	0	0	0	0	0
25	Walter Creek HLP - 25	0				0	0	0	0	0	0	0	0	0	0
26	Walter Creek HLP - 26	0				0	0	0	0	0	0	0	0	0	0
27	Walter Creek HLP - 27	0				0	0	0	0	0	0	0	0	0	0
28	Walter Creek HLP - 28	0				0	0	0	0	0	0	0	0	0	0
29	Walter Creek HLP - 29	0				0	0	0	0	0	0	0	0	0	0
30	Walter Creek HLP - 30	0				0	0	0	0	0	0	0	0	0	0
31	Walter Creek HLP - 31	0				0	0	0	0	0	0	0	0	0	0
32	Walter Creek HLP - 32	0				0	0	0	0	0	0	0	0	0	0
33	Walter Creek HLP - 33	0				0	0	0	0	0	0	0	0	0	0
34	Walter Creek HLP - 34	0				0	0	0	0	0	0	0	0	0	0
35	Walter Creek HLP - 35	0				0	0	0	0	0	0	0	0	0	0
36	Walter Creek HLP - 36	0				0	0	0	0	0	0	0	0	0	0
37	Walter Creek HLP - 37	0				0	0	0	0	0	0	0	0	0	0
38	Walter Creek HLP - 38	0				0	0	0	0	0	0	0	0	0	0
39	Walter Creek HLP - 39	0				0	0	0	0	0	0	0	0	0	0
40	Walter Creek HLP - 40	0				0	0	0	0	0	0	0	0	0	0
41	Walter Creek HLP - 41	0				0	0	0	0	0	0	0	0	0	0
42	Walter Creek HLP - 42	0				0	0	0	0	0	0	0	0	0	0
43	Walter Creek HLP - 43	0				0	0	0	0	0	0	0	0	0	0
44	Walter Creek HLP - 44	0				0	0	0	0	0	0	0	0	0	0
45	Walter Creek HLP - 45	0				0	0	0	0	0	0	0	0	0	0
46	Walter Creek HLP - 46	0				0	0	0	0	0	0	0	0	0	0
47	Walter Creek HLP - 47	0				0	0	0	0	0	0	0	0	0	0
48	Walter Creek HLP - 48	0				0	0	0	0	0	0	0	0	0	0
49	Walter Creek HLP - 49	0				0	0	0	0	0	0	0	0	0	0
50	Barnes Creek HLP - 1	0				0	0	0	0	0	0	0	0	0	0
		0				0	0	0	0		0	0	0	0	0

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Heap Leach Pad - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Walter Creek HLP - 1	3,654	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	2	128	529	657
2	Walter Creek HLP - 2	967	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	1	64	265	329
3	Walter Creek HLP - 3	13,710	73	D10T2	1,998	1.6	1.0	0.82	1.0	1,632	8	512	2,118	2,630
4	Walter Creek HLP - 4	8,911	70	D10T2	2,070	1.6	1.0	0.82	1.0	1,691	5	320	1,324	1,644
5	Walter Creek HLP - 5	2,279	51	D10T2	2,704	1.6	1.0	0.82	1.0	2,208	1	64	265	329
6	Walter Creek HLP - 6	972	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	1	64	265	329
7	Walter Creek HLP - 7	157	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	1	64	265	329
8	Walter Creek HLP - 8	507	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	1	64	265	329
9	Walter Creek HLP - 9	6,977	55	D10T2	2,537	1.6	1.0	0.82	1.0	2,072	3	192	794	986
10	Walter Creek HLP - 10	11,563	60	D10T2	2,357	1.6	1.0	0.82	1.0	1,925	6	384	1,588	1,972
11	Walter Creek HLP - 11	10,267	55	D10T2	2,537	1.6	1.0	0.82	1.0	2,072	5	320	1,324	1,644
12	Walter Creek HLP - 12	13,755	74	D10T2	1,975	1.6	1.0	0.82	1.0	1,613	9	576	2,383	2,959
13	Walter Creek HLP - 13	5,618	70	D10T2	2,070	1.6	1.0	0.82	1.0	1,691	3	192	794	986
14	Walter Creek HLP - 14	8,014	68	D10T2	2,121	1.6	1.0	0.82	1.0	1,732	5	320	1,324	1,644
15	Walter Creek HLP - 15	17,793	63	D10T2	2,262	1.6	1.0	0.82	1.0	1,847	10	640	2,647	3,287
16	Walter Creek HLP - 16	40,535	71	D10T2	2,045	1.6	1.0	0.82	1.0	1,670	24	1,536	6,354	7,890
17	Walter Creek HLP - 17	37,052	68	D10T2	2,121	1.6	1.0	0.82	1.0	1,732	21	1,344	5,560	6,904
18	Walter Creek HLP - 18	34,173	82	D10T2	1,811	1.6	1.0	0.82	1.0	1,479	23	1,472	6,089	7,561
19	Walter Creek HLP - 19	4,852	72	D10T2	2,021	1.6	1.0	0.82	1.0	1,651	3	192	794	986
20	Walter Creek HLP - 20	38,081	85	D10T2	1,757	1.6	1.0	0.82	1.0	1,435	27	1,728	7,148	8,876
21	Walter Creek HLP - 21	15,692	61	D10T2	2,325	1.6	1.0	0.82	1.0	1,899	8	512	2,118	2,630
22	Walter Creek HLP - 22	12,147	70	D10T2	2,070	1.6	1.0	0.82	1.0	1,691	7	448	1,853	2,301
23	Walter Creek HLP - 23	13,103	58	D10T2	2,426	1.6	1.0	0.82	1.0	1,981	7	448	1,853	2,301
24	Walter Creek HLP - 24	29,878	76	D10T2	1,931	1.6	1.0	0.82	1.0	1,577	19	1,216	5,030	6,246
25	Walter Creek HLP - 25	32,822	74	D10T2	1,975	1.6	1.0	0.82	1.0	1,613	20	1,280	5,295	6,575
26	Walter Creek HLP - 26	30,500	73	D10T2	1,998	1.6	1.0	0.82	1.0	1,632	19	1,216	5,030	6,246
27	Walter Creek HLP - 27	22,696	70	D10T2	2,070	1.6	1.0	0.82	1.0	1,691	13	832	3,442	4,274
28	Walter Creek HLP - 28	21,463	81	D10T2	1,830	1.6	1.0	0.82	1.0	1,495	14	896	3,706	4,602
29	Walter Creek HLP - 29	13,747	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	9	576	2,383	2,959
30	Walter Creek HLP - 30	47,554	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	31	1,984	8,207	10,191
31	Walter Creek HLP - 31	49,332	82	D10T2	1,811	1.6	1.0	0.82	1.0	1,479	33	2,112	8,736	10,848
32	Walter Creek HLP - 32	956	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	1	64	265	329
33	Walter Creek HLP - 33	66,876	82	D10T2	1,811	1.6	1.0	0.82	1.0	1,479	45	2,880	11,913	14,793
34	Walter Creek HLP - 34	4,342	50	D10T2	2,750	1.6	1.0	0.82	1.0	2,246	2	128	529	657
35	Walter Creek HLP - 35	91,548	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	60	3,840	15,884	19,724
36	Walter Creek HLP - 36	76,031	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	50	3,200	13,237	16,437
37	Walter Creek HLP - 37	25,232	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	17	1,088	4,501	5,589
38	Walter Creek HLP - 38	10,600	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	7	448	1,853	2,301
39	Walter Creek HLP - 39	1,476	51	D10T2	2,704	1.6	1.0	0.82	1.0	2,208	1	64	265	329
40	Walter Creek HLP - 40	36,324	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	24	1,536	6,354	7,890
41	Walter Creek HLP - 41	94,223	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	62	3,968	16,414	20,382
42	Walter Creek HLP - 42	79,316	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	52	3,328	13,766	17,094
43	Walter Creek HLP - 43	68,381	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	45	2,880	11,913	14,793
44	Walter Creek HLP - 44	23,375	113	D10T2	1,382	1.6	1.0	0.82	1.0	1,129	21	1,344	5,560	6,904
45	Walter Creek HLP - 45	11,413	83	D10T2	1,793	1.6	1.0	0.82	1.0	1,464	8	512	2,118	2,630
46	Walter Creek HLP - 46	38,271	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	25	1,600	6,619	8,219
47	Walter Creek HLP - 47	49,816	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	33	2,112	8,736	10,848
48	Walter Creek HLP - 48	72,216	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	47	3,008	12,443	15,451
49	Walter Creek HLP - 49	82,974	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	54	3,456	14,296	17,752
50	Barnes Creek HLP - 1	13,865	79	D10T2	1,869	1.6	1.0	0.82	1.0	1,526	9	576	2,383	2,959
		1,396,006									902	**57,728**	**238,797**	**296,525**

Heap Leach - Cover 1 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Walter Creek HLP - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Walter Creek HLP - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Walter Creek HLP - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Walter Creek HLP - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Walter Creek HLP - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Walter Creek HLP - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Walter Creek HLP - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Walter Creek HLP - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Walter Creek HLP - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Walter Creek HLP - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Walter Creek HLP - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Walter Creek HLP - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Walter Creek HLP - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	Walter Creek HLP - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	Walter Creek HLP - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	Walter Creek HLP - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Walter Creek HLP - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Walter Creek HLP - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Walter Creek HLP - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Walter Creek HLP - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Walter Creek HLP - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
22	Walter Creek HLP - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
23	Walter Creek HLP - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
24	Walter Creek HLP - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
25	Walter Creek HLP - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
26	Walter Creek HLP - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
27	Walter Creek HLP - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
28	Walter Creek HLP - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
29	Walter Creek HLP - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
30	Walter Creek HLP - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
31	Walter Creek HLP - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
32	Walter Creek HLP - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
33	Walter Creek HLP - 33	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
34	Walter Creek HLP - 34	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
35	Walter Creek HLP - 35	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
36	Walter Creek HLP - 36	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
37	Walter Creek HLP - 37	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
38	Walter Creek HLP - 38	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
39	Walter Creek HLP - 39	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
40	Walter Creek HLP - 40	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
41	Walter Creek HLP - 41	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
42	Walter Creek HLP - 42	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
43	Walter Creek HLP - 43	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
44	Walter Creek HLP - 44	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
45	Walter Creek HLP - 45	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
46	Walter Creek HLP - 46	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
47	Walter Creek HLP - 47	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
48	Walter Creek HLP - 48	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
49	Walter Creek HLP - 49	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
50	Barnes Creek HLP - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Heap Leach - Cover 2 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Walter Creek HLP - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Walter Creek HLP - 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Walter Creek HLP - 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Walter Creek HLP - 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Walter Creek HLP - 5	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Walter Creek HLP - 6	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Walter Creek HLP - 7	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Walter Creek HLP - 8	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Walter Creek HLP - 9	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Walter Creek HLP - 10	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Walter Creek HLP - 11	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Walter Creek HLP - 12	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Walter Creek HLP - 13	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	Walter Creek HLP - 14	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	Walter Creek HLP - 15	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	Walter Creek HLP - 16	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Walter Creek HLP - 17	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Walter Creek HLP - 18	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Walter Creek HLP - 19	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Walter Creek HLP - 20	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Walter Creek HLP - 21	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
22	Walter Creek HLP - 22	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
23	Walter Creek HLP - 23	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
24	Walter Creek HLP - 24	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
25	Walter Creek HLP - 25	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
26	Walter Creek HLP - 26	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
27	Walter Creek HLP - 27	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
28	Walter Creek HLP - 28	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
29	Walter Creek HLP - 29	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
30	Walter Creek HLP - 30	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
31	Walter Creek HLP - 31	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
32	Walter Creek HLP - 32	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
33	Walter Creek HLP - 33	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
34	Walter Creek HLP - 34	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
35	Walter Creek HLP - 35	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
36	Walter Creek HLP - 36	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
37	Walter Creek HLP - 37	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
38	Walter Creek HLP - 38	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
39	Walter Creek HLP - 39	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
40	Walter Creek HLP - 40	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
41	Walter Creek HLP - 41	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
42	Walter Creek HLP - 42	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
43	Walter Creek HLP - 43	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
44	Walter Creek HLP - 44	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
45	Walter Creek HLP - 45	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
46	Walter Creek HLP - 46	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
47	Walter Creek HLP - 47	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
48	Walter Creek HLP - 48	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
49	Walter Creek HLP - 49	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
50	Barnes Creek HLP - 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Heap Leach - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	Walter Creek HLP - 1	14,972	777G/992K/D9T	9.56	3	1,041	15	4,893	21,509	26,402
2	Walter Creek HLP - 2	2,565	777G/992K/D9T	9.56	3	1,041	3	979	4,302	5,281
3	Walter Creek HLP - 3	4,937	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
4	Walter Creek HLP - 4	3,808	777G/992K/D9T	9.56	3	1,041	3	979	4,302	5,281
5	Walter Creek HLP - 5	1,758	777G/992K/D9T	9.56	3	1,041	2	652	2,868	3,520
6	Walter Creek HLP - 6	1,468	777G/992K/D9T	9.56	3	1,041	2	652	2,868	3,520
7	Walter Creek HLP - 7	1,790	777G/992K/D9T	9.56	3	1,041	1	326	1,434	1,760
8	Walter Creek HLP - 8	1,759	777G/992K/D9T	9.56	3	1,041	1	326	1,434	1,760
9	Walter Creek HLP - 9	4,275	777G/992K/D9T	9.56	3	1,041	4	1,305	5,736	7,041
10	Walter Creek HLP - 10	5,840	777G/992K/D9T	9.56	3	1,041	6	1,957	8,603	10,560
11	Walter Creek HLP - 11	5,066	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
12	Walter Creek HLP - 12	4,711	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
13	Walter Creek HLP - 13	2,758	777G/992K/D9T	9.56	3	1,041	3	979	4,302	5,281
14	Walter Creek HLP - 14	6,389	777G/992K/D9T	9.56	3	1,041	6	1,957	8,603	10,560
15	Walter Creek HLP - 15	10,326	777G/992K/D9T	9.56	3	1,041	10	3,262	14,339	17,601
16	Walter Creek HLP - 16	18,005	777G/992K/D9T	9.56	3	1,041	17	5,546	24,376	29,922
17	Walter Creek HLP - 17	18,166	777G/992K/D9T	9.56	3	1,041	17	5,546	24,376	29,922
18	Walter Creek HLP - 18	17,779	777G/992K/D9T	9.56	3	1,041	17	5,546	24,376	29,922
19	Walter Creek HLP - 19	4,969	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
20	Walter Creek HLP - 20	14,859	777G/992K/D9T	9.56	3	1,041	14	4,567	20,075	24,642
21	Walter Creek HLP - 21	9,357	777G/992K/D9T	9.56	3	1,041	9	2,936	12,905	15,841
22	Walter Creek HLP - 22	4,114	777G/992K/D9T	9.56	3	1,041	4	1,305	5,736	7,041
23	Walter Creek HLP - 23	6,325	777G/992K/D9T	9.56	3	1,041	7	2,284	10,037	12,321
24	Walter Creek HLP - 24	10,906	777G/992K/D9T	9.56	3	1,041	10	3,262	14,339	17,601
25	Walter Creek HLP - 25	11,681	777G/992K/D9T	9.56	3	1,041	11	3,589	15,773	19,362
26	Walter Creek HLP - 26	10,761	777G/992K/D9T	9.56	3	1,041	10	3,262	14,339	17,601
27	Walter Creek HLP - 27	9,421	777G/992K/D9T	9.56	3	1,041	9	2,936	12,905	15,841
28	Walter Creek HLP - 28	7,292	777G/992K/D9T	9.56	3	1,041	7	2,284	10,037	12,321
29	Walter Creek HLP - 29	5,389	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
30	Walter Creek HLP - 30	14,294	777G/992K/D9T	9.56	3	1,041	14	4,567	20,075	24,642
31	Walter Creek HLP - 31	16,682	777G/992K/D9T	9.56	3	1,041	16	5,220	22,942	28,162
32	Walter Creek HLP - 32	3,421	777G/992K/D9T	9.56	3	1,041	3	979	4,302	5,281
33	Walter Creek HLP - 33	27,346	777G/992K/D9T	9.56	3	1,041	27	8,808	38,715	47,523
34	Walter Creek HLP - 34	4,146	777G/992K/D9T	9.56	3	1,041	4	1,305	5,736	7,041
35	Walter Creek HLP - 35	32,073	777G/992K/D9T	9.56	3	1,041	31	10,113	44,451	54,564
36	Walter Creek HLP - 36	24,813	777G/992K/D9T	9.56	3	1,041	24	7,830	34,414	42,244
37	Walter Creek HLP - 37	9,825	777G/992K/D9T	9.56	3	1,041	9	2,936	12,905	15,841
38	Walter Creek HLP - 38	3,227	777G/992K/D9T	9.56	3	1,041	3	979	4,302	5,281
39	Walter Creek HLP - 39	1,823	777G/992K/D9T	9.56	3	1,041	2	652	2,868	3,520
40	Walter Creek HLP - 40	12,438	777G/992K/D9T	9.56	3	1,041	12	3,915	17,207	21,122
41	Walter Creek HLP - 41	30,879	777G/992K/D9T	9.56	3	1,041	30	9,787	43,017	52,804
42	Walter Creek HLP - 42	26,346	777G/992K/D9T	9.56	3	1,041	26	8,482	37,281	45,763
43	Walter Creek HLP - 43	96,090	777G/992K/D9T	9.56	3	1,041	93	30,339	133,353	163,692
44	Walter Creek HLP - 44	5,276	777G/992K/D9T	9.56	3	1,041	5	1,631	7,170	8,801
45	Walter Creek HLP - 45	3,985	777G/992K/D9T	9.56	3	1,041	4	1,305	5,736	7,041
46	Walter Creek HLP - 46	11,390	777G/992K/D9T	9.56	3	1,041	11	3,589	15,773	19,362
47	Walter Creek HLP - 47	15,876	777G/992K/D9T	9.56	3	1,041	15	4,893	21,509	26,402
48	Walter Creek HLP - 48	24,249	777G/992K/D9T	9.56	3	1,041	24	7,830	34,414	42,244
49	Walter Creek HLP - 49	140,812	777G/992K/D9T	9.56	3	1,041	136	44,367	195,010	239,377
50	Barnes Creek HLP - 1	476,320	777G/992K/D9T	17.36	6	1,145	416	217,368	886,013	1,103,381
		1,202,757					1,118	**446,380**	**1,892,617**	**2,338,997**

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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Heap Leach - Scarify/Revegetation Costs

										Scarifying Costs			Regegetation Costs			
	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	Walter Creek HLP - 1	1.63	7.65	9.28	77	900	D10T2	1	5	384	1,588	1,972	0	1,753	2,266	4,019
2	Walter Creek HLP - 2	0.43	1.16	1.59	74	200	D10T2	0	1	64	265	329	0	300	388	688
3	Walter Creek HLP - 3	3.06	0.00	3.06	146	900	D10T2	2	0	128	529	657	0	578	747	1,325
4	Walter Creek HLP - 4	2.08	0.28	2.36	139	600	D10T2	1	0	64	265	329	0	446	576	1,022
5	Walter Creek HLP - 5	0.70	0.39	1.09	104	200	D10T2	0	0	64	265	329	0	206	267	473
6	Walter Creek HLP - 6	0.47	0.44	0.91	63	300	D10T2	0	0	64	265	329	0	189	222	411
7	Walter Creek HLP - 7	0.18	0.93	1.11	31	200	D10T2	0	1	64	265	329	0	210	272	482
8	Walter Creek HLP - 8	0.21	0.88	1.09	72	100	D10T2	0	1	64	265	329	0	206	267	473
9	Walter Creek HLP - 9	1.90	0.75	2.65	113	700	D10T2	1	1	128	529	657	0	501	648	1,149
10	Walter Creek HLP - 10	3.15	0.47	3.62	119	1,100	D10T2	2	0	128	529	657	0	684	885	1,569
11	Walter Creek HLP - 11	2.98	0.16	3.14	108	1,200	D10T2	2	0	128	529	657	0	593	767	1,360
12	Walter Creek HLP - 12	2.92	0.00	2.92	145	800	D10T2	2	0	128	529	657	0	551	713	1,264
13	Walter Creek HLP - 13	1.31	0.40	1.71	148	300	D10T2	1	0	64	265	329	0	323	418	741
14	Walter Creek HLP - 14	1.87	2.09	3.96	133	600	D10T2	1	1	128	529	657	0	748	968	1,716
15	Walter Creek HLP - 15	4.09	2.31	6.40	126	1,400	D10T2	3	2	320	1,324	1,644	0	1,208	1,563	2,771
16	Walter Creek HLP - 16	9.02	2.14	11.16	139	2,800	D10T2	6	2	512	2,118	2,630	0	2,108	2,724	4,832
17	Walter Creek HLP - 17	8.65	2.61	11.26	133	2,800	D10T2	5	2	448	1,853	2,301	0	2,127	2,750	4,877
18	Walter Creek HLP - 18	8.61	2.41	11.02	152	2,400	D10T2	6	1	448	1,853	2,301	0	2,081	2,692	4,773
19	Walter Creek HLP - 19	1.21	1.87	3.08	143	300	D10T2	1	1	128	529	657	0	582	753	1,335
20	Walter Creek HLP - 20	7.64	1.57	9.21	164	2,000	D10T2	5	1	384	1,588	1,972	0	1,740	2,249	3,989
21	Walter Creek HLP - 21	4.04	1.76	5.80	120	1,400	D10T2	3	1	256	1,059	1,315	0	1,095	1,416	2,511
22	Walter Creek HLP - 22	2.55	0.00	2.55	139	700	D10T2	2	0	128	529	657	0	482	623	1,105
23	Walter Creek HLP - 23	3.57	0.35	3.92	114	1,300	D10T2	2	0	128	529	657	0	740	958	1,698
24	Walter Creek HLP - 24	6.76	0.00	6.76	145	2,000	D10T2	4	0	256	1,059	1,315	0	1,277	1,650	2,927
25	Walter Creek HLP - 25	6.97	0.27	7.24	145	2,000	D10T2	4	0	256	1,059	1,315	0	1,367	1,768	3,135
26	Walter Creek HLP - 26	6.09	0.58	6.67	145	1,800	D10T2	4	0	256	1,059	1,315	0	1,260	1,629	2,889
27	Walter Creek HLP - 27	4.76	1.08	5.84	139	1,400	D10T2	3	1	256	1,059	1,315	0	1,103	1,426	2,529
28	Walter Creek HLP - 28	4.20	0.32	4.52	158	1,100	D10T2	3	0	192	794	986	0	853	1,103	1,956
29	Walter Creek HLP - 29	2.54	0.80	3.34	158	600	D10T2	2	0	128	529	657	0	631	815	1,446
30	Walter Creek HLP - 30	8.77	0.10	8.87	158	2,400	D10T2	6	0	384	1,588	1,972	0	1,675	2,166	3,841
31	Walter Creek HLP - 31	10.30	0.10	10.40	158	2,800	D10T2	7	0	448	1,853	2,301	0	1,964	2,539	4,503
32	Walter Creek HLP - 32	0.64	1.48	2.12	58	400	D10T2	0	1	64	265	329	0	401	517	918
33	Walter Creek HLP - 33	13.96	2.99	16.95	158	3,800	D10T2	9	2	704	2,912	3,616	0	3,202	4,138	7,340
34	Walter Creek HLP - 34	1.42	1.15	2.57	88	700	D10T2	1	1	128	529	657	0	485	628	1,113
35	Walter Creek HLP - 35	16.88	3.00	19.88	158	4,600	D10T2	11	2	832	3,442	4,274	0	3,755	4,853	8,608
36	Walter Creek HLP - 36	14.02	1.36	15.38	158	3,800	D10T2	9	1	640	2,647	3,287	0	2,905	3,755	6,660
37	Walter Creek HLP - 37	4.65	1.44	6.09	158	1,200	D10T2	3	1	256	1,059	1,315	0	1,150	1,488	2,638
38	Walter Creek HLP - 38	1.96	0.10	2.06	158	500	D10T2	1	0	64	265	329	0	389	503	892
39	Walter Creek HLP - 39	0.60	0.53	1.13	95	200	D10T2	0	0	64	265	329	0	213	276	489
40	Walter Creek HLP - 40	6.70	1.01	7.71	158	1,800	D10T2	4	1	320	1,324	1,644	0	1,456	1,883	3,339
41	Walter Creek HLP - 41	17.38	1.76	19.14	158	4,700	D10T2	11	1	768	3,177	3,945	0	3,614	4,673	8,287
42	Walter Creek HLP - 42	14.63	1.70	16.33	158	4,000	D10T2	9	1	640	2,647	3,287	0	3,084	3,987	7,071
43	Walter Creek HLP - 43	12.61	46.95	59.56	158	3,400	D10T2	8	30	2,432	10,060	12,492	0	11,249	14,542	25,791
44	Walter Creek HLP - 44	3.27	0.00	3.27	221	600	D10T2	2	0	128	529	657	0	618	799	1,417
45	Walter Creek HLP - 45	2.39	0.10	2.49	162	600	D10T2	2	0	128	529	657	0	470	608	1,078
46	Walter Creek HLP - 46	7.06	0.00	7.06	158	1,900	D10T2	4	0	256	1,059	1,315	0	1,333	1,724	3,057
47	Walter Creek HLP - 47	9.19	0.65	9.84	158	2,500	D10T2	6	0	384	1,588	1,972	0	1,859	2,403	4,262
48	Walter Creek HLP - 48	13.32	1.71	15.03	158	3,600	D10T2	8	1	576	2,383	2,959	0	2,839	3,670	6,509
49	Walter Creek HLP - 49	15.30	71.98	87.28	158	4,200	D10T2	10	46	3,584	14,825	18,409	0	16,484	21,308	37,792
50	Barnes Creek HLP - 1	2.56	292.68	295.24	158	700	D10T2	2	192	12,416	51,360	63,776	0	55,760	72,080	127,840
		281.20	464.46	745.66				179	301	**30,912**	**127,864**	**158,776**	**0**	**140,847**	**182,063**	**322,910**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2) Assumes 50 min/hr equipment availability

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Cost CostType Type: FA Cost Basis: Fort Knox

Solution/Water Management - User Input - Pumping

																		Operating Period			User Overrides	
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Water Type (select)	Management Type (select)	Capital Cost $	Flow (Q) gpm	Pipeline Length ft	Static Head ft	Pipe Diameter (ID)(1) in	Pipe Material (select)	Pump Efficiency %	Total Concentated Losses (2)	Hrs/Day	Days/ Month	Number of Months	Crew Size (3)	Power Cost ($/kWh)
1	TSF North Pond to South Pond - 2020			Solution Management	Closure	Fort Knox		FA	Residual Invento	Active		1213.00	2,114	30.0	8	HDPE	85	20	24.0	30.4	9	1	
2	TSF South Pond to Pit - 2020			Solution Management	Closure	Fort Knox		FA	Residual Invento	Active		3640.00	5,114	343.0	16	HDPE	85	20	24.0	30.4	9	0	
3	HLP Draindown - Walter Creek HLP - 2020			Solution Management	Closure	Fort Knox		FA	Residual Invento	Active		683.00	3,299	88.0	8	HDPE	85	20	24.0	30.4	12	1	
4	HLP Draindown - Barnes Creek HLP - 2020			Solution Management	Closure	Fort Knox		FA	Residual Invento	Active		1133.00	10,151	64.0	8	HDPE	85	20	24.0	30.4	12	0	
5	TSF seepage to Pit - 2020-2022			Solution Management	Closure	Fort Knox		FA	Residual Invento	Active		143.00	10,095	691.0	4	HDPE	85	20	24.0	30.4	36	1	
6	TSF seepage to Pit - 2023-2054			Solution Management	Post-Closure	Fort Knox		FA	Residual Invento	Active		143.00	10,095	691.0	4	HDPE	85	20	24.0	30.4	384	0	

Notes: 1. Inside Diameter (ID) depends on nominal diameter and the pipewall thickness.
2. k (total of all losses related to valves, restrictions, etc.). Typically 8 -20. Not significant for longer pipes.
3. Default crew assumes crew of two laborers required during pumping hours

See closure plan figure "Water Balance Schematics" for paths and dates backup.
See User 06 for backup of flow rate, pipeline length, static head, etc.
TSF seepage pumping will be monitored remotely after the closure period (see "Other User" for remote monitoring costs in lieu of site crews).
Long-term management crew in "Human Resources."

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Solution Mgmt - Assumptions & Calculations

Manning's Roughness Coefficient

Pipe material	Manning n
HDPE	
ID < 4" (100 mm)	0.011
ID ≥ 4 in (100 mm) < 10 in (250 mm)	0.01
ID ≥ 10 in (250 mm)	0.009
PVC	
ID < 4" (100 mm)	0.011
ID ≥ 4 in (100 mm) < 10 in (250 mm)	0.01
ID ≥ 10 in (250 mm)	0.009
Brass	0.011
Cast Iron	0.013
Smooth Steel	0.012
Asbestos Cement	0.011

Water Treatment Costs

Water treatment cost = CapEx + Labor Cost + Equipment Cost (includes Operating Cost)

CapEx = User Entered Value
Consumable costs = cost of treatment chemicals or materials based quantity treated
Labor Cost = No. Months x Days/mo. x [(Supervisor Cost x 8 hrs) + (Laborer Cost x Crew Size x Hours/day)]
Operating Cost = Fuel, power, maintenance or other costs calculated based on quantity treated
Equipment Cost = No. Months x Days/mo. x [(Supervisor Truck Cost x 8 hrs) + (Labor Truck Cost x No. Crew Trucks x Hours/day)]
No. Crew Trucks = 1 per each two laborers per shift

Solution/Water Management - Pumping

	Description (required)	Flow gpm	Manning n (see above)	Losses k	Velocity(2) ft/sec	Friction Head ft	Total Dynamic Head ft	Pump Efficiency %	Power Required kW	Horsepower Required HP	Monthly Operating Hours hrs	Pump Capital Cost $	Total Operating Cost $	Total Labor Cost $	Total Crew Equipment Cost $	Total Cost $	Cost/gal $
1	**TSF North Pond to South Pond - 2020**	1213.00	0.010	20	7.758	82	111	85	29.98	40.30	730	0	21,654	383,609	83,787	489,050	0.27
2	**TSF South Pond to Pit - 2020**	3640.00	0.009	20	5.820	38	381	85	307.51	412.40	730	0	222,120	0	0	222,120	0.04
3	**HLP Draindown - Walter Creek HLP - 2020**	683.00	0.010	20	4.368	37	125	85	18.93	25.40	730	0	18,228	511,479	111,716	641,423	0.47
4	**HLP Draindown - Barnes Creek HLP - 2020**	1133.00	0.010	20	7.246	280	344	85	86.37	115.90	730	0	83,184	0	0	83,184	0.04
5	**TSF seepage to Pit - 2020-2022**	143.00	0.010	20	3.622	168	859	85	27.23	36.60	730	0	78,660	1,534,436	335,149	1,948,245	2.28
6	**TSF seepage to Pit - 2023-2054**	143.00	0.010	20	3.622	168	859	85	27.23	36.60	730	0	839,040	0	0	839,040	0.09
											4,378	**0**	**1,262,886**	**2,429,524**	**530,653**	**4,223,063**	

Notes:
1. Assumes 2 man labor crew unless user overrides default.
2. Maintaining pipe flow velocity between 1.0 m/s (3.28 ft/sec) and 3.0 m/s (9.84 ft/sec) is generally accepted piping practice. This range is dictated by economic considerations, allows for maintaining stable flow regime and precludes excessive friction losses, noise, vibration, wear and transient overpressures in the pipeline.
   Please revise pipe internal diameter if the calculated velocity is outside of the recommended range.

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Cost Estimate Type: FA   Cost Basis: Fort Knox

Pits - User Input

	Facility Description								Pit Berms					Berm Construction			Hauling (if selected method)				Revegetation		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Berm (or Highwall) Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Volume (if calculated elsewhere) cy	Berm Construction Method (select)	Berm Material Type (select)	Berm Construction Fleet (select)	Haul Distance to Placement Location ft	Slope to Placement Location % grade	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)
1	Pit Berm			Pit	Closure	Fort Knox		FA	39828	5.0	22.0	1.3		Dozer	Shale	Large Truck	0.0	0.0			User Mix 5 (from	None	Chemical

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Per closure plan, berm height is 4-6 ft. Average of 5 ft used above.

Pits - Assumptions & Calculations

Safety Berm Volume Calculation

Cross Sectional Area = (a+b)/2 x h
Berm Volume = Berm Length x Crossectional Area x No. Sides

Dozer productivity assumes push distance of:
100 ft

Dozer:
Length x (Berm Base Width + Dozer Push Distance) - accounts for disturbance created in borrow area

Excavator:
Length x (Berm Base Width + (2 x Excavator Track Width) - accounts for disturbance created in borrow area

Haul & Place:
Length x Berm Base Width - if necessary use Yards sheet to account for disturbance created in borrow area

Revegetation Calculations

Minimum 1 acre revegetation crew time per area

Pits - Safety Berm Construction Costs

		Safety Berm								
	Description (required)	Safety Berm Volume cy	Selected Fleet	Cycle Time min	Haul Fleet Size	Corrected Fleet Productivity cy/hr	Total Hours hrs	Safety Berm Labor Cost $	Safety Berm Equipment Cost $	Total Safety Berm Cost $
1	Pit Berm	114,321	D10T2		2	954	120	7,680	31,769	39,449
		114,321					120	**7,680**	**31,769**	**39,449**

Pits - Safety Berms - Revegetation Costs

	Description (required)	Flat Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Pit Berm	111.55	0	21,068	27,234	48,302
		111.55	**0**	**21,068**	**27,234**	**48,302**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Roads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each road

	Facility Description								Physical (1) - MANDATORY						User Overrides		Growth Media		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % grade	Ungraded Slope _H:1V	Cut Slope degrees	Road Width ft	Road Length ft	Slope Replacement Percent %	Regrade Volume (if calculated elsewhere) cy	Disturbed Area (if calculated elsewhere) acres	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Yellow Pup Haul Road (1)			Roads	Closure	Fort Knox		FA	4.0	1.5	60.0	75.0	5,563	100%		52.36			
2	Walter Creek Haul Road (2)			Roads	Closure	Fort Knox		FA	11.0	1.5	60.0	60.0	3,645	100%		35.82			
3	Gill Causeway (see "Sediment & Drainage Control") (3)			Roads	Closure	Fort Knox		FA	0.0	1.5	60.0	25.0	1,246	100%	13844.4	1.95			
4	Barnes Creek Haul Road (4)			Roads	Closure	BCHL Phase 9		FA	10.0	1.5	60.0	75.0	715	100%		6.37			
5	Access Road (9)			Roads	Closure	Fort Knox		FA	20.0	1.5	60.0	20.0	3,045	100%		7.94			
6	Access Road (10)			Roads	Closure	Fort Knox		FA	12.0	1.5	60.0	12.0	2,881	100%		4.14			
7	Access Road (12)			Roads	Closure	Fort Knox		FA	5.0	1.5	60.0	12.0	3,428	100%		2.83			

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Because the work required for building roads with a dozer is similar to that required to regrade a road with a dozer, this sheet could be used to provide a rough estimate of road construction costs if a dozer is selected as the grading fleet.

Also see "Exploration Roads & Pads."

Roads - User Input (cont.)

		Haul Road Safety Berms				
	Description (required)	Berm Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Number of Berms (2) (1 or 2 sides)
1	Yellow Pup Haul Road (1)					
2	Walter Creek Haul Road (2)					
3	Gill Causeway (see "Sediment & Drainage Control") (3)					
4	Barnes Creek Haul Road (4)					
5	Access Road (9)					
6	Access Road (10)					
7	Access Road (12)					

(2) Enter 1 if berm on only one side of road, 2 if both sides of road are bermed.

Roads - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each road

		Grading				Growth Media				Revegetation				
	Description (required)	Dozing Material Condition (select)	Cut Material Type (select)	Recontouring Equipment Fleet(2) (select)	No. of Excavators if grade >30% (select)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarifying/ Ripping? (select)	Ripping Fleet (select)
1	Yellow Pup Haul Road (1)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
2	Walter Creek Haul Road (2)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
3	Gill Causeway (see "Sediment & Drainage Control") (3)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
4	Barnes Creek Haul Road (4)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
5	Access Road (9)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
6	Access Road (10)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer
7	Access Road (12)	1	Alluvium	Small Excavator	1	Alluvium	Small Truck			User Mix 5 (from Seed Mix sheet)		Chemical	Yes	Med Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
2. If original slope >30% only excavators are allowed.

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Roads - Assumptions & Calculations

Regrading Volume and Footprint Volume

Will not allow dozer for slopes greater than 30%
For dozer regrading push distance = road width
Assumes dozer push is uphill
Assumes minimum push distance of 100 ft

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per area
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Road length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
For dozer regrading assumes push distance = 3 x road width

Revegetation Calculations

Minimum of 1 acre crew time per area

Safety Berm Volume Calculation

Cross Sectional Area = (a+b)/2 x h
Berm Volume = Berm Length x Crossectional Area x No. Sides

Total berm volume doubled if both sides of road are bermed.
If length of berm on each side of road is different, input total length of both berms
and input 1 for number of sides

Roads - Regrading Costs

	Description (required)	Regrading Volume cy	Recontouring Fleet	Number of Excavators	Fleet Productivity cy/hr	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**Yellow Pup Haul Road (1)**	6,616	325F	1	398	17	2,176	3,139	5,315
2	**Walter Creek Haul Road (2)**	8,276	325F	1	398	21	2,688	3,877	6,565
3	**Gill Causeway (see "Sediment & Drainage Control") (3)**	13,844	325F	1	398	35	4,480	6,462	10,942
4	**Barnes Creek Haul Road (4)**	2,278	325F	1	398	6	768	1,108	1,876
5	**Access Road (9)**	1,570	325F	1	398	4	512	739	1,251
6	**Access Road (10)**	289	325F	1	398	1	128	185	313
7	**Access Road (12)**	132	325F	1	398	1	128	185	313
		33,005				85	**10,880**	**15,695**	**26,575**

Roads - Growth Media Costs

	Description (required)	Volume cy	Replacement Fleet	Cycle Time min	Fleet Productivity LCY/hr	Haul Fleet Size	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Topsoiling Cost $
1	**Yellow Pup Haul Road (1)**	0					0	0	0	
2	**Walter Creek Haul Road (2)**	0					0	0	0	
3	**Gill Causeway (see "Sediment & Drainage Control") (3)**	0					0	0	0	
4	**Barnes Creek Haul Road (4)**	0					0	0	0	
5	**Access Road (9)**	0					0	0	0	
6	**Access Road (10)**	0					0	0	0	
7	**Access Road (12)**	0					0	0	0	
		0					0	**0**	**0**	**0**

Roads - Scarifying/Revegetation Costs

						Scarifying Costs			Regegetation Costs			
	Description (required)	Total Surface Area acres	Final Slope Length ft	Ripping/ Scarifying Fleet	Ripping Hours hrs	Ripping Labor Costs $	Ripping Equipment Cost $	Total Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**Yellow Pup Haul Road (1)**	52.36	410	D9T	38	2,432	8,109	10,541	0	9,889	12,783	22,672
2	**Walter Creek Haul Road (2)**	35.82	428	D9T	26	1,664	5,548	7,212	0	6,765	8,745	15,510
3	**Gill Causeway (see "Sediment & Drainage Control") (3)**	1.95	68	D9T	1	64	213	277	0	368	477	845
4	**Barnes Creek Haul Road (4)**	6.37	388	D9T	5	320	1,067	1,387	0	1,203	1,556	2,759
5	**Access Road (9)**	7.94	114	D9T	6	384	1,280	1,664	0	1,500	1,938	3,438
6	**Access Road (10)**	4.14	63	D9T	3	192	640	832	0	782	1,011	1,793
7	**Access Road (12)**	2.83	36	D9T	2	128	427	555	0	534	691	1,225
		111.41			81	**5,184**	**17,284**	**22,468**	**0**	**21,041**	**27,201**	**48,242**

Closure Cost Estimate
Yards, Etc.

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Yards, Etc. - User Input

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

	Facility Description								Physical			Cover 1			Cover 2			Growth Media		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Area acres	Average Flat Area Long Dimension (ripping distance) ft	Regrade Volume (calculated elsewhere) cy	Cover Thickness in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Growth Media Thickness in	Haul Distance to Placement ft	Slope to Placement Location % grade
1	Laydown Yard			Yards	Closure	Fort Knox		FA	80.91	1,880	0									
2	Tailings North Borrow			Borrow Area	Closure	Fort Knox		FA	66.32	1,700	0									
3	Tailings South Borrow 2			Borrow Area	Closure	Fort Knox		FA	42.15	1,360	0									
4	Tailings South Borrow 1			Borrow Area	Closure	Fort Knox		FA	42.42	1,360	0									
5	Heap Leach Growth Media 1			Yards	Closure	Fort Knox		FA	72.16	1,770	0									
6	Heap Leach Growth Media 2			Yards	Closure	Fort Knox		FA	13.48	770	0									
7	Yellow Pup Growth Media 1			Yards	Closure	Fort Knox		FA	3.23	370	0									
8	Yellow Pup Growth Media 2			Yards	Closure	Fort Knox		FA	0.81	190	0									
9	Yellow Pup Growth Media 3			Yards	Closure	Fort Knox		FA	0.94	200	0									
10	Barnes Creek Growth Media 1			Yards	Closure	Fort Knox		FA	6.96	550	0									
11	Barnes Creek Growth Media 4			Yards	Closure	Fort Knox		FA	0.88	200	0									
12	Barnes Creek Growth Media 3			Yards	Closure	Fort Knox		FA	2.53	330	0									
13	Barnes Creek Growth Media 2			Yards	Closure	Fort Knox		FA	2.87	350	0									
14	TSF North Growth Media			Yards	Closure	Fort Knox		FA	63.59	1,660	0									
15	TSF South Growth Media 1			Yards	Closure	Fort Knox		FA	4.25	430	0									
16	TSF South Growth Media 2			Yards	Closure	Fort Knox		FA	0.89	200	0									
17	Water Supply Growth Media (reclaimed)			Yards	Closure	Fort Knox		FA	29.83	1,140	0									
18	Mill Stockpile Area			Yards	Closure	Fort Knox		FA	54.17	1,540	0									
19	Mill & Admin Area			Yards	Closure	Fort Knox		FA	54.15	1,540	0									
20	Contractor Laydown Area			Yards	Closure	Fort Knox		FA	8.66	610	0									
21	Fish Creek Area Regrade (volume from AutoCAD)			Yards	Closure	Fort Knox		FA	98.57	600		24.7	1,200	-2.0				12	9,571	1.5
22	Pit Pre-Strip Area			Pit	Closure	Fort Knox		FA	95.20	2,040	0									

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Assume that all yards will be regraded, scarified and seeded.
Fish Creek Area regrade/fill area will include depostion of fill material from Yellow Pup dump, this material will be covered with growth media
The pit pre-strip area is assumed suficient soils remain to provide adequate revegetation by scarification and reseeding.

Yards, Etc. - User Input (Cont.)

	Facility Description	Cover 1 - Crushing & Screening									Cover 2 - Crushing & Screening								
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Cover Borrow % grade	Haul to Crusher Fleet (2) (select)	Compact After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope from Cover Borrow % grade	Haul to Crusher Fleet (2) (select)	Compact After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Laydown Yard																		
2	Tailings North Borrow																		
3	Tailings South Borrow 2																		
4	Tailings South Borrow 1																		
5	Heap Leach Growth Media 1																		
6	Heap Leach Growth Media 2																		
7	Yellow Pup Growth Media 1																		
8	Yellow Pup Growth Media 2																		
9	Yellow Pup Growth Media 3																		
10	Barnes Creek Growth Media 1																		
11	Barnes Creek Growth Media 4																		
12	Barnes Creek Growth Media 3																		
13	Barnes Creek Growth Media 2																		
14	TSF North Growth Media																		
15	TSF South Growth Media 1																		
16	TSF South Growth Media 2																		
17	Water Supply Growth Media (reclaimed)																		
18	Mill Stockpile Area																		
19	Mill & Admin Area																		
20	Contractor Laydown Area																		
21	Fish Creek Area Regrade (volume from AutoCAD)																		
22	Pit Pre-Strip Area																		

Notes:
1. Input distance to crusher if material to be crushed
2. if distance from borrow <820 ft (250 m) must select loader fleet

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Cost Data: User Data
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Cost Estimate Type: FA Cost Basis: Fort Knox

Yards, Etc. - User Input (Cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Grading			Cover 1				Cover 2				Growth Media				Revegetation				
	Description (required)	Dozing Material Condition (select)	Dozing Material Type (select)	Grading Equipment Fleet (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Ripping Fleet (select)
1	Laydown Yard	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
2	Tailings North Borrow	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
3	Tailings South Borrow 2	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
4	Tailings South Borrow 1	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
5	Heap Leach Growth Media 1	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
6	Heap Leach Growth Media 2	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
7	Yellow Pup Growth Media 1	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
8	Yellow Pup Growth Media 2	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
9	Yellow Pup Growth Media 3	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
10	Barnes Creek Growth Media 1	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
11	Barnes Creek Growth Media 4	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
12	Barnes Creek Growth Media 3	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
13	Barnes Creek Growth Media 2	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
14	TSF North Growth Media	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
15	TSF South Growth Media 1	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
16	TSF South Growth Media 2	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
17	Water Supply Growth Media (reclaimed)	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
18	Mill Stockpile Area	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
19	Mill & Admin Area	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
20	Contractor Laydown Area	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
21	Fish Creek Area Regrade (volume from AutoCAD)	1	Granite - broken	Large	Granite - broken	Large Truck							Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer
22	Pit Pre-Strip Area	1	Granite - broken	Large									Topsoil	Large Truck			User Mix 5 (fror	None	Chemical	Yes	Large Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Yards, Etc. - Assumptions & Calculations

Grading Calculations

Average push distance assumed to be 2/3 of the 600 feet maximum from Catepillar Handbook or 400 feet
Material assumed to be loose stockile (1.2 productivity factor)
Slope assumed to be 0 to 5% (1.0 productivity factor)

Cover Volume Calculation

Yard area x cover thickness

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr ripping/scarifying per area

Revegetation

Minimum 1 acre revegetation crew time per area

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Yards, Etc. - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Laydown Yard			D10T2						0	0	0	0
2	Tailings North Borrow			D10T2						0	0	0	0
3	Tailings South Borrow 2			D10T2						0	0	0	0
4	Tailings South Borrow 1			D10T2						0	0	0	0
5	Heap Leach Growth Media 1			D10T2						0	0	0	0
6	Heap Leach Growth Media 2			D10T2						0	0	0	0
7	Yellow Pup Growth Media 1			D10T2						0	0	0	0
8	Yellow Pup Growth Media 2			D10T2						0	0	0	0
9	Yellow Pup Growth Media 3			D10T2						0	0	0	0
10	Barnes Creek Growth Media 1			D10T2						0	0	0	0
11	Barnes Creek Growth Media 4			D10T2						0	0	0	0
12	Barnes Creek Growth Media 3			D10T2						0	0	0	0
13	Barnes Creek Growth Media 2			D10T2						0	0	0	0
14	TSF North Growth Media			D10T2						0	0	0	0
15	TSF South Growth Media 1			D10T2						0	0	0	0
16	TSF South Growth Media 2			D10T2						0	0	0	0
17	Water Supply Growth Media (reclaimed)			D10T2						0	0	0	0
18	Mill Stockpile Area			D10T2						0	0	0	0
19	Mill & Admin Area			D10T2						0	0	0	0
20	Contractor Laydown Area			D10T2						0	0	0	0
21	Fish Creek Area Regrade (volume from AutoCAD)			D10T2						0	0	0	0
22	Pit Pre-Strip Area			D10T2						0	0	0	0
		0								0	**0**	**0**	**0**

Yards, Etc. - Cover 1 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Laydown Yard	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Tailings North Borrow	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Tailings South Borrow 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Tailings South Borrow 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Heap Leach Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Heap Leach Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Yellow Pup Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Yellow Pup Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Yellow Pup Growth Media 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Barnes Creek Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Barnes Creek Growth Media 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Barnes Creek Growth Media 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Barnes Creek Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	TSF North Growth Media	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	TSF South Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	TSF South Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Water Supply Growth Media (reclaimed)	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Mill Stockpile Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Mill & Admin Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Contractor Laydown Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Fish Creek Area Regrade (volume from AutoCAD)	0	327,323					0	777G/992K/D9T	5.94	2	1,117	293	0	0	0	0	0	0	0	76,414	352,163	428,577	428,577
22	Pit Pre-Strip Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	327,323					0					293	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**76,414**	**352,163**	**428,577**	**428,577**

Notes:

1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Yards, Etc. - Cover 2 Costs

		Material Volumes		Haul to Crusher					Haul to Placement					Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Laydown Yard	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
2	Tailings North Borrow	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
3	Tailings South Borrow 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
4	Tailings South Borrow 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
5	Heap Leach Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
6	Heap Leach Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
7	Yellow Pup Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
8	Yellow Pup Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
9	Yellow Pup Growth Media 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
10	Barnes Creek Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
11	Barnes Creek Growth Media 4	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
12	Barnes Creek Growth Media 3	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
13	Barnes Creek Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
14	TSF North Growth Media	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
15	TSF South Growth Media 1	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
16	TSF South Growth Media 2	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
17	Water Supply Growth Media (reclaimed)	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
18	Mill Stockpile Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
19	Mill & Admin Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
20	Contractor Laydown Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
21	Fish Creek Area Regrade (volume from AutoCAD)	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
22	Pit Pre-Strip Area	0	0					0					0	0	0	0	0	0	0	0	0	0	0	0
		0	0					0					0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)

Yards, Etc. - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	Laydown Yard						0	0	0	0
2	Tailings North Borrow						0	0	0	0
3	Tailings South Borrow 2						0	0	0	0
4	Tailings South Borrow 1						0	0	0	0
5	Heap Leach Growth Media 1						0	0	0	0
6	Heap Leach Growth Media 2						0	0	0	0
7	Yellow Pup Growth Media 1						0	0	0	0
8	Yellow Pup Growth Media 2						0	0	0	0
9	Yellow Pup Growth Media 3						0	0	0	0
10	Barnes Creek Growth Media 1						0	0	0	0
11	Barnes Creek Growth Media 4						0	0	0	0
12	Barnes Creek Growth Media 3						0	0	0	0
13	Barnes Creek Growth Media 2						0	0	0	0
14	TSF North Growth Media						0	0	0	0
15	TSF South Growth Media 1						0	0	0	0
16	TSF South Growth Media 2						0	0	0	0
17	Water Supply Growth Media (reclaimed)						0	0	0	0
18	Mill Stockpile Area						0	0	0	0
19	Mill & Admin Area						0	0	0	0
20	Contractor Laydown Area						0	0	0	0
21	Fish Creek Area Regrade (volume from AutoCAD)	159,024	777G/992K/D9T	14.7	5	1,129	141	64,450	267,598	332,048
22	Pit Pre-Strip Area						0	0	0	0
		159,024					141	**64,450**	**267,598**	**332,048**

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Cost Estimate Type: FA Cost Basis: Fort Knox

Yards, Etc. - Scarify/Revegetation Costs

						Scarifying Costs			Regegetation Costs			
	Description (required)	Total Surface Area acres	Average Long Dimension (ripping distance) ft	Ripping/Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	**Laydown Yard**	80.91	1,880	D10T2	52	3,328	13,766	17,094	0	0	19,754	19,754
2	**Tailings North Borrow**	66.32	1,700	D10T2	43	2,752	11,384	14,136	0	0	16,190	16,190
3	**Tailings South Borrow 2**	42.15	1,360	D10T2	27	1,792	7,413	9,205	0	0	10,291	10,291
4	**Tailings South Borrow 1**	42.42	1,360	D10T2	27	1,792	7,413	9,205	0	0	10,358	10,358
5	**Heap Leach Growth Media 1**	72.16	1,770	D10T2	47	3,008	12,443	15,451	0	0	17,617	17,617
6	**Heap Leach Growth Media 2**	13.48	770	D10T2	9	576	2,383	2,959	0	0	3,292	3,292
7	**Yellow Pup Growth Media 1**	3.23	370	D10T2	2	192	794	986	0	0	788	788
8	**Yellow Pup Growth Media 2**	0.81	190	D10T2	1	64	265	329	0	0	198	198
9	**Yellow Pup Growth Media 3**	0.94	200	D10T2	1	64	265	329	0	0	229	229
10	**Barnes Creek Growth Media 1**	6.96	550	D10T2	5	320	1,324	1,644	0	0	1,699	1,699
11	**Barnes Creek Growth Media 4**	0.88	200	D10T2	1	64	265	329	0	0	215	215
12	**Barnes Creek Growth Media 3**	2.53	330	D10T2	2	128	529	657	0	0	619	619
13	**Barnes Creek Growth Media 2**	2.87	350	D10T2	2	128	529	657	0	0	701	701
14	**TSF North Growth Media**	63.59	1,660	D10T2	41	2,624	10,854	13,478	0	0	15,524	15,524
15	**TSF South Growth Media 1**	4.25	430	D10T2	3	192	794	986	0	0	1,037	1,037
16	**TSF South Growth Media 2**	0.89	200	D10T2	1	64	265	329	0	0	218	218
17	**Water Supply Growth Media (reclaimed)**	29.83	1,140	D10T2	19	1,280	5,295	6,575	0	0	7,282	7,282
18	**Mill Stockpile Area**	54.17	1,540	D10T2	35	2,240	9,266	11,506	0	0	13,224	13,224
19	**Mill & Admin Area**	54.15	1,540	D10T2	35	2,240	9,266	11,506	0	0	13,221	13,221
20	**Contractor Laydown Area**	8.66	610	D10T2	6	384	1,588	1,972	0	0	2,114	2,114
21	**Fish Creek Area Regrade (volume from AutoCAD)**	98.57	600	D10T2	65	4,160	17,208	21,368	0	0	24,064	24,064
22	**Pit Pre-Strip Area**	95.20	2,040	D10T2	61	3,904	16,149	20,053	0	0	23,241	23,241
		744.97			482	**31,296**	**129,458**	**160,754**	**0**	**0**	**181,876**	**181,876**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2) Assumes 50 min/hr equipment availability

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Cost Estimate Type: FA Cost Basis: Fort Knox

Generic Material Hauling - User Input

Facility Description									Physical			Haul to Crusher		Crushing & Screening			Haul to Placement		Cover Thickness			Growth Media		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Final Surface Area acres	Average Ripping Distance ft	Material Volume Required cy	Haul Distance to Crusher (1) ft	Slope to Crusher % grade	Crush Material	Screen Material	Loss to Crushing/ Screening %	Haul Distance to Placement Location (2) ft	Slope to Placement Area % grade	Cover Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Riprap for channels - Yellow Pup WRD to Spillway			Sediment and Drainage C	Closure	Fort Knox		FA			53,392	300	0.0		Yes	75%	13,404	1.6						
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HLP			Sediment and Drainage C	Closure	Fort Knox		FA			32,296	300	0.0		Yes	75%	21,319	-1.5						
3	Riprap for channels - Yellow Pup WRD to Walter Creek HLP			Sediment and Drainage C	Closure	Fort Knox		FA			30,744	300	0.0		Yes	75%	24,137	-3.2						
4	TSF spillway fine-grained bedding haulage			Sediment and Drainage C	Closure	Fort Knox		FA	8.55	610	13,794	300	0.0		Yes	30%	9,926	0.0						
5	TSF spillway coarse-grained bedding haulage			Sediment and Drainage C	Closure	Fort Knox		FA	9.25	635	14,915	300	0.0		Yes	30%	9,926	0.0						

Notes:
1. Input distance to crusher if material to be crushed
2. Assumed to be 0% if material will be crushed and source is within 250 m of crusher
3. If Slope is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

See User 14 for riprap quantities

Generic Material Hauling - User Input (cont.)

		Hauling Material								Cover				Growth Media				Revegetation				
	Description (required)	Haul Material Type (select)	Crusher Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Placement Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Compact After Placement?	Material Type (select)	Placement Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch Type (select)	Fertilizer Type (select)	Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	Riprap for channels - Yellow Pup WRD to Spillway	Granite - broken	Large Truck			Large Truck			No		Large Truck			Topsoil	Large Truck			None	None	None	No	
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HL	Granite - broken	Large Truck			Large Truck			No		Large Truck			Topsoil	Large Truck			None	None	None	No	
3	Riprap for channels - Yellow Pup WRD to Walter Creek HL	Granite - broken	Large Truck			Large Truck			No		Large Truck			Topsoil	Large Truck			None	None	None	No	
4	TSF spillway fine-grained bedding haulage	Granite - broken	Large Truck			Large Truck			Yes		Large Truck			Topsoil	Large Truck			None	None	None	No	
5	TSF spillway coarse-grained bedding haulage	Granite - broken	Large Truck			Large Truck			No		Large Truck			Topsoil	Large Truck			None	None	None	No	

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
2. If distance betweem borrow source is <250 m, haul fleet assumed be wheeled loaders

Closure Cost Estimate
Haul Material

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Estimate Type: FA   Cost Basis: Fort Knox

Generic Material Hauling - Load, Haul, Place and Grade

		Material Volumes		Haul to Crusher					Haul to Placement				
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Fleet Hours hrs
1	Riprap for channels - Yellow Pup WRD to Spillway	213,568	53,392	777G/992K/992K	5	2	1,326	161	777G/992K/D9T	18.72	6	1,061	50
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HL	129,184	32,296	777G/992K/992K	5	2	1,326	97	777G/992K/D9T	27	9	1,106	29
3	Riprap for channels - Yellow Pup WRD to Walter Creek HL	122,976	30,744	777G/992K/992K	5	2	1,326	93	777G/992K/D9T	36.5	12	1,086	28
4	TSF spillway fine-grained bedding haulage	19,706	13,794	777G/992K/992K	5	2	1,326	15	777G/992K/D9T	15.08	5	1,100	13
5	TSF spillway coarse-grained bedding haulage	21,307	14,915	777G/992K/992K	5	2	1,326	16	777G/992K/D9T	15.08	5	1,100	14
		506,741	145,141					382					134

		Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Riprap for channels - Yellow Pup WRD to Spillway	42,301	243,606	285,907	106,784	0	0	0	26,126	106,492	132,618	525,309
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HL	25,486	146,769	172,255	64,592	0	0	0	20,845	81,948	102,793	339,640
3	Riprap for channels - Yellow Pup WRD to Walter Creek HL	24,435	140,716	165,151	61,488	0	0	0	25,623	98,608	124,231	350,870
4	TSF spillway fine-grained bedding haulage	3,941	22,696	26,637	9,853	5,104	1,931	7,035	5,942	24,672	30,614	74,139
5	TSF spillway coarse-grained bedding haulage	4,204	24,209	28,413	10,654	0	0	0	6,399	26,570	32,969	72,036
		100,367	**577,996**	**678,363**	**253,371**	**5,104**	**1,931**	**7,035**	**84,935**	**338,290**	**423,225**	**1,361,993**

Notes: Final Material Volume includes allowance for additional material hauled to crushing/screening plant based on Loss to Crushing/Screening input above.

