2017 ANNUAL CAP INSPECTION AND GROUNDWATER MONITORING REPORT

EAST SURFACE IMPOUNDMENT
GOLDENDALE, WASHINGTON

Prepared for

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TETRA TECH

2017 Annual Cap Inspection and Groundwater Monitoring Report

East Surface Impoundment
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ACRONYMS

BAL	Basalt Aquifer Lower
BAU	Basalt Aquifer Upper
CGA	Columbia Gorge Aluminum
Ecology	Washington State Department of Ecology
ESI	East Surface Impoundment
HASP	Health and Safety Plan
Lockheed Martin	Lockheed Martin Corporation
MCLs	Maximum Contaminant Levels
mg/L	Milligrams per Liter
NAVD	North American Vertical Datum
PAH	Polycyclic Aromatic Hydrocarbon
PVC	Polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
RI/FS	Remedial Investigation/Feasibility Study
SAP	Sampling and Analysis Plan
UA	Unconsolidated Aquifer
WAC	Washington Administrative Code

Section 1
Introduction

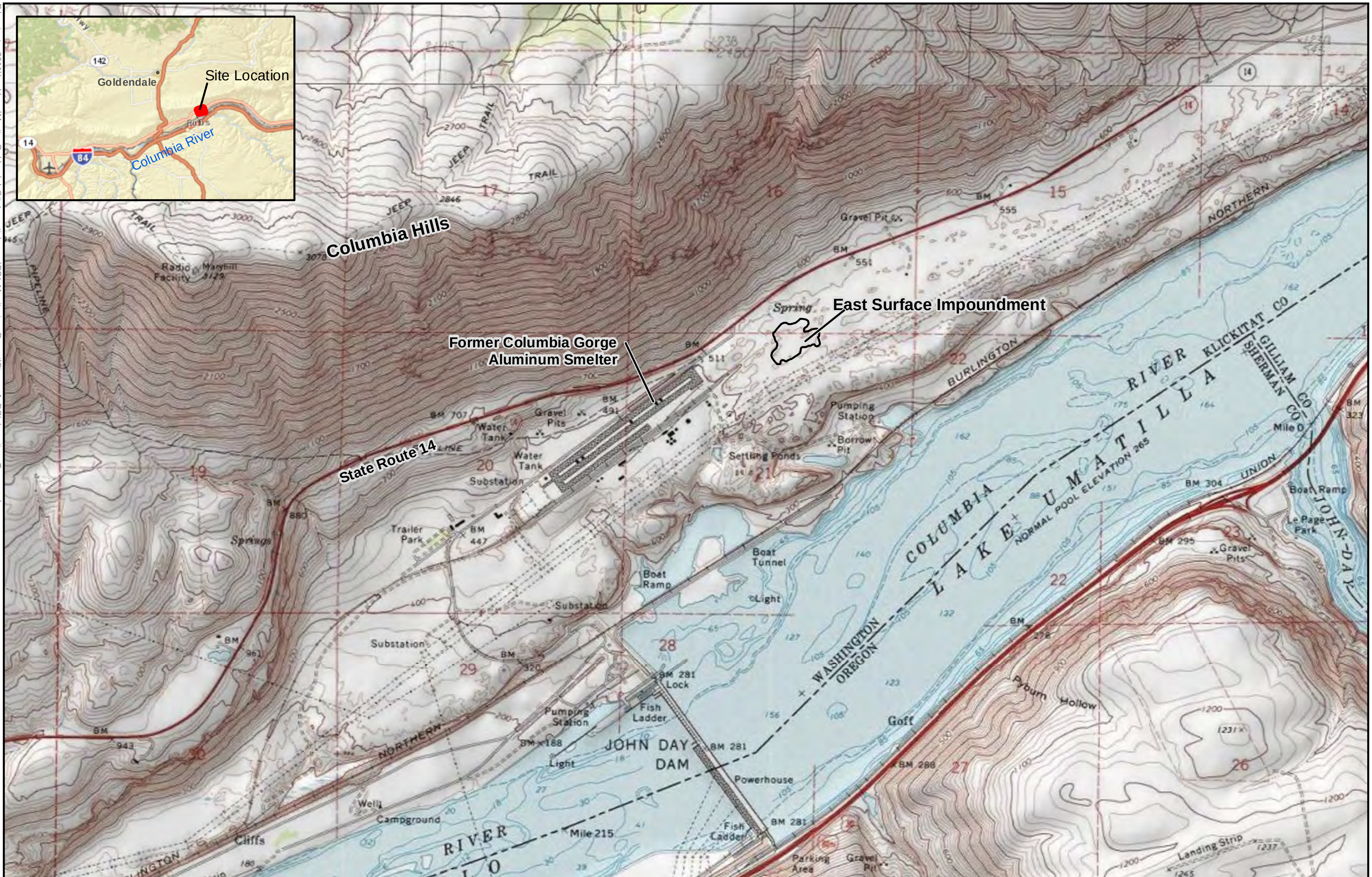
This 2017 Cap Inspection Report summarizes the current condition of the protective cap and ancillary features and groundwater monitoring associated with the East Surface Impoundment (ESI) located at the former Columbia Gorge Aluminum (CGA) Smelter Site, Goldendale, Washington (Figure 1).

