KINROSS Fort Knox

Fort Knox Mine
Plan of Operations Modification Request

Walter Creek Valley Heap Leach Facility Expansion
Barnes Creek Waste Rock Dump Expansion

February 4, 2014

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Abbreviations

amsl	above mean sea level
BCWRD	Barnes Creek Waste Rock Dump
CIC	carbon-in-column
COE	U.S. Army Corps of Engineers
DEC	Alaska Department of Environmental Conservation
DNR	Alaska Department of Natural Resources
FEMA	Federal Emergency Management Agency
ft	feet
ft^2	square feet
FGMI	Fairbanks Gold Mining, Inc.
Fort Knox	Fort Knox Mine
gpm	gallons per minute
H	horizontal
hr	hour
MHTLO	Mental Health Trust Land Office
PCMS	process component monitoring system
PFS	prefeasibility study
TSF	tailings storage facility
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
V	vertical
WCHLF	Walter Creek Heap Leach Facility

1.0 INTRODUCTION

Fairbanks Gold Mining, Inc. (FGMI) is requesting a Plan of Operations modification approval at its Fort Knox Mine (Fort Knox) for the following:

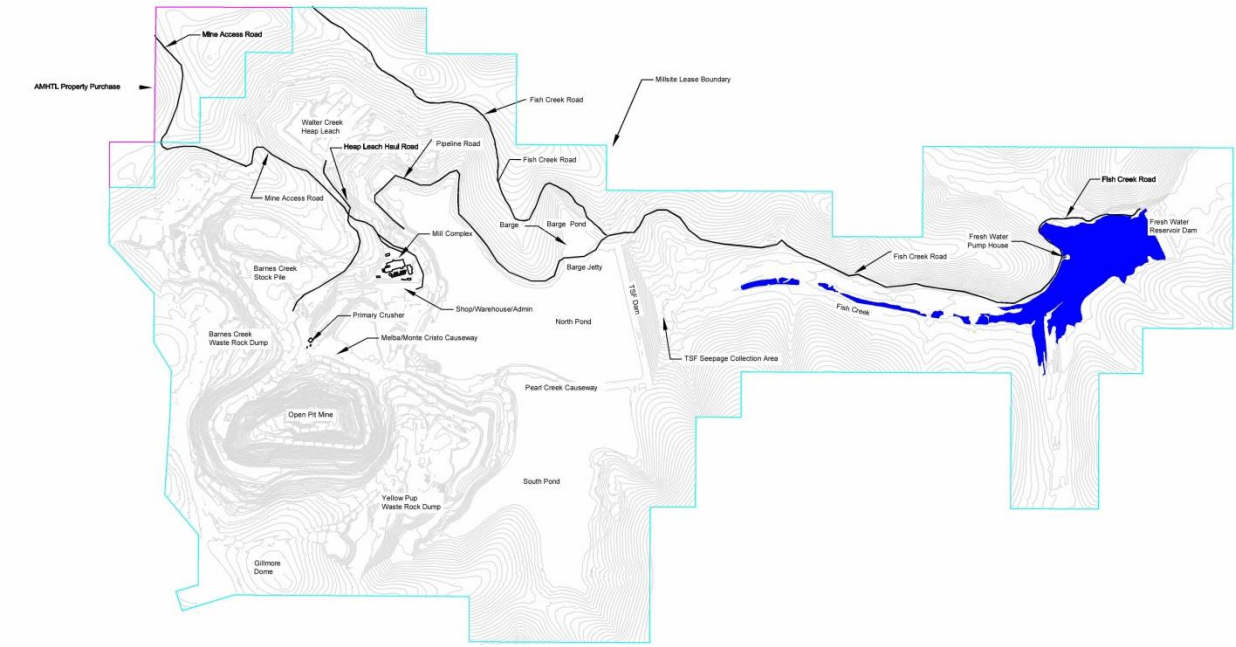
- Walter Creek Heap Leach Facility Expansion
- Barnes Creek Waste Rock Dump Expansion

1.1 Site Description

Fort Knox is owned and operated by FGMI, a wholly owned subsidiary of Kinross Gold USA, Inc. Fort Knox is located in the Fairbanks North Star Borough, approximately 26-road miles northeast of Fairbanks, Alaska (Figure 1). It is located along a belt of lode and placer deposits that comprise one of the highest gold-producing areas in Alaska. The deposit at Fort Knox is mined by conventional open-pit methods on a year-round basis, seven days per week. Fort Knox processes ore onsite at a carbon in-pulp mill with a daily capacity of up to 45,000 tons. In recent years, Fort Knox has produced approximately 300,000 to 350,000 ounces of gold annually and is projecting production of 425,000 ounces in 2013. Major site facilities include the active open pit mine, mill, tailings storage facility (TSF), waste rock dumps, water storage reservoir, and the Walter Creek Valley Heap Leach Facility (Figure 2).

Figure 1: Site Location

Figure 2: Mine Facilities



2.0 WALTER CREEK HEAP LEACH EXPANSION

FGMI operates the Walter Creek Valley Fill Heap Leach Facility (WCHLF) located approximately 26 miles northeast of Fairbanks, Alaska. The facility is located on the Livengood (A-1) SW U.S. Geological Survey (USGS) quadrangle map in Township 2N, range 2E of the Fairbanks Meridian. The approximate GPS coordinates of the facility center are latitude 65°00'N, longitude 147°20'W. Construction of the WCHLF, upstream of the existing Fort Knox Tailings Storage Facility (TSF), has been completed through Stage 3 (year 2013). Stage 4 is scheduled for completion in the 2014 construction season.

FGMI proposes to expand the WCHLF, which is currently permitted through Stage 5 for a designed capacity of 161 million tons. With this expansion, it is FGMI's intent to maximize the potential capacity for placement and processing of ore within the Walter Creek Valley. Beginning in 2012 the placement of ore for heap leaching has been increased to approximately 30 million tons per annum or roughly 123,000 tons per day based on April through November loading (244 days per year) on the in-heap.

The WCHLF expansion extends from the perimeter of the currently designed and approved WCHLF as illustrated in Attachment 1, WCHLF Expansion General Arrangement Plan. It extends the west/northwest sides of Stages 3 through 5 of the currently designed arrangement, while the final two expansion stages form Stages 6 and 7 of the overall pad and constitute new areas above and up-valley from the original WCHLF.

The proposed expansion will increase the capacity to approximately 307 million tons of ore with the completion of Phases 6 and 7. With the proposed expansion, the lined pad area will increase from

approximately 279 acres to 485 acres and will encompass the upper Walter Creek watershed. The expanded WCHLF will not extend outside the Walter Creek watershed as illustrated by Attachment 1, WCHLF Expansion General Arrangement Plan.

The Walter Creek Valley Fill Heap Leach Facility Expansion Pre-Feasibility Study [*Knight Piesold, December 7, 2011*] was originally provided to the DNR on June 15, 2012, which includes detailed engineering information for the Alaska Department of Natural Resources (DNR) review. DNR provided comments [*Alaska Department of Natural Resources, Letter from Tom Crafford, August 13, 2012*] to FGMI regarding the pre-feasibility study, and the following responses address these comments.

- Design modifications were made to the on-heap conveyance and dispersion pipes by raising the connections to the on-heap solution conveyance and dispersion pipework based on the existing conditions of the loaded heap [*Knight Piesold, WCHLF Approved Design – Construction Addendum No. 14: Reissue for Construction Drawings (Revision 3) and On-Heap Pipework concept 2012 Construction, Remaining Stage 3 and 4, October 18, 2012*]. The design modifications are illustrated by Attachments 2 – 4, WCHLF On-Heap Solution Conveyance/Dispersion Pipes Plan, WCHLF On-Heap Solution Conveyance/Dispersion Pipes Network Sheet 1 of 2, and WCHLF On-Heap Solution Conveyance/Dispersion Pipes Network Sheet 2 of 2, respectively. The design modifications include:

  - Installation of the perforated dispersion pipe networks at elevation 1908 feet (ft).

  - Incorporation of a flat section of solid on-heap conveyance pipe, connecting to the perforated dispersion pipe networks at elevation 1908 ft.

  - The remaining sections of the solid on-heap conveyance pipe installed at a 2-percent grade from the end of the flat section of solid conveyance pipe to the tie-in point with the pad surface.

  - The pad solution collection headers upstream of the on-heap pipe connections will no longer be connected to the collection headers downstream on the pad surface and will only tie directly to the on-heap conveyance pipes. The downstream perforated solution collection headers will be extended up the pad slope past the on-heap connection and run adjacent to the perforated upstream pipe for a short distance (5 ft).

    The design was carried out with the input of DNR. Analysis of this modified solution collection system predicted that the calculated head applied to the pad liner system under the increased flow and ore leaching regime will remain low, at less than 1.0-ft on average, for the area under leach. This together with the high-quality liner and the solution monitoring systems installed in the WCHLF, as well as the hydraulic containment provided by the valley site that results in all drainage reporting to the TSF and then being consumed in the mill process, provides for a very high level of environmental protection. [*Knight Piesold, Walter Creek Valley Fill Heap Leach Facility Expansion Pre-Feasibility Study Revision 3 (Prefeasibility Study Rev. 3), April 30, 2013*]

- FGMI will not pursue the reduction of minimum freeboard requirement below the crest of the in-heap storage from 5 ft to 3ft. The 5 ft freeboard allowance was retained per the original design. [*Knight Piesold, Walter Creek Valley Fill Heap Leach Facility Expansion Pre-Feasibility Study Revision 3 (Prefeasibility Study Rev. 3), April 30, 2013*]

- The draindown allowance was re-evaluated [*Knight Piesold, Walter Creek Heap Leach Facility Report on Transient Heap Draindown Analyses, Revision 1, (Draindown Analyses) April 22, 2013*]. In the event of an emergency condition, more than a day of draindown may be accommodated within the in-heap pond because flow rates begin at the leach application rate and decline as the draindown process proceeds without recirculation of solution on top of the heap. Fill durations without encroachment into storm volume range from 1.5 to 1.7 days depending upon the conditions considered in the draindown analyses. Fill durations to the spillway invert elevation are longer yet.

  Recirculation of solution under emergency power (to the top of the WCHLF to keep some solution volume in storage in the leach ore above the pond) is an effective means of extending fill durations to the point of encroaching into storm volume or even to the point of approaching the spillway elevation. Recirculating 50 percent of the solution flow (i.e., 8,000 gpm out of 16,000 gpm) will at least double fill durations and, in some cases, may extend fill durations by more than a factor of two because of the non-linear nature of the draindown process.

  Three in-heap storage pond filling scenarios were investigated in association with the transient draindown analysis:

  1. Establishing the anticipated volume of flow expected to accumulate over the first 24 hours.

  2. Filling to the level at which the storage capacity for the 100-yr/24-hr storm volume is still available below the invert elevation of the overflow spillway, which is currently elevation 1650.50 ft above mean sea level (amsl) per the original design but may be reduced to elevation 1650.25 ft amsl per the PFS design of the WCHLP expansion.

  3. Filling to the level at which the solution within the in-heap storage pond just reaches the invert of the overflow spillway as defined in Item 2 above.

  Transient draindown analyses and calculations were completed to estimate the volume of solution released from the heap over the first 24 hours following an outage and the time before each of these pond levels are reached (if at all) for two different average heap heights (August 2011, 108.4 ft and ultimate heap, 280.0 ft) under the assumption of either no solution recirculation or 8,000 gpm solution recirculation. Information from the PFS design of the WCHLF expansion was reviewed to establish the volume available to capture draindown flows for a range of conditions. These include:

  - Spillway invert elevation
    - Original design elevation 1650.50 ft amsl
    - Prefeasibility study elevation 1650.25 ft amsl

- Pumping scenario and typical operating pond elevations (Pumping Scenarios B and C are renamed in this document as Primary Pumping Configuration and Standby Pumping Configuration, respectively and discussed on page 9.)
  - Primary Pumping Configuration
    - 12,000 gpm from original wells, 4,000 gpm from additional wells
    - Maximum normal operating pond level at Stage 7, 1617.3 ft amsl
  - Standby Pumping Configuration
    - 8,000 gpm from original wells, 8,000 gpm from additional wells
    - Maximum normal operating pond level at Stage 7, 1617.3 ft amsl

- Storm Volume
  - Available volume without encroachment into storm volume
  - Available volume below spillway invert elevation with use of storm volume

- Recirculation
  - No recirculation
  - 8,000 gpm circulation

The available volumes were established for the possible combinations of the above various conditions and the time to fill each possible available volume was established for draindown from the two different average heap heights. The summary analysis results are shown in Table 1. The draindown analysis results are summarized in Tables 2 and 3 for the August 2011 heap (108.4 ft average height) and the ultimate heap (280.0 ft average height), respectively. Attachments 5 and 6 are graphs that show the cumulative draindown volumes for average heap heights of 108.4 feet and 280.0 feet, respectively.