Generic Material Hauling - Cover and Growth Media Costs

		Cover Placement									Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Cover Placement Cost $	Final Material Volume cy	Placement Fleet	Cycle Time min	No. of Trucks/ Scrapers	Fleet Productivity LCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	Riprap for channels - Yellow Pup WRD to Spillway						0	0	0	0							0	0	0
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HL						0	0	0	0							0	0	0
3	Riprap for channels - Yellow Pup WRD to Walter Creek HL						0	0	0	0							0	0	0
4	TSF spillway fine-grained bedding haulage						0	0	0	0							0	0	0
5	TSF spillway coarse-grained bedding haulage						0	0	0	0							0	0	0
		0					0	**0**	**0**	**0**	0					0	**0**	**0**	**0**

Generic Material Hauling - Scarifying/Revegetation Costs

					Scarifying Costs			Regegetation Costs			
	Description (required)	Total Surface Area acres	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Cost $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Cost $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Riprap for channels - Yellow Pup WRD to Spillway	0.10		0	0	0	0	0	0	0	0
2	Riprap for channels - Yellow Pup WRD to Barnes Creek HL	0.10		0	0	0	0	0	0	0	0
3	Riprap for channels - Yellow Pup WRD to Walter Creek HL	0.10		0	0	0	0	0	0	0	0
4	TSF spillway fine-grained bedding haulage	8.60		0	0	0	0	0	0	0	0
5	TSF spillway coarse-grained bedding haulage	9.20		0	0	0	0	0	0	0	0
		18.10		0	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Closure Cost Estimate
Foundations & Buildings

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Estimate Type: FA   Cost Basis: Fort Knox

Buildings & Foundation - User Input									You must fill in ALL green cells and relevant blue cells in this section for each building or facility													
Facility Description									Physical - MANDATORY								Foundation Cover (1)			Growth Media (1) (entire footprint)		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Width ft	Eave Height ft	Slab Thickness in	Foundation Wall Thickness in	Foundation Wall Height ft	Average Flat Area Long Dimension (ripping distance) ft	Building Area Footprint (including surrounding facilities) acres	Foundation Cover Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	CIC 1	6.10		Buildings	Closure	Fort Knox		FA	144	57	50	6	10	3	144	0.19	12	1,000	8.0	0	0	0.0
2	CIC 2	6.10		Buildings	Closure	Fort Knox		FA	123	59	50	6	10	3	123	0.17	12	1,000	8.0	0	0	0.0
3	Tailings Thickener	6.10		Buildings	Closure	Fort Knox		FA	111	107	50	24	40	7	111	0.27	12	1,000	8.0	0	0	0.0
4	Pre-Leach Thickener	6.10		Buildings	Closure	Fort Knox		FA	195	125	50	24	40	7	195	0.56	12	1,000	8.0	0	0	0.0
5	Grind Floor	6.10		Buildings	Closure	Fort Knox		FA	218	147	100	18	10	4	218	0.74	12	1,000	8.0	0	0	0.0
6	MCC	6.10		Buildings	Closure	Fort Knox		FA	97	85	100	8	10	4	97	0.19	12	1,000	8.0	0	0	0.0
7	Crusher	6.10		Buildings	Closure	Fort Knox		FA	112	60	50	24	40	3	112	0.15	12	1,000	8.0	0	0	0.0
8	Conveyor Drive Tower	6.10		Buildings	Closure	Fort Knox		FA	50	50	30	6	8	1	50	0.06	12	1,000	8.0	0	0	0.0
9	Cold Storage (Steel)	6.10		Buildings	Closure	Fort Knox		FA	202	101	22	6	8	3	202	0.47	12	1,000	8.0	0	0	0.0
10	Tailings Barge	6.10		Buildings	Closure	Fort Knox		FA	34	30	20	6	0	0	34	0.02	12	1,000	8.0	0	0	0.0
11	Leach Tank (1/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
12	Leach Tank (2/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
13	Leach Tank (3/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
14	Leach Tank (4/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
15	Leach Tank (5/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
16	Leach Tank (6/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
17	Leach Tank (7/7)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	7	49	0.06	12	1,000	8.0	0	0	0.0
18	CN Detox	6.10		Buildings	Closure	Fort Knox		FA	141	107	50	8	12	3	141	0.35	12	1,000	8.0	0	0	0.0
19	Storage Tent	6.10		Buildings	Closure	Fort Knox		FA	195	125	0	6	0	0	195	0.56	12	1,000	8.0	0	0	0.0
20	Storage Tent	6.10		Buildings	Closure	Fort Knox		FA	103	54	0	6	0	0	103	0.13	12	1,000	8.0	0	0	0.0
21	Storage Steel (Building 51)	6.10		Buildings	Closure	Fort Knox		FA	102	43	20	12	8	3	102	0.10	12	1,000	8.0	0	0	0.0
22	Refinery	6.10		Buildings	Closure	Fort Knox		FA	218	112	57	8	10	2	218	0.56	12	1,000	8.0	0	0	0.0
23	Assay Lab	6.10		Buildings	Closure	Fort Knox		FA	125	58	30	6	10	7	125	0.17	12	1,000	8.0	0	0	0.0
24	Carbon in Pulp Tank (1/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
25	Carbon in Pulp Tank (2/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
26	Carbon in Pulp Tank (3/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
27	Carbon in Pulp Tank (4/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
28	Carbon in Pulp Tank (5/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
29	Carbon in Pulp Tank (6/6)	6.10		Tanks	Closure	Fort Knox		FA	49	49	55	24	40	3	49	0.06	12	1,000	8.0	0	0	0.0
30	Warehouse	6.10		Buildings	Closure	Fort Knox		FA	306	86	30	6	10	5	306	0.60	12	1,000	8.0	0	0	0.0
31	MEM	6.10		Buildings	Closure	Fort Knox		FA	327	86	58	6	10	5	327	0.65	12	1,000	8.0	0	0	0.0
32	Recycle Water Tank	6.10		Buildings	Closure	Fort Knox		FA	49	49	50	12	8	5	49	0.06	12	1,000	8.0	0	0	0.0
33	ALPM	6.10		Buildings	Closure	Fort Knox		FA	185	78	60	8	8	3	185	0.33	12	1,000	8.0	0	0	0.0
34	Tire Yard	6.10		Buildings	Closure	Fort Knox		FA	71	71	0	0	0	0	71	0.12	12	1,000	8.0	0	0	0.0
35	Admin Building	6.10		Buildings	Closure	Fort Knox		FA	129	119	22	6	10	5	129	0.35	12	1,000	8.0	0	0	0.0
36	Laydown Yard 1	6.10		Buildings	Closure	Fort Knox		FA	81	66	0	0	0	0	81	0.12	12	1,000	8.0	0	0	0.0
37	Laydown Yard 2	6.10		Buildings	Closure	Fort Knox		FA	99	41	0	0	0	0	99	0.09	12	1,000	8.0	0	0	0.0
38	Freshwater Pump House	6.10		Buildings	Closure	Fort Knox		FA	33	33	20	6	8	2	33	0.03	12	1,000	8.0	0	0	0.0
39	Seepage Pumphouse	6.10		Buildings	Post-Closure	Fort Knox		FA	52	29	20	6	10	2	52	0.03	12	1,000	8.0	0	0	0.0
40	Emergency Generators	6.10		Buildings	Post-Closure	Fort Knox		FA	108	60	20	6	10	3	108	0.15	12	1,000	8.0	0	0	0.0
41	RO-1 tent	6.10		Buildings	Closure	Fort Knox		FA	91	52	0	6	0	0	91	0.11	12	1,000	8.0	0	0	0.0
42	Heap leach booster pump - building 1	6.10		Buildings	Closure	Fort Knox		FA	61	24	20	6	10	2	61	0.03	12	1,000	8.0	0	0	0.0
43	Heap leach booster pump - building 2	6.10		Buildings	Closure	Fort Knox		FA	50	13	20	6	10	2	50	0.01	12	1,000	8.0	0	0	0.0

Notes:
1. Foundation cover only calculated to cover slab. Growth media estimated over entire footprint area
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Building dimensions from drawings or from "Book1" spreadsheet provided by FGMI. See "Book1_Building_Demolition_ft.xlsx" for documentation.

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Buildings & Foundation - User Input (cont.) You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Construction Materials		Slab Demolition		Foundation Cover				Growth Media				Revegetation				
	Description (required)	Building Type (select)	Foundation Wall Type (select)	Slab Demo Method (select)	Slab Breaking Equipment Fleet (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Ripping Fleet (select)
1	CIC 1	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
2	CIC 2	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
3	Tailings Thickener	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
4	Pre-Leach Thickener	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
5	Grind Floor	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
6	MCC	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
7	Crusher	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
8	Conveyor Drive Tower	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
9	Cold Storage (Steel)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
10	Tailings Barge	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
11	Leach Tank (1/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
12	Leach Tank (2/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
13	Leach Tank (3/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
14	Leach Tank (4/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
15	Leach Tank (5/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
16	Leach Tank (6/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
17	Leach Tank (7/7)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
18	CN Detox	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
19	Storage Tent	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
20	Storage Tent	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
21	Storage Steel (Building 51)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
22	Refinery	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
23	Assay Lab	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
24	Carbon in Pulp Tank (1/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
25	Carbon in Pulp Tank (2/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
26	Carbon in Pulp Tank (3/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
27	Carbon in Pulp Tank (4/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
28	Carbon in Pulp Tank (5/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
29	Carbon in Pulp Tank (6/6)	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
30	Warehouse	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
31	MEM	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
32	Recycle Water Tank	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
33	ALPM	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
34	Tire Yard	Lg. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
35	Admin Building	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
36	Laydown Yard 1	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
37	Laydown Yard 2	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
38	Freshwater Pump House	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
39	Seepage Pumphouse	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
40	Emergency Generators	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
41	RO-1 tent	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
42	Heap leach booster pump - building 1	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer
43	Heap leach booster pump - building 2	Sm. steel	Conc 8 in (200 mm) thick	Break & bury	Med Excavator	Granite - broken	Med Truck							User Mix 5 (from Seed Mix shee		Chemical	Yes	Small Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Foundations & Buildings - Assumptions & Calculations

Building Volume Calculations

Using Means Heavy Construction Cost Data (2004) calculates cubic feet from building dimensions
Estimage slab thickness and wall thickness if not known
Assumes that all concrete slabs are reinforced
Productivity for crew from Means Heavy Construction Cost Data (2004) adjusted for supervision
(addressed in Misc. Costs) and Davis-Bacon Wage Rates
Demolition costs do not include hauling or disposing if debris - Use Waste Disposal module

Slab Demolition Calculations

Minimum 1 hr excavator time for slab demolition

Cover Volume Calculation

Foundation area x cover thickness
If "Bury in Place" is selected as slab demolition method, cover thickness is adjusted such that
total cover (cover + growth media) equals value entered in "Minimum thickness of cover over unbroken slab" cell above

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation

Minimum 1 acre revegetation crew time per area

Closure Cost Estimate
Foundations & Buildings

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Building & Foundation Demolition Costs

Uses RS Means Heavy Construction Cost Data for building and wall demolition cost calculations. Uses CAT Handbook for slab breaking production.

	Description (required)	Building Footprint (slab area) sqft	Building Volume cu ft	Building Demolition Fleet	Building Demolition Hours hrs	Wall Length ft	Wall Area sq ft	Wall Demolition Hours hrs	Slab Volume cy	Slab Demolition Fleet	Slab Demolition Hours hrs
1	**CIC 1**	8,208	410,400	930M/20 Ton Crane/Dump T	153	402	1,206	69	152	349F	3
2	**CIC 2**	7,257	362,850	930M/20 Ton Crane/Dump T	135	364	1,092	62	134	349F	2
3	**Tailings Thickener**	11,877	593,850	930M/20 Ton Crane/Dump T	221	436	3,052	174	880	349F	15
4	**Pre-Leach Thickener**	24,375	1,218,750	930M/20 Ton Crane/Dump T	453	640	4,480	256	1,806	349F	30
5	**Grind Floor**	32,046	3,204,600	930M/20 Ton Crane/Dump T	1,192	730	2,920	167	1,780	349F	30
6	**MCC**	8,245	824,500	930M/20 Ton Crane/Dump T	307	364	1,456	83	204	349F	3
7	**Crusher**	6,720	336,000	930M/20 Ton Crane/Dump T	125	344	1,032	59	498	349F	8
8	**Conveyor Drive Tower**	2,500	75,000	930M/20 Ton Crane/Dump T	28	200	200	11	46	349F	1
9	**Cold Storage (Steel)**	20,402	448,844	930M/20 Ton Crane/Dump T	167	606	1,818	104	378	349F	6
10	**Tailings Barge**	1,020	20,400	930M/20 Ton Crane/Dump T	8	128	0	0	19	349F	1
11	**Leach Tank (1/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
12	**Leach Tank (2/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
13	**Leach Tank (3/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
14	**Leach Tank (4/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
15	**Leach Tank (5/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
16	**Leach Tank (6/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
17	**Leach Tank (7/7)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	1,372	78	178	349F	3
18	**CN Detox**	15,087	754,350	930M/20 Ton Crane/Dump T	281	496	1,488	85	373	349F	6
19	**Storage Tent**	24,375	0	930M/20 Ton Crane/Dump T	0	640	0	0	451	349F	8
20	**Storage Tent**	5,562	0	930M/20 Ton Crane/Dump T	0	314	0	0	103	349F	2
21	**Storage Steel (Building 51)**	4,386	87,720	930M/20 Ton Crane/Dump T	33	290	870	50	162	349F	3
22	**Refinery**	24,416	1,391,712	930M/20 Ton Crane/Dump T	518	660	1,320	75	603	349F	10
23	**Assay Lab**	7,250	217,500	930M/20 Ton Crane/Dump T	81	366	2,562	146	134	349F	2
24	**Carbon in Pulp Tank (1/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
25	**Carbon in Pulp Tank (2/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
26	**Carbon in Pulp Tank (3/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
27	**Carbon in Pulp Tank (4/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
28	**Carbon in Pulp Tank (5/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
29	**Carbon in Pulp Tank (6/6)**	2,401	132,055	930M/20 Ton Crane/Dump T	49	196	588	34	178	349F	3
30	**Warehouse**	26,316	789,480	930M/20 Ton Crane/Dump T	294	784	3,920	224	487	349F	8
31	**MEM**	28,122	1,631,076	930M/20 Ton Crane/Dump T	607	826	4,130	236	521	349F	9
32	**Recycle Water Tank**	2,401	120,050	930M/20 Ton Crane/Dump T	45	196	980	56	89	349F	1
33	**ALPM**	14,430	865,800	930M/20 Ton Crane/Dump T	322	526	1,578	90	356	349F	6
34	**Tire Yard**	5,041	0	930M/20 Ton Crane/Dump T	0	284	0	0	0		0
35	**Admin Building**	15,351	337,722	930M/Dump Truck (10-12 yd	183	496	2,480	142	284	349F	5
36	**Laydown Yard 1**	5,346	0	930M/Dump Truck (10-12 yd	0	294	0	0	0		0
37	**Laydown Yard 2**	4,059	0	930M/Dump Truck (10-12 yd	0	280	0	0	0		0
38	**Freshwater Pump House**	1,089	21,780	930M/Dump Truck (10-12 yd	12	132	264	15	20	349F	1
39	**Seepage Pumphouse**	1,508	30,160	930M/Dump Truck (10-12 yd	16	162	324	19	28	349F	1
40	**Emergency Generators**	6,480	129,600	930M/Dump Truck (10-12 yd	70	336	1,008	58	120	349F	2
41	**RO-1 tent**	4,732	0	930M/Dump Truck (10-12 yd	0	286	0	0	88	349F	1
42	**Heap leach booster pump - building 1**	1,464	29,280	930M/Dump Truck (10-12 yd	16	170	340	19	27	349F	1
43	**Heap leach booster pump - building 2**	650	13,000	930M/Dump Truck (10-12 yd	7	126	252	14	12	349F	1
			15,631,139						12,069		205

	Description (required)	Building Demolition: Total Labor Cost $	Building Demolition: Total Equipment Cost $	Building Demolition: Total Building Demolition Cost $	Wall Demolition: Total Labor Cost $	Wall Demolition: Total Equipment Cost $	Wall Demolition: Total Wall Demolition Cost $	Slab Demolition: Total Labor Cost $	Slab Demolition: Total Equipment Cost $	Slab Demolition: Total Slab Breaking Cost $	Total Costs: Total Labor Cost $	Total Costs: Total Equipment Cost $	Total Costs: Total Demolition Costs $
1	**CIC 1**	73,872	32,832	106,704	4,426	1,025	5,451	390	1,194	1,584	78,688	35,051	113,739
2	**CIC 2**	65,313	29,028	94,341	4,008	928	4,936	260	796	1,056	69,581	30,752	100,333
3	**Tailings Thickener**	106,893	47,508	154,401	11,201	2,594	13,795	1,949	5,971	7,920	120,043	56,073	176,116
4	**Pre-Leach Thickener**	219,375	97,500	316,875	16,442	3,808	20,250	3,898	11,941	15,839	239,715	113,249	352,964
5	**Grind Floor**	576,828	256,368	833,196	10,716	2,482	13,198	3,898	11,941	15,839	591,442	270,791	862,233
6	**MCC**	148,410	65,960	214,370	5,344	1,238	6,582	390	1,194	1,584	154,144	68,392	222,536
7	**Crusher**	60,480	26,880	87,360	3,787	877	4,664	1,040	3,184	4,224	65,307	30,941	96,248
8	**Conveyor Drive Tower**	13,500	6,000	19,500	734	170	904	130	398	528	14,364	6,568	20,932
9	**Cold Storage (Steel)**	80,792	35,908	116,700	6,672	1,545	8,217	780	2,388	3,168	88,244	39,841	128,085
10	**Tailings Barge**	3,672	1,632	5,304	0	0	0	130	398	528	3,802	2,030	5,832
11	**Leach Tank (1/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
12	**Leach Tank (2/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
13	**Leach Tank (3/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
14	**Leach Tank (4/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
15	**Leach Tank (5/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
16	**Leach Tank (6/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
17	**Leach Tank (7/7)**	23,770	10,564	34,334	5,035	1,166	6,201	390	1,194	1,584	29,195	12,924	42,119
18	**CN Detox**	135,783	60,348	196,131	5,461	1,265	6,726	780	2,388	3,168	142,024	64,001	206,025
19	**Storage Tent**	0	0	0	0	0	0	1,040	3,184	4,224	1,040	3,184	4,224
20	**Storage Tent**	0	0	0	0	0	0	260	796	1,056	260	796	1,056
21	**Storage Steel (Building 51)**	15,790	7,018	22,808	3,193	740	3,933	390	1,194	1,584	19,373	8,952	28,325
22	**Refinery**	250,508	111,337	361,845	4,844	1,122	5,966	1,299	3,980	5,279	256,651	116,439	373,090
23	**Assay Lab**	39,150	17,400	56,550	9,403	2,178	11,581	260	796	1,056	48,813	20,374	69,187
24	**Carbon in Pulp Tank (1/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
25	**Carbon in Pulp Tank (2/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
26	**Carbon in Pulp Tank (3/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
27	**Carbon in Pulp Tank (4/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
28	**Carbon in Pulp Tank (5/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
29	**Carbon in Pulp Tank (6/6)**	23,770	10,564	34,334	2,158	500	2,658	390	1,194	1,584	26,318	12,258	38,576
30	**Warehouse**	142,106	63,158	205,264	14,386	3,332	17,718	1,040	3,184	4,224	157,532	69,674	227,206
31	**MEM**	293,594	130,486	424,080	15,157	3,511	18,668	1,169	3,582	4,751	309,920	137,579	447,499
32	**Recycle Water Tank**	21,609	9,604	31,213	3,597	833	4,430	130	398	528	25,336	10,835	36,171
33	**ALPM**	155,844	69,264	225,108	5,791	1,341	7,132	780	2,388	3,168	162,415	72,993	235,408
34	**Tire Yard**	0	0	0	0	0	0	0	0	0	0	0	0
35	**Admin Building**	77,676	27,018	104,694	9,102	2,108	11,210	650	1,990	2,640	87,428	31,116	118,544
36	**Laydown Yard 1**	0	0	0	0	0	0	0	0	0	0	0	0
37	**Laydown Yard 2**	0	0	0	0	0	0	0	0	0	0	0	0
38	**Freshwater Pump House**	5,009	1,742	6,751	969	224	1,193	130	398	528	6,108	2,364	8,472
39	**Seepage Pumphouse**	6,937	2,413	9,350	1,189	275	1,464	130	398	528	8,256	3,086	11,342
40	**Emergency Generators**	29,808	10,368	40,176	3,699	857	4,556	260	796	1,056	33,767	12,021	45,788
41	**RO-1 tent**	0	0	0	0	0	0	130	398	528	130	398	528
42	**Heap leach booster pump - building 1**	6,734	2,342	9,076	1,248	289	1,537	130	398	528	8,112	3,029	11,141
43	**Heap leach booster pump - building 2**	2,990	1,040	4,030	925	214	1,139	130	398	528	4,045	1,652	5,697
		2,841,683	**1,250,486**	**4,092,169**	**190,487**	**44,118**	**234,605**	**26,643**	**81,593**	**108,236**	**3,058,813**	**1,376,197**	**4,435,010**

Closure Cost Estimate
Foundations & Buildings

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Building & Foundation - Foundation Cover and Growth Media Costs

		Foundation Cover									Growth Media									Total Cover & Growth Media Costs		
	Description (required)	Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Cover Cost $	Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Cost $	Total Labor Cost $	Total Equipment Cost $	Total Costs $
1	**CIC 1**	304	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
2	**CIC 2**	269	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
3	**Tailings Thickener**	440	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
4	**Pre-Leach Thickener**	903	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
5	**Grind Floor**	1,187	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
6	**MCC**	305	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
7	**Crusher**	249	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
8	**Conveyor Drive Tower**	93	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
9	**Cold Storage (Steel)**	756	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
10	**Tailings Barge**	38	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
11	**Leach Tank (1/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
12	**Leach Tank (2/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
13	**Leach Tank (3/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
14	**Leach Tank (4/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
15	**Leach Tank (5/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
16	**Leach Tank (6/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
17	**Leach Tank (7/7)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
18	**CN Detox**	559	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
19	**Storage Tent**	903	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
20	**Storage Tent**	206	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
21	**Storage Steel (Building 51)**	162	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
22	**Refinery**	904	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
23	**Assay Lab**	269	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
24	**Carbon in Pulp Tank (1/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
25	**Carbon in Pulp Tank (2/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
26	**Carbon in Pulp Tank (3/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
27	**Carbon in Pulp Tank (4/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
28	**Carbon in Pulp Tank (5/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
29	**Carbon in Pulp Tank (6/6)**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
30	**Warehouse**	975	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
31	**MEM**	1,042	740C/988K/D8T	5.3	2	503	2	517	1,399	1,916						0	0	0	0	517	1,399	1,916
32	**Recycle Water Tank**	89	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
33	**ALPM**	534	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
34	**Tire Yard**	187	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
35	**Admin Building**	569	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
36	**Laydown Yard 1**	198	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
37	**Laydown Yard 2**	150	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
38	**Freshwater Pump House**	40	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
39	**Seepage Pumphouse**	56	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
40	**Emergency Generators**	240	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
41	**RO-1 tent**	175	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
42	**Heap leach booster pump - building 1**	54	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
43	**Heap leach booster pump - building 2**	24	740C/988K/D8T	5.3	2	503	1	258	700	958						0	0	0	0	258	700	958
		13,037					50	**12,907**	**34,993**	**47,900**	0					0	**0**	**0**	**0**	**12,907**	**34,993**	**47,900**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Building & Foundation - Scarifying/Revegetation Costs

						Scarifying/Ripping			Revegetation				Total Scarify & Revegation Costs			
	Description (required)	Flat Area acres	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $	Total Labor Cost $	Total Equipment Cost $	Total Material Cost $	Total Costs $
1	CIC 1	0.20	144	D7E	1	64	111	175	0	189	49	238	64	300	49	413
2	CIC 2	0.20	123	D7E	1	64	111	175	0	189	49	238	64	300	49	413
3	Tailings Thickener	0.30	111	D7E	1	64	111	175	0	189	73	262	64	300	73	437
4	Pre-Leach Thickener	0.60	195	D7E	1	64	111	175	0	189	146	335	64	300	146	510
5	Grind Floor	0.70	218	D7E	1	64	111	175	0	189	171	360	64	300	171	535
6	MCC	0.20	97	D7E	1	64	111	175	0	189	49	238	64	300	49	413
7	Crusher	0.20	112	D7E	1	64	111	175	0	189	49	238	64	300	49	413
8	Conveyor Drive Tower	0.10	50	D7E	1	64	111	175	0	189	24	213	64	300	24	388
9	Cold Storage (Steel)	0.50	202	D7E	1	64	111	175	0	189	122	311	64	300	122	486
10	Tailings Barge	0.10	34	D7E	1	64	111	175	0	189	24	213	64	300	24	388
11	Leach Tank (1/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
12	Leach Tank (2/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
13	Leach Tank (3/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
14	Leach Tank (4/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
15	Leach Tank (5/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
16	Leach Tank (6/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
17	Leach Tank (7/7)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
18	CN Detox	0.40	141	D7E	1	64	111	175	0	189	98	287	64	300	98	462
19	Storage Tent	0.60	195	D7E	1	64	111	175	0	189	146	335	64	300	146	510
20	Storage Tent	0.10	103	D7E	1	64	111	175	0	189	24	213	64	300	24	388
21	Storage Steel (Building 51)	0.10	102	D7E	1	64	111	175	0	189	24	213	64	300	24	388
22	Refinery	0.60	218	D7E	1	64	111	175	0	189	146	335	64	300	146	510
23	Assay Lab	0.20	125	D7E	1	64	111	175	0	189	49	238	64	300	49	413
24	Carbon in Pulp Tank (1/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
25	Carbon in Pulp Tank (2/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
26	Carbon in Pulp Tank (3/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
27	Carbon in Pulp Tank (4/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
28	Carbon in Pulp Tank (5/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
29	Carbon in Pulp Tank (6/6)	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
30	Warehouse	0.60	306	D7E	1	64	111	175	0	189	146	335	64	300	146	510
31	MEM	0.70	327	D7E	1	64	111	175	0	189	171	360	64	300	171	535
32	Recycle Water Tank	0.10	49	D7E	1	64	111	175	0	189	24	213	64	300	24	388
33	ALPM	0.30	185	D7E	1	64	111	175	0	189	73	262	64	300	73	437
34	Tire Yard	0.10	71	D7E	1	64	111	175	0	189	24	213	64	300	24	388
35	Admin Building	0.40	129	D7E	1	64	111	175	0	189	98	287	64	300	98	462
36	Laydown Yard 1	0.10	81	D7E	1	64	111	175	0	189	24	213	64	300	24	388
37	Laydown Yard 2	0.10	99	D7E	1	64	111	175	0	189	24	213	64	300	24	388
38	Freshwater Pump House	0.10	33	D7E	1	64	111	175	0	189	24	213	64	300	24	388
39	Seepage Pumphouse	0.10	52	D7E	1	64	111	175	0	189	24	213	64	300	24	388
40	Emergency Generators	0.20	108	D7E	1	64	111	175	0	189	49	238	64	300	49	413
41	RO-1 tent	0.10	91	D7E	1	64	111	175	0	189	24	213	64	300	24	388
42	Heap leach booster pump - building 1	0.10	61	D7E	1	64	111	175	0	189	24	213	64	300	24	388
43	Heap leach booster pump - building 2	0.10	50	D7E	1	64	111	175	0	189	24	213	64	300	24	388
		9.50			43	2,752	4,773	7,525	0	8,121	2,308	10,429	2,752	12,894	2,308	17,954

Closure Cost Estimate
Other Demo & Equip Removal

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Equipment & Material Removal

	Facility Description													
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Quantity	Units	Labor Unit Cost $	Equipment Unit Cost $	Material Unit Cost $	Total Cost $
1	Belt Coveyor - Equipment removal (crew B-8 - large building)	6.10.		Other Demo	Closure	Fort Knox		FA	160	hours	$483.05	202.44		109,678
2	Belt Coveyor - Structure removal (crew B-8 - large building)	6.10.		Other Demo	Closure	Fort Knox		FA	512	hours	$483.05	202.44		350,971
3	Conveyor Tower - Removal of Major Equipment (crew B-8 - large building)	6.10.		Other Demo	Closure	Fort Knox		FA	32	hours	$483.05	202.44		21,936
4	Crusher Conveyor Access Tunnel - Removal of Major Equipment (crew B-8 - large building)	6.10.		Other Demo	Closure	Fort Knox		FA	32	hours	$483.05	202.44		21,936
5	Fuel Tank distribution pipe removal (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	64	hours	$419.05	149.42		36,382
6	TSF Barge - Removal of Major Equipment (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	24	hours	$419.05	149.42		13,643
7	TSF Seepage Reclaim Building - Removal of Major Equipment (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	16	hours	$419.05	149.42		9,096
8	Fresh Water Pump House - Removal of Major Equipment (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	12	hours	$419.05	149.42		6,822
9	Heap Leach Well Head Houses (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	15	hours	$419.05	149.42		8,527
10	Heap Leach PSPS and valve Enclosure (crew B-3 - small building)	6.10.		Other Demo	Closure	Fort Knox		FA	30	hours	$419.05	149.42		17,054
											422,992	173,052	0	596,045

Notes: **Hours per item are product of "quantity" and "unit" inputs in 2013 submittal.**

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Diversion Ditches - User Input

	Facility Description								Diversions Ditches							Revegetation			Liner and Rip-Rap Installation			
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Diversion Length ft	Diversion Depth ft	Ditch Bottom Width ft	Ditch Sideslope Angle _H:1V	Excavate Volume (if calculated elsewhere) cy	Excavating Material Condition (select)	Excavating Equipment Fleet (select)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Liner Area S.Y.	Liner Type (select)	Rip-Rap Area S.Y.	Rip-Rap Type (select)
1	TSF Spillway Construction - 0+00 - 9+25.0			TSF Spillway	Closure	Fort Knox		FA	925	9.0	24.0	2.5		0.6	Large	None	None	None			5,756	Rip-Rap 450 mm min
2	TSF Spillway Construction - 9+25.0 - 10+50.0 (riprap >18')			TSF Spillway	Closure	Fort Knox		FA	125	15.0	24.0	2.5		0.6	Large	None	None	None			1,862	Rip-Rap 450 mm min
3	TSF Spillway Construction - 10+50.0 - 13+25.0 (riprap >18')			TSF Spillway	Closure	Fort Knox		FA	275	14.0	24.0	2.5		0.6	Large	None	None	None			4,094	Rip-Rap 450 mm min
4	TSF Spillway Construction - 13+25.0 - 13+75.0 (transition)			TSF Spillway	Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
5	TSF Spillway Construction - 13+75.0 - 18+75.0			TSF Spillway	Closure	Fort Knox		FA	500	12.0	24.0	2.5		0.6	Large	None	None	None			3,722	Rip-Rap 450 mm min
6	TSF Spillway Construction - 18+75.0 - 19+25.0 (transition)			TSF Spillway	Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
7	TSF Spillway Construction - 19+25.0 - 24+50.0 (riprap >18')			TSF Spillway	Closure	Fort Knox		FA	525	14.0	24.0	2.5		0.6	Large	None	None	None			7,816	Rip-Rap 450 mm min
8	TSF Spillway Construction - 24+50.0 - 25+00.0 (transition)			TSF Spillway	Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
9	TSF Spillway Construction - 25+00.0 - 36+00.0			TSF Spillway	Closure	Fort Knox		FA	1100	12.0	24.0	2.5		0.6	Large	None	None	None			8,189	Rip-Rap 450 mm min
10	TSF Spillway Construction - 36+00.0 - 36+50.0 (transition)			TSF Spillway	Closure	Fort Knox		FA	50	14.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
11	TSF Spillway Construction - 36+50.0 - 44+00.0 (riprap >18')			TSF Spillway	Closure	Fort Knox		FA	750	16.0	24.0	2.5		0.6	Large	None	None	None			11,166	Rip-Rap 450 mm min
12	TSF Spillway Construction - 44+00.0 - 44+50.0 (transition)			TSF Spillway	Closure	Fort Knox		FA	50	13.5	27.0	2.5		0.6	Large	None	None	None			389	Rip-Rap 450 mm min
13	TSF Spillway Construction - 44+50.0 - 53+50.0			TSF Spillway	Closure	Fort Knox		FA	900	9.0	30.0	2.5		0.6	Large	None	None	None			6,200	Rip-Rap 450 mm min
14	Conveyance Channels for North Wetland System	3		Sediment and Drainage Contr	Closure	Fort Knox		FA	11500	4.0	6.0	3.0		1	Large	User Mix 5 (from S	None	Chemical			0	
15	TSF Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	6580	4.0	40.0	3.0		1	Large	User Mix 5 (from S	None	Chemical			0	
16	WC-1 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	8470	2.5	10.0	3.0		1	Large	None	None	None			24,469	Rip-Rap 450 mm min
17	WC-2 Channel (riprap >18')			Sediment and Drainage Contr	Closure	Fort Knox		FA	7809	3.5	10.0	3.0		1	Large	None	None	None			55,530	Rip-Rap 450 mm min
18	BC-1 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	7526	3.5	10.0	3.0		1	Large	None	None	None			26,759	Rip-Rap 450 mm min
19	BC-2 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	4100	2.0	10.0	3.0		1	Large	None	None	None			10,478	Rip-Rap 450 mm min
20	BC-3 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	6959	3.0	10.0	3.0		1	Large	None	None	None			22,423	Rip-Rap 450 mm min
21	C-1 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	3776	4.0	10.0	3.0		1	Large	None	None	None			14,684	Rip-Rap 450 mm min
22	YP-1 Channel			Sediment and Drainage Contr	Closure	Fort Knox		FA	3232	3.0	10.0	3.0		1	Large	None	None	None			10,414	Rip-Rap 450 mm min
23	TSF Spillway Replacement - 0+00 - 9+25.0			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	925	9.0	24.0	2.5		0.6	Large	None	None	None			5,756	Rip-Rap 450 mm min
24	TSF Spillway Replacement - 9+25.0 - 10+50.0 (riprap >18')			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	125	15.0	24.0	2.5		0.6	Large	None	None	None			1,862	Rip-Rap 450 mm min
25	TSF Spillway Replacement - 10+50.0 - 13+25.0 (riprap >18')			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	275	14.0	24.0	2.5		0.6	Large	None	None	None			4,094	Rip-Rap 450 mm min
26	TSF Spillway Replacement - 13+25.0 - 13+75.0 (transition)			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
27	TSF Spillway Replacement - 13+75.0 - 18+75.0			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	500	12.0	24.0	2.5		0.6	Large	None	None	None			3,722	Rip-Rap 450 mm min
28	TSF Spillway Replacement - 18+75.0 - 19+25.0 (transition)			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
29	TSF Spillway Replacement - 19+25.0 - 24+50.0 (riprap >18')			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	525	14.0	24.0	2.5		0.6	Large	None	None	None			7,816	Rip-Rap 450 mm min
30	TSF Spillway Replacement - 24+50.0 - 25+00.0 (transition)			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	50	13.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
31	TSF Spillway Replacement - 25+00.0 - 36+00.0			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	1100	12.0	24.0	2.5		0.6	Large	None	None	None			8,189	Rip-Rap 450 mm min
32	TSF Spillway Replacement - 36+00.0 - 36+50.0 (transition)			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	50	14.0	24.0	2.5		0.6	Large	None	None	None			372	Rip-Rap 450 mm min
33	TSF Spillway Replacement - 36+50.0 - 44+00.0 (riprap >18')			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	750	16.0	24.0	2.5		0.6	Large	None	None	None			11,166	Rip-Rap 450 mm min
34	TSF Spillway Replacement - 44+00.0 - 44+50.0 (transition)			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	50	13.5	27.0	2.5		0.6	Large	None	None	None			389	Rip-Rap 450 mm min
35	TSF Spillway Replacement - 44+50.0 - 53+50.0			Long-term Maintenance and R	Post-Closure	Fort Knox		FA	900	9.0	30.0	2.5		0.6	Large	None	None	None			6,200	Rip-Rap 450 mm min

Notes:
Diversion depth here includes the spillway design depth as well as the over-excavation for coarse-grained bedding, fine-grained bedding, and riprap. See User 14 for diversion depth.
Riprap sourcing costs in User 14 and Haul Materials.
In areas where the riprap D50 is greater than 18", riprap area is calculated as twice that of the internal area of the channel in order to accommodate the riprap size.

Closure Cost Estimate
Sediment & Drainage Control

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Sediment/Evaporation Pond Construction/Removal - User Input

									Sediment Ponds								Growth Media		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Pond Width ft	Pond/Berm Length ft	Berm Height ft	Crest Width ft	Sideslope Angle _H:1V	Final Area (if calculated elsewhere) acres	Regrade Volume (if calculated elsewhere) cy	Cover Volume (if calculated elsewhere) cy	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Wetland ponds (Fish Creek restoration)			Sediment and Drainage Contr	Closure	Fort Knox		FA	500	941	2.0	3.0	3.0	10.80			12	2,000	0.0

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Sediment/Evaporation Pond Construction/Removal - User Input (cont.)

		Sediment Ponds				Growth Media				Revegetation			Ripping/Scarifying	
	Description (required)	Excavating Material Condition (select)	Material Type (select)	Excavating Equipment Fleet (select)	Liner Type (select)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	Wetland ponds (Fish Creek restoration)	1.2	Granite - broken	Large		Topsoil	Med Truck			User Mix 1	None	None	Yes	Small Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Sediment & Drainage Control - Assumptions & Calculations

Diversion Ditch Volume Calculation

1) Assume 20% swell for excavations
2) Assumes heavy duty trenching bucket is used

Sediment/Evaporation Pond Construction Calculation

Cut = Fill
Push distance = pond width up to 2/3 max push distance (400 ft)

1) Assume balanced cut-to-fill for berm construction
2) Include cost for liner, if required.
3) Include line items for removal, if necessary.
4) Assume 20% swell for excavations
5) Minimum 1 hr ripping/scarifying per area
6) Minimum 1 acre revegetation crew time per area

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Diversion Ditches - Excavation Costs

									Liner Installation				Rip-Rap Installation			
	Description (required)	Diversion Ditch Volume LCY	Diversion Ditch Equipment	Corrected Excavator Productivity LCY/hr	Total Hours hrs	Diversion Ditch Labor Cost $	Diversion Ditch Equipment Cost $	Total Diversion Ditch Cost $	Total Labor Cost $	Total Equipment Cost $	Total Material Cost $	Total Liner Cost $	Labor Cost $	Equipment Cost $	Material Cost $	Total Cost $
1	**TSF Spillway Construction - 0+00 - 9+25.0**	17,205	390F	935	18	1,187	3,708	4,895	0	0	0	0	167,384	158,635	0	326,019
2	**TSF Spillway Construction - 9+25.0 - 10+50.0 (riprap >18')**	5,125	390F	935	5	330	1,030	1,360	0	0	0	0	54,147	51,317	0	105,464
3	**TSF Spillway Construction - 10+50.0 - 13+25.0 (riprap >18')**	10,096	390F	935	11	725	2,266	2,991	0	0	0	0	119,054	112,831	0	231,885
4	**TSF Spillway Construction - 13+25.0 - 13+75.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
5	**TSF Spillway Construction - 13+75.0 - 18+75.0**	14,400	390F	935	15	989	3,090	4,079	0	0	0	0	108,236	102,578	0	210,814
6	**TSF Spillway Construction - 18+75.0 - 19+25.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
7	**TSF Spillway Construction - 19+25.0 - 24+50.0 (riprap >18')**	19,273	390F	935	21	1,385	4,326	5,711	0	0	0	0	227,289	215,409	0	442,698
8	**TSF Spillway Construction - 24+50.0 - 25+00.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
9	**TSF Spillway Construction - 25+00.0 - 36+00.0**	31,680	390F	935	34	2,242	7,003	9,245	0	0	0	0	238,136	225,689	0	463,825
10	**TSF Spillway Construction - 36+00.0 - 36+50.0 (transition)**	1,836	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
11	**TSF Spillway Construction - 36+50.0 - 44+00.0 (riprap >18')**	34,133	390F	935	37	2,440	7,621	10,061	0	0	0	0	324,707	307,735	0	632,442
12	**TSF Spillway Construction - 44+00.0 - 44+50.0 (transition)**	1,823	390F	935	2	132	412	544	0	0	0	0	11,312	10,721	0	22,033
13	**TSF Spillway Construction - 44+50.0 - 53+50.0**	18,900	390F	935	20	1,319	4,120	5,439	0	0	0	0	180,296	170,872	0	351,168
14	**Conveyance Channels for North Wetland System**	36,800	390F	935	39	2,572	8,033	10,605	0	0	0	0	0	0	0	0
15	**TSF Channel**	60,828	390F	935	65	4,286	13,389	17,675	0	0	0	0	0	0	0	0
16	**WC-1 Channel**	16,469	390F	935	18	1,187	3,708	4,895	0	0	0	0	711,559	674,366	0	1,385,925
17	**WC-2 Channel (riprap >18')**	24,902	390F	935	27	1,780	5,561	7,341	0	0	0	0	1,614,812	1,530,407	0	3,145,219
18	**BC-1 Channel**	24,000	390F	935	26	1,714	5,355	7,069	0	0	0	0	778,152	737,478	0	1,515,630
19	**BC-2 Channel**	5,831	390F	935	6	396	1,236	1,632	0	0	0	0	304,700	288,774	0	593,474
20	**BC-3 Channel**	17,629	390F	935	19	1,253	3,914	5,167	0	0	0	0	652,061	617,978	0	1,270,039
21	**C-1 Channel**	14,768	390F	935	16	1,055	3,296	4,351	0	0	0	0	427,011	404,691	0	831,702
22	**YP-1 Channel**	8,188	390F	935	9	593	1,854	2,447	0	0	0	0	302,839	287,010	0	589,849
23	**TSF Spillway Replacement - 0+00 - 9+25.0**	17,205	390F	935	18	1,187	3,708	4,895	0	0	0	0	167,384	158,635	0	326,019
24	**TSF Spillway Replacement - 9+25.0 - 10+50.0 (riprap >18')**	5,125	390F	935	5	330	1,030	1,360	0	0	0	0	54,147	51,317	0	105,464
25	**TSF Spillway Replacement - 10+50.0 - 13+25.0 (riprap >18')**	10,096	390F	935	11	725	2,266	2,991	0	0	0	0	119,054	112,831	0	231,885
26	**TSF Spillway Replacement - 13+25.0 - 13+75.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
27	**TSF Spillway Replacement - 13+75.0 - 18+75.0**	14,400	390F	935	15	989	3,090	4,079	0	0	0	0	108,236	102,578	0	210,814
28	**TSF Spillway Replacement - 18+75.0 - 19+25.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
29	**TSF Spillway Replacement - 19+25.0 - 24+50.0 (riprap >18')**	19,273	390F	935	21	1,385	4,326	5,711	0	0	0	0	227,289	215,409	0	442,698
30	**TSF Spillway Replacement - 24+50.0 - 25+00.0 (transition)**	1,632	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
31	**TSF Spillway Replacement - 25+00.0 - 36+00.0**	31,680	390F	935	34	2,242	7,003	9,245	0	0	0	0	238,136	225,689	0	463,825
32	**TSF Spillway Replacement - 36+00.0 - 36+50.0 (transition)**	1,836	390F	935	2	132	412	544	0	0	0	0	10,818	10,252	0	21,070
33	**TSF Spillway Replacement - 36+50.0 - 44+00.0 (riprap >18')**	34,133	390F	935	37	2,440	7,621	10,061	0	0	0	0	324,707	307,735	0	632,442
34	**TSF Spillway Replacement - 44+00.0 - 44+50.0 (transition)**	1,823	390F	935	2	132	412	544	0	0	0	0	11,312	10,721	0	22,033
35	**TSF Spillway Replacement - 44+50.0 - 53+50.0**	18,900	390F	935	20	1,319	4,120	5,439	0	0	0	0	180,296	170,872	0	351,168
		528,149			567	**37,390**	**116,794**	**154,184**	**0**	**0**	**0**	**0**	**7,738,800**	**7,334,294**	**0**	**15,073,094**

Notes: LCM assumes 20% swell from ditch volume

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Diversion Ditches - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	TSF Spillway Construction - 0+00 - 9+25.0	1.50	0	0		0
2	TSF Spillway Construction - 9+25.0 - 10+50.0 (riprap >18')	0.30	0	0		0
3	TSF Spillway Construction - 10+50.0 - 13+25.0 (riprap >18')	0.60	0	0		0
4	TSF Spillway Construction - 13+25.0 - 13+75.0 (transition)	0.10	0	0		0
5	TSF Spillway Construction - 13+75.0 - 18+75.0	1.00	0	0		0
6	TSF Spillway Construction - 18+75.0 - 19+25.0 (transition)	0.10	0	0		0
7	TSF Spillway Construction - 19+25.0 - 24+50.0 (riprap >18')	1.20	0	0		0
8	TSF Spillway Construction - 24+50.0 - 25+00.0 (transition)	0.10	0	0		0
9	TSF Spillway Construction - 25+00.0 - 36+00.0	2.20	0	0		0
10	TSF Spillway Construction - 36+00.0 - 36+50.0 (transition)	0.10	0	0		0
11	TSF Spillway Construction - 36+50.0 - 44+00.0 (riprap >18')	1.90	0	0		0
12	TSF Spillway Construction - 44+00.0 - 44+50.0 (transition)	0.10	0	0		0
13	TSF Spillway Construction - 44+50.0 - 53+50.0	1.60	0	0		0
14	Conveyance Channels for North Wetland System	8.30	0	1,568	2,026	3,594
15	TSF Channel	9.90	0	1,870	2,417	4,287
16	WC-1 Channel	5.00	0	0		0
17	WC-2 Channel (riprap >18')	5.80	0	0		0
18	BC-1 Channel	5.60	0	0		0
19	BC-2 Channel	2.10	0	0		0
20	BC-3 Channel	4.60	0	0		0
21	C-1 Channel	3.10	0	0		0
22	YP-1 Channel	2.10	0	0		0
23	TSF Spillway Replacement - 0+00 - 9+25.0	1.50	0	0		0
24	TSF Spillway Replacement - 9+25.0 - 10+50.0 (riprap >18')	0.30	0	0		0
25	TSF Spillway Replacement - 10+50.0 - 13+25.0 (riprap >18')	0.60	0	0		0
26	TSF Spillway Replacement - 13+25.0 - 13+75.0 (transition)	0.10	0	0		0
27	TSF Spillway Replacement - 13+75.0 - 18+75.0	1.00	0	0		0
28	TSF Spillway Replacement - 18+75.0 - 19+25.0 (transition)	0.10	0	0		0
29	TSF Spillway Replacement - 19+25.0 - 24+50.0 (riprap >18')	1.20	0	0		0
30	TSF Spillway Replacement - 24+50.0 - 25+00.0 (transition)	0.10	0	0		0
31	TSF Spillway Replacement - 25+00.0 - 36+00.0	2.20	0	0		0
32	TSF Spillway Replacement - 36+00.0 - 36+50.0 (transition)	0.10	0	0		0
33	TSF Spillway Replacement - 36+50.0 - 44+00.0 (riprap >18')	1.90	0	0		0
34	TSF Spillway Replacement - 44+00.0 - 44+50.0 (transition)	0.10	0	0		0
35	TSF Spillway Replacement - 44+50.0 - 53+50.0	1.60	0	0		0
		68.10	**0**	**3,438**	**4,443**	**7,881**

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Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Sediment/Evaporation Ponds - Construction/Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83)

	Description (required)	Regrading Volume cy	Sed/Evap Pond Equipment	Dozing Distance (see above) ft	Uncorrected Dozer Productivity LCY/hr	Grade Correction	Density Correction	Excavating Material	Corrected Productivity LCY/hr	Total Dozer Hours hrs	Earthwork: Total Labor Cost $	Earthwork: Total Equipment Cost $	Earthwork: Total Constr/ Regrading Cost $	Liner (1): Liner Area ft2	Liner (1): Total Labor Cost $	Liner (1): Total Equipment Cost $	Liner (1): Total Material Cost $	Liner (1): Total Liner Cost $
1	Wetland ponds (Fish Creek restoration)	753	D10T2	400	475	1.00	0.82	1.20	291	3	192	794	986	0	0	0	0	0
		753								3	**192**	**794**	**986**		**0**	**0**	**0**	**0**

Notes: 1. Includes costs for finish grading and compaction (see Misc. Unit Costs)

Sediment/Evaporation Ponds - Growth Media Costs

	Description (required)	Growth Media: Growth Media Volume cy	Growth Media Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Cover Placement Cost $
1	Wetland ponds (Fish Creek restoration)	17,424	740C/988K/D8T	6.2	2	430	41	10,589	28,683	39,272
		17,424					41	**10,589**	**28,683**	**39,272**

Sediment/Evaporation Ponds - Revegetation Costs

	Description (required)	Surface Area acres	Average Long Dimension (ripping distance) ft	Area Width ft	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying Costs: Scarifying/ Ripping Labor Costs $	Scarifying Costs: Scarifying/ Ripping Equipment Cost $	Scarifying Costs: Total Scarifying/ Ripping Costs $	Revegetation Costs: Revegetation Labor Cost $	Revegetation Costs: Revegetation Equipment Cost $	Revegetation Costs: Revgetation Material Cost $	Revegetation Costs: Total Revegetation Cost $
1	Wetland ponds (Fish Creek restoration)	10.80	941	500	D7E	11	704	1,226	1,930	0	2,040	1,017	3,057
		10.80				11	**704**	**1,226**	**1,930**	**0**	**2,040**	**1,017**	**3,057**

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Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Disposal - User Input - Solid Waste

												Landfill (Bulk) Disposal			Dumpster
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Waste Type (select)	Disposal Method (select)	Quantity cy	Distance to Landfill ft	Slope to Landfill % grade	Number of Trucks (user override)	Months Dumpster Rental months
1	Solid waste			Solid Waste Disposal	Closure	Fort Knox		FA	Waste Mgmt & Disposal	Landfill (bulk)	438	6000	-5.0		

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
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Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**

Waste Disposal - User Input - Hydrocarbon Contaminated Soils

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Waste Type (select)	Disposal Method (select)	Quantity cy	Travel Distance to Offsite Disposal mi
1	Area around petroleum aboveground storage tanks			Solid Waste Disposal	Closure	Fort Knox		FA	Other Facilities	On site	24,000	1

Notes:
1. Use Yards or Landfills Sheets for bioremediation facility reclamation

Area around petroleum aboveground storage tanks based on approximately 660,000 ft3 of soil previously land-farmed (per call on July 30, 2019)

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Waste Disposal - Assumptions & Calculations

Solid Waste Disposal

Off site disposal assumes use of average rolloff dumpster [30 cy (m3), 10 ton (tonne)]
On site disposal assumes use of small loader/truck fleet for haulage
Average density for on site disposal = 2,600 lb/cy (1,540 kg/m3)
For on site disposal only 1 truck is required unless total truck hours > 8, only 2 trucks unless total truck hours are > 16

Hazardous Materials Disposal

Assumes all hazardous materials are known
Enter EITHER solid or liquid quantity each line.
If container type = 55 gallon (200 liter) drum then solid waste hauling costs apply
Average density for solids assumed to be 2,600 lb/cy (1,540 kg/m3)
Vacuum truck sizes: small = 2,200 gal (~8,300 litres), large = 5,000 gal (~19,000 litres)
Vacuum truck on site for 4 hours for each load

Hydrocarbon Contaminated Soils Disposal

Assumes all hazardous materials are known
On site disposal assumes biopad treatment
Exavation productivity =45 cy./hr (35 m3/hr) (Means Heavy Construction, 2006: 02315-424-0360)

Waste Disposal - Solid Waste Disposal

								Off-Site	On-Site		
	Description (required)	Waste Volume cy	Number of Off Site Dumpster Loads	Landfill Fleet Equipment	Landfill Fleet Productivity LCY/hr	Number of Trucks	Total Fleet Hours hrs	Total Dumpster Cost $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1	**Solid waste**	438		740C	123	1	4	0	699	1,734	2,433
		438					4	**0**	**699**	**1,734**	**2,433**

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Waste Disposal - Hydrocarbon Contaminated Soils

	Description (required)	Quantity cy	Total Fleet Hours hrs	Treatment Cost $	Transport Fees $	Disposal Fees $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1	**Area around petroleum aboveground storage tanks**	24,000	0	705,960			35,146	21,331	762,437
		24,000	0	**705,960**	**0**	**0**	**35,146**	**21,331**	**762,437**

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Culvert & Buried Pipe Removal

									Input			Costs		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Location (select)	Labor Cost $	Equipment Cost $	Total Cost $
1	GIL Culvert 6.5 ft			Linear Structures	Closure	Fort Knox		FA	100	36 in (1m) Diameter	On site	1,607	515	2,122
2	GIL Culvert 10 ft			Linear Structures	Closure	Fort Knox		FA	82	36 in (1m) Diameter	On site	1,318	422	1,740
3	GIL Culvert 4 ft			Linear Structures	Closure	Fort Knox		FA	92	36 in (1m) Diameter	On site	1,478	474	1,952
												4,403	1,411	5,814

Notes: Note SRCE culvert removal goes up to 36".

Surface Pipe Removal

									Input			Costs		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Location (select)	Labor Cost $	Equipment Cost $	Total Cost $
1	18" Fresh water pipline to barge Pond			Linear Structures	Post-Closure	Fort Knox		FA	18,280	10 in (250 mm) - 18 in (450 mm	On site	144,595	6,215	150,810
2	12" Fresh water pipeline to Mill (length above ground)			Linear Structures	Post-Closure	Fort Knox		FA	32,730	10 in (250 mm) - 18 in (450 mm	On site	258,894	11,128	270,022
3	18" Seepage to Barge Pond pipeline			Linear Structures	Post-Closure	Fort Knox		FA	3,775	10 in (250 mm) - 18 in (450 mm	On site	29,860	1,284	31,144
4	20" Barge to Mill pipeline			Linear Structures	Post-Closure	Fort Knox		FA	14,450	20 in (500 mm) - 36 in (1 m)	On site	171,522	7,370	178,892
5	Mill to tailings discharge lines			Linear Structures	Post-Closure	Fort Knox		FA	20,000	20 in (500 mm) - 36 in (1 m)	On site	237,400	10,200	247,600
6	South pond to North Pond			Linear Structures	Post-Closure	Fort Knox		FA	10,475	20 in (500 mm) - 36 in (1 m)	On site	124,338	5,342	129,680
7	Misc interceptor well pipelines			Linear Structures	Post-Closure	Fort Knox		FA	4,129	6 in (150 mm) - 8 in (200 mm)	On site	19,613	826	20,439
												986,222	42,365	1,028,587

Notes:

Power Line and Substation Removal

									Input				Costs			Cost Breakdown	
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phase	Location	Property	Cost Type	Power Line Length miles	Power Line Type (select)	Number of Substations #	Location (select)	Power Line Removal $	Substation Removal $	Total Cost $	Labor Cost $	Equipment Cost $
1	Mine Powerlines			Linear Structures	Post-Closure	Fort Knox		FA	8.0	Single Pole Powerlines	4	On site	416,482	149,240	565,722	113,144	452,578
													416,482	149,240	565,722	113,144	452,578

Notes: If substation owned by operator, use Other Demo & Equipment Removal sheet
User may need to add line items in Foundations & Buildings for substation slab demolition and fence removal
Labor/Equipment costs assume approximately 80% of cost are equipment and 20% are labor related costs

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Cost Estimate Type: FA   Cost Basis: Fort Knox

Maximum grade allowed for dozer: 20 %

Exploration Roads & Pads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each road

	Facility Description							
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type
1	Exploration road - 5			Roads	Closure	Fort Knox		FA
2	Exploration road - 6			Roads	Closure	Fort Knox		FA
3	Exploration road - 7			Roads	Closure	Fort Knox		FA
4	Exploration road - 8			Roads	Closure	Fort Knox		FA
5	Exploration road - 11			Roads	Closure	Fort Knox		FA

	Physical (1) - MANDATORY										User Overrides		Growth Media		
	Ground Slope at Toe % grade	Ungraded Slope _H:1V	Cut Slope degrees	Road + Drill Pad Length ft	Road Width ft	Number of Drill Pads	Individual Sump Volume cy	Drill Pad Width ft	Drill Pad Length ft	Slope Replacement Percent %	Regrade Volume (if calculated elsewhere) cy	Disturbed Area (if calculated elsewhere) acres	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	5.0	1.5	60.0	2,587	12.0	1	5	70.0	130	100%		2.39	0	0	0.0
2	8.0	1.5	60.0	2,574	10.0	1	5	70.0	130	100%		1.23	0	0	0.0
3	8.0	1.5	60.0	2,472	12.0	3	5	70.0	130	100%		6.58	0	0	0.0
4	11.0	1.5	60.0	1,566	12.0	1	5	70.0	130	100%		0.38	0	0	0.0
5	5.0	1.5	60.0	5,025	12.0	1	5	70.0	130	100%		3.03	0	0	0.0

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Slope replacement refers to the percentage of cut volume replaced during regrading.
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
4. Sump volume will be applied to all roads on slopes <20%. On slopes >20% pad width (i.e. cut volume) should be adequate to account for sump volume.

Exploration Roads & Pads - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each road

		Grading				Growth Media					Revegetation				
	Description (required)	Regrade Material Condition (select)	Cut Material Type (select)	Recontouring Equipment Fleet (select)	Additional Hrs for Walk-in [(1)]	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Additional Hrs for Walk-in [(1)]	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarifying/ Ripping? (select)	Ripping Fleet (select)
1	Exploration road - 5	1	Alluvium	Small Dozer	4.0						User Mix 5 (fror	None	Chemical	Yes	Med Dozer
2	Exploration road - 6	1	Alluvium	Small Dozer	4.0						User Mix 5 (fror	None	Chemical	Yes	Med Dozer
3	Exploration road - 7	1	Alluvium	Small Dozer	4.0						User Mix 5 (fror	None	Chemical	Yes	Med Dozer
4	Exploration road - 8	1	Alluvium	Small Dozer	4.0						User Mix 5 (fror	None	Chemical	Yes	Med Dozer
5	Exploration road - 11	1	Alluvium	Small Dozer	4.0						User Mix 5 (fror	None	Chemical	Yes	Med Dozer

Notes:
1. Include one-way hours necessary to walk equipment in from drop-off point to work area
2. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Expl. Roads & Pads - Assumptions & Calculations

Regrading Volume and Footprint Volume

Will not allow dozer for slopes greater than 30%
For dozer regrading push distance = road width
Assumes dozer push is uphill
Assumes minimum push distance of 100 ft

Swell Factor: 1.2

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per area
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Road length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
For dozer regrading assumes push distance = 3 x road width

Revegetation Calculations

Minimum of 1 acre crew time per area

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Exploration Roads & Pads - Regrading Costs

	Description (required)	Total Road Length ft	Total Drill Pad Length ft	Regrading Volume cy	Recontouring Fleet	Equipment Productivity cy/hr	Total Equipment Hours (1) hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Exploration road - 5	2,457	130	270	D7E	110	9	576	1,003	1,579
2	Exploration road - 6	2,444	130	395	D7E	94	10	640	1,115	1,755
3	Exploration road - 7	2,082	390	994	D7E	94	12	768	1,338	2,106
4	Exploration road - 8	1,436	130	537	D7E	80	11	704	1,226	1,930
5	Exploration road - 11	4,895	130	364	D7E	110	9	576	1,003	1,579
		13,314	910	2,560			51	**3,264**	**5,685**	**8,949**

(1) Includes walk-in time based on distance and travel speed (see Productivity sheet for speeds)

Exploration Roads & Pads - Growth Media Costs

	Description (required)	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	Exploration road - 5					0	0	0	0
2	Exploration road - 6					0	0	0	0
3	Exploration road - 7					0	0	0	0
4	Exploration road - 8					0	0	0	0
5	Exploration road - 11					0	0	0	0
		0				0	**0**	**0**	**0**

Expl. Roads & Pads - Scarify/Revegetation Costs

	Description (required)	Surface Area acres	Ripping/ Scarifying Fleet	Ripping Hours hrs	Ripping Labor Costs $	Ripping Equipment Cost $	Total Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Exploration road - 5	2.39	D9T	1	64	213	277	0	451	584	1,035
2	Exploration road - 6	1.23	D9T	1	64	213	277	0	232	301	533
3	Exploration road - 7	6.58	D9T	1	64	213	277	0	1,243	1,606	2,849
4	Exploration road - 8	0.38	D9T	1	64	213	277	0	189	93	282
5	Exploration road - 11	3.03	D9T	1	64	213	277	0	572	740	1,312
		13.61		5	**320**	**1,065**	**1,385**	**0**	**2,687**	**3,324**	**6,011**

Closure Cost Estimate
Monitoring

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Cost Estimate Type: FA   Cost Basis: Fort Knox

Reclamation Monitoring

	Description (required)	Staff	ID Code	Construction Year (1)	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Number of Staff	Number of Trucks	Hrs/Day	Days/Year	Number of Years
1	Annual visual observation of revegetati	Range Scientist			Monitoring	Post-Closure	Fort Knox		FA	1	1	8	2	5
2	Quarterly inspection for erosion and fo	Range Scientist			Monitoring	Post-Closure	Fort Knox		FA	1	1	8	8	5

Notes:
Days/year includes travel to site.