The post-closure plan (Geraghty & Miller 1986, as modified April 1, 1994) requires periodic inspection and maintenance of the cap, gas vents, security fencing, signs, and drainage systems. A Washington State Department of Ecology (Ecology) conditional approval letter reduced the groundwater monitoring frequency for the ESI and specifies that operation and maintenance inspections will be completed annually during each of three sampling years, including 2005, 2010, and 2017 (Ecology 2003). Lockheed Martin Corporation (Lockheed Martin) currently plans to perform annual inspections of the cap. 2017 represents the last year of scheduled post-closure reporting.

The 2017 cap inspection was conducted on July 20, 2017, with quarterly groundwater monitoring extending through 2017, and maintenance activities through October 2018. The following sections discuss the background and purpose of the ESI Cap Inspection Program, and provides a summary of the 2017 cap inspection, groundwater monitoring, and routine maintenance activities.

1.1 BACKGROUND AND PURPOSE

The former CGA Goldendale facility incorporates an area of approximately 350 acres of land adjacent to the Columbia River (refer to Figure 1). The plant is now demolished, but formerly included a smelter (four electrolytic reduction cell lines), a carbon plant, a cast house, and administrative offices including a quality control laboratory. The administrative offices and a sewage treatment plant are still present.



Topographic Map Data Source: USGS 24k Topographic Quadrangles, 1973.

Figure 1
East Surface Impoundment Location
Topographic Map

Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

The reduction process used molten cryolite into which the alumina was dissolved. The electrolytic reaction in the reduction cell caused molten aluminum to precipitate on the cathode in the cell, where it was periodically decanted. During this process, the anode was consumed and particulate and gas emissions were collected and treated. These emissions included polycyclic aromatic hydrocarbon (PAH) compounds that are present in the binder for the carbon anodes and fluoride. These gaseous and particulate wastes were collected in a wet scrubber system. Sludge generated in the wet scrubber was discharged to settling ponds at various locations onsite, including the ESI.

The ESI is a 5.76 acre unlined impoundment that received sludge from the plant's air emission control scrubber system from approximately 1973 through June 1985. The ESI is located approximately 1,500 feet northeast of the smelter complex. In July 1987 the ESI was closed in compliance with the ESI Modified Closure and Post-Closure Plans (Geraghty and Miller 1986) by stabilizing waste, placing a cap, and fencing the closed site. This closure conformed with the Washington Dangerous Waste Regulations, specifically Washington Administrative Code (WAC) 173-303-400(3)(a), which includes, by reference, 40 CFR Part 265 Subparts F through R for interim status facilities. Post-closure requirements have been subsequently modified [refer to 1994 modification of the post-closure plan and Ecology (2003)]. Refer to Figure 2 for ESI site features.

The post-closure plan requires two main field activities including: 1) inspection and maintenance of the integrity and effectiveness of the cap including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events, and 2) maintenance and sampling of the groundwater monitoring network. During 2017, groundwater monitoring at the ESI was conducted quarterly (4 rounds) at 4 monitoring wells.

1.2 CAP INSPECTION AND MAINTENANCE PROGRAM

The primary objectives of this annual inspection and maintenance program include: 1) verify that the structural integrity of the ESI cap is maintained, 2) verify that security fencing and associated signage is intact and visible, 3) verify that gas collection vents and risers are functioning, 4) ensure that drainage systems are clear of blockages and functioning, 5) make recommendations for maintenance, and 6) perform minor maintenance activities.

Legend

MW-8 Monitoring Well

MW-10 ESI Monitoring Program Well

Vent Location (GPS Points)

Fenceline

Approximate Gravel Road Location

ESI Cap Boundary

ESI Drainage Channel

N

0 125 250 500

Feet

Figure 2

East Surface Impoundment and Associated Features

Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

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The annual inspections include the following key elements:

- Checking the cap for defects such as erosion gullies, loss of vegetation cover, cracking or settlement of the cover, burrows or other animal activities disturbing the cap, and slumping or sliding of the cover or protective rip-rap.
- Checking all fences to ensure they are intact, securely anchored and attached, and that warning signs are clearly visible.
- Inspecting the gas collection and control system to verify the vents are clear and the risers are undamaged.
- Inspecting the levee and drainage systems within and around the ESI to ensure that no water is ponding or creating diversions.

The 2017 annual cap inspection findings are documented in this report. A completed Cap inspection checklist and photographic log of site features taken during inspection and maintenance activities are included as Appendix A and B, respectively.