Table 1 – Summary of Seepage Analysis Results

Heap Configuration	Draindown Condition	No Recirculation		8,000 gpm Recirculation	
		Fill Duration (days)	Fill Volume (gallons)	Fill Duration (days)	Fill Volume (gallons)
Average Height of 108.4 ft (August 2011 Heap)	24-hr Draindown	1.0	18,062,218	1.0	9,031,109
	Storm Volume Encroachment	1.7	28,942,370	4.3	28,942,370
	Spillway Invert Elevation	14.3	82,175,944	Spillway Not Reached	82,175,944
Average Height of 280.0 ft (Full Build Out Heap)	24-hr Draindown	1.0	19,520,141	1.0	9,760,071
	Storm Volume Encroachment	1.5	28,942,370	3.0	28,942,370
	Spillway Invert Elevation	4.3	82,175,944	10.5	82,175,977

Table 1 Notes:

1. The fill volumes (to storm volume encroachment and spillway invert elevation) presented are reflective of:
   - Total pond volume calculated below the PFS design spillway invert elevation of 1650.25 ft.
   - 100-yr/24-hr storm volumes for the ultimate build-out of the WCHLF through Stage 7.
   - Assumed operating volumes based on required solution depth over pumps for 12,000 gpm from original wells and 4,000 gpm from additional wells or 8,000 gpm from each set of wells.

2. Available fill volume (without encroaching into storm volume) is calculated as the total pond volume less the combined operating and 100-yr/24-hr storm volumes.
3. Available fill volume (to spillway invert) is calculated as the total pond volume less the assumed operating volume.
4. 24-hr fill volumes and fill durations to storm volume encroachment and spillway invert elevation were evaluated for conditions with and without 50 percent solution recycle (8,000 gpm) onto the heap.

Table 2 – Summary of Seepage Analysis Results for Average Leach Height of 108.4 Feet

	Original Design Spillway - Invert at Elevation 1650.0 ft amsl		PFS Design Spillway - Invert Elevation at 1650.25 ft amsl	
	Primary Pumping Configuration	**Standby Pumping Configuration**	**Primary Pumping Configuration**	**Standby Pumping Configuration**
Total Pond Volume	113,756,683 gallons	113,756,683 gallons	113,157,013 gallons	113,157,013 gallons
Assumed Operating Volume	30,981,069 gallons	30,981,069 gallons	30,981,069 gallons	30,981,069 gallons
100-yr/24-hr Storm Volume	53,233,575 gallons	53,233,575 gallons	53,233,575 gallons	53,233,575 gallons
Available Volume - Without Encroaching into Storm Volume	29,542,039 gallons	29,542,039 gallons	28,942,370 gallons	28,942,370 gallons
Fill Duration – No Recirculation	1.7 days	1.7 days	1.7 days	1.7 days
Fill Duration – 8,000 gpm Recirculation	4.5 days	4.5 days	4.3 days	4.3 days
Available Volume – To Spillway Invert	82,775,614 gallons	82,775,614 gallons	82,175,944 gallons	82,175,944 gallons
Fill Duration – No Recirculation	15.7 days	15.7 days	14.3 days	14.3 days
Fill Duration – 8,000 gpm Recirculation	Spillway not Reached	Spillway Not Reached	Spillway Not Reached	Spillway Not Reached

Table 3 – Summary of Seepage Analysis Results for Average Leach Height of 280.0 Feet

	Original Design Spillway - Invert at Elevation 1650.0 ft amsl		PFS Design Spillway - Invert Elevation at 1650.25ft amsl	
	Primary Pumping Configuration	**Standby Pumping Configuration**	**Primary Pumping Configuration**	**Standby Pumping Configuration**
Total Pond Volume	113,756,683 gallons	113,756,683 gallons	113,157,013 gallons	113,157,013 gallons
Assumed Operating Volume	30,981,069 gallons	30,981,069 gallons	30,981,069 gallons	30,981,069 gallons
100-yr/24-hr Storm Volume	53,233,575 gallons	53,233,575 gallons	53,233,575 gallons	53,233,575 gallons
Available Volume - Without Encroaching into Storm Volume	29,542,039 gallons	29,542,039 gallons	28,942,370 gallons	28,942,370 gallons
Fill Duration – No Recirculation	1.5 days	1.5 days	1.5 days	1.5 days
Fill Duration – 8,000 gpm Recirculation	3.0 days	3.0 days	3.0 days	3.0 days
Available Volume – To Spillway Invert	82,775,614 gallons	82,775,614 gallons	82,175,944 gallons	82,175,944 gallons
Fill Duration – No Recirculation	4.3 days	4.3 days	4.3 days	4.3 days
Fill Duration – 8,000 gpm Recirculation	10.7 days	10.7 days	10.5 days	10.5 days

Tables 2 and 3 Notes:

1. The volumes presented are only for the ultimate build-out of the WCHLF through Stage 7.
2. Total pond volume is calculated below the spillway invert elevation. Note 0.25-foot decrease from original PFS design.
3. Assumed operating volume is based on required solution depth over pumps for different operational scenarios.
4. Primary Pumping Configuration – 12,000 gpm from original wells, 4,000 gpm from additional wells (maximum normal operating pond levels presented in Table 5)
5. Standby Pumping Configuration – 8,000 gpm from original wells, 8,000 gpm from additional wells (maximum normal operating pond levels presented in Table 5)
6. Primary Pumping Configuration is the current pumping configuration being used.
7. Available volume (without encroaching into storm volume) is calculated as the total pond volume less the combined operating and 100-yr/24-hr storm volumes.
8. Available volume (to spillway invert) is calculated as the total pond volume less the assumed operating volume.
9. Fill durations were evaluated for conditions with and without 50 percent solution recycle (8,000 gpm) onto the heap.

The proposed expansion-stage construction components will be identical to the currently constructed heap leach facility. The stage construction components will include:

- Clearing and stripping the area to a competent foundation,
- Regrading the slopes to 2.5H:1V (horizontal:vertical) or flatter,
- Installing groundwater underdrains at selected locations as extensions to the existing drains,
- Placing a moisture conditioned and compacted prepared soil sub-grade (subbase material) layer,
- Installing a process component monitoring system (PCMS) as an extension to the existing PCMS,

- Installing geomembrane liner,
- Placing a solution collection layer of free draining aggregate (overliner material) with encapsulating perforated pipes over the geomembrane, and
- Construction of perimeter roads and diversion channels.

The WCHLF expansion will include installation of geomembrane-lined pad areas associated with each stage. Table 4 lists the lined areas by expansion stage and the approximate area size that will be installed with geomembrane liner. Attachment 1, WCHLF Expansion General Arrangement Plan illustrates the stage areas.

Table 4: Walter Creek Heap Leach Facility Expansion Stage Liner Areas

Expansion Stage	Stage 3 Extension	Stage 4 Extension	Stage 5 Extension	Stage 6	Stage 7	Total
Lined Area (million ft^2)	0.33	0.95	1.74	2.79	3.16	8.98
Lined Area (acres)	7.67	21.73	39.99	64.11	72.63	206.13

At its ultimate configuration including the proposed expansion, the heap leach facility will have a maximum height (toe to crest) of approximately 1,010 ft and will accommodate a total of approximately 307 million tons of ore. The maximum vertical height of ore over the geomembrane has been maintained at approximately 500 ft per criteria in the original design. Slope stability analyses of the ultimate heap configuration were conducted for both static and seismic loading conditions and provided acceptable results that confirmed the adequacy of this configuration.

Loading of the ore on the heap in the proposed expansion will continue to occur over a period of approximately 8 months each year (April through November) and year-round leaching is planned. The on-heap ore stacking to its ultimate configuration is scheduled to be complete in 2020 and active leaching with addition of cyanide to continue through 2022. There is projected to be two additional years of leaching with no additional cyanide being added to the circulating solution.

As part of the pre-feasibility study design, the existing and planned future solution collection pipework and drainage layer was checked for its ability to accommodate the increase of solution flow to 16,000 gallons per minute (gpm). The DNR approved the increase of solution flow to 16,000 gpm in January 2012 with the addition of two additional wells to the WCHLF Pregnant Solution Pump Station's well system. FGMI installed the two additional wells in 2012 by drilling through the ore in the in-heap storage pond but, to remove the risk of damaging the pad liner system, the drilling and well installations were terminated approximately 10 feet above the overliner drain layer. The two new wells were operational in July 2012, and the system increased from 8,000 gpm to 16,000 gpm in August 2012. The recirculation of the 16,000 gpm also includes processing 8,000 gpm at the existing carbon-in-column (CIC) facility where the gold is removed from the pregnant solution, and the other 8,000 gpm is recirculated in the WCHLF to build the solution's grade of gold. Once the second CIC (construction approved by the DNR in May and July 2012) is constructed in 2013, the total 16,000 gpm will be processed by the two CIC facilities.

The solution application applied per unit area will remain unchanged at 0.005 gpm/ft^2, but the application area will essentially be doubled. The analysis accounted for this increase in contributing area to the collection headers together with the various pipe sizes, slopes, and their estimated reductions in flow carrying capacity due to loading of the heap. Certain sections of the existing solution collection headers were found not to be able to convey the required flows. Therefore, a new additional system of installing on-heap conveyance and dispersion pipework (with the input of DNR) was recently designed and included during the WCHLF Stage 3 construction (design modifications discussed on page 3 of this document). The analysis of the solution collection system, considering the installation of the on-heap conveyance and dispersion pipework, demonstrates that the calculated head applied to the pad liner system under the increased flow regime will remain low, at less than 1.0 ft on average, for the area under leach.

The solution flows through the collection pipework and overliner drain layer to the in-heap storage pond. Solution is removed from the pond by a series of extraction wells located near the eastern limit of the pond adjacent to the upstream toe of the in-heap storage embankment as illustrated by Attachment 1, WCHLF Expansion General Arrangement Plan. Three extraction wells were constructed before 2012, and two additional wells were constructed in 2012 in the approximate location as the original three initial wells. Each well has been fitted with a 4,000 gpm capacity pump for a total pumping capacity of 16,000 gpm. Three potential pumping configurations (Prefeasibility Study Rev. 3 Pumping Scenarios A, B, and C) were evaluated and discussed in the PFS. While Pumping Scenario A was initially considered and included in the drawdown modeling, FGMI no longer intends to install pumps larger than the current 4,000 gpm; therefore, Pumping Scenario A would not be possible and is considered no longer applicable or relevant and will not be discussed here. Pumping configuration Scenario B has been determined as the Primary Pumping Configuration and is currently being used as the normal pumping operation at the WCHLF. Whereby, Scenario C is the Standby Pumping Configuration and will be used when a pump, from the primary configuration, goes down in an emergency or for system maintenance.

- Primary Pumping Configuration (Prefeasibility Study Rev. 3 and Draindown Analyses Scenario B) – under this configuration 12,000 gpm is extracted from the three pre-2012 wells, while 4,000 gpm is pumped from one of the two 2012 installed wells. Under the Primary Pumping Configuration, the in-heap storage pond operating level was modeled which suggested the in-heap storage pond operating level would need to be maintained above 1,612.3 feet amsl to provide 24 feet of pump submergence. However, based on actual field operating performance, observations showed negligible drawdown of the in-heap storage pond while operating at levels as low as elevation 1605 ft amsl and therefore the modeled lower level limit is not considered to be applicable. This configuration is currently being used and is considered the preferred method of operation.

- Standby Pumping Configuration (Prefeasibility Study Rev. 3 and Draindown Analyses Scenario C) – under this configuration 8,000 gpm will be extracted from two of the three pre-2012 wells, while 8,000 gpm will be pumped from the two 2012 installed wells. Under the Standby Pumping Configuration, when the pumps in both of the 2012 extraction wells are operated at 4,000 gpm each, for a total of 8,000 gpm, the in-heap storage pond operating level was modeled which suggested that the in-heap storage pond operating level would need to be maintained above 1616.6 feet amsl to provide 24 feet of submergence at the pumps.

However, similar to above, based on actual field operating performance of the Standby Pumping Configuration, observations showed negligible drawdown of the in-heap storage pond while operating at levels as low as elevation 1605 ft amsl and therefore the lower level limit is not considered to be applicable.

Monitoring of the system will continue to provide data for the lower operational boundaries for both pumping configurations.

The pond storage component volumes and their resulting maximum elevations on a stage-by-stage basis are summarized in Table 5. The maximum normal operation pond level listed in the table is the elevation that the pond will be kept below under normal operating conditions to avoid encroaching into the storm, draindown, and freeboard limits.