Water and Rock Sample Analysis

	Description (required)	Analysis Type	ID Code	Construction Year (1)	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Samples #	Events/Year #	No. Years #	First Sample Year closure year	No. of Samplers #	Days/Event #	Hrs/Day #	Reporting Hours/Event #	Comments
1	Pit surface water (2027-2048)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	4	25	1	2	1	1	1	
2	Tailings Decant (TSF Pond @barge) (20	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	4	25	1	2	1	1	1	
3	Upper Wetlands (2027-2048)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	3	25	1	2	1	1	1	
4	Lower Wetlands (2027-2048)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	3	25	1	2	1	1	1	
5	FW reservoir (2027-2048)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	4	25	1	2	1	1	1	
6	FW dam Seepage (2027-2048)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	4	25	1	2	1	1	1	
7	PC-2GW (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	11	1	2	1	1	1	
8	PC-2GW (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	1	11	12	2	1	1	1	
9	PC-3GW (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
10	PC-3GW (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	1	11	12	2	1	1	1	
11	PB-2D (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
12	PB-2D (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	1	11	12	2	1	1	1	
13	VC-2GW (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
14	VC-2GW (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	1	11	12	2	1	1	1	
15	PC-1GW (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
16	PC-1GW (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	1	11	12	2	1	1	1	
17	TSF Seepage (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
18	MW-1 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
19	MW-2 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
20	MW-3 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
21	MW-4 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
22	MW-5 (Compliance Well) (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
23	MW-5 (Compliance Well) (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	4	11	12	2	1	1	1	
24	MW-6 (Compliance Well) (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
25	MW-6 (Compliance Well) (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	4	11	12	2	1	1	1	
26	MW-7 (Compliance Well) (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
27	MW-7 (Compliance Well) (2038-2048)	Profile 2	7.0		Monitoring	Post-Closure	Fort Knox		FA	1	4	11	12	2	1	1	1	
28	IW-1 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
29	IW-2 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
30	IW-3 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
31	IW-4 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
32	IW-5 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
33	IW-6 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
34	IW-7 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
35	IW-8 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
36	IW-11 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
37	IW-13 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
38	IW-14 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
39	PMW-1 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
40	PMW-2 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
41	PMW-3S (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
42	PMW-3D (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
43	PMW-4 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
44	PMW-5 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
45	PMW-6 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
46	Site 401 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
47	Site 501 (2027-2037)	Profile 1	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
48	OL-296 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
49	LCRS (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
50	PCMS (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
51	HL-1 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
52	HL-2 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
53	HL-3 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
54	HL-4 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
55	HL-5 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
56	HL-6 (2027-2037)	Profile 2	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	
57	FK Potable Water (2027-2037)	FK Potable Water (Yearly Total)	7.0		Monitoring	Closure	Fort Knox		FA	1	1	14	1	2	1	1	1	
58	Duplicate (2027-2037)	Profile 4	7.0		Monitoring	Closure	Fort Knox		FA	1	4	14	1	2	1	1	1	

Notes:
(1) This is the first year that the monitoring commitment is made (e.g. included in permit or approved monitoring plan)
(2) Monitoring may not extend beyond the maximum number of schedule years (100)
(3) First Sample Year can not be before first closure year shown in schedule (-10).

Based on "Monitoring.xlsx" received on April 9, 2019.

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Reclamation Monitoring

	Description (required)	Labor Rate $/hr	Equipment Rate $/hr	Labor Cost $	Equipment Cost $	Total $
1	Annual visual observation of revegetati	170.28	9.59	13,622	767	14,390
2	Quarterly inspection for erosion and for	170.28	9.59	54,490	3,069	57,558
				68,112	**3,836**	**71,948**

Water and Rock Sample Analysis

	Description (required)	Analysis Cost $/sample	Supplies $/sample	Labor Cost $	Equipment Cost $	Material Cost $	Lab Cost $	Reporting Cost $	Total $
1	Pit surface water (2027-2048)	352.75	0.00	31,160	959	0	35,275	18,364	85,758
2	Tailings Decant (TSF Pond @barge) (20	352.75	0.00	31,160	959	0	35,275	18,364	85,758
3	Upper Wetlands (2027-2048)	352.75	0.00	23,370	719	0	26,456	13,773	64,319
4	Lower Wetlands (2027-2048)	352.75	0.00	23,370	719	0	26,456	13,773	64,319
5	FW reservoir (2027-2048)	352.75	0.00	31,160	959	0	35,275	18,364	85,758
6	FW dam Seepage (2027-2048)	352.75	0.00	31,160	959	0	35,275	18,364	85,758
7	PC-2GW (2027-2037)	308.90	0.00	13,710	422	0	13,592	8,080	35,804
8	PC-2GW (2038-2048)	308.90	0.00	3,428	105	0	3,398	2,020	8,951
9	PC-3GW (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
10	PC-3GW (2038-2048)	308.90	0.00	3,428	105	0	3,398	2,020	8,951
11	PB-2D (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
12	PB-2D (2038-2048)	308.90	0.00	3,428	105	0	3,398	2,020	8,951
13	VC-2GW (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
14	VC-2GW (2038-2048)	308.90	0.00	3,428	105	0	3,398	2,020	8,951
15	PC-1GW (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
16	PC-1GW (2038-2048)	308.90	0.00	3,428	105	0	3,398	2,020	8,951
17	TSF Seepage (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
18	MW-1 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
19	MW-2 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
20	MW-3 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
21	MW-4 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
22	MW-5 (Compliance Well) (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
23	MW-5 (Compliance Well) (2038-2048)	308.90	0.00	13,710	422	0	13,592	8,080	35,804
24	MW-6 (Compliance Well) (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
25	MW-6 (Compliance Well) (2038-2048)	308.90	0.00	13,710	422	0	13,592	8,080	35,804
26	MW-7 (Compliance Well) (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
27	MW-7 (Compliance Well) (2038-2048)	308.90	0.00	13,710	422	0	13,592	8,080	35,804
28	IW-1 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
29	IW-2 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
30	IW-3 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
31	IW-4 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
32	IW-5 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
33	IW-6 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
34	IW-7 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
35	IW-8 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
36	IW-11 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
37	IW-13 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
38	IW-14 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
39	PMW-1 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
40	PMW-2 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
41	PMW-3S (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
42	PMW-3D (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
43	PMW-4 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
44	PMW-5 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
45	PMW-6 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
46	Site 401 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
47	Site 501 (2027-2037)	352.75	0.00	17,450	537	0	19,754	10,284	48,024
48	OL-296 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
49	LCRS (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
50	PCMS (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
51	HL-1 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
52	HL-2 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
53	HL-3 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
54	HL-4 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
55	HL-5 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
56	HL-6 (2027-2037)	308.90	0.00	17,450	537	0	17,298	10,284	45,569
57	FK Potable Water (2027-2037)	3,910.00	0.00	4,362	134	0	54,740	2,571	61,808
58	Duplicate (2027-2037)	132.40	0.00	17,450	537	0	7,414	10,284	35,685
				980,605	**30,180**	**0**	**1,039,213**	**577,915**	**2,627,913**

Notes: Sampling labor cost = No. Samplers x Years x Events/year x Days/event x Hour/Day x Labor Rate
Sampling equipment costs include 1 pickup truck for every two samplers

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
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Cost Estimate Type: FA Cost Basis: Fort Knox

Revegetation Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Revegetation Surface Area (user override)	% Area Requiring Reseeding	Seed Mix (select)	Area Requiring Reseeding acres	Seed $/acres	Labor $/acres	Equipment $/acres	Labor Cost $	Equipment Cost $	Material Cost $	Total $
1	Revegetation Maintenance			Reclamation Maintenance	Closure	Fort Knox		FA		10%	User Mix 5 (from $	306.5	94.14	0.00	188.86	0	57,887	28,854	86,741
															Total Revegetation Matinenance	0	57,887	28,854	86,741

Notes: 1) Calculated based on cost type and current filters - (See Reclamation Quantities sheet)
2) Will use values from Reclamation Quantities sheet if user does not override
3) Surface area is NOT the same as footprint disturbance area typically used for permitting purposes.

	Total Cover Volume cy	Average Placement Cost $/cy
Information from Reclamation Quantities Sheet:	3,331,576	1.76

Cover Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total Cover Volume (1) (user override)	% Volume Requiring Maintenance	Average Placement Cost (1) (user override)	Volume Requiring Replacement cy	Labor (assume: 25%) $/cy	Equipment (assume: 75%) $/cy	Labor Cost $	Equipment Cost $	Total $
1	Cover Maintenance			Reclamation Maintenance	Closure	Fort Knox		FA		5%		166,579	0.44	1.32	73,295	219,884	293,179
														Total Cover Maintenance	73,295	219,884	293,179

Notes: 1) Will use values from Reclamation Quantities sheet if user does not override

	Total GM Volume cy	Average Placement Cost $/cy
Information from Reclamation Quantities Sheet:	4,679,809	1.89

Growth Media Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total Volume (user override)	% Volume Requiring Maintenance	Average Placement Cost (user override)	Volume Requiring Replacement cy	Labor (assume: 25%) $/cy	Equipment (assume: 75%) $/cy	Labor Cost $	Equipment Cost $	Total $
1	Growth Media Maintenance			Reclamation Maintenance	Closure	Fort Knox		FA		7%		327,587	0.47	1.42	154,785	464,355	619,140
														Total Growth Media Maintenance	154,785	464,355	619,140

Notes: 1) Will use values from Reclamation Quantities sheet if user does not override

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Road Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Water Truck (select)	Grader (select)	Fleet Size number	Duration mo.	First Maintenance Year closure year	Hours/ Month hrs	Equipment Fleet	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Totals $
1	Water Truck			Road Maintenance	Closure	Fort Knox		FA	Small		1	24	1	20	621E (8,000 gal)	480	30,797	58,253	89,050
2	Grader			Road Maintenance	Closure	Fort Knox		FA		Large	1	24	1	20	24M	480	31,651	95,083	126,734
																	62,448	**153,336**	**215,784**

Notes:
Assumptions for Road Maintenance: 8 months of the year, 20 hours per month.

Closure Cost Estimate
Closure Planning

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Closure Plan Studies and Reporting

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Type (select type)	Total Cost $	Comments
1	Pit lake water quality prediction update 2025			Pit	Post-Closure			FA	closure plan	25,000	
2	Pit lake water quality prediction update 2030			Pit	Post-Closure			FA	closure plan	25,000	
3	Pit lake water quality prediction update 2040			Pit	Post-Closure			FA	closure plan	25,000	
4	Pit lake water quality prediction update 2050			Pit	Post-Closure			FA	closure plan	25,000	
5	Pit lake water quality prediction update 2060			Pit	Post-Closure			FA	closure plan	25,000	
6	Pit lake water quality prediction update 2070			Pit	Post-Closure			FA	closure plan	25,000	
7	Pit lake water quality prediction update 2080			Pit	Post-Closure			FA	closure plan	25,000	
										175,000	

Notes:
For the FA calculations, a pit lake study and evaluation will be conducted every 5 years for the first 10 years, and then every 10 years until the lake reaches WQ standards

Closure Cost Estimate
G & A

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Administration

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Type (select type)	Frequency (select type)	Cost/ Payment $	Number of Payments	Total Cost $	Comments
1	Water rights			Water Fees	Closure	Fort Knox		FA	Misc. Administration	Annual	550	3	1,650	11 water rights; $50 each
													1,650	

Notes:

Closure Cost Estimate
Other User

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA   Cost Basis: Fort Knox

Other Cost Items Calculated Elsewhere

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Quantity	Units	Total Capital Cost $	Material Unit Cost $	Labor Unit Cost $	Equipment/ Operating Unit Cost $	Total Cost $	Comments
1	Tank cutting			Tanks	Closure	Fort Knox		FA	1	lump sum		37,854.96	59,363.46	1,720.68	98,939	See User 4 tab
2	FK Dewatering Wells	6.11		Well Abandonment	Closure	Fort Knox		FA	1	lump sum		19,995.48	197,326.26	65,033.60	282,355	See User 3 Tab
3	FK Interceptor Wells	6.11		Well Abandonment	Closure	Fort Knox		FA	1	lump sum		2,309.76	29,915.21	9,859.30	42,084	See User 3 Tab
4	FK Monitoring Wells	6.11		Well Abandonment	Closure	Fort Knox		FA	1	lump sum		1,588.19	23,613.32	7,782.31	32,984	See User 3 Tab
5	FK TSF Piezometers	6.11		Well Abandonment	Closure	Fort Knox		FA	1	lump sum		1,026.54	30,452.96	10,036.50	41,516	See User 3 Tab
6	FK Heap Wells	6.11		Well Abandonment	Closure	Fort Knox		FA	1	lump sum		552.80	8,580.23	2,827.82	11,961	See User 3 Tab
7	Well abandonment mob/demob (dewatering)			Well Abandonment	Closure	Fort Knox		FA	1	lump sum				7,560.00	7,560	See User 3 Tab
8	Well abandonment mob/demob (interceptor wells)			Well Abandonment	Closure	Fort Knox		FA	1	lump sum				7,560.00	7,560	See User 3 Tab
9	Well abandonment mob/demob (monitoring wells)			Well Abandonment	Closure	Fort Knox		FA	1	lump sum				7,560.00	7,560	See User 3 Tab
10	Pit Rim Warning Signage Initial Install	7.1.3		Pit	Closure	Fort Knox		FA	80	posts		221.00	145.93	56.60	33,882	See User 9 Tab
11	Dam Security Gate Install	7.1.3		Tailings	Closure	Fort Knox		FA	20	hours			236.53	91.73	6,565	See User 10 Tab
12	TSF Phase 1 Causeway Breach			Tailings	Closure	Fort Knox		FA	1,375	hours			195.88	523.45	989,079	See User 17 Tab
13	Pearl Creek Causeway Breach			Tailings	Closure	Fort Knox		FA	44	hours			195.88	523.45	31,651	
14	Blasting for riprap			Sediment and Drainage Control	Closure	Fort Knox		FA	116,432	CY		5.37	6.49	6.41	2,127,213	See user 14 for riprap quantity and blasting crew.
15	Excavate trench for 12" pipe for solution management - Walter Creek			Solution Management	Closure	Fort Knox		FA	7,407	CY			0.44	0.34	5,795	Use excavator 312F. Depth of excavation 6 ft. Width of excavation 6 ft.
16	Install 12" pipe for solution management - Walter Creek - buried			Solution Management	Closure	Fort Knox		FA	5,000	LF		19.44	11.38	6.89	188,570	Material cost from RSMeans 2019 p. 358, adjusted for Fairbanks
17	Cover trench for 12" pipe for solution management - Walter Creek			Solution Management	Closure	Fort Knox		FA	7,407	CY			0.44	0.34	5,795	Assume same productivity as excavation
18	Install 12" pipe for solution management - Walter Creek - HDD			Solution Management	Closure	Fort Knox		FA	4,000	LF		19.44	11.38	6.89	150,856	
19	Horizontal drilling for solution management pipe - Walter Creek - drill through fill			Solution Management	Closure	Fort Knox		FA	3,000	LF				192.70	578,088	RSMeans 2019, p. 349, directional drill through cobble, boulder, etc. 18" diameter
20	Horizontal drilling for solution management pipe - Walter Creek - drill through hard rock			Solution Management	Closure	Fort Knox		FA	2,000	LF				768.49	1,536,980	RSMeans 2019, p. 349, directional drill through hard rock. 18" diameter
21	Horizontal drilling for solution management pipe - Barnes Creek - drill through fill			Solution Management	Closure	Fort Knox		FA	600	LF				192.70	115,618	RSMeans 2019, p. 349, directional drill through cobble, boulder, etc. 18" diameter
22	Horizontal drilling for solution management pipe - Barnes Creek - drill through hard rock			Solution Management	Closure	Fort Knox		FA	600	LF				768.49	461,094	RSMeans 2019, p. 349, directional drill through hard rock. 18" diameter
23	TSF Maint Repair - Erosion Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				1,437,800.00	1,437,800	See User 07.
24	TSF Maint Repair - Rill Erosion Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				81,032.00	81,032	See User 07.
25	TSF Maint Repair - Replace Armor Stone	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				2,607,398.00	2,607,398	See User 07.
26	TSF Maint Repair - Dam Crest Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				25,904.00	25,904	See User 07.
27	TSF Maint Repair - Seal Cracks	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				219,175.00	219,175	See User 07.
28	TSF Maint Repair - Refurbish Surface Spalling	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				227,510.00	227,510	See User 07.
29	TSF Maint Repair - Accelerated Spillway Erosion	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				48,720.00	48,720	See User 07.
30	TSF Maint Repair - Spillway/Earth Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				178,420.00	178,420	See User 07.
31	TSF Maint Repair - Joints Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				46,305.00	46,305	See User 07.
32	TSF Maint Repair - Channel Rip Rap	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				550,846.00	550,846	See User 07.
33	TSF Maint Repair - Spur Road Annual Maintenance	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				138,800.00	138,800	See User 07.
34	TSF Maint Repair - 5-Year Dam Safety Inspections and Report	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				900,000.00	900,000	See User 07.
35	TSF Maint Repair - Principal	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				6,461,910.00	6,461,910	See User 07.
36	WSR Maint Repair - Clean Spillway	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				34,020.00	34,020	See User 08.
37	WSR Maint Repair - Clearing Woody Growth	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				44,910.00	44,910	See User 08.
38	WSR Maint Repair - Erosion Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				15,015.00	15,015	See User 08.
39	WSR Maint Repair - Accelerated Erosion	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				32,640.00	32,640	See User 08.
40	WSR Maint Repair - Seal Cracks	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				571,220.00	571,220	See User 08.
41	WSR Maint Repair - Refurbish Surface Spalling	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				571,220.00	571,220	See User 08.
42	WSR Maint Repair - Ice Damage Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				17,096.00	17,096	See User 08.
43	WSR Maint Repair - Replace Armor Rock	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				47,394.00	47,394	See User 08.
44	WSR Maint Repair - Dam Crest Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				7,772.00	7,772	See User 08.
45	WSR Maint Repair - Spillway Replace	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				8,285,906.00	8,285,906	See User 08.
46	WSR Maint Repair - Spillway/earth Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				180,846.00	180,846	See User 08.
47	WSR Maint Repair - Joints Repair	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				81,605.00	81,605	See User 08.
48	WSR Maint Repair - Tailwater Riprap	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				302,254.00	302,254	See User 08.
49	WSR Maint Repair - Spur Road Annual Maintenance2013 costs	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				138,900.00	138,900	See User 08.
50	WSR Maint Repair - Annual Inspection	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				700,000.00	700,000	See User 08.
51	WSR Maint Repair - Principal	9.2		Long-term Maintenance and Rep	Post-Closure	Fort Knox		FA	1	LS				11,030,798.00	11,030,798	See User 08.
52	Remote monitoring of TSF seepage to pit (2023-2054)			Solution Management	Post-Closure	Fort Knox		FA	32	years	10,000			10,000.00	330,000	
53	Pipe installation costs - TSF North Pond to South Pond - 2020 - diameter 8 in.			Solution Management	Closure	Fort Knox		FA	2,114	LF		81.36	Arctic Insulation	8.99	190,993	Lengths per "Solution Management." See User 02 for backup of costs and assumptions.
54	Pipe installation costs - TSF South Pond to Pit - 2020 - diameter 16 in.			Solution Management	Closure	Fort Knox		FA	5,114	LF		190.94	Arctic Insulation	12.72	1,041,517	Lengths per "Solution Management." See User 02 for backup of costs and assumptions.
55	Pipe installation costs - HLP Draindown - Walter Creek HLP - 2020 - diameter 8 in.			Solution Management	Closure	Fort Knox		FA	3,299	LF		81.36	Arctic Insulation	8.99	298,054	Lengths per "Solution Management." See User 02 for backup of costs and assumptions.
56	Pipe installation costs - HLP Draindown - Barnes Creek HLP - 2020 - diameter 8 in.			Solution Management	Closure	Fort Knox		FA	10,151	LF		81.36	Arctic Insulation	8.99	917,109	Lengths per "Solution Management." See User 02 for backup of costs and assumptions.
57	Pipe installation costs - TSF seepage to Pit - 2020-2022 - diameter 4 in.			Solution Management	Closure	Fort Knox		FA	10,095	LF		48.17	Arctic Insulation	7.40	560,979	Lengths per "Solution Management." See User 02 for backup of costs and assumptions.
58	TSF seepage to Pit - 10-year pipeline replacement - 2030			Solution Management	Post-Closure	Fort Knox		FA	5,048	LF		48.17	Arctic Insulation	7.40	280,490	Half replaced every 10 years.
59	TSF seepage to Pit - 10-year pipeline replacement - 2040			Solution Management	Post-Closure	Fort Knox		FA	5,048	LF		48.17	Arctic Insulation	7.40	280,490	Half replaced every 10 years.
60	TSF seepage to Pit - 10-year pipeline replacement - 2050			Solution Management	Post-Closure	Fort Knox		FA	5,048	LF		48.17	Arctic Insulation	7.40	280,490	Half replaced every 10 years.
61	Substation removal			Linear Structures	Post-Closure	Fort Knox		FA	1	LS				50,000.00	50,000	Cost included based on experience with similar sites.
62	Heat trace installation			Solution Management	Closure	Fort Knox		FA	1	LS				84,362.00	84,362	See User 02.
63	Heat trace operations costs - closure period			Solution Management	Closure	Fort Knox		FA	3	LS				22,685.16	68,055	See User 02.
64	Heat trace operations costs - post-closure period			Solution Management	Post-Closure	Fort Knox		FA	32	LS				22,685.16	725,925	See User 02.
											10,000	4,339,687	1,508,213	41,653,403	46,857,583	

Notes:
Capital cost is lump sum (i.e. not multiplied by the quantity).
Material, Labor and Equipment/Operating costs are unit costs (i.e. multiplied by the quantity).

Closure Cost Estimate
Human Resources

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Human Resources - Salary & Benefits

	Job Description (required)	Avg. Annual Salary (incl. benefits) $	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Closure Year -1 #	Closure Year 1 #	Closure Year 2 #	Closure Year 3 #	Closure Year 4 #	Closure Year 5 #	Closure Year 6 #	Closure Year 7 #	Closure Year 8 #	Closure Year 9 #	Closure Year 10 #	Closure Year 11 #	Closure Year 12 #	Closure Year 13 #
1	closure manager (InfoMine p. B27, closure manager)	239,200			Active Reclamation	Closure	Fort Knox		FA		1	1	1										
2	environmental manager (InfoMine p. B27, environme	106,600			Active Reclamation	Closure	Fort Knox		FA		1	1	1										
3	environmental technicians (InfoMine p. B27, environ	62,600			Active Reclamation	Closure	Fort Knox		FA		2	2	2										
4	engineer (InfoMine p. B27, chief engineer)	128,400			Active Reclamation	Closure	Fort Knox		FA		2	2	2										
5	mechanics (InfoMine p. B27, mech/electr. Superint.)	135,400			Active Reclamation	Closure	Fort Knox		FA		4	4	4										
6	equipment operators	135,168			Active Reclamation	Closure	Fort Knox		FA		2	2	2										
7	administrator (InfoMine p. B27, admin assistant)	57,100			Active Reclamation	Closure	Fort Knox		FA		1	1	1										
8	security (InfoMine p. A10, security officer)	85,289			Active Reclamation	Closure	Fort Knox		FA		2	2	2										
9	foreman ((InfoMine p. B27, mine foreman)	103,500			Active Reclamation	Closure	Fort Knox		FA		4	4	4										
10	environmental manager - part-time (same as above)	106,600			Closure Monitoring	Post-Closure	Fort Knox		FA					0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
11	environmental technicians - part-time (same as abov	62,600			Closure Monitoring	Post-Closure	Fort Knox		FA					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
12	Long-term solution management technician (InfoMin	84,003			Solution Management	Post-Closure	Fort Knox		FA					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
									SUBTOTAL ($)	-	2,181,414	2,181,414	2,181,414	99,951	99,951	99,951	99,951	99,951	99,951	99,951	99,951	99,951	99,951

Notes:
Salaries based on Infomine Western Region 2018 US Mine Salary Survey (pages A6, A10, B27 and B32)
Long-term solution management technician (InfoMine p. A6, water treatment plant operator IV) includes on-site and remote monitoring of seepage pumping system

Project Name: Fort Knox Phased Estimate - Recla
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_0
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knc

Human Resources - Salary & Benefits

	Job Description (required)	Closure Year 14 #	Closure Year 15 #	Closure Year 16 #	Closure Year 17 #	Closure Year 18 #	Closure Year 19 #	Closure Year 20 #	Closure Year 21 #	Closure Year 22 #	Closure Year 23 #	Closure Year 24 #
1	closure manager (InfoMine p. B27, closure manager)											
2	environmental manager (InfoMine p. B27, environme											
3	environmental technicians (InfoMine p. B27, environ											
4	engineer (InfoMine p. B27, chief engineer)											
5	mechanics (InfoMine p. B27, mech/electr. Superint.)											
6	equipment operators											
7	administrator (InfoMine p. B27, admin assistant)											
8	security (InfoMine p. A10, security officer)											
9	foreman ((InfoMine p. B27, mine foreman)											
10	environmental manager - part-time (same as above)	0.25	0.25									
11	environmental technicians - part-time (same as abov	0.5	0.5									
12	Long-term solution management technician (InfoMin	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		99,951	99,951	42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001

	Job Description (required)	Closure Year 25 #	Closure Year 26 #	Closure Year 27 #	Closure Year 28 #	Closure Year 29 #	Closure Year 30 #	Closure Year 31 #	Closure Year 32 #	Closure Year 33 #	Closure Year 34 #	Closure Year 35 #
1	closure manager (InfoMine p. B27, closure manager)											
2	environmental manager (InfoMine p. B27, environme											
3	environmental technicians (InfoMine p. B27, environ											
4	engineer (InfoMine p. B27, chief engineer)											
5	mechanics (InfoMine p. B27, mech/electr. Superint.)											
6	equipment operators											
7	administrator (InfoMine p. B27, admin assistant)											
8	security (InfoMine p. A10, security officer)											
9	foreman ((InfoMine p. B27, mine foreman)											
10	environmental manager - part-time (same as above)											
11	environmental technicians - part-time (same as abov											
12	Long-term solution management technician (InfoMin	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001	42,001

Notes:
Salaries based on Infomine Western Region 2018 US
Long-term solution management technician (InfoMin

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**

Cost type:	**FA**	
Budget Year:	**2019**	
First Year of Operation:	**2009**	
Closure Year 1:	**2020**	
Closure Period:	**3**	years
Post Closure Period:	**11**	years

ID Code Filter:	
FacilityType Filter:	
Phase Filter:	
Location Filter:	
Property Filter:	

Last Equipment Use update:
26-Aug-2019 15:43 (to update, go to Equip Use sheet and select Refresh Schedule button)

Mobilization/Demobilization

	Equipment	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total FA Hours	Minimum	Maximum	Available Use	Actual Use (if less than available)	Minimum	Maximum	Units Mobilized	Transport Method	Total Load/ Secure Unload/ Secure Time	Assembly/ Disassembly [1]	Assembly/ Disassembly Override	Equipment Weight
									hrs	hrs/yr	hrs/yr	hrs/yr	hrs/yr	units/year	units/year	#	(select)	hrs	Total $	Total $	tons
1	D7E	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	105	2	76	2,112		1	1	1	Road only	8.00	0		28.3
2	D8T	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	91	2	57	2,112		1	1	1	Road only	8.00	0		42.9
3	D9T	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	3,391	400	1,565	2,112		1	1	1	Road only	16.00	0		52.5
4	D10T2	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	17,749	1,704	8,106	2,112		1	4	4	Road only	16.00	81,265		76.2
5	24M	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	480	158	163	2,112		1	1	1	Road only	16.00	0		71.3
6	325F	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	2,786	2,786	2,786	2,112		2	2	1	Road only	8.00	0		28.2
7	349F	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	205	3	69	2,112		1	1	1	Road only	8.00	0		56.3
8	390F	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	567	105	171	2,112		1	1	1	Road only	16.00	57,011		97.0
9	930M	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		15.3
10	966M	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		25.3
11	988K	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	182	4	115	2,112		1	1	1	Road only	16.00	0		55.6
12	992K	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	12,842	725	6,957	2,112		1	4	1	Road only	16.00	94,206		108.6
13	Heavy Duty Drill Rig	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		0.0
14	740C	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	182	4	115	2,112		1	1	2	Road only	8.00	0		39.2
15	777G	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	12,842	725	6,957	2,112		1	4	12	Road only	16.00	90,522		180.4
16	621E (8,000 gal)	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		57.4
17	Dump Truck (10-12 yd3)	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	2	Road only	0.00	0		35.0
18	20 Ton Crane	5.2.1		Mobilization-demobilization	Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		25.0
19	D8T	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	91	2	57	2,112		1	1	1	Road only	8.00	0		42.9
20	349F	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	205	3	69	2,112		1	1	1	Road only	8.00	0		56.3
21	930M	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		15.3
22	988K	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	182	4	115	2,112		1	1	1	Road only	16.00	0		55.6
23	Heavy Duty Drill Rig	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	0	0	0	2,112		0	0	1	Road only	8.00	0		0.0
24	740C	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	182	4	115	2,112		1	1	2	Road only	8.00	0		39.2
25	Dump Truck (10-12 yd3)	5.2.1		Mobilization-demobilization	Post-Closure	Fort Knox		FA	0	0	0	2,112		0	0	2	Road only	0.00	0		35.0

Equipment Information Sources: CAT Performance Handbook ed. 46;CAT website (http://www.cat.com/en_US/products/new/) (as of June 2017)
Komatsu Equipment Company (http://www.komatsuamerica.com/equipment/)
Hitachi Construction Machinery Company (https://www.hitachiconstruction.com/)
Liebherr (https://www.liebherr.com/en/nld/products/mobile-and-crawler-cranes/mobile-cranes/ltm-mobile-cranes/)
Tadano Ltd. (https://www.tadano.com/products/productstype/LC/)

NOTES:
(1) Only demobilization required for Shovels and Trucks larger than 777.

USER NOTES:

Closure Cost Estimate
Mobilization

Minimum number of road lanes (one direction) on route:
1

Road Transportation - Haulers and Escort Vehicles										One-way road transport costs											
	Equipment	Road Transport Method	Units Mobilized	Required Number of Haulers per Piece	Required Number of Pilot Cars per Hauler	Pilot Car Override	Hours of travel @ 55 mph	Deadhead Distance	Miscellaneous Costs per Hauler[2]	Load/Secure Unload/Secure Labor Cost	Escort Vehicle Labor Cost	Hauler Labor Cost	Load/Secure Unload/Secure Equipment Cost	Escort Vehicle Equipment Cost	Hauler Equipment Cost	Total Labor Costs	Total Equipment Costs	Total Miscellaneous Costs	Total Costs	Total Assembly/ Disassembly Cost	Road Transport Cost
			#	#	#	#	hrs	mi	$	$	$	$	$	$	$	$	$	$	$	$	$
1	**D7E**	hauler	1	1	1		6.36	350		512	673	391	111	110	637	1,576	858	0	2,434	0	2,434
2	**D8T**	hauler	1	1	1		6.36	350		512	673	391	154	110	637	1,576	901	0	2,477	0	2,477
3	**D9T**	hauler	1	1	2		6.36	350		1,024	1,345	391	213	220	790	2,760	1,223	0	3,983	0	3,983
4	**D10T2**	hauler	4	1	1		6.36	350		4,096	2,690	1,565	1,059	440	3,162	8,351	4,661	0	13,012	325,060	13,012
5	**24M**	hauler	1	1	2		6.36	350		1,055	1,345	391	198	220	790	2,791	1,208	0	3,999	0	3,999
6	**325F**	hauler	1	1	0		6.36	350		512	0	391	73	0	637	903	710	0	1,613	0	1,613
7	**349F**	hauler	1	1	0		6.36	350		528	0	391	131	0	790	919	921	0	1,840	0	1,840
8	**390F**	hauler	1	2	2		6.36	350		2,110	2,690	782	206	440	1,274	5,582	1,920	0	7,502	57,011	7,502
9	**930M**	hauler	1	1	0		6.36	350		512	0	391	58	0	494	903	552	0	1,455	0	1,455
10	**966M**	hauler	1	1	0		6.36	350		528	0	391	97	0	637	919	734	0	1,653	0	1,653
11	**988K**	hauler	1	1	0		6.36	350		1,055	0	391	195	0	790	1,446	985	0	2,431	0	2,431
12	**992K**	hauler	1	2	2		6.36	350		2,110	2,690	782	525	440	1,581	5,582	2,546	0	8,128	94,206	8,128
13	**Heavy Duty Drill Rig**	self mobilized	1	0	0		6.36	350		0	0	0	367	0	0	0	367	0	367	0	367
14	**740C**	hauler	2	1	1		6.36	350		1,027	1,345	782	351	220	1,274	3,154	1,845	0	4,999	0	4,999
15	**777G**	hauler	12	3	3		6.36	350		37,688	72,636	14,081	2,784	11,879	28,457	124,405	43,120	0	167,525	1,086,264	167,525
16	**621E (8,000 gal)**	hauler	1	1	0		6.36	350		513	0	391	121	0	790	904	911	0	1,815	0	1,815
17	**Dump Truck (10-12 yd3)**	self mobilized	2	1	0		6.36	350		0	0	782	92	0	1,274	782	1,366	0	2,148	0	2,148
18	**20 Ton Crane**	self mobilized	1	0	0		6.36	350		0	0	0	53	0	0	0	53	0	53	0	53
19	**D8T**	hauler	1	1	1		6.36	350		512	673	391	154	110	637	1,576	901	0	2,477	0	2,477
20	**349F**	hauler	1	1	0		6.36	350		528	0	391	131	0	790	919	921	0	1,840	0	1,840
21	**930M**	hauler	1	1	0		6.36	350		512	0	391	58	0	494	903	552	0	1,455	0	1,455
22	**988K**	hauler	1	1	0		6.36	350		1,055	0	391	195	0	790	1,446	985	0	2,431	0	2,431
23	**Heavy Duty Drill Rig**	self mobilized	1	0	0		6.36	350		0	0	0	367	0	0	0	367	0	367	0	367
24	**740C**	hauler	2	1	1		6.36	350		1,027	1,345	782	351	220	1,274	3,154	1,845	0	4,999	0	4,999
25	**Dump Truck (10-12 yd3)**	self mobilized	2	1	0		6.36	350		0	0	782	92	0	1,274	782	1,366	0	2,148	0	2,148

NOTES:
(1) Only demobilization required for Shovels and Trucks larger than 777.
(2) Miscellaneous costs could include, fees, permits, ancillary equipment, etc.)

Default Escort Car Requirements (based on trailer width)	
Exceeds 12 feet (on 2 and 3 lane roads)	1 Front
Exceeds 14 feet (on 2 and 3 lane roads)	1 Front/1 Rear
Exceeds 16 feet (on 2 and 3 lane roads)	2 Front/1 Rear
Exceeds 14 feet (on 4 or more lane roads)	1 Rear
Exceeds 16 feet (on 4 or more lane roads)	1 Front/1 Rear

Source: Nevada Department of Transportation (https://www.nevadadot.com/doing-business/commercial-vehicles/commercial-vehicle-permits/escort-information-and-guidelines)

Assembly/Disassembly Source:	N/A

Closure Cost Estimate
Labor Rates

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Fort Knox	Fairbanks North Star Borough, Alaska
Power Equipment Operators	none	0.00
Truck Drivers	none	0.00
Laborers	none	0.00

INDIRECT COSTS

Unemployment (%)	
Retirement/SS/Medicare (%)	
Workman's Compensation (%)	

Other Indirects

Total Other Indirects	0.00%

HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Labor Group	Base Rate $/hr	Zone Adjustment $/hr	Hourly Wage $/hr	Fringe $/hr	Retirement/ Medicare $/hr	Unemployment Insurance $/hr	Workman's Compensation $/hr	Other Indirect Costs $/hr	Additional User Markups to Base Rate† $/hr	%	$/hr	Total $/hr
Equipment Operators (2)													
Bulldozers													
D6T	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D6R w/ Winch	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D7E	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D8T	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D9T	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D10T2	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
D11T	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
Wheeled Dozers													
824K					23.65							0	0.00
834K					23.65							0	0.00
844K					23.65							0	0.00
854K					23.65							0	0.00
Motor Graders													
12M2	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
14M	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
16M3	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
24M	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
Track Excavators													
312F	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
320F	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
325F	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
330F	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
349F	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
374F	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
390F	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
Scrapers													
631K	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
637K	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
Wheeled Loaders													
926M	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
930M	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
950M	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
966M	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
972M	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
980M	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
988K	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
990K	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
992K	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
994K	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
L2350					23.65							0	0.00
Shovels/Excavators													
PC2000					23.65							0	0.00
PC3000					23.65							0	0.00
PC4000					23.65							0	0.00
PC5500					23.65							0	0.00
PC8000					23.65							0	0.00
EX2500					23.65							0	0.00
Hydraulic Hammers													
H120Es (fits 325)													
H160Es (fits 349)													
H180Es (fits 374/390)													
Demolition Shears													
S3050 (fits 320/325/330)													
S3070 (fits 330/349)													
S3090 (fits 374/390)													
Demolition Grapples													
G315B (fits 320/325)													
G320B (fits 325/330)													
G330 (fits 349/374)													

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Fort Knox	Fairbanks North Star Borough, Alaska
Power Equipment Operators	none	0.00
Truck Drivers	none	0.00
Laborers	none	0.00

INDIRECT COSTS

Unemployment (%)	
Retirement/SS/Medicare (%)	
Workman's Compensation (%)	

Other Indirects

Total Other Indirects	0.00%

HOURLY LABOR RATE TABLE

Other Equipment

420F2	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
430F2	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
CS54B	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
CS64B	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
CP54B	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
CP68B	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
Light Truck - 1.5 Ton	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
Supervisor's Truck	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
Flatbed Truck	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
Air Compressor + tools	A1605 Group 4	32.83	0.00	32.83	23.65	0.00	0.00	0.00	0.00			0	56.48
Welding Equipment	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
Heavy Duty Drill Rig	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
Pump (plugging) Drill Rig	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
Concrete Pump					23.65							0	
Gas Engine Vibrator	A1604 Group 3	39.04	0.00	39.04	23.65	0.00	0.00	0.00	0.00			0	62.69
Generator 5KW					23.65							0	
HDEP Welder (pipe or liner)					23.65							0	
5 Ton Crane	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
20 Ton Crane	A1601 Group 1	40.35	0.00	40.35	23.65	0.00	0.00	0.00	0.00			0	64.00
50 Ton Crane	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94
120 Ton Crane	A1602 Group 1A	42.29	0.00	42.29	23.65	0.00	0.00	0.00	0.00			0	65.94

NOTES:

(1) Equipment Type:	Catepillar model or equivalent, LeTourneau
(2) Equipment Operator Source:	Alaska Division of Labor Standards and Safety: Pamphlet 600, Issue 38 (May 1, 2019)
(3) Zone Basis:	

Truck Drivers (4)

725C2	A2103 Group 2	38.68	0.00	38.68	24.22	0.00	0.00	0.00	0.00			0	62.90
730C2	A2103 Group 2	38.68	0.00	38.68	24.22	0.00	0.00	0.00	0.00			0	62.90
735C	A2103 Group 2	38.68	0.00	38.68	24.22	0.00	0.00	0.00	0.00			0	62.90
740C	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
770G	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
773G	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
777G	A2102 Group 1A	41.21	0.00	41.21	24.22	0.00	0.00	0.00	0.00			0	65.43
785D	A2102 Group 1A	41.21	0.00	41.21	24.22	0.00	0.00	0.00	0.00			0	65.43
789D	A2102 Group 1A	41.21	0.00	41.21	24.22	0.00	0.00	0.00	0.00			0	65.43
793F	A2102 Group 1A	41.21	0.00	41.21	24.22	0.00	0.00	0.00	0.00			0	65.43
797F	A2102 Group 1A	41.21	0.00	41.21	24.22	0.00	0.00	0.00	0.00			0	65.43
613E (5,000 gal)	A2105 Group 4	37.28	0.00	37.28	24.22	0.00	0.00	0.00	0.00			0	61.50
621E (8,000 gal)	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
777G H2O Truck	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
785D H2O Truck	A2101 Group 1	39.94	0.00	39.94	24.22	0.00	0.00	0.00	0.00			0	64.16
Dump Truck (10-12 yd3)	A2105 Group 4	37.28	0.00	37.28	24.22	0.00	0.00	0.00	0.00			0	61.50
Tractor/Trailer (20 ton)	A2105 Group 4	37.28	0.00	37.28	24.22	0.00	0.00	0.00	0.00			0	61.50
Tractor/Trailer (50 ton)	A2105 Group 4	37.28	0.00	37.28	24.22	0.00	0.00	0.00	0.00			0	61.50
Tractor/Trailer (80 ton)	A2105 Group 4	37.28	0.00	37.28	24.22	0.00	0.00	0.00	0.00			0	61.50

NOTES:

(4) Truck Driver Source:	Alaska Division of Labor Standards and Safety: Pamphlet 600, Issue 38 (May 1, 2019)
(5) Zone Basis:	

Closure Cost Estimate
Labor Rates

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Fort Knox	Fairbanks North Star Borough, Alaska
Power Equipment Operators	none	0.00
Truck Drivers	none	0.00
Laborers	none	0.00

INDIRECT COSTS

Unemployment (%)	
Retirement/SS/Medicare (%)	
Workman's Compensation (%)	

Other Indirects

Total Other Indirects	0.00%

HOURLY LABOR RATE TABLE

Laborers (6,7)

General Laborer	N1201 Group 1	30.71	0.00	30.71	27.71	0.00	0.00	0.00	0.00			0	58.42
Skilled Laborer	N1203 Group 3	32.61	0.00	32.61	27.71	0.00	0.00	0.00	0.00			0	60.32
Driller's Helper	N1203 Group 3	32.61	0.00	32.61	27.71	0.00	0.00	0.00	0.00			0	60.32
Rodmen (reinforcing concrete)	N1202 Group 2	31.71	0.00	31.71	27.71	0.00	0.00	0.00	0.00			0	59.42
Cement finisher	N0401 Group 1	38.13	0.00	38.13	27.71	0.00	0.00	0.00	0.00			0	65.84
Carpenter	A0301	38.34	0.00	38.34	25.86	0.00	0.00	0.00	0.00			0	64.20

NOTES:

(6) Laborer Source:	Alaska Division of Labor Standards and Safety: Pamphlet 600, Issue 38 (May 1, 2019)
(7) Carpenter Source:	Alaska Division of Labor Standards and Safety: Pamphlet 600, Issue 38 (May 1, 2019)
(8) Zone Basis:	

Project Management and Technical Labor (9)

Project Manager		93.75	0.00	93.75	27.71	0.00	0.00	0.00	0.00			0	121.46
Foreman		87.50	0.00	87.50	27.71	0.00	0.00	0.00	0.00			0	115.21
Field Geologist/Engineer		155.93	0.00	155.93	27.71	0.00	0.00	0.00	0.00			0	183.64
Field Tech/Sampler		128.09	0.00	128.09	27.71	0.00	0.00	0.00	0.00			0	155.80
Range Scientist		142.57	0.00	142.57	27.71	0.00	0.00	0.00	0.00			0	170.28
					27.71								
					27.71								
					27.71								
					27.71								
					27.71								
					27.71								
					27.71								

NOTES:

(9) Project Manager:	RS Means 2018 (013113200200, Total O&P) [Fairbanks, AK]
(9) Foreman Source:	RS Means 2018 (01311200260, Total O&P) [Fairbanks, AK]
(9) Techical Labor Source:	SRK Consulting 2018 (Total Incl. O&P-10%) Adjusted for Zone,Tax and Ins. [adjusted from NV to
Other Labor Source:	
Other Labor Source:	
†Additional User Markups	
(These are added by the user to the	
base rate to account for site-specific	
conditions or corporate requirements)	

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm

Monthly Rental Basis:	176	hrs month
Wet Rates?	No	

EQUIPMENT RENTAL RATE TABLE

EQUIPMENT TYPE (1)	Monthly Owner/Rental Rate $/mo	Equipment Hourly Rate $/hr	Fuel/Lube/ Wear $/hr	Total Rate $/hr
Bulldozers				
D6T	12,600.00	71.59	24.93	96.52
D6R w/ Winch	13,000.00	73.86	24.93	98.79
D7E	15,500.00	88.07	23.42	111.49
D8T	20,700.00	117.61	36.20	153.81
D9T	29,500.00	167.61	45.78	213.40
D10T2	35,750.00	203.13	61.61	264.74
D11T	52,000.00	295.45	85.93	381.39
Wheeled Dozers				
824K			31.08	31.08
834K			36.44	36.44
844K			41.26	41.26
854K			52.26	52.26
Motor Graders				
12M2	10,800.00	61.36	19.63	80.99
14M	12,000.00	68.18	25.73	93.92
16M3	24,000.00	136.36	31.53	167.89
24M	26,400.00	150.00	48.09	198.09
Track Excavators				
312F	6,985.00	39.69	9.75	49.44
320F	9,700.00	55.11	14.28	69.40
325F	10,300.00	58.52	14.62	73.14
330F	11,700.00	66.48	20.61	87.08
349F	17,000.00	96.59	34.07	130.66
374F	24,000.00	136.36	34.98	171.34
390F	29,500.00	167.61	38.37	205.98
Scrapers				
631K	22,200.00	126.14	59.97	186.11
637K	43,100.00	244.89	90.17	335.06
Wheeled Loaders				
926M	7,000.00	39.77	11.62	51.39
930M	8,000.00	45.45	12.47	57.92
950M	9,700.00	55.11	18.41	73.52
966M	12,900.00	73.30	23.39	96.68
972M	15,000.00	85.23	25.15	110.38
980M	17,250.00	98.01	29.28	127.30
988K	25,000.00	142.05	52.57	194.62
990K	49,900.00	283.52	81.10	364.63
992K	73,900.00	419.89	104.67	524.56
994K	81,300.00	461.93	159.43	621.36
L2350			181.53	181.53

Closure Cost Estimate
Equipment Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
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Shovels				
PC2000			101.77	101.77
PC3000			137.53	137.53
PC4000			192.54	192.54
PC5500			327.31	327.31
PC8000			409.82	409.82
EX2500			140.28	140.28
Hydraulic Hammers				
H120Es (fits 325)	7,500.00	42.61	0.00	42.61
H160Es (fits 349)	9,500.00	53.98	0.00	53.98
H180Es (fits 374/390)	11,922.02	67.74	0.00	67.74
Demolition Shears				
S3050 (fits 320/325/330)				0.00
S3070 (fits 330/349)				0.00
S3090 (fits 374/390)				0.00
Demolition Grapples				
G315B (fits 320/325)				0.00
G320B (fits 325/330)				0.00
G330 (fits 349/374)				0.00
Other Equipment				
420F2	4,100.00	23.30	16.73	40.02
430F2	5,000.00	28.41	17.62	46.03
CS54B	6,350.00	36.08	9.21	45.29
CS64B	7,900.00	44.89	9.21	54.10
CP54B	8,200.00	46.59	9.21	55.81
CP68B	8,200.00	46.59	9.90	56.49
Light Truck - 1.5 Ton	1,479.00	8.40	4.36	12.76
Supervisor's Truck	1,162.70	6.61	2.98	9.59
Flatbed Truck	1,091.33	6.20	14.20	20.40
Air Compressor + tools	1,890.69	10.74	2.75	13.49
Welding Equipment	1,178.00	6.69	5.50	12.19
Heavy Duty Drill Rig	58,827.00	334.24	33.01	367.25
Pump (plugging) Drill Rig	58,827.00	334.24	27.51	361.75
Concrete Pump	15,426.31	87.65	27.51	115.15
Gas Engine Vibrator	252.43	1.43	2.75	4.18
Generator 5KW	764.00	4.34	4.13	8.47
HDEP Welder (pipe or liner)	8,031.89	45.64	5.50	51.14
5 Ton Crane	3,518.72	19.99	8.25	28.24
20 Ton Crane	7,394.42	42.01	11.00	53.02
50 Ton Crane	14,023.90	79.68	12.93	92.61
120 Ton Crane	15,426.29	87.65	14.30	101.95
Trucks				
725C2	14,900.00	84.66	38.92	123.58
730C2	14,900.00	84.66	39.88	124.54
735C	17,800.00	101.14	54.20	155.34
740C	20,700.00	117.61	57.97	175.58
770G	29,000.00	164.77	24.76	189.54
773G	29,000.00	164.77	40.98	205.75
777G	29,000.00	164.77	67.21	231.98
785D	82,100.00	466.48	107.31	573.79
789D	90,300.00	513.07	107.31	620.38
793F	99,300.00	564.20	169.40	733.60
797F	109,200.00	620.45	237.02	857.47
613E (5,000 gal)	7,394.00	42.01	26.73	68.75
621E (8,000 gal)	13,556.00	77.02	44.33	121.36
777G H2O Truck	74,600.00	423.86	67.21	491.07
785D H2O Truck	82,100.00	466.48	107.31	573.79
Dump Truck (10-12 yd3)	5,354.58	30.42	15.33	45.75
Tractor/Trailer (20 ton)	6,887.00	39.13	38.51	77.64
Tractor/Trailer (50 ton)	8,920.00	50.68	49.51	100.19
Tractor/Trailer (80 ton)	11,225.00	63.78	60.51	124.29

NOTES:

Power Equipment Source:	Cashman Equipment Company (July 2018) unless noted [adjusted to AK from NV
Power Equipment Type:	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels
Drilliing Equipment Source:	RS Means 2019 (Fairbanks, AK)
Other Equipment Source:	RS Means 2019 (Fairbanks, AK)
Note:	Drill rig includes support (pipe) truck

Closure Cost Estimate
Equipment Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
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FUEL, LUBE AND WEAR CALCULATIONS

EQUIPMENT TYPE	PM Cost (1) $/hr	Under carriage or Tires $/hr	G.E.T Consumption (2) $/hr	Fuel Use Rate gal/hr (3)	Fuel Cost@ 2.75/gal	Total Hourly Equipment Cost $/hr
Bulldozers						
D6T	7.19		0.00	6.45	17.74	24.93
D6R w/ Winch	7.19		0.00	6.45	17.74	24.93
D7E	7.19		0.00	5.90	16.23	23.42
D8T	7.59		0.00	10.40	28.61	36.20
D9T	8.65		0.00	13.50	37.13	45.78
D10T2	10.18		0.00	18.70	51.43	61.61
D11T	13.87		0.00	26.20	72.06	85.93
Wheeled Dozers						
824K		0.00		11.30	31.08	31.08
834K		0.00		13.25	36.44	36.44
844K		0.00		15.00	41.26	41.26
854K		0.00		19.00	52.26	52.26
Motor Graders						
12M2	4.37	4.67	0.00	3.85	10.59	19.63
14M	5.45	6.39	0.00	5.05	13.89	25.73
16M3	5.69	8.65	0.00	6.25	17.19	31.53
24M	6.26	9.51	0.00	11.75	32.32	48.09
Track Excavators						
312F	4.11		0.00	2.05	5.64	9.75
320F	4.38		0.00	3.60	9.90	14.28
325F	4.44		0.00	3.70	10.18	14.62
330F	6.44		0.00	5.15	14.17	20.61
349F	7.25		0.00	9.75	26.82	34.07
374F	6.65		0.00	10.30	28.33	34.98
390F	6.05		0.00	11.75	32.32	38.37
Scrapers						
631K	7.30	11.08	0.00	15.12	41.59	59.97
637K	12.13	11.08	0.00	24.35	66.96	90.17
Wheeled Loaders						
926M	3.33	3.34	0.00	1.80	4.95	11.62
930M	3.90	3.34	0.00	1.90	5.23	12.47
950M	4.85	5.03	0.00	3.10	8.53	18.41
966M	5.06	8.01	0.00	3.75	10.31	23.39
972M	5.72	8.01	0.00	4.15	11.41	25.15
980M	5.72	8.44	0.00	5.50	15.13	29.28
988K	10.72	13.25	0.00	10.40	28.61	52.57
990K	11.30	21.40	0.00	17.60	48.41	81.10
992K	11.87	29.54	0.00	23.00	63.26	104.67
994K	13.06	32.50	0.00	41.40	113.87	159.43
L2350			0.00	66.00	181.53	181.53
Shovels						
PC2000				37.00	101.77	101.77
PC3000				50.00	137.53	137.53
PC4000				70.00	192.54	192.54
PC5500				119.00	327.31	327.31
PC8000				149.00	409.82	409.82
EX2500				51.00	140.28	140.28
Hydraulic Hammers						
H120Es (fits 325)	N/A		0.00			0.00
H160Es (fits 349)	N/A		0.00			0.00
H180Es (fits 374/390)	N/A		0.00			0.00
Demolition Shears						
S3050 (fits 320/325/330)	N/A					0.00
S3070 (fits 330/349)	N/A					0.00
S3090 (fits 374/390)	N/A					0.00
Demolition Grapples						
G315B (fits 320/325)	N/A					0.00
G320B (fits 325/330)	N/A					0.00
G330 (fits 349/374)	N/A					0.00
Other Equipment						
420F2	4.04	0.86	0.00	4.30	11.83	16.73

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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430F2	3.83	0.86	0.00	4.70	12.93	17.62
CS54B				3.35	9.21	9.21
CS64B				3.35	9.21	9.21
CP54B				3.35	9.21	9.21
CP68B				3.60	9.90	9.90
Light Truck - 1.5 Ton		0.23		1.50	4.13	4.36
Supervisor's Truck		0.23		1.00	2.75	2.98
Flatbed Truck		1.27		4.70	12.93	14.20
Air Compressor + tools			N/A	1.00	2.75	2.75
Welding Equipment			N/A	2.00	5.50	5.50
Heavy Duty Drill Rig				12.00	33.01	33.01
Pump (plugging) Drill Rig				10.00	27.51	27.51
Concrete Pump			N/A	10.00	27.51	27.51
Gas Engine Vibrator			N/A	1.00	2.75	2.75
Generator 5KW			N/A	1.50	4.13	4.13
HDEP Welder (pipe or liner)			N/A	2.00	5.50	5.50
5 Ton Crane				3.00	8.25	8.25
20 Ton Crane				4.00	11.00	11.00
50 Ton Crane				4.70	12.93	12.93
120 Ton Crane				5.20	14.30	14.30
Trucks						
725C2	8.04	16.99	0.00	5.05	13.89	38.92
730C2	8.04	16.99	0.00	5.40	14.85	39.88
735C	8.04	27.05	0.00	6.95	19.12	54.20
740C	8.04	28.47	0.00	7.80	21.45	57.97
770G	5.96	5.19	0.00	4.95	13.61	24.76
773G	7.37	10.92	0.00	8.25	22.69	40.98
777G	10.55	19.39	0.00	13.55	37.27	67.21
785D	11.61	26.66	0.00	25.10	69.04	107.31
789D	12.77	29.33	0.00	36.85	101.36	143.45
793F	14.05	32.26	0.00	44.75	123.08	169.40
797F	15.46	35.49	0.00	67.65	186.07	237.02
613E (5,000 gal)	5.75	4.48		6.00	16.50	26.73
621E (8,000 gal)	6.11	8.66		10.75	29.57	44.33
777G H2O Truck	10.55	19.39	0.00	13.55	37.27	67.21
785D H2O Truck	11.61	26.66	0.00	25.10	69.04	107.31
Dump Truck (10-12 yd3)	N/A	1.02	N/A	5.20	14.30	15.33
Tractor/Trailer (20 ton)	N/A		N/A	14.00	38.51	38.51
Tractor/Trailer (50 ton)	N/A		N/A	18.00	49.51	49.51
Tractor/Trailer (80 ton)	N/A		N/A	22.00	60.51	60.51

Notes:

(1) PM Source:	
(2) G.E.T. Source:	
(3) Fuel Use Source:	Caterpillar Handbook, Edition 46, Ch. 20; or estimated average for smaller vehicles

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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TIRE COST TABLES

Equipment	Tire Size	# of Tires Per Piece of Equipment	Cost Per Tire	Tire Cost (1)(2) $	Life Expectency Hours (Low/Zone A) (3)	Tire Cost per Hour $/hr
Bulldozers						
D6T			N/A			
D6R w/ Winch			N/A			
D7E			N/A			
D8T			N/A			
D9T			N/A			
D10T2			N/A			
D11T			N/A			
Wheeled Dozers						
824K	29.5R25	4		0	3,500	0.00
834K	35/65-R33	4		0	3,500	0.00
844K	45/65-R39	4		0	3,500	0.00
854K	45/65-R45	4		0	3,500	0.00
Motor Graders						
12M2	13PR24	6	2,724	16,346	3,500	4.67
14M	20.5R25	6	3,730	22,377	3,500	6.39
16M3	23.5R25	6	5,045	30,270	3,500	8.65
24M	23.5R25	6	5,549	33,297	3,500	9.51
Track Excavators						
312F			N/A			
320F			N/A			
325F			N/A			
330F			N/A			
349F			N/A			
374F			N/A			
390F			N/A			
Scrapers						
631K	37.25R35	4	11,081	44,325	4,000	11.08
637K	37.25R35	4	11,081	44,325	4,000	11.08
Wheeled Loaders						
926M	17.5R25	4	3,759	15,034	4,500	3.34
930M	17.5R25	4	3,759	15,034	4,500	3.34
950M	26.5R25	4	5,662	22,649	4,500	5.03
966M	26.5R25	4	9,015	36,062	4,500	8.01
972M	26.5R25	4	9,015	36,062	4,500	8.01
980M	29.5R25	4	9,491	37,964	4,500	8.44
988K	35/65-33	4	14,905	59,619	4,500	13.25
990K	41.25/70-39	4	24,070	96,280	4,500	21.40
992K	45/65R45	4	33,235	132,940	4,500	29.54
994K	55/85R57	4	36,559	146,234	4,500	32.50
L2350	55/85R57	4	0	0	4,500	
Shovels						
PC2000			N/A			
PC3000			N/A			
PC4000			N/A			
PC5500			N/A			
PC8000			N/A			
EX2500			N/A			
Hydraulic Hammers						
H120Es (fits 325)			N/A			
H160Es (fits 349)			N/A			
H180Es (fits 374/390)			N/A			
Demolition Shears						
S3050 (fits 320/325/330)			N/A			
S3070 (fits 330/349)			N/A			
S3090 (fits 374/390)			N/A			
Demolition Grapples						
G315B (fits 320/325)			N/A			
G320B (fits 325/330)			N/A			
G330 (fits 349/374)			N/A			
Other Equipment						
420F2	340/80R18-19.5LR24	2	1,289	2,579	3,000	0.86

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Model Version: Version 2.0
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430F2	340/80R18-16.9R28	2	1,289	2,579	3,000	0.86
CS54B			N/A			
CS64B			N/A			
CP54B			N/A			
CP68B			N/A			
Light Truck - 1.5 Ton		4	173	694	3,000	0.23
Supervisor's Truck		4	173	694	3,000	0.23
Flatbed Truck		22	173	3,815	3,000	1.27
Air Compressor + tools			N/A			
Welding Equipment			N/A			
Heavy Duty Drill Rig		4		0	3,000	
Pump (plugging) Drill Rig		4		0	3,000	
Concrete Pump			N/A			
Gas Engine Vibrator			N/A			
Generator 5KW			N/A			
HDEP Welder (pipe or liner)			N/A			
5 Ton Crane		4		0	3,000	
20 Ton Crane		4		0	3,000	
50 Ton Crane		6		0	3,000	
120 Ton Crane		6		0	3,000	
Trucks						
725C2	23.5R25	6	5,662	33,974	2,000	16.99
730C2	23.5R25	6	5,662	33,974	2,000	16.99
735C	26.5R25	6	9,015	54,092	2,000	27.05
740C	29.5R25	6	9,491	56,945	2,000	28.47
770G	18.00R33	6	5,189	31,131	6,000	5.19
773G	24.00R35	6	9,100	54,599	5,000	10.92
777G	27.00R49	6	16,159	96,951	5,000	19.39
785D	33.00R51	6	17,774	106,646	4,000	26.66
789D	40.00R57	6	19,552	117,311	4,000	29.33
793F	40.00R57	6	21,507	129,042	4,000	32.26
797F	40.00R57	6	23,658	141,946	4,000	35.49
613E (5,000 gal)	23.5R25	6	4,481	26,888	6,000	4.48
621E (8,000 gal)	33.25R29	6	11,540	69,241	8,000	8.66
777G H2O Truck	27.00R49	6	16,159	96,951	5,000	19.39
785D H2O Truck	33.00R51	6	17,774	106,646	4,000	26.66
Dump Truck (10-12 yd3)		10	614	6,136	6,000	1.02
Tractor/Trailer (20 ton)			N/A			
Tractor/Trailer (50 ton)			N/A			
Tractor/Trailer (80 ton)			N/A			

Notes:

(1) Unit Cost Basis:	
(2) Cost Basis:	Cost per set
(3) Tire Cost Source:	Total cost for all required tires.
(4) Tire Wear Source:	Purecell Tire Quote: July 2018 [adjusted to AK from NV, using RS Means Historical Cost Index]

Closure Cost Estimate
Material Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
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Cost Estimate Type: FA   Cost Basis: Fort Knox

Revegetation Materials

Seed Mixes

Seed Mix	Description		Cost $/acres
None			
Mix 1	Basins		0.00
Mix 2	Low Hills		0.00
Mix 3	Uplands		0.00
Mix 4	Riparian or Custom		0.00
User Mix 1	**Same as User Mix 5**		**$94.14**
User Mix 2			
User Mix 3			
User Mix 4			
	Cost/lb	**lbs/Acre**	**Cost/Acre**
User Mix 5 (from Seed Mix sheet)	10.46	9.00	94.14
Notes:			

Mulch

Item	Cost/lb	lbs/Acre	Cost $/acres
None			
Straw Mulch	0.20	**10**	2.00
Hydro Mulch	0.31	**10**	3.08
		10	
		10	

Notes:
Granite Seed $500 per Ton in 50 lb bag Wood (Hydro) Mulch (July 2018) [adju

Closure Cost Estimate
Material Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**

Amendments			
Item	**Cost/lb**	**lbs/Acre**	**Cost** $/acres
None			
Organic Matter	0.00		0.00
Treated Sludge	0.00		0.00
Chemical	0.50	**300**	150.00
Notes:	$0.44/lb cost from 2013 escalated to 2019		

Closure Cost Estimate
Material Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA　　**Cost Basis: Fort Knox**

Well Abandonment Materials

Description	Cost/50lb bag	Units	Cost*
			$/unit
Cement	7.22	cy	34.37
Grout (Low Grade Bentonite)	10.66	cy	50.76
Inert Material/Cuttings		cy	

(1) RS Means 2019 (Fairbanks, AK) Type I,II Cement at $13.57 per 94 lb. bag
(2) Jentech Drilling Supply (June 2018) 3/8 in. Chunk Bentonite Hole Plug at $8.65 per 50 lb. bag (5.75 cf/bag at 4

* Assumes 1 bag mixes with water to make 0.21 y3 or 0.16 m3 of grout/cement slurry.