Section 2
Cap Inspection Results

The 2017 annual cap inspection was conducted on July 20, 2017. All work was conducted in accordance with the site-specific Health and Safety Plan (HASP).

The cap area, vents, drainages, and fences identified on Figure 2 were inspected. Observations regarding various site features and system components are as follows:

- **Cap Area:** The cap area was inspected for evidence of settlement and erosion. No evidence of settlement or erosion was observed. Vegetation including grasses and perennials such as sage brush were observed growing on portions of the cap area (refer to Appendix B photographs). The amount of vegetation on the cap is slightly greater in 2017 compared to 2016 due to a very wet winter (Tetra Tech 2016). The closure plan (Geraghty and Miller 1986) does not include specifications for vegetation control.

- **Vents:** Nine vents were observed within the cap area. The above-ground portion of the vents system were in good condition. The vent riser pipes were not damaged; the concrete pads were not cracked; and no gaps or cracks associated with the above-surface completions of the vents were observed. All nine of the vent riser pipes were capped with a screw-on steel endcap. The locations of these vent riser pipes are included in Figure 2.

  As previously reported in earlier cap inspection reports (Tetra Tech 2015c, Tetra Tech 2016), the westernmost vent-riser pipe (ESI-V2) appears to have settled or has been previously backed into by a vehicle based on its tilted orientation (refer to Appendix B photograph). However, the concrete pad associated with this riser was in good condition and the riser pipe was not damaged. Therefore, this pipe structure has been determined to be functioning as designed.

- **Fencing:** The fencing and gates were generally found in good condition with gates locked and operational. Evidence of animal burrowing under the fence was observed in approximately 3 locations. Basalt cobbles found immediately adjacent to the burrows were piled and used to block all new burrows that were found. The extensive small-animal burrowing repairs that were performed in 2016 (Tetra Tech 2016) were inspected and found to be in good condition with no need for further repair.

- **Signs:** The fence signs were observed to be properly spaced and in good condition. A total of 17 signs were observed at the time of the inspection.

- **Drainages:** There is a large gap (1.5 to 2 foot) under the existing fence line at the drainage ditch near the main western ESI entrance gate. This gap was not filled as it's part of the designed drainage channel which flows away from the ESI.

- **Other Debris:** No other debris was observed inside or immediately outside the impoundment fence line during this inspection.

- **Monitoring Wells:** Monitoring wells were inspected and sampled on a quarterly basis during 2017 (refer to Section 4.0).

- **Area of Discolored Soil.** An area of discolored surface soil was found outside and inside the southeastern corner of the ESI fence line during 2016 (Tetra Tech 2016). This area was visited by Ecology representative Guy Barrett during a site visit on October 28, 2016. These soils were addressed as a maintenance activity in October 2018, as discussed in Section 3, Maintenance Activities Summary.

Section 3
Maintenance Activities Summary

This section summarizes maintenance activities performed at the ESI to address needs identified during the 2016 and July 20, 2017 inspections of the ESI. The Weather conditions were clear and sunny, with light wind and high temperatures of about 88 degrees Fahrenheit.

The primary maintenance activity consisted of filling burrows located under the fence line and addressing areas of stained soils identified during the 2016 annual inspection. During the exterior inspection of the chain-link fence perimeter, field personnel addressed all locations where evidence of animal burrows under the fence was observed. At three new locations, basalt cobbles found in the vicinity of the burrow were gathered and stacked along the outside of the fence to block new gaps between the bottom of the fence and the ground surface.

During the inspection completed on 20 July 2017, all of the basalt cobble repairs completed in 2016 were observed intact and required only minor repair. Some areas where cobbles were already stacked were reinforced with more basalt cobbles (refer to Appendix B photographs).

As part of ongoing maintenance activities, the area(s) of discolored soil observed outside and inside the southeastern corner of the ESI fence line during the 2016 ESI inspection (refer to Appendix B photographs) were excavated in October 2018. The discolored surface soils were confirmed to be limited in both lateral and vertical extent and were transported to an offsite disposal facility.

Prior to excavation activities, the discolored surface soil area(s) were sampled and analyzed for PAHs (Method 8270D Sim), total cyanide (Method 9012A), and fluoride and sulfate (Method 300.0). This soil sampling effort was to help establish areas for excavation and for waste profiling purposes. Waste soil profile sample results are summarized in Appendix F and showed that PAHs above MTCA Method C soil screening levels were present in the discolored soil.

The soil excavation was generally shallow (less than 1 foot). Approximately 435 tons of discolored surface soils were excavated and disposed at Columbia Ridge Landfill between 5-22 October 2018. Manifest/disposal receipts are included in Appendix F.

At the completion of excavation activities, confirmation samples were collected from the remaining (underlying) non-discolored soils. Confirmation soil sample results are provided in Appendix F and show that remaining soil concentrations are below MTCA Method A Industrial and Method C soil screening levels. A figure showing the excavation area(s) and confirmation sample locations is included in Appendix F.

