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ENVIRONMENTAL

From:
ARCADIS U.S., Inc., Helena, MT

Date:
June 8,2012

Subject:
Combined RCRA and CERCLA Groundwater Monitoring Report

ARCADIS Project No.:
GP000677.0015

We are sending you:

☐ **Attached** ☐ **Under Separate Cover Via** _____ **the Following Items:**

☐ Shop Drawings ☐ Plans ☐ Specifications ☐ Change Order
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☒ Other Consolidated RCRA/CERCLA Groundwater Monitoring Report

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1	06-08-12			Combined RCRA/CERCLA Groundwater Monitoring Report	FA

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Comments: 1 hard copy plus disk to Fredrick; 1 disk copy to Bob Schwarz, 1 hard copy plus disk to LMC Burbank, 1 disk copy to Bill Bath, CO

Combined 2011 Semiannual RCRA and Annual CERCLA Report
Lockheed Martin Corporation
The Dalles Facility
The Dalles, Oregon
ORD 052 221 025

Prepared for:

Lockheed Martin

Prepared by:

ARCADIS U.S., Inc.

June 8, 2012

Lynden Peters
Project Manager

Gordon G. Levin, R.G. (G2112)
Project Scientist

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Acronyms and Abbreviations

ACL	Alternative Concentration Limit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	chain of custody
DGWR	Dalles Groundwater Reservoir
EOR	Electric Operating Record
ft	feet
LCS	Leachate Collection System
MCL	maximum contaminant level
mg/L	milligrams per liter
MMRF	Martin Marietta Reduction Facility
MOA	Memorandum of Understanding
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
NAC	Northwest Aluminum Company
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
ODEQ	Oregon Department of Environmental Quality
%R	percent recovery
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SMCL	secondary maximum contaminant level
TOC	total organic carbon
USEPA	U.S. Environmental Protection Agency
WAD	weak acid dissociable

Certification

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

June 8, 2012

Lynden Peters — Date

Project Manager

Section 1
Introduction

Two landfills located at the former Martin Marietta Reduction Facility (MMRF) in The Dalles, Oregon are being monitored pursuant to approved monitoring plans. Presented herein are the results of groundwater and site monitoring activities performed between April 2011 and March 2012. The MMRF site is located near the west bank of the Columbia River and, during production, occupied approximately 350 acres within an 800-acre area zoned for heavy industry and manufacturing (Figure 1). Wastes generated during the aluminum production process, primarily potliner waste (United States Environmental Protection Agency [USEPA] waste code K088), were released to the site soils and groundwater. In 1984, the potliner waste was stockpiled on a lined storage pad. The waste pad was subsequently closed in place as a Resource Conservation and Recovery Act (RCRA) landfill, in accordance with an Oregon Department of Environmental Quality (ODEQ)-approved closure plan. After closing the landfill, activities have been performed at the site in accordance with the RCRA Post-Closure Care Permit developed for the site (ORD 052 221 025).

In 1986, the USEPA listed the MMRF property as the "Martin Marietta Aluminum Company" on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL). The NPL site definition included the majority of the former MMRF property (approximately 350 acres), but specifically excluded the RCRA landfill. Therefore, the RCRA landfill was surrounded by, but not part of, the CERCLA site. Martin Marietta remediated the CERCLA site under a 1988 Record of Decision (ROD), 1989 Consent Decree, and 1991 ROD amendment. USEPA delisted the site from the NPL in 1996.

The Consent Decree and ROD established the groundwater compliance standards. Alternative Concentration Limits (ACLs) were established for groundwater quality in the shallow S aquifer at

the site. The following hazardous constituents and their concentration limits comprise the groundwater protection standard for the S aquifer:

Constituent	ACLs (mg/L)
WAD Cyanide	0.77
Fluoride	9.7
Sulfate	3,020

WAD = weak acid dissociable
mg/L – milligrams per liter

USEPA Safe Drinking Water Act maximum contaminant levels (MCLs) apply to the A and B aquifers for fluoride and sulfate. These standards include 4.0 mg/L for fluoride and 250 mg/L for sulfate (secondary MCL [SMCL]). The groundwater contaminant limit for WAD cyanide is based on the USEPA Health Advisory for life exposure for adults to onsite groundwater (0.77 mg/L) and longer-term exposure for children to off-site groundwater (0.22 mg/L).

In 2004, a Memorandum of Agreement (MOA) between the ODEQ and USEPA integrated management of the CERCLA landfill into the RCRA Post-Closure Care Permit. In 2006, the RCRA Post-Closure Care Permit was modified to integrate CERCLA and RCRA groundwater monitoring and reporting requirements, including preparing a combined RCRA and CERCLA report. The RCRA Post-Closure Care Permit specifies semiannual groundwater monitoring (in March and September) at the RCRA landfill and annual groundwater monitoring (in March) at the CERCLA landfill.

This document contains the combined Semiannual RCRA and Annual CERCLA Report and covers the period of April 2011 through March 2012. In addition to groundwater monitoring, the RCRA Post-Closure Permit specifies both RCRA and CERCLA landfill inspections, leachate collection and treatment inspections and analyses, and treatment system requirements. Information on these topics is presented in subsequent sections of this report. Specifically, Section 2 discusses the RCRA post-closure activities, Section 3 discusses the CERCLA program, Section 4 presents the findings, and Section 5 contains a list of references cited in this report. Previous groundwater monitoring reports and the Electronic Operating Record (EOR) contain additional background

information on the site, history of the groundwater monitoring program, and other modifications to the RCRA Post-Closure Care Permit. The EOR can be accessed by contacting Fredrick Moore at the ODEQ in Bend, Oregon.

Section 2
RCRA Post-Closure Care Program

The RCRA Post-Closure Care Permit specifies that the requirements of the post-closure program are to:

- Maintain the integrity and effectiveness of the final landfill cover, including preventing runon and runoff from eroding or otherwise damaging the final cover, and repairing the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.
- Continue to operate and monitor the leachate collection and removal system until leachate is no longer detected.
- Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 40 Code of Federal Regulations (CFR) Part 264.
- Protect and maintain surveyed benchmarks used in complying with the surveying and recordkeeping requirements of 40 CFR 264.309.

In support of these requirements, the following activities were performed during this reporting period:

- Inspections of the RCRA landfill final cover;
- Inspections of the leachate collection system (LCS); and
- Semiannual groundwater monitoring in accordance with the Sampling and Analysis Plan (SAP; ARCADIS 2010a).