Monitoring Costs

Description	Units	Cost
		$/unit
Monitor Well Pump	ea.	
Sampling Supplies	ea.	0.00
Profile 1	ea.	352.75
Profile 2	ea.	308.90
Profile 4	ea.	132.40
FK Potable Water (Yearly Total)	ea.	3,910.00
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
Cyanide - Total Water	**ea.**	**$41.32**
Water Analysis (Complete) (1)	**ea.**	**$515.81**

Costs from "Monitoring.xlsx" in <...\226900.020_Fort Knox Rec & Closure Plan\020_Project Data\20190409_monit
Shipping included.Per "Monitoring.xlsx" in <...\226900.020_Fort Knox Rec & Closure Plan\020_Project Data\2019(

Closure Cost Estimate
Material Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA　　　Cost Basis: Fort Knox

Fuel, Etc.

Description	Units	Cost	User Overrides
		$/unit	
Off-road Diesel - delivered (1)	gal	2.751	
Pickup Truck Mileage	$/mi	0.545	
Electical Power	$/kWh	0.110	
Concrete Delivered to Site	**CY**	**180.00**	
Rebar Delivered	**lb**	**0.75**	

(1) Source: Average on road diesel price (GasBuddy August 22, 2019), less on-road tax of $0.08/gal and surcharg
Source: Federal Government Vehicle Allowance Rate 2018
GVEA bill calculator. http://extapp1p.gvea.com:8080/extweb/billCalculator.jsp?serviceType=5&kWh=1000000&kW
A Munt email 14th July 2017

Revegetation Method				
Slopes				
Disturbance Type	**Seed Application Method**	**Labor** $/acres	**Equipment** $/acres	**Total** $/acres
Waste Rock Dumps	**Mechanical Broadcast**	0.00	188.86	188.86
Heap Leach	**Mechanical Broadcast**	0.00	188.86	188.86
Tailings	**Mechanical Broadcast**	0.00	188.86	188.86
Quarries & Borrow Pits	**Mechanical Broadcast**	0.00	188.86	188.86
Flat Areas and Undifferentiated				
Disturbance Type	**Seed Application Method**	**Labor** $/acres	**Equipment** $/acres	**Total** $/acres
Exploration Trenches	**Mechanical Broadcast**	0.00	188.86	188.86
Exploration Roads	**Mechanical Broadcast**	0.00	188.86	188.86
Waste Rock Dumps	**Mechanical Broadcast**	0.00	188.86	188.86
Heap Leach	**Mechanical Broadcast**	0.00	188.86	188.86
Tailings	**Mechanical Broadcast**	0.00	188.86	188.86
Quarries & Borrow Pits	**Mechanical Broadcast**	0.00	188.86	188.86
Roads	**Mechanical Broadcast**	0.00	188.86	188.86
Pits	**Mechanical Broadcast**	0.00	188.86	188.86
Haul Material	**Mechanical Broadcast**	0.00	188.86	188.86
Foundations & Buildings	**Mechanical Broadcast**	0.00	188.86	188.86
Sediment & Drainge Control	**Mechanical Broadcast**	0.00	188.86	188.86
Process Ponds	**Mechanical Broadcast**	0.00	188.86	188.86
Landfills	**Mechanical Broadcast**	0.00	188.86	188.86
Yards, Etc.	**Mechanical Broadcast**	0.00	188.86	188.86
Revegetation Maintenance	**Mechanical Broadcast**	0.00	188.86	188.86

Closure Cost Estimate
Misc. Unit Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Revegetation

	Means Number	Unit	Crew	Daily Output	Daily Output User	Materials	Labor	Equipment	Total	Notes
Seeding - Broadcast Manual		acres					0.00	188.86	188.86	
Seeding - Broadcast Mechanical		acres					0.00	188.86	188.86	
Seeding - Drill		acres		365			0.00	188.86	188.86	
Seeding - Hydroseeding				365			0.00	188.86	188.86	
Shrub Planting - bare root 6-10 in (150- 250mm)	02910-400-0561	ea.	1 Clab	365			1.28	0.00	1.28	
Tree Planting - bare root 11-16 in (270- 400mm)	02910-400-0562	ea.	1 Clab	260			1.80	0.00	1.80	
Cactus Planting		ea.	1 Clab						0.00	
NOTES:										
Seeding Source:	Costs escalated from 2014 to 2019 ("Monitoring_ft.xlsx" in <\\srk.ad\dfs\na\rno\Documents\Filiz\226900.020_Fort Knox Rec & Closure Plan\020_Project Data\20190409_monitoring>)									
Shrub Source:										
Tree Source:										
Cactus Source:										

Building and Wall Demolition

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Daily Output User	Labor	Equipment	Premium	Total	Notes
Building Demolition										
Lg. steel	02220-110-0012	C.F.	B-8	21500		0.18	0.08		0.26	
Lg. concrete	02220-110-0050	C.F.	B-8	15300		0.25	0.11		0.36	
Lg. masonry	02220-110-0080	C.F.	B-8	20100		0.19	0.08		0.27	
Lg. mixed	02220-110-0100	C.F.	B-8	20100		0.19	0.08		0.27	
Sm. steel	02220-110-0500	C.F.	B-3	14800		0.23	0.08		0.31	
Sm. concrete	02220-110-0600	C.F.	B-3	11300		0.30	0.11		0.41	
Sm. masonry	02220-110-0650	C.F.	B-3	14800		0.23	0.08		0.31	
Sm. wood	02220-110-0700	C.F.	B-3	14800		0.23	0.08		0.31	
Wall Demolition										
Block 4 in (100 mm) thick	02220-130-2000	S.F.	1 Clab	180		2.60	0.00	20%	3.12	
Block 6 in (150 mm) thick	02220-130-2040	S.F.	1 Clab	170		2.75	0.00	20%	3.30	
Block 8 in (200 mm) thick	02220-130-2080	S.F.	1 Clab	150		3.12	0.00	20%	3.74	
Block 12 in (300 mm) thick	02220-130-2100	S.F.	1 Clab	150		3.12	0.00	20%	3.74	
Conc 6 in (150 mm) thick	02220-130-2400	S.F.	B-9	160		2.92	0.67	10%	3.95	
Conc 8 in (200 mm) thick	02220-130-2420	S.F.	B-9	140		3.34	0.77	10%	4.52	
Conc 10 in (250 mm) thick	02220-130-2440	S.F.	B-9	120		3.89	0.90	10%	5.27	
Conc 12 in (300 mm) thick	02220-130-2500	S.F.	B-9	100		4.67	1.08	10%	6.33	

Closure Cost Estimate
Misc. Unit Costs

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Date of Submittal: December 2019
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Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

Waste Disposal

Unit rates from Means Heavy Construction 2006 Edition by permission of R.S.Means/Reed Construction Data .

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment		Total	Notes
Rubbish Handling										
Dumpster delivery (average for all sizes)	02220-350-0910	ea.			82.50				82.50	
Haul (average for all sizes)	02220-350-0920	ea.			259.00				259.00	
Rent per month (average for all sizes)	02220-350-0940	ea.			88.00				88.00	
Disposal fee per ton (tonne) (average for all sizes)	02220-350-0950	ton			97.00				97.00	
NOTES:										
Dumpster Cost Source:	RS Means 2019 (Fairbanks, AK)									
Disposal Fee Source:	RS Means 2019 (Fairbanks, AK)									
Hazardous Material Handling - Solids (+ Liquids in drums)										
Pickup fees 55 gal. drums	02110-300-1100	ea.			309.26				309.26	
Bulk material (average)	02110-300-1220/1230	ton			504.73				504.73	
Transport - truck load (80 drums, 25 cy (m3), 18 tons)	02110-300-1260/1270	mile			7.25				7.25	
Dump site disposal fee	02110-300-6000/6020	ton			355.94				355.94	
NOTES:										
Solid Handling Cost Source:	RS Means 2019 (Fairbanks, AK)									
Solid Disposal Fee Source:	RS Means 2019 (Fairbanks, AK)[avg. 028120106000 and 028120106020]									
Hazardous Material Handling - Liquids										
Vacuum Truck Pickup (2200 gal or 9,700 litres)	02110-300-3110	hr.			180.89				180.89	
Vacuum Truck Pickup (5000 gal or 2,000 litres)	02110-300-3120	hr.			262.58				262.58	
Dump site disposal fee	02110-300-6000/6020	ton			355.94				355.94	
NOTES:										
Liquid Handling Cost Source:	RS Means 2019 (Fairbanks, AK)									
Liquid Disposal Fee Source:	RS Means 2019 (Fairbanks, AK)[avg. 028120106000 and 028120106020]									
Hydrocarbon Contaminated Soils (HCS)										
Insitu Biotreatment	02115-200-2020/2021	C.Y.			29.42				29.42	
HCS disposal fee	02115-200-2050/2055	C.Y.			344.27				344.27	
NOTES:										
Insitu Treatement Cost Source:	RS Means 2019 (Fairbanks, AK)[avg. 026510302020 and 026510302021]									
HCS Disposal Fee Source:	RS Means 2019 (Fairbanks, AK)[avg. 026510302050 and 026510302055]									

Closure Cost Estimate
Misc. Unit Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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Model Version: Version 2.0
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Cost Estimate Type: FA Cost Basis: Fort Knox

Concrete Structure Installation

Weekly dumpster rental rates from Means Heavy Construction 2005 Edition with permission by R.S.Means/Reed Construction Data .
Weekly dumpster rental rates include haul to off-site disposal site and disposal fees

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Reinforced Concrete Bulkheads and Shaft Covers										
Grade walls - 15 in thick, 8 ft high	03310-240-4300	C.Y.	C-14D	80.02	187.20	169.73	12.89		369.82	includes reinforcing
Grade walls - 15 in thick, 12 ft high	03310-240-4350	C.Y.	C-14D	26.2	187.20	518.38	39.36		744.94	includes reinforcing
Elevated conc, 1-way beam & slab - 15ft span	03310-240-2700	C.Y.	C-14B	20.59	326.43	681.49	50.09		1,058.01	includes reinforcing
Elevated conc, 1-way beam & slab - 25ft span	03310-240-2750	C.Y.	C-14B	28.36	310.05	494.78	36.37		841.20	includes reinforcing
Bat Gate/Foam Plug Installation										
Bat Gate		ea.			3,745.83					materials $/ea. Installed
Culvert Gate		ea.			9,798.71					materials $/ea. Installed
Adit Foam Plug		ea./C.Y.			489.93					materials $/cy placed
Production Opening Foam Plug		ea./C.Y.			489.93					materials $/cy placed
NOTES:										
Bat Gate Source:	NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)[adjusted to AK from NV, using RS Means Historic City Index]									
Foam Plug Source:	NV BLM, 2/2006: 8 hr+ 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)[adjusted to AK from NV, using RS Means Historical Cost Index]									

Closure Cost Estimate
Misc. Unit Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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Model Version: Version 2.0
Cost Data: User Data
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Cost Estimate Type: FA Cost Basis: Fort Knox

Misc. Linear Projects

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Fencing Installation										
Barbed 3-strand	02820-170-1650	L.F.	B-80A	760	0.54	2.50	0.13		3.17	
Barbed 4-strand	extrapolated	L.F.	B-80A	570	0.72	3.34	0.18		4.24	
Barbed 5-strand	02820-130-0920	L.F.	B-80A	456	0.90	4.17	0.22		5.29	
Chain link 8 ft -10 ft Install	02820-130-0920	L.F.	B-80C	180	55.38	10.58	0.57		66.53	
Wood stockade fence 6 ft high - Install	02820-510-1240	L.F.	B-80C	150	26.22	12.69	0.68		39.59	
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
Fencing Removal										
Barbed 3-strand Removal	02220-220-1600	L.F.	2 Clab	430		3.34	0.24		3.58	
Barbed 4-strand Removal	extrapolated	L.F.	2 Clab	355		4.05	0.29		4.34	
Barbed 5-strand Removal	02220-220-1650	L.F.	2 Clab	280		5.13	0.36		5.49	
Chain link 8 ft -10 ft Removal	02220-220-1700	L.F.	B-6	445		3.25	1.04		4.29	
Wood, all types 4 ft -6 ft high Removal	02220-220-1775	L.F.	2 Clab	430		3.34	0.24		3.58	
	user	L.F.								
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
Culvert Removal										
12 in (300 mm) Diameter	02220-220-2900	L.F.	B-6	175		8.27	2.65		10.92	
18 in (450 mm) Diameter	02220-220-2930	L.F.	B-6	150		9.64	3.09		12.73	
24 in (600 mm) Diameter	02220-220-2960	L.F.	B-6	120		12.06	3.86		15.92	
36 in (1m) Diameter	02220-220-3000	L.F.	B-6	90		16.07	5.15		21.22	
Pipeline Removal										
Plastic Pipe 3/4 in (mm) - 4 in (100 mm) diameter	02220-381-1600	L.F.	B-20	700		3.39	0.15		3.54	
6 in (150 mm) - 8 in (200 mm)	02220-381-1700	L.F.	B-20	500		4.75	0.20		4.95	
10 in (250 mm) - 18 in (450 mm)	02220-381-1800	L.F.	B-20	300		7.91	0.34		8.25	
20 in (500 mm) - 36 in (1 m)	02220-381-1900	L.F.	B-20	200		11.87	0.51		12.38	
Pipe and Drainpipe Installation										
Water 4in (100mm) 40ft (12m) length, welded HDPE	02510-760-0100	L.F.	B-22A	400	3.58	7.40	4.48		15.46	
Water 6in (150mm) 40ft (12m) length, welded HDPE	02510-760-0200	L.F.	B-22A	380	8.11	7.79	4.71		20.61	
Water 12in (300mm) 40ft (12m) length, welded HDPE	02510-760-0500	L.F.	B-22A	260		11.38	6.89		18.27	
Drain 4in (100mm) perforated PVC	02620-630-2100	L.F.	B-14	315	2.36	12.13	1.34		15.83	
Drain 6in (150mm) perforated PVC	02620-630-2110	L.F.	B-14	300	5.18	12.73	1.41		19.32	
Drain 4in (100mm) corrugated, perf or plain	02620-660-0040	L.F.	2 Clab	1200	1.54	1.20	0.09		2.83	
Drain 6in (150mm) corrugated., perf or plain	02620-660-0060	L.F.	2 Clab	900	4.29	1.60	0.11		6.00	

Note: HDPE Water Pipe in 40ft (12m) lengths, welded

Closure Cost Estimate
Misc. Unit Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Estimate Type: FA   Cost Basis: Fort Knox

Drain Rock Preparation										
Crushing		C.Y.							0.50	
Screening		C.Y.							0.50	
TOTAL									1.00	
Misc.										
Backhoe work	02210-700-0120	C.Y.	B-11M	28		18.84	11.43		30.27	
Powerline and Transformer Removal										
Single Pole Powerlines		mile							52,060.29	
Double Pole Powerlines		mile							59,497.48	
Substation		ea.							37,310.05	
NOTES:										
Single Pole Source:	NV Energy estimate (2009) Adjusted to 2018 [adjusted to AK from NV, using RS Means Historical Cost Index]									
Double Pole Source:	NV Energy estimate (2009) Adjusted to 2018 [adjusted to AK from NV, using RS Means Historical Cost Index]									
Transformer Source:	Sierra Pacific Power Company estimate (2004) adjusted to 2018 [adjusted to AK from NV, using RS Means Historical Cost Index									

Erosion and Sedimentation Control

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets
* some crews modifed to reflect actual crews used for riprap placement at mine sites

	Means Number	Unit	Crew	Means Daily Output	Materials	Labor	Equipment	User Daily Output	Total	Notes
Rip-Rap & Rock Lining										
Rip-Rap 3/8 to 1/4 CY pieces, grouted	02370-450-0110	S.Y.	B-13	80	0.00	41.48	9.26		50.74	assumes on-site source of rip-rap
Rip-Rap 18-inch min thick, no grout	02370-450-0200	S.Y.	B-13	53	0.00	62.62	13.98		76.60	assumes on-site source of rip-rap
Rip-Rap 3/8 to 1/4 CY pieces, grouted	02370-450-0110*	S.Y.	B-12G	80	0.00	19.26	18.26		37.52	assumes on-site source of rip-rap
Rip-Rap 18-inch min thick, no grout	02370-450-0200*	S.Y.	B-12G	53	0.00	29.08	27.56		56.64	assumes on-site source of rip-rap
Gabions, 6 in (150 mm) deep	02370-450-0400	S.Y.	B-13	200	0.00	16.59	3.70		20.29	assumes on-site source rock fill for gabions
Gabions, 9 in (250 mm) deep	02370-450-0500	S.Y.	B-13	163	0.00	20.36	4.55		24.91	assumes on-site source rock fill for gabions
Gabions, 12 in (300 mm) deep	02370-450-0200	S.Y.	B-13	153	0.00	21.69	4.84		26.53	assumes on-site source rock fill for gabions
Gabions, 18 in (450 mm) deep	02370-450-0200	S.Y.	B-13	102	0.00	32.54	7.26		39.80	assumes on-site source rock fill for gabions
Gabions, 36 in (1m) deep	02370-450-0200	S.Y.	B-13	60	0.00	55.31	12.35		67.66	assumes on-site source rock fill for gabions
HDEP Liner Installation										
Finish grading large area	2310-100-0100	S.F.	B-11L	54000		0.02	0.01		0.03	
Compaction-riding, vibrating roller - 12in (300mm) lifts	2315-310-5100	C.Y.	B-10Y	2600		0.37	0.14		0.51	
Geotextile	2660-610-0010	S.F.	3 Skwk	1600		1.23	0.46		1.69	
Geonet	2660-610-0010	S.F.	3 Skwk	1600		1.23	0.46		1.69	
Geogrid	2660-610-0010	S.F.	3 Skwk	1600		1.23	0.46		1.69	
60 mil HDPE	2660-610-0010	S.F.	3 Skwk	1600	0.90	1.23	0.46		2.59	
80 mil HDPE	user	S.F.	3 Skwk	149	$9.00	13.26	4.89		27.15	
40 mil VLDPE	user	S.F.	3 Skwk	150	$7.00	13.17	4.86		25.03	
	user	S.F.	3 Skwk						0.00	
	user	S.F.	3 Skwk						0.00	

Closure Cost Estimate
Misc. Unit Costs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
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Cost Estimate Type: FA Cost Basis: Fort Knox

Transport Costs											
Ship/Barge Transport Cost			cost/lb/mi								
Rail Transport Cost			cost/lb/mi								
Air Transport Cost			cost/lb/mi								
Escort Vehicle Deadhead Rate ($/mi)			cost/lb/mi								
Construction Management Support											
Office Trailer, Furnished, no hook-ups		0150-500-0250	mo.			237.58				237.58	
Toilet Portable, chemical		1590-400-6410	mo.			232.96				232.96	
TOTAL						470.54				470.54	
Pump and Casing Removal											
	Pump Type	**Measurement**	**Unit**				**Labor**	**Equipment**		**Total**	**Notes**
Pump Removal											
Submersible			L.F.				7.44	20.03		27.47	
Line Shaft			L.F.				7.44	20.03		27.47	
NOTES:											
Pump Removal Source:		Boart Longyear Quote: June 2018 [adjusted to AK from NV, using RS Means Historical Cost Index]									

Closure Cost Estimate
Seed Mixture

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Cost Estimate Type: FA Cost Basis: Fort Knox

Seed Mixture

Common Name	Scientific Name	Species Number of Seeds / lb	Species % in Mix	PLS/acre	Cost/Lb	Cost/Acre
Grasses						
Seed Mix:			100.00	9.00	10.46	94.14
Arctared Fescue						
Gruenin Alpine Bluegrass						
Tundra Glaucous Bluegrass						
Nortran Tufted Hairgrass						
Forbs						
Shrubs						
Total				**9.00**		**94.14**

Source:
Per seed quote from Alaska Mill and Feed, August 23, 2019

Notes:

Closure Cost Estimate
Fleets (Crews)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
RIPPING						
Rip road Waste rock dumps, heaps, tails - rip flat surfaces Surface preparation Scarify						
Small Dozer w/ multi-shank						
D7E				111.49	64.00	175.49
Totals				111.49	64.00	175.49
Medium Dozer w/ multi-shank						
D9T				213.40	64.00	277.40
Totals				213.40	64.00	277.40
Large Dozer w/ multi-shank						
D10T2				264.74	64.00	328.74
Totals				264.74	64.00	328.74
Grader w/ multi-shank						
16M3				167.89	65.94	233.83
Totals				167.89	65.94	233.83
GRADING						
Grading storage and structure areas Grading waste rock dumps and heaps Grading landfills Constructing pit safety berms						
Small Dozer Fleet						
D7E				111.49	64.00	175.49
Totals				111.49	64.00	175.49
Medium Dozer Fleet						
D9T				213.40	64.00	277.40
Totals				213.40	64.00	277.40
Large Dozer Fleet						
D10T2				264.74	64.00	328.74
Totals				264.74	64.00	328.74
EXPLORATION GRADING						
Backfilling and grading exploration trenches Grading flat exploration roads						
Small Dozer Fleet						
D7E				111.49	64.00	175.49
Totals				111.49	64.00	175.49
Medium Dozer Fleet						
D9T				213.40	64.00	277.40
Totals				213.40	64.00	277.40
Large Dozer Fleet						
D10T2				264.74	64.00	328.74
Totals				264.74	64.00	328.74

Closure Cost Estimate
Fleets (Crews)

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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
EXCAVATING						
Earthen Berms Diversion ditch excavation and backfill Underground openings backfill - excavate and place Pit berm construction (excavator option)						
Small Excavator						
325F				73.14	64.00	137.14
Totals				73.14	64.00	137.14
Medium Excavator						
349F				130.66	65.94	196.60
Totals				130.66	65.94	196.60
Large Excavator						
390F				205.98	65.94	271.92
Totals				205.98	65.94	271.92
EXCAVATE AND RECONTOUR						
Recontour large roads (haul roads, access roads, etc.) Ponds - Excavate and pull liner and bury						
Small Excavator + Dozer						
325F				73.14	64.00	137.14
D7E				111.49	64.00	175.49
Total Equipment				184.63	128.00	312.63
Medium Excavator + Dozer						
349F				130.66	65.94	196.60
D9T				213.40	64.00	277.40
Totals				344.06	129.94	474.00
Large Excavator + Dozer						
390F				205.98	65.94	271.92
D10T2				264.74	64.00	328.74
Totals				470.72	129.94	600.66
EXPLORATION ROAD/PAD RECONTOUR						
Recontour small roads (exploration roads, service roads, etc.) Cut and Fill reclamation on slopes Drill pad recountour Drill sump backfill						
Small Dozer						
D7E				111.49	64.00	175.49
Totals				111.49	64.00	175.49
Large Dozer						
D10T2				264.74	64.00	328.74
Totals				264.74	64.00	328.74
Grader						
14M				93.92	65.94	159.86
Totals				93.92	65.94	159.86
Small Excavator						
320F				69.40	64.00	133.40
Totals				69.40	64.00	133.40
Medium Excavator						
349F				130.66	65.94	196.60
Totals				130.66	65.94	196.60

Closure Cost Estimate
Fleets (Crews)

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v17_ft_20191217.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS						
ACTIVITY AND FLEET		**Standard Labor Crew**	**User Defined Labor Crew**	**EQUIPMENT UNIT COST (Hourly)**	**TOTAL LABOR UNIT COST (Hourly)**	**TOTAL COST (Hourly)**
LOAD CRUSHER/TRAM BACKFILL						
Load crusher with wheeled loader Tram backfill into portals						
Small Crusher Loader Fleet						
988K		1		194.62	65.94	260.56
Totals				194.62	65.94	260.56
Medium Crusher Loader Fleet						
990K		1		364.63	65.94	430.57
Totals				364.63	65.94	430.57
Large Crusher Loader Fleet						
992K		1		524.56	65.94	590.50
Totals				524.56	65.94	590.50
Extra Large Crusher Loader Fleet						
994K		1		621.36	65.94	687.30
Totals				621.36	65.94	687.30
COMPACT COVER						
From Means Heavy Construction - Costs in Misc. Unit Costs. Assumes compaction-riding, vibrating roller - 12in (300mm) lifts						
Compactor						
CS54B		1		45.29	62.69	107.98
Totals				45.29	62.69	107.98

Closure Cost Estimate
Fleets (Crews)

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Cost Estimate Type: FA   Cost Basis: Fort Knox

EQUIPMENT FLEETS						
ACTIVITY AND FLEET		**Standard Labor Crew**	**User Defined Labor Crew**	**EQUIPMENT UNIT COST (Hourly)**	**TOTAL LABOR UNIT COST (Hourly)**	**TOTAL COST (Hourly)**
LOAD, HAUL AND PLACE MATERIAL						
Rock placement Haul overburden for backfill Haul borrow for backfill Haul cover or growth media						
Small Truck/Loader Fleet						
740C				175.58	64.16	239.74
988K	**Loader**			194.62	65.94	260.56
D7E		1		111.49	64.00	175.49
Totals				481.69	194.10	675.79
Medium Truck/Loader Fleet						
740C				175.58	64.16	239.74
988K	**Loader**			194.62	65.94	260.56
D8T		1		153.81	64.00	217.81
Totals				524.01	194.10	718.11
Large Truck/Loader Fleet						
777G				231.98	65.43	297.41
992K	**Loader**			524.56	65.94	590.50
D9T		1		213.40	64.00	277.40
Totals				969.94	195.37	1,165.31
Extra Large Truck/Loader Fleet						
789D				620.38	65.43	685.81
994K	**Loader**			621.36	65.94	687.30
D11T		1		381.39	64.00	445.39
Totals				1,623.13	195.37	1,818.50
Scraper/Dozer Fleet						
631K				186.11	64.00	250.11
D10T2				264.74	64.00	328.74
D10T2		1		264.74	64.00	328.74
Totals				715.59	192.00	907.59
Tandem Scraper Fleet						
637K				335.06	65.94	401.00
D7E		1		111.49	64.00	175.49
Totals				446.55	129.94	576.49
MISC. LOAD AND HAUL AND EARTHWORKS						
Sludge removal Drainage controls						
Misc. - Cat 325B Excavator / 10-12 yd3 Truck						
325F				73.14	64.00	137.14
Dump Truck (10-12 yd3)				45.75	61.50	107.25
Totals				118.89	125.50	244.39
Misc. - Cat D9R Dozer/ Loader (5 yd3) / 10-12 yd3 Truck						
D9T				213.40	64.00	277.40
966M				96.68	65.94	162.62
Dump Truck (10-12 yd3)				45.75	61.50	107.25
Totals				355.83	191.44	547.27
Misc. - Cat D6 Dozer / Cat 966 Loader / 10-12 yd3 Truck						
D6T				96.52	64.00	160.52
966M				96.68	65.94	162.62
Dump Truck (10-12 yd3)				45.75	61.50	107.25
Totals				238.95	191.44	430.39
LINER REMOVAL						
Liner removal						
Small - Cat 325B Excavator w/ H140D s Hammer						
325F				73.14	64.00	137.14
General Laborer		2		0.00	116.84	116.84
Totals				73.14	180.84	253.98

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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
CONCRETE BREAKING						
Slab demolition Footing demolition Wall demolition						
Small - Cat 325F Excavator w/ H120E s Hammer						
325F				73.14	64.00	137.14
H120Es (fits 325)				42.61	0.00	42.61
D9T				213.40	64.00	277.40
Totals				329.15	128.00	457.15
Medium - Cat 349F Excavator w/ H160E s Hammer						
349F				130.66	65.94	196.60
H160Es (fits 349)				53.98	0.00	53.98
D9T				213.40	64.00	277.40
Totals				398.04	129.94	527.98
Large - Cat 374F Excavator w/ H180E s Hammer						
374F				171.34	65.94	237.28
H180Es (fits 374/390)				67.74	0.00	67.74
D9T				213.40	64.00	277.40
Totals				452.48	129.94	582.42
DRILL HOLE ABANDONMENT						
Drill Hole - Grout or Cement						
Pump (plugging) Drill Rig				361.75	64.00	425.75
Driller's Helper		2		0.00	120.64	120.64
Totals				361.75	184.64	546.39
Drill Hole - Inert Media (Means Crew B-11M+ 1 Laborer)						
420F2				40.02	65.94	105.96
General Laborer		1		0.00	58.42	58.42
Totals				40.02	124.36	164.38
Drill Hole - Casing Perforation or Removal						
Heavy Duty Drill Rig				367.25	64.00	431.25
Driller's Helper		2		0.00	120.64	120.64
Totals				367.25	184.64	551.89
MAINTENANCE FLEET						
Road Grading, Dust Suppression, Clean Up						
Maintenance - Small Water Truck and Cat 14G Grader						
621E (8,000 gal)				121.36	64.16	185.52
14M				93.92	65.94	159.86
Totals				215.28	130.10	345.38
Maintenance - Medium Water Truck and Cat 16G Grader						
777G H2O Truck				491.07	64.16	555.23
16M3				167.89	65.94	233.83
Totals				658.96	130.10	789.06
Maintenance - Large Water Truck and Cat 16G Grader						
785D H2O Truck				573.79	64.16	637.95
24M				198.09	65.94	264.03
Totals				771.88	130.10	901.98
PROJECT SUPERVISION						
Foreman		1		0.00	115.21	115.21
Supervisor's Truck		1		9.59	62.69	72.28
Totals				9.59	177.90	187.49

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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
MEANS CREW DEFINITIONS						
Crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data . For use with misc. unit costs where Means is the source for productivity						
1 Clab - Seedling Planting/Block Wall Demolition						
General Laborer		1		0.00	58.42	58.42
Totals				0.00	58.42	58.42
2 Clab - Barbed Wire/Wood Fence Removal, Drainpipe Installation, Pumping, Evaporation						
General Laborer		2		0.00	116.84	116.84
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				12.76	179.53	192.29
2 Clab + Excavator - Pond Liner Cut and Fold						
General Laborer		2		0.00	116.84	116.84
325F				73.14	64.00	137.14
Totals				73.14	180.84	253.98
2 Clab + Welder - Bat Gates						
General Laborer		2		0.00	116.84	116.84
Welding Equipment				12.19	65.94	78.13
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				24.95	245.47	270.42
3 Clab - Foam Adit Plugs						
General Laborer		2		0.00	116.84	116.84
420F2				40.02	65.94	105.96
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				52.78	245.47	298.25
3 Clab + Welder - Culvert Bat Gate						
General Laborer		2		0.00	116.84	116.84
Welding Equipment				12.19	65.94	78.13
420F2				40.02	65.94	105.96
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				64.97	311.41	376.38
3 Clab D - 3 Laborers + Foreman - Decontamination						
General Laborer		3		0.00	175.26	175.26
Foreman		1		0.00	115.21	115.21
Supervisor's Truck		1		9.59	62.69	72.28
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				22.35	415.85	438.20
3 SKWK - Liner Installation						
Skilled Laborer		3		0.00	180.96	180.96
HDEP Welder (pipe or liner)		1		51.14	0.00	51.14
420F2		1		40.02	65.94	105.96
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				91.16	246.90	338.06

Closure Cost Estimate
Fleets (Crews)

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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-3 - Small Building Demoltion						
LABOR						
General Laborer		2		0.00	116.84	116.84
Foreman		1		0.00	115.21	115.21
				0.00		0.00
				0.00		0.00
				0.00		0.00
EQUIPMENT						
930M		1		57.92	64.00	121.92
Dump Truck (10-12 yd3)		2		91.50	123.00	214.50
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				149.42	419.05	568.47
B-6 - Chain Link Fence/Culvert Removal						
General Laborer		2		0.00	116.84	116.84
930M		1		57.92	64.00	121.92
Totals				57.92	180.84	238.76
B-8 - Large Building Demolition						
LABOR						
General Laborer		2		0.00	116.84	116.84
Foreman		1		0.00	115.21	115.21
				0.00		0.00
				0.00		0.00
				0.00		0.00
EQUIPMENT						
930M		1		57.92	64.00	121.92
20 Ton Crane		1		53.02	64.00	117.02
Dump Truck (10-12 yd3)		2		91.50	123.00	214.50
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				202.44	483.05	685.49
B-9 - Concrete Wall Demolition						
General Laborer		4		0.00	233.68	233.68
Foreman		1		0.00	115.21	115.21
Air Compressor + tools				13.49	56.48	69.97
Totals				13.49	405.37	418.86

Closure Cost Estimate
Fleets (Crews)

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Cost Estimate Type: FA Cost Basis: Fort Knox

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-10Y - General Compaction						
General Laborer		1		0.00	58.42	58.42
CS54B		1		45.29	62.69	107.98
Totals				45.29	121.11	166.40
B-11L - Fine Grading for Evaporation Pond Liner Base						
General Laborer		1		0.00	58.42	58.42
14M		1		93.92	65.94	159.86
Totals				93.92	124.36	218.28
B-11M - Backhoe Work						
420F2		1		40.02	65.94	105.96
Totals				40.02	65.94	105.96
B-12G - Rip-Rap Machine Placed (Modified)						
General Laborer		2		0.00	116.84	116.84
966M		1		96.68	65.94	162.62
325F		1		73.14	64.00	137.14
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				182.58	192.63	375.21
B-13 - Grouted Rip-Rap & Gabion Baskets						
General Laborer		4		0.00	233.68	233.68
Foreman		1		0.00	115.21	115.21
50 Ton Crane		1		92.61	65.94	158.55
Totals				92.61	414.83	507.44
B-14 PVC Drain Pipe Installation						
Foreman		1		0.00	115.21	115.21
General Laborer		4		0.00	233.68	233.68
420F2		1		40.02	65.94	105.96
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				52.78	477.52	530.30
B-20 - Remove Pipelines						
Foreman		1		0.00	115.21	115.21
Skilled Laborer		1		0.00	60.32	60.32
General Laborer		1		0.00	58.42	58.42
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				12.76	296.64	309.40
B-22A - HDEP Installation - Pipe or Liner						
Skilled Laborer		1		0.00	60.32	60.32
General Laborer		2		0.00	116.84	116.84
D7E		1		111.49	64.00	175.49
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
420F2		1		40.02	65.94	105.96
Generator 5KW		1		8.47	0.00	8.47
HDEP Welder (pipe or liner)		1		51.14	0.00	51.14
Totals				223.88	369.79	593.67
B-34N - Equipment Mobilization (40-ton)						
Skilled Laborer		1		0.00	60.32	60.32
General Laborer		2		0.00	116.84	116.84
D7E		1		111.49	64.00	175.49
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
420F2		1		40.02	65.94	105.96
Generator 5KW		1		8.47	0.00	8.47
HDEP Welder (pipe or liner)		1		51.14	0.00	51.14
Totals				223.88	369.79	593.67
B-34U - Equipment Mobilization (20-ton)						
Skilled Laborer		1		0.00	60.32	60.32
General Laborer		2		0.00	116.84	116.84
D7E		1		111.49	64.00	175.49
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
420F2		1		40.02	65.94	105.96
Generator 5KW		1		8.47	0.00	8.47
HDEP Welder (pipe or liner)		1		51.14	0.00	51.14
Totals				223.88	369.79	593.67

Closure Cost Estimate
Fleets (Crews)

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Cost Estimate Type: FA Cost Basis: Fort Knox

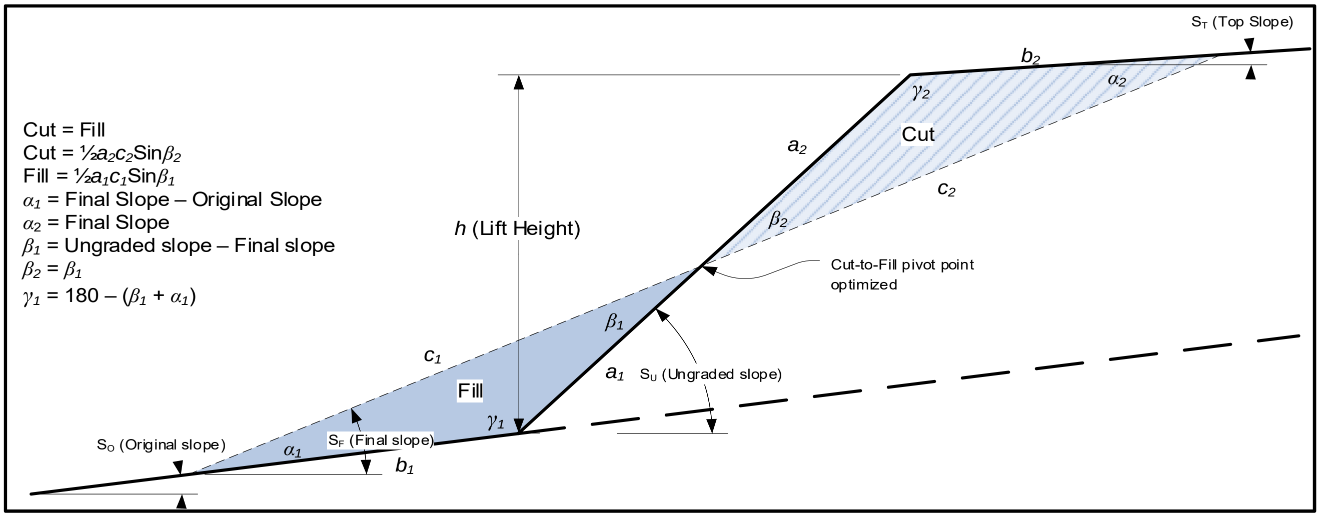
EQUIPMENT FLEETS

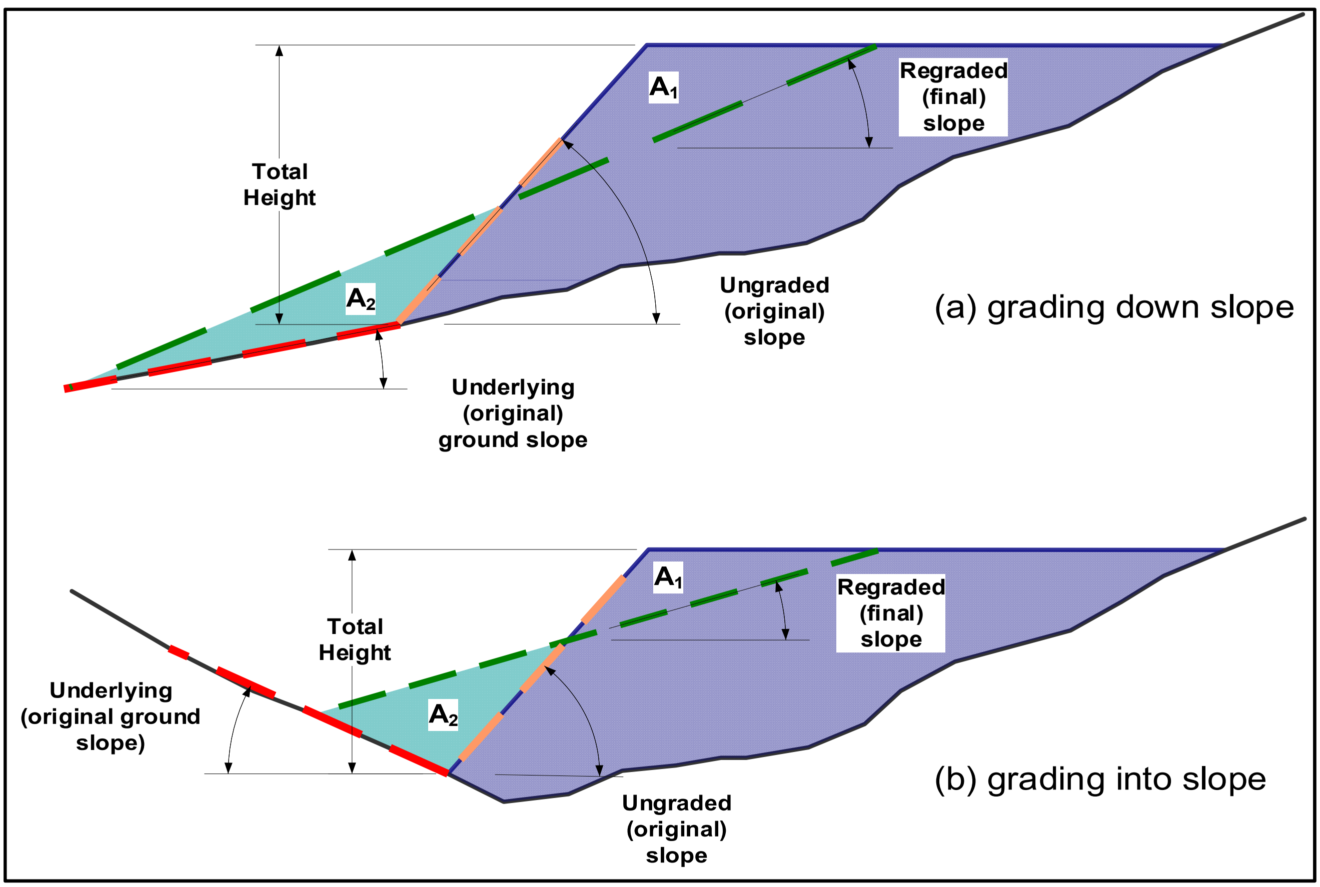
ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-34V - Equipment Mobilization (50-ton)						
Skilled Laborer		1		0.00	60.32	60.32
General Laborer		2		0.00	116.84	116.84
D7E		1		111.49	64.00	175.49
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
420F2		1		40.02	65.94	105.96
Generator 5KW		1		8.47	0.00	8.47
HDEP Welder (pipe or liner)		1		51.14	0.00	51.14
Totals				223.88	369.79	593.67
B-80A - Install Barbed Wire Fence						
General Laborer		3		0.00	175.26	175.26
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				12.76	237.95	250.71
B-80C - Install Chain Link Fence (Flatbed truck has small crane)						
General Laborer		3		0.00	175.26	175.26
Light Truck - 1.5 Ton		1		12.76	62.69	75.45
Totals				12.76	237.95	250.71
C-14B - Elevated Concrete Slabs (Reinforced Concrete Shaft Covers)						
Foreman		1		0.00	115.21	115.21
Supervisor's Truck		1		9.59	62.69	72.28
Carpenter		16		0.00	1,027.20	1,027.20
General Laborer		2		0.00	116.84	116.84
Rodmen (reinforcing concrete)		4		0.00	237.68	237.68
Cement finisher		2		0.00	131.68	131.68
Gas Engine Vibrator		1		4.18	62.69	66.87
Concrete Pump		1		115.15	0.00	115.15
Totals				128.92	1,753.99	1,882.91
C-14D - Concrete Walls Formed in Place (Reinforced Concrete Adit Bulkheads)						
Foreman		1		0.00	115.21	115.21
Supervisor's Truck		1		9.59	62.69	72.28
Carpenter		18		0.00	1,155.60	1,155.60
General Laborer		2		0.00	116.84	116.84
Rodmen (reinforcing concrete)		2		0.00	118.84	118.84
Cement finisher		1		0.00	65.84	65.84
Gas Engine Vibrator		1		4.18	62.69	66.87
Concrete Pump		1		115.15	0.00	115.15
Totals				128.92	1,697.71	1,826.63

FIGURES

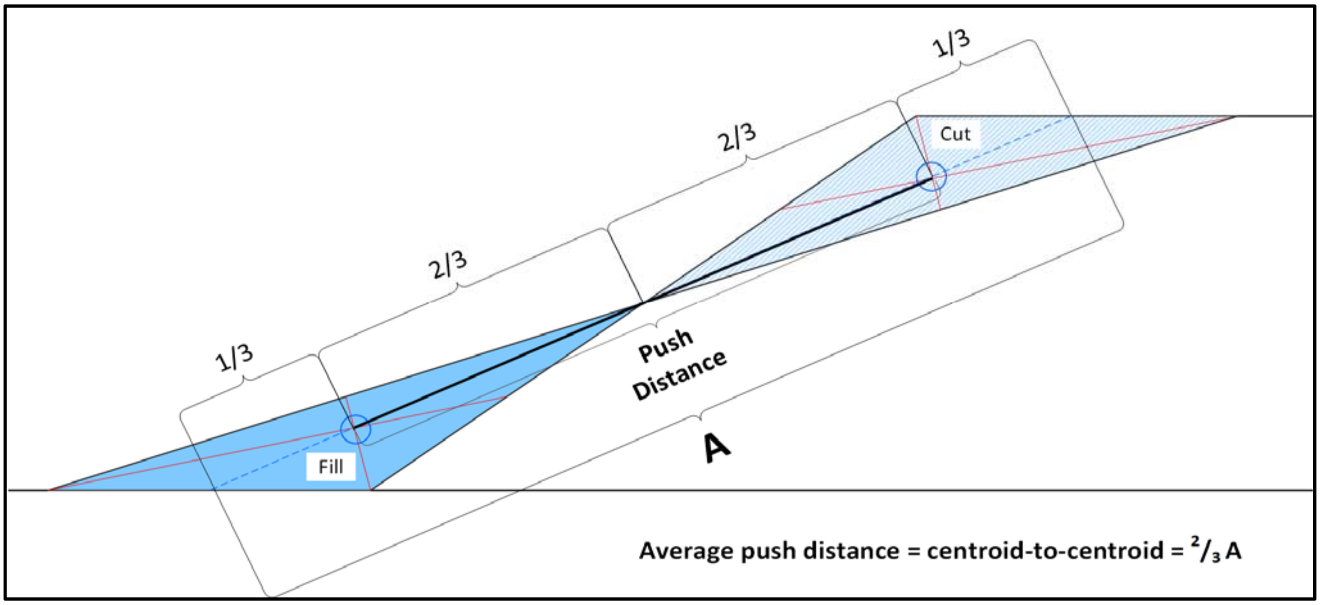
These figures show key inputs to the model and important calculations used by the model

Slope Regrading Volumes

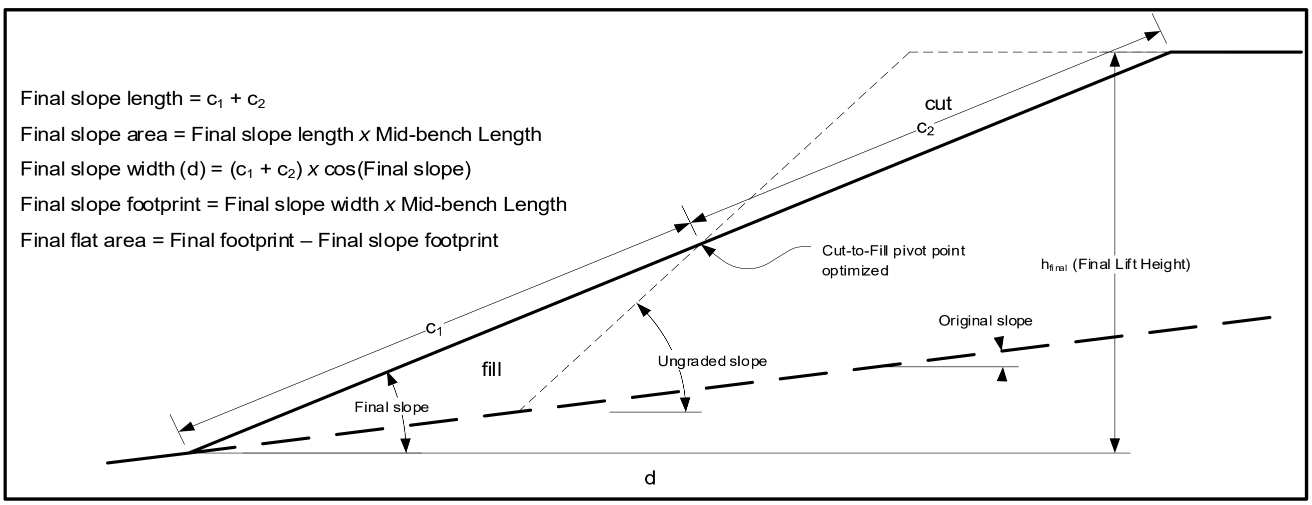




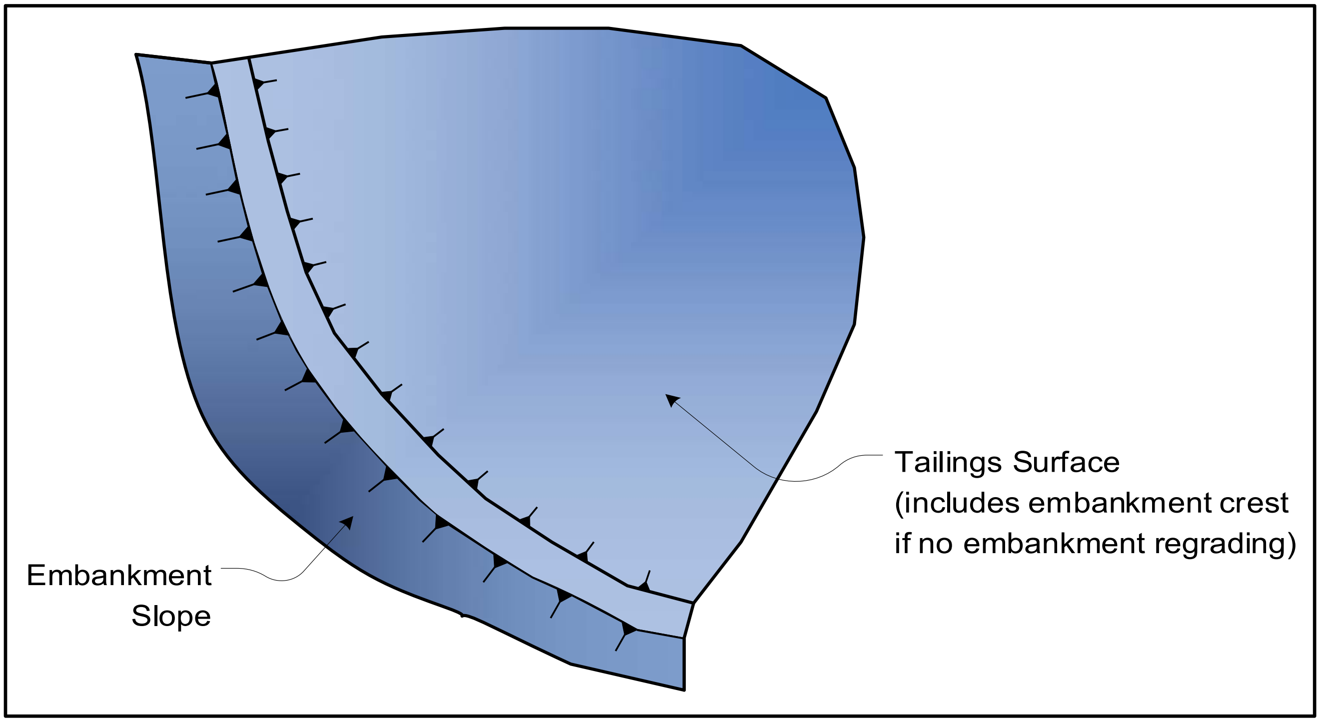
Slope Regrading Push Distance



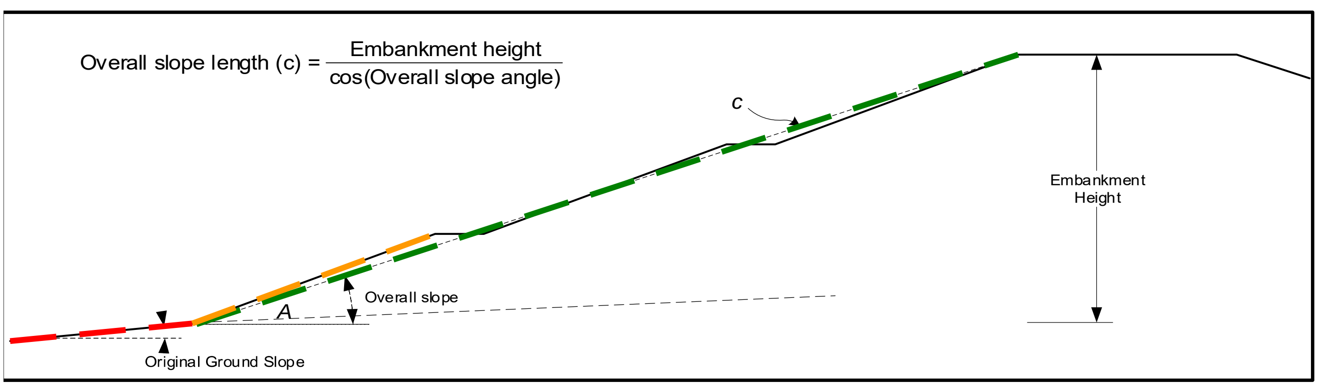
Slope/Flat Area Calculations



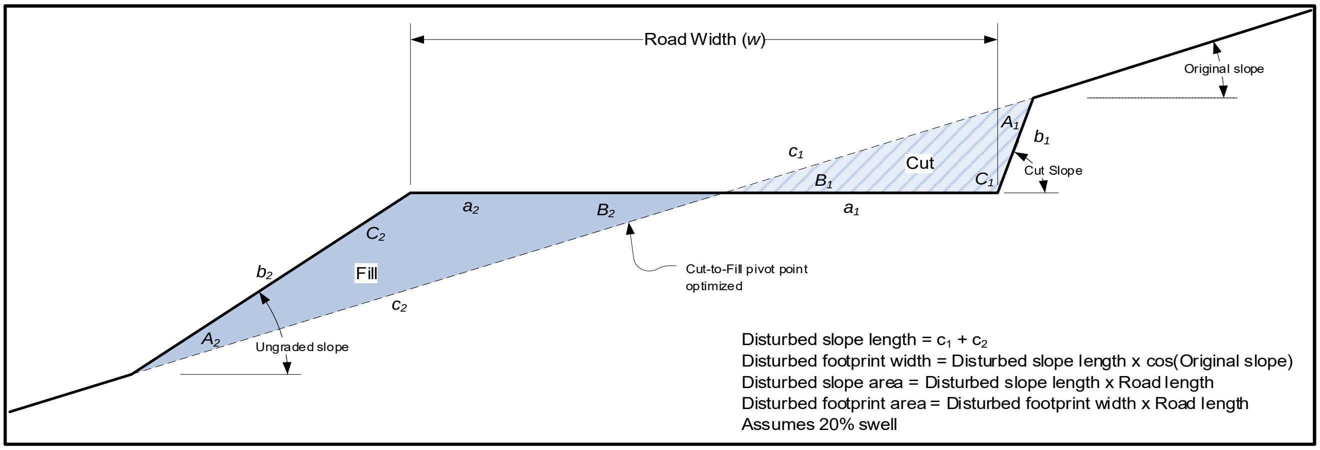
Tailings Impoundments



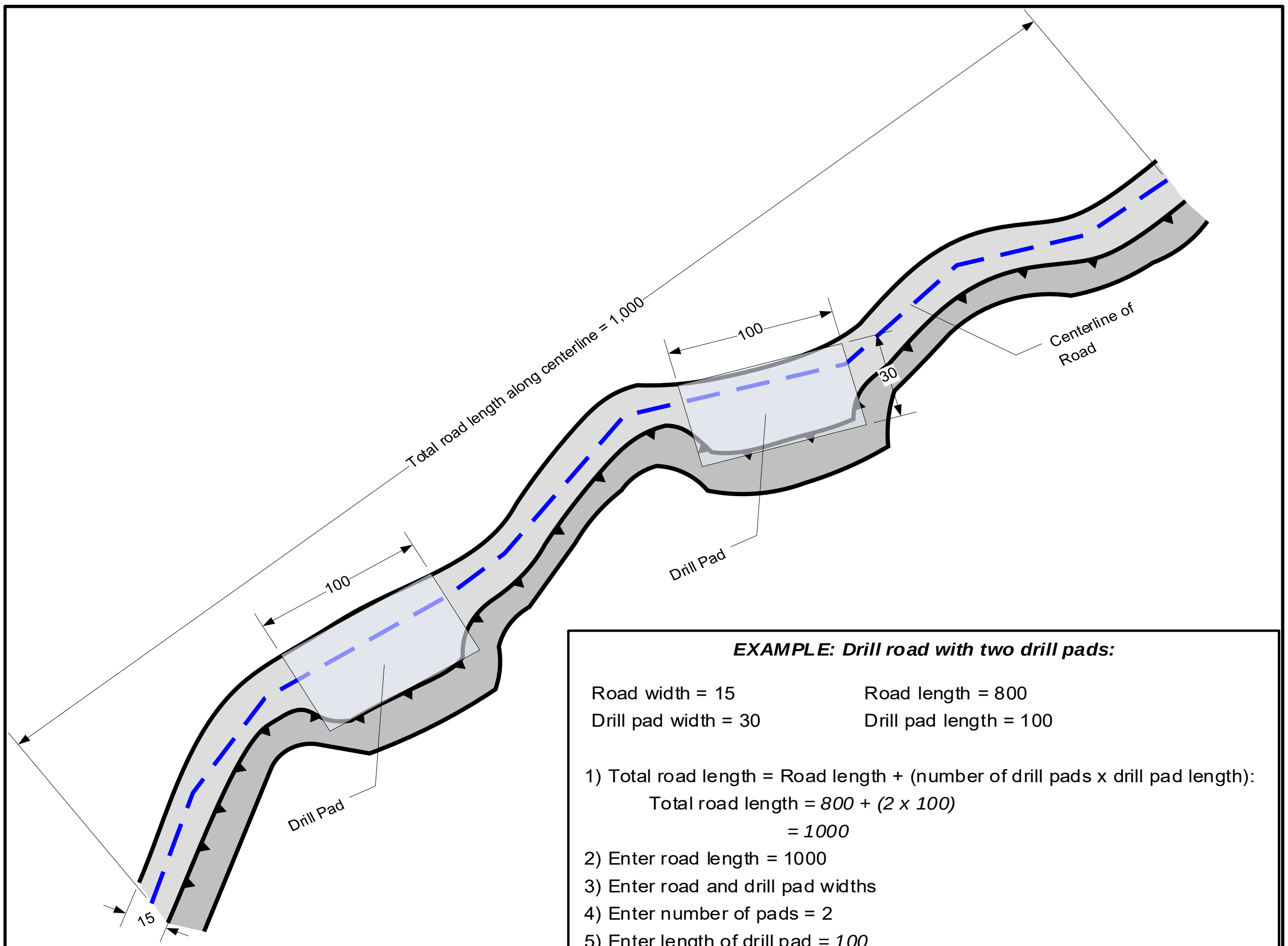
Tailings Embankments



Road Regrading Volume Calculations



Exploration Road Calculations

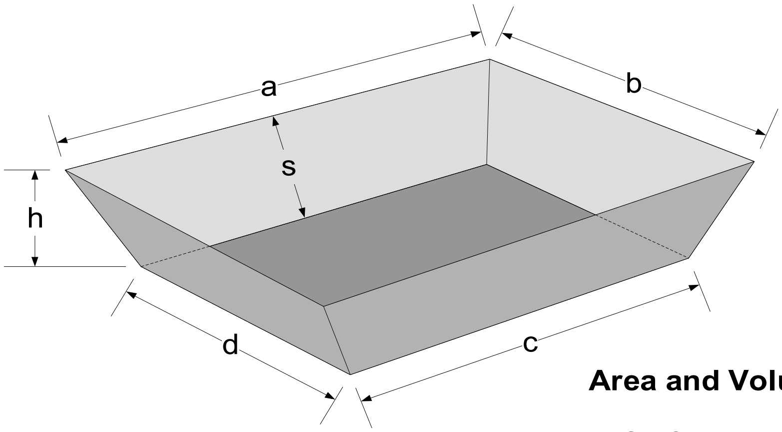


EXAMPLE: Drill road with two drill pads:

Road width = 15	Road length = 800
Drill pad width = 30	Drill pad length = 100

1) Total road length = Road length + (number of drill pads x drill pad length):
   Total road length = *800 + (2 x 100)*
   = 1000
2) Enter road length = 1000
3) Enter road and drill pad widths
4) Enter number of pads = 2
5) Enter length of drill pad = *100*

Pond Volume Calculations



Area and Volume of the Frustrum of a Pyramid

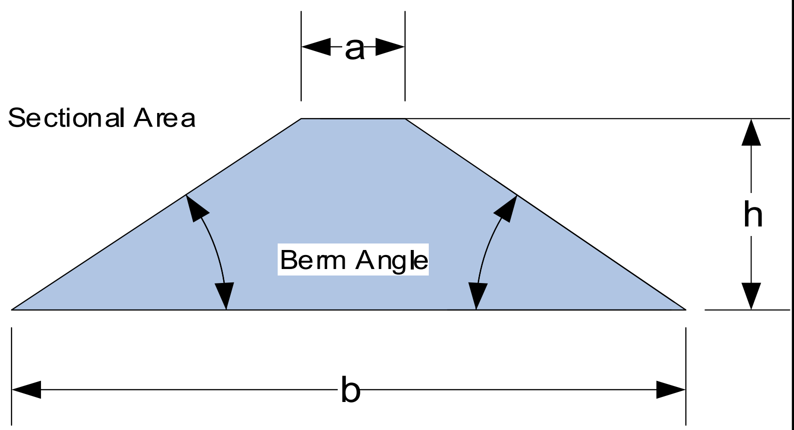
Surface Area = $ab + cd + (a+b+c+d) \times \frac{s}{2}$

Volume = $\frac{h\,(ab + cd + \sqrt{abcd}\,)}{3}$

Berm Volume Calculations

Cross Sectional Area =

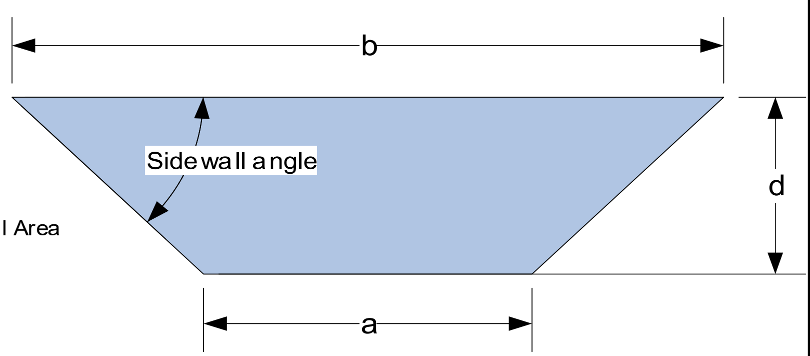
Berm Volume = Berm Length x Cross Sectional Area



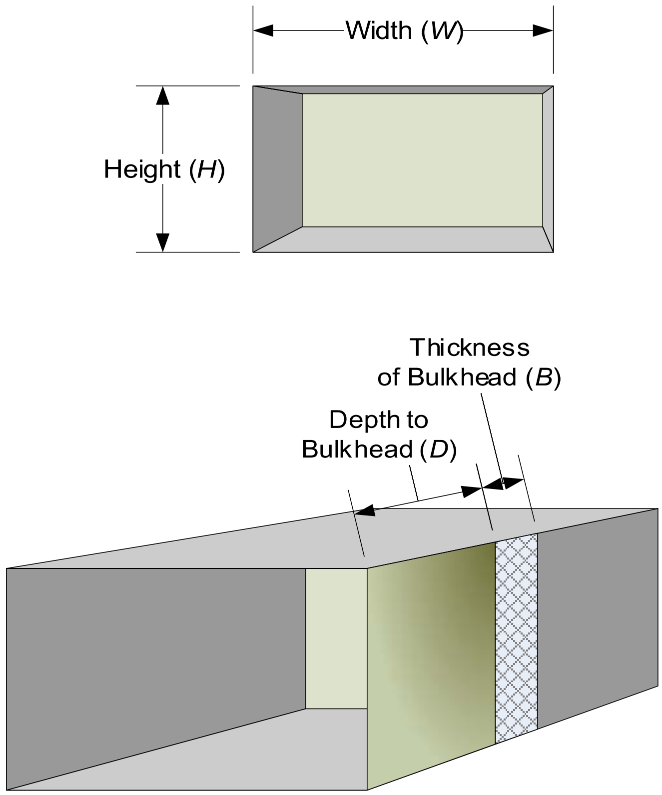
Ditch Volume Calculations

Cross Sectional Area = $\frac{(a+b)}{2} \times d$

Ditch Volume = Ditch Length x Cross Sectional Area

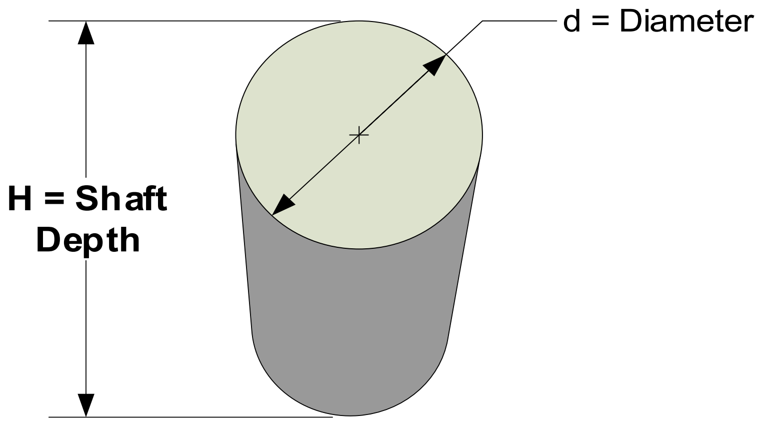


Portal/Adit Measurements



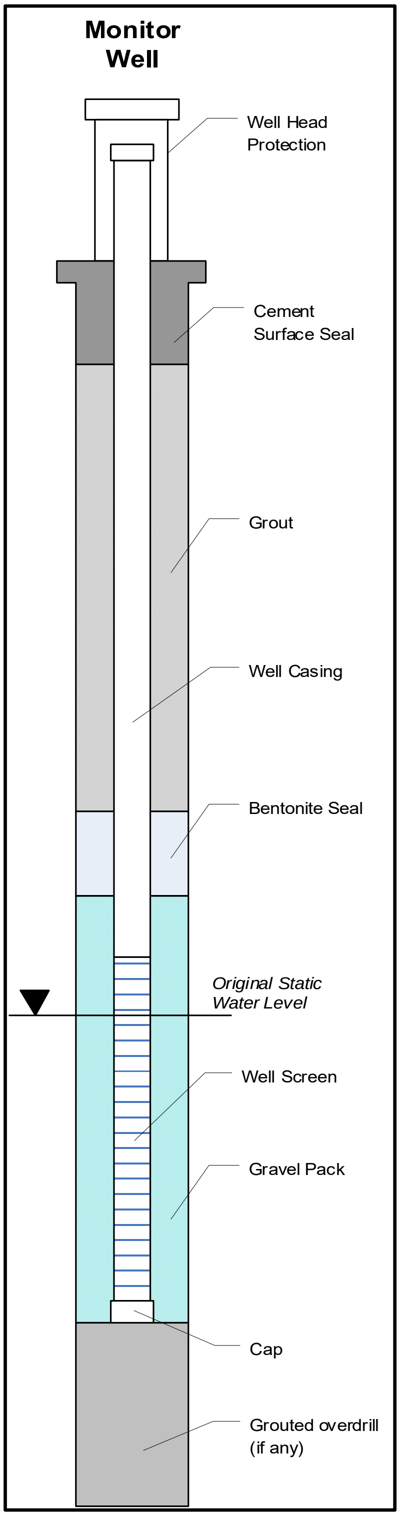
Cross-Sectional Area (A) = *W* x *H*
Volume of Concrete Bulkhead = *A* x *B*
Volume of Backfill = *A* x *D*

Shaft Measurements

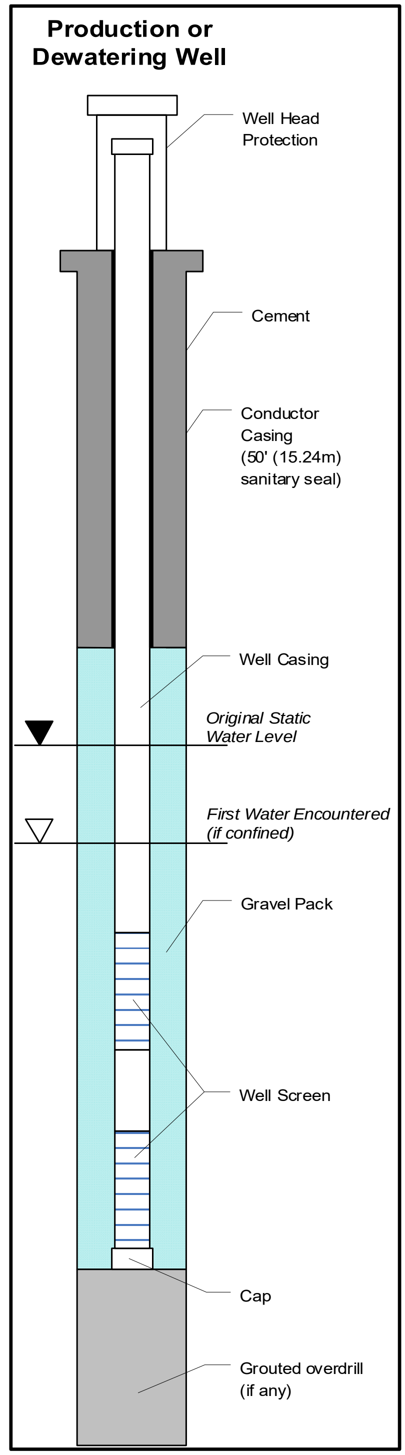


Radius (r) = ½d
Cross-Sectional Area (A) = πr^2
Volume = A x H

Production Well



Monitor Well



Closure Cost Estimate
User 01 Mob-demob costs

Table 1 looks at the reclamation schedule in "Acct Codes" sheet to see whether an activity is carried out during operations, closure
If relevant cells are populated, the table indicates that they are.
Table 1 thus provides guidance for population of Table 2 (fleet components by operations, closure, and/or post-closure).

Table 2 identifies the numbers of equipment by operations, closure, and post-closure phases.
Table 2 is used to determine the maximum number of equipment the number of which are variable (typically trucks).
Table 2 is examined to see which equipment can be shared between activities.
The maximum number of equipment for any given activity is assumed to be the number mobilized.
(For example, if there were 2 trucks for the WRDs during any phase and 5 trucks required for the HLPs during the same, 5 trucks v
These are then summed at the bottom where Table 3 is.

The summary of Table 3 is linked to the "Mob/demob" worksheet.

Table 1

	Facility Reclaimed/Closed	Closure	Post-Closure
1	Waste Rock Dumps	Yes	
2	Heap Leach Pad	Yes	
8	Tailings (Haul Material)	Yes	
4	Pit	Yes	Yes
6	Roads	Yes	
5	Yards	Yes	
9	Buildings	Yes	
11	Sediment and Drainage Control	Yes	
16	Well Abandonment	Yes	
13	Linear Structures (Miscellaneous Costs)	Yes	Yes
15	Road Maintenance	Yes	

Table 2

Waste Rock Dumps	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Regrading	Large		D10T2	4	4	
	Growth Media Placement	Large Truck		D9T	1	1	
				992K	1	1	
				777G	4	shared	
	Ripping/Scarifying	Large Dozer		D10T2	1	shared	
Tailings	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Embankment Regrading	Large		D10T2	1	shared	
	Surface Regrading						
	Cover 1 Placement	Large Truck		D9T	1	shared	
	Cover 2 Placement			992K	1	shared	
	Growth Media Placement	Large Truck		777G	4	shared	
	Ripping/Scarifying	Large Dozer		D10T2	1	shared	
Heap Leach Pad	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Regrading	Large		D10T2	1	shared	
	Growth Media Placement	Large Truck		D9T	1	shared	
				992K	1	shared	
				777G	6	shared	
	Ripping/Scarifying	Large Dozer		D10T2	1	shared	
Haul Material	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Haul Material	Large Truck		D9T	1	shared	
				992K	1	shared	
				777G	12	12	
	Growth Media Placement	Large Truck		D9T	1	shared	
				992K	1	shared	
				777G	0	shared	
	Ripping/Scarifying	0		FALSE	1	shared	
Pits	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Berm Construction	Large Truck		D9T	1	shared	
				992K	1	shared	
				777G	2	shared	
Roads	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Regrading with excavator	Small Excavator		325F	1	1	
	Growth Media Placement	Small Truck		D7E	1	1	
				988K	1	1	
				740C	0	shared	
Yards, Etc.	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Regrading	Large		D10T2	1	shared	
	Growth Media Placement	Large Truck		D9T	1	shared	
				992K	1	shared	
				777G	5	shared	
	Ripping/Scarifying	Large Dozer		D10T2	1	shared	
Buildings and Foundations	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Small Building Demolition	Small Building Demolition	930M/Dump Truck (10-12 yd3)	930M	1	1	1
				Dump Truck (10-12 yd3)	2	2	2
	Slab Demolition	Med Excavator		349F	1	1	1
	Cover Placement	Med Truck		D8T	1	1	1
				988K	1	1	1
				740C	2	2	2
Diversion Ditches	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Backfilling/Regrading	Large		390F	1	shared	
	Rip-Rap Installation	B-12G		966M	1	1	
Sediment Ponds	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Backfilling/Regrading	Large		390F	1	1	
Well Abandonment	**Activity**	**Fleet Name**	**Fleet Details**	**Fleet Components**	**# Equip.**	**Closure**	**Post-Closure**
	Monitoring Well Abandonment	Drill Rig	Drill Rig	Drill Rig	1	1	1

Table 3

Equipment	Total Load/Unload Time (hours)	Closure	Post-Closure	Total
D7E	8	1		1
D8T	8	1	1	2
D9T	16	1		1
D10T2	16	4		4
24M	16	1		1
325F	8	1		1
349F	8	1	1	2
390F	16	1		1
930M	8	1	1	2
966M	8	1		1
988K	16	1	1	2
992K	16	1		1
Heavy Duty Drill Rig	8	1	1	2
740C	8	2	2	4
777G	16	12		12
621E (8,000 gal)	8	1		1
Dump Truck (10-12 yd3)	0	2	2	4
20 Ton Crane	8	1		

Closure Cost Estimate
User 02 Piping

Unit costs for pipe material based on budgetary quote from Arctic Insulation and Manufacturing, August 19, 2019

Diameter	Insulated pipe cost per LF	Insulated pipe length LF	Insulation joint kit cost	Insulation joint kit cost per LF	Total insulated pipe material cost per LF	Source of pipe material costs	Installation labor cost from Misc. Unit Costs	Installation equipment cost from Misc. Unit Costs	Source of installation labor and equipment costs
4	$ 39.37	20	$ 175.94	$ 8.80	$ 48.17	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 7.40	$ 4.48	Misc. Unit Costs sheet
6	$ 40.74	20	$ 174.03	$ 8.70	$ 49.44	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 7.79	$ 4.71	Misc. Unit Costs sheet
8	$ 72.48	20	$ 177.52	$ 8.88	$ 81.36	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 8.99	$ 5.44	Interpolate costs between 6 in. and 12 in.
10	$ 96.65	20	$ 246.25	$ 12.31	$ 108.96	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 10.18	$ 6.16	Interpolate costs between 6 in. and 12 in.
12	$ 105.35	20	$ 405.27	$ 20.26	$ 125.61	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 11.38	$ 6.89	Misc. Unit Costs sheet
16	$ 165.43	20	$ 510.29	$ 25.51	$ 190.94	Arctic Insulation and Manufacturing budgetary quote, August 19, 2019	$ 12.72	$ 7.70	Extrapolate from previous two predecessors
					^Other User		^Other User	^Other User	

Summary of Costs from Arctic Insulation and Manufacturing (August 19, 2019) utilized in this estimate

Item #	Quantity	Unit of Measurement		Weight	Unit Price	Extended Price
1	20	LF	4" X 10" INSULA	9.67	39.37	787.4
2	1	ea	4" X 10" INSULA	11.3	175.94	175.94
7	20	LF	6" X 12" INSULA	7.72	40.74	814.8
8	1	ea	6" X 12" INSULA	16.5	174.03	174.03
11	20	LF	8" X 15" INSULA	22.11	72.48	1449.6
12	1	ea	8" X 15" INSULA	20.28	177.52	177.52
13	20	LF	10" X 18" INSUL	29.19	96.65	1933
14	1	ea	10" X 18" INSUL	28.1	246.25	246.25
17	20	LF	12" X 18" INSUL	34.51	105.35	2107
18	1	EA	12" X 18" INSUL	24.9	405.27	405.27
23	20	LF	16" X 22" INSUL	52.84	165.43	3308.6
24	1	EA	16" X 22" INSUL	28.25	510.29	510.29

Closure Cost Estimate
User 02 Piping

Arctic Insulation and Manufacturing, August 19, 2019

Item #	Quantity	Unit of Measurement		Weight	Unit Price	Extended Pri
1	20	LF	4" X 10" INSULATED PIPE W/ HEAT TRACE CHANNEL. 4" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 10.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	9.67	39.37	$ 787.40
2	1	ea	4" X 10" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 4"IPS X 10. "OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	11.3	175.94	$ 175.94
3	20	LF	4" X 12" INSULATED PIPE W/ HEAT TRACE CHANNEL 4" HDPE SDR 11PE 3608/3408 AWWA C906 CORE PIPE WITH 12.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	11.59	45.82	$ 916.40
4	1	ea	4" X 12" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 4"IPS X 12. 5"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	18.2	183.23	$ 183.23
5	20	LF	4" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 4" HDPE SDR 11PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	15.46	60.65	$ 1,213.00
6	1	ea	4" X 15" INSULATION JOINT KIT 4"IPS X 15.8 "OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	19.46	310.33	$ 310.33
7	20	LF	6" X 12" INSULATED PIPE W/ HEAT TRACE CHANNEL 6" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 12.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	7.72	40.74	$ 814.80
8	1	ea	6" X 12" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 6"IPS X 12. 5"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE,AK ***	16.5	174.03	$ 174.03
9	20	LF	6" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 6" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	18.66	64.09	$ 1,281.80
10	1	ea	6" X 15" INSULATION JOINT KIT 6" IPS X 15.8 5"OD X 24" LONG 4LB/CF URETHANE FOAM WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.55	236.66	$ 236.66
11	20	LF	8" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 8" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	22.11	72.48	$ 1,449.60
12	1	ea	8" X 15" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 8"IPS X 15.8 5"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	20.28	177.52	$ 177.52
13	20	LF	10" X 18" INSULATED PIPE W/ HEAT TRACE CHANNEL 10" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 18.3" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	29.19	96.65	$ 1,933.00
14	1	ea	10" X 18" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 10"IPS X 18. 5"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	28.1	246.25	$ 246.25
15	20	LF	10" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 10" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	32.19	116.21	$ 2,324.20
16	1	ea	10" X 20" INSULATION JOINT KIT WITH HEAT TRACE CHANNEL 10"IPS X 20.00"OD X 24" LONG 3LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.65	353.64	$ 353.64
17	20	LF	12" X 18" INSULATED PIPE W/ HEAT TRACE CHANNEL 12" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 18.3" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	34.51	105.35	$ 2,107.00
18	1	EA	12" X 18" INSULATION JOINT KIT12"IPS X 18. 5"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.9	405.27	$ 405.27
19	20	LF	12" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 12" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	37.51	1274.98	$ 25,499.60
20	1	EA	12" X 20" INSULATED JOINT KIT 12"IPS X 20"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	30.85	425.53	$ 425.53
21	20	LF	14" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 14" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	41.3	131.45	$ 2,629.00
22	1	EA	14" X 20" INSULATION JOINT KIT14"IPS X 20.0"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	26.1	468.12	$ 468.12
23	20	LF	16" X 22" INSULATED PIPE W/ HEAT TRACE CHANNEL 16" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 22.80" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	52.84	165.43	$ 3,308.60
24	1	EA	16" X 22" INSULATION JOINT KIT16"IPS X 22"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	28.25	510.29	$ 510.29

Closure Cost Estimate
User 02 Piping

Heat trace install			**Est. Cost per**	**Total Cost**	
Pipe length	10095	ft			
Connections (1 per 200lf)	50	ea	$ 250	$ 12,500	Estimate from AK Wired
Voltage	277	V		$ -	Estimate from AK Wired
circuits (200ft/circuit)	50.5	ea		$ -	Estimate from AK Wired
circuit pannels	2	ea	$ 5,000	$ 10,000	Estimate from AK Wired
power lead to circuts	63724.6875	lf	$ 0	$ 15,931	Estimate from AK Wired
Lead conduit	63724.6875	lf	$ 0	$ 15,931	Estimate from AK Wired
Controls	2	ea	$ 5,000	$ 10,000	Estimate from AK Wired
service connect	2	ea	$ 10,000	$ 20,000	Estimate from AK Wired
				$ 84,362	**<--Other User**

Power Cost		
length of heat trace	10095	ft
Watts (7/ft)	70665	W
volts	277	V
Power consumed (day)	1695.96	kWh
Power consumed (month)	51,557	kWh
Heat trace required months	4	
Power consumed (year)	206,229	kWh
Power unit cost ($/kWh)(Ma	0.11	
Power cost (year)	22,685.16	**<--Other User**

Closure Cost Estimate
User 03 Well closure

WELL CLOSURE

Source:

Pump Crew (foreman and two drillers helpers)		235.85	Per Hour
Decommissioning Equipment	56.5		Per Hr
5kw Generator	8.47		Per Hr
LT Duty truck	12.76		Per Hr
Total Well Decommissioning	77.73	235.85	Per Hr
Mob/Demob (well Closure)	7560		There will be multiple mob/demob: dewatering, interceptor wells, and monitoring wells.

^Other User

Well Closure Summary

	Materials	Labor	Equipment	
FK Dewatering W	19,995.48	######	######	<--Other User
FK Interceptor We	2,309.76	######	######	<--Other User
FK Monitoring We	1,588.19	######	######	<--Other User
FK TSF Piezomet	1,026.54	######	######	<--Other User
FK Heap Wells	552.80	######	######	<--Other User
Totals	25,472.77	######	######	

Stemming	30			
cement ($	7.22			
Well Clos	50			
Bentonite	50	ft of 8" well / bag	17.45	cft/bag
Cement u	10	ft of 8" well / bag	3.49	cft/bag

Dewatering Wells & Piezometers

Well ID	Well Dia.(in)	Well Dep	Well Volu	Stemming	Bentonite	Time to C	Move Bet	Stemming	cement Cost($)	Labor($)	Equipmen	Total Cost($)
DW08-196	8	1210	422.4	15.64	25	24.2	2	469.2	$ 180	$ 6,179	$ 2,037	$ 8,216
DW08-200	8	1202	419.6	15.54	24.8	24.04	2	466.2	$ 179	$ 6,142	$ 2,024	$ 8,166
DW09-207	8	1008	351.9	13.03	21	20.16	2	390.9	$ 152	$ 5,226	$ 1,723	$ 6,949
DW09-211	8	820	286.2	10.6	17.2	16.4	2	318	$ 124	$ 4,340	$ 1,430	$ 5,770
DW09-222	12	280	219.9	8.14	9.6	5.6	2	244.2	$ 69	$ 1,792	$ 591	$ 2,383
DW09-226	8	1022	356.7	13.21	21.2	20.44	2	396.3	$ 153	$ 5,292	$ 1,744	$ 7,037
DW09-228	12	260	204.2	7.56	9	5.2	2	226.8	$ 65	$ 1,698	$ 560	$ 2,258
DW09-232	8	280	97.7	3.62	6.4	5.6	2	108.6	$ 46	$ 1,792	$ 591	$ 2,383
DW09-233	8	802	280	10.37	16.8	16.04	2	311.1	$ 121	$ 4,255	$ 1,402	$ 5,657
DW09-234	8	800	279.3	10.34	16.8	16	2	310.2	$ 121	$ 4,245	$ 1,399	$ 5,644
DW11-276	8	1210	422.4	15.64	25	24.2	2	469.2	$ 180	$ 6,179	$ 2,037	$ 8,216
DW13-322	3	1142	56.1	2.08	8.9	22.84	2	62.4	$ 64	$ 5,859	$ 1,931	$ 7,789
DW14-345	8	771	269.1	9.97	16.2	15.42	2	299.1	$ 117	$ 4,109	$ 1,354	$ 5,463
DW14-354	8	1105	385.7	14.29	22.9	22.1	2	428.7	$ 165	$ 5,684	$ 1,873	$ 7,557
DW14-355	8	283	98.8	3.66	6.5	5.66	2	109.8	$ 47	$ 1,807	$ 595	$ 2,402
DW14-356	8	512	178.7	6.62	11	10.24	2	198.6	$ 79	$ 2,887	$ 951	$ 3,838
DW14-357	8	1120	391	14.48	23.2	22.4	2	434.4	$ 167	$ 5,755	$ 1,897	$ 7,651
DW15-360	8	1220	425.9	15.77	25.2	24.4	2	473.1	$ 182	$ 6,226	$ 2,052	$ 8,279
DW15-375	8	1137	396.9	14.7	23.5	22.74	2	441	$ 170	$ 5,835	$ 1,923	$ 7,758
DW16-381	8	703	245.4	9.09	14.9	14.06	2	272.7	$ 108	$ 3,788	$ 1,248	$ 5,036
DW16-383	8	1010	352.6	13.06	21	20.2	2	391.8	$ 152	$ 5,236	$ 1,726	$ 6,961
DW16-388	8	700	244.3	9.05	14.8	14	2	271.5	$ 107	$ 3,774	$ 1,244	$ 5,017
DW16-389	8	400	139.6	5.17	8.8	8	2	155.1	$ 64	$ 2,359	$ 777	$ 3,136
DW16-390	8	480	167.6	6.21	10.4	9.6	2	186.3	$ 75	$ 2,736	$ 902	$ 3,638
DW 372 mod	8	799	278.9	10.33	16.8	15.98	2	309.9	$ 121	$ 4,241	$ 1,398	$ 5,638
DW16-408	8	785	274	10.15	16.5	15.7	2	304.5	$ 119	$ 4,175	$ 1,376	$ 5,550
DW17-416 Draft	8	1205	420.6	15.58	24.9	24.1	2	467.4	$ 180	$ 6,156	$ 2,029	$ 8,184
DW17-421 Draft	8	805	281	10.41	16.9	16.1	2	312.3	$ 122	$ 4,269	$ 1,407	$ 5,676
DW17-420 Draft	8	1180	411.9	15.26	24.4	23.6	2	457.8	$ 176	$ 6,038	$ 1,990	$ 8,028
DW17-430 Draft	8	100	34.9	1.29	2.8	2	2	38.7	$ 20	$ 943	$ 311	$ 1,254
DW17-445	8	1210	422.4	15.64	25	24.2	2	469.2	$ 180	$ 6,179	$ 2,037	$ 8,216
DW17-446	8	700	244.3	9.05	14.8	14	2	271.5	$ 107	$ 3,774	$ 1,244	$ 5,017
DW17-449	8	1030	359.5	13.32	21.4	20.6	2	399.6	$ 154	$ 5,330	$ 1,757	$ 7,087
DW18-453	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-457	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-463	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-464	8	1100	384	14.22	22.8	22	2	426.6	$ 165	$ 5,660	$ 1,866	$ 7,526
DW18-471	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-474	8	1200	418.9	15.51	24.8	24	2	465.3	$ 179	$ 6,132	$ 2,021	$ 8,153
DW18-475	8	740	258.3	9.57	15.6	14.8	2	287.1	$ 113	$ 3,962	$ 1,306	$ 5,268
DW18-476	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-477	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
DW18-478	8	102	35.6	1.32	2.8	2.04	2	39.6	$ 20	$ 953	$ 314	$ 1,267
DW18-480	8	1000	349.1	12.93	20.8	20	2	387.9	$ 150	$ 5,189	$ 1,710	$ 6,899
Dewatering Well Closure Total						748.66	88	14400	$ 5,595	######	$ 65,034	$ 262,360

Interceptor Wells

Well ID	Well Dia.(in)	Well Dep	Well Volu	Stemming	Bentonite	Time to C	Move Bet	Stemming	Bentonite Cost($)	Labor($)	Equipmen	Total Cost($)
401	8	76	26.5	0.98	2.3	1.52	2	29.4	$ 17	$ 830	$ 274	$ 1,104
801	8	36	12.6	0.47	1.5	0.72	2	14.1	$ 11	$ 642	$ 211	$ 853
IW 1	6	320	62.8	2.33	5.4	6.4	2	69.9	$ 39	$ 1,981	$ 653	$ 2,634
IW 2	6	329	64.6	2.39	5.5	6.58	2	71.7	$ 40	$ 2,024	$ 667	$ 2,691
IW 3	6	310	60.9	2.25	5.3	6.2	2	67.5	$ 38	$ 1,934	$ 637	$ 2,571
IW 4	6	330	64.8	2.4	5.6	6.6	2	72	$ 40	$ 2,028	$ 668	$ 2,697
IW 5	6	380	74.6	2.76	6.3	7.6	2	82.8	$ 45	$ 2,264	$ 746	$ 3,010
IW 6	6	380	74.6	2.76	6.3	7.6	2	82.8	$ 45	$ 2,264	$ 746	$ 3,010
IW 7	8	204	71.2	2.64	4.9	4.08	2	79.2	$ 35	$ 1,434	$ 473	$ 1,907
IW 8	8	184	64.2	2.38	4.5	3.68	2	71.4	$ 32	$ 1,340	$ 442	$ 1,781
IW 9	8	197	68.8	2.55	4.7	3.94	2	76.5	$ 34	$ 1,401	$ 462	$ 1,863
IW 10	8	260	90.8	3.36	6	5.2	2	100.8	$ 43	$ 1,698	$ 560	$ 2,258
IW 11	8	296	103.3	3.83	6.7	5.92	2	114.9	$ 48	$ 1,868	$ 616	$ 2,484
IW 13	10	480	261.8	9.7	13	9.6	2	291	$ 94	$ 2,736	$ 902	$ 3,638
IW 14	8	480	167.6	6.21	10.4	9.6	2	186.3	$ 75	$ 2,736	$ 902	$ 3,638
IW 15	8	480	167.6	6.21	10.4	9.6	2	186.3	$ 75	$ 2,736	$ 902	$ 3,638
Interceptor Well Closure Total						94.84	32	1596.6	$ 713	######	$ 9,859	$ 39,775

Closure Cost Estimate
User 03 Well closure

Monitor Wells

Well ID	Well Dia.(in)	Well Dep	Well Volu	Stemmin	Bentonite	Time to C	Move Bet	Stemming	Bentonite Cost($)	Labor($)	Equipmen	Total Cost($)
MW 1	6	305	59.9	2.22	5.2	6.1	2	66.6	$ 38	$ 1,910	$ 630	$ 2,540
MW 2	6	279	54.8	2.03	4.8	5.58	2	60.9	$ 35	$ 1,788	$ 589	$ 2,377
MW 3	6	296	58.1	2.15	5	5.92	2	64.5	$ 36	$ 1,868	$ 616	$ 2,484
MW 4	6	288	56.5	2.09	4.9	5.76	2	62.7	$ 35	$ 1,830	$ 603	$ 2,433
MW 5	6	120	23.6	0.87	2.4	2.4	2	26.1	$ 17	$ 1,038	$ 342	$ 1,380
MW 6	6	150	29.5	1.09	2.9	3	2	32.7	$ 21	$ 1,179	$ 389	$ 1,568
MW 7	6	135	26.5	0.98	2.6	2.7	2	29.4	$ 19	$ 1,109	$ 365	$ 1,474
MW 8	6	135	26.5	0.98	2.6	2.7	2	29.4	$ 19	$ 1,109	$ 365	$ 1,474
PMW-1	8	295	103	3.81	6.7	5.9	2	114.3	$ 48	$ 1,863	$ 614	$ 2,477
PMW-2	8	196	68.4	2.53	4.7	3.92	2	75.9	$ 34	$ 1,396	$ 460	$ 1,856
PMW-3D	8	500	174.5	6.46	10.8	10	2	193.8	$ 78	$ 2,830	$ 933	$ 3,763
PMW-3S	8	159	55.5	2.06	4	3.18	2	61.8	$ 29	$ 1,222	$ 403	$ 1,624
PMW-4	8	155	54.1	2	3.9	3.1	2	60	$ 28	$ 1,203	$ 396	$ 1,599
PMW-5	8	196	68.4	2.53	4.7	3.92	2	75.9	$ 34	$ 1,396	$ 460	$ 1,856
PMW-6	8	297	103.7	3.84	6.7	5.94	2	115.2	$ 48	$ 1,873	$ 617	$ 2,490
Monitor Well Closure Total						70.12	30	1069.2	$ 519	######	$ 7,782	$ 31,396

Piezometers

Well ID	Well Dia.(in)	Well Dep	Well Volu	Stemmin	Bentonite	Time to C	Move Bet	Stemming	Bentonite Cost($)	Labor($)	Equipmen	Total Cost($)
PZ 1	6	420	82.5	3.05	6.9	8.4	2	91.5	$ 50	$ 2,453	$ 808	$ 3,261
PZ 2	6	450	88.4	3.27	7.4	9	2	98.1	$ 53	$ 2,594	$ 855	$ 3,449
PZ 3	6	445	87.4	3.24	7.3	8.9	2	97.2	$ 53	$ 2,571	$ 847	$ 3,418
PZ 4	6	550	108	4	8.9	11	2	120	$ 64	$ 3,066	$ 1,010	$ 4,077
PZ 5	6	450	88.4	3.27	7.4	9	2	98.1	$ 53	$ 2,594	$ 855	$ 3,449
PZ 6	6	150	29.5	1.09	2.9	3	2	32.7	$ 21	$ 1,179	$ 389	$ 1,568
PZ 7	8	200	69.8	2.59	4.8	4	2	77.7	$ 35	$ 1,415	$ 466	$ 1,881
PZ08-10	1.5	100	1.2	0.05	0.5	2	2	1.5	$ 4	$ 943	$ 311	$ 1,254
PZ08-11	1.5	100	1.2	0.05	0.5	2	2	1.5	$ 4	$ 943	$ 311	$ 1,254
PZ08-12	1.5	80	1	0.04	0.5	1.6	2	1.2	$ 4	$ 849	$ 280	$ 1,129
PZ08-13	1.5	62	0.8	0.03	0.4	1.24	2	0.9	$ 3	$ 764	$ 252	$ 1,016
PZ08-14	1.5	37	0.5	0.02	0.3	0.74	2	0.6	$ 2	$ 646	$ 213	$ 859
PZ08-15	1.5	82	1	0.04	0.5	1.64	2	1.2	$ 4	$ 858	$ 283	$ 1,141
PZ08-1	1.5	100	1.2	0.05	0.5	2	2	1.5	$ 4	$ 943	$ 311	$ 1,254
PZ08-2	1.5	102	1.3	0.05	0.5	2.04	2	1.5	$ 4	$ 953	$ 314	$ 1,267
PZ08-3	1.5	107	1.3	0.05	0.6	2.14	2	1.5	$ 4	$ 976	$ 322	$ 1,298
PZ08-4	1.5	96	1.2	0.04	0.5	1.92	2	1.2	$ 4	$ 925	$ 305	$ 1,229
PZ08-5	1.5	155	1.9	0.07	0.7	3.1	2	2.1	$ 5	$ 1,203	$ 396	$ 1,599
PZ08-6	1.5	90	1.1	0.04	0.5	1.8	2	1.2	$ 4	$ 896	$ 295	$ 1,192
PZ08-7	1.5	185	2.3	0.08	0.8	3.7	2	2.4	$ 6	$ 1,344	$ 443	$ 1,787
PZ08-8	1.5	160	2	0.07	0.8	3.2	2	2.1	$ 6	$ 1,226	$ 404	$ 1,631
PZ08-9	1.5	135	1.7	0.06	0.7	2.7	2	1.8	$ 5	$ 1,109	$ 365	$ 1,474
TOTAL						85.12	44	637.5	$ 389	######	$ 10,037	$ 40,489

Heap Leach Wells

Well ID	Well Dia.(in)	Well Dep	Well Volu	Stemmin	Bentonite	Time to C	Move Bet	Stemming	Bentonite Cost($)	Labor($)	Equipmen	Total Cost($)
HL-1	15	94	115.4	4.27	5	1.88	2	128.1	$ 36	$ 915	$ 302	$ 1,217
HL-2	6	141	27.7	1.03	2.7	2.82	2	30.9	$ 19	$ 1,137	$ 375	$ 1,511
HL-3	6	183	35.9	1.33	3.3	3.66	2	39.9	$ 24	$ 1,335	$ 440	$ 1,775
HL-4	6	225	44.2	1.64	4	4.5	2	49.2	$ 29	$ 1,533	$ 505	$ 2,038
HL-5	6	267	52.4	1.94	4.6	5.34	2	58.2	$ 33	$ 1,731	$ 571	$ 2,302
HL-6	6	309	60.7	2.25	5.2	6.18	2	67.5	$ 38	$ 1,929	$ 636	$ 2,565
HL 201	30	160	785.4	29.09	15	3.2	2	872.7	$ 108	$ 1,226	$ 404	$ 1,631
HL 202	30	160	785.4	29.09	15	3.2	2	872.7	$ 108	$ 1,226	$ 404	$ 1,631
HL 310	30	160	785.4	29.09	15	3.2	2	872.7	$ 108	$ 1,226	$ 404	$ 1,631
HL 311	30	160	785.4	29.09	15	3.2	2	872.7	$ 108	$ 1,226	$ 404	$ 1,631
HL 312	30	160	785.4	29.09	15	3.2	2	872.7	$ 108	$ 1,226	$ 404	$ 1,631
Heap Leach Wells Closure Total								4737.3	$ 720	######	$ 4,849	$ 19,561

Closure Cost Estimate
User 04 Tank cutting

Tank cutting

This sheet estimates costs to cut steel tanks before building demolition equipment take them down.

Assumptions are made for the width of cuts to make in order to be able to pile pieces to the trucks to haul away.

Maximum dimensions of cuts (ft)

Top/bottom:	5
Side:	10
Circumference (horizon	5

	# of each type	Diameter ft	Height ft	circumference ft	# longitudinal cuts from top to bottom (circumference divided by "side" dimension, rounded up)	Length of top to bottom cuts (ft) (# cuts from top to bottom multiplied by height)	# horizontal cuts along circumference (height divided by "Circumference (horizontal)" dimension, rounded up)	Length of horizontal cuts (ft) (circumference times # horizontal cuts)	# longitudinal cuts on top of tank (ft) (diameter divided by "top/bottom" dimension, rounded up)	Length of longitudinal cuts on top of tank (ft) (# cuts times diameter)	# cuts perpendicular to longitudinal cuts on top of tank (ft) (diameter divided by "side" dimension, rounded up)	Length of perpendicular cuts on top of tank (ft) (# cuts times diameter)	sum of lengths per tank (ft)	subtotal lengths for type of tank (ft)
Leach tanks	7	49	55	154	16	880	11	1,694	10	490	5	245	3,309	23,163
Carbon in pulp tanks	6	49	55	154	16	880	11	1,694	10	490	5	245	3,309	19,854
													total	**43,017**

Steel Cutting Task

RS Means	Crew	Daily Output	Labor-Hours	Unit	Material unit cost	Labor unit cost	Equipment unit cost
02 41 19.27 0020	E-25	333	0.22	l.f.	0.88	1.38	0.04

RSMeans 2019, page 42.

Steel Cutting hours

Daily Output (LF/day)	333
Total length to cut (ft):	43,017
Total number of days:	129
Hours in a day:	8
Total number of hours:	1032

Hourly output (ft/hr):	42

	Labor/LF	Equipment/LF
Cost per linear foot	1.38	0.04

RSMeans Crew E-25	Labor rate (USD	Equipment rate (USD/hr)
Welder	58	
Torch		1.56
subtotal, USD	58	1.56

	Material cost	Labor cost	Equipment cost	Total cost
Total Steel Cutting Cost	$ 37,855	$ 59,363	$ 1,721	$ 98,939
	^Other User	^Other User	^Other User	

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclamation Plan
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_020_v18_ft_20200128.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends: 11

Rate of Return: 4.3%

Total Costs (Undiscounted)

		1	2	3	4	5	6	7	8	9	10
1	Waste Rock Dumps	$ 4,174,942	$ 4,174,942	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ 1,558,604	$ 1,558,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 8,256,680	$ 665,604	$ 665,604	$ 504,205	$ 494,206	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686
4	Pit	$ 131,045	$ -	$ 33,882	$ -	$ -	$ 25,000	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ 990,576	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ 16,345	$ -	$ 97,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ 69,385	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ 5,351,299	$ 4,324,005	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ 1,325,059	$ 1,286,087	$ 1,286,087	$ 59,847	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ 559,663	$ -	$ 36,382	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ 2,499,906	$ 1,070,706	$ 9,364,740	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ 1,458,565	$ 1,458,565	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ 5,814	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ 162,713	$ 162,713	$ 162,713	$ 177,102	$ 177,102	$ 177,102	$ 177,102	$ 177,102	$ 162,713	$ 162,713
15	Road Maintenance	$ 73,367	$ 71,209	$ 71,209	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ 289,915	$ -	$ 90,188	$ 41,516	$ 11,961	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ 550	$ 550	$ 550	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ -	$ -	$ -	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ 894,988	$ -	$ 910,705	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ 2,181,414	$ 2,181,414	$ 2,181,414	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950
22	Solid Waste Disposal	$ 827	$ 803	$ 763,240	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ 499,530	$ 249,765	$ 249,765	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ 283,826	$ 179,449	$ 179,449	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 29,719,237	$ 17,384,414	$ 17,158,987	$ 857,774	$ 758,374	$ 351,893	$ 326,893	$ 406,893	$ 312,503	$ 312,503
	Engineering, Design and Construction Plan	$ 891,577	$ 521,532	$ 514,770	$ 25,733	$ 22,751	$ 10,557	$ 9,807	$ 12,207	$ 9,375	$ 9,375
	Contingency	$ 4,755,078	$ 2,781,506	$ 2,745,438	$ 137,244	$ 121,340	$ 56,303	$ 52,303	$ 65,103	$ 50,000	$ 50,000
	Contractor OH and Profit	$ 4,457,886	$ 2,607,662	$ 2,573,848	$ 128,666	$ 113,756	$ 52,784	$ 49,034	$ 61,034	$ 46,875	$ 46,875
	Contract Administration	$ 1,569,176	$ 917,897	$ 905,994	$ 45,290	$ 40,042	$ 18,580	$ 17,260	$ 21,484	$ 16,500	$ 16,500
	Grand Total	$ 41,392,954	$ 24,213,011	$ 23,899,037	$ 1,194,707	$ 1,056,263	$ 490,117	$ 455,297	$ 566,721	$ 435,253	$ 435,253

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		11	12	13	14	15	16	17	18	19	20
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 355,175	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ 1,028,587	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ 162,713	$ 173,291	$ 173,291	$ 173,291	$ 32,700	$ 32,700	$ 32,700	$ 32,700	$ 32,700	$ 32,700
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 138,121	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 617,993	$ 323,082	$ 444,048	$ 323,082	$ 1,211,078	$ 124,541	$ 124,541	$ 204,541	$ 124,541	$ 124,541
	Engineering, Design and Construction Plan	$ 18,540	$ 9,692	$ 13,321	$ 9,692	$ 36,332	$ 3,736	$ 3,736	$ 6,136	$ 3,736	$ 3,736
	Contingency	$ 98,879	$ 51,693	$ 71,048	$ 51,693	$ 193,772	$ 19,927	$ 19,927	$ 32,727	$ 19,927	$ 19,927
	Contractor OH and Profit	$ 92,699	$ 48,462	$ 66,607	$ 48,462	$ 181,662	$ 18,681	$ 18,681	$ 30,681	$ 18,681	$ 18,681
	Contract Administration	$ 32,630	$ 17,059	$ 23,446	$ 17,059	$ 63,945	$ 6,576	$ 6,576	$ 10,800	$ 6,576	$ 6,576
	Grand Total	$ 860,741	$ 449,988	$ 618,470	$ 449,988	$ 1,686,789	$ 173,461	$ 173,461	$ 284,885	$ 173,461	$ 173,461

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		21	22	23	24	25	26	27	28	29	30
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 355,175	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ 32,700	$ 32,700	$ 18,867	$ 18,867	$ 18,867	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 150,446	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 430,030	$ 124,541	$ 584,887	$ 110,707	$ 110,707	$ 91,841	$ 91,841	$ 225,132	$ 91,841	$ 91,841
	Engineering, Design and Construction Plan	$ 12,901	$ 3,736	$ 17,547	$ 3,321	$ 3,321	$ 2,755	$ 2,755	$ 6,754	$ 2,755	$ 2,755
	Contingency	$ 68,805	$ 19,927	$ 93,582	$ 17,713	$ 17,713	$ 14,694	$ 14,694	$ 36,021	$ 14,694	$ 14,694
	Contractor OH and Profit	$ 64,505	$ 18,681	$ 87,733	$ 16,606	$ 16,606	$ 13,776	$ 13,776	$ 33,770	$ 13,776	$ 13,776
	Contract Administration	$ 22,706	$ 6,576	$ 30,882	$ 5,845	$ 5,845	$ 4,849	$ 4,849	$ 11,887	$ 4,849	$ 4,849
	Grand Total	$ 598,947	$ 173,461	$ 814,631	$ 154,192	$ 154,192	$ 127,915	$ 127,915	$ 313,564	$ 127,915	$ 127,915

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		31	32	33	34	35	36	37	38	39	40
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 355,175	$ 74,686	$ 74,686	$ 74,686	$ 74,719	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ 615,722	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 138,121	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 397,330	$ 91,841	$ 212,807	$ 91,841	$ 707,596	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
	Engineering, Design and Construction Plan	$ 11,920	$ 2,755	$ 6,384	$ 2,755	$ 21,228	$ 515	$ 515	$ 2,915	$ 515	$ 515
	Contingency	$ 63,573	$ 14,694	$ 34,049	$ 14,694	$ 113,215	$ 2,745	$ 2,745	$ 15,545	$ 2,745	$ 2,745
	Contractor OH and Profit	$ 59,600	$ 13,776	$ 31,921	$ 13,776	$ 106,139	$ 2,573	$ 2,573	$ 14,573	$ 2,573	$ 2,573
	Contract Administration	$ 20,979	$ 4,849	$ 11,236	$ 4,849	$ 37,361	$ 906	$ 906	$ 5,130	$ 906	$ 906
	Grand Total	$ 553,402	$ 127,915	$ 296,397	$ 127,915	$ 985,539	$ 23,894	$ 23,894	$ 135,318	$ 23,894	$ 23,894

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		41	42	43	44	45	46	47	48	49	50
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 42,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
	Engineering, Design and Construction Plan	$ 1,265	$ 515	$ 14,740	$ 515	$ 515	$ 515	$ 515	$ 2,915	$ 515	$ 515
	Contingency	$ 6,745	$ 2,745	$ 78,614	$ 2,745	$ 2,745	$ 2,745	$ 2,745	$ 15,545	$ 2,745	$ 2,745
	Contractor OH and Profit	$ 6,323	$ 2,573	$ 73,700	$ 2,573	$ 2,573	$ 2,573	$ 2,573	$ 14,573	$ 2,573	$ 2,573
	Contract Administration	$ 2,226	$ 906	$ 25,942	$ 906	$ 906	$ 906	$ 906	$ 5,130	$ 906	$ 906
	Grand Total	$ 58,714	$ 23,894	$ 684,331	$ 23,894	$ 23,894	$ 23,894	$ 23,894	$ 135,318	$ 23,894	$ 23,894

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		51	52	53	54	55	56	57	58	59	60
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 1,940,368	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 42,155	$ 17,155	$ 1,940,368	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
	Engineering, Design and Construction Plan	$ 1,265	$ 515	$ 58,211	$ 515	$ 515	$ 515	$ 515	$ 2,915	$ 515	$ 515
	Contingency	$ 6,745	$ 2,745	$ 310,459	$ 2,745	$ 2,745	$ 2,745	$ 2,745	$ 15,545	$ 2,745	$ 2,745
	Contractor OH and Profit	$ 6,323	$ 2,573	$ 291,055	$ 2,573	$ 2,573	$ 2,573	$ 2,573	$ 14,573	$ 2,573	$ 2,573
	Contract Administration	$ 2,226	$ 906	$ 102,451	$ 906	$ 906	$ 906	$ 906	$ 5,130	$ 906	$ 906
	Grand Total	$ 58,714	$ 23,894	$ 2,702,544	$ 23,894	$ 23,894	$ 23,894	$ 23,894	$ 135,318	$ 23,894	$ 23,894

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		61	62	63	64	65	66	67	68	69	70
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 42,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
	Engineering, Design and Construction Plan	$ 1,265	$ 515	$ 14,740	$ 515	$ 515	$ 515	$ 515	$ 2,915	$ 515	$ 515
	Contingency	$ 6,745	$ 2,745	$ 78,614	$ 2,745	$ 2,745	$ 2,745	$ 2,745	$ 15,545	$ 2,745	$ 2,745
	Contractor OH and Profit	$ 6,323	$ 2,573	$ 73,700	$ 2,573	$ 2,573	$ 2,573	$ 2,573	$ 14,573	$ 2,573	$ 2,573
	Contract Administration	$ 2,226	$ 906	$ 25,942	$ 906	$ 906	$ 906	$ 906	$ 5,130	$ 906	$ 906
	Grand Total	$ 58,714	$ 23,894	$ 684,331	$ 23,894	$ 23,894	$ 23,894	$ 23,894	$ 135,318	$ 23,894	$ 23,894

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA **Cost Basis: Fort Knox**
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		71	72	73	74	75	76	77	78	79	80
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 138,121	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 150,446	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 17,155	$ 17,155	$ 138,121	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 150,446	$ 17,155	$ 17,155
	Engineering, Design and Construction Plan	$ 515	$ 515	$ 4,144	$ 515	$ 515	$ 515	$ 515	$ 4,513	$ 515	$ 515
	Contingency	$ 2,745	$ 2,745	$ 22,099	$ 2,745	$ 2,745	$ 2,745	$ 2,745	$ 24,071	$ 2,745	$ 2,745
	Contractor OH and Profit	$ 2,573	$ 2,573	$ 20,718	$ 2,573	$ 2,573	$ 2,573	$ 2,573	$ 22,567	$ 2,573	$ 2,573
	Contract Administration	$ 906	$ 906	$ 7,293	$ 906	$ 906	$ 906	$ 906	$ 7,944	$ 906	$ 906
	Grand Total	$ 23,894	$ 23,894	$ 192,375	$ 23,894	$ 23,894	$ 23,894	$ 23,894	$ 209,541	$ 23,894	$ 23,894

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		81	82	83	84	85	86	87	88	89	90
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 17,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 31,417,802
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 17,155	$ 17,155	$ 491,335	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 31,417,802
	Engineering, Design and Construction Plan	$ 515	$ 515	$ 14,740	$ 515	$ 515	$ 515	$ 515	$ 2,915	$ 515	$ 942,534
	Contingency	$ 2,745	$ 2,745	$ 78,614	$ 2,745	$ 2,745	$ 2,745	$ 2,745	$ 15,545	$ 2,745	$ 5,026,848
	Contractor OH and Profit	$ 2,573	$ 2,573	$ 73,700	$ 2,573	$ 2,573	$ 2,573	$ 2,573	$ 14,573	$ 2,573	$ 4,712,670
	Contract Administration	$ 906	$ 906	$ 25,942	$ 906	$ 906	$ 906	$ 906	$ 5,130	$ 906	$ 1,658,860
	Grand Total	$ 23,894	$ 23,894	$ 684,331	$ 23,894	$ 23,894	$ 23,894	$ 23,894	$ 135,318	$ 23,894	$ 43,758,714

Closure Cost Estimate
User 05 NPV Calcs

Project Name: Fort Knox Phased Estimate - Reclam
Date of Submittal: December 2019
File Name: DRAFT_Fort_Knox_Phased_226900_02(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: CDF_226900_020_FNL_ft_ism.xlsm
Cost Estimate Type: FA Cost Basis: Fort Knox
Sheet Name: NPV Calcs

From "Acct Codes" sheet

Year Phase I (Active Reclamation) Ends:

Rate of Return:

Total Costs (Undiscounted)

		Subtotal
1	Waste Rock Dumps	$ 8,349,884
2	Heap Leach Pad	$ 3,117,208
3	Solution Management	$ 13,668,364
4	Pit	$ 339,927
5	Yards	$ 990,576
6	Roads	$ 113,630
7	Borrow Area	$ 69,385
8	Tailings	$ 9,675,304
9	Buildings	$ 3,957,079
10	Other Demo	$ 596,045
11	Sediment and Drainage Control	$ 12,935,352
12	TSF Spillway	$ 2,917,129
13	Linear Structures	$ 1,650,123
14	Monitoring	$ 2,699,861
15	Road Maintenance	$ 215,784
16	Well Abandonment	$ 433,580
17	Water Fees	$ 1,650
18	Long-term Maintenance and Repair	$ 37,902,545
19	Mobilization-demobilization	$ 1,805,692
20	Active Reclamation	$ 6,544,241
21	Closure Monitoring	$ 695,400
22	Solid Waste Disposal	$ 764,870
23	Reclamation Maintenance	$ 999,060
24	Tanks	$ 642,724

	Total Direct	$ 111,085,415

	Engineering, Design and Construction Plan	$ 3,332,575
	Contingency	$ 17,773,676
	Contractor OH and Profit	$ 16,662,798
	Contract Administration	$ 5,865,319
	Grand Total	$ 154,719,783

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		1	2	3	4	5	6	7	8	9	10
1	Waste Rock Dumps	$ 4,174,942	$ 4,174,942	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ 1,558,604	$ 1,558,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 8,256,680	$ 665,604	$ 665,604	$ 504,205	$ 494,206	$ 74,686	$ 74,686	$ 74,686	$ 74,686	$ 74,686
4	Pit	$ 131,045	$ -	$ 33,882	$ -	$ -	$ 25,000	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ 990,576	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ 16,345	$ -	$ 97,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ 69,385	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ 5,351,299	$ 4,324,005	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ 1,325,059	$ 1,286,087	$ 1,286,087	$ 59,847	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ 559,663	$ -	$ 36,382	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ 2,499,906	$ 1,070,706	$ 9,364,740	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ 1,458,565	$ 1,458,565	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ 5,814	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ 162,713	$ 162,713	$ 162,713	$ 177,102	$ 177,102	$ 177,102	$ 177,102	$ 177,102	$ 162,713	$ 162,713
15	Road Maintenance	$ 73,367	$ 71,209	$ 71,209	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ 289,915	$ -	$ 90,188	$ 41,516	$ 11,961	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ 550	$ 550	$ 550	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ -	$ -	$ -	$ 17,155	$ 17,155	$ 17,155	$ 17,155	$ 97,155	$ 17,155	$ 17,155
19	Mobilization-demobilization	$ 894,988	$ -	$ 910,705	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ 2,181,414	$ 2,181,414	$ 2,181,414	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950	$ 57,950
22	Solid Waste Disposal	$ 827	$ 803	$ 763,240	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ 499,530	$ 249,765	$ 249,765	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ 283,826	$ 179,449	$ 179,449	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 29,719,237	$ 17,384,414	$ 17,158,987	$ 857,774	$ 758,374	$ 351,893	$ 326,893	$ 406,893	$ 312,503	$ 312,503
	Engineering, Design and Construction Plan	$ 891,577	$ 521,532	$ 514,770	$ 25,733	$ 22,751	$ 10,557	$ 9,807	$ 12,207	$ 9,375	$ 9,375
	Contingency	$ 4,755,078	$ 2,781,506	$ 2,745,438	$ 137,244	$ 121,340	$ 56,303	$ 52,303	$ 65,103	$ 50,000	$ 50,000
	Contractor OH and Profit	$ 4,457,886	$ 2,607,662	$ 2,573,848	$ 128,666	$ 113,756	$ 52,784	$ 49,034	$ 61,034	$ 46,875	$ 46,875
	Contract Administration	$ 1,569,176	$ 917,897	$ 905,994	$ 45,290	$ 40,042	$ 18,580	$ 17,260	$ 21,484	$ 16,500	$ 16,500
	Grand Total	$ 41,392,954	$ 24,213,011	$ 23,899,037	$ 1,194,707	$ 1,056,263	$ 490,117	$ 455,297	$ 566,721	$ 435,253	$ 435,253

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		11	12	13	14	15	16	17	18	19	20
1	Waste Rock Dumps	$ -									
2	Heap Leach Pad	$ -									
3	Solution Management	$ 355,175									
4	Pit	$ 25,000									
5	Yards	$ -									
6	Roads	$ -									
7	Borrow Area	$ -									
8	Tailings	$ -									
9	Buildings	$ -									
10	Other Demo	$ -									
11	Sediment and Drainage Control	$ -									
12	TSF Spillway	$ -									
13	Linear Structures	$ -									
14	Monitoring	$ 162,713									
15	Road Maintenance	$ -									
16	Well Abandonment	$ -									
17	Water Fees	$ -									
18	Long-term Maintenance and Repair	$ 17,155									
19	Mobilization-demobilization	$ -									
20	Active Reclamation	$ -									
21	Closure Monitoring	$ 57,950									
22	Solid Waste Disposal	$ -									
23	Reclamation Maintenance	$ -									
24	Tanks	$ -									
	Total Direct	$ 617,993									
	Engineering, Design and Construction Plan	$ 18,540									
	Contingency	$ 98,879									
	Contractor OH and Profit	$ 92,699									
	Contract Administration	$ 32,630									
	Grand Total	$ 860,741									

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		21	22	23	24	25	26	27	28	29	30
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		31	32	33	34	35	36	37	38	39	40
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										
	Total Direct										
	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		41	42	43	44	45	46	47	48	49	50
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		51	52	53	54	55	56	57	58	59	60
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		61	62	63	64	65	66	67	68	69	70
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		71	72	73	74	75	76	77	78	79	80
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		81	82	83	84	85	86	87	88	89	90
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										
	Total Direct										
	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

Phase I Costs (Undiscounted)

		Subtotal
1	Waste Rock Dumps	$ 8,349,884
2	Heap Leach Pad	$ 3,117,208
3	Solution Management	$ 11,314,900
4	Pit	$ 214,927
5	Yards	$ 990,576
6	Roads	$ 113,630
7	Borrow Area	$ 69,385
8	Tailings	$ 9,675,304
9	Buildings	$ 3,957,079
10	Other Demo	$ 596,045
11	Sediment and Drainage Control	$ 12,935,352
12	TSF Spillway	$ 2,917,129
13	Linear Structures	$ 5,814
14	Monitoring	$ 1,861,786
15	Road Maintenance	$ 215,784
16	Well Abandonment	$ 433,580
17	Water Fees	$ 1,650
18	Long-term Maintenance and Repair	$ 217,240
19	Mobilization-demobilization	$ 1,805,692
20	Active Reclamation	$ 6,544,241
21	Closure Monitoring	$ 463,600
22	Solid Waste Disposal	$ 764,870
23	Reclamation Maintenance	$ 999,060
24	Tanks	$ 642,724

	Total Direct	$ 68,207,462

	Engineering, Design and Construction Plan	$ 2,046,224
	Contingency	$ 10,913,194
	Contractor OH and Profit	$ 10,231,119
	Contract Administration	$ 3,601,353
	Grand Total	$ 94,999,352

Phase II Costs (Discounted)

Closure Cost Estimate
User 05 NPV Calcs

		1	2	3	4	5	6	7	8	9	10
1	Waste Rock Dumps										
2	Heap Leach Pad										
3	Solution Management										
4	Pit										
5	Yards										
6	Roads										
7	Borrow Area										
8	Tailings										
9	Buildings										
10	Other Demo										
11	Sediment and Drainage Control										
12	TSF Spillway										
13	Linear Structures										
14	Monitoring										
15	Road Maintenance										
16	Well Abandonment										
17	Water Fees										
18	Long-term Maintenance and Repair										
19	Mobilization-demobilization										
20	Active Reclamation										
21	Closure Monitoring										
22	Solid Waste Disposal										
23	Reclamation Maintenance										
24	Tanks										