Table 5
In-Heap Pond Storage Component Summary

Stage	Stage 3		Stage 4		Stage 5		Stage 6		Stage 7	
Pad Area (1)	8.32 M ft^2		11.59 M ft^2		14.89 M ft^2		17.69 M ft^2		20.63 M ft^2	
Storage Component	**Elev (ft amsl)**	**Storage (M gal)**	**Elev (ft amsl)**	**Storage (M gal)**	**Elev (ft amsl)**	**Storage (M gal)**	**Elev (ft amsl)**	**Storage (M gal)**	**Elev (ft amsl)**	**Storage (M gal)**
Maximum Normal Operating Level (2,3)	1634.7	76.5	1629.8	68.1	1625.8	59.6	1620.9	52.4	1617.3	44.8
24 Hour Draindown **(4)**	1634.7 – 1638.9	9.8	1629.8 – 1634.7	9.8	1625.8 – 1630.5	9.8	1620.9 – 1626.4	9.8	1617.3 - 1622.0	9.8
100-yr/24-hr Storm Event (3)	1638.9 - 1648.0	21.5	1634.7 - 1648.0	29.9	1630.5 - 1648.0	38.4	1626.4 - 1648.0	45.6	1622.0 - 1648.0	53.2
Freeboard	1648.0 - 1653.0	12.0	1648.0 - 1653.0	12.0	1648.0 - 1653.0	12.0	1648.0 - 1653.0	12.0	1648.0 - 1653.0	12.0
Total		119.8		119.8		119.8		119.8		119.8

Notes:

1. The pad areas shown represent the cumulative 2-diminsional areas through each stage pad development, including both the original and expansion design footprints.
2. The Maximum Normal Operating Level represents the maximum elevation that the pond should be operated at any stage of the WCHLF development to maintain the necessary capacity above it for accommodating the 100-yr/24-hr Storm Event, the 24-hour Draindown component and 5 ft of freeboard below the crest of the in-heap pond dam. The storage volumes presented for the Maximum Normal Operating Level are the total volumes from the bottom of the in-heap storage pond (elevation 1550 ft amsl) to the elevations shown.
3. While pond storage allowances associated with the Draindown and Freeboard components are assumed to remain constant throughout the life of the facility, the storage allowances associated with the Maximum Normal Operating Level and the 100-yr/24-hr Storm Event are inversely related to each other. As the pad area grows with each stage of development, the 100-yr/24-hr Storm Event component increases and this reduces the Maximum Normal Operating Pond Level. It is expected that with on-going operational experience, FGMI will be able to readily adapt to this reducing level.
4. The 24-hr Draindown component provides storage for a condition where either the power supply is interrupted or a few pumps are temporarily shut down; both of which would result in a loss of pumping capacity from the in-heap pond and its subsequent filling. FGMI has recently equipped the heap with sufficient back-up power and redundant pumps so that the worst case condition is one where 8,000 gpm would continue to be extracted from the wells but it would be re-applied to the heap, and no solution would be removed to the gold recovery plant. In this case, the draindown into the in-heap pond would be associated with a change of the solution application on the heap from 16,000 to 8,000 gpm, and this was modeled in the transient analysis. The storage component listed above is for the first 24 hours of volume from this analysis.

It should be noted that in the unlikely case that the in-heap storage pond capacity is exceeded and the solution level reaches the in-heap storage pond emergency spillway, the solution will be directed safely downstream and contained within the TSF. No release to the environment will occur.

2.1 Reclamation

The on-heap ore stacking to its ultimate configuration is scheduled to be complete in 2020 and active residual leaching with addition of cyanide to continue through 2022. There is projected to be two additional years of residual leaching with no additional cyanide being added to the circulating solution to continue through 2024.

In 2025, rinsing of the heap leach will begin. The rinsing rate will be 16,000 gpm, and rinsing will entail applying water pumped from the open pit to the heap leach via the mill then pumping the rinse water collected in the in-heap storage pond to the open pit via the mill. Rinsing is projected to be completed in 2028 at which time water quality standards are expected to be achieved. Following approval by DEC, the heap leach water will be released to the tailings impoundment when the quality will not cause the pond water to impact designated uses of surface water in Fish Creek.

Following completion of rinsing in 2028, the heap will be regraded to an overall 3H:1V slope. The grading plan will include erosion control measures as appropriate to avoid loss of growth media. The growth media will be sourced from stockpiles created during facility construction. The growth media will be seeded and vegetated subsequent to placement.

Reclamation of the WCHLF is detailed in the *Fairbanks Gold Mining, Inc., Reclamation and Closure Plan, November 2013, Revision 2*.

3.0 BARNES CREEK WASTE ROCK DUMP EXPANSION

FGMI proposes to expand the Barnes Creek Waste Rock Dump (BCWRD) from its current configuration to an additional 24.0 acres as illustrated by Attachment 7, BCWRD Expansion. The 24.0 acres will require clearing and grubbing activities, and the material will be placed on the Barnes Creek Growth Media Stockpile. The waste rock dump proposed ultimate expansion elevation is 2,300 ft amsl as illustrated by Attachment 8, BCWRD Expansion Ultimate Configuration. The projected tonnage to be placed on the waste rock dump from the Phase 8 pit expansion is approximately 56 million tons. The proposed expansion is necessary to adequately manage the additional waste rock from the Phase 8 mining of the pit as illustrated by Attachment 9, Phase 8 Pit Rim.

3.1 Reclamation

The mine reclamation plan for the expansion of the BCWRD will follow the previously approved criteria, grading to a 2.5H:1V or flatter slope, placement of growth media, ripping on the contour and revegetation by applying seed and fertilizer. Reclamation of the BCWRD is detailed in the *Fairbanks Gold Mining, Inc., Reclamation and Closure Plan, November 2013, Revision 2*.

4.0 MENTAL HEALTH TRUST LAND PURCHASE

To accommodate the WCHLF and BCWRD expansion, 280 acres of surface was purchased from the Mental Health Trust Land Office (MHTLO). The sale of the property was completed in 2012 with the title of the property conveyed to FGMI on December 14, 2012 [*Alaska Mental Health Trust Land Office, Quitclaim Deed QCD676 MHT9400441, December 14, 2012*]. The additional land is needed for the proposed expansions of the heap leach and the Barnes Creek waste rock dump, as illustrated by Attachment 10, Land Purchase for Expansion, and includes:

- SW1/4 of the SW1/4 of Section 4, Township 2N, Range 2E of the Fairbanks Principle Meridian of 40 acres
- S1/2 of the SE1/4 of Section 5, Township 2N, Range 2E of the Fairbanks Principle Meridian of 80 acres
- N1/2 of the NE1/4 of Section 8, Township 2N, Range 2E of the Fairbanks Principle Meridian of 80 acres
- SW1/4 of the NE1/4 of Section 8, Township 2N, Range 2E, of the Fairbanks Principle Meridian of 40 acres
- NE1/4 of the SW1/4 of Section 8, Township 2N, Range 2E of the Fairbanks Principle Meridian of 40 acres

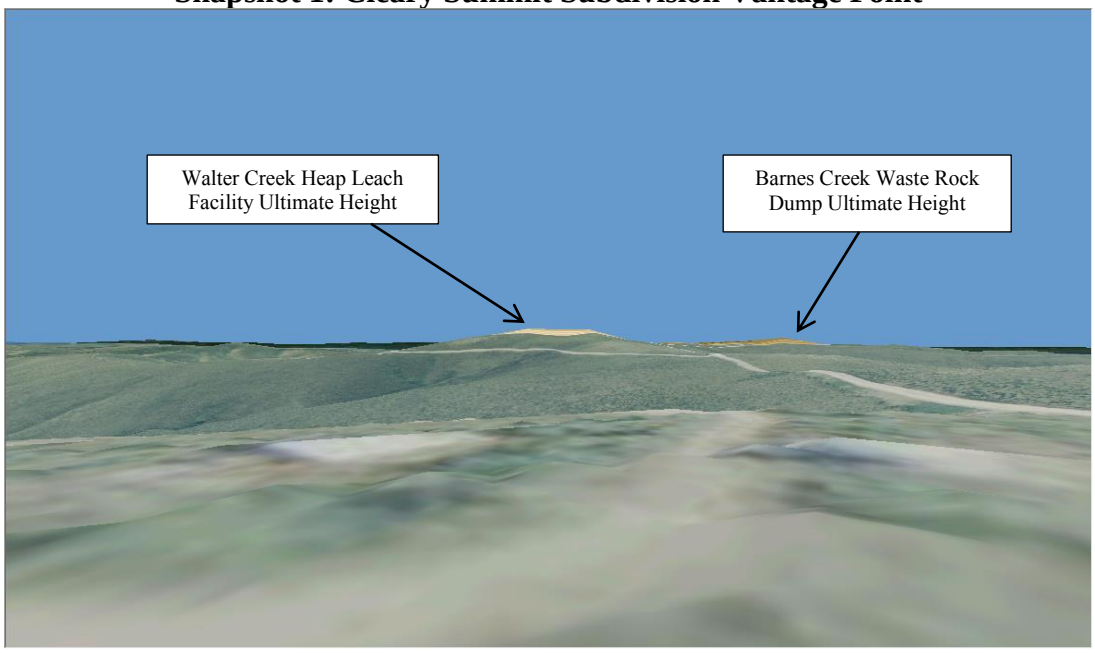
4.1 Wetlands Delineation

A wetlands delineation (Preliminary Jurisdictional Determination) was completed for the 280-acre MHTLO parcel, and no wetland types were identified within the 280-acre parcel [*Travis/Peterson Environmental Consulting, Jurisdictional Determination Report Walter Creek Expansion, Inc., October 2012*] The area of the proposed WCHLF and BCWRD expansions that are within the current Millsite Lease area have been delineated for wetlands and no wetlands were identified in these areas [*HDR Alaska, Inc., Fort Knox Mine Preliminary Jurisdictional Determination, August 2010*].

5.0 3-D VISUALIZATION STUDY

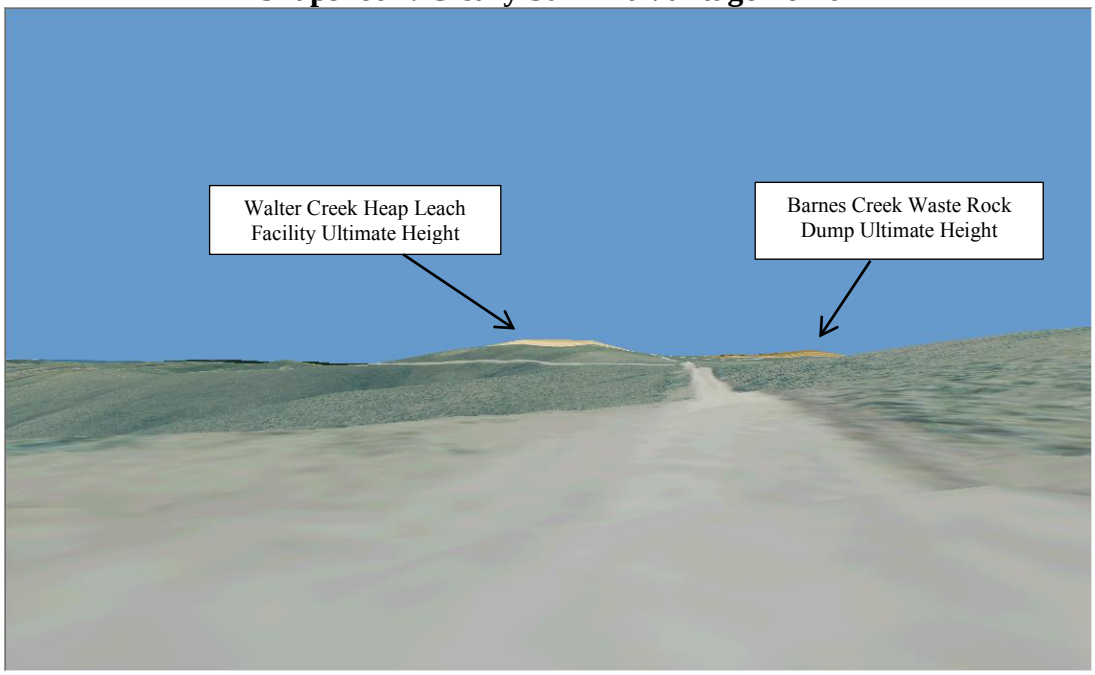
A 3-D visualization study has been prepared for the expansion of the WCHLF, BCWRD, and YPWRD. A visualization video is provided with this proposed Plan of Operations modification. The video shows views with and without trees along the Chena Hot Springs Road, Steese Highway, and the Fish Creek Road. Visualization snapshots shown below include views of the site from Cleary Summit Subdivision and Cleary Summit. Other projected views are not included in this document (included in the electronic Visualization Study submitted with this document) since the views do not show the expansion sites that are visible from the vantage points. Attachments 11 and 12 identify the locations of all the snapshots identified in the electronic Visualization Study in relationship to Fort Knox.