The site layout of the RCRA landfill is provided on Figure 2a, while Figures 2b and 2c provide additional details on the landfill features, groundwater elevations, and groundwater quality in the vicinity of the RCRA landfill. Landfill leachate production and analysis data are provided in Tables 1a and 1b. RCRA leachate production is presented graphically on Chart 1a, and RCRA

leachate analysis is presented on Chart 1b. Groundwater quality and water table elevation data for the RCRA landfill are provided in Table 2. Groundwater elevation data are presented graphically on Chart 2a. Groundwater quality data are presented graphically on Charts 2b through 2e.

2.1 RCRA LANDFILL AND LCS INSPECTIONS

The RCRA landfill cover and the LCS are inspected semiannually and quarterly, respectively. Inspections are also performed after severe weather events. The inspections are designed to monitor for deterioration, malfunction, or improper operation of the runon and runoff systems and to determine the proper functioning of the leachate collection and removal systems.

The annual inspection of the RCRA landfill includes the following:

- Cover inspection including checking for erosion, animal burrows, and woody vegetation;
- Fence and gate inspection including checking fence and gate integrity to ensure that warning signs are in place;
- Drainage system inspection including checking for ponded water or blockages in the channels or culvert; and
- Inspection of the area adjacent to the landfill including checking for riprap erosion, ponded water, silt deposits, and damaged well heads.

The quarterly RCRA LCS inspection includes the following:

- Inspecting the sump leak detection system and fluid high-level warning lights,
- Inspecting the leachate drums, and
- Inspecting the building and slab.

The following RCRA inspections were performed during the reporting period for this report.

Inspection	Quarter 2 2011	Quarter 3 2011	Quarter 4 2011	Quarter 1 2012
RCRA Landfill	6/13/11	--	12/12/11	--
RCRA LCS	6/13/11	9/14/11	12/12/11	3/14/12

The Landfill Final Cover Inspection for June 2011 and Leachate Collection System Inspections for June and September 2011 were reported in the November 2011 Semiannual RCRA Report (ARCADIS 2010b).

During the December 2011 Landfill Final Cover Inspection, it was noted that tumbleweeds were cleared from drainage culverts and fences. During the LCS inspections, all items were found to be in good condition. Inspection forms for this reporting period are provided in Appendix A.

Rainfall data, collected by Northwest Aluminum Company (NAC; which owned the former reduction facility), indicated that precipitation had little effect, if any, on the maintenance of the systems. As reported in Appendix B, the maximum daily precipitation during the reporting period was 0.87 inch on December 28, 2011.

2.2 LEACHATE TRANSFER SAMPLING AND ANALYSIS

In accordance with RCRA Post-Closure Care Permit Condition V.C.1.b. (modified in by permit modification in October 2005), leachate collected from within the RCRA tank is transferred to the on-site 300,000-gallon CERCLA tank twice per year or as needed. This permit modification reflects the significant reduction in the volume of leachate produced at the landfill. The leachate generated at the RCRA landfill is combined with leachate pumped from the CERCLA LCS and is subsequently treated in the CERCLA tank using enhanced biological degradation. The treated effluent from the CERCLA tank is discharged via outfall 001 under NAC's National Pollutant Discharge Elimination System (NPDES) permit number 100902/File #53166.

2.2.1 Leachate Transfer

Approximately 95 gallons of leachate were transferred from the sump on November 2, 2011. Table 1a summarizes all leachate production from the RCRA landfill.

2.2.2 Leachate Sampling and Analysis

Leachate is currently sampled and analyzed when sump levels approach or are at transferable volumes. Sampling of the leachate occurred in conjunction with the leachate transfer in November

2011. Two other check samples were collected from the leachate during June and September 2011. These results are included in Table 1b.

2.3 GROUNDWATER MONITORING

The groundwater monitoring points of compliance consist of one upgradient monitor well (MW-5S) and six downgradient or cross-gradient wells (MW-17S, MW-22S, MW-23S, MW-35S, MW-36S, and MW-37S). Monitor well MW-5S was installed in 1989 and is sampled for the CERCLA analytes (which includes total cyanide) on the RCRA sampling schedule. Monitor well MW-17S was installed in 1986. Monitor wells MW-22S and MW-23S were installed in 1987. Monitor wells MW-35S, MW-36S, and MW-37S were installed in December 2000. Depth-to-water measurements in monitor wells MW-3S and MWR-4S, installed in 1994, are also included in the RCRA monitoring schedule. Well locations are identified on Figure 2a.

A primary objective of the Groundwater Monitoring Program is to document that constituent concentrations in groundwater remain below the following groundwater protection standards, which were developed as part of the Consent Decree (USEPA and ODEQ 1989):

- WAD Cyanide 0.770 mg/L (S aquifer); 0.770 mg/L on site and 0.220 mg/L off site (A and B Aquifers)
- Fluoride 9.7 mg/L (S aquifer); 4 mg/L (A and B aquifers)
- Sulfate 3,020 mg/L (S aquifer); 250 mg/L (A and B aquifers)

2.3.1 Semiannual Monitoring Well Sampling

Semiannual RCRA compliance groundwater was sampled on March 22, 2012. The samples were collected in accordance with the updated SAP approved as part of the 2010 RCRA Post-Closure Care Permit modification (ARCADIS 2010b). Samples were collected with dedicated low-flow bladder pumps.

Groundwater samples were submitted to TestAmerica in Beaverton, Oregon (an approved laboratory for analysis of the RCRA groundwater samples) and analyzed for:

- WAD cyanide SM 4500-CN-I/E/USEPA Method 335.4M
- Total cyanide USEPA Method 335.4
- Fluoride USEPA SW-846-9056
- Sulfate USEPA Method 300.0

The analytical report was received on April 11, 2012. Validation of the data was completed on May 15, 2012. Data collected through March 2012 are presented in Table 2. Groundwater quality data are presented graphically in Charts 2b through 2e. The RCRA groundwater quality analytical results are included on Figure 2c.

2.3.2 Groundwater Measurements

The RCRA groundwater monitoring program includes collection of water level measurements. The reference points for determining water level elevations are the tops of the protective well casings, which have been surveyed relative to mean sea level (msl). To reduce variation in groundwater level measurements, static water levels are measured on the same day for all wells prior to initiation of monitor well purging and sampling. Groundwater elevation measurements also included monitor wells MW-3S and MWR-4S. The only monitoring requirement for these wells is groundwater elevations.