	Total Direct										

	Engineering, Design and Construction Plan										
	Contingency										
	Contractor OH and Profit										
	Contract Administration										
	Grand Total										

Closure Cost Estimate
User 05 NPV Calcs

		11	12	13	14	15	16	17	18	19	20
1	Waste Rock Dumps		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management		$ 47,001	$ 45,063	$ 43,206	$ 41,424	$ 39,717	$ 38,079	$ 36,509	$ 35,004	$ 33,561
4	Pit		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures		$ -	$ -	$ -	$ 570,507	$ -	$ -	$ -	$ -	$ -
14	Monitoring		$ 109,056	$ 104,560	$ 100,249	$ 18,137	$ 17,389	$ 16,673	$ 15,985	$ 15,326	$ 14,694
15	Road Maintenance		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair		$ 10,796	$ 83,339	$ 9,924	$ 9,515	$ 9,123	$ 8,747	$ 47,493	$ 8,040	$ 7,709
19	Mobilization-demobilization		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring		$ 36,469	$ 34,966	$ 33,524	$ 32,142	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct		$ 203,322	$ 267,928	$ 186,903	$ 671,725	$ 66,229	$ 63,498	$ 99,988	$ 58,371	$ 55,964
	Engineering, Design and Construction Plan		$ 6,099	$ 8,038	$ 5,607	$ 20,152	$ 1,987	$ 1,905	$ 3,000	$ 1,751	$ 1,679
	Contingency		$ 32,532	$ 42,869	$ 29,904	$ 107,476	$ 10,597	$ 10,160	$ 15,998	$ 9,340	$ 8,954
	Contractor OH and Profit		$ 30,498	$ 40,189	$ 28,035	$ 100,759	$ 9,934	$ 9,525	$ 14,998	$ 8,756	$ 8,395
	Contract Administration		$ 10,736	$ 14,147	$ 9,869	$ 35,467	$ 3,497	$ 3,353	$ 5,279	$ 3,082	$ 2,955
	Grand Total		$ 283,187	$ 373,170	$ 260,318	$ 935,579	$ 92,244	$ 88,441	$ 139,263	$ 81,299	$ 77,947

Closure Cost Estimate
User 05 NPV Calcs

		21	22	23	24	25	26	27	28	29	30
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 153,023	$ 30,851	$ 29,579	$ 28,359	$ 27,190	$ 26,069	$ 24,994	$ 23,964	$ 22,976	$ 22,029
4	Pit	$ 10,771	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ 14,088	$ 13,508	$ 7,472	$ 7,164	$ 6,869	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 7,391	$ 7,086	$ 194,591	$ 6,514	$ 6,246	$ 5,988	$ 5,741	$ 48,273	$ 5,278	$ 5,060
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 185,273	$ 51,445	$ 231,642	$ 42,038	$ 40,304	$ 32,057	$ 30,736	$ 72,237	$ 28,254	$ 27,089
	Engineering, Design and Construction Plan	$ 5,558	$ 1,543	$ 6,949	$ 1,261	$ 1,209	$ 962	$ 922	$ 2,167	$ 848	$ 813
	Contingency	$ 29,644	$ 8,231	$ 37,063	$ 6,726	$ 6,449	$ 5,129	$ 4,918	$ 11,558	$ 4,520	$ 4,334
	Contractor OH and Profit	$ 27,791	$ 7,717	$ 34,746	$ 6,306	$ 6,046	$ 4,809	$ 4,610	$ 10,836	$ 4,238	$ 4,063
	Contract Administration	$ 9,783	$ 2,716	$ 12,231	$ 2,219	$ 2,128	$ 1,693	$ 1,623	$ 3,814	$ 1,492	$ 1,430
	Grand Total	$ 258,049	$ 71,652	$ 322,631	$ 58,550	$ 56,136	$ 44,649	$ 42,808	$ 100,612	$ 39,351	$ 37,729

Closure Cost Estimate
User 05 NPV Calcs

		31	32	33	34	35	36	37	38	39	40
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ 100,442	$ 20,250	$ 19,415	$ 18,615	$ 17,855	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 7,070	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ 147,136	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 4,851	$ 4,651	$ 35,906	$ 4,276	$ 4,099	$ 3,930	$ 3,768	$ 20,462	$ 3,464	$ 3,321
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 112,363	$ 24,901	$ 55,321	$ 22,890	$ 169,090	$ 3,930	$ 3,768	$ 20,462	$ 3,464	$ 3,321
	Engineering, Design and Construction Plan	$ 3,371	$ 747	$ 1,660	$ 687	$ 5,073	$ 118	$ 113	$ 614	$ 104	$ 100
	Contingency	$ 17,978	$ 3,984	$ 8,851	$ 3,662	$ 27,054	$ 629	$ 603	$ 3,274	$ 554	$ 531
	Contractor OH and Profit	$ 16,855	$ 3,735	$ 8,298	$ 3,434	$ 25,363	$ 590	$ 565	$ 3,069	$ 520	$ 498
	Contract Administration	$ 5,933	$ 1,315	$ 2,921	$ 1,209	$ 8,928	$ 208	$ 199	$ 1,080	$ 183	$ 175
	Grand Total	$ 156,499	$ 34,682	$ 77,050	$ 31,881	$ 235,509	$ 5,474	$ 5,249	$ 28,499	$ 4,825	$ 4,626

Closure Cost Estimate
User 05 NPV Calcs

		41	42	43	44	45	46	47	48	49	50
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 4,641	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 3,184	$ 3,053	$ 83,837	$ 2,807	$ 2,691	$ 2,580	$ 2,474	$ 13,431	$ 2,274	$ 2,180
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 7,825	$ 3,053	$ 83,837	$ 2,807	$ 2,691	$ 2,580	$ 2,474	$ 13,431	$ 2,274	$ 2,180
	Engineering, Design and Construction Plan	$ 235	$ 92	$ 2,515	$ 84	$ 81	$ 77	$ 74	$ 403	$ 68	$ 65
	Contingency	$ 1,252	$ 489	$ 13,414	$ 449	$ 431	$ 413	$ 396	$ 2,149	$ 364	$ 349
	Contractor OH and Profit	$ 1,174	$ 458	$ 12,576	$ 421	$ 404	$ 387	$ 371	$ 2,015	$ 341	$ 327
	Contract Administration	$ 413	$ 161	$ 4,427	$ 148	$ 142	$ 136	$ 131	$ 709	$ 120	$ 115
	Grand Total	$ 10,899	$ 4,252	$ 116,768	$ 3,909	$ 3,748	$ 3,593	$ 3,445	$ 18,707	$ 3,167	$ 3,036

Closure Cost Estimate
User 05 NPV Calcs

		51	52	53	54	55	56	57	58	59	60
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 3,046	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 2,090	$ 2,004	$ 217,320	$ 1,842	$ 1,766	$ 1,693	$ 1,624	$ 8,816	$ 1,492	$ 1,431
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 5,136	$ 2,004	$ 217,320	$ 1,842	$ 1,766	$ 1,693	$ 1,624	$ 8,816	$ 1,492	$ 1,431
	Engineering, Design and Construction Plan	$ 154	$ 60	$ 6,520	$ 55	$ 53	$ 51	$ 49	$ 265	$ 45	$ 43
	Contingency	$ 822	$ 321	$ 34,771	$ 295	$ 283	$ 271	$ 260	$ 1,411	$ 239	$ 229
	Contractor OH and Profit	$ 770	$ 301	$ 32,598	$ 276	$ 265	$ 254	$ 244	$ 1,322	$ 224	$ 215
	Contract Administration	$ 271	$ 106	$ 11,474	$ 97	$ 93	$ 89	$ 86	$ 465	$ 79	$ 76
	Grand Total	$ 7,154	$ 2,791	$ 302,683	$ 2,566	$ 2,460	$ 2,359	$ 2,261	$ 12,279	$ 2,079	$ 1,993

Closure Cost Estimate
User 05 NPV Calcs

		61	62	63	64	65	66	67	68	69	70
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ 1,999	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 1,372	$ 1,315	$ 36,120	$ 1,209	$ 1,159	$ 1,112	$ 1,066	$ 5,787	$ 980	$ 939
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 3,371	$ 1,315	$ 36,120	$ 1,209	$ 1,159	$ 1,112	$ 1,066	$ 5,787	$ 980	$ 939
	Engineering, Design and Construction Plan	$ 101	$ 39	$ 1,084	$ 36	$ 35	$ 33	$ 32	$ 174	$ 29	$ 28
	Contingency	$ 539	$ 210	$ 5,779	$ 193	$ 186	$ 178	$ 171	$ 926	$ 157	$ 150
	Contractor OH and Profit	$ 506	$ 197	$ 5,418	$ 181	$ 174	$ 167	$ 160	$ 868	$ 147	$ 141
	Contract Administration	$ 178	$ 69	$ 1,907	$ 64	$ 61	$ 59	$ 56	$ 306	$ 52	$ 50
	Grand Total	$ 4,696	$ 1,832	$ 50,308	$ 1,684	$ 1,615	$ 1,548	$ 1,484	$ 8,059	$ 1,364	$ 1,308

Closure Cost Estimate
User 05 NPV Calcs

		71	72	73	74	75	76	77	78	79	80
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 901	$ 863	$ 6,665	$ 794	$ 761	$ 730	$ 699	$ 5,882	$ 643	$ 616
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 901	$ 863	$ 6,665	$ 794	$ 761	$ 730	$ 699	$ 5,882	$ 643	$ 616
	Engineering, Design and Construction Plan	$ 27	$ 26	$ 200	$ 24	$ 23	$ 22	$ 21	$ 176	$ 19	$ 19
	Contingency	$ 144	$ 138	$ 1,066	$ 127	$ 122	$ 117	$ 112	$ 941	$ 103	$ 99
	Contractor OH and Profit	$ 135	$ 129	$ 1,000	$ 119	$ 114	$ 109	$ 105	$ 882	$ 96	$ 92
	Contract Administration	$ 48	$ 46	$ 352	$ 42	$ 40	$ 39	$ 37	$ 311	$ 34	$ 33
	Grand Total	$ 1,254	$ 1,203	$ 9,283	$ 1,105	$ 1,060	$ 1,016	$ 974	$ 8,192	$ 896	$ 859

Closure Cost Estimate
User 05 NPV Calcs

		81	82	83	84	85	86	87	88	89	90
1	Waste Rock Dumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Heap Leach Pad	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Solution Management	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Pit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Yards	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Roads	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Borrow Area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Tailings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Buildings	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Other Demo	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Sediment and Drainage Control	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	TSF Spillway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Linear Structures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Road Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Well Abandonment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Water Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Long-term Maintenance and Repair	$ 591	$ 567	$ 15,562	$ 521	$ 499	$ 479	$ 459	$ 2,493	$ 422	$ 741,092
19	Mobilization-demobilization	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Active Reclamation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Closure Monitoring	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Solid Waste Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Reclamation Maintenance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	Tanks	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Direct	$ 591	$ 567	$ 15,562	$ 521	$ 499	$ 479	$ 459	$ 2,493	$ 422	$ 741,092
	Engineering, Design and Construction Plan	$ 18	$ 17	$ 467	$ 16	$ 15	$ 14	$ 14	$ 75	$ 13	$ 22,233
	Contingency	$ 95	$ 91	$ 2,490	$ 83	$ 80	$ 77	$ 73	$ 399	$ 68	$ 118,575
	Contractor OH and Profit	$ 89	$ 85	$ 2,334	$ 78	$ 75	$ 72	$ 69	$ 374	$ 63	$ 111,164
	Contract Administration	$ 31	$ 30	$ 822	$ 28	$ 26	$ 25	$ 24	$ 132	$ 22	$ 39,130
	Grand Total	$ 823	$ 789	$ 21,675	$ 726	$ 696	$ 667	$ 639	$ 3,472	$ 588	$ 1,032,193

Closure Cost Estimate
User 05 NPV Calcs

		Subtotal	
1	Waste Rock Dumps	$	-
2	Heap Leach Pad	$	-
3	Solution Management	$	925,175
4	Pit	$	27,527
5	Yards	$	-
6	Roads	$	-
7	Borrow Area	$	-
8	Tailings	$	-
9	Buildings	$	-
10	Other Demo	$	-
11	Sediment and Drainage Control	$	-
12	TSF Spillway	$	-
13	Linear Structures	$	717,643
14	Monitoring	$	461,170
15	Road Maintenance	$	-
16	Well Abandonment	$	-
17	Water Fees	$	-
18	Long-term Maintenance and Repair	$	1,766,469
19	Mobilization-demobilization	$	-
20	Active Reclamation	$	-
21	Closure Monitoring	$	137,101
22	Solid Waste Disposal	$	-
23	Reclamation Maintenance	$	-
24	Tanks	$	-

	Total Direct	$	4,035,086

	Engineering, Design and Construction Plan	$	121,056
	Contingency	$	645,619
	Contractor OH and Profit	$	605,264
	Contract Administration	$	213,057
	Grand Total	$	5,620,066

Closure Cost Estimate
User 05 NPV Calcs

Table 8-1: **Reclamation and Closure Cost Estimate**

		Phase I Costs (undiscounted)	Phase II Costs (discounted)	Total
1	Waste Rock Dumps	$8,349,884	$0	$8,349,884
2	Heap Leach Pad	$3,117,208	$0	$3,117,208
3	Solution Management	$11,314,900	$925,175	$12,240,075
4	Pit	$214,927	$27,527	$242,454
5	Yards	$990,576	$0	$990,576
6	Roads	$113,630	$0	$113,630
7	Borrow Area	$69,385	$0	$69,385
8	Tailings	$9,675,304	$0	$9,675,304
9	Buildings	$3,957,079	$0	$3,957,079
10	Other Demo	$596,045	$0	$596,045
11	Sediment and Drainage Control	$12,935,352	$0	$12,935,352
12	TSF Spillway	$2,917,129	$0	$2,917,129
13	Linear Structures	$5,814	$717,643	$723,457
14	Monitoring	$1,861,786	$461,170	$2,322,956
15	Road Maintenance	$215,784	$0	$215,784
16	Well Abandonment	$433,580	$0	$433,580
17	Water Fees	$1,650	$0	$1,650
18	Long-term Maintenance and Repair	$217,240	$1,766,469	$1,983,709
19	Mobilization-demobilization	$1,805,692	$0	$1,805,692
20	Active Reclamation	$6,544,241	$0	$6,544,241
21	Closure Monitoring	$463,600	$137,101	$600,701
22	Solid Waste Disposal	$764,870	$0	$764,870
23	Reclamation Maintenance	$999,060	$0	$999,060
24	Tanks	$642,724	$0	$642,724

	Total Direct	$68,207,462	$4,035,086	$72,242,548

	Engineering, Design and Construction Plan	$2,046,224	$121,056	$2,167,280
	Contingency	$10,913,194	$645,619	$11,558,813
	Contractor OH and Profit	$10,231,119	$605,264	$10,836,383
	Contract Administration	$3,601,353	$213,057	$3,814,410
	Grand Total	$94,999,352	$5,620,066	$100,619,418

Closure Cost Estimate
User 06 Soln. mgmt

Rec Plan Table 6-2 Pit Lake Transfer Summary - Premature Closure

	Years	TSF Decant Pond Transfers (ac-ft)	Interception System Pumping (ac-ft)	Heap Leach Facility Transfers (ac-ft)
TSF to Pit	2020	5,872		
HLP Draindown	2020			2,929
TSF seepage to Pit	2020-2054		8,079	
subtotal:		**5,872**	**8,079**	**2,929**

Broken out by year:	**Years**	**TSF Decant Pond Transfers (ac-ft)**	**Interception System Pumping (ac-ft)**	**Heap Leach Facility Transfers (ac-ft)**	**Transfer volumes in gallons**	**# years**	**Period**	**Average Pumping rate through period (gpm)**	**Average hours/day pumping**	**Days per year pumping**	**# months**	**Pumping rate during shifts (gpm)**	**Pipeline length (ft)**	**Static Head (ft)**
TSF North Pond to South Pon	2020	1,468			478,349,268	0.75	Closure	1,213	24	365	9	1,213	2114	30
TSF South Pond to Pit	2020	4,404			1,435,047,804	0.75	Closure	3,640	24	365	9	3,640	5114	343
HLP Draindown - Walter Cree	2020			1,101	358,803,601	1	Closure	683	24	365	12	683	3299	88
HLP Draindown - Barnes Cree	2020			1,828	595,613,978	1	Closure	1,133	24	365	12	1,133	10151	64
TSF seepage to Pit	2020-2022		693		225,651,818	3	Closure	143	24	365	36	143	10095	691
TSF seepage to Pit	2023-2054		7,387		2,406,898,412	32	Post-Closure	143	24	365	384	143	10095	691
Subtotal:		**5,872**	**8,079**	**2,929**										

NB: HLP draindown split at ratio of 1:1.66 per HLG (2019) (Final_FtKnoxPitLake2019Update (HGL_7May2019).pdf)

Walter HLP to Pit
Source: Solution_Pumping_PMC_SRCE_20190820_ft.xlsx

	Measured	**Input**	**Remarks**
Length	32+99.20	3299	
Beginning elevation	1553.98		
Lowest elevation	802.53		
Highest elevation	1642.07		
Diff elevation	88.09	88	

Barnes Cr HLP to Pit
Source: Solution_Pumping_PMC_SRCE_20190820_ft.xlsx

	Measured	**Input**	**Remarks**
Length	101+50.86	10151	
Beginning elevat	1566.04		
Lowest elevation	850		
Highest elevatior	1630		
Diff elevation	63.96	64	

N Pond to S Pond
Source: Solution_Pumping_PMC_SRCE_20190820_ft.xlsx

	Measured	**Input**	**Remarks**
Length	21+14.26	2114	
Beginning (	1540		
Lowest ele	1536.13		
Highest ele	1558.46		
Diff elevati	18.46	30	Assume from bottom of north pond to south pond.

S Pond to Pit
Source: Solution_Pumping_PMC_SRCE_20190820_ft.xlsx

	Measured	**Input**	**Remarks**
Length	51+14.16	5114	
Beginning (	1531.54		
Lowest ele	1530.91		
Highest ele	1875		
Diff elevati	343.46	343	

TSF Seepage to Pit
Source: Solution_Pumping_PMC_SRCE_201

	Measured	**Input**	**Remarks**
Length	100+95.27	10095	
Beginning (	1170		
Lowest ele	1170		
Highest ele	1860.78		
Diff elevati	690.78	691	

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596): 1.26

2009 costs

Year	1	2	3	4	5	6	7	8	9	10	11	12	13
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair													
Replace Armor Stone													
Dam Crest Repair													
Seal Cracks													
Refurbish Surface Spalling													
Accelerated Spillway Erosion													
Spillway/Earth Repair										$ 14,160			
Joints Repair													
Channel Rip Rap													
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168
Principal													
2009 Total	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 43,253	$ 17,579	$ 44,307	$ 17,579

2019 costs

Year	1	2	3	4	5	6	7	8	9	10	11	12	13
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair													
Replace Armor Stone													
Dam Crest Repair													
Seal Cracks													
Refurbish Surface Spalling													
Accelerated Spillway Erosion													
Spillway/Earth Repair										$ 17,842			
Joints Repair													
Channel Rip Rap													
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report					$ 45,000					$ 45,000			
subtotal	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**
Principal													
2019 Total	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair												$ 16,078		
Replace Armor Stone														
Dam Crest Repair												$ 5,140		
Seal Cracks							$ 34,790							
Refurbish Surface Spalling							$ 36,113							
Accelerated Spillway Erosion												$ 9,666		
Spillway/Earth Repair							$ 14,160							
Joints Repair							$ 7,350							
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896
Principal														
2009 Total	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 121,506	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 48,463	$ 17,579	$ 44,307

2019 costs

Year	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair												$ 20,258		
Replace Armor Stone														
Dam Crest Repair												$ 6,476		
Seal Cracks							$ 43,835							
Refurbish Surface Spalling							$ 45,502							
Accelerated Spillway Erosion												$ 12,180		
Spillway/Earth Repair							$ 17,842							
Joints Repair							$ 9,261							
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report		$ 45,000					$ 45,000					$ 45,000		
subtotal	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 99,680**	**$ 15,766**	**$ 15,766**
Principal														
2019 Total	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 99,680**	**$ 15,766**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks													$ 34,790	
Refurbish Surface Spalling													$ 36,113	
Accelerated Spillway Erosion														
Spillway/Earth Repair			$ 14,160										$ 14,160	
Joints Repair													$ 7,350	
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168
Principal														
2009 Total	$ 17,579	$ 17,579	$ 69,981	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 121,506	$ 17,579

2019 costs

Year	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks													$ 43,835	
Refurbish Surface Spalling													$ 45,502	
Accelerated Spillway Erosion														
Spillway/Earth Repair			$ 17,842										$ 17,842	
Joints Repair													$ 9,261	
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report			$ 45,000					$ 45,000					$ 45,000	
subtotal	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**
Principal														
2019 Total	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	42	43	44	45	46	47	48	49	50	51	52	53	54	55
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair									$ 16,078					
Replace Armor Stone									$ 1,034,682					
Dam Crest Repair									$ 5,140					
Seal Cracks														
Refurbish Surface Spalling														
Accelerated Spillway Erosion									$ 9,666					
Spillway/Earth Repair									$ 14,160					
Joints Repair														
Channel Rip Rap									$ 218,589					
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168
Principal														
2009 Total	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 1,327,409	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579

2019 costs

Year	42	43	44	45	46	47	48	49	50	51	52	53	54	55
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair									$ 20,258					
Replace Armor Stone									$ 1,303,699					
Dam Crest Repair									$ 6,476					
Seal Cracks														
Refurbish Surface Spalling														
Accelerated Spillway Erosion									$ 12,180					
Spillway/Earth Repair									$ 17,842					
Joints Repair														
Channel Rip Rap									$ 275,423					
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report				$ 45,000					$ 45,000					$ 45,000
subtotal	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 1,696,644**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**
Principal														
2019 Total	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 1,696,644**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	56	57	58	59	60	61	62	63	64	65	66	67	68	69
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks					$ 34,790									
Refurbish Surface Spalling					$ 36,113									
Accelerated Spillway Erosion														
Spillway/Earth Repair					$ 14,160									
Joints Repair					$ 7,350									
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896
Principal														
2009 Total	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 148,234	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307

2019 costs

Year	56	57	58	59	60	61	62	63	64	65	66	67	68	69
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks					$ 43,835									
Refurbish Surface Spalling					$ 45,502									
Accelerated Spillway Erosion														
Spillway/Earth Repair					$ 17,842									
Joints Repair					$ 9,261									
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report					$ 45,000					$ 45,000				
subtotal	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**
Principal														
2019 Total	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	70	71	72	73	74	75	76	77	78	79	80	81	82	83
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair						$ 16,078								
Replace Armor Stone														
Dam Crest Repair						$ 5,140								
Seal Cracks											$ 34,790			
Refurbish Surface Spalling											$ 36,113			
Accelerated Spillway Erosion						$ 9,666								
Spillway/Earth Repair	$ 14,160										$ 14,160			
Joints Repair											$ 7,350			
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168
Principal														
2009 Total	$ 43,253	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 75,191	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 121,506	$ 44,307	$ 17,579	$ 17,579

2019 costs

Year	70	71	72	73	74	75	76	77	78	79	80	81	82	83
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair						$ 20,258								
Replace Armor Stone														
Dam Crest Repair						$ 6,476								
Seal Cracks											$ 43,835			
Refurbish Surface Spalling											$ 45,502			
Accelerated Spillway Erosion						$ 12,180								
Spillway/Earth Repair	$ 17,842										$ 17,842			
Joints Repair											$ 9,261			
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report	$ 45,000					$ 45,000					$ 45,000			
subtotal	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 99,680**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**
Principal														
2019 Total	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 99,680**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 177,206**	**$ 15,766**	**$ 15,766**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	84	85	86	87	88	89	90	91	92	93	94	95	96	97
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411	$ 11,411
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks														
Refurbish Surface Spalling														
Accelerated Spillway Erosion														
Spillway/Earth Repair							$ 14,160							
Joints Repair														
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
Dam Safety Inspections and Report	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168	$ 6,168	$ 32,896	$ 6,168
Principal														
2009 Total	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 69,981	$ 17,579	$ 17,579	$ 44,307	$ 17,579	$ 17,579	$ 44,307	$ 17,579

2019 costs

Year	84	85	86	87	88	89	90	91	92	93	94	95	96	97
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378	$ 14,378
Rill Erosion Repair														
Replace Armor Stone														
Dam Crest Repair														
Seal Cracks														
Refurbish Surface Spalling														
Accelerated Spillway Erosion														
Spillway/Earth Repair							$ 17,842							
Joints Repair														
Channel Rip Rap														
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
5-Year Dam Safety Inspections and Report		$ 45,000					$ 45,000					$ 45,000		
subtotal	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**
Principal														
2019 Total	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 78,608**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 15,766**	**$ 60,766**	**$ 15,766**	**$ 15,766**

Closure Cost Estimate
User 07 TSF Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	98	99	100	subtotal
Erosion Repair	$ 11,411	$ 11,411	$ 11,411	$ 1,141,100
Rill Erosion Repair			$ 16,078	$ 64,312
Replace Armor Stone			$ 1,034,682	$ 2,069,364
Dam Crest Repair			$ 5,140	$ 20,560
Seal Cracks			$ 34,790	$ 173,950
Refurbish Surface Spalling			$ 36,113	$ 180,564
Accelerated Spillway Erosion			$ 9,666	$ 38,666
Spillway/Earth Repair			$ 14,160	$ 141,600
Joints Repair			$ 7,350	$ 36,750
Channel Rip Rap			$ 218,589	$ 437,179
Spur Road Annual Maintenance	$ 1,102	$ 1,102	$ 1,102	$ 110,188
Dam Safety Inspections and Report	$ 6,168	$ 32,896	$ 6,168	$ 1,498,824
Principal			$ 1,037,507	$ 1,037,507
2009 Total	$ 17,579	$ 44,307	$ 5,067,279	$ 9,579,626

2019 costs

Year	98	99	100	subtotal	
Erosion Repair	$ 14,378	$ 14,378	$ 14,378	$ 1,437,800	<--Other User
Rill Erosion Repair			$ 20,258	$ 81,032	<--Other User
Replace Armor Stone			$ 1,303,699	$ 2,607,398	<--Other User
Dam Crest Repair			$ 6,476	$ 25,904	<--Other User
Seal Cracks			$ 43,835	$ 219,175	<--Other User
Refurbish Surface Spalling			$ 45,502	$ 227,510	<--Other User
Accelerated Spillway Erosion			$ 12,180	$ 48,720	<--Other User
Spillway/Earth Repair			$ 17,842	$ 178,420	<--Other User
Joints Repair			$ 9,261	$ 46,305	<--Other User
Channel Rip Rap			$ 275,423	$ 550,846	<--Other User
Spur Road Annual Maintenance	$ 1,388	$ 1,388	$ 1,388	$ 138,800	<--Other User
5-Year Dam Safety Inspections and Report			$ 45,000	$ 900,000	<--Other User
subtotal	**$ 15,766**	**$ 15,766**	**$ 1,795,242**	**$ 6,461,910**	**<--"principal" in next row**
Principal			$ 6,461,910	$ 6,461,910	**<--the "principal" is the sum of the above costs; Other User**
2019 Total	**$ 15,766**	**$ 15,766**	**$ 8,257,152**	**$ 12,923,820**	

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):	1.26

2009 costs

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clean Spillway															
Clearing Woody Growth										$ 3,960					
Erosion Repair															
Accelerated Erosion															
Seal Cracks															
Refurbish Surface Spalling															
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair										$ 14,392					
Joints Repair															
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 34,800	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448

2019 costs

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clean Spillway															
Clearing Woody Growth										$ 4,990					
Erosion Repair															
Accelerated Erosion															
Seal Cracks															
Refurbish Surface Spalling															
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair										$ 18,134					
Joints Repair															
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Clean Spillway					$ 5,400										
Clearing Woody Growth					$ 3,960										$ 3,960
Erosion Repair					$ 2,383										
Accelerated Erosion										$ 6,476					
Seal Cracks					$ 90,670										
Refurbish Surface Spalling					$ 90,670										
Ice Damage Repair										$ 3,392					
Replace Armor Rock															
Dam Crest Repair										$ 1,542					
Spillway Replace															
Spillway/earth Repair					$ 14,392										$ 14,392
Joints Repair					$ 12,953										
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 236,876	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 27,858	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 34,800

2019 costs

Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Clean Spillway					$ 6,804										
Clearing Woody Growth					$ 4,990										$ 4,990
Erosion Repair					$ 3,003										
Accelerated Erosion										$ 8,160					
Seal Cracks					$ 114,244										
Refurbish Surface Spalling					$ 114,244										
Ice Damage Repair										$ 4,274					
Replace Armor Rock															
Dam Crest Repair										$ 1,943					
Spillway Replace															
Spillway/earth Repair					$ 18,134										$ 18,134
Joints Repair					$ 16,321										
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 50,766**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 50,766**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Clean Spillway										$ 5,400					
Clearing Woody Growth										$ 3,960					
Erosion Repair										$ 2,383					
Accelerated Erosion															
Seal Cracks										$ 90,670					
Refurbish Surface Spalling										$ 90,670					
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair										$ 14,392					
Joints Repair										$ 12,953					
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 236,876	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448

2019 costs

Year	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Clean Spillway										$ 6,804					
Clearing Woody Growth										$ 4,990					
Erosion Repair										$ 3,003					
Accelerated Erosion															
Seal Cracks										$ 114,244					
Refurbish Surface Spalling										$ 114,244					
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair										$ 18,134					
Joints Repair										$ 16,321					
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):	

2009 costs

Year	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Clean Spillway															$ 5,400
Clearing Woody Growth															$ 3,960
Erosion Repair															$ 2,383
Accelerated Erosion					$ 6,476										
Seal Cracks															$ 90,670
Refurbish Surface Spalling															$ 90,670
Ice Damage Repair					$ 3,392										
Replace Armor Rock					$ 18,807										
Dam Crest Repair					$ 1,542										
Spillway Replace															
Spillway/earth Repair					$ 14,392										$ 14,392
Joints Repair															$ 12,953
Tailwater Riprap					$ 119,942										
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 180,999	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 236,876

2019 costs

Year	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Clean Spillway															$ 6,804
Clearing Woody Growth															$ 4,990
Erosion Repair															$ 3,003
Accelerated Erosion					$ 8,160										
Seal Cracks															$ 114,244
Refurbish Surface Spalling															$ 114,244
Ice Damage Repair					$ 4,274										
Replace Armor Rock					$ 23,697										
Dam Crest Repair					$ 1,943										
Spillway Replace															
Spillway/earth Repair					$ 18,134										$ 18,134
Joints Repair															$ 16,321
Tailwater Riprap					$ 151,127										
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 243,724**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 243,724**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Clean Spillway															
Clearing Woody Growth										$ 3,960					
Erosion Repair															
Accelerated Erosion															$ 6,476
Seal Cracks															
Refurbish Surface Spalling															
Ice Damage Repair															$ 3,392
Replace Armor Rock															
Dam Crest Repair															$ 1,542
Spillway Replace															
Spillway/earth Repair										$ 14,392					
Joints Repair															
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 34,800	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 27,858

2019 costs

Year	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Clean Spillway															
Clearing Woody Growth										$ 4,990					
Erosion Repair															
Accelerated Erosion															$ 8,160
Seal Cracks															
Refurbish Surface Spalling															
Ice Damage Repair															$ 4,274
Replace Armor Rock															
Dam Crest Repair															$ 1,943
Spillway Replace															
Spillway/earth Repair										$ 18,134					
Joints Repair															
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 50,766**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 50,766**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Clean Spillway					$ 5,400										
Clearing Woody Growth					$ 3,960										$ 3,960
Erosion Repair					$ 2,383										
Accelerated Erosion															
Seal Cracks					$ 90,670										
Refurbish Surface Spalling					$ 90,670										
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair					$ 14,392										$ 14,392
Joints Repair					$ 12,953										
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448
Principal															
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 236,876	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 34,800

2019 costs

Year	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Clean Spillway					$ 6,804										
Clearing Woody Growth					$ 4,990										$ 4,990
Erosion Repair					$ 3,003										
Accelerated Erosion															
Seal Cracks					$ 114,244										
Refurbish Surface Spalling					$ 114,244										
Ice Damage Repair															
Replace Armor Rock															
Dam Crest Repair															
Spillway Replace															
Spillway/earth Repair					$ 18,134										$ 18,134
Joints Repair					$ 16,321										
Tailwater Riprap															
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389
5-year Inspection					$ 35,000					$ 35,000					$ 35,000
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**
Principal															
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 314,129**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 59,513**

Closure Cost Estimate
User 08 WSR Maint Repair

Coefficient to adjust 2009 costs to 2019 (RSMeans 2019, p. 596):

2009 costs

Year	91	92	93	94	95	96	97	98	99	100	subtotal
Clean Spillway										$ 5,400	$ 27,000
Clearing Woody Growth										$ 3,960	$ 35,640
Erosion Repair										$ 2,383	$ 11,915
Accelerated Erosion										$ 6,476	$ 25,904
Seal Cracks										$ 90,670	$ 453,350
Refurbish Surface Spalling										$ 90,670	$ 453,350
Ice Damage Repair										$ 3,392	$ 13,568
Replace Armor Rock										$ 18,807	$ 37,614
Dam Crest Repair										$ 1,542	$ 6,168
Spillway Replace										$ 6,576,116	$ 6,576,116
Spillway/earth Repair										$ 14,000	$ 143,528
Joints Repair										$ 12,953	$ 64,765
Tailwater Riprap										$ 119,942	$ 239,884
Spur Road Annual Maintenance2013 costs	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 1,102	$ 110,200
5-year Inspection	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 657,920
Principal										$ 518,825	$ 518,825
2009 Total	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 16,448	$ 4,112	$ 4,112	$ 4,112	$ 4,112	$ 7,481,584	$ 9,265,547

2019 costs

Year	91	92	93	94	95	96	97	98	99	100	subtotal	
Clean Spillway										$ 6,804	$ 34,020	<--Other User
Clearing Woody Growth										$ 4,990	$ 44,910	<--Other User
Erosion Repair										$ 3,003	$ 15,015	<--Other User
Accelerated Erosion										$ 8,160	$ 32,640	<--Other User
Seal Cracks										$ 114,244	$ 571,220	<--Other User
Refurbish Surface Spalling										$ 114,244	$ 571,220	<--Other User
Ice Damage Repair										$ 4,274	$ 17,096	<--Other User
Replace Armor Rock										$ 23,697	$ 47,394	<--Other User
Dam Crest Repair										$ 1,943	$ 7,772	<--Other User
Spillway Replace										$ 8,285,906	$ 8,285,906	<--Other User
Spillway/earth Repair										$ 17,640	$ 180,846	<--Other User
Joints Repair										$ 16,321	$ 81,605	<--Other User
Tailwater Riprap										$ 151,127	$ 302,254	<--Other User
Spur Road Annual Maintenance2013 costs	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 1,389	$ 138,900	<--Other User
5-year Inspection					$ 35,000					$ 35,000	$ 700,000	<--Other User
subtotal	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 8,788,742**	**$ 11,030,798**	**<--"principal" in ne**
Principal										$ 11,030,798	$ 11,030,798	**<--the "principal" is**
2019 Total	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 36,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 1,389**	**$ 19,819,540**	**$ 22,061,596**	

Closure Cost Estimate
User 09 Pit signs

Initial Funding

Crew: B-80	#	Hourly labor rate ($)	Hourly equipment rate ($)	Hourly labor cost ($)	Hourly equipment cost ($)	subtotal ($)
Foreman	1	115.21		115.21	0	115.21
Laborer	1	58.42		58.42	0	58.42
Truck	1		12.76	0	12.76	12.76
Truck driver	1	62.90		62.9	0	62.9
Flatbed truck, gas, 3 ton*	1		30.74	0	30.74	30.74
Earth auger, truck-mounted	1		48.23	0	48.23	48.23
* RSMeans 2019, p. 580				236.53	91.73	328.26

Signage:	Crew	Daily Output	Labor-hours	Material	Labor	Equipment
RSMeans 10 14 53.20 0400 - high intensity	B-80	70	0.457	183	108.09	41.92
RSMeans 10 14 53.20 1500 - posts	B-80	200	0.16	38	37.84	14.68
				221	**145.93**	**56.6**

Signs will be installed at __ ft intervals	500	
Pit rim length =	39828	ft
# of signs	80	

	#	Material	Labor	Equipment	total	
Sign installation around pit rim:	80	221	145.93	56.6	33,882	**<--Other User**

Closure Cost Estimate
User 10 Dam Security Gate

RS Means Crew B80
Cantilever type Gate
Assume reuse and relocate existing gates
Assume 1 gate will take 1 10 hr day to install

Crew: B-80	#	Hourly labor rate ($)	Hourly equipment rate ($)	Hourly labor cost ($)	Hourly equipment cost ($)	subtotal ($)
Foreman	1	115.21	0	115.21	0	115.21
Laborer	1	58.42	0	58.42	0	58.42
Truck	1	0	12.76	0	12.76	12.76
Truck driver	1	62.90	0	62.9	0	62.9
Flatbed truck, gas, 3 ton*	1	0	30.74	0	30.74	30.74
Earth auger, truck-mounted	1	0	48.23	0	48.23	48.23
* RSMeans 2019, p. 580				236.53	91.73	328.26

# gates	2
hours/gate	10
Time	20

	hours	Labor	Equipment	total	
Sign installation a	20	236.53	91.73	6,565.20	**<--Other User**

Closure Cost Estimate
User 11 Labor subtotal

Sheet	Activity	Labor subtotal
Waste Rock Dumps	Regrading	$ 879,040
	Cover 1 Placement	$ -
	Cover 2 Placement	$ -
	Growth Media Placement	$ 586,975
	Ripping/Scarifying	$ 44,544
	Revegetation	$ -
Tailings	Embankment Regrading	$ 4,224
	Surface Regrading	$ -
	Cover 1 Placement	$ 1,025,757
	Cover 2 Placement	$ -
	Growth Media Placement	$ 569,865
	Ripping/Scarifying	$ -
	Revegetation	$ -
Heap Leach	Drainage Installation	$ -
	Regrading	$ 57,728
	Cover 1 Placement	$ -
	Cover 2 Placement	$ -
	Growth Media Placement	$ 446,380
	Ripping/Scarifying	$ 30,912
	Revegetation	$ -
Quarries & Borrow Pits	Regrading	$ -
	Cover 1 Placement	$ -
	Cover 2 Placement	$ -
	Growth Media Placement	$ -
	Ripping/Scarifying	$ -
	Revegetation	$ -
	Berm Construction	$ -
	Berm Revegetation	$ -
Roads	Regrading	$ 10,880
	Growth Media Placement	$ -
	Ripping/Scarifying	$ 5,184
	Revegetation	$ -
Process Ponds	Liner Cutting and Folding	$ -
	Backfill/Cover 1 Placement	$ -
	Backfill/Cover 2 Placement	$ -
	Growth Media Placement	$ -
	Revegetation	$ -
	E-Cell/ET-Cell Liner	$ -
	E-Cell/ET-Cell Piping	$ -
Yards	Regrading	$ -
	Cover 1 Placement	$ 76,414
	Cover 2 Placement	$ -
	Growth Media Placement	$ 64,450
	Ripping/Scarifying	$ 31,296
	Revegetation	$ -
Haul Material	Crush/Screen	
	Haul Material	$ 185,302
	Compact Material	$ 5,104
	Cover Placement	$ -
	Growth Media Placement	$ -

Closure Cost Estimate
User 11 Labor subtotal

	Ripping/Scarifying	$	-
	Revegetation	$	-
Buildings and Foundations	Building Demolition	$	2,841,683
	Wall Demolition	$	190,487
	Slab Demolition	$	26,643
	Cover Placement	$	12,907
	Growth Media Placement	$	-
	Ripping/Scarifying	$	2,752
	Revegetation	$	-
Other Demo	Other Demolition	$	-
	Equipment & Material Removal	$	422,992
Diversion Ditches	Backfilling/Regrading	$	37,390
	Liner Installation	$	-
	Rip-Rap Installation	$	7,738,800
	Revegetation	$	-
Sediment Ponds	Backfilling/Regrading	$	192
	Liner Installation	$	-
	Growth Media Placement	$	10,589
	Ripping/Scarifying	$	704
	Revegetation	$	-
Monitoring Wells	Production, Dewatering, Infiltration Wells	$	-
	Monitoring Wells	$	-
Solution Management	Pumping	$	2,429,524
	Forced Evaporation	$	-
	Water Treatment	$	-
	Decontamination	$	-
Waste Management	Solid Waste	$	699
	Hazardous Waste		
	Hydrocarbon-Contaminated Soils	$	35,146
Other User Costs	Labor subtotal	$	1,508,213
Misc. Costs	Fence Removal	$	-
	Fence Installation	$	-
	Culvert & Buried Pipe Removal	$	4,403
	Surface Pipe Removal	$	986,222
	Power Line and Substation Removal	$	113,144
	Rip-Rap & Rock Lining	$	-
Monitoring	Reclamation Monitoring	$	68,112
	Water/Rock Sample Analysis - Labor	$	-
	Water/Rock Sample Analysis - Reporting	$	-
Reclamation Maintenance	Revegetation Maintenance	$	-
	Cover Maintenance	$	73,295
	Growth Media Maintenance	$	154,785
Construction Management	Construction Management	$	-
	Road Maintenance	$	62,448
	Total Labor Costs	$	20,745,185
	Total Direct Costs	$	111,085,415
	Labor as percent of direct		19%

Closure Cost Estimate
User 12 Indirects

Engineering, Design and Co	3%	
Contingency	16%	
Insurance	0.28%	(1.5% of 19% share of labor costs in total direct costs per User 11)
Performance Bond	3%	
Contractor Profit	10%	
Contractor overhead	5%	
Contract Administration	2%	
	39%	

Engineering, Design and Co	3%	**<--FA schedule sheet**
Contingency (%)	16%	**<--FA schedule sheet**
Contractor OH and Profit (%	15%	**<--FA schedule sheet**
Contract Administration (%)	5.28%	**<--FA schedule sheet**

Closure Cost Estimate
User 13 Haul Distances

Rock Haulage to TSF
From rec plan:
Reclamation of upland areas will utilize the general reclamation techniques described in Section 5, with the addition of an average of 2 ft of waste rock overlaying the tailings with exception to the Pearl Creek Causeway.
The Pearl Creek Causeway will be ripped prior to growth media placement. Growth media will be placed over the top of the waste rock cover (including Pearl Creek Causeway) to encourage vegetative growth.

TSF rock requirement (CY):	2,991,216	
Distance from Yellow Pup t	6630	<--to "Tailings" sheet
Grade:	0.95	<--to "Tailings" sheet

Growth Media Haulage

Facility	GM requirement	Barnes Creek Growth Media 1	Barnes Creek Growth Media 2	Barnes Creek Growth Media 3	Barnes Creek Growth Media 4	Heap Leach Growth Media 2	Heap Leach Growth Media 1	Yellow Pup Growth Media 3	Yellow Pup Growth Media 2	Yellow Pup Growth Media 1	TSF North Borrow
		377,600	240,300	200,300	14,170	782,400	1,625,000	37,900	13,100	844,500	3,186,400
Barnes Creek WRF	636,751	377,600	240,300	18,851							
Barnes Creek HLP	476,320			181,449			294,871				
Walter Creek HLP	726,437					726,437					
Yellow Pup WRF	787,093							37,900	13,100	736,093	
Fish Creek WRF	311,679						203,272			108,407	
Laydown Yard					14,170						
Mill and Admin Area											
Mill Stockpile Area	0										-
Contractor Laydown Area	0										-
Fish Creek Area Regrade											
TSF	1,565,081						1,126,857				438,224
	surplus	-	-	-	-	55,963	-	-	-	-	2,748,176

From	To:	Barnes Creek Growth Media 1	Barnes Creek Growth Media 2	Barnes Creek Growth Media 3	Barnes Creek Growth Media 4	Heap Leach Growth Media 2	Heap Leach Growth Media 1	Yellow Pup Growth Media 3	Yellow Pup Growth Media 2	Yellow Pup Growth Media 1	TSF North Borrow	
Barnes Creek WRF	Distance	6201	3919									<-- to Waste Rock Dumps
	Grade	-2.4	-4.77									
Barnes Creek HLP	Distance			8786			12100					<-- to Heap Leach Pad
	Grade			3.36			2.97					
Walter Creek HLP	Distance					4305						<-- to Heap Leach Pad
	Grade					-3.14						
Yellow Pup WRF	Distance							4663	2767	7420		<-- to Waste Rock Dumps
	Grade							-6.76	0.11	0.57		
Fish Creek WRF	Distance						11182			4422		<-- to Waste Rock Dumps
	Grade						1.18			5.02		
Laydown Yard	Distance					8758						<-- to Yards
	Grade					4.36						
Mill and Admin Area	Distance										7471	<-- to Yards
	Grade										0.39	
Mill Stockpile Area	Distance										7726	<-- to Yards
	Grade										0.91	
Contractor Laydown Area	Distance										12614	<-- to Yards
	Grade										-4.5	
Fish Creek Area Regrade	Distance										9571	<-- to Yards
	Grade										1.51	
TSF	Distance						7626				6587	<-- to Tailings
	Grade						2.61				-3.26	

Closure Cost Estimate
User 14 Riprap sourcing

This sheet complements the TSF spillway construction costs as provided in "Sediment & Drainage Control."

Blasting

RSMeans Activity 31 23 16.30 0100
Crew B-47

	#	Labor hourly rate ($/hr)	Equipment hourly rate ($/hr)	Labor hourly cost ($/hr)	Equipment hourly cost ($/hr)	subtotal
Blast foreman	1	115.21		115.21	0	115.21
Driller	1	64.00		64	0	64
Equipment operator (light)	1	64.00		64	0	64
Air track drill, 4" (RSMeans	1		158.34	0	158.34	158.34
Air compressor, 600 cfm (R	1		65.86	0	65.86	65.86
50' air hoses, 3" (RSMeans	2		8.12	0	16.24	16.24
				243.21	**240.44**	**483.65**

Daily output (CY): 300
Hourly output (CY): 37.5

Material cost per CY (RSMe 5.37 **<--Other User**
Labor cost per CY: 6.49 **<--Other User**
Equipment cost per CY: 6.41 **<--Other User**

Closure Cost Estimate
User 15 Solid waste quantity

Solid Waste

Per the EPA,

Pounds waste per person per day	**4.4**

Source:
https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/

Density of municipal waste per EPA (Commercial):	lbs/CY
Commercial - dry waste (lower end)	56
Commercial - dry waste (higher end)	73
Average:	**64.5**

Source:
https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf

Total equipment operator hours (per Equipment Use sheet):	51,422
Hours per day:	8
Total equipment operator days:	6,428

Total pounds waste (equipment operator days times pounds waste per person per day):	**28,283**

Total volume waste (pounds waste divided by average uncompacted waste density) (CY):	**438**	**<--'Waste Disposal' sh 'Solid Waste' table, ite 1**

The above estimate assumes an operator disposes of all waste generated during their day on site, not adjusting for hours off site

Closure Cost Estimate
User 17 Causeway breach

Fleet:

Excavator selected:	390F
Productivity of excavator (L(	935

Number of excavators:	2

Dozer selected:	D7E
Number of dozers:	1

excavator labor rate ($/hr):	65.94
excavator equipment rate ($	205.98
excavator hourly labor cost	131.88
excavator hourly equipment	411.96

dozer labor rate ($/hr):	64
dozer equipment rate ($/hr):	111.49
dozer hourly labor cost ($/hr	64
dozer hourly equipment cos	111.49

total hourly labor cost ($/hr)	195.88	<--Other User
total hourly equipment cost	523.45	<--Other User

Phase 1 Causeway Breach

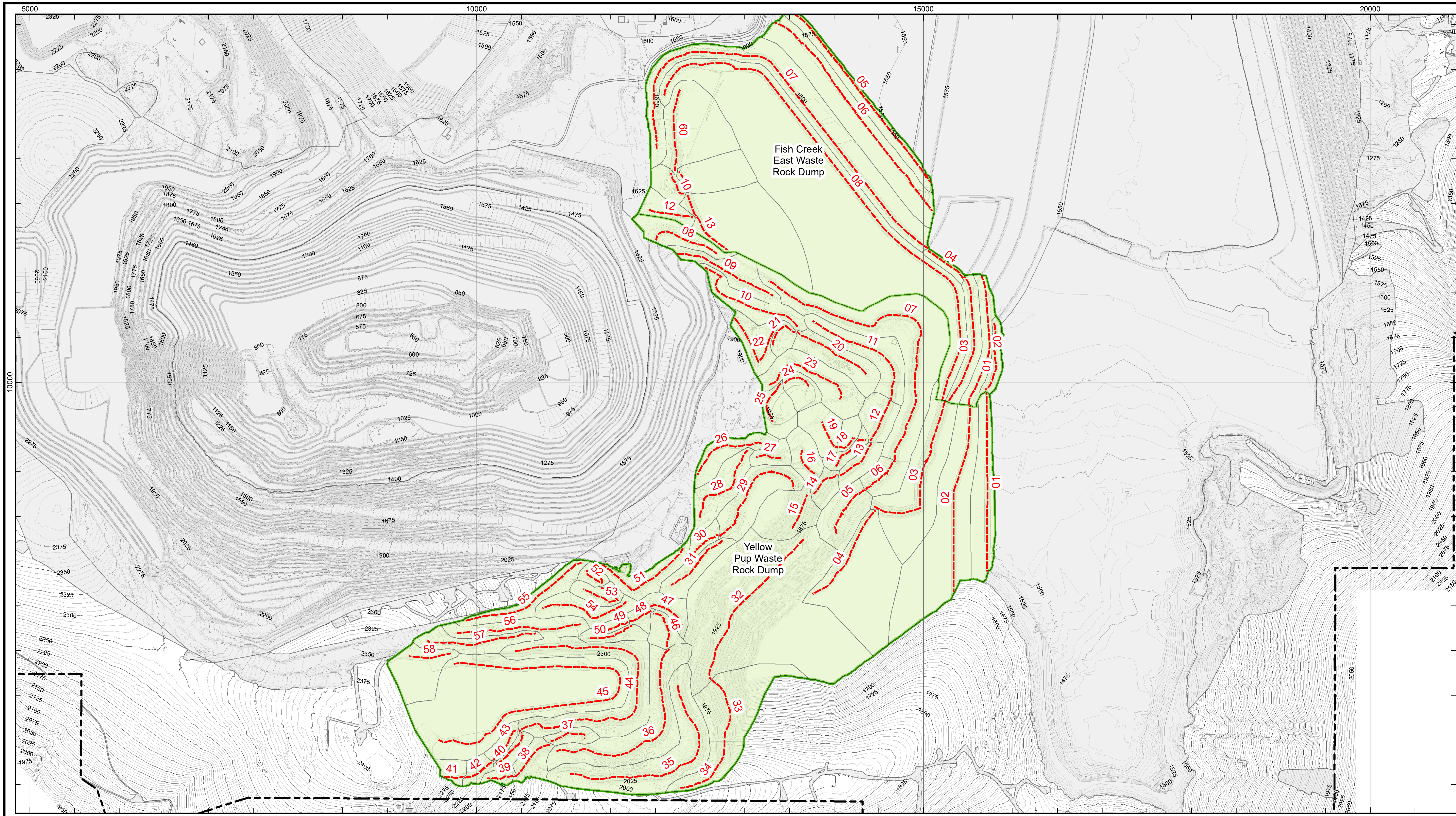
Bank volume to be excavate	1,285,181	
time required to pull materia	1375	<--Other User

Pearl Creek Causeway Breach

Bank volume to be excavate	40,989	
time required to pull materia	44	<--Other User

Attachment B

Figures Supporting SRCE for Fort Knox Premature Closure Scenario



KINROSS Fort Knox

Yellow Pup & Fish Creek East WRD
Premature Closure SRCE Inputs

Figure 1

Date: December 2019

LEGEND

- Millsite Lease Boundary
- Contour 25'
- Contour 5'
- Facility Disturbance
- Mid-Bench Length
- Mid-Bench Area
- Facility Boundary

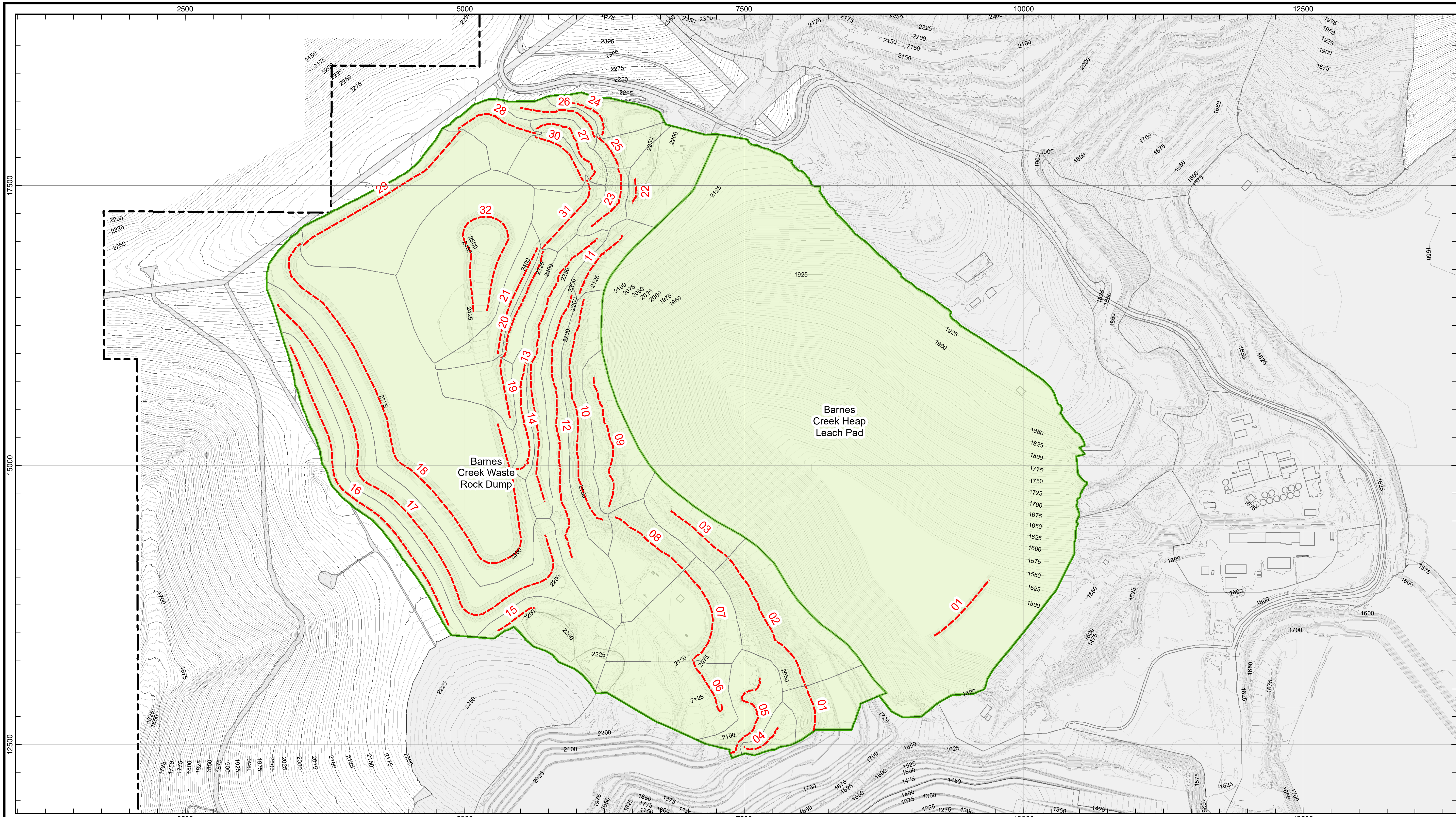
N

0 500 1000 1500 2000

1"=1,000'

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_MB_YELLOW-PUP.mxd



KINROSS Fort Knox	Barnes Creek HLP and WRD Premature Closure SRCE Inputs
	Figure 2
	Date: December 2019

LEGEND

- Millsite Lease Boundary
- Contour 25'
- Contour 5'
- Facility Disturbance
- Mid-Bench Length
- Mid-Bench Area
- Facility Boundary

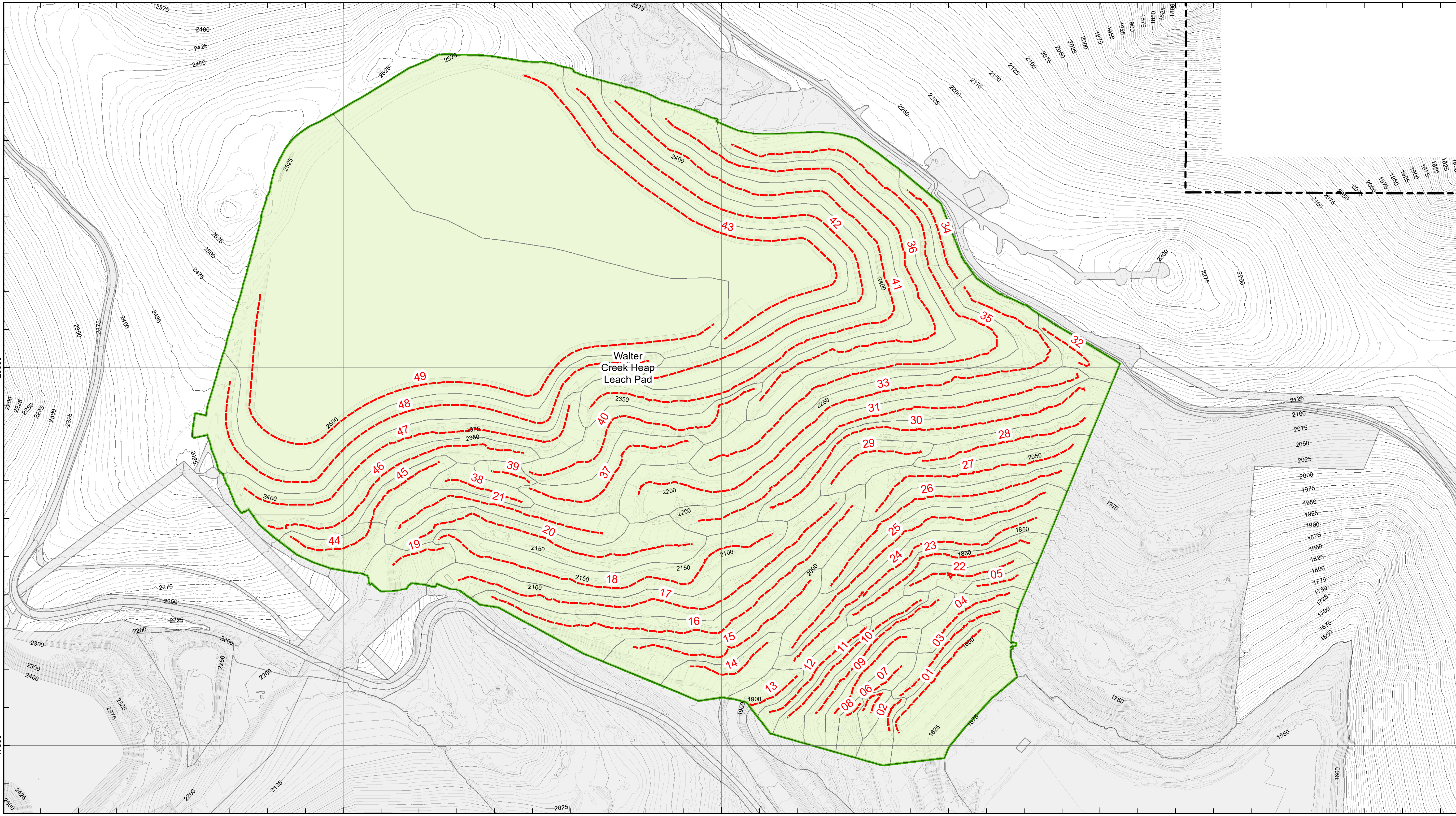
N

1"=800'

0 400 800 1200 1600

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_MB_BARNES-CREEK.mxd



KINROSS Fort Knox

Walter Creek HLP
Premature Closure SRCE Inputs

Figure 3

Date: December 2019

LEGEND

- Millsite Lease Boundary
- Contour 25'
- Contour 5'
- Facility Disturbance
- Mid-Bench Length
- Mid-Bench Area
- Facility Boundary