Snapshot 1: Cleary Summit Subdivision Vantage Point

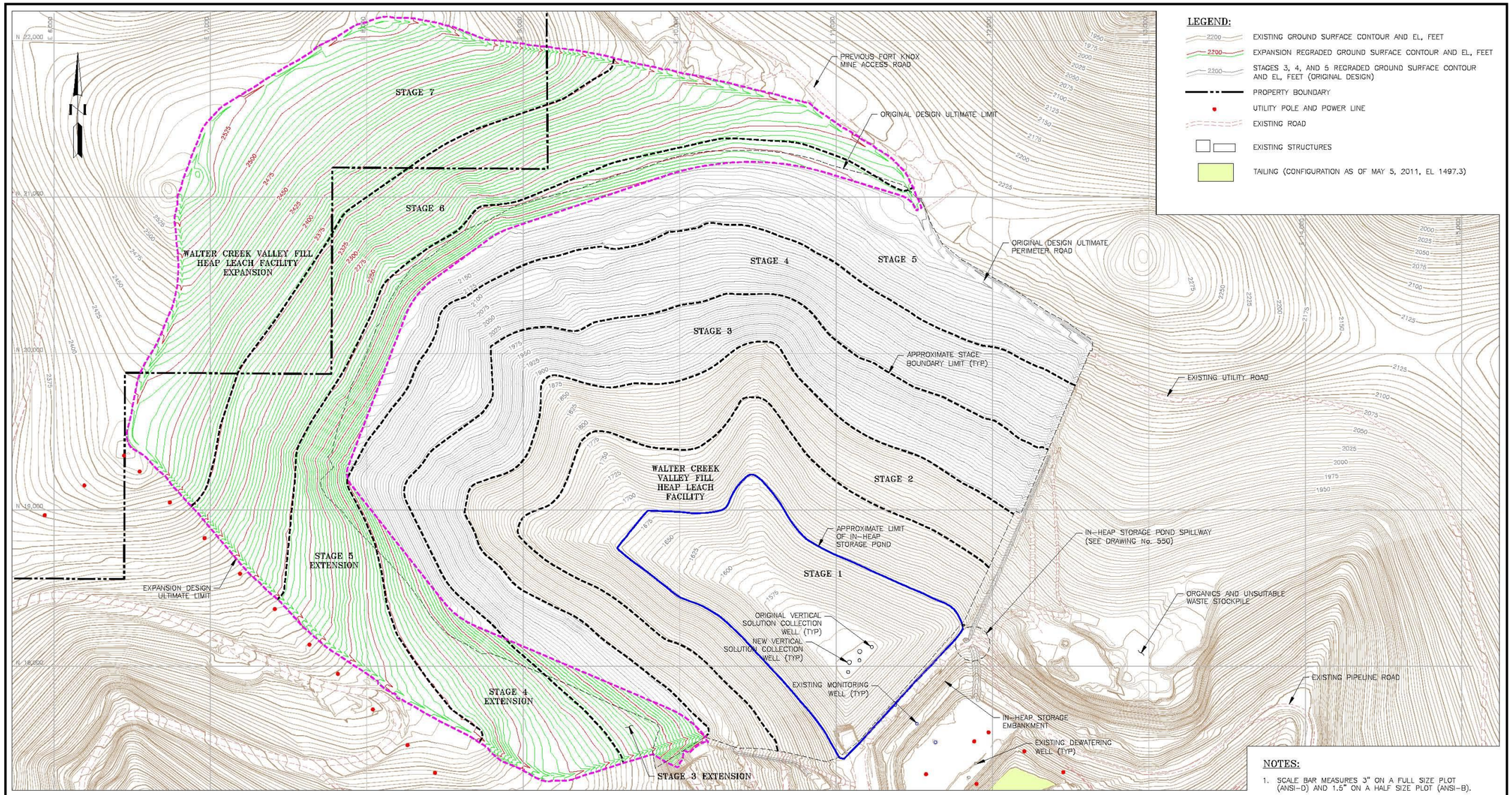


The graphic visualization shows the projected view of the WCHLF and the BCWRD at their ultimate height of elevation 2,650 ft amsl and 2,300 ft amsl, respectively. The view is from the Cleary Summit Subdivision vantage point (65.044117 ° N, 147.414370° W) and is identified on Attachment 12.

Snapshot 2: Cleary Summit Vantage Point



The graphic visualization shows the projected view of the WCHLF and the BCWRD at their ultimate height of elevation 2,650 ft amsl and 2,300 ft amsl, respectively. The view is from the Cleary Summit vantage point (65.040981° N, 147.416228° W) and is identified on Attachment 12.



PLAN

300 0 300 600 FEET

1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

NOTES:

1. SCALE BAR MEASURES 3" ON A FULL SIZE PLOT (ANSI-D) AND 1.5" ON A HALF SIZE PLOT (ANSI-B).
2. THE REGRADED CONTOURS REPRESENT THE TOP OF THE LEACH PAD LINER WITHIN THE PAD AND TOP OF WEARING COURSE ON ALL ROADS.
2. THE EXISTING POWER LINE SHALL BE RELOCATED AS REQUIRED BY FGMI.
3. ALL EXISTING CULVERTS WITHIN THE LEACH PAD BASIN AREA SHALL BE REMOVED PRIOR TO THE START OF LEACH PAD REGRADING.

REFERENCE:
-EXPANSION AREA BASED ON TOPOGRAPHIC MAPPING PROVIDED BY CLIENT DATA FILE NAMED: FORT_KNOX_2005_LOCAL.DWG. DATED: 07/06/05 RECEIVED BY KNIGHT PIESOLD ON 7/2005. SEE G:\101\00089.08\A\Data_Info\External\TOPO\071505
-AERIAL PHOTOGRAPHY PROVIDED BY FGMI ON 06/16/2009 (2009 AERIAL SURVEY)
-2010 AS-BUILT CONTOURS AND FEATURES PROVIDED BY GOLD CANYON MINING AND CONSTRUCTION ON 12/12/2010 (2010 AS-BUILT SURVEY)
-HORIZONTAL PROJECTION COMPLIES WITH A LOCAL COORDINATE SYSTEM THAT ASSUMES THE CHATHAM MONUMENT VALUES ARE: X=7745.58 Y=34803.33 AND THE IDWA MONUMENT VALUES ARE: X=38531.24 Y=8825.48

REV	DATE	DESCRIPTION	APP'D
			CADD
A	10/11/11	ISSUED FOR CLIENT REVIEW	JTR / CB
B	12/07/11	ISSUED FOR PRE-FEASIBILITY STUDY	JTR / CB
C	12/19/12	REISSUED FOR PRE-FEASIBILITY STUDY	JTR / JBW

ACTIVITY CODE 700 | XREF N/A

CLIENT: FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

PROJECT: FORT KNOX PROJECT
WALTER CREEK VALLEY FILL HEAP LEACH FACILITY EXPANSION

TITLE: GENERAL ARRANGMENT PLAN

DESIGNED BY	DRAWN BY	LOCATION	PROJECT NUMBER	DRAWING NUMBER	REVISION
JTR	ARB	DV101	00089.41	140	C

LAST SAVED BY: JWHITLESEY
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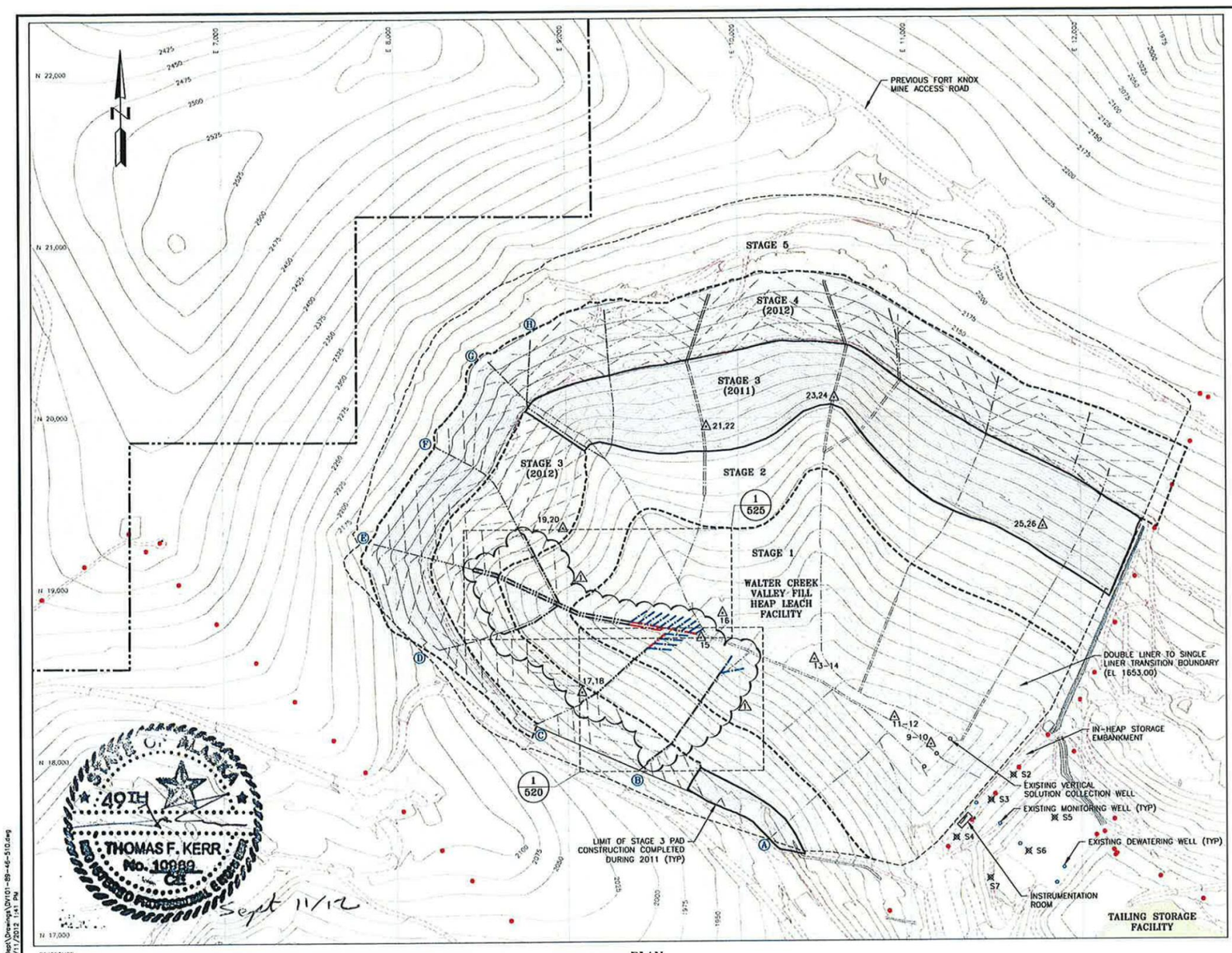

LEGEND:

- EXISTING AND ORIGINAL DESIGN REGRADED GROUND SURFACE CONTOUR AND EL, FEET
- STAGE 4 REGRADED GROUND SURFACE CONTOUR AND EL, FEET
- EXISTING UTILITY POLE
- EXISTING ROADS
- TAILING (CONFIGURATION AS OF AUGUST 2011)
- LIMIT OF STAGE 3 PAD CONSTRUCTION COMPLETED DURING 2011
- PROPERTY BOUNDARY
- 4" DIA PERFORATED CPT (TYPE SP) SOLUTION LATERAL (SEE NOTE 10)
- 6" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 10)
- 8" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 10)
- 10" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 10)
- 12" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 10)
- 24" DIA PERFORATED CPT (TYPE SP) SOLUTION HEADER (SEE NOTE 10)
- 12" DIA SOLID CPT (TYPE S) ON-HEAP SOLUTION CONVEYANCE PIPE
- 24" DIA SOLID CPT (TYPE S) ON-HEAP SOLUTION CONVEYANCE PIPE
- 12" DIA PERFORATED CPT (TYPE SP) ON-HEAP SOLUTION DISPERSION PIPE
- 24" DIA PERFORATED CPT (TYPE SP) ON-HEAP SOLUTION DISPERSION PIPE
- EXISTING VERTICAL SOLUTION COLLECTION WELL
- △ 9,10 PAD OVERLINER PAD VIBRATING WIRE PIEZOMETER PAIR (SEE NOTES 6 THRU 9)
- ⊠ S5 EXISTING SURVEY MONUMENT
- Ⓐ SOLUTION COLLECTOR/HEADER DESIGNATION

NOTES:

1. SCALE BAR MEASURES 3" ON A FULL SIZE PLOT (ANSI-D) AND 1.5" ON A HALF SIZE PLOT (ANSI-B).
2. THE REGRADED CONTOURS REPRESENT THE TOP OF THE LEACH PAD LINER WITHIN THE PAD AND TOP OF WEARING COURSE ON ALL ROADS.
3. ALL PIPE CONNECTIONS SHALL BE FORMED USING MANUFACTURER SUPPLIED FABRICATED COUPLERS, TEES OR WYES. ALL CPT CONNECTIONS WHICH CHANGE DIAMETER, SLOPE OR ALIGNMENT MUST BE WIRE-TIED AROUND BOTH ENDS OF THE CONNECTIONS.
4. WHERE CPT SOLUTION PIPES TERMINATE, THEY SHALL BE FITTED WITH MANUFACTURER SUPPLIED END CAPS. ALL PIPEWORK, INCLUDING TERMINATION POINTS, SHALL BE SURVEYED FOR FUTURE IDENTIFICATION.
5. THE SOLUTION LATERALS ARE TO BE SPACED ON MAXIMUM 90' CENTERS ABOVE ELEVATION 1653'.
6. THE ORIGINAL PIEZOMETER CABLES REPORT TO A CENTRAL MONITORING LOCATION NEAR THE IN-HEAP STORAGE EMBANKMENT CREST. THE CABLES ASSOCIATED WITH THE FIVE ADDITIONAL PAIRS OF OVERLINER PIEZOMETERS ARE TO REPORT TO SEPARATE MONITORING STATIONS THAT WILL PROGRESSIVELY BE MOVED UP THE LEACH PAD SLOPE FOR EACH STAGE EXPANSION.
7. PIEZOMETERS 9 THROUGH 16 WERE INSTALLED WITHIN THE PAD OVERLINER LAYER DURING THE INITIAL STAGE 1 CONSTRUCTION. IT IS UNDERSTOOD THAT PIEZOMETERS 21 THROUGH 26 WERE INSTALLED DURING THE 2011 CONSTRUCTION SEASON. PIEZOMETERS 17 THROUGH 20 WILL BE INSTALLED DURING 2012.
8. ALIGNMENTS AND EXTENSIONS OF PIEZOMETER CABLES NOT SHOWN FOR CLARITY. REFER TO DRAWING 500.
9. FOR INFORMATION ON NEW PIEZOMETER INSTALLATION REFER TO DRAWING 720.
10. REFER TO DRAWING 500 FOR INFORMATION AND CLARITY REGARDING THE PAD SOLUTION COLLECTION PIPEWORK LAYOUT.

REVISIONS:

△ REVISED SIZES OF STAGE 3 SOLUTION COLLECTION HEADERS ON SOUTH SLOPE AND IN VALLEY 1. EXTENDED ON-HEAP CONVEYANCE PIPES TO REVISED CONNECTION LOCATIONS WITH STAGE 3 SOLUTION COLLECTION HEADERS.

REFERENCE:
- AERIAL TOPOGRAPHY PROVIDED BY FGM ON 11/30/2011 (AUGUST 2011 AERIAL SURVEY).
- 2011 AS-BUILT INFORMATION PROVIDED BY GCM, USKH, AND FGM IN NOVEMBER 2011.
- STAGE 4 REGRADE CONTOURS PROVIDED BY FGM IN DECEMBER 2011.

PLAN

300 0 300 600 FEET
1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

REV	DATE	DESCRIPTION	APP'D
A	06/15/12	ISSUED FOR CLIENT REVIEW	CADD / JTR / JSW
0	06/22/12	ISSUED FOR CONSTRUCTION	JTR / CB
1	09/12/12	REISSUED FOR CONSTRUCTION	JTR / CB

DISCLAIMER
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ACTIVITY CODE 100 | XREF N/A

CLIENT: FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

PROJECT: FORT KNOX PROJECT
WALTER CREEK VALLEY FILL HEAP LEACH FACILITY S3 AND S4 - 2012
TITLE: ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPES PLAN

DESIGNED BY	JTR	LOCATION	PROJECT NUMBER	DRAWING NUMBER	REVISION
DRAWN BY	CB	DV101	00089.46	510	1

LAST SAVED BY: CBEANLAND
PLOTTED ON: 9/11/2012 1:41:04 PM
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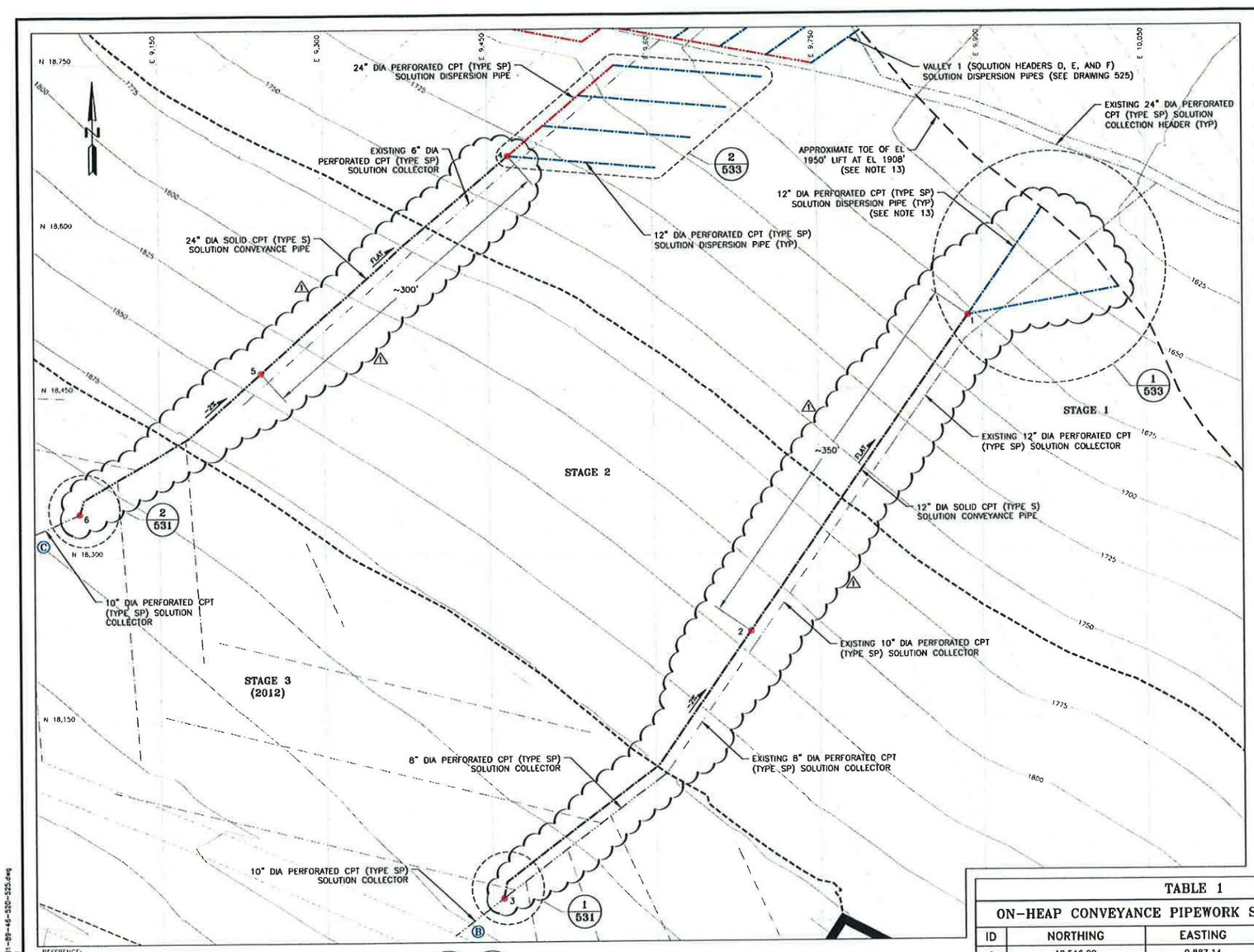

REFERENCE:
- AERIAL TOPOGRAPHY PROVIDED BY FGMI ON 11/30/2011 (AUGUST 2011 AERIAL SURVEY).
- 2011 AS-BUILT INFORMATION PROVIDED BY GCM, USKH, AND FGMI IN NOVEMBER 2011.
- STAGE 4 REGRADE CONTOURS PROVIDED BY FGMI IN DECEMBER 2011.

SOLUTION COLLECTION HEADERS B AND C ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPES

50 0 50 100 FEET
1" = 50' AT FULL SIZE (ANSI D)
1" = 100' AT HALF SIZE (ANSI B)

LEGEND:

- 2500 — EXISTING AND ORIGINAL DESIGN REGRADED GROUND SURFACE CONTOUR AND EL, FEET
- 4" DIA PERFORATED CPT (TYPE SP) SOLUTION LATERAL (SEE NOTE 11)
- 6" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 11)
- 8" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 11)
- 10" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 11)
- 12" DIA PERFORATED CPT (TYPE SP) SOLUTION COLLECTOR (SEE NOTE 11)
- 24" DIA PERFORATED CPT (TYPE SP) SOLUTION HEADER (SEE NOTE 11)
- 12" DIA SOLID CPT (TYPE S) ON-HEAP SOLUTION CONVEYANCE PIPE
- 24" DIA SOLID CPT (TYPE S) ON-HEAP SOLUTION CONVEYANCE PIPE
- 12" DIA PERFORATED CPT (TYPE SP) ON-HEAP SOLUTION DISPERSION PIPE
- 24" DIA PERFORATED CPT (TYPE SP) ON-HEAP SOLUTION DISPERSION PIPE
- (B) SOLUTION COLLECTOR/HEADER DESIGNATION
- 1 ● SETTING OUT DATA POINT AND DESIGNATION (SEE NOTE 7, TABLE 1)

NOTES:

1. SCALE BAR MEASURES 3" ON A FULL SIZE PLOT (ANSI-D) AND 1.5" ON A HALF SIZE PLOT (ANSI-B).
2. THE REGRADED CONTOURS REPRESENT THE TOP OF THE LEACH PAD LINER WITHIN THE PAD AND TOP OF WEARING COURSE ON ALL ROADS.
3. ALL PIPE CONNECTIONS SHALL BE FORMED USING MANUFACTURER SUPPLIED FABRICATED COUPLERS, TEES OR WYES. ALL CPT CONNECTIONS WHICH CHANGE DIAMETER, SLOPE OR ALIGNMENT MUST BE WIRE-TIED AROUND BOTH ENDS OF THE CONNECTIONS.
4. WHERE CPT SOLUTION PIPES TERMINATE, THEY SHALL BE FITTED WITH MANUFACTURER SUPPLIED END CAPS. ALL PIPEWORK, INCLUDING TERMINATION POINTS, SHALL BE SURVEYED FOR FUTURE IDENTIFICATION.
5. THE SOLUTION LATERALS ARE TO BE SPACED ON MAXIMUM 90' CENTERS ABOVE ELEVATION 1653'.
6. ALL PIPE CONNECTIONS WHERE THE PAD SOLUTION COLLECTION PIPEWORK TRANSITIONS TO THE ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPEWORK SHALL UTILIZE WATER TIGHT (WT) FITTINGS SECURED WITH TENSION STRAPS TO MITIGATE POTENTIAL SEPARATION OF THE CONNECTIONS. THE CONNECTIONS SHALL ALSO BE FULLY WRAPPED WITH NON-WOVEN GEOTEXTILE SECURED WITH WIRE TIES AT APPROXIMATE 3' INTERVALS.
7. THE SETTING OUT DATA POINTS REPRESENT THE START LOCATIONS OF THE SOLUTION DISPERSION PIPE NETWORKS. THE ELEVATIONS AT THE SETTING OUT DATA POINTS WILL BE SUCH THAT A MINUS 2% SLOPE FROM THE STAGE 2/3 PERIMETER IS MAINTAINED INTO THE HEAP.
8. LOCALIZED RAMPING OF THE HEAP SURFACE WILL BE COMPLETED SUCH THAT A MINUS 2% GRADE IS PROVIDED ON ALL SOLUTION CONVEYANCE/DISPERSION PIPES FROM THE STAGE 2/3 PERIMETER INTO THE HEAP AS SHOWN ON THIS DRAWING. THE SOLUTION CONVEYANCE/DISPERSION PIPEWORK SHALL BE ENCAPSULATED WITHIN OVERLINER MATERIAL AS SHOWN ON DRAWING 534.
9. SURVEY CONTROL POINTS SHALL BE PROVIDED BY FGMI.
10. ALL SETTING OUT DATA IS TO BE APPROVED BY THE ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION. IF THE EXISTING TOPOGRAPHY DIFFERS FROM THAT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL ADJUST THE DESIGN FOR UNFORESEEN CONDITIONS.
11. REFER TO DRAWING 500 FOR INFORMATION AND CLARITY REGARDING THE PAD SOLUTION COLLECTION PIPEWORK LAYOUT.
12. REFER TO TABLE 1 FOR SETTING OUT DATA ASSOCIATED WITH THE PAD SOLUTION COLLECTION TO ON-HEAP CONVEYANCE PIPEWORK CONNECTIONS, ON-HEAP CONVEYANCE PIPEWORK GRADE TRANSITION POINTS, AND TRANSITION POINTS FROM ON-HEAP CONVEYANCE PIPEWORK TO DISPERSION PIPE NETWORKS.
13. THE ON-HEAP DISPERSION PIPES WILL TERMINATE AT THE SLOPE OF THE EXISTING ORE LIFT. SAFETY PRECAUTIONS SHOULD BE UTILIZED WHEN WORKING IN CLOSE PROXIMITY TO THE HEAP SLOPE.