Groundwater measurements from the most recent sampling event (March 2012) are included in Table 2. This table also includes all field and analytical data collected to date from each well. Groundwater elevation data are presented graphically in Chart 2a and Figure 2b.

2.4 HYDROGEOLOGY

Water levels are measured semiannually as part of the ongoing monitoring program at the site. The stratigraphy and hydrogeology of the site were determined during the Remedial Investigation/Feasibility Study (RI/FS; Geraghty & Miller 1988). The site is underlain by the Columbia River Basalt Group, which includes the following stratigraphic units (listed in order of descending depth):

- the Lolo Flow of the Priest Rapids Member,
- the Byron Interbed,
- the Rosalia Flow of the Priest Rapids Member,
- the Quincy/Squaw Creek Interbed, and
- the Sentinel Gap Flow of the Frenchman Springs Member.

Four hydrostratigraphic units were identified in the RI/FS: the S aquifer (unconfined), the A aquifer (semi-confined), the B aquifer (confined), and The Dalles Groundwater Reservoir (DGWR). The hydrostratigraphic units correspond to the stratigraphic units at the site as follows:

- S aquifer: Groundwater in the uppermost part of the Columbia River Basalt Group. The S aquifer is contained within the relatively impermeable Lolo Flow, the Byron Interbed, and the upper part of the Rosalia Flow.
- A aquifer: Groundwater is contained within the upper subaqueous portion of the Rosalia Flow.
- B aquifer: Groundwater in the Rosalia Flow is locally separated from the A aquifer by a low-permeability basalt.
- DGWR: This is a permeable groundwater system within the Sentinel Gap Flow.

Perched groundwater and saturated alluvial sediments observed at the site resulting from natural and artificial recharge are limited in extent and discontinuous across the site. The volume and movement of subflow varies depending mainly on rain events at the site.

All of the RCRA wells are completed in the S aquifer.

2.4.1 Groundwater Flow

Water level measurements were evaluated to determine the magnitude and direction of the hydraulic gradient. Water levels in all nine RCRA groundwater monitor wells, including MW-3S and MWR-4S, were measured and recorded on March 21, 2012. A water level elevation contour map for the S aquifer was generated from data collected on March 21, 2012 and is presented on Figure 2b.

Groundwater flow velocities within the S aquifer were estimated based on the groundwater gradient observed in the S aquifer and an estimated range of hydraulic conductivities interpreted from aquifer tests performed at the site (ARCADIS G&M 2001).

Hydraulic conductivity (K) is the coefficient of permeability in Darcy's equation describing the movement of water through a porous media:

$$q = -K^* (dh/dl)$$

Where:

q = the flux of water

(dh/dl) = a hydraulic gradient or change of water elevation over a distance

Hydraulic conductivity (K values), are expressed in centimeters per second (cm/sec).

The estimated average K value for the S aquifer at intervals intercepting the Byron Interbed is approximately 6×10^{-3} cm/sec (the measured range is 3.2×10^{-4} to 1.2×10^{-2} cm/sec).

Because groundwater moves only through pores (a combination of fractures within basalt and the interstitial spaces between sediments within the Byron Interbed of the S aquifer at the NAC Site), a term for effective porosity (n_e) is included in the expression for seepage velocity (V) or average linear velocity as:

$$V_x = \frac{q}{n_e} = - \frac{K dh}{n_e dl}$$

A reasonable estimate of effective porosity of the S aquifer at intervals intercepting the Byron Interbed is 10 percent (Divine and Rask 2002). An average hydraulic gradient of 0.015 was calculated between the S aquifer monitoring wells in the area of the RCRA landfill on March 21, 2012. Using the equation above, average linear velocity of groundwater in the S aquifer in the area of the RCRA Landfill is estimated at approximately 9×10^{-3} cm/sec.

2.4.2 Water Level Variations

Elevations for the S aquifer for March 2012 range from 129.3 feet (ft) above msl in MW-36S to 136.79 ft above msl in MW-5S. Water level data collected between March 1994 and March 2012 were used to construct hydrographs comparing all of the RCRA monitor wells (Chart 2a). Seasonal fluctuations are evident and remain relatively unchanged for all data collected. Water level elevations in the S aquifer in the area of the RCRA Landfill have exhibited a slight increasing trend since 2007, but remain within historic maximum and minimum water levels. The water level elevations observed in the area of the RCRA Landfill in March 2012 were mostly slightly lower than the levels observed in March of 2011.

2.5 DATA VALIDATION RESULTS

The RCRA groundwater monitoring results were reviewed in accordance with the Data Validation Checklist (Appendix A). Documentation of the field and analytical data package was acceptable, and no data qualifiers were required for the analytical results.

Field Data Package

Performance was acceptable.

Analytical Data Package Documentation General Information

Performance was acceptable.

Inorganic Analyses

Performance was acceptable.

General/Wet Chemistry

Performance was acceptable.

2.6 GROUNDWATER QUALITY

Table 2 summarizes historical and current groundwater quality for the RCRA wells, and includes groundwater elevation data, field parameters, and analytical data. These data are maintained in an electronic database by ARCADIS.

As presented in Chart 2c, WAD cyanide concentrations were non-detect (less than 0.005 mg/L) at all monitor wells. As presented in Chart 2d, concentrations of fluoride ranged from 0.170 mg/L at monitor well MW-36S to 4.34 mg/L at MW-37S. As presented in Chart 2e, concentrations of sulfate ranged from 37.0 mg/L at MW-37S to 106 mg/L at MW-35S. All results are within historical ranges of concentrations.

WAD cyanide, sulfate, and fluoride were not detected in the rinsate sample collected from the RCRA landfill.

Section 3
CERCLA Program

CERCLA landfill and LCS activities include the following:

- Maintain the integrity and effectiveness of the final cover, including the prevention of runon and runoff from eroding or otherwise damaging the final cover and repairing the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.
- Continue to operate and monitor the leachate collection and treatment system.
- Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 40 CFR Part 264.
- Present groundwater quality and hydrogeology data.
- Protect and maintain surveyed benchmarks.

In support of these requirements, the following activities were performed during this reporting period:

- Inspections of the CERCLA landfill final cover;
- Inspections of the leachate collection system (LCS); and
- Annual groundwater monitoring in accordance with the Sampling and Analysis Plan (SAP; ARCADIS 2010a).