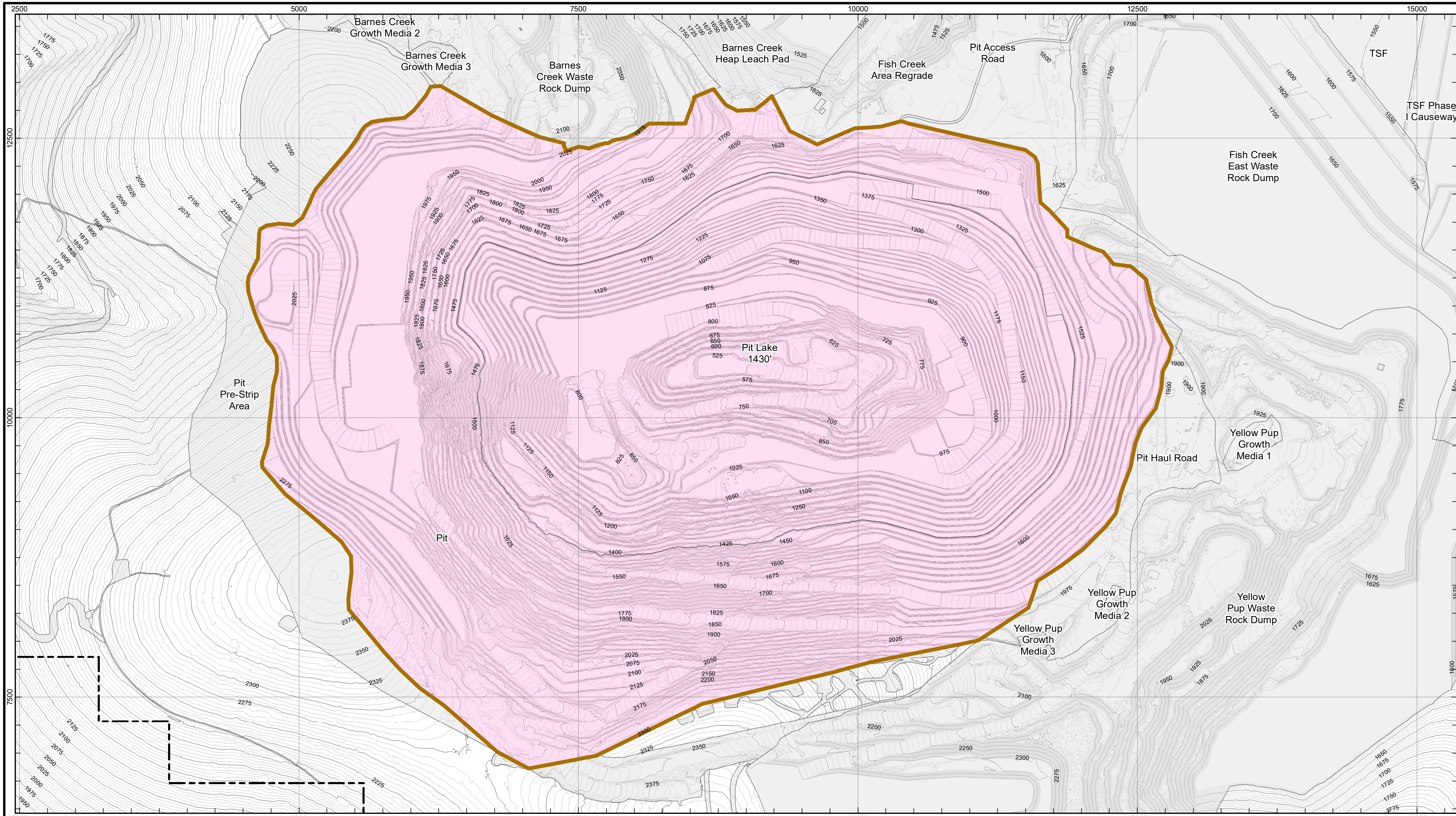
N

1"=600'

0 300 600 900 1200

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_MB_WALTER-CREEK-HLP.mxd



KINROSS Fort Knox

Pit Berm
Premature Closure SRCE Inputs

Figure 4

Date: December 2019

LEGEND

- Millsite Lease Boundary
- Contour 25'
- Contour 5'
- Facility Disturbance
- Pit
- Pit Berm (24,224')

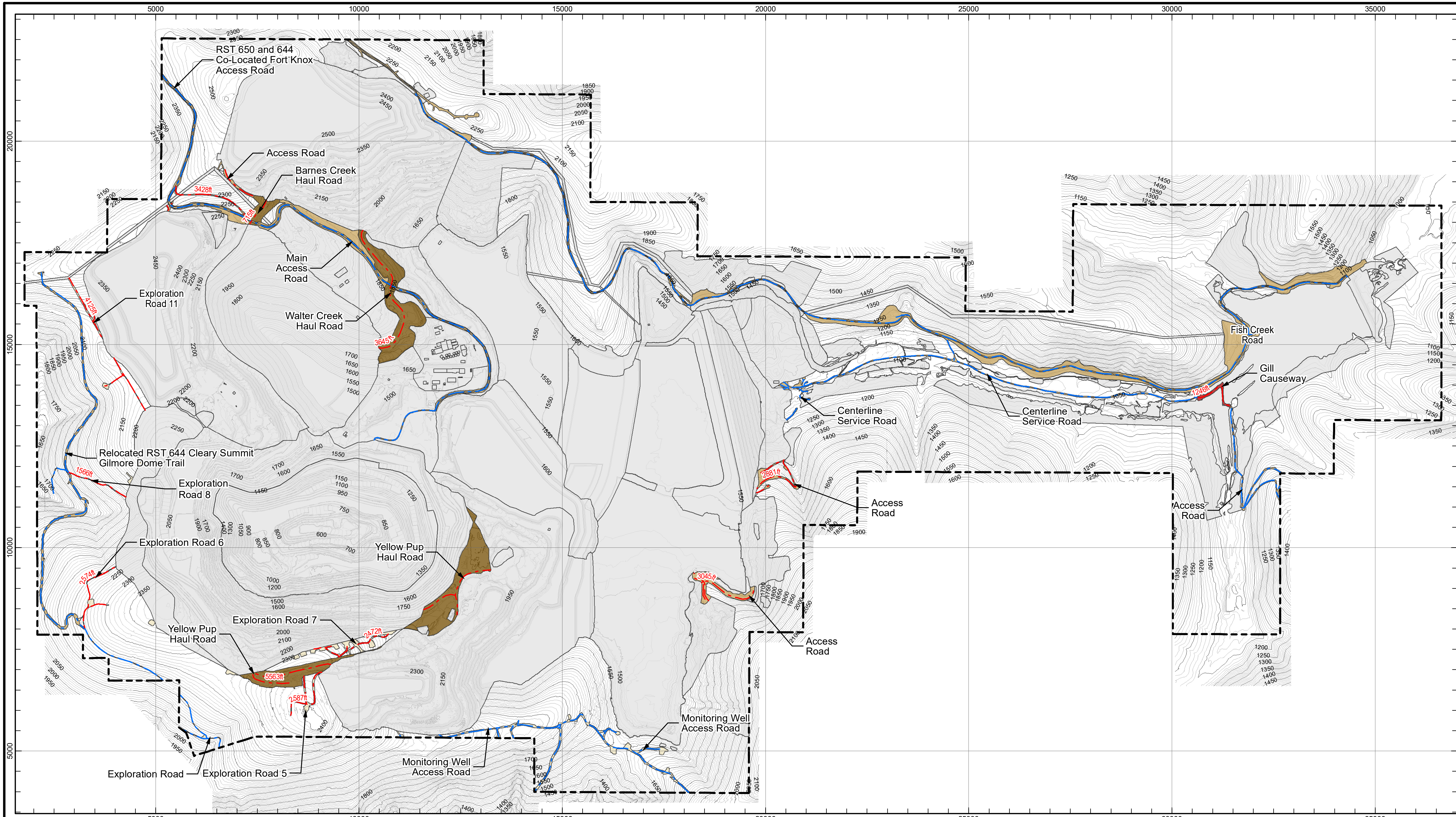
N

0 400 800 1200 1600

1"=800'

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_PIT_BERM.mxd



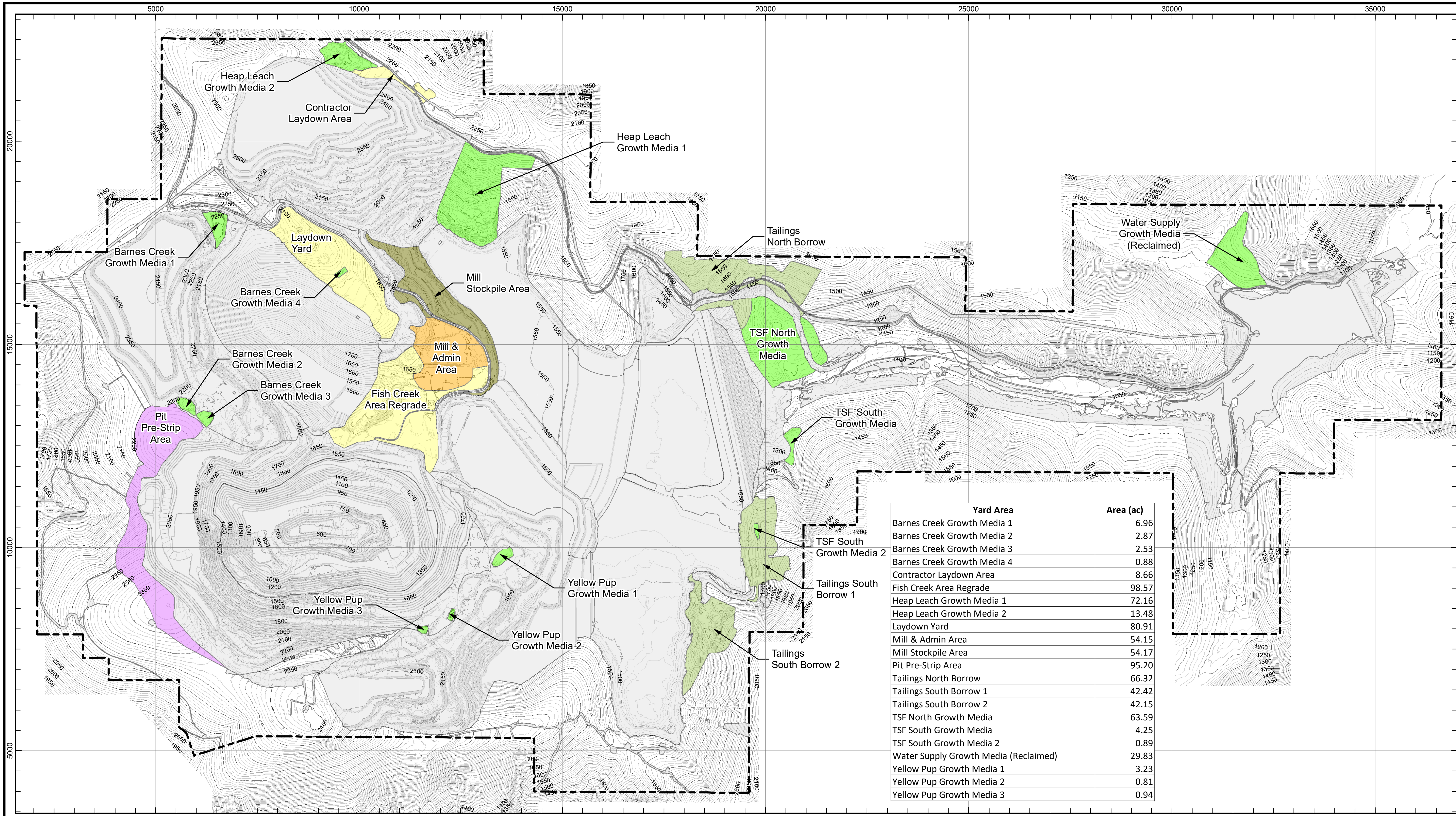
KINROSS Fort Knox

Roads
Premature Closure SRCE Inputs

Figure 5

Date: December 2019

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_ROADS_SRCE.mxd



Yard Area	Area (ac)
Barnes Creek Growth Media 1	6.96
Barnes Creek Growth Media 2	2.87
Barnes Creek Growth Media 3	2.53
Barnes Creek Growth Media 4	0.88
Contractor Laydown Area	8.66
Fish Creek Area Regrade	98.57
Heap Leach Growth Media 1	72.16
Heap Leach Growth Media 2	13.48
Laydown Yard	80.91
Mill & Admin Area	54.15
Mill Stockpile Area	54.17
Pit Pre-Strip Area	95.20
Tailings North Borrow	66.32
Tailings South Borrow 1	42.42
Tailings South Borrow 2	42.15
TSF North Growth Media	63.59
TSF South Growth Media	4.25
TSF South Growth Media 2	0.89
Water Supply Growth Media (Reclaimed)	29.83
Yellow Pup Growth Media 1	3.23
Yellow Pup Growth Media 2	0.81
Yellow Pup Growth Media 3	0.94

KINROSS Fort Knox

Yards
Premature Closure SRCE Inputs

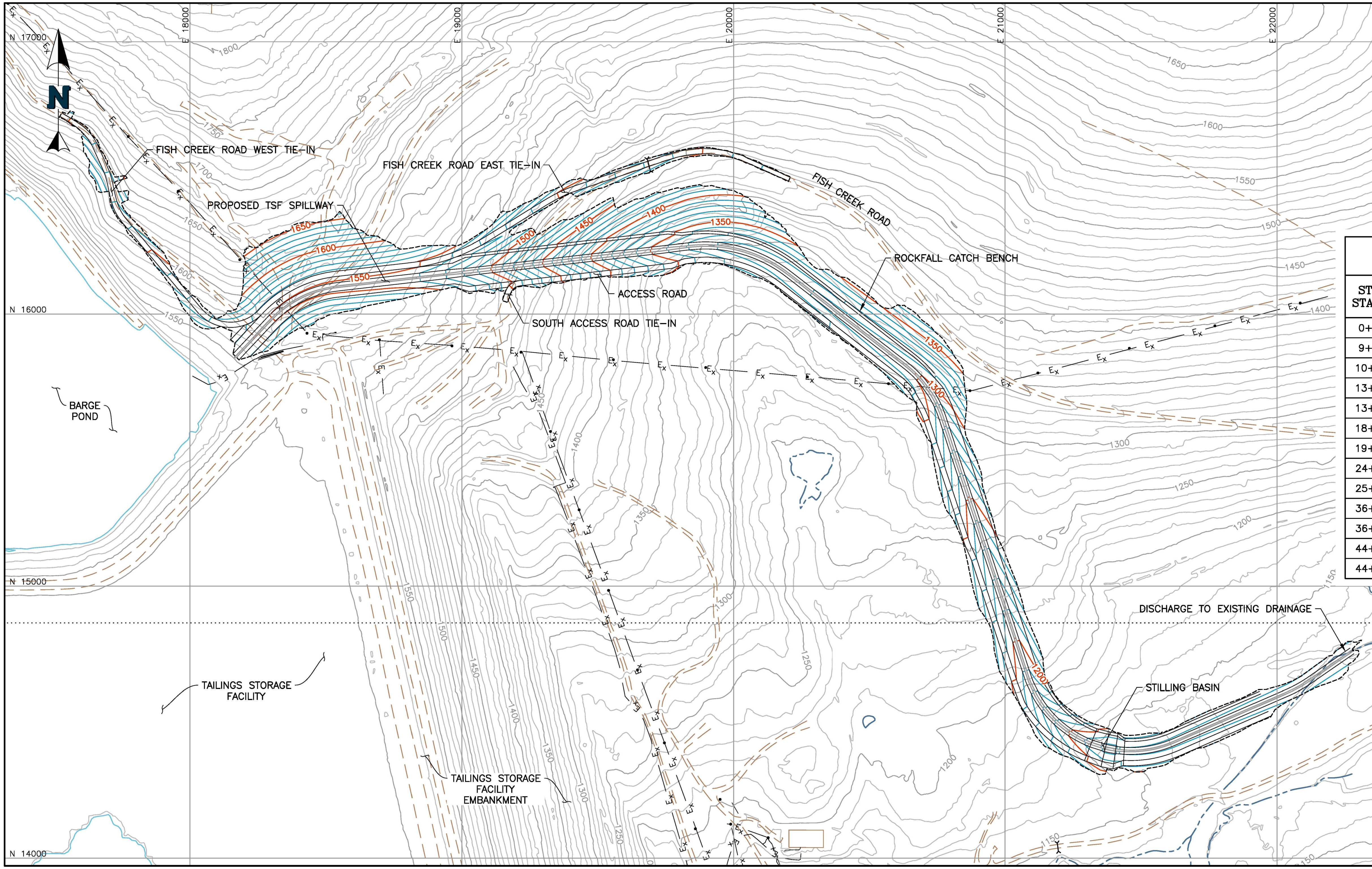
Figure 6

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Facility Disturbance
- Pit Pre-Strip Area
- Mill/Admin Area
- Yards
- Stockpile
- Borrow
- Growth Media

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_YARDS.mxd



LEGEND:

- EXISTING GROUND CONTOURS
- PROPOSED GROUND CONTOURS
- EXISTING ROADS/TRAILS
- EXISTING DRAINAGES
- SECTION LINES
- EXISTING FENCE
- EXISTING WATER LINE
- EXISTING POWERPOLE
- EXISTING POWER LINE
- EXISTING CULVERT

SPILLWAY DESIGN

START STATION	END STATION	WIDTH, W (FT)	DEPTH, D (FT)	RIPRAP SIZE, D_{50} (IN)	RIPRAP THICKNESS, T (FT)
0+00.0	9+25.0	24	6	6	1
9+25.0	10+50.0	24	8	30	5
10+50.0	13+25.0	24	8	24	4
13+25.0	13+75.0	TRANSITION			
13+75.0	18+75.0	24	8	12	2
18+75.0	19+25.0	TRANSITION			
19+75.0	24+50.0	24	8	24	4
24+50.0	25+00.0	TRANSITION			
25+00.0	36+00.0	24	8	12	2
36+00.0	36+50.0	TRANSITION			
36+50.0	44+00.0	24	8	36	6
44+00.0	44+50.0	TRANSITION			
44+50.0	53+50.0	30	6	6	1

0 200 400 FEET

EXISTING TOPOGRAPHY PROVIDED BY KINROSS IN OCTOBER 2018 FROM FILE FK18_MS_Plan and Topo_Local.dwg. DRAWINGS USE A LOCAL COORDINATE SYSTEM TRANSFORMED FROM NAD27SPD3FT. VERTICAL DATUM IN BASED ON NAVD88.

NOT FOR CONSTRUCTION

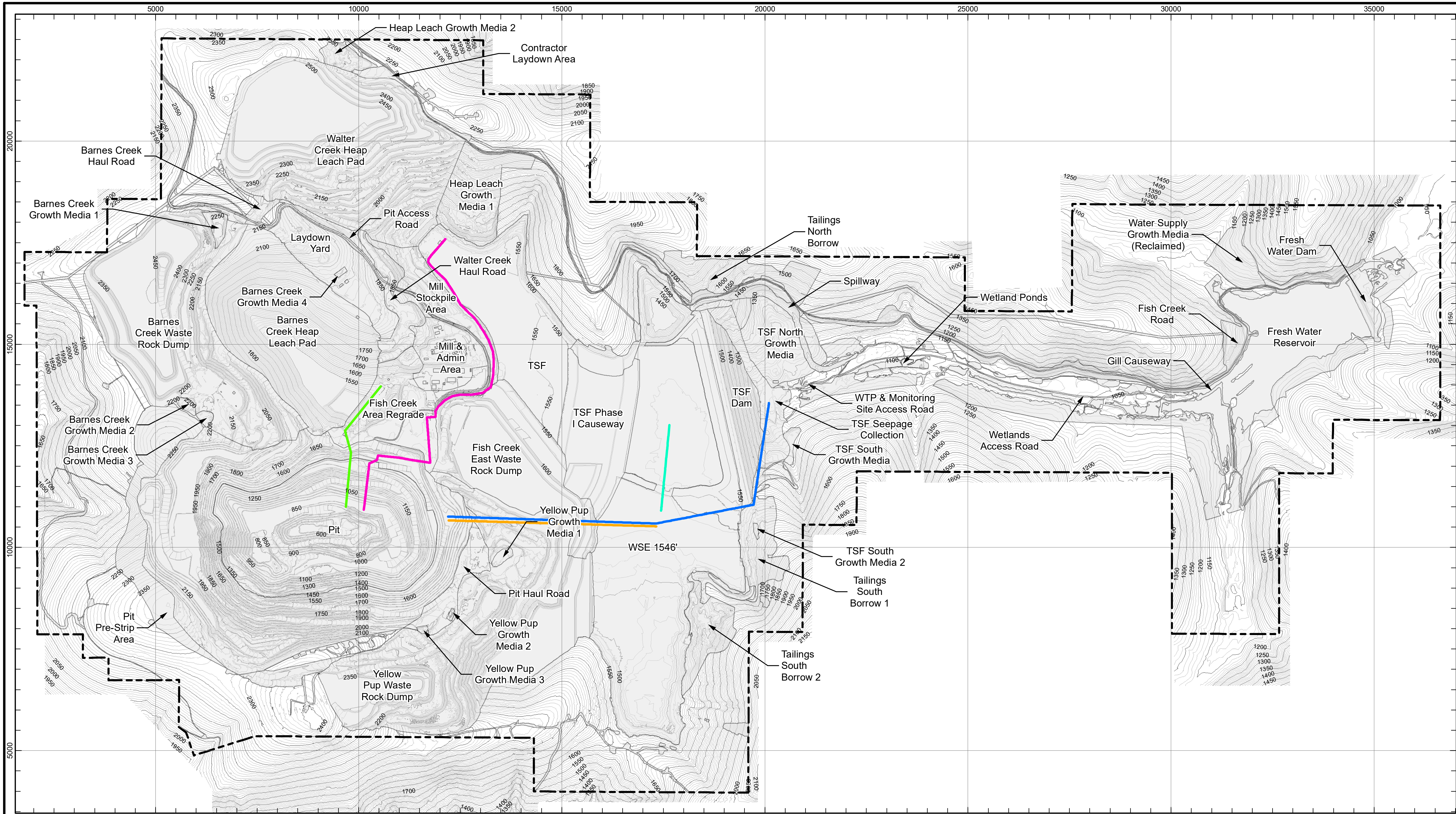
KINROSS Fort Knox

TSF Spillway Premature Closure
SRCE Inputs

Figure 7

Date: December 2019

P:\Fort_Knox\040_Drafting\Task_200_Update_Reclamation_and_Closure_Plan\226900.020_FIG_SPILLWAY.dwg



KINROSS Fort Knox

Solution Management Pumping Routes
Premature Closure SRCE Inputs

Figure 8

Date: December 2019

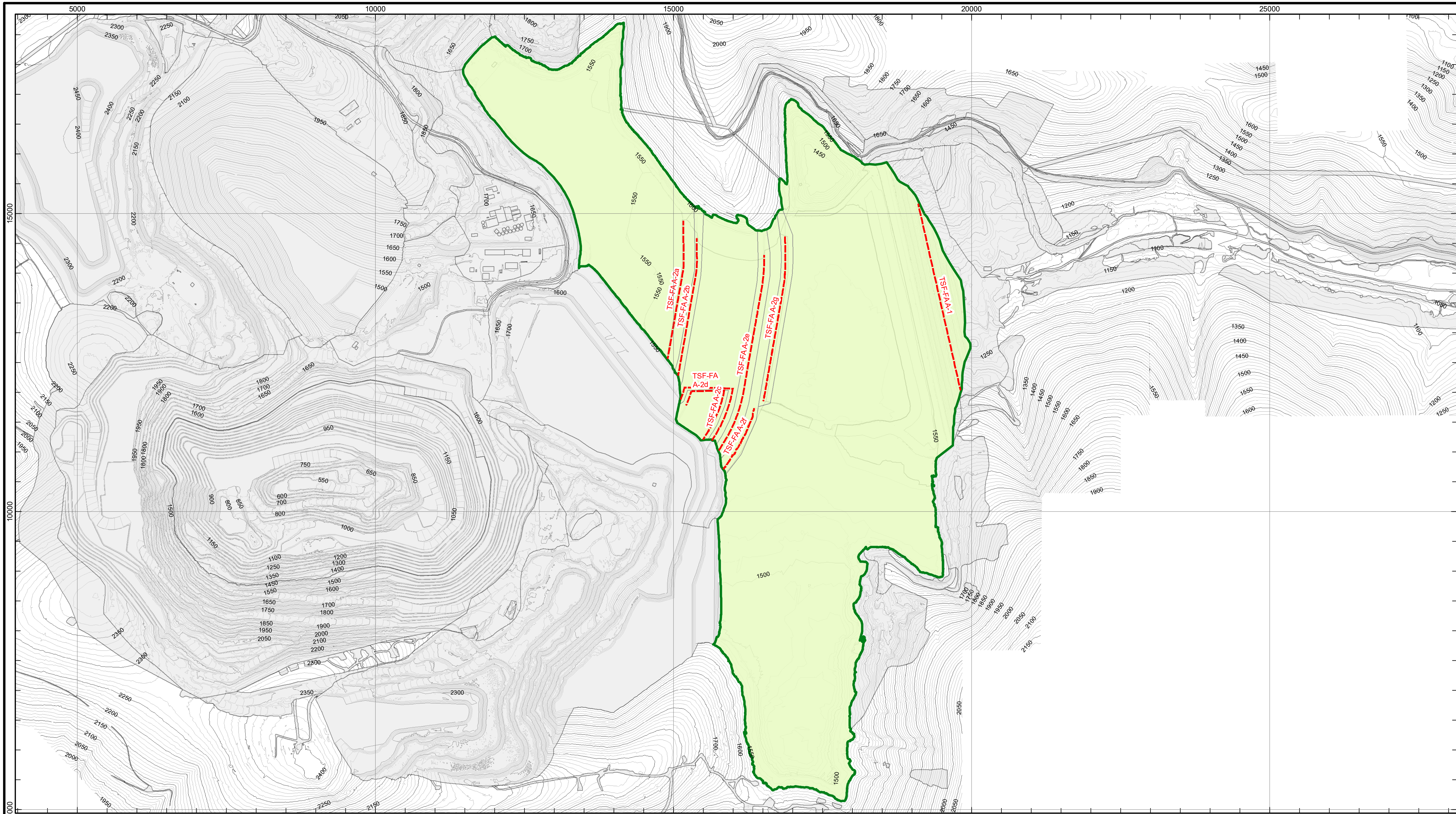
LEGEND:

- Millsite Lease Boundary
- Facility Disturbance

2020 Post-Mining Topo

- Contour 50'
- Contour 10'
- Barnes Creek Heap Leach to Pit
- North Pond to South Pond
- South Pond to Pit
- TSF Seepage to Pit
- Walter Creek Heap Leach to Pit

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_PUMPING.mxd



KINROSS Fort Knox

TSF
Premature Closure SRCE Inputs

Figure 9

Date: December 2019

LEGEND:

- Contour 50'
- Contour 10'
- Facility Disturbance
- Mid-Bench Length
- Mid-Bench Area
- Facility Boundary

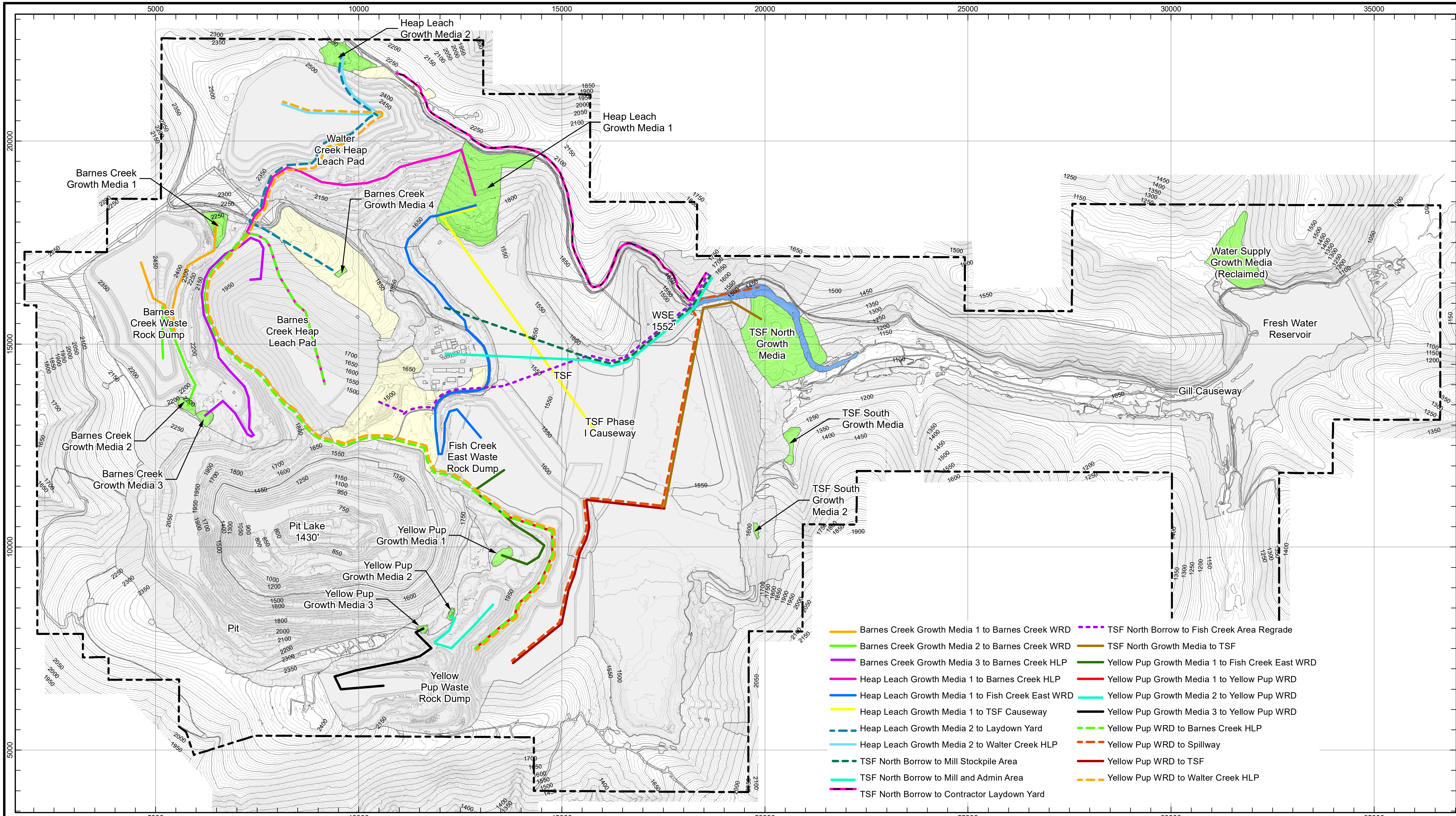
N

0 750 1500 2250 3000

1"=1,500'

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_TSF_SRCE.mxd



KINROSS Fort Knox

Haul Routes
Premature Closure SRCE Inputs

Figure 10

Date: December 2019

LEGEND:

- Millsite Lease Boundary
- Contour 50'
- Contour 10'
- Facility Disturbance
- Spillway
- Yards
- Growth Media

N

0 1100 2200 3300 4400

1"=2,200'

Fort Knox Local Grid Final

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_HAUL_DIST.mxd

KINROSS Fort Knox

Buildings
Premature Closure SRCE Inputs

Figure 11

Date: December 2019

P:\Fort_Knox\040_Drafting\Task_250_Premature_Closure\226900.020_FIG_BUILDINGS.mxd

Attachment C

Cost Data File for SRCE

Attachment C Parts

C.0	Cost data file (CDF)
C.1	Equipment costs
C.2	Material costs
C.3	Diesel costs
C.4	Power costs

Attachment C.0

Cost Data File for SRCE

Format Version:	*SRCE Data File v2.0*
File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Type:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

Units of Measure:	**Imperial**

No. of Bases/Regions:	6

Basis/Region	Basis/Region Name	Basis/Region Description
Basis 1	***Northern Nevada imperial***	Churchill, Douglas, Elko, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, Washoe, and White Pine Counties
Basis 2	***Southern Nevada imperial***	Clark, Esmeralda, Lincoln and Nye Counties
Basis 3	***Northern Nevada metric***	Basis 1 converted from imperial to metric
Basis 4	***notes - do not use***	notes - do not use
Basis 5	***Fort Knox***	Fairbanks North Star Borough, Alaska
Basis 6	***notes - do not use***	notes - do not use
Basis 7		
Basis 8		
Basis 9		
Basis 10		
Basis 11		
Basis 12		
Basis 13		
Basis 14		
Basis 15		

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			

MONTHLY EQUIPMENT RATE TABLE [Cost Per Month] (1)

EQUIPMENT TYPE (2)	Basis 1 *Northern Nevada imperial*	Basis 2 *Southern Nevada imperial*	Basis 3 *Northern Nevada metric*	Basis 4 *notes - do not use*	Basis 5 *Fort Knox*	Basis 6 *notes - do not use*	Basis 7	Basis 8
Bulldozers								
D6T	10,400	10,400	10,400		12,600	FGMI Equipment Rates - SRK Request - 2019.xlsx		
D6R w/ Winch	10,400	10,400	10,400	Same as D6T	13,000	Same as D6T		
D7E	11,350	11,350	11,350		15,500	FGMI Equipment Rates - SRK Request - 2019.xlsx		
D8T	19,000	19,000	19,000		20,700	FGMI Equipment Rates - SRK Request - 2019.xlsx		
D9T	23,100	23,100	23,100		29,500	FGMI Equipment Rates - SRK Request - 2019.xlsx		
D10T2	32,000	32,000	32,000		35,750	FGMI Equipment Rates - SRK Request - 2019.xlsx		
D11T	64,000	64,000	64,000		52,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
Wheeled Dozers								
824K								
834K								
844K								
854K								
Motor Graders								
12M2	9,600	9,600	9,600		10,800	0.9 of neighbor		
14M	14,500	14,500	14,500		12,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
16M3	21,000	21,000	21,000		24,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
24M	23,100	23,100	23,100	1.1 of predecessor	26,400	1.1 of predecessor		
Track Excavators								
312F	5,415	5,415	5,415		6,985	FGMI Equipment Rates - SRK Request - 2019.xlsx		
320F	6,700	6,700	6,700		9,700	FGMI Equipment Rates - SRK Request - 2019.xlsx		
325F	11,100	11,100	11,100		10,300	FGMI Equipment Rates - SRK Request - 2019.xlsx		
330F	10,800	10,800	10,800		11,700	FGMI Equipment Rates - SRK Request - 2019.xlsx		
349F	14,280	14,280	14,280		17,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
374F	18,390	18,390	18,390	average of neighbors	24,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
390F	22,500	22,500	22,500		29,500	FGMI Equipment Rates - SRK Request - 2019.xlsx		
Scrapers								
631K	18,000	18,000	18,000		22,200	NV costs adjusted	22,183	
637K	35,000	35,000	35,000		43,100	NV costs adjusted	43,134	

Equipment Costs

File Name:	***CDF_226900_020_FNL_ft_ism.xlsm***
Date:	***February 11, 2019***
Cost Basis:	***User Data***
Author/Source:	***FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes***

	Basis 1	**Basis 2**	**Basis 3**	**Basis 4**	**Basis 5**	**Basis 6**	**Basis 7**	**Basis 8**
Monthly Rental Basis (operating hrs/ period)	***160***	***160***	***160***		***176***			
Wet Rate?	**No**	**No**	**No**		**No**			
Wheeled Loaders								
926M	5,000	5,000	5,000		7,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
930M	5,200	5,200	5,200		8,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
950M	7,600	7,600	7,600		9,700	FGMI Equipment Rates - SRK Request - 2019.xlsx		
966M	10,900	10,900	10,900		12,900	FGMI Equipment Rates - SRK Request - 2019.xlsx		
972M	13,800	13,800	13,800		15,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
980M	13,800	13,800	13,800		17,250	FGMI Equipment Rates - SRK Request - 2019.xlsx		
988K	21,000	21,000	21,000		25,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		
990K	40,500	40,500	40,500	average of neighbors	49,900	NV costs adjusted	49,913	
992K	60,000	60,000	60,000		73,900	NV costs adjusted	73,944	
994K	66,000	66,000	66,000	1.1 of predecessor	81,300	NV costs adjusted	81,339	
L2350								
Shovels/Excavators								
PC2000								
PC3000								
PC4000								
PC5500								
PC8000								
EX2500								
Hydraulic Hammers								
H120Es (fits 325)	5,700	5,700	5,700		7,500	FGMI Equipment Rates - SRK Request - 2019.xlsx		
H160Es (fits 349)	12,000	12,000	12,000		9,500	FGMI Equipment Rates - SRK Request - 2019.xlsx		
H180Es (fits 374/390)	16,200	16,200	16,200		11,922	NV costs adjusted		
Demolition Shears								
S3050 (fits 320/325/330)								
S3070 (fits 330/349)								
S3090 (fits 374/390)								
Demolition Grapples								
G315B (fits 320/325)								
G320B (fits 325/330)								
G330 (fits 349/374)								
Other Equipment								
420F2	3,200	3,200	3,200		4,100	FGMI Equipment Rates - SRK Request - 2019.xlsx		
430F2	4,000	4,000	4,000		5,000	FGMI Equipment Rates - SRK Request - 2019.xlsx		

Equipment Costs

File Name:	***CDF_226900_020_FNL_ft_ism.xlsm***
Date:	***February 11, 2019***
Cost Basis:	***User Data***
Author/Source:	***FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes***

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	***160***	***160***	***160***		***176***			
Wet Rate?	**No**	**No**	**No**		**No**			

CS54B	8,470	8,470	8,470		6,350	FGMI Equipment Rates - SRK Request - 2019.xlsx		
CS64B	8,470	8,470	8,470	assume CS54B Vibrat	7,900	FGMI Equipment Rates - SRK Request - 2019.xlsx		
CP54B	8,470	8,470	8,470	assume CS54B Vibrat	8,200	FGMI Equipment Rates - SRK Request - 2019.xlsx		
CP68B	8,470	8,470	8,470	assume CS54B Vibrat	8,200	assume CS54B Vibratory Roller		
Light Truck - 1.5 Ton	4,074	4,074	4,074		1,479	United Rental		
Supervisor's Truck	2,741	2,741	2,741		1,163	RSMeans	1,163	
Flatbed Truck	4,074	4,074	4,074		1,091	RSMeans	1,091	
Air Compressor + tools	4,345	4,345	4,345		1,891	RSMeans	1,891	
Welding Equipment	2,123	2,123	2,123		1,178	United Rental		
Heavy Duty Drill Rig	58,080	58,080	58,080		58,827	RSMeans	58,827	

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
Pump (plugging) Drill Rig	58,080	58,080	58,080		58,827	RSMeans	58,827	
Concrete Pump	18,986	18,986	18,986		15,426	RSMeans	15,426	
Gas Engine Vibrator	554	554	554		252	RSMeans	252	
Generator 5KW	766	766	766		764	United Rental		
HDEP Welder (pipe or liner)	9,196	9,196	9,196		8,032	RSMeans	8,032	
5 Ton Crane	5,610	5,610	5,610		3,519	RSMeans	3,519	
20 Ton Crane	12,782	12,782	12,782		7,394	RSMeans	7,394	
50 Ton Crane	12,782	12,782	12,782		14,024	RSMeans	14,024	
120 Ton Crane	14,060	14,060	14,060	1.1 of predecessor	15,426	1.1 of predecessor		
Trucks								
725C	15,000	15,000	15,000		14,900	same as 730C		
730C	15,000	15,000	15,000		14,900	FGMI Equipment Rates - SRK Request - 2019.xlsx		
735C	15,000	15,000	15,000		17,800	average		
740C	15,000	15,000	15,000		20,700	FGMI Equipment Rates - SRK Request - 2019.xlsx		
770G	21,000	21,000	21,000		29,000	proportion with NV		
773G	33,000	33,000	33,000		29,000	proportion with NV		
777G	54,000	54,000	54,000		29,000	proportion with NV		
785D	59,400	59,400	59,400	1.1 of predecessor	82,100	1.1 of predecessor		
789D	65,300	65,300	65,300	1.1 of predecessor	90,300	1.1 of predecessor		
793F	71,800	71,800	71,800	1.1 of predecessor	99,300	1.1 of predecessor		
797F	79,000	79,000	79,000	1.1 of predecessor	109,200	1.1 of predecessor		
613E (5,000 gal)	6,000	6,000	6,000		7,394	NV costs adjusted		
621E (8,000 gal)	11,000	11,000	11,000		13,556	NV costs adjusted		
777D H2O Truck	54,000	54,000	54,000	Same as equivalent T	74,600	Same as equivalent Truck		
785C H2O Truck	59,400	59,400	59,400	1.1 of predecessor	82,100	Same as equivalent Truck		
Dump Truck (10-12 yd3)	11,726	11,726	11,726		5,355	RSMeans	5,355	
Tractor/Trailer (20 ton)	12,899	12,899	12,899	1.1 times neighbour	6,887	RSMeans 2019, p. 55	6,886.70	
Tractor/Trailer (50 ton)	14,189	14,189	14,189	1.1 times neighbour	8,920	RSMeans 2019, p. 55	8,920.17	
Tractor/Trailer (80 ton)	15,608	15,608	15,608	1.1 times neighbour	11,225	RSMeans 2019, p. 55	11,224.78	
NOTES:								
(1) Power Equipment Source:	Company (July 2018)	Company (July 2018)	Company (July 2018)		Company (July 2018)			
(2) Power Equipment Type:	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau	equivalent, LeTourneau
(3) Drilliing Equipment Source:	RS Means Heavy	RS Means Heavy	RS Means Heavy		(Fairbanks, AK)			
(4) Other Equipment Source:	RS Means Heavy	RS Means Heavy	RS Means Heavy		RS Means 2019			

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			

PREVENTATIVE MAINTENANCE COST [Cost Per Hour] (1)

EQUIPMENT TYPE	Basis 1 *Northern Nevada imperial*	Basis 2 *Southern Nevada imperial*	Basis 3 *Northern Nevada metric*	Basis 4 *notes - do not use*	Basis 5 *Fort Knox*	Basis 6 *notes - do not use*	Basis 7	Basis 8
Bulldozers								
D6T	7.19	7.19	7.19		7.19			
D6R w/ Winch	7.19	7.19	7.19	Same as D6T	7.19	Same as D6T		
D7E	7.19	7.19	7.19		7.19			
D8T	7.59	7.59	7.59		7.59			
D9T	8.65	8.65	8.65		8.65			
D10T2	10.18	10.18	10.18		10.18			
D11T	13.87	13.87	13.87		13.87			
Wheeled Dozers								
824K								
834K								
844K								
854K								
Motor Graders								
12M2	4.37	4.37	4.37		4.37			
14M	5.45	5.45	5.45		5.45			
16M3	5.69	5.69	5.69		5.69			
24M	6.26	6.26	6.26	1.1 of predecessor	6.26	1.1 of predecessor		
Track Excavators								
312F	4.11	4.11	4.11		4.11			
320F	4.38	4.38	4.38		4.38			
325F	4.44	4.44	4.44		4.44			
330F	6.44	6.44	6.44		6.44			

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
349F	7.25	7.25	7.25		7.25			
374F	6.65	6.65	6.65	average of neighbors	6.65	average of neighbors		
390F	6.05	6.05	6.05		6.05			
Scrapers								
631K	7.30	7.30	7.30		7.30			
637K	12.13	12.13	12.13		12.13			
Wheeled Loaders								
926M	3.33	3.33	3.33		3.33			
930M	3.90	3.90	3.90		3.90			
950M	4.85	4.85	4.85		4.85			
966M	5.06	5.06	5.06		5.06			
972M	5.72	5.72	5.72		5.72			
980M	5.72	5.72	5.72		5.72			
988K	10.72	10.72	10.72		10.72			
990K	11.30	11.30	11.30	average of neighbors	11.30	average of neighbors		
992K	11.87	11.87	11.87		11.87			
994K	13.06	13.06	13.06	1.1 of predecessor	13.06	1.1 of predecessor		
L2350								
Shovels/Excavators								
PC2000								
PC3000								
PC4000								
PC5500								
PC8000								
EX2500								
Hydraulic Hammers								
H120Es (fits 325)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H160Es (fits 349)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H180Es (fits 374/390)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Demolition Shears								
S3050 (fits 320/325/330)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S3070 (fits 330/349)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S3090 (fits 374/390)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Demolition Grapples								

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
G315B (fits 320/325)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G320B (fits 325/330)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G330 (fits 349/374)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Equipment								
420F2	4.04	4.04	4.04		4.04			
430F2	3.83	3.83	3.83		3.83			
CS54B								
CS64B								
CP54B								
CP68B								
Light Truck - 1.5 Ton								
Supervisor's Truck								
Flatbed Truck								
Air Compressor + tools								
Welding Equipment								
Heavy Duty Drill Rig								
Pump (plugging) Drill Rig								
Concrete Pump								
Gas Engine Vibrator								
Generator 5KW								
HDEP Welder (pipe or liner)								
5 Ton Crane								
20 Ton Crane								
50 Ton Crane								
120 Ton Crane								
Trucks								
725C	8.04	8.04	8.04		8.04			
730C	8.04	8.04	8.04		8.04			
735C	8.04	8.04	8.04		8.04			
740C	8.04	8.04	8.04		8.04			
770G	5.96	5.96	5.96		5.96			
773G	7.37	7.37	7.37		7.37			

Equipment Costs

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	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
777G	10.55	10.55	10.55		10.55			
785D	11.61	11.61	11.61	1.1 of predecessor	11.61	1.1 of predecessor		
789D	12.77	12.77	12.77	1.1 of predecessor	12.77	1.1 of predecessor		
793F	14.05	14.05	14.05	1.1 of predecessor	14.05	1.1 of predecessor		
797F	15.46	15.46	15.46	1.1 of predecessor	15.46	1.1 of predecessor		
613E (5,000 gal)	5.75	5.75	5.75		5.75			
621E (8,000 gal)	6.11	6.11	6.11		6.11			
777D H2O Truck	10.55	10.55	10.55	Same as equivalent T	10.55	Same as equivalent Truck		
785C H2O Truck	11.61	11.61	11.61	1.1 of predecessor	11.61	1.1 of predecessor		
Dump Truck (10-12 yd3)	8.04	8.04	8.04		8.04			
Tractor/Trailer (20 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor/Trailer (50 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor/Trailer (80 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NOTES:								
(1) PM Source:	Cashman Equipment	Company (July 2018)	Company (July 2018)		Company (July 2018)			

G.E.T CONSUMPTION [Cost Per Hour] (1) (Wear Items)

EQUIPMENT TYPE	Basis 1 *Northern Nevada imperial*	Basis 2 *Southern Nevada imperial*	Basis 3 *Northern Nevada metric*	Basis 4 *notes - do not use*	Basis 5 *Fort Knox*	Basis 6 *notes - do not use*	Basis 7	Basis 8
Bulldozers								
D6T	5.07	5.07	5.07		0.00	included in rental rate		
D6R w/ Winch	5.07	5.07	5.07	Same as D6T	0.00	included in rental rate		
D7E	5.07	5.07	5.07		0.00	included in rental rate		
D8T	9.75	9.75	9.75		0.00	included in rental rate		
D9T	15.17	15.17	15.17		0.00	included in rental rate		
D10T2	21.24	21.24	21.24		0.00	included in rental rate		
D11T	31.56	31.56	31.56		0.00	included in rental rate		
Wheeled Dozers								
824K								
834K								
844K								
854K								
Motor Graders								

Equipment Costs

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Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
12M2	10.47	10.47	10.47		0.00	included in rental rate		
14M	15.13	15.13	15.13		0.00	included in rental rate		
16M3	20.66	20.66	20.66		0.00	included in rental rate		
24M	22.73	22.73	22.73	1.1 of predecessor	0.00	included in rental rate		
Track Excavators								
312F	3.94	3.94	3.94		0.00	included in rental rate		
320F	4.55	4.55	4.55		0.00	included in rental rate		
325F	5.74	5.74	5.74		0.00	included in rental rate		
330F	6.32	6.32	6.32		0.00	included in rental rate		
349F	6.46	6.46	6.46		0.00	included in rental rate		
374F	9.84	9.84	9.84	average of neighbors	0.00	included in rental rate		
390F	13.22	13.22	13.22		0.00	included in rental rate		
Scrapers								
631K	8.27	8.27	8.27		0.00	included in rental rate		
637K	10.39	10.39	10.39		0.00	included in rental rate		
Wheeled Loaders								
926M	4.35	4.35	4.35		0.00	included in rental rate		
930M	4.50	4.50	4.50		0.00	included in rental rate		
950M	8.37	8.37	8.37		0.00	included in rental rate		
966M	10.51	10.51	10.51		0.00	included in rental rate		
972M	13.30	13.30	13.30		0.00	included in rental rate		
980M	13.30	13.30	13.30		0.00	included in rental rate		
988K	14.25	14.25	14.25		0.00	included in rental rate		
990K	23.49	23.49	23.49	average of neighbors	0.00	included in rental rate		
992K	32.73	32.73	32.73		0.00	included in rental rate		
994K	36.00	36.00	36.00	1.1 of predecessor	0.00	included in rental rate		
L2350					0.00	included in rental rate		
Shovels/Excavators								
PC2000								
PC3000								
PC4000								
PC5500								
PC8000								
EX2500								

Equipment Costs

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Date:	*February 11, 2019*
Cost Basis:	*User Data*
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	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
Hydraulic Hammers								
H120Es (fits 325)	5.44	5.44	5.44		0.00	included in rental rate		
H160Es (fits 349)	10.58	10.58	10.58		0.00	included in rental rate		
H180Es (fits 374/390)	12.53	12.53	12.53		0.00	included in rental rate		
Demolition Shears								
S3050 (fits 320/325/330)								
S3070 (fits 330/349)								
S3090 (fits 374/390)								
Demolition Grapples								
G315B (fits 320/325)								
G320B (fits 325/330)								
G330 (fits 349/374)								
Other Equipment								
420F2	3.50	3.50	3.50		0.00	included in rental rate		
430F2	3.61	3.61	3.61		0.00	included in rental rate		
CS54B								
CS64B								
CP54B								
CP68B								
Light Truck - 1.5 Ton								
Supervisor's Truck								
Flatbed Truck								
Air Compressor + tools	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welding Equipment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Heavy Duty Drill Rig								
Pump (plugging) Drill Rig								
Concrete Pump	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gas Engine Vibrator	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator 5KW	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HDEP Welder (pipe or liner)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5 Ton Crane								
20 Ton Crane								
50 Ton Crane								
120 Ton Crane								

Equipment Costs

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Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
Trucks								
725C	3.13	3.13	3.13		0.00	included in rental rate		
730C	3.13	3.13	3.13		0.00	included in rental rate		
735C	3.13	3.13	3.13		0.00	included in rental rate		
740C	3.13	3.13	3.13		0.00	included in rental rate		
770G	3.50	3.50	3.50		0.00	included in rental rate		
773G	3.94	3.94	3.94		0.00	included in rental rate		
777G	4.40	4.40	4.40		0.00	included in rental rate		
785D	4.84	4.84	4.84	1.1 of predecessor	0.00	included in rental rate		
789D	5.32	5.32	5.32	1.1 of predecessor	0.00	included in rental rate		
793F	5.85	5.85	5.85	1.1 of predecessor	0.00	included in rental rate		
797F	6.44	6.44	6.44	1.1 of predecessor	0.00	included in rental rate		
613E (5,000 gal)								
621E (8,000 gal)								
777D H2O Truck	4.40	4.40	4.40	Same as equivalent T	0.00	included in rental rate		
785C H2O Truck	4.84	4.84	4.84	1.1 of predecessor	0.00	included in rental rate		
Dump Truck (10-12 yd3)	3.13	3.13	3.13		0.00	included in rental rate		
Tractor/Trailer (20 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor/Trailer (50 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor/Trailer (80 ton)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes:								
(1) G.E.T. Source:								

TIRE COST TABLE [Cost Per Tire[1,2,3]]

EQUIPMENT TYPE	Basis 1 *Northern Nevada imperial*	Basis 2 *Southern Nevada imperial*	Basis 3 *Northern Nevada metric*	Basis 4 *notes - do not use*	Basis 5 *Fort Knox*	Basis 6 *notes - do not use*	Basis 7	Basis 8
Bulldozers								
D6T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D6R w/ Winch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D7E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D8T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D9T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D10T2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Equipment Costs

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Cost Basis:	*User Data*
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	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
D11T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wheeled Dozers								
824K								
834K								
844K								
854K								
Motor Graders								
12M2	2,210.54	2,210.54	2,210.54		2,724.29	NV, adjusted		
14M	3,026.19	3,026.19	3,026.19		3,729.50	NV, adjusted		
16M3	4,093.60	4,093.60	4,093.60		5,044.99	NV, adjusted		
24M	4,502.96	4,502.96	4,502.96	1.1 of predecessor	5,549.49	1.1 of predecessor in NV, adjusted		
Track Excavators								
312F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
320F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
325F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
330F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
349F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
374F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
390F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scrapers								
631K	8,991.59	8,991.59	8,991.59		11,081.31	NV, adjusted		11,081.31
637K	8,991.59	8,991.59	8,991.59		11,081.31	NV, adjusted		11,081.31
Wheeled Loaders								
926M	3,049.73	3,049.73	3,049.73		3,758.52	NV, adjusted		3,758.52
930M	3,049.73	3,049.73	3,049.73		3,758.52	NV, adjusted		3,758.52
950M	4,594.55	4,594.55	4,594.55		5,662.36	NV, adjusted		5,662.36
966M	7,315.27	7,315.27	7,315.27		9,015.40	NV, adjusted		9,015.40
972M	7,315.27	7,315.27	7,315.27		9,015.40	NV, adjusted		9,015.40
980M	7,701.09	7,701.09	7,701.09		9,490.88	NV, adjusted		9,490.88
988K	12,094.03	12,094.03	12,094.03		14,904.78	NV, adjusted		14,904.78
990K	19,530.82	19,530.82	19,530.82	average of neighbors	24,069.95	average of neighbors		24,069.95
992K	26,967.61	26,967.61	26,967.61		33,235.11	NV, adjusted		33,235.11
994K	29,664.37	29,664.37	29,664.37	1.1 of predecessor	36,558.62	1.1 of predecessor in NV, adjusted		36,558.62
L2350					0.00			0.00

Equipment Costs

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	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
Shovels/Excavators								
PC2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PC3000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PC4000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PC5500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PC8000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EX2500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydraulic Hammers								
H120Es (fits 325)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H160Es (fits 349)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H180Es (fits 374/390)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Demolition Shears								
S3050 (fits 320/325/330)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S3070 (fits 330/349)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S3090 (fits 374/390)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Demolition Grapples								
G315B (fits 320/325)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G320B (fits 325/330)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G330 (fits 349/374)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Equipment								
420F2	1,046.27	1,046.27	1,046.27		1,289.43	NV, adjusted		1,289.43
430F2	1,046.27	1,046.27	1,046.27		1,289.43	NV, adjusted		1,289.43
CS54B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CS64B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CP54B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CP68B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Light Truck - 1.5 Ton	140.72	140.72	140.72		173.42	NV, adjusted		173.42
Supervisor's Truck	140.72	140.72	140.72		173.42	NV, adjusted		173.42
Flatbed Truck	140.72	140.72	140.72		173.42	NV, adjusted		173.42
Air Compressor + tools	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welding Equipment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Heavy Duty Drill Rig								
Pump (plugging) Drill Rig								
Concrete Pump	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Equipment Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5	Basis 6	Basis 7	Basis 8
Monthly Rental Basis (operating hrs/ period)	*160*	*160*	*160*		*176*			
Wet Rate?	No	No	No		No			
Gas Engine Vibrator	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator 5KW	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HDEP Welder (pipe or liner)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5 Ton Crane								
20 Ton Crane								
50 Ton Crane								
120 Ton Crane								
Trucks								
725C	4,594.55	4,594.55	4,594.55		5,662.36	NV, adjusted		5,662.36
730C	4,594.55	4,594.55	4,594.55		5,662.36	NV, adjusted		5,662.36
735C	7,315.27	7,315.27	7,315.27		9,015.40	NV, adjusted		9,015.40
740C	7,701.09	7,701.09	7,701.09		9,490.88	NV, adjusted		9,490.88
770G	4,210.07	4,210.07	4,210.07		5,188.52	NV, adjusted		5,188.52
773G	7,383.83	7,383.83	7,383.83		9,099.89	NV, adjusted		9,099.89
777G	13,111.37	13,111.37	13,111.37		16,158.56	NV, adjusted		16,158.56
785D	14,422.50	14,422.50	14,422.50	1.1 of predecessor	17,774.41	1.1 of predecessor in NV, adjusted		17,774.41
789D	15,864.75	15,864.75	15,864.75	1.1 of predecessor	19,551.85	1.1 of predecessor in NV, adjusted		19,551.85
793F	17,451.23	17,451.23	17,451.23	1.1 of predecessor	21,507.04	1.1 of predecessor in NV, adjusted		21,507.04
797F	19,196.35	19,196.35	19,196.35	1.1 of predecessor	23,657.74	1.1 of predecessor in NV, adjusted		23,657.74
613E (5,000 gal)	3,636.27	3,636.27	3,636.27		4,481.37	NV, adjusted		4,481.37
621E (8,000 gal)	9,363.96	9,363.96	9,363.96		11,540.22	NV, adjusted		11,540.22
777D H2O Truck	13,111.37	13,111.37	13,111.37	Same as equivalent T	16,158.56	Same as equivalent Truck		16,158.56
785C H2O Truck	14,422.50	14,422.50	14,422.50	1.1 of predecessor	17,774.41	1.1 of predecessor		17,774.41
Dump Truck (10-12 yd3)	497.89	497.89	497.89		613.60			613.60
Tractor/Trailer (20 ton)								
Tractor/Trailer (50 ton)								
Tractor/Trailer (80 ton)								
Notes:								
(1) Unit Cost Basis:	Cost per set	Cost per set	Cost per set		Cost per set			
(2) Cost Basis:	required tires.	required tires.	required tires.		required tires.			
(3) Tire Cost Source:	2018	2018	2018		2018 [adjusted to AK from			
(4) Tire Wear Source (defined in model):	Caterpillar Handbook, Edition 35; Ch. 20	Caterpillar Handbook, Edition 35; Ch. 20	Caterpillar Handbook, Edition 35; Ch. 20		Caterpillar Handbook, Edition 35; Ch. 20			