REVISIONS:

⚠ REVISED SIZES OF STAGE 3 SOLUTION COLLECTION HEADERS ON SOUTH SLOPE AND IN VALLEY 1. EXTENDED ON-HEAP CONVEYANCE PIPES TO REVISED CONNECTION LOCATIONS WITH STAGE 3 SOLUTION COLLECTION HEADERS. ADDED FLAT SECTION OF ON-HEAP CONVEYANCE PIPES AND ADDITIONAL SETTING OUT POINTS.

TABLE 1

ON-HEAP CONVEYANCE PIPEWORK SETTING OUT DATA

ID	NORTHING	EASTING	ELEVATION
1	18,516.20	9,887.14	1908.00
2	18,228.98	9,687.16	1908.00
3	17,987.40	9,459.95	1915.00
4	18,664.19	9,468.86	1908.00
5	18,467.04	9,242.74	1908.00
6	18,339.60	9,076.51	1912.00

STATE OF ALASKA
49TH
THOMAS F. KERR
No. 10939
CE
REGISTERED PROFESSIONAL ENGINEER
Sept 11/12

REV	DATE	DESCRIPTION	APP'D
A	06/15/12	ISSUED FOR CLIENT REVIEW	CADD JTR CB
0	06/22/12	ISSUED FOR CONSTRUCTION	JTR CB
1	09/12/12	REISSUED FOR CONSTRUCTION	JTR CB

DISCLAIMER
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ACTIVITY CODE 100 XREF N/A

CLIENT: FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

PROJECT: FORT KNOX PROJECT
WALTER CREEK VALLEY FILL HEAP LEACH FACILITY S3 AND S4 - 2012
TITLE: ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPES NETWORK - SHEET 1 OF 2

DESIGNED BY	DRAWN BY	LOCATION	PROJECT NUMBER	DRAWING NUMBER	REVISION
JTR	CB	DV101	00089.46	520	1

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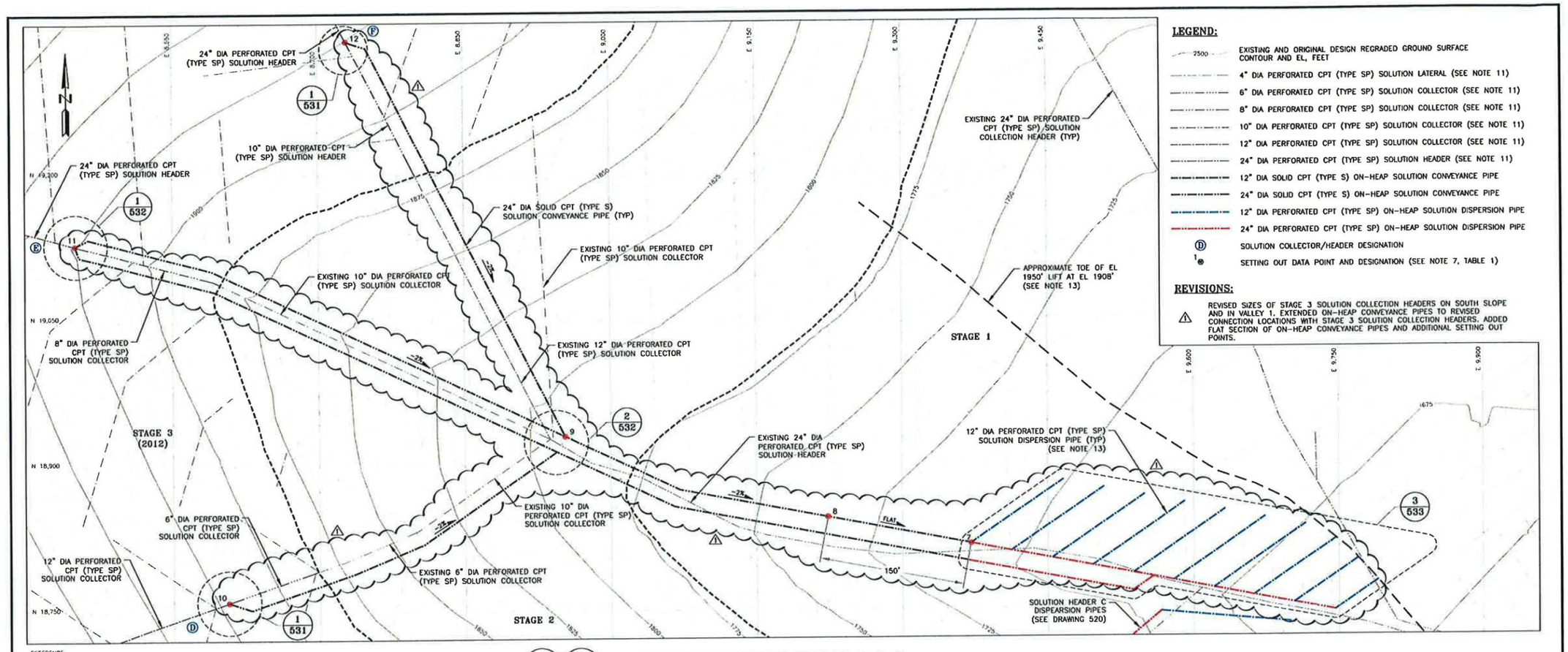
PLOTTED BY: CHAD BEARLAND, PRINT TIME: 9/11/2012 2:02 PM



REFERENCE:
- AERIAL TOPOGRAPHY PROVIDED BY FGMI ON 11/30/2011 (AUGUST 2011 AERIAL SURVEY).
- 2011 AS-BUILT INFORMATION PROVIDED BY CCM, USKH, AND FGMI IN NOVEMBER 2011.
- STAGE 4 REGRADE CONTOURS PROVIDED BY FGMI IN DECEMBER 2011.

1/500 1/510 SOLUTION COLLECTION HEADERS D, E, F ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPES

50 0 50 100 FEET
1" = 50', AT FULL SIZE (ANSI D)
1" = 100' AT HALF SIZE (ANSI B)

TABLE 1			
ON-HEAP CONVEYANCE PIPEWORK SETTING OUT DATA			
ID	NORTHING	EASTING	ELEVATION
7	18,817.23	9,370.98	1908.00
8	18,845.00	9,223.58	1908.00
9	18,929.42	8,953.68	1913.30
10	18,760.05	8,606.71	1921.00
11	19,128.42	8,449.75	1924.50
12	19,337.33	8,729.43	1922.50

NOTES:

1. SCALE BAR MEASURES 3" ON A FULL SIZE PLOT (ANSI-D) AND 1.5" ON A HALF SIZE PLOT (ANSI-B).
2. THE REGRADED CONTOURS REPRESENT THE TOP OF THE LEACH PAD LINER WITHIN THE PAD AND TOP OF WEARING COURSE ON ALL ROADS.
3. ALL PIPE CONNECTIONS SHALL BE FORMED USING MANUFACTURER SUPPLIED FABRICATED COUPLERS, TEES OR WYES. ALL CPT CONNECTIONS WHICH CHANGE DIAMETER, SLOPE OR ALIGNMENT MUST BE WIRE-TIED AROUND BOTH ENDS OF THE CONNECTIONS.
4. WHERE CPT SOLUTION PIPES TERMINATE, THEY SHALL BE FITTED WITH MANUFACTURER SUPPLIED END CAPS. ALL PIPEWORK, INCLUDING TERMINATION POINTS, SHALL BE SURVEYED FOR FUTURE IDENTIFICATION.
5. THE SOLUTION LATERALS ARE TO BE SPACED ON MAXIMUM 90' CENTERS ABOVE ELEVATION 1653'.
6. ALL PIPE CONNECTIONS WHERE THE PAD SOLUTION COLLECTION PIPEWORK TRANSITIONS TO THE ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPEWORK SHALL UTILIZE WATER TIGHT (WT) FITTINGS SECURED WITH TENSION STRAPS TO MITIGATE POTENTIAL SEPARATION OF THE CONNECTIONS. THE CONNECTIONS SHALL ALSO BE FULLY WRAPPED WITH NON-WOVEN GEOTEXTILE SECURED WITH WIRE TIES AT APPROXIMATE 3' INTERVALS.
7. THE SETTING OUT DATA POINTS REPRESENT THE START LOCATIONS OF THE SOLUTION DISPERSION PIPE NETWORKS. THE ELEVATIONS AT THE SETTING OUT DATA POINTS WILL BE SUCH THAT A MINUS 2% SLOPE FROM THE STAGE 2/3 PERIMETER IS MAINTAINED INTO THE HEAP.
8. LOCALIZED RAMPING OF THE HEAP SURFACE WILL BE COMPLETED SUCH THAT A MINUS 2% GRADE IS PROVIDED ON ALL SOLUTION CONVEYANCE/DISPERSION PIPES FROM THE STAGE 2/3 PERIMETER INTO THE HEAP AS SHOWN ON THIS DRAWING. THE SOLUTION CONVEYANCE/DISPERSION PIPEWORK SHALL BE ENCAPSULATED WITHIN OVERLINER MATERIAL AS SHOWN ON DRAWING 534.
9. SURVEY CONTROL POINTS SHALL BE PROVIDED BY FGMI.
10. ALL SETTING OUT DATA IS TO BE APPROVED BY THE ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION. IF THE EXISTING TOPOGRAPHY DIFFERS FROM THAT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL ADJUST THE DESIGN FOR UNFORESEEN CONDITIONS.
11. REFER TO DRAWING 500 FOR INFORMATION AND CLARITY REGARDING THE PAD SOLUTION COLLECTION PIPEWORK LAYOUT.
12. REFER TO TABLE 1 FOR SETTING OUT DATA ASSOCIATED WITH THE PAD SOLUTION COLLECTION TO ON-HEAP CONVEYANCE PIPEWORK CONNECTIONS, ON-HEAP CONVEYANCE PIPEWORK GRADE TRANSITION POINTS, AND TRANSITION POINTS FROM ON-HEAP CONVEYANCE PIPEWORK TO DISPERSION PIPE NETWORKS.
13. THE ON-HEAP DISPERSION PIPES WILL TERMINATE AT THE SLOPE OF THE EXISTING ORE LIFT. SAFETY PRECAUTIONS SHOULD BE UTILIZED WHEN WORKING IN CLOSE PROXIMITY TO THE HEAP SLOPE.