Section 4
Groundwater Monitoring Summary

This section summarizes the results of the four quarters of groundwater monitoring performed during 2017.

4.1 GROUNDWATER MONITORING PROGRAM SUMMARY

Groundwater monitoring was completed as required by Ecology as part of post-closure activities for the ESI and the sampling requirements from the Ecology outlined in a letter dated November 20, 2003 (Ecology 2003). All field activities were completed in accordance with the Sampling and Analysis Plan (SAP) (Geraghty & Miller 1986). The groundwater monitoring program was previously completed from 2003 to 2010 (ARCADIS 2011) and the historical results are provided in Appendix E.

In November 2003, the requirements for groundwater monitoring and operations and maintenance inspection activities were reduced by Ecology to a total of three one year monitoring periods, where groundwater monitoring and operations and maintenance inspections were performed quarterly (ARCADIS 2011). These one year monitoring periods include:

- 2005 (completed)
- 2010 (completed)
- 2017 (completed and summarized in this report)

The monitoring wells specified for sampling (see Figure 2) include:

- IB-3 (upgradient well)
- MW-10 (downgradient well)
- IB-5 (downgradient well)
- IB-8 (downgradient well)

The 2017 ESI quarterly groundwater monitoring program included collection of water-level elevations, field parameters (pH, conductivity, dissolved oxygen, and temperature) and analytical data (fluoride, sulfate, total and dissolved iron).

The 2017 samples for the ESI groundwater monitoring program represent a subset of the RI groundwater monitoring program that is described in the Final RI Work Plan, Volume 2: Phase 2 Work Plan, Columbia Gorge Aluminum Smelter Site (Tetra Tech 2015b). The RI groundwater sampling program includes a more comprehensive suite of chemical analyses and expanded list of monitoring wells. In this report, only the results for those wells and chemical parameters specified in the ESI groundwater monitoring program are summarized. The full results of the RI groundwater monitoring program will be summarized in the RI report.

The groundwater samples were collected using low flow groundwater sampling techniques consistent with and as described in the Final RI Phase 2 Work Plan and the ESI SAP (Geraghty and Miller 1986). Three of the wells (IB-3, IB-5, and MW-10) were sampled with a peristaltic pump and dedicated polyethylene tubing, while well IB-8 was sampled with a bladder pump and dedicated bladders and polyethylene tubing. Compressed nitrogen gas was used to operate the bladder pump. An in-line flow-through cell and water quality meter was used to collect field parameters during well purging including: temperature, specific conductivity, dissolved oxygen, pH, oxidation-reduction potential, and turbidity. A low flow rate of less than 0.5 liters per minute was used to purge and sample the wells. Water levels were measured during purging to document drawdown. All non-dedicated equipment (i.e., bladder pump and water-level indicator) were cleaned with an Alconox wash and distilled water rinse before use in a given well. The dedicated tubing for each well was measured and cut during the first sampling round, so that the tubing/pump inlet was positioned in the center of the screen interval when the tubing was extended down the well.

The 2017 ESI groundwater monitoring activity was implemented consistent with the RI quality assurance/quality control (QA/QC) program. The ESI results were validated in accordance with the QA/QC criteria and procedures specified in the Final RI Phase 2 Work Plan (Tetra Tech 2015b) and include level-3 data validation. Data qualifiers from the data validation process are included in the ESI data summary tables.

A site-wide hydrogeologic conceptual model was developed and presented in the Fina RI Phase 1 and Phase 2 Work Plans (Tetra Tech 2015a,b). Three aquifer zones have been identified across the site including:

- The unconsolidated aquifer (UA) zone, which consists of unconsolidated alluvium, colluvium and fill material and represents the uppermost aquifer zone. In some areas near the ESI, the UA zone is absent where basalt bedrock outcrops.
- The basalt aquifer upper (BAU) zone, which represents the uppermost basalt aquifer zone. Groundwater most commonly occurs in flow-top breccia and connected fractures within the basalt aquifer system. The BAU aquifer has more than one water-bearing zone in some areas, but the water levels for all wells included in the BAU area are relatively similar. The UA and BAU zones are locally interconnected.
- The basalt aquifer lower (BAL) zone, which represents the deeper basalt aquifer zone. Water-levels in the BAL are significantly lower relative to the shallower UA and BAU zones; the BAL appears to have limited connection to the BAU and BAL zones.

The wells included in the ESI monitoring program are completed in the following aquifer zones: IB-3 (BAU zone), MW-10 (UA zone), IB-5 (BAU zone), and IB-8 (BAL zone).

The complete monitoring well network at the site was inspected during fall 2015 as part of the site-wide RI, including the four wells in the ESI monitoring program. The wells were also inspected during each quarterly sampling event during 2017. The four wells were determined to be in good condition.