Labor Rates

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HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Basis 1		Basis 2		Basis 3		Basis 4		Basis 5		Basis 6	
	Northern Nevada imperial		*Southern Nevada imperial*		*Northern Nevada metric*		*notes - do not use*		*Fort Knox*		*notes - do not use*	
EQUIPMENT OPERATORS - Labor Groups and Base Pay Rate ($/hr) (2)												
Bulldozers												
D6T	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
D6R w/ Winch	Group 8	48.69	Group 6	58.62	Group 8	48.69	same as rest of category		A1601 Group 1	40.35		
D7E	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
D8T	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
D9T	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
D10T2	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
D11T	Group 8	48.69	Group 6	58.62	Group 8	48.69			A1601 Group 1	40.35		
Wheeled Dozers												
824K												
834K												
844K												
854K												
Motor Graders												
12M2	Group 10a	49.55	Group 10	58.85	Group 10a	49.55			A1602 Group 1A	42.29		
14M	Group 10a	49.55	Group 10	58.85	Group 10a	49.55			A1602 Group 1A	42.29		
16M3	Group 10a	49.55	Group 10	58.85	Group 10a	49.55			A1602 Group 1A	42.29		
24M	Group 10a	49.55	Group 10	58.85	Group 10a	49.55	same as rest of category		A1602 Group 1A	42.29		
Track Excavators												
312F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1601 Group 1	40.35		
320F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1601 Group 1	40.35		
325F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1601 Group 1	40.35		
330F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1602 Group 1A	42.29		
349F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1602 Group 1A	42.29		
374F	Group 11	49.79	Group 12	59.02	Group 11	49.79	same as rest of category		A1602 Group 1A	42.29		
390F	Group 11	49.79	Group 12	59.02	Group 11	49.79			A1602 Group 1A	42.29		
Scrapers												
631K	Group 10	49.36	Group 15	59.23	Group 10	49.36			A1601 Group 1	40.35		
637K	Group 11	49.79	Group 15	59.23	Group 11	49.79			A1602 Group 1A	42.29		
Wheeled Loaders												
926M	Group 10	49.36	Group 8	58.73	Group 10	49.36			A1601 Group 1	40.35		
930M	Group 10	49.36	Group 8	58.73	Group 10	49.36			A1601 Group 1	40.35		
950M	Group 10	49.36	Group 8	58.73	Group 10	49.36			A1601 Group 1	40.35		
966M	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1602 Group 1A	42.29		
972M	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1602 Group 1A	42.29		
980M	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1602 Group 1A	42.29		
988K	Group 11	49.79	Group 10	58.85	Group 11	49.79			A1602 Group 1A	42.29		
990K	Group 11	49.79	Group 10	58.85	Group 11	49.79	same as 988K		A1602 Group 1A	42.29		
992K	Group 11a	51.43	Group 10	58.85	Group 11a	51.43			A1602 Group 1A	42.29		
994K	Group 11a	51.43	Group 10	58.85	Group 11a	51.43	same as 992K		A1602 Group 1A	42.29		
L2350												
Shovels/Excavators												
PC2000												
PC3000												
PC4000												
PC5500												
PC8000												
EX2500												
Hydraulic Hammers												
H120Es (fits 325)												
H160Es (fits 349)												
H180Es (fits 374/390)												
Demolition Shears												
S3050 (fits 320/325/330)												
S3070 (fits 330/349)												
S3090 (fits 374/390)												
Demolition Grapples												
G315B (fits 320/325)												
G320B (fits 325/330)												
G330 (fits 349/374)												
Other Equipment												
420F2	Group 10a	49.55	Group 4	58.40	Group 10a	49.55			A1602 Group 1A	42.29		
430F2	Group 10a	49.55	Group 4	58.40	Group 10a	49.55			A1602 Group 1A	42.29		
CS54B	Group 6	47.85	Group 4	58.40	Group 6	47.85			A1604 Group 3	39.04		
CS64B	Group 6	47.85	Group 4	58.40	Group 6	47.85			A1604 Group 3	39.04		
CP54B	Group 6	47.85	Group 4	58.40	Group 6	47.85			A1604 Group 3	39.04		
CP68B	Group 6	47.85	Group 4	58.40	Group 6	47.85			A1604 Group 3	39.04		
Light Truck - 1.5 Ton	Group 6	47.85	Group 4	58.40	Group 6	47.85	assume CS54B Vibratory Rolle		A1604 Group 3	39.04		
Supervisor's Truck	Group 6	47.85	Group 4	58.40	Group 6	47.85	assume CS54B Vibratory Rolle		A1604 Group 3	39.04		
Flatbed Truck	Group 6	47.85	Group 4	58.40	Group 6	47.85	assume CS54B Vibratory Rolle		A1604 Group 3	39.04		
Air Compressor + tools	Group 3	46.64	Group 1	55.67	Group 3	46.64			A1605 Group 4	32.83		
Welding Equipment	Group 9	49.01	Group 6	58.62	Group 9	49.01			A1602 Group 1A	42.29		
Heavy Duty Drill Rig	Group 10	49.36	Group 2	56.62	Group 10	49.36			A1601 Group 1	40.35		
Pump (plugging) Drill Rig	Group 10	49.36	Group 2	56.62	Group 10	49.36			A1601 Group 1	40.35		
Concrete Pump												
Gas Engine Vibrator	Group 6	47.85	Group 6	58.62	Group 6	47.85			A1604 Group 3	39.04		
Generator 5KW												
HDEP Welder (pipe or liner)												
5 Ton Crane	Group 10a	49.55	Group 8	58.73	Group 10a	49.55			A1601 Group 1	40.35		
20 Ton Crane	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1601 Group 1	40.35		
50 Ton Crane	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1602 Group 1A	42.29		
120 Ton Crane	Group 11	49.79	Group 8	58.73	Group 11	49.79			A1602 Group 1A	42.29		

Labor Rates

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HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Basis 1		Basis 2		Basis 3		Basis 4		Basis 5		Basis 6	
	Northern Nevada imperial		*Southern Nevada imperial*		*Northern Nevada metric*		*notes - do not use*		*Fort Knox*		*notes - do not use*	
Fringe Benefits												
Equip Op Fringe Benefits ($/hr)		0.00		0.00		0.00				23.65		
Zone and Area Adjustments - Miles and Rates ($hr) (3)												
Equipment Zone 1	0-50 miles	0.00	0-20 miles	0.00	0-50 miles	0.00			none	0.00		
Equipment Zone 2	50-150 miles	2.00	20-40 miles	2.00	50-150 miles	2.00			none	0.00		
Equipment Zone 3	150-300 miles	3.00	40-60 miles	3.00	150-300 miles	3.00			none	0.00		
Equipment Zone 4	>300 miles	4.00	>60 miles	3.50	>300 miles	4.00			none	0.00		
Equipment Zone 5												
Equipment Zone 6												
Equipment Zone 7												
NOTES:												
(1) Equipment Type:	Catepillar model or equivalent		Catepillar model or equivalent		Catepillar model or equivalent		Catepillar model or equivalent		Catepillar model or equivalent		Catepillar model or equivalent	
(2) Equipment Operator Source:	D-B NV180038 05/05/2018		D-B NV180034 01/05/2018		D-B NV180034 01/05/2018				Alaska Division of Labor			
(3) Zone Basis:	From Washoe Co.		From Las Vegas City Hall		From Las Vegas City Hall							
TRUCK DRIVERS - Labor Groups and Base Pay Rate ($/hr) (4)												
725C	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2103 Group 2	38.68		
730C	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2103 Group 2	38.68		
735C	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2103 Group 2	38.68		
740C	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2101 Group 1	39.94		
770G	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2101 Group 1	39.94		
773G	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2101 Group 1	39.94		
777G	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2102 Group 1A	41.21		
785D	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2102 Group 1A	41.21		
789D	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2102 Group 1A	41.21		
793F	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2102 Group 1A	41.21		
797F	Dump Truck	31.50	Group 4	46.62	Dump Truck Drive	31.50			A2102 Group 1A	41.21		
613E (5,000 gal)	Water Truck >	31.50	Group 3	46.44	Water Truck > 2,5	31.50			A2105 Group 4	37.28		
621E (8,000 gal)	Water Truck >	31.50	Group 4	46.62	Water Truck > 2,5	31.50			A2101 Group 1	39.94		
777D H2O Truck	Water Truck >	31.50	Group 4	46.62	Water Truck > 2,5	31.50	same as rest of category		A2101 Group 1	39.94		
785C H2O Truck	Water Truck >	31.50	Group 4	46.62	Water Truck > 2,5	31.50	same as rest of category		A2101 Group 1	39.94		
Dump Truck (10-12 yd3)	Dump Truck	31.50	Group 2	46.23	Dump Truck Drive	31.50			A2105 Group 4	37.28		
Tractor/Trailer (20 ton)									A2105 Group 4	37.28		
Tractor/Trailer (50 ton)									A2105 Group 4	37.28		
Tractor/Trailer (80 ton)									A2105 Group 4	37.28		
Fringe Benefits												
Truck Driver Fringe Benefits (cost/hr)										24.22		
Zone and Area Adjustments (5)												
Truck Zone 1	0-50 miles	0.00	0-30 miles	0.00	0-50 miles	0.00			none	0.00		
Truck Zone 2	50-150 miles	2.00	30-50 miles	1.50	50-150 miles	2.00			none	0.00		
Truck Zone 3	150-300 miles	3.00	50-70 miles	2.50	150-300 miles	3.00			none	0.00		
Truck Zone 4	>300 miles	4.00	>70 miles	3.50	>300 miles	4.00			none	0.00		
Truck Zone 5												
Truck Zone 6												
Truck Zone 7												
NOTES:												
(4) Truck Driver Source:									Alaska Division of Labor			
(5) Zone Basis:												
LABORERS - Labor Groups and Base Pay Rate ($/hr) (6,7)												
General Laborer	Group 1	30.82	Group 1	42.94	Group 1	30.82			N1201 Group 1	30.71		
Skilled Laborer	Group 4	31.32	Group 3	43.25	Group 4	31.32			N1203 Group 3	32.61		
Driller's Helper	Group 3	31.07	Group 2	43.15	Group 3	31.07			N1203 Group 3	32.61		
Rodmen (reinforcing concrete)	Group 2	30.92	Group 4	43.34	Group 2	30.92			N1202 Group 2	31.71		
Cement finisher	Group 3	31.07	Group 4	43.34	Group 3	31.07			N0401 Group 1	38.13		
Carpenter		38.80		48.95		38.80			A0301	38.34		
Fringe Benefits												
Laborer Fringe Benefits (cost/hr)		0.00		0.00		0.00				27.71		
Carpenter Fringe Benefits (cost/hr)		0.00		0.00		0.00				25.86		
Zone and Area Adjustments (8)												
Laborer Zone 1	0-50 miles	0.00	0-30 miles	0.00	0-50 miles	0.00			none	0.00		
Laborer Zone 2	50-150 miles	2.00	30-50 miles	1.50	50-150 miles	2.00			none	0.00		
Laborer Zone 3	150-300 miles	3.00	>50 miles	3.25	150-300 miles	3.00			none	0.00		
Laborer Zone 4	>300 miles	4.00	Laughlin	2.25	>300 miles	4.00			none	0.00		
Laborer Zone 5												
Laborer Zone 6												
Laborer Zone 7												
NOTES:												
(6) Laborer Source:									Alaska Division of Labor			
(7) Carpenter Source:									Alaska Division of Labor			
(8) Zone Basis:												
PROJECT MANAGEMENT AND TECHNICAL LABOR - Base Pay Rate ($/hr) (9)												
Project Manager		75.38		89.44		75.38				93.75		
Foreman		70.31		83.81		70.31				87.50		
Field Geologist/Engineer		126.53		126.53		126.53				155.93		
Field Tech/Sampler		103.93		103.93		103.93				128.09		
Range Scientist		115.68		115.68		115.68				142.57		

Labor Rates

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HOURLY LABOR RATE TABLE

EQUIPMENT TYPE [1] OR JOB DESCRIPTION	Basis 1		Basis 2		Basis 3		Basis 4		Basis 5		Basis 6	
	Northern Nevada imperial		*Southern Nevada imperial*		*Northern Nevada metric*		*notes - do not use*		*Fort Knox*		*notes - do not use*	
NOTES:												
(9) Project Manager:	R.S.Means 2018 Q2 (01 31		R.S.Means 2018 Q2 (01 31		R.S.Means 2018 Q2 (01 31				(013113200200, Total O&P)			
(9) Foreman Source:	R.S.Means 2018 Q2 (01 31		R.S.Means 2018 Q2 (01 31		R.S.Means 2018 Q2 (01 31				(01311200260, Total O&P)			
(9) Techical Labor Source:	SRK Consulting 2018 (Total		SRK Consulting 2018 (Total		SRK Consulting 2018 (Total				SRK Consulting 2018 (Total			
INDIRECT COSTS												
SOCIAL SECURITY, WORKMAN'S COMP, INSURANCE, ETC.												
Unemployment (%)		3.00%		3.00%		3.00%						
Retirement/SS/Medicare (%)		7.65%		7.65%		7.65%						
Workman's Compensation (%)		0.075		0.075		0.075						
NOTES:												
(10) Workman's Comp Source:	RS Means R013113-60 NV		RS Means R013113-60 NV		RS Means R013113-60 NV				Included in Pamphlet 600			
Unemployment Tax	NRS 612.540, NRS 612.606		NRS 612.540, NRS 612.606		NRS 612.540, NRS 612.606				Included in Pamphlet 600			
									Included in Pamphlet 600			

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RECLAMATION MATERIAL COST TABLE

MATERIAL TYPE		Basis 1 *Northern Nevada imperial*	Basis 2 *Southern Nevada imperial*	Basis 3 *Northern Nevada metric*	Basis 4 *notes - do not use*	Basis 5 *Fort Knox*	Basis 6 *notes - do not use*
Revegetation Materials							
Seed Mixes							
Seed Mix	Units						
None							
Mix 1	Cost/Acre	302.50	302.50	747.49		0.00	
Mix 2	Cost/Acre	332.75	332.75	822.24		0.00	
Mix 3	Cost/Acre	363.00	363.00	896.99		0.00	
Mix 4	Cost/Acre	393.25	393.25	971.74		0.00	
User Mix 1	Cost/Acre						
User Mix 2	Cost/Acre						
User Mix 3	Cost/Acre						
User Mix 4	Cost/Acre						
User Mix 5 (see Seed Mix sheet)	Cost/Acre						
	Notes:						
Mulch							
Item	Units						
None							
Straw Mulch	Cost/lb	0.16	0.16	0.36		0.20	
Hydro Mulch	Cost/lb	0.25	0.25	0.55		0.31	
	Cost/lb						
	Cost/lb						
	Cost/lb						
	Notes:	Straw Spec 60 lb. bale, Cert. weed free, (June 2018)100 bales per load	Straw Spec 60 lb. bale, Cert. weed free, (June 2018)100 bales per load	Straw Spec 60 lb. bale, Cert. weed free, (June 2018)100 bales per load			
		Granite Seed $500 per Ton in 50 lb bag Wood (Hydro) Mulch (July 2018)	Granite Seed $500 per Ton in 50 lb bag Wood (Hydro) Mulch (July 2018)	Granite Seed $500 per Ton in 50 lb bag Wood (Hydro) Mulch (July 2018)		Granite Seed $500 per Ton in 50 lb bag Wood (Hydro) Mulch (July 2018) [adjusted to AK from NV, using RS Means Historical Cost Index]	
Amendments							
Item	Units						
None							
Organic Matter	Cost/lb	0.70	0.70	1.54		0.00	
Treated Sludge	Cost/lb					0.00	
Chemical	Cost/lb	0.59	0.59	1.29		0.50	
	Cost/lb						
	Cost/lb						
	Cost/lb						
	Notes:	Granite Seed $0.70 per lb. in 50 lb. bag, 1 Ton min order Sustain 4-6-4 (July 2018)	Granite Seed $0.70 per lb. in 50 lb. bag, 1 Ton min order Sustain 4-6-4 (July 2018)				
		Western Nevada Supply $29.34 per 50 lb. bag 15-15-15 (June 2018)	Western Nevada Supply $29.34 per 50 lb. bag 15-15-15 (June 2018)			$0.44/lb cost from 2013 escalated to 2019	
Well Abandonment Materials							
Description	Units						
Cement	50lb bag	7.57	7.57	7.57		7.22	
Grout (Low Grade Bentonite)	50lb bag	8.65	8.65	8.65		10.66	
Inert Material/Cuttings	cy						
	Notes:	(1) Jentech Drilling Supply quote (June 2018) Type I,II Cement at $14.24 per 94 lb. bag	(1) Jentech Drilling Supply quote (June 2018) Type I,II Cement at $14.24 per 94 lb. bag			(1) RS Means 2019 (Fairbanks, AK) Type I,II Cement at $13.57 per 94 lb. bag	

		(2) Jentech Drilling Supply (June 2018) 3/8 in. Chunk Bentonite Hole Plug at $8.65 per 50 lb. bag (5.75 cf/bag at 43 gallons slurry and 12.1% solids)+ 10% for bentonite chips added.	(2) Jentech Drilling Supply (June 2018) 3/8 in. Chunk Bentonite Hole Plug at $8.65 per 50 lb. bag (5.75 cf/bag at 43 gallons slurry and 12.1% solids)+ 10% for bentonite chips added.			(2) Jentech Drilling Supply (June 2018) 3/8 in. Chunk Bentonite Hole Plug at $8.65 per 50 lb. bag (5.75 cf/bag at 43 gallons slurry and 12.1% solids)+ 10% for bentonite chips added. [adjusted to AK from NV, using RS Means Historical Cost Index]	

Monitoring Costs

Description	Units	Cost/unit	Cost/unit	Cost/unit	Cost/unit	Cost/unit	Cost/unit
Monitor Well Pump	ea.	2,516.69	2,516.69	2,516.69			
Sampling Supplies	ea.	5.88	5.88	5.88		0.00	
Profile 1	ea.					352.75	
Profile 2	ea.					308.90	
Profile 4	ea.					132.40	
FK Potable Water (Yearly Total)	ea.					3,910.00	
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	ea.						
	Notes:					Costs from "Monitoring.xlsx" in <...\226900.020_Fort Knox Rec & Closure Plan\020_Project Data\20190409_monitoring>	
						Shipping included. Per "Monitoring.xlsx" in <...\226900.020_Fort Knox Rec & Closure Plan\020_Project Data\20190409_monitoring>	

Fuel, Etc.

Description	Units	Cost/unit	Cost/unit	Cost/unit	Cost/unit	Cost/unit	Cost/unit
Off-road Diesel - delivered (1)	Cost/gal	2.42	2.42	0.64		2.75	
Pickup Truck Travel	Cost/mi	0.55	0.55	0.34		0.55	
Electical Power	Cost/kWh	0.08	0.08	0.08		0.11	
	Notes:	(1) Source: Oil Price Infomration Service , average annual cost including freight to Nevada (July 2018).	(1) Source: Oil Price Infomration Service , average annual cost including freight to Nevada (July 2018).	(1) Source: Oil Price Infomration Service , average annual cost including freight to Nevada (July 2018).		(1) Source: Average on road diesel price (GasBuddy August 22, 2019), less on-road tax of $0.08/gal and surcharge of $0.0095/gal (per Alaska Dept. of Revenue Tax Division).	
		Source: Federal Government Vehicle Allowance Rate 2018	Source: Federal Government Vehicle Allowance Rate 2018	Source: Federal Government Vehicle Allowance Rate 2018		Source: Federal Government Vehicle Allowance Rate 2018	
		Source: NV Energy (July 2018) $0.07856	Source: NV Energy (July 2018) $0.07856	Source: NV Energy (July 2018) $0.07856		GVEA bill calculator. http://extapp1p.gvea.com:8080/extweb/billCalculator.jsp?serviceType=5&kWh=1000000&kW=0&view=spawnPrint&B1=Go	

Nevada Standardized Bond Calculation
Misc. Unit Costs

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Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

MISCELLANEOUS COST TABLE

JOB DESCRIPTION		Basis 1		Basis 2		Basis 3		Basis 4		Basis 5		Basis 6		Bas
		Northern Nevada imperial		*Southern Nevada imperial*		*Northern Nevada metric*		*notes - do not use*		*Fort Knox*		*notes - do not use*		
REVEGETATION														
Item	**Units**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**
Seeding - Broadcast Manual (1)	$/acres	140.00	50.00	140.00	50.00	345.95	123.55			0.00	188.86			
Seeding - Broadcast Mechanical (1)	$/acres	100.00	38.00	100.00	38.00	247.11	93.90			0.00	188.86			
Seeding - Drill (1)	$/acres	140.00	100.00	140.00	100.00	345.95	247.11			0.00	188.86			
Seeding - Hydroseeding (1)	$/acres	250.00	125.00	250.00	125.00	617.76	308.88			0.00	188.86			
Item	**Units**	**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**
Shrub Planting - bare root 6-10 in (150- 250mm) (2)	ea.													
Tree Planting - bare root 11-16 in (270- 400mm) (3)	ea.													
Cactus Planting (4)	ea.													
NOTES:														
	(1) Seeding Source:	Source: Kelley Erosion Control (June 2018).		Source: Kelley Erosion Control (June 2018).		Source: Kelley Erosion Control (June 2018).				Costs escalated from 2014 to 2019 ("Monitoring_ft.xlsx" in				
	(2) Shrub Source:													
	(3) Tree Source:													
	(4) Cactus Source:													
BUILDING and WALL DEMOLITION														
Item	**Units**		**Premium**		**Premium**		**Premium**		**Premium**		**Premium**		**Premium**	
Building Demolition														
Lg. steel	C.F.													
Lg. concrete	C.F.													
Lg. masonry	C.F.													
Lg. mixed	C.F.													
Sm. steel	C.F.													
Sm. concrete	C.F.													
Sm. masonry	C.F.													
Sm. wood	C.F.													
Wall Demolition														
Block 4 in thick	S.F.		20%		20%		20%		20%		20%			
Block 6 in thick	S.F.		20%		20%		20%		20%		20%			
Block 8 in thick	S.F.		20%		20%		20%		20%		20%			
Block 12 in thick	S.F.		20%		20%		20%		20%		20%			
Conc 6 in thick	S.F.		10%		10%		10%		10%		10%			
Conc 8 in thick	S.F.		10%		10%		10%		10%		10%			
Conc 10 in thick	S.F.		10%		10%		10%		10%		10%			
Conc 12 in thick	S.F.		10%		10%		10%		10%		10%			
WASTE DISPOSAL														
Item	**Units**	**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**
Rubbish and Waste Handling														
Dumpster delivery (average for all sizes)	ea.	56.00		56.00		56.00				82.50				
Haul (average for all sizes)	ea.	175.00		175.00		175.00				259.00				
Rent per month (average for all sizes)	ea.	59.50		59.50		59.50				88.00				
Disposal fee per ton (tonne) (average for all sizes)	ton	65.50		65.50		72.20				97.00				
NOTES:														
	Dumpster Cost Source:	R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).				RS Means 2019 (Fairbanks, AK)				
	Disposal Fee Source:	R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).				RS Means 2019 (Fairbanks, AK)				
Hazardous Material Handling - Solids														
Pickup fees 55 gal. drums	ea.	259.00		259.00		259.00				309.26				
Bulk material (average)	ton	423.00		423.00		466.28				504.73				
Transport - truck load (80 drums, 25 cy (m3), 18 tons)	mile	5.78		5.78		3.59				7.25				
Dump site disposal fee	ton	298.50		298.50		329.04				355.94				
NOTES:														
	Solid Handling Cost Source:	R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).				RS Means 2019 (Fairbanks, AK)				
	Solid Disposal Fee Source:	2018 Q2 R.S. Means Heavy Const. ave. 02 81		2018 Q2 R.S. Means Heavy Const. ave. 02 81		2018 Q2 R.S. Means Heavy Const. ave. 02 81				AK)[avg. 028120106000 and 028120106020]				
Hazardous Material Handling - Liquids														
Vacuum Truck Pickup (2200 gal or 9,700 litres)	hr.	152.00		152.00		152.00				180.89				
Vacuum Truck Pickup (5000 gal or 2,000 litres)	hr.	220.00		220.00		220.00				262.58				
Dump site disposal fee	ton	298.50		298.50		329.04				355.94				
NOTES:														
	Liquid Handling Cost Source:	R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).		R.S. Means Heavy Construction (2018 Q2).				RS Means 2019 (Fairbanks, AK)				
	Liquid Disposal Fee Source:	2018 Q2 R.S. Means Heavy Const. ave. 02 81		2018 Q2 R.S. Means Heavy Const. ave. 02 81		2018 Q2 R.S. Means Heavy Const. ave. 02 81				AK)[avg. 028120106000 and 028120106020]				
Hydrocarbon Contaminated Soils (HCS)														
Insitu Biotreatment	C.Y	18.72		18.72		24.48				29.42				
HCS disposal fee	C.Y	288.50		288.50		377.34				344.27				
NOTES:														
	Insitu Treatement Cost Source:	2018 Q2 R.S. Means Heavy Const., ave. 02 65		2018 Q2 R.S. Means Heavy Const., ave. 02 65		2018 Q2 R.S. Means Heavy Const., ave. 02 65				AK)[avg. 026510302020 and 026510302021]				
	HCS Disposal Fee Source:	2018 Q2 R.S. Means Heavy Const., ave. 02 65		2018 Q2 R.S. Means Heavy Const., ave. 02 65		2018 Q2 R.S. Means Heavy Const., ave. 02 65				AK)[avg. 026510302050 and 026510302055]				
UNDERGROUND OPENING CLOSURE														
Item	**Units**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**
Reinforced Concrete Bulkheads and Shaft Covers														
Grade walls - 15 in thick, 8 ft high	C.Y	167.00		167.00		218.43				187.20				
Grade walls - 15 in thick, 12 ft high	C.Y	167.00		167.00		218.43				187.20				
Elevated conc, 1-way beam & slab - 15ft span	C.Y	290.00		290.00		379.31				326.43				
Elevated conc, 1-way beam & slab - 25ft span	C.Y	276.00		276.00		360.99				310.05				
Item	**Units**	**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**
Small Adit Plugging														
Bat Gate (5)	ea.	3,039.44		3,039.44		3,039.44				3,745.83				
Culvert Gate (5)	C.Y	6,078.87		6,078.87		7,950.86				9,798.71				
Adit Foam Plug (6)	C.Y	303.94		303.94		397.54				489.93				
Production Opening Foam Plug (6)	C.Y	303.94		303.94		397.54				489.93				
NOTES:														
	(5) Bat Gate Source:	NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)		NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)		NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)				NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)[adjusted to AK from NV, using RS Means Historic City				
	(6) Foam Plug Source:	NV BLM, 2/2006: 8 hr+ 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)		NV BLM, 2/2006: 8 hr+ 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)		NV BLM, 2/2006: 8 hr+ 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)				NV BLM, 2/2006: 8 hr+ 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)[adjusted to AK from NV				

Nevada Standardized Bond Calculation
Misc. Unit Costs

File Name:	*CDF_226900_020_FNL_ft_ism.xlsm*
Date:	*February 11, 2019*
Cost Basis:	*User Data*
Author/Source:	*FT/ISM - RS Means, AK Division of Labor Standards & Safety, Contractor Quotes*

MISCELLANEOUS COST TABLE

JOB DESCRIPTION		Basis 1		Basis 2		Basis 3		Basis 4		Basis 5		Basis 6		Bas
		Northern Nevada imperial		*Southern Nevada imperial*		*Northern Nevada metric*		*notes - do not use*		*Fort Knox*		*notes - do not use*		
MISC. LINEAR PROJECTS														
Item	**Units**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**
Fencing Installation														
Barbed 3-strand	ft	0.48		0.48		1.57				0.54				
Barbed 4-strand	ft	0.64		0.64		2.10				0.72				
Barbed 5-strand	ft	0.80		0.80		2.62				0.90				
Chain link 8 ft -10 ft Install	ft	39.00		39.00		127.92				55.38				
Wood stockade fence 6 ft high - Install	ft	15.95		15.95		52.32				26.22				
	ft													
	ft													
Fencing Removal														
Barbed 3-strand Removal	ft													
Barbed 4-strand Removal	ft													
Barbed 5-strand Removal	ft													
Chain link 8 ft -10 ft Removal	ft													
Wood, all types 4 ft -6 ft high Removal	ft													
	ft													
	ft													
Culvert Removal														
12 in (300 mm) Diameter	ft													
18 in (450 mm) Diameter	ft													
24 in (600 mm) Diameter	ft													
36 in (1m) Diameter	ft													
Pipeline Removal														
Plastic Pipe 3/4 in (mm) - 4 in (100 mm) diameter	ft													
6 in (150 mm) - 8 in (200 mm)	ft													
10 in (250 mm) - 18 in (450 mm)	ft													
20 in (500 mm) - 36 in (1 m)	ft													
Pipe and Drainpipe Installation														
Water 4in (100mm) 40ft (12m) length, welded HDPE	ft	2.20		2.20		7.22				3.58				
Water 6in (150mm) 40ft (12m) length, welded HDPE	ft	4.97		4.97		16.30				8.11				
Water 12in (300mm) 40ft (12m) length, welded HDPE	ft					0.00								
Drain 4in (100mm) perforated PVC	ft	1.44		1.44		4.72				2.36				
Drain 6in (150mm) perforated PVC	ft	3.07		3.07		10.07				5.18				
Drain 4in (100mm) corrugated, perf or plain	ft	0.65		0.65		2.13				1.54				
Drain 6in (150mm) corrugated., perf or plain	ft	1.65		1.65		5.41				4.29				
Drain Rock Preparation														
Item	**Units**		**Total**		**Total**		**Total**		**Total**		**Total**		**Total**	
Crushing	C.Y		0.50		0.50		0.65				0.50			
Screening	C.Y		0.50		0.50		0.65				0.50			
Misc.														
Item	**Units**		**Premium**		**Premium**		**Premium**		**Premium**		**Premium**		**Premium**	
Backhoe work	C.Y													
Powerline and Transformer Removal			**Total**		**Total**		**Total**		**Total**		**Total**		**Total**	
Single Pole Powerlines (7)	mile		42,243		42,243		26,248				52,060			
Double Pole Powerlines (8)	mile		48,277		48,277		29,998				59,497			
Substation (9)	unit		30,274		30,274		30,274				37,310			
NOTES:														
(7) Single Pole Source:		NV Energy estimate (2009) Adjusted to 2018		NV Energy estimate (2009) Adjusted to 2018						NV Energy estimate (2009) Adjusted to 2018 [adjusted to AK from NV, using				
(8) Double Pole Source:		NV Energy estimate (2009) Adjusted to 2018		NV Energy estimate (2009) Adjusted to 2018						NV Energy estimate (2009) Adjusted to 2018 [adjusted to AK from NV, using				
(9) Transformer Source:		Sierra Pacific Power Company		Sierra Pacific Power Company estimate (2004) adjusted to 2018						Sierra Pacific Power Company estimate (2004) adjusted to 2018				
EROSION, EVAPORATION and SEDIMENTATION CONTROL														
Item	**Units**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**
Rip-Rap & Rock Lining														
Rip-Rap 3/8 to 1/4 CY (m3) pieces, grouted	S.Y.	28.50		28.50		34.09				0.00		riprap sourced locally, not purchased		
Rip-Rap 18 in (450 mm) min thick, no grout	S.Y.	8.75		8.75		10.46				0.00		riprap sourced locally, not purchased		
Gabions, 6 in (150 mm) deep	S.Y.	8.65		8.65		10.35				0.00		riprap sourced locally, not purchased		
Gabions, 9 in (250 mm) deep	S.Y.	10.70		10.70		12.80				0.00		riprap sourced locally, not purchased		
Gabions, 12 in (300 mm) deep	S.Y.	14.35		14.35		17.16				0.00		riprap sourced locally, not purchased		
Gabions, 18 in (450 mm) deep	S.Y.	20.50		20.50		24.52				0.00		riprap sourced locally, not purchased		
Gabions, 36 in (1m) deep	S.Y.	34.50		34.50		41.26				0.00		riprap sourced locally, not purchased		
Liner Installation														
Item	**Units**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**	**Premium**	**Materials**
Finish grading large area	S.F.													
Compaction-riding, vibrating roller - 12in (300mm) lifts	S.F.													
Geotextile	S.F.													
Geonet	S.F.													
Geogrid	S.F.													
60 mil HDPE	S.F.	0.43		0.43		4.63				0.90				
Transport Costs														
Item	**Units**		**Total**		**Total**		**Total**		**Total**		**Total**		**Total**	
Ship/Barge Transport Cost	Cost/ton													
Rail Transport Cost	Cost/ton													
Air Transport Cost	Cost/ton													
Escort Vehicle Deadhead Rate	Cost/mi													
Construction Management Support														
Item	**Units**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**		**Materials**	
Office Trailer, Furnished, no hook-ups	month		207.00		207.00		207.00				237.58			
Toilet Portable, chemical	month		215.80		215.80		215.80				232.96			
PRODUCTION OR DEWATERING WELL PUMP REMOVAL														
Item	**Units**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**	**Equip**	**Labor**
Pump Type														
Submersible (10)	ft to pump	6.04	16.25	6.04	16.25	19.81	53.30			7.44	20.03			
Line Shaft (10)	ft to pump	6.04	16.25	6.04	16.25	19.81	53.30			7.44	20.03			
NOTES:														
(10) Pump Removal Source:		Boart Longyear Quote: June 2018		Boart Longyear Quote: June 2018						Boart Longyear Quote: June 2018 [adjusted to AK from NV, using RS				

Attachment C.1

Equipment Costs

Labor and Equipment Cost Data Request

Operations hours per month: 176

srk consulting

EQUIPMENT RATE TABLE

Item	Monthly Owner/Rental Rate w/o Fuel	PREVENTATIVE MAINTENANCE COST [Cost Per Hour]	GROUND ENGAGING TOOLS CONSUMPTION [Cost Per Hour] (Wear Items)	TIRE COST TABLE [Cost Per Tire]	Mobilization (per equipment, one way)	Notes
Bulldozers						
D6T	$ 12,600					
D6R w/ Winch	$ 13,000					
D7E	$ 15,500					
D8T	$ 20,700					
D9T	$ 29,500					
D10T2	$ 35,750					
D11T	$ 52,000					
Wheeled Dozers						
824K	N/A					
834K	N/A					
844K	N/A					
854K	N/A					
Motor Graders						
12M2	N/A					
14M	$ 12,000					
16M3	$ 24,000					
24M	N/A					
Track Excavators						
312F	$ 6,985					
320F	$ 9,700					
325F	$ 10,300					
330F	$ 11,700					
349F	$ 17,000					
374F	$ 24,000					
390F	$ 29,500					
Scrapers						
631K	N/A					
637K	N/A					
Wheeled Loaders						
926M	$ 7,000					
930M	$ 8,000					
950M	$ 9,700					
966M	$ 12,900					
972M	$ 15,000					
980M	$ 17,250					
988K	$ 25,000					
990K	N/A					
992K	N/A					
994K	N/A					
L2350	N/A					
Shovels						
PC2000	N/A					
PC3000	N/A					
PC4000	N/A					
PC5500	N/A					
PC8000	N/A					
EX2500	N/A					
Hydraulic Hammers						
H120Es (fits 325)	$ 7,500					
H160Es (fits 349)	$ 9,500					
H180Es (fits 374/390)	N/A					
Demolition Shears						
S3050 (fits 320/325/330)	N/A					
S3070 (fits 330/349)	N/A					
S3090 (fits 374/390)	N/A					
Demolition Grapples						
G315B (fits 320/325)	N/A					
G320B (fits 325/330)	N/A					
G330 (fits 349/374)	N/A					
Other Equipment						
420F2	$ 4,100					
430F2	$ 5,000					
CS54B	$ 6,350					
CS74B	$ 7,900					
CP54B	$ 8,200					
CP68B	N/A					

Light Truck - 1.5 Ton	N/A					
Supervisor's Truck	N/A					
Flatbed Truck	N/A					
Air Compressor + tools	N/A					
Welding Equipment	N/A					
Heavy Duty Drill Rig	N/A					
Pump (plugging) Drill Rig	N/A					
Concrete Pump	N/A					
Gas Engine Vibrator	N/A					
Generator 5KW	N/A					
HDEP Welder (pipe or liner)	N/A					
5 Ton Crane	N/A					
20 Ton Crane	N/A					
50 Ton Crane	N/A					
120 Ton Crane	N/A					
Trucks						
725C	N/A					
730C	$ 14,900					
735C	N/A					
740C	$ 20,700					
770G	N/A					
773G	N/A					
777G	N/A					
785D	N/A					
789D	N/A					
793F	N/A					
797F	N/A					
613E (5,000 gal)	N/A					
621E (8,000 gal)	N/A					
777D H2O Truck	N/A					
785C H2O Truck	N/A					
Dump Truck (10-12 m3)	N/A					
Tractor/Trailer (18 ton)	N/A					
Tractor/Trailer (45 ton)	N/A					
Tractor/Trailer (75 ton)	N/A					

United Rentals

RENTAL QUOTE

BRANCH 854
9760 OLD SEWARD HWY
ANCHORAGE AK 99515-2137
907-349-4425
907-336-1900 FAX

167938831

Customer #	:	1397725
Quote Date	:	04/08/19
Estimated Out	:	05/01/19 09:00 AM
Estimated In	:	05/29/19 09:00 AM
UR Job Loc	:	FORT KNOX, FAIRBANKS
UR Job #	:	8
Customer Job ID	:	
P.O. #	:	TBD
Ordered By	:	FILIZ TOPRAK
Written By	:	SHAWN SEREYKO
Salesperson	:	

Job Site Address

FORT KNOX MINE
FORT KNOX
x:.@.
FAIRBANKS AK 99701
Office: 775-753-4151 **Cell:** 775-742-7299

S R K CONSULTING
1250 LAMOILLE HWY
ELKO NV 89801-4396

This is not an invoice
Please do not pay from this document

RENTAL ITEMS:

Qty	Equipment	Description	Minimum	Day	Week	4 Week	Estimated Amt.
1	1003185	COMPRESSOR 175-195 CFM	149.00	198.00	534.00	1169.00	1,169.00
1	9751500	WELDER ARC 500 AMP GAS/DIESEL	239.00	239.00	524.00	1178.00	1,178.00
1	9502086	TRUCK PICKUP 1 TON 4X4 CREW CAB	246.00	246.00	739.00	1479.00	1,479.00
1	9522120	TRUCK STAKE 12'	287.00	287.00	822.00	2369.00	2,369.00
1	2403061	GENERATOR 6.5-6.9 KW		112.00	440.00	764.00	764.00

Rental Subtotal: 6,959.00

SALES/MISCELLANEOUS ITEMS:

Qty	Item		Price	Unit of Measure	Extended Amt.
1	AK VEHICLE RENTAL TAX	[AKVEHTAX/MCI]	147.900	EACH	147.90
1	ENVIRONMENTAL SERVICE CHARGE	[ENV/MCI]	99.000	EACH	99.00

Sales/Misc Subtotal: 246.90

Agreement Subtotal: 7,205.90
Rental Protection: 1,043.85
Estimated Total: 8,249.75

COMMENTS/NOTES:

CONTACT: FILIZ TOPRAK
CELL#: 775-742-7299

This proposal may be withdrawn if not accepted within 30 days. The above referenced Rental Protection Plan, environmental, and tax charges are estimates and are subject to change.

THIS IS NOT A RENTAL AGREEMENT. THE RENTAL OF EQUIPMENT AND ANY OTHER ITEMS LISTED ABOVE IS SUBJECT TO AVAILABILITY AND ACCEPTANCE OF THE TERMS AND CONDITIONS OF UNITED'S RENTAL AGREEMENT, WHICH MUST BE SIGNED PRIOR TO OR UPON DELIVERY OF THE EQUIPMENT AND OTHER ITEMS.

Attachment C.2

Material Costs

From:	Ivan Clark
To:	Filiz Toprak
Subject:	FW: Ft Knox Seed
Date:	Friday, August 23, 2019 12:35:25 PM
Attachments:	image001.png

From: Steve Rooke <steve.rooke@alaskamillandfeed.com>
Sent: Friday, August 23, 2019 11:27 AM
To: Ivan Clark <iclark@srk.com>
Subject: Ft Knox Seed

Ivan,
Price:
50% Arctared fescue
20% Gruening alpine
20% Glaucous tundra
10% Nortran tufted hairgrass
$10.46/lb
Thanks, Steve

Steve Rooke
Alaska Garden & Pet Supply, Inc.
SERVING ALASKA SINCE 1954
An Employee Owned Company
114 North Orca St, Anchorage, AK 99501
Office: (907) 222-2047
Fax: 907-222-2060
steve.rooke@alaskamillandfeed.com
www.alaskamillandfeed.com

General Variables

Production Factors

Operator Factor	0.75	
Visibility Factor	1	
Job Efficiency Factor	0.83	
Altitude Factor	1	

General Costs & Factors

Fuel Cost ($/gal)	$2.50	
Laborer Class	Power Equipment Operator	Laborer
Labor Cost ($/hr)	$82.87	$82.87
Supervisor Cost ($/hr)	$90.60	
Rodmen (reinforcing concrete)	$77.99	
Supervisor Cost Factor	1/6	
Mill Decommissioning Labor	52.90336538	

Monitoring & Sampling Costs

Profile 1 Cost ($/sample)	$353	Shipping Included
Profile 2 Cost ($/sample)	$309	Shipping Included
CN Sample	$48	
Profile 4	$132	
4 Metals	$45	
Contract Sampling ($/sample)	$160	

Revegetation

Upland Seed Rate (lb/ac)	9	Reduced from 11 lb/acre after discussions with State
Wetland Seed Rate (lb/ac)	9	Reduced from 15 lb/acre after discussions with State
Upland Seed Cost ($/lb)	$11.29	Aerial Application
Wetland Seed Cost ($/lb)	$11.29	
Fertilizer Rate (lb/ac)	$331.22	Aerial Application
Fertilizer Cost ($/ton)	$1,365.31	Includes shipping to site and handling fee
Reveg Application Rate(ac/hr)	$14.72	
Aerial Application Cost ($/ac)	$188.86	Wet Rate

Channel & Spillway Construction

Channel Excavation Cost ($/cy)	4	
Geofabric Cost ($/ft^2)	0.17	
Labor Cost to Place Geofabric ($/sy)	0.33	
Labor Cost O&P Factor	0%	
Total Labor Cost to Place Geofabric ($/sy)	$0.50	
Geofabric Placement Rate (sy/hr)	300.00	
Riprap Cost ($/cy)	8.00	FGMI to Provide and Stockpile
Cost to Place Riprap ($/cy)	6.00	
Channel Construction Rate (ft/hr)	10	

Well Closure Costs

Stemming Cost ($/cy)	$30.00
Bentonite Cost ($/50lb bag)	$30.39
Well Closure Rate (ft/hr)	50

Diver Inspection ($/inspect.)
Periodic Dam Inspection ($/inspect.)
TSF Road Cost ($/ft)
Seepage Pumping ($/day)
Pump to Pit ($/day)

Scheduling

Workday	10	hrs
Workweek	50	hrs
Work Month	200	hrs
Start Earthworks Months	1	May
End Earthworks Months	12	September
Earthworks Season	4	months
Start Revegetation Month	5	May
End Revegetation Month	8	August
Revegetation Season	4	Months

CAT Performance Handbook, Ed 41

or 50 min/hr

Labor Rates are 2018 contractor rates based on a 60 hour work week
O&P Included in labor rates Therefore they are FMV

2018 Profile I analytical discounted rates ($352.75) plus shipping - ACZ Laboratories
2018 Profile II analytical cost ($308.90) with shipping - ACZ Laboratories
2018 Shipping - FedEx - $150.00 for four samples
2018 Profile 4 analytical rate ($132.40 with shipping)
2018 Profile 5 analytical rate($168.15 with shipping)

Yr of Estimate	2014	
Current Year	2019	
Annual % Rate	2%	
2014 Rates	2017 Rates	
9		
9		
10.23	$11.29	Pathfinder Aviation 2014 costs + 2% inflation, profit included
10.23	$11.29	Pathfinder Aviation 2014 costs + 2% inflation, profit included
300	$331.22	
1236.6	$1,365.31	Pathfinder Aviation 2014 costs + 2% inflation, profit included
13.333	$14.72	
171.06	$188.86	Pathfinder Aviation 2014 costs + 2% inflation, profit included. Includes a

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Quote	QTE03373
Date	8/19/2019

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SALESPERSON	CUSTOMER PO	SHIPPING METHOD	PAYMENT TERMS	REQUESTED SHIP DATE	FOB	PAGE
DWHITELEY	BUDGETARY NUMBERS	WILL CALL	DOR	8/19/2019	PLANT	1 of 5

Line	QTY	UofM	DESCRIPTION	WEIGHT	UNIT PRICE	EXT PRICE
1	20.00	LF	4" X 10" INSULATED PIPE W/ HEAT TRACE CHANNEL. 4" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 10.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	9.67	$39.37	$787.40
2	1.00	EA	4" X 10" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 4"IPS X 10.7"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	11.30	$175.94	$175.94
3	20.00	LF	4" X 12" INSULATED PIPE W/ HEAT TRACE CHANNEL 4" HDPE SDR 11PE 3608/3408 AWWA C906 CORE PIPE WITH 12.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	11.59	$45.82	$916.40
4	1.00	EA	4" X 12" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 4"IPS X 12.75"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	18.20	$183.23	$183.23
5	20.00	LF	4" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 4" HDPE SDR 11PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	15.46	$60.65	$1213.00
6	1.00	EA	4" X 15" INSULATION JOINT KIT 4"IPS X 15.87"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	19.46	$310.33	$310.33
7	20.00	LF	6" X 12" INSULATED PIPE W/ HEAT TRACE CHANNEL 6" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 12.8" OD .200" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	7.72	$40.74	$814.80

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DWHITELEY	BUDGETARY NUMBERS	WILL CALL	DOR	8/19/2019	PLANT	2 of 5

Line	QTY	UofM	DESCRIPTION	WEIGHT	UNIT PRICE	EXT PRICE
8	1.00	EA	6" X 12" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 6"IPS X 12.75"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE,AK ***	16.50	$174.03	$174.03
9	20.00	LF	6" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 6" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	18.66	$64.09	$1281.80
10	1.00	EA	6" X 15" INSULATION JOINT KIT 6" IPS X 15.875"OD X 24" LONG 4LB/CF URETHANE FOAM WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.55	$236.66	$236.66
11	20.00	LF	8" X 15" INSULATED PIPE W/ HEAT TRACE CHANNEL 8" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 15.65" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	22.11	$72.48	$1449.60
12	1.00	EA	8" X 15" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 8"IPS X 15.875"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	20.28	$177.52	$177.52
13	20.00	LF	10" X 18" INSULATED PIPE W/ HEAT TRACE CHANNEL 10" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 18.3" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	29.19	$96.65	$1933.00
14	1.00	EA	10" X 18" INSULATION JOINT KIT W/ HEAT TRACE CHANNEL 10"IPS X 18.75"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	28.10	$246.25	$246.25

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SALESPERSON	CUSTOMER PO	SHIPPING METHOD	PAYMENT TERMS	REQUESTED SHIP DATE	FOB	PAGE
DWHITELEY	BUDGETARY NUMBERS	WILL CALL	DOR	8/19/2019	PLANT	3 of 5

Line	QTY	UofM	DESCRIPTION	WEIGHT	UNIT PRICE	EXT PRICE
15	20.00	LF	10" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 10" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	32.19	$116.21	$2324.20
16	1.00	EA	10" X 20" INSULATION JOINT KIT WITH HEAT TRACE CHANNEL 10"IPS X 20.00"OD X 24" LONG 3LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.65	$353.64	$353.64
17	20.00	LF	12" X 18" INSULATED PIPE W/ HEAT TRACE CHANNEL 12" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 18.3" OD .250" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	34.51	$105.35	$2107.00
18	1.00	EA	12" X 18" INSULATION JOINT KIT12"IPS X 18.75"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	24.90	$405.27	$405.27
19	20.00	LF	12" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 12" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	37.51	$1274.98	$25499.60
20	1.00	EA	12" X 20" INSULATED JOINT KIT 12"IPS X 20"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	30.85	$425.53	$425.53
21	20.00	LF	14" X 20" INSULATED PIPE W/ HEAT TRACE CHANNEL 14" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 20.3" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	41.30	$131.45	$2629.00

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SALESPERSON	CUSTOMER PO	SHIPPING METHOD	PAYMENT TERMS	REQUESTED SHIP DATE	FOB	PAGE
DWHITELEY	BUDGETARY NUMBERS	WILL CALL	DOR	8/19/2019	PLANT	4 of 5

Line	QTY	UofM	DESCRIPTION	WEIGHT	UNIT PRICE	EXT PRICE
22	1.00	EA	14" X 20" INSULATION JOINT KIT14"IPS X 20.0"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	26.10	$468.12	$468.12
23	20.00	LF	16" X 22" INSULATED PIPE W/ HEAT TRACE CHANNEL 16" HDPE SDR 11 PE 3608/3408 AWWA C906 CORE PIPE WITH 22.80" OD .300" WALL PE 3608 HDPE JACKET 3 LB/CF URETHANE FOAM 20'-0" LENGTHS WITH 12" CUTBACKS *** FOB BIG LAKE, AK ***	52.84	$165.43	$3308.60
24	1.00	EA	16" X 22" INSULATION JOINT KIT16"IPS X 22"OD X 24" LONG 4LB/CF URETHANE FOAM HALF SHELL SET WITH 36" WIDE HEAT SHRINK SLEEVE AND CLOSURE STRIP *** FOB BIG LAKE, AK ***	28.25	$510.29	$510.29
25	1.00	EA	IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL SIZES, QUANTITIES AND DESCRIPTION OF MATERIAL BEFORE BIDDING OR ORDERING. SUBMITTAL PACKAGE WILL BE PROVIDED AND REQUIRED APPROVED BEFORE MANUFACTURING CAN START. NOTE: WE ARE OFFERING OUR STANDARD TESTING PACKAGE OF DENSITY, "K" FACTOR AND VISUAL TESTING. NO SPECIFICATION PROVIDED, THANK YOU FOR THE OPPORTUNITY TO PROVIDE YOU WITH THIS QUOTATION. PLEASE CALL IF THERE ARE ANY QUESTIONS. THANK YOU DEMITRIUS WHITELEY 907-892-8438 OFFICE 907-715-7105 CELL	.00	$0.00	$0.00

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SALESPERSON	CUSTOMER PO	SHIPPING METHOD	PAYMENT TERMS	REQUESTED SHIP DATE	FOB	PAGE
DWHITELEY	BUDGETARY NUMBERS	WILL CALL	DOR	8/19/2019	PLANT	5 of 5

Line	QTY	UofM	DESCRIPTION	WEIGHT	UNIT PRICE	EXT PRICE

Total Weight: 6528.14

Subtotal	$47931.21
Misc.	$0.00
Freight	$0.00
Tax	$0.00
Discount	$0.00
Total	**$47931.21**

Quotes are valid for 30 days unless stated otherwise. Our products are warranted to the extent that we will replace without charge, products shown to have manufacturing defects within the first year from the date of delivery. No warranty is included against any expense for removal, re-installation, freight to or from or other consequential damages arising from any defect. Due to the widely varying conditions under which our products are installed and used, we cannot be and are not bound. No person is authorized to bind us by any further warranty whatsoever expressed or implied including the warranty or merchant ability and fitness for a particular purpose. Arctic Insulation and Manufacturing terms are Net 30. A finance charge of 2% will be applied to all over due accounts.

Attachment C.3

Diesel Costs

How does GasBuddy Work?

Find Gas

Save money by finding the cheapest gas near you.

Report Gas

Help others save money by reporting gas prices.

Win Gas

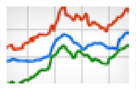
ENTER DRAW

Earn points for reporting gas prices and use them to enter to win free gas. (Learn More)

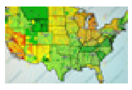
Statistics

	Anchorage	USA	Trend
Today	2.873	2.598	
Yesterday	2.875	2.599	Prices Stable
One Week Ago	2.909	2.634	
One Month Ago	3.094	2.757	
One Year Ago	3.186	2.827	

** Average Regular Gas Prices - Updated: 7:55 AM*



Price Charts



Gas Price Heat Maps

This Week's Opinion Poll

What is the primary reason not to buy a hybrid/electric vehicle? (Discuss)

- Costs
- Range
- Reliability
- Performance
- Other
- None

VOTE View results/past polls

Tell a friend about our site!

We believe people have control over how much they pay at the pump. Spread the word about the Gasbuddy community! Tell a friend!

GasBuddy Blog & News

GasBuddy T-Shirts, Hats And More Now Available
53 minutes ago by: GasBuddy Blog

Oil Inventories Drift Lower While Gasoline And ...
Yesterday by: GasBuddy Blog

Should you warm up your car when it's cold?
Today by: DesertSpring

Inside Mercedes-AMG's New, Almost-Sterile Engin...
4 hours ago by: EricOShawn

MLB warns of stiff penalty as gas station sex p...
3 hours ago by: roadking1951

Submit News | All Recent News

Quick Search for Gas Prices

Find the lowest gas prices in these areas:

Anchorage [More Cities]

Related Information

Trip Calculator
Crude Oil Price Chart

Anchorage Avg
2.873

Search Gas Prices

Show Search Options

City, State or Zip... SEARCH

Lowest Diesel Fuel Prices in the Last 48 hours

Regular Gas | Midgrade | Premium | Diesel Fuel

Price	Station	Area	Thanks
2.55 update	Costco 330 W Dimond Blvd near King St	Anchorage	MooseInAlaska 16 hours ago
2.75 update	Holiday 1530 Huffman Rd & New Seward Hwy	Anchorage	ReadSquirrel 10 hours ago
2.75 update	Carrs 1375 Huffman Park Dr near Old Seward Hwy	Anchorage	ReadSquirrel 10 hours ago
2.75 update	Fred Meyer 9150 Northwood St & W Dimond Blvd	Anchorage	mike74711 18 hours ago
2.75 update	Fred Meyer 2300 Abbott Rd & Lake Otis Pkwy	Anchorage	felipewag Tue 8:22 PM
2.79 update	Chevron 3608 Minnesota Dr & Spenard Rd	Anchorage	ReadSquirrel 13 minutes ago
CASH 2.79 update	Shell 1501 W Northern Lights Blvd & Minnesota Dr	Anchorage	MSampy63 20 minutes ago
2.79 update	Tesoro 4608 Spenard Rd & Wisconsin St	Anchorage	ReinholdAK 21 hours ago
2.82 update	Alice Mae's 19223 Old Glenn Hwy near Skyview Dr	Chugiak	TimKnEagleRiver 2 hours ago
2.84 update	Holiday 285 Muldoon Rd & Duben Ave	Anchorage	Indyscooter 14 hours ago
2.84 update	Tesoro 341 Boniface Pkwy near Camelot Dr	Anchorage	ima_trooper 16 hours ago
2.85 update	Carrs 1650 W Northern Lights Blvd & Minnesota Dr	Anchorage	MSampy63 18 minutes ago
2.85 update	Reed's Auto Service 12751 Old Seward Hwy near Huffman Rd	Anchorage	ReadSquirrel 10 hours ago
CASH 2.86 update	Tesoro 442 Gambell St & 5th Ave	Anchorage	2strokeHI 1 hour ago
2.86 update	Fred Meyer 7701 Debarr Rd & Muldoon Rd	Anchorage	TimKnEagleRiver 2 hours ago

Highest Diesel Fuel Prices in the Last 48 hours

Price	Station	Area	Thanks
2.99 update	Chevron 9100 Lake Otis Pkwy & Abbott Rd	Anchorage	John8421 25 hours ago
2.99 update	Chevron 1092 O'Malley Centre & Old Seward Hwy	Anchorage	ReadSquirrel 24 hours ago
2.99 update	Shell 919 E Dimond Blvd & Old Seward Hwy	Anchorage	MSampy63 20 hours ago
CASH 2.99 update	Shell 11301 Old Glenn Hwy & Centerfield Dr	Eagle River	TimKnEagleRiver 2 hours ago

U.S. Fuel Tax Rates
Canada Fuel Tax Rates
U.S. Fuel Tax State Map
Volume Converter Tool
What is OPEC?
What is in a Barrel of Crude?

Price	Station	Area	Thanks
2.99 update	Holiday 1500 E 5th Ave & Orca St	Anchorage	2strokeHI 1 hour ago
2.99 update	Chevron 2500 Seward Hwy & Fireweed Ln	Anchorage	2strokeHI 1 hour ago
2.99 update	Chevron 5210 Old Seward Hwy & International Airport Rd	Anchorage	harleymamajan 7 minutes ago
2.98 update	Shell 810 W Tudor Rd & Arctic Blvd	Anchorage	ColPotter 9 hours ago
2.94 update	Tesoro 101 E Northern Lights Blvd & A St	Anchorage	2strokeHI 1 hour ago
2.93 update	Holiday 10630 Old Seward Hwy & O'Malley Rd	Anchorage	John8421 Tue 7:57 PM
2.93 update	Tesoro 1940 Abbott Rd & Abbott Rd	Anchorage	lmomzkn 17 hours ago
2.93 update	Holiday 5501 DeBarr Rd & Boniface Pkwy	Anchorage	ima_trooper 16 hours ago
2.93 update	Essential 1 9250 King St & 92nd Ave	Anchorage	AKRed49 13 hours ago
2.93 update	Tesoro 36511 Seward Hwy & Alyeska Hwy	Girdwood	gramsd 13 hours ago
2.93 update	Tesoro 6010 Old Seward Hwy & Dowling Rd	Anchorage	harleymamajan 8 minutes ago

GAS PRICES
Search Gas Prices
Report Gas Prices
Trip Cost Calculator
Map Gas Prices
Gas Price Charts
Average Gas Prices by State
Fuel Logbook
Master Station List
US Fuel Tax Rates
US Fuel Tax State Map
Canada Fuel Tax Rates
What is OPEC?
What is in a Barrel of Crude?
Crude Oil Price Chart
Fuel Saving Tips

MAPS
Gas Price Heat Maps
Map Gas Prices

FORUMS
Message Forum
Favorite Topics
Browse Other Forums
Manage Favorite Topics
Manage Ignored Members

COMMUNITY
My Point Statistics
My Profile
Photo Albums
Browse Profiles
Edit Member Info
Opinion Polls
Tell A Friend
Members Messaging
Preferences
Notifications

POINTS & PRIZES
Prize Give-away
Recent Prize Winners
All Time / 30 Day Leaders
Half-Year Leaders
Consecutive Day Leaders
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How to Earn Points

MOBILE APPS
GasBuddy Mobile Apps

MEDIA
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HELP
Contact Us
How It Works

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Motor Fuel Tax

Motor Fuel Tax News

Alaska levies a motor fuel tax and surcharge on motor fuel sold, transferred, or used within Alaska. The Department of Revenue's Tax Division collects motor fuel taxes primarily from wholesalers and distributors that hold "qualified dealer" licenses issued by the division.

(A qualified dealer is a person who refines, imports, manufactures, produces, compounds or wholesales refined or motor fuel.)

Fuel Type	Rate/Gallon
Highway	$0.08
Marine	$0.05
Aviation Gasoline	$0.047
Jet Fuel	$0.032

In addition to the tax rates, there is a motor fuel surcharge, which is $0.0095 a gallon. It went into effect on July 1, 2015.

Taxpayers file returns and make payments monthly. There are four separate returns: gasoline, diesel, aviation and gasohol.

Taxpayers must file their returns electronically using Revenue Online. The due date is the last day of the month following the month of sale or taxable use. Taxpayers may deduct 1% of the tax and surcharge due, limited to a maximum of $100 per return, as a credit for timely filing to cover the expense of accounting and filing the monthly return.

Motor fuel tax exemptions – Sales and use for heating, federal, state, and local government agencies, foreign flights (jet fuel), exports, charitable institutions, bunker fuel (residual fuel oil or #6 fuel oil), and sales or transfers between qualified dealers.

Surcharge exemptions – Use by federal and state government agencies, liquefied petroleum gas, aviation fuel, fuel refined and used outside the United States, and transfers between qualified dealers. Local governments are exempt from the motor fuel tax, but not all local governments are exempt from the surcharge. For a local government to be exempt from the surcharge, it must meet the definition of a "municipality". For a list of municipalities, contact the motor fuel section at dor.tax.motorfuel@alaska.gov.

Consumers may claim a refund for the full tax rate or surcharge if the consumer paid the full tax rate or surcharge at the time of purchase and then used the fuel for exempt purposes. Consumers may also claim a partial refund of the tax if a higher rate was paid at the time of purchase or if the consumer used the fuel for partially exempt purposes.

Resellers, usually retailers, may claim a refund for the full tax if the reseller paid the tax, and then sold the fuel for exempt use and did not collect the tax.

For diesel specifically, municipalities and federally recognized tribes may elect to defer the payment of tax on diesel purchased for their own official use and resale to residents of the municipality or tribal members by filing a form with the Tax Division. The municipalities and federally recognized tribes must receive approval before receiving untaxed fuel. A list of approved municipalities and tribes can be found here. (Select "Search for a License" and then "Motor Fuel Tax Deferral Query.") Then, if the fuel for which taxes were deferred ends up being sold for a taxable use, the municipality or tribe must file a tax return and pay the tax.

For aviation fuel, the Tax Division shares with the respective municipalities 60% of taxes attributable to aviation fuel sales at municipally owned or operated airports. (A current list of Airport Sponsors.) The Tax Division calculates the amount due to the municipalities based on reports filed by qualified dealers. Qualified dealers that collect tax at municipal airports must attach Schedule 532A to the aviation return.

Additional information on the motor fuel tax.

Links

- Forms
- FAQs
- Reports
- Schemas
- Statutes and Regulations
- Cash Tax Payment Options

Annual Report Information

- 2018 Annual Report
- 2017 Annual Report
- 2016 Annual Report
- 2015 Annual Report
- 2014 Annual Report
- Annual Report Data
- Description of Credits
- Historical Overview

How to Contact Us

OR

Juneau Office
Juneau Front Desk
907-465-2320 - Juneau

Email Tips to Investigators
1-855-269-7868

Anchorage Office
Anchorage Front Desk
907-269-6620 - Anchorage
907-269-6595 - Fax

Attachment C.4

Power Costs

Select Service Type

GS-3 Industrial Service

Set kWh

1000000 kWh

Set kW

0 kW

Go

GVEA Bill Calculator

Customer Charge:	$220.00
Demand Charge: $29.18 x 0kW)	$0.00
Utility Charge: $0.012200 x 1000000kWh)	$12,200.00
Fuel and Purchased Power: $0.09639000 x 1000000kWh)	$96,390.00
Regulatory Cost Charge: $0.00082700 x 1000000kWh)	$827.00
Total Due:	$109,637.00