STATE OF ALASKA 49TH THOMAS F. KERR No. 10989 CE REGISTERED PROFESSIONAL ENGINEER
Sept 11/12

REV	DATE	DESCRIPTION	APP'D
A	06/15/12	ISSUED FOR CLIENT REVIEW	CADD / JTR / CB
0	06/22/12	ISSUED FOR CONSTRUCTION	CADD / JTR / CB
1	09/12/12	REISSUED FOR CONSTRUCTION	CADD / JTR / CB

DISCLAIMER
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ACTIVITY CODE 100 XREF N/A

CLIENT: FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

PROJECT: FORT KNOX PROJECT
WALTER CREEK VALLEY FILL HEAP LEACH FACILITY S3 AND S4 - 2012
TITLE: ON-HEAP SOLUTION CONVEYANCE/DISPERSION PIPES NETWORK - SHEET 2 OF 2

DESIGNED BY	DRAWN BY	LOCATION	PROJECT NUMBER	DRAWING NUMBER	REVISION
JTR	CB	DV101	00089.46	525	1

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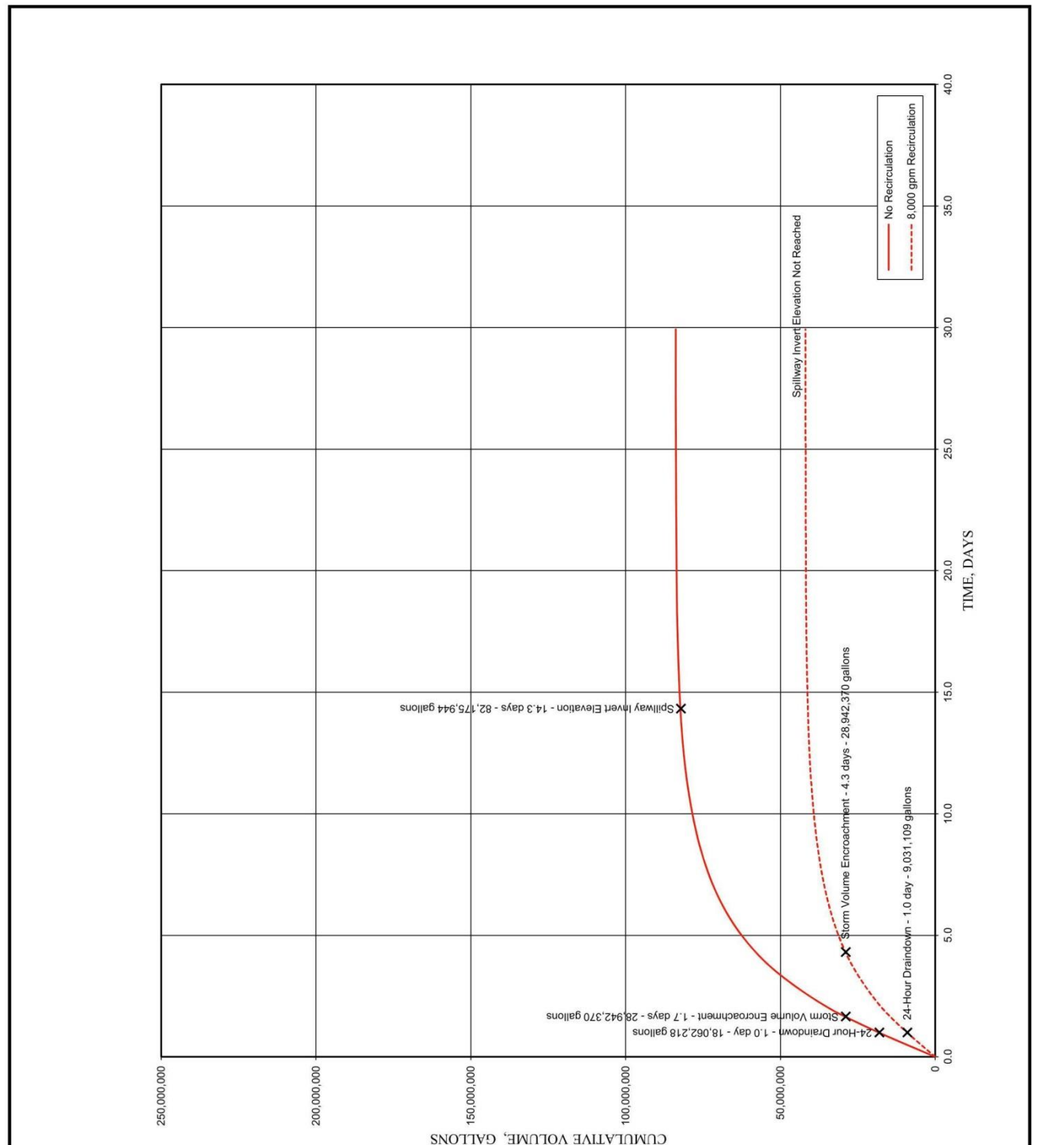

NOTES:

1. EXISTING SPILLWAY INVERT ELEVATION 1650.50 FEET ABOVE MEAN SEA LEVEL.
2. PUMPING CONDITION C WITH 8,000 gpm FROM ORIGINAL SOLUTION RECOVERY WELLS AND 8,000 gpm FROM NEW WELLS.

PROJECT	FORT KNOX PROJECT WALTER CREEK HLF DRAINDOWN ANALYSES
TITLE	CUMULATIVE DRAINDOWN VOLUME FOR AVERAGE HEIGHT OF 108.4 FEET
CLIENT	FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

DESIGNED BY	PD	LOCATION	PROJECT NUMBER	FIGURE NUMBER	REVISION
DRAWN BY	AL	DV101	00089.51	3.7	1
ACTIVITY CODE	N/A	XREF NUMBER	N/A		

LAST SAVED BY: RGRAHAM
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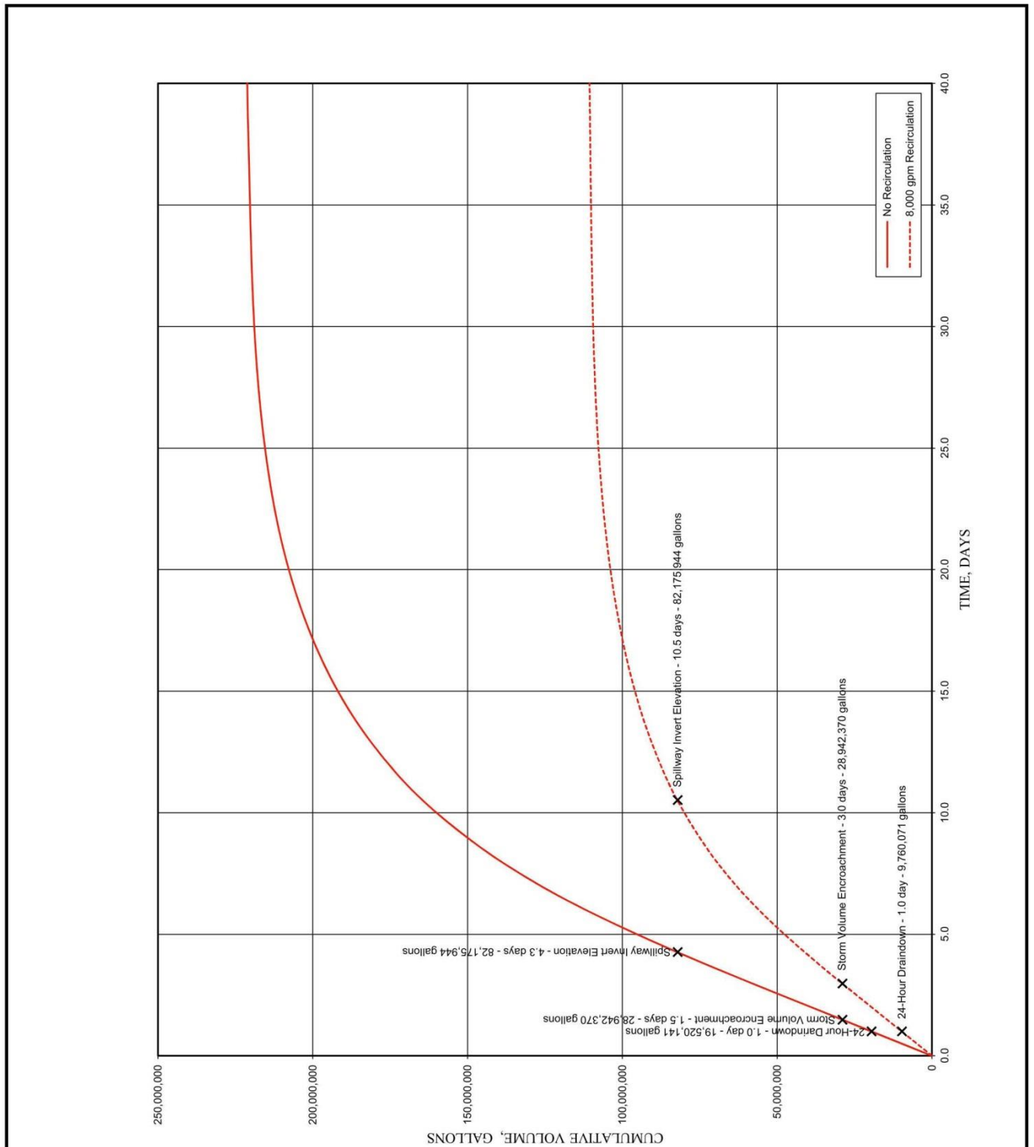

NOTES:

1. PRE-FEASIBILITY STUDY DESIGN SPILLWAY INVERT ELEVATION 1650.25 FEET ABOVE MEAN SEA LEVEL.
2. PUMPING CONDITION C WITH 8,000 gpm FROM ORIGINAL SOLUTION RECOVERY WELLS AND 8,000 gpm FROM NEW WELLS.

PROJECT	FORT KNOX PROJECT WALTER CREEK HLF DRAINDOWN ANALYSES
TITLE	CUMULATIVE DRAINDOWN VOLUME FOR AVERAGE HEIGHT OF 280.0 FEET
CLIENT	FAIRBANKS GOLD MINING, INC.

Knight Piésold CONSULTING

DESIGNED BY	PD	LOCATION	PROJECT NUMBER	FIGURE NUMBER	REVISION
DRAWN BY	CB	DV101	00089.51	3.10	1
ACTIVITY CODE	N/A	XREF NUMBER	N/A		

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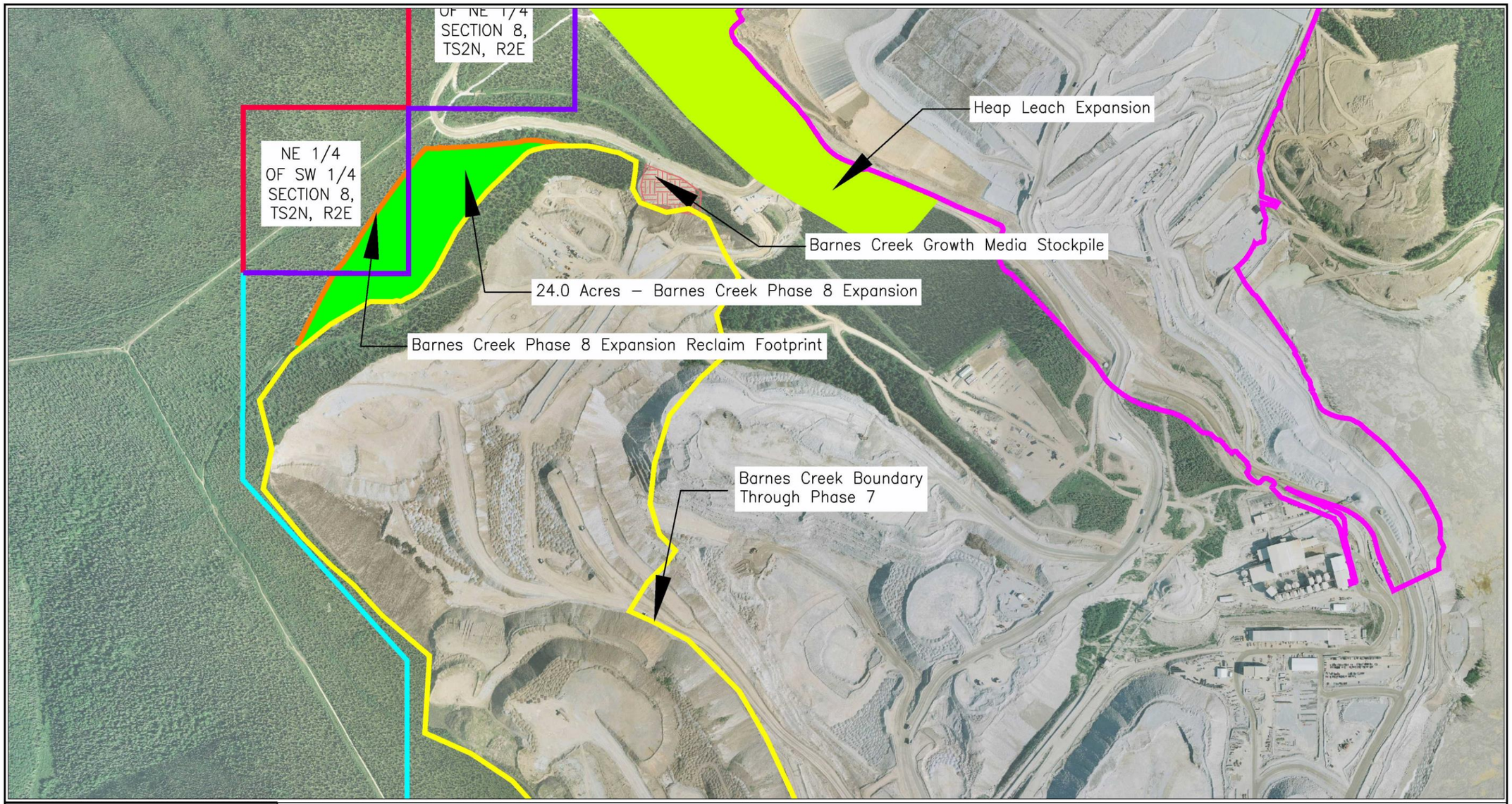
PRINTED BY: RGRAHAM - FRI, 7 MAR 2014 - TIME: 4:05:13 PM