4.2 WATER-LEVEL RESULTS

Table 1 summarizes groundwater elevation data collected during 2017. Groundwater elevation posting maps are presented on Figure 3 for quarterly measurements collected during February (Winter, Quarter 1), May (Spring, Quarter 2), August (Summer, Quarter 3), and November (Fall, Quarter 4) of 2017. The water-level elevations were not contoured because the monitoring wells are completed in different aquifer zones and there are insufficient wells in individual aquifer zones to define a potentiometric surface.

Water-level measuring point elevations in Table 1 are from a site-wide location survey of the existing and new monitoring wells conducted in 2016 as part of the RI. The vertical datum used in

Table 1
Well Construction and 2017 Water-Level Elevation Measurement Summary
East Surface Impoundment, Goldendale, Washington

Well Number	Well Construction						Field Method and Survey Datum		Winter Quarter (Q1) January-February 2017		Spring Quarter (Q2) May 2017		Summer Quarter (Q3) August 2017		Fall Quarter (Q4) November 2017	
	Total Well Depth (ft-bgs)	Screen Interval (ft-bgs)	Screen Interval (feet TOC)	Measured Depth (Q1) (feet TOC)	Well Diameter (Inches)	RI Aquifer Designation	Pump Type/ Sampling Method	Measuring Point Elevation (Feet MSL, NAVD 1988)	Water Level (feet TOC)	Water Level Elevation (feet MSL, NAVD 1988)	Water Level (feet TOC)	Water-Level Elevation (feet MSL, NAVD 1988)	Water Level (feet TOC)	Water-Level Elevation (feet MSL, NAVD 1988)	Water Level (feet TOC, NAVD 1988)	Water-Level Elevation (feet MSL, NAVD 1988)
IB-3	35	20 - 30	18.6-28.6	36.36	2	BAU	Peristaltic/ Low flow	536.39	6.98	529.41	6.00	530.39	10.64	525.75	11.59	524.80
IB-5	25	10 - 20	8.6-18.6	26.40	2	BAU	Peristaltic/ Low flow	506.45	8.67	497.78	9.57	496.88	11.16	495.29	11.83	494.62
IB-8	306	281 - 291	279.4-289.4	about 310[a]	2	BAL	Bladder/ Low flow	465.53	196.47	269.06	196.53	269.00	197.71	267.82	197.83	267.70
MW-10	13	8 -13	6.1-11.1	13.38	4	UA	Peristaltic/ Low flow	517.83	3.35	514.49	4.06	513.77	9.43	508.40	10.87	506.96

Notes:

a Total depth measurement for this well was approximated due to variability of total depth measurements at this location during the four sampling rounds.
BAL Basalt Aquifer-Lower
BAU Basalt Aquifer-Upper
bgs Below ground surface
MSL Mean sea level
NAVD North American Vertical Datum
RI Remedial Investigation
TOC Top of Casing
UA Unconsolidated Aquifer

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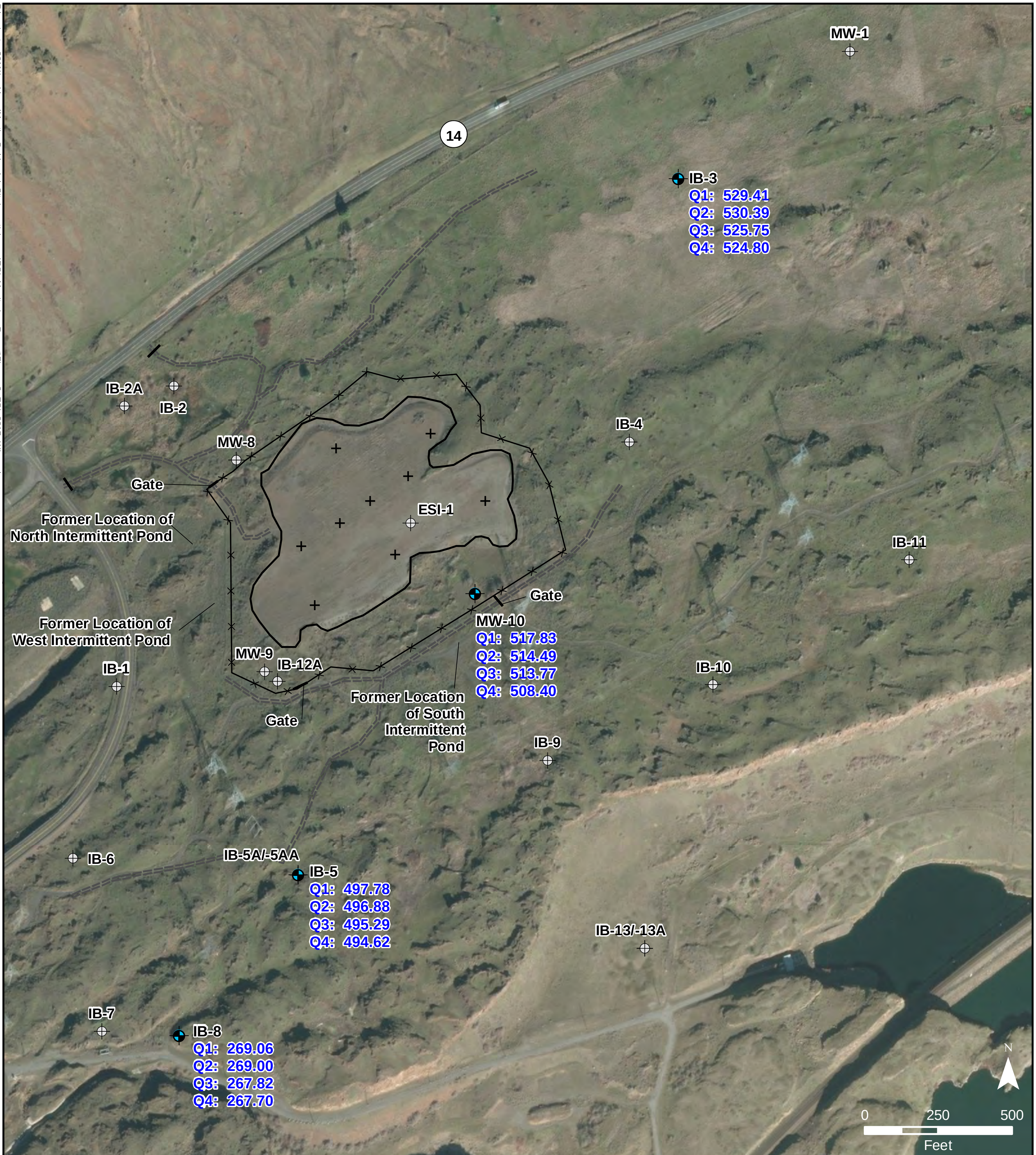

Legend

MW-8 Monitoring Well

MW-10 ESI Monitoring Program Well

Vent Location (Approximate)

Fenceline

Approximate Gravel Road Location

ESI Cap Boundary

269.06 Water-level Elevation (feet mean sea level, NAVD88)

Q1 First Quarter

Figure 3
East Surface Impoundment
2017 Water-level Elevations

Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

the well survey is North American Vertical Datum (NAVD) 1988. For these specific wells, the measuring point elevations are a little over 3 feet higher than reported measuring point elevations in the 2010 groundwater report (ARCADIS 2011) due to the change in survey datum. The measuring points for each well are marked on the northern rim of the inner polyvinyl chloride (PVC) well casing. Complete survey coordinates will be provided in the RI report.

Based on historical data (Tetra Tech 2015a) and the initial results from the RI, the horizontal gradient in the UA and BAU aquifer zones is to the south or southwest. Initial results from the RI for the BAL zone suggest that the horizontal gradient for this deeper zone is to the south-southeast. Water levels fluctuate seasonally with the highest water-level elevations occurring in the winter and/or spring and the lowest water-level elevations occurring in the fall.

4.3 GROUNDWATER MONITORING ANALYTICAL RESULTS

A summary of the groundwater analytical results for 2017 is summarized below in Table 2. Table 2 includes comparisons to appropriate screening levels used for the ESI monitoring program. The analytical laboratory data summary reports for the 2017 sampling rounds at these wells are provided in Appendix C. Groundwater sampling field forms completed for each well at the time of sampling are provided in Appendix D. A summary of past ESI groundwater sampling results (ARCADIS 2011) from 2002 through 2010 is presented in Appendix E.

Chemical analyses were conducted by TestAmerica Laboratories, Inc. Third-party Level III data validation was performed by Laboratory Data Consultants, Inc. as specified in the Final RI Phase 2 Work Plan (Tetra Tech 2015b), and the data has been qualified as appropriate.

Analytical results have been compared against the same screening levels [Washington State Maximum Contaminant Levels (MCLs) and Secondary MCLs].

Groundwater chemical concentrations during the 2017 monitoring period are summarized as follows.

- Fluoride was detected above the Washington MCL for fluoride of 4 milligrams per liter (mg/L) in well MW-10 (4.8 mg/L to 8 J mg/L) in all monitoring quarters. The range of fluoride concentrations is similar to past results presented in Appendix E. Fluoride was not detected above the MCL in the remaining wells included in the monitoring program.

Table 2
2017 Groundwater Analytical Results Summary
East Surface Impoundment, Goldendale, Washington

Well Number	Month Sampled	Fluoride (mg/L)	Sulfate (mg/L)	Total Iron (mg/L)	Dissolved Iron (mg/L)
IB-3	Feb-17	0.31	18.0	0.089	0.092 B
	May-17	0.19 J	24.0	0.12 U	0.12 U
	Aug-17	0.26	17.0	0.16 B	0.12 U
	Nov-17	0.28	18.0	0.12 U	0.12 U
MW-10	Feb-17	**8 J**	50	0.05	0.028 J
	May-17	**5.50**	**460**	0.12 U	0.12 U
	Aug-17	**4.8**	**440 J**	0.25 B	0.16 B
	Nov-17	**4.5**	**700**	0.12 U	0.12 U
IB-5	Feb-17	0.25 J	**480 J**	0.18 U	0.082 B
	May-17	0.03 U	**470**	0.12 U	0.12 U
	Aug-17	0.053 J	**550 J**	**0.3 B**	0.12 U
	Nov-17	0.03 U	**550**	0.12 U	0.12 U
IB-8	Feb-17	0.95	**770**	**0.38**	0.022 B
	May-17	0.03 U	**970**	0.091 J	0.044 J
	Aug-17	1.3	**980**	0.036 U	0.084 J
	Nov-17	0.03 UJ	**1,000 J**	0.12 U	0.12 U
Washington State MCL		4	250 (SMCL)	0.3 (SMCL)	0.3 (SMCL)

Notes:
Bold concentration exceeds MCLs or SMCL.

B Constituent was detected in both the sample and associated laboratory blank
J Estimated Concentration
MCL Maximum Contaminant Level
mg/L Milligrams per liter
NA Not analyzed
SMCL Secondary Maximum Contaminant Level
U Constituent was not detected above associated limit

- Sulfate was consistently detected above the Secondary MCL of 250 mg/L in wells MW-10 (50 mg/L to 700 mg/L), IB-5 (480 J mg/L to 550 mg/L), and IB-8 (770 mg/L to 1,000 J mg/L). The detected range of sulfate concentrations in wells MW-10 and IB-8 was similar to past results that are presented in Appendix E. The range of sulfate concentrations in IB-5 during 2017 was lower than previous historical results. There appears to be a decreasing trend of sulfate concentrations at well IB-5.

- Total iron was detected above the Secondary MCL of 0.3 mg/L at IB-5 (maximum of 0.3 B mg/L) and at IB-8 (maximum of 0.38 mg/L). At each of these two wells, the total iron concentration exceeded the screening value only during one sampling round. None of the field-filtered (dissolved fraction) results exceeded the Secondary MCL.

Field parameters (pH, conductivity, dissolved oxygen, and temperature) were stabilized during purging and were within the historic range of values for these wells (refer to Appendices D and E).

Section 5
Planned Activities

The 2017 cap inspection and groundwater sampling events represent the last activities included under the current RCRA monitoring program (Ecology 2003).

Lockheed Martin intends to independently continue to perform annual inspection(s) as appropriate. Future groundwater monitoring requirements associated with the ESI will be determined as part of the ongoing site-wide Remedial Investigation/Feasibility Study (RI/FS).

Section 6
Limitations

This report has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined. The report is intended for the exclusive use of Lockheed Martin Corporation, for specific application to the referenced project. No other warranty, express or implied, is made.

Section 7
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6. Tetra Tech. 2015c. 2015 Annual Cap Inspection Report, East Surface Impoundment, Goldendale, Washington. Prepared by Tetra Tech, Inc. for Lockheed Martin Corporation, August.

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APPENDIX A—— 2017 ESI CAP INSPECTION FORM

ESI CAP INSPECTION FORM

Date of Inspection: **July 20, 2017** Time: **11:00 – 14:00** Inspection Frequency: **Annually**

Inspected by: **Mike Pavarini** Signed: 

	Condition	Repair Needed	Remarks
1. Security Fencing System			
A. Gate locks and gate closures	**Secure**	**None**	**All locked, good condition**
B. Keep Out Signs	**Adequate**	**None**	**All signage in good condition**
C. Fence Posts and top rails	**Adequate**	**None**	**Good Condition**
D. Chain link and barbed wire	**Secure**	**None**	**All Intact**
E. Burrows under fence	**Adequate**	**None**	**Fixed ≈ 3 burrow locations**
2. ESI Cover System			
A. Settlement, slumping, or erosion	**Adequate**	**None**	**No visible erosion or settlement**
B. Wood vegetation	**Minor Vegetation**	**None**	**Sage brush and other grasses growing on cap, slightly more than 2016 due to wet year**
C. Animal Burrows	**None Observed**	**None**	**None**
D. Gas vent risers	**Adequate**	**None**	**All vents are capped. One is bent as noted previously**
E. Gas vents	**Adequate**	**None**	**Minor settlement and cracks**
3. Drainage Systems			
A. Lined ditches #1, #3	**Adequate**	**None**	**Evidence of past standing water at ditches 1 & 3 low points**
B. Unlined ditches and extensions	**Adequate**	**None**	**Some vegetation within ditches**
C. Culvert, ditch #1 extension	**Adequate**	**None**	**Gap in fence at west side of culvert**
D. North intermittent pond drainage	**Adequate**	**None**	
E. West intermittent pond drainage	**Adequate**	**None**	
F. South intermittent pond drainage	**Adequate**	**None**	

Items requiring correction:

All maintenance issues were addressed at time of inspection.

APPENDIX B—— 2017 ESI CAP INSPECTION PHOTOGRAPHIC LOG

Photograph No. 1: View of capped Vent #1 (typical of Vents #1 and Vents #3 through #9).

Photograph No. 2: View of capped Vent #2 with bent riser.

Photograph No. 3: View southwest across ESI cap.

Photograph No. 4: View southwest of monitoring well ESI-1.

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Photograph No. 5: View southeast of the main entrance gate to the ESI cap.


Photograph No. 6: View southeast of the open area on the southeast side of the ESI cap.

Photograph No. 7: View northeast across ESI cap.

Photograph No. 8: View of vegetation in drainage channel at southeast corner of ESI.


Photograph No. 9: View to north along drainage channel at southeast corner of ESI.


Photograph No. 10: View to west along drainage channel along northern boundary of ESI.

Photograph No. 11: View of vegetation at northwest corner of ESI at the main entrance.

Photograph No. 12: View to the east along northern boundary fence of ESI (typical of entire exterior fence perimeter).

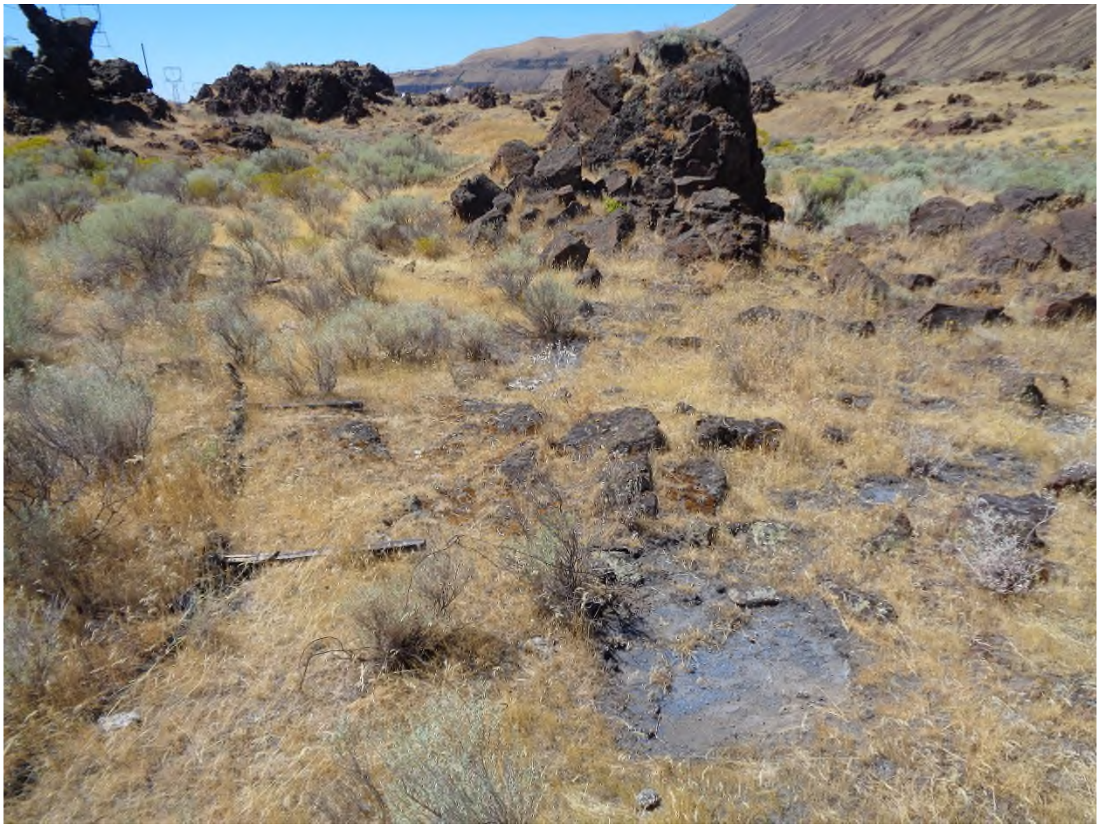
Photograph No. 13: View of gap under fence blocked by basalt cobbles near northeast corner.

Photograph No. 14: View to northwest at locked gate along southeastern side of fence.

TETRA TECH

Photograph No. 15: View to north at locked gate at southwestern corner of fence by MW-9 and IB-12A.

Photograph No. 16: View to north along eastern edge of ESI fence.



Photograph No. 17: View of discolored soils inside southeast corner of fence line, facing west.

Photograph No. 18: View of discolored soils, outside of southeastern fence line, facing west.

Photograph No. 19: View of discolored soil outside of southeastern fence line, facing south-southeast.