The site layout of the CERCLA landfill is provided on Figure 3a. Additional details of the landfill features, well locations, groundwater elevations, and groundwater quality are provided on Figures 3b and 3c. Landfill leachate production and quality data for the CERCLA Landfill are provided in Tables 3a through 3c and Charts 3a and 3b; historical groundwater quality and water table elevation data are provided in Table 4. Comparisons of CERCLA landfill leachate WAD cyanide averages are presented on Chart 3b.

3.1 CERCLA LANDFILL AND LCS INSPECTION

The CERCLA landfill is inspected annually. The LCS is inspected quarterly to detect and repair, if necessary, any defects in the landfill cover and LCS in accordance with the 1989 Consent Decree and the RCRA Post-Closure Care Permit.

The annual inspection of the CERCLA landfill includes the following:

- Cover inspection including checking for erosion, slumping, animal burrows, woody vegetation, and survey benchmarks;
- Fence and gate inspection including checking fence and gate integrity and ensuring that warning signs are in place;
- Drainage system inspection including checking for ponded water or blockages in the channels or culvert, checking cap drain discharge pipes, gas vent system, and lightning protection; and
- Inspection of the area adjacent to the landfill including checking for riprap erosion, ponded water, silt deposits, and damaged well heads.

The quarterly CERCLA LCS inspection includes the following:

- Inspecting the lift station pumps and alarm lights,
- Inspecting the piping, and
- Inspecting CERCLA tank integrity.

The following CERCLA inspections were performed during the reporting period for this report.

Inspection	Quarter 2 2010	Quarter 3 2010	Quarter 4 2010	Quarter 1 2011
CERCLA Landfill	6/15/11	--	--	--
CERCLA LCS	6/15/11	9/14/11	12/16/11	3/14/12

The inspections for the June 2011 and September 2011 events were reported in the November 2011 Semiannual RCRA Report (ARCADIS 2010b).

All items were found to be in good condition during the quarterly inspections. Inspection forms for this reporting period are provided in Appendix C.

3.2 LEACHATE COLLECTION, TREATMENT, SAMPLING AND ANALYSIS, AND DISCHARGE

3.2.1 Leachate Collection

The CERCLA LCS, which consists of buried, perforated pipe in a covered trench, surrounds three sides of the landfill (Figure 3a). Leachate gravity drains to two lift stations; Lift Station 2 pumps leachate over a rock outcrop to Lift Station 1, and Lift Station 1 pumps directly to the 300,000-gallon CERCLA tank. All leachate collection and pumping systems were in good working condition during the semiannual period.

Total influent to the CERCLA tank during the reporting period (April 2011 through March 2012) was 830,500 gallons. Table 3a presents monthly LCS flows measured at Lift Stations 1 and 2. Table 3a also presents monthly rain data totals. Leachate production responds quickly to precipitation events as is graphically presented on Chart 3a.

Influent totals for each month were:

- April 2011 126,890 gallons
- May 2011 96,930 gallons
- June 2011 77,430 gallons
- July 2011 27,710 gallons
- August 2011 21,090 gallons
- September 2011 21,270 gallons
- October 2011 16,400 gallons
- November 2011 24,800 gallons
- December 2011 26,440 gallons

- January 2012 119,730 gallons
- February 2012 128,710 gallons
- March 2012 127,660 gallons

Water levels within the CERCLA tank are recorded regularly to corroborate meter readings.

3.2.2 Treatment

Bio-treatment of leachate generated at the CERCLA landfill began in March 2002 with addition of a carbon source and nutrients to stimulate biological activity within the LCS. Carbon was also added directly to the CERCLA tank. In December 2004, the biochemical treatment process was enhanced by initiation of a drip dosing system that meters organic carbon to the LCS via Manhole 4, and manual dosing of nutrients was initiated directly into Manholes 2 and 3 during February 2005 (Figure 3a). The dosing volumes are calculated based on fluctuations in the flow rates within the LCS.

Due to the success of the LCS treatment program, surface applications were discontinued following the October 22, 2007 application, and the CERCLA tank is now only dosed at certain times of the year.

3.2.3 Sampling and Analysis

The RCRA permit specifies leachate sampling and analysis from the CERCLA tank prior to discharge in accordance with the Batch Discharge Protocol. In addition, leachate at Lift Stations 1 and 2 and Manholes 2 and 4 is sampled during March of each year to coincide with the annual CERCLA groundwater monitoring. Occasional supplementary samples are collected from these sites or from Lift Station 1 and analyzed as system checks.

Required samples collected and analyzed for the reporting period included six pre-discharge samples from the tank on April 10, 2011, May 16, 2011, July 19, 2011, January 4, 2012, February 6, 2012, and March 12, 2012 and one round from the LCS (Lift Stations 1 and 2 and Manholes 2 and 4) on March 22, 2012 (Table 3b). The pre-discharge samples were analyzed for the following:

- WAD cyanide by SM 4500-CN-I/E/USEPA Method 335.4M
- Total Cyanide by USEPA Method 335.4
- Total Organic Carbon (TOC) by 415.1/5310C

The LCS samples were analyzed for fluoride, sulfate, WAD cyanide, and total cyanide.

Results of the analytical data from the CERCLA LCS for 2011 and 2012 are presented in Table 3b. See Section 3.2.4 for dates, volumes, and analytical results for discharges during the reporting period. Copies of laboratory report and chain-of-custody (COC) documentation are provided in Appendix C.

3.2.4 CERCLA Tank Discharge

Treated effluent from the CERCLA tank is discharged via outfall "C" under NAC's NPDES permit number OR0001708 to NAC Outfall 001. There were five discharges from the CERCLA tank during the reporting period. All pre-discharge analytical results from tank samples met the 0.1 mg/L WAD cyanide requirement, and the tank was at the desired target capacity prior to each discharge event. Discharge dates, WAD cyanide results, and volumes of discharge for the reporting period are summarized below:

Date Range	WAD Cyanide (mg/L)	Total Discharge (gallons)
April 15-20, 2011	0.1	149,800
May 18-24, 2011	0.02	166,600
July 21-27, 2011	0.06	151,850
January 6-13, 2012	0.03	157,000
February 8-14, 2012	0.03	145,200
March 13-20, 2012	0.02	151,700

A total of 922,150 gallons of treated leachate was discharged during the reporting period.

3.3 GROUNDWATER SAMPLING AND ANALYSIS

The groundwater monitoring points (Figures 3a, 3b, and 3c) for the CERCLA annual compliance program are completed in three aquifers:

- S aquifer. MW-5S, MWR-15S, MW-26S, MWR-27S, MW-29S, MW-38S, MW-39S, MW-40S, MW-41S, and MW-42S. MW-26S is monitored annually for water elevation only. MWR-8S and MW-9S were decommissioned in 2008 (replaced by MW-42S);
- A aquifer. MW-6AA, MW-12A, and MW-13A; and
- B aquifer. MWR-7A.

Well locations are identified on Figure 3a.

A primary objective of the groundwater monitoring program is to document that dissolved constituent concentrations remain below the standards set in the CERLCA 1988 ROD.

3.3.1 Annual Monitoring Well Sampling

Annual CERCLA compliance groundwater sampling was conducted on March 22 and March 23, 2012. The samples were collected in accordance with the updated SAP approved as part of the 2010 RCRA Post-Closure Permit modification (ARCADIS 2010b), with the exception of well MW-42S being purged and sampled using a peristaltic pump with dedicated tubing rather than a bladder pump. TestAmerica (Portland) is currently the approved laboratory for analysis of the CERCLA groundwater samples (see Section 2.3.1). Monitor well MW-27S was not sampled, as the well was inaccessible due to soil removal activities associated with NAC.

Groundwater elevation data, field parameters, and analytical data collected through March 2012 are presented in Table 4. Groundwater quality data are presented graphically on Charts 4c through 4j. Concentrations of total cyanide ranged from not detected at the laboratory reporting limit (less than 0.00500 mg/L) in monitoring well MW-29S to 2.48 mg/L in monitoring well MW-15S. Concentrations of WAD cyanide ranged from not detected at the laboratory reporting limit (less than 0.00500 mg/L) in monitoring wells MW-29S, MW-38S, MW-39S, MW-40S, MW-41S, MW-42S, MW-6AA, MWR-7A, MW-12A, and MW-13A to 0.0128 mg/L in monitoring well MW-15S.

Fluoride concentrations ranged from 0.300 mg/L at MW-41S to 4.26 mg/L at well MW-38S. Sulfate concentrations ranged from 6.86 mg/L at well MW-39S to 238 mg/L at MW-29S. Comparison of the March 2012 analytical results with previously collected data shows that the results from the 2012 sampling event are generally consistent with historical concentrations.

WAD cyanide, sulfate, and fluoride were not detected in either the rinseate sample or transfer blank sample collected from the CERCLA landfill.

3.4 HYDROGEOLOGY

The stratigraphy and hydrogeology of the site are discussed in Section 2.4. As described in Section 3.3, the CERCLA wells are completed in the S, A, and B aquifers.

3.4.1 Groundwater Flow

As part of the CERCLA program at the site, water levels were measured and evaluated to determine the magnitude and direction of the hydraulic gradient. Water levels in all CERCLA groundwater monitoring wells were measured and recorded on March 21, 2012. A water elevation contour map for the S aquifer was generated from the data collected and is presented on Figure 3b.

3.4.2 Water Level Variations

During March 2012, groundwater elevations in the area of the CERCLA landfill for the S aquifer ranged from 91.96 ft above msl in well MW-40S to 126.81 ft above msl in MW-42S. Groundwater elevations for the A aquifer ranged from 69.2 ft above msl in wells MW-12A and MW-13A to 70.66 ft above msl in MW-6AA, and the elevation for the B aquifer as measured in monitoring well MWR-7A was 69.75 ft above msl.

Charts 4a and 4b show a comparison of the water levels in the CERCLA aquifers collected over time. Seasonal fluctuations are evident, and the seasonal range of fluctuations remains relatively unchanged for all data collected. Water levels within the S aquifer exhibit a slight increase. Water level elevations for the lower A and B aquifers continue a pronounced upward trend since 2001, with the highest water level elevations on record measured for all four of the wells completed in the A and B aquifers measured during the March sampling..

3.5 DATA VALIDATION RESULTS

The groundwater monitoring results for the CERCLA Landfill Monitoring were reviewed in accordance with the Data Validation Checklist (Appendix C). Documentation of the field data package was acceptable with the following notes listed.

Field Data Package

Performance was acceptable.

Analytical Data Package Documentation General Information

Performance was acceptable.

Inorganic Analyses

Performance was acceptable.

General/Wet Chemistry

Performance was acceptable, with the exception of the percent recovery (%R) and relative percent difference (RPD) criteria of WAD cyanide in the matrix spike/matrix spike duplicate (MS/MSD) sample. Sample results greater than the reporting limit (0.005 mg/L) were qualified as "J" in the data tables, while results below the reporting limit were qualified as "UJ" in the data tables. The qualifier J means the analyte is positively identified; however, the associated numerical value is an estimated concentration only. The qualifier UJ indicates that the analyte was not detected above the reported sample detection limit; however, the reported limit is approximate and may or may not represent the actual limit of detection.

Section 4
Discussion of Findings during the Reporting Period

This section presents the findings of the activities completed during the reporting period for both the RCRA and CERCLA programs at the site and discusses the long-term strategy for the site.

4.1 RCRA LANDFILL

RCRA Inspections: The RCRA landfill cover and LCS were inspected, and both met the inspection criteria. The inspection form documents that the drain system for the landfill cap is functioning properly.

RCRA Leachate Flows: The RCRA landfill has exhibited a trend of diminishing leachate production since collection began in 1990 (Table 1a, Chart 1a). The production of leachate between 1990 and 2008 has been based on the volumes transferred to the CERCLA tank. Starting in 2006, there have been quarterly periods where leachate volumes in the sump were insufficient to transfer. A leachate transfer was conducted on November 2, 2011. Approximately 95 gallons were transferred.

RCRA Leachate Quality: Leachate was sampled in conjunction with the leachate transfer in November 2011. These results are included in Table 1b.

RCRA Groundwater Analytical Results: All analytes met applicable standards during the March 2012 monitoring event. The analytical results continue to indicate the effectiveness of the cap and the remedy in place.

RCRA Hydrogeology: The groundwater elevation map was generated using water levels measured on March 21, 2012. Water level data indicate that the S aquifer water table continues to rise and

fall seasonally. These data continue to indicate that the shallow aquifer is directly affected by precipitation. Water level elevations in the S aquifer in the area of the RCRA Landfill have exhibited a slight increase, but remain within historical maximum and minimum water levels. The magnitude of the groundwater calculated gradient and flow directions have not deviated from historical observations. The flow direction in the S aquifer at this location indicates a groundwater high, passing under the RCRA landfill, with groundwater locally flowing to the south and northeast.

4.2 CERCLA LANDFILL

CERCLA Inspections: The CERCLA landfill cover and LCS were inspected, and both met the inspection criteria. No items were noted that required corrective action.

CERCLA Leachate Flows: Total influent to the CERCLA tank recorded during the 12-month period was 830,500 gallons, and total effluent discharged from the CERCLA tank was 922,150 gallons (Table 3a).

Total rainfall for the 12-month period was 14.56 inches. LCS flows are greatly affected by precipitation, as indicted on Chart 3a. In addition, rainfall adds directly to the total tank volume (each inch of rainfall adds approximately 1,120 gallons of water to the open-topped tank).

CERCLA Leachate Quality. As indicated on Charts 3b and 3b, the in-LCS treatment of leachate has successfully reduced WAD cyanide concentrations in leachate. All concentrations for WAD cyanide met compliance requirements prior to discharge.

CERCLA Groundwater Analytical Results: All analytes met applicable standards in the last year. Comparison of the 2012 analytical results with previously collected data shows that the results from the 2012 sampling event are generally consistent with historical concentrations.

CERCLA Hydrogeology: The groundwater elevation map was generated using water levels measured on March 21, 2012. Water level data indicate that the S aquifer water table continues to rise and fall with wet and dry seasons, indicating that the shallow aquifer is directly affected by precipitation. Site wide, the general groundwater flow direction in the area of the CERCLA

landfill is to the north. Water level elevations for the lower A and B aquifers continue a pronounced upward trend, with the highest water level elevations on record measured for all four of the wells completed in the A and B aquifer. Groundwater elevations in the A and B aquifers for observations made annually in the month of March appear to be increasing annually by approximately 2.5 and 2.7 feet, respectively.

4.3 LONG-TERM STRATEGY

The current RCRA Post-Closure Care Permit was in effect until July 3, 2010. An application for permit renewal was submitted to ODEQ in January 2010 (ARCADIS 2010c). It is anticipated that the permit will be renewed for an additional 10 years. The volume of leachate produced by the RCRA landfill is limited and continues to be effectively treated in the CERCLA tank prior to discharge through NAC's NPDES outfall.

At the CERCLA landfill, in-LCS biological treatment has resulted in reduction of WAD cyanide concentrations in the leachate to the point that the leachate leaving the LCS meets the discharge standards for Outfall C (Chart 3b; note that all of the CERCLA landfill leachate passes through Lift Station 1, where it is pumped to the CERCLA tank).

Groundwater monitoring continues to document compliance with groundwater standards.

Section 5
References

ARCADIS G&M. 2001. Semi-Annual Report, Sampling Dates: March 2001, The Dalles, Oregon, ORD 052 221 025 Appendix I, Aquifer Test Results and Velocity Calculations, May 24, 2001

ARCADIS. 2010a. Sampling and Analysis Plan. June

ARCADIS. 2010b. Fall 2011 Semiannual RCRA Report, Former Martin Marietta Reduction Facility, The Dalles, Oregon, ORD 052 221 025. December

ARCADIS. 2010c. RCRA Permit Renewal Application. January

Divine, C. E. and Rask, B. 2002. Interpreting Pumping Tests for a Basalt-Interbed Hydrostratigraphic Unit. *Hydrology Days, American Geophysical Union*, 2002: 53-64.

Geraghty & Miller. 1988. Remedial Investigation/Feasibility Study (RI/FS). Martin Marietta Reduction Facility, The Dalles, Oregon, March.

United States Environmental Protection Agency and Oregon Department of Environmental Quality (USEPA and ODEQ). 1989. United States of America and The State of Oregon, Department of Environmental Quality, Plaintiffs, v. Martin Marietta Corporation, Commonwealth Aluminum Corporation, Defendants. Consent Decree. July 5, 1989.

Appendix A. RCRA Post-Closure Care Permit Requirements

Inspection - RCRA Leachate Collection System_03-07-11
Inspection – RCRA Leachate Collection System_12-08-10
Inspection – RCRA Final Cover_12-08-10

RCRA Monitor Well Analytical Report_03-25-11
Field Notes
RCRA MW Field Data
Data Validation Checklist for RCRA Monitor Wells sampled 03-25-11
Field Data - MW-37S
RCRA MW-37S Resample Analytical Report_06-04-11

ARCADIS

RCRA Leachate Collection System
Quarterly Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 3-14-12 1345 Quarter: ✓

Inspected by: DAN SHAVER Signed: [signature]

Tank (sump) Inspection:

	Yes	No	Remarks
Leachate valve open	✓		
Sump alarm system tested	✓		
Secondary petcock checked	✓		
Quarterly wet test of leak alarm	✓		
Quarterly wet test of high level	✓		
Leachate in sump	✓		10" of Leachate in sump. 83 gallons
If pumped, record gallons			

Leachate Drum Inspection:

	Yes	No	Remarks
Leachate stored in drums		✓	
If so, are drums properly marked		N/A	
If so, Hazardous Waste Decal w date		N/A	
Drum condition	✓		Good

Building and Slab:

	Yes	No	Remarks
Warning signs in place	✓		
Doors locked	✓		
Exit light checked	✓		
Emergency light checked	✓		
Emergency equipment	✓		
Roofing and siding	✓		
Outside dewatering pump	✓		
Concrete slab inspected	✓		
Sump inspected	✓		

General remarks and items requiring correction:

Inspection Requirements:

Weekly	Until leachate less than 250 gallons/month
Monthly	Until leachate less than 250 gallons/quarter
(Quarterly)	Until less than 250 gallons/year

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 5S

Page: 1 of 1

Date: 3/22/12

Start Time: 1248

Purging Device: Bladder Pump

Sampler's Signature: Thom Yamin

Well Casing Elevation: 158.92 ft. [MSL]

Total Well Depth: 38.80 ft. [TOC]

Initial Depth to Water: 21.45 ft. [TOC]

Final Pump Intake Depth: 33.80 ft. [TOC]

Top of Screen: 28.80 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1250	21.82	14.8	755.2	7.73	0.5	0.2	0.1	
1255	22.09	14.9	719.1	7.52	1.0	0.35	0.1	
1300	22.17	14.8	682.1	7.35	1.5	0.5	0.1	
1305	22.08	14.7	675.9	7.33	2.0	0.7	0.1	
1310	22.34	14.9	666.1	7.21	2.5	0.9	0.1	
1315	22.31	14.7	669.9	7.25	3.0	1.1	0.1	
1320	22.41	14.8	664.7	7.23	3.5	1.25	0.1	
1322	22.57							sample collected

Water Column (ft): 17.35 Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 2.8

Analysis: free and total cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 22S

Page: 1 of 1

Date: 3/22/12

Well Casing Elevation: 155.80 ft. [MSL]

Start Time: 1351

Total Well Depth: 43.22 ft. [TOC]

Purging Device: Bladder Pump

Initial Depth to Water: 20.45 ft. [TOC]

Sampler's Signature:

Final Pump Intake Depth: 36.32 ft. [TOC]

Top of Screen: 33.22 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1353	22.02	15.6	459.8	8.10	0.3	0.1	0.1	
1358	23.99	15.2	460.0	8.08	1.3	0.4	0.15	
1403	25.13	15.2	438.1	8.09	2.0	0.6	0.1	
1408	26.45	15.2	425.9	8.06	2.5	0.7	0.1	
1413	27.21	15.1	417.3	8.09	3.5	0.9	0.2	
1418	27.85	15.2	413.6	8.07	4.0	1.1	0.2	Sample collected

Water Column (ft): 22.77 Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 3.6

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments: Rinsate-1 collected at 14:30

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 17S

Page: 1 of 1

Date: 3/22/12

Start Time: 0847

Purging Device: Bladder Pump

Sampler's Signature: Thom Nanni

Well Casing Elevation: 151.56 ft. [MSL]

Total Well Depth: 41.70 ft. [TOC]

Initial Depth to Water: 15.17 ft. [TOC]

Final Pump Intake Depth: 36.70 ft. [TOC]

Top of Screen: 31.70 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
0849	15.92	14.4	632	7.45	0.2	0.1	0.1	
0854	16.11	14.19	611	7.23	1.0	0.2	0.1	
0859	16.09	14.14	609	7.20	1.5	0.4	0.125	
0904	16.07	14.09	610	7.16	2.0	0.5	0.1	
0909	16.12	14.20	611	7.13	2.7	0.6	0.1	
0914	16.12	14.14	611	7.11	3.3	0.8	0.1	
0919	16.22	14.20	610	7.11	4.1	0.9	0.1	
0920					4.2	1.0	0.1	sample collected

Water Column (ft): 26.53 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 4.2

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 23S

Page: 1 of 1

Date: 3/22/12

Start Time: 1200

Purging Device: Bladder Pump

Sampler's Signature: [signature]

Well Casing Elevation: 144.36 ft. [MSL]

Total Well Depth: 36.00 ft. [TOC]

Initial Depth to Water: 10.38 ft. [TOC]

Final Pump Intake Depth: 31.00 ft. [TOC]

Top of Screen: 26.00 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1206	12.65	13.8	313.0	8.17	0.5	0.1	<0.1	
1211	15.46	13.7	313.1	8.22	1.0	0.25	<0.1	
1216	17.76	13.8	313.2	8.22	1.6	0.4	<0.1	
1220	20.31	14.1	315.5	8.22	2.7	0.7	<0.1	
1225	22.16	14.3	319.7	8.15	3.6	0.8	<0.1	
1230	23.32	14.4	324.6	8.18	4.2	1.0	<0.1	
1235	23.68	14.6	325.0	8.15	5.0	1.2	<0.1	sample collected

Water Column (ft): 25.62 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 4.1

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 35S

Page: 1 of 1

Date: 3/22/12

Start Time: 0938

Purging Device: Bladder pump

Sampler's Signature: [signature]

Well Casing Elevation: 146.95 ft. [MSL]

Total Well Depth: 32.84 ft. [TOC]

Initial Depth to Water: 8.21 ft. [TOC]

Final Pump Intake Depth: 31.84 ft. [TOC]

Top of Screen: 22.84 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
0940	10.49	13.84	676	8.03	0.3	~0.1	0.15	
0945	12.20	13.92	676	8.06	1.0	0.25	0.13	
0950	15.51	13.70	673	8.01	1.6	0.4	0.1	
0955	16.55	13.64	670	8.06	2.2	0.6	0.13	
1000	17.89	13.68	668	8.07	3.0	0.75	0.16	
1005	18.79	13.74	667	7.99	3.9	1.0	0.13	
1007								sample collected

Water Column (ft): 24.6 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 3.9

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 36S **Page:** 1 of 1

Date: 3/22/12 **Well Casing Elevation:** 146.98 ft. [MSL]

Start Time: 1027 **Total Well Depth:** 36.28 ft. [TOC]

Purging Device: Bladder **Initial Depth to Water:** 16.95 ft. [TOC]

Sampler's Signature: [signature] **Final Pump Intake Depth:** 35.28 ft. [TOC]

Top of Screen: 26.28 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1030	19.43	14.9	450.6	7.68	0.3	0.1	0.2	
1035	22.41	14.6	444.1	7.76	1.1	0.35	0.25	
1040	–	–	–	–	–	–	–	Pump shutdown restarted @ 1044
1045	24.82	14.9	444.5	7.85	2.0	0.65	0.15	
1050	25.92	14.7	443.0	7.83	2.25	0.73	0.13	
1055	24.81	14.3	440.0	7.83	2.5	0.8	<0.1	
1100	25.96	15.0	443.5	7.84	2.8	0.9	<0.1	
1105	26.64	15.0	439.4	7.85	3.2	1.1	<0.1	
1107								sample collected

Water Column (ft): 19.33 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 3.1

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1- 500 ml amber plastic bottle preserved with NaOH, 1- 500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 37S

Page: 1 of 1

Date: 3/22/12

Start Time: 1120

Purging Device: Bladder pump

Sampler's Signature: Thomas Nairn

Well Casing Elevation: 144.25 ft. [MSL]

Total Well Depth: 24.40 ft. [TOC]

Initial Depth to Water: 9.12 ft. [TOC]

Final Pump Intake Depth: 19.40 ft. [TOC]

Top of Screen: 14.40 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1122	9.36	12.5	625.3	7.88	0.2	0.1	<0.1	
1125	9.25	12.1	458.9	7.70	0.6	0.25	<0.1	
1130	9.51	11.9	461.2	7.56	1.5	0.6	0.15	
1135	9.41	11.9	490.3	7.57	2.1	0.9	0.2	
1140	9.55	11.9	506.7	7.56	3.0	1.25	0.2	
1145	9.48	11.8	511.1	7.54	3.5	1.5	0.1	
1147								sample collected

Water Column (ft): 15.28 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 2.4

Analysis: free cyanide, flouride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge:

Comments: Duplicate collected as MW-100

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 6AA

Page: 1 of 1

Date: 3/22/12

Start Time: 1634

Purging Device: Bladder pump

Sampler's Signature:

Well Casing Elevation: 133.66 ft.

Total Well Depth: 128.21 ft. [TOC]

Initial Depth to Water: 62.95 ft. [TOC]

Final Pump Intake Depth: 125.71 ft. [TOC]

Top of Screen: 118.21 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1636	62.95	14.5	307.3	8.09	0.5	0.1	0.3	
1641	62.99	14.6	303.7	8.15	3.0	0.3	0.3	
1646	63.03	14.6	302.3	8.15	4.5	0.4	0.3	
1651	63.07	14.6	298.0	8.18	6.0	0.6	0.3	
1656	63.03	14.5	297.0	8.21	7.5	0.7	0.3	
1701	63.05	14.7	294.1	8.19	9.0	0.9	0.3	
1706	63.07	14.6	291.2	8.20	10.5	1.0	0.3	sample collected

Water Column (ft): 65.26 Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 10.4

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500ml amber plastic bottle preserved with NaOH, 1-500ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

FIELD

All-Weather Spiral
No. 353

LMC - LCS projects
1/24/05 →
TMN

4 5/8" x 7" - 64 Pages

(32) 9/25/11

@ 1013 began to purge MW-36S
@ 1027 collected sample

@ 1042 began to purge MW-37S
@ 1059 collected sample. Dup as MW-100

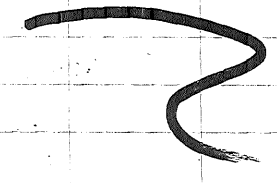
@ 11:21 began to purge MW-23S
@ 11:37 collected sample

@ 1155 began to purge MW-5S
@ 1214 collected sample

@ 1231 began to purge MW-22S
@ 1248 collected sample
@ 1300 collected Rinsate as Rinsate-1

packed samples for lab in cooler and ice, clean rental equipment and prepared for shipment.

@ 1610 left site



3/22/12 T. Nannini, A. Catlin (33)

The Dalles OR LMC Groundwater Sampling

Objective: Collect sample from RCRA and CERCLA monitoring wells.

Field equipment: Water level meter: Solinst model 101. pH, conductivity and temperature meter: YSI 556 MPS

Weather: sleet, cold mid 30°s

@ 0800 arrive at site.

Calibration:

Conductivity Standard 0.447 us/cm
Calibrated to 0.447 us/cm
Initial Read - 6.67

pH 7.00 - Calibrated to 7.00
4.01 - Initial Read - 4.44
Calibrated to - 4.01
10.01 - Initial Read - 10.56
Calibrated to - 10.08

(34) 3/22/12 T. Nannini A. Cattani

Decontamination Procedures: Prior to the beginning of any Fieldwork and after each use of any equipment that will be or has been in contact with the ground water, the Following procedures will be completed: ① initial rinse with deionized water ② spray and soak with deionized water and alconox soap mixture, ③ triple rinse with deionized water, ④ allow to air dry and/or pat dry with disposable paper towel.

@ 0847 Began to purge MW17S
@ 0920 collected sample MW17S

@ 0938 Began to purge MW35S
@ 1007 collected sample MW35S

@ 1027 Began to purge MW36S
@ 1107 collected sample MW36S

3/22/12 T. Nannini A. Cattani (35)

@ 1120 Began to purge MW37S
@ 1147 collected sample MW37S
2nd Field duplicate as MW-100

@ 1200 Began to purge MW23S
@ 1235 collected sample MW23S

@ 1248 Began to purge MW5S
@ 1322 collected sample MW5S

@ 1351 Began to purge MW22S
@ 1418 collected sample MW22S
@ 1430 collected rinsate as Rinsate-1

@ 1504 Began to purge MW29S
@ 1545 collected sample MW29S

@ 1603 Began to purge MW38S
@ 1626 collected sample MW38S

@ 1634 Began to purge MW6AA
@ 1706 collected sample MW6AA

(36) 3/23/12 T. Nannini A. Cattani

@ 0745 arrive at site and prepare for sampling event continued from 3/22/12. Process and procedures are followed as described in current SAP and on pages 33 and 34.

Weather: Mostly cloudy, breezy, 40's

calibrated Ultrameter using pH calibration solutions 7.00, 10.00 and 4.00 and using Conductivity solution 447.

@ 0814 Began to purge MW39S
@ 0908 well went dry

@ 0911 Began to purge MW12A
@ 0959 collected sample MW12A

@ 1005 Began to purge MW39S again
@ 1008 collected sample MW39S

@ 1018 Began to purge MW13A
@ 1113 collected sample MW13A

3/23/12 T. Nannini A. Cattani (37)

@ 1136 Began to purge MW40S
@ 1201 collected sample MW40S

@ 1214 Began to purge MW41S
@ 1245 collected sample MW41S

@ 1256 Began to purge MW7A
@ 1343 collected sample MW7A

@ 1409 Began to purge MW42S
@ 1520 collected sample MW42S and Field duplicate as MW200

@ 1538 Began to purge MW15S
@ 1607 collected sample MW15S

@ 1614 collected rinsate as Rinsate-2

@ 1720 Left the site.

ARCADIS

RCRA Landfill
Annual Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 12-12-11 0955 Quarter: ✓

Inspected by: DAN SHAVER Signed: Dan Shaver

Cover Inspection:

	Yes	No	Remarks
Top erosion		✓	
Top settling / subsidence		✓	
Ponded water (or signs of)		✓	
Animal burrows		✓	
Woody vegetation		✓	
Check benchmarks (4 on top)	✓		
(survey every 4.5 years)			
Side riprap erosion		✓	
Slope stability/failures		✓	

Gas Vent System:

	Yes	No	Remarks
Vent pipes damaged		✓	
Vents clogged		✓	
Vent screens missing		✓	
Survey vents with benchmarks (4.5 yrs)			

Lightning Rod System:

Lightning rods damaged		✓	
Cable connections