Barnes Creek Waste Rock Dump Expansion

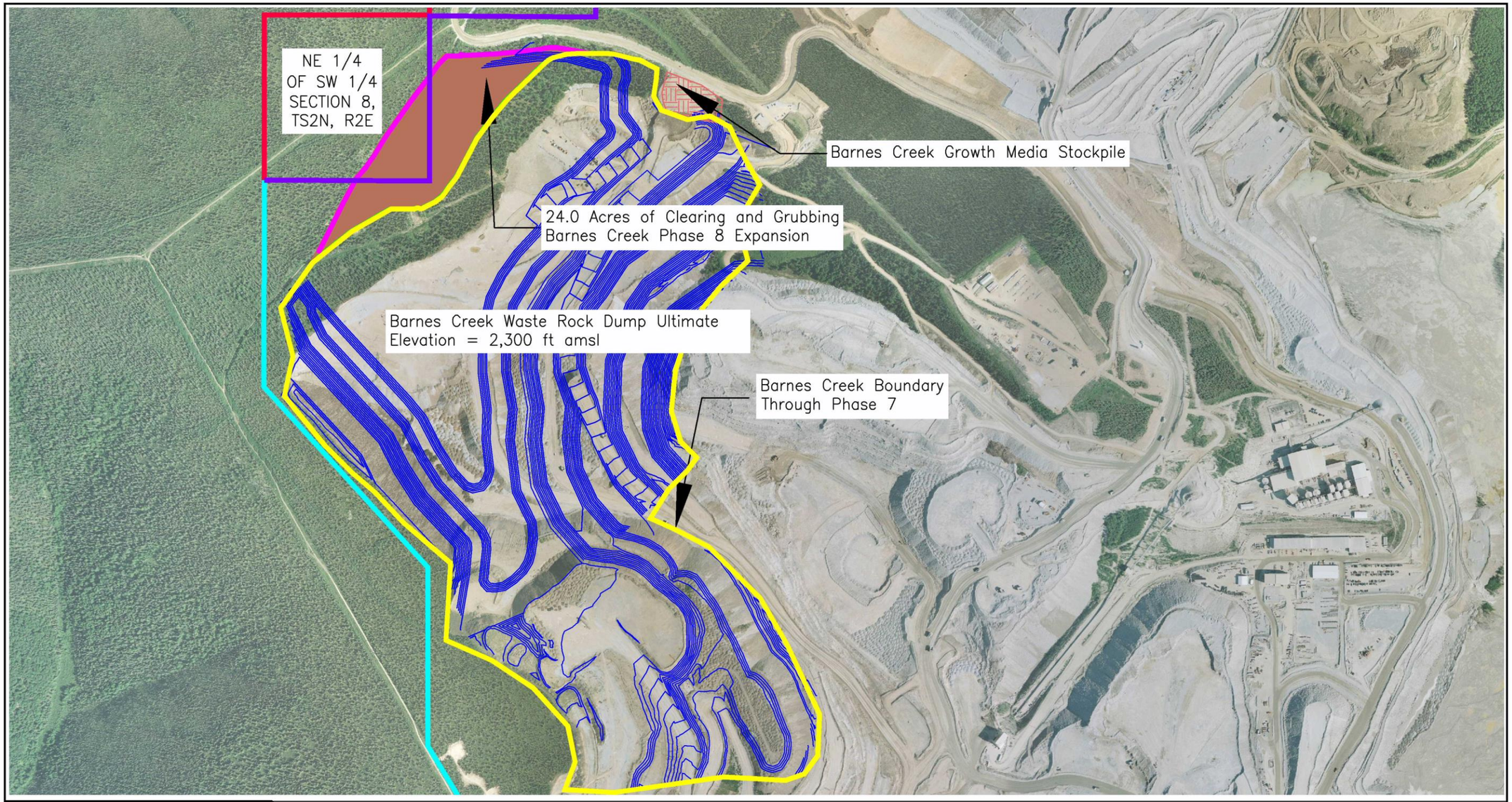
Date: February 2014

KINROSS Fort Knox

Expansion Footprint
Barnes Creek Growth Media Stockpile
Barnes Creek WRD Phase 7 Boundary
AMHTL Property Purchase Boundary
Millsite Lease Boundary
Millsite Lease Boundary
Heap Leach Stage 5 Boundary

N

0 750' 1125' 1500'
1"=750'



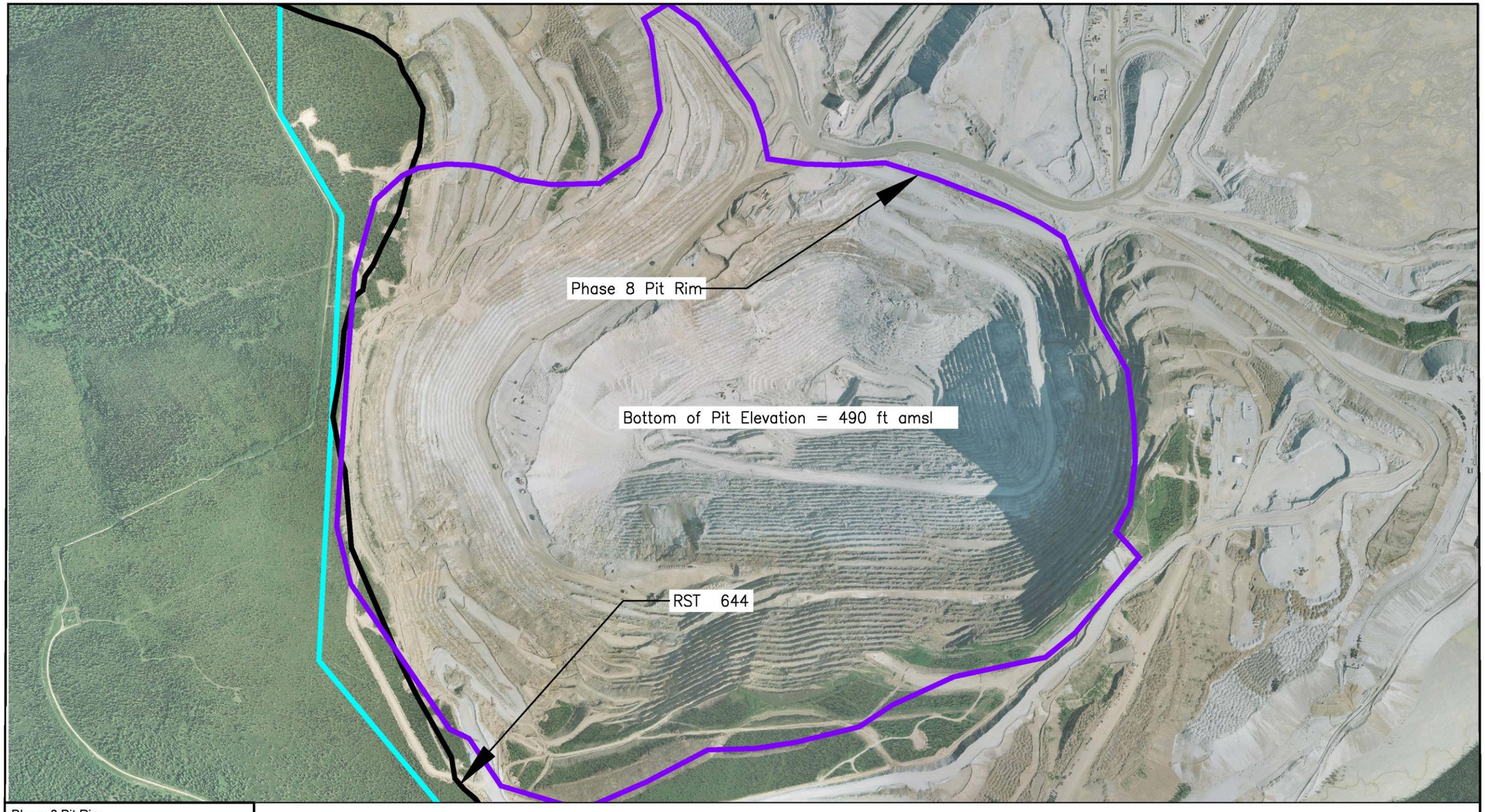
Barnes Creek Waste Rock Dump Expansion
Ultimate Configuration
Date: January 2014

KINROSS Fort Knox

Barnes Creek Growth Media Stockpile
Barnes Creek Clearing and Grubbing
Barnes Creek WRD Phase 7 Boundary
Barnes Creek Contours
AMHTL Property Purchase Boundary
Millsite Lease Boundary
Millsite Lease Boundary

N

1"=750' 0 750' 1250' 1500'



Phase 8 Pit Rim

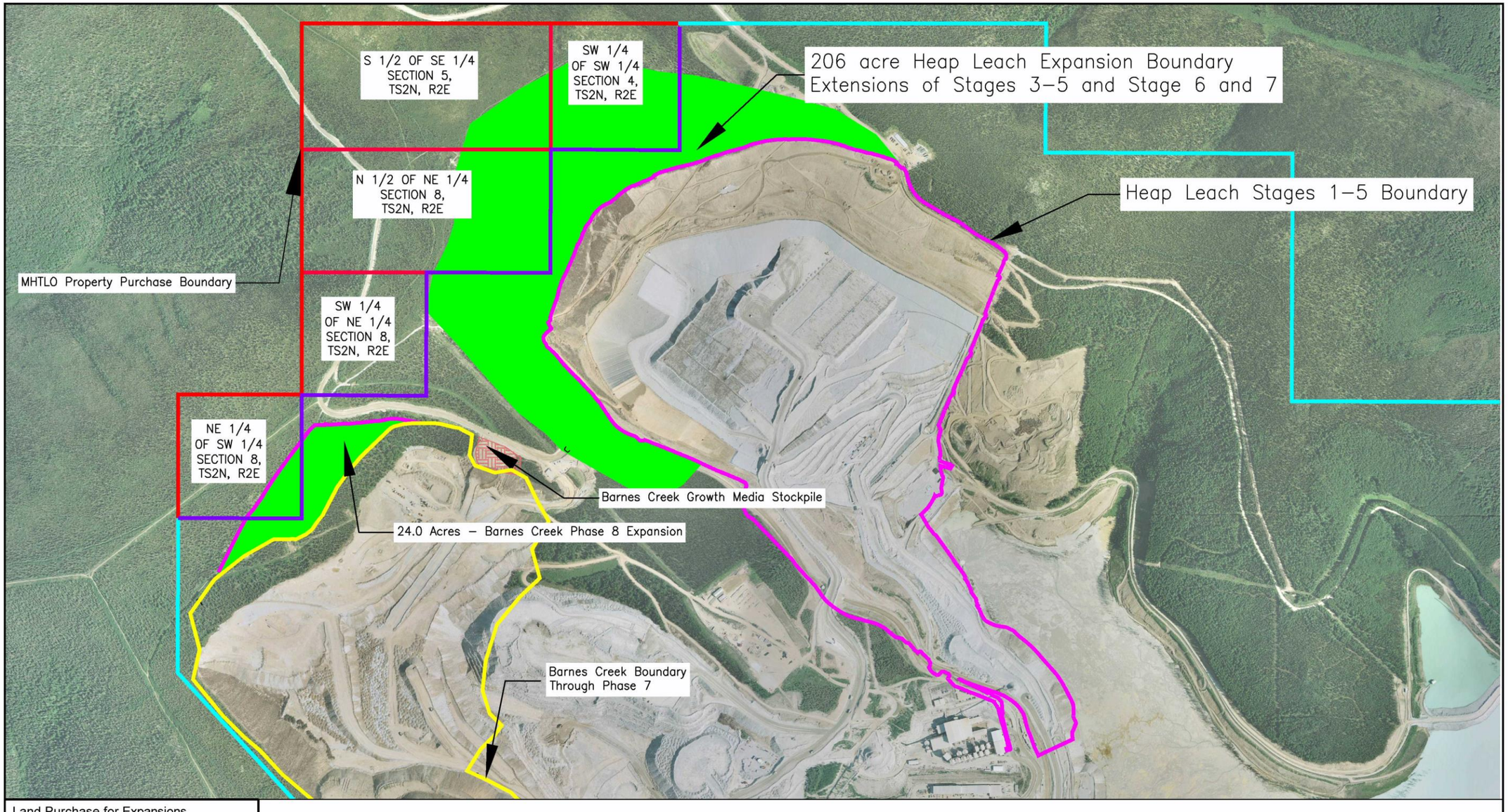
Date: March 2013

KINROSS Fort Knox

Phase 8 Pit Boundary
Millsite Lease Boundary
RST 644

N

0 750' 1125' 1500'
1"=750'



Land Purchase for Expansions

Date: February 2013

KINROSS Fort Knox

Expansion Footprint
Heap Leach Stage 5 Boundary
Barnes Creek WRD Phase 7 Boundary
MHTLO Property Purchase Boundary
Millsite Lease Boundary
Millsite Lease Boundary

N

KINROSS Fort Knox	Visualization Snapshot Locations
	Sheet 1 of 2
	Date: November 2012

KINROSS Fort Knox	Visualization Snapshot Locations	
	Sheet 2 of 2	
	Date: November 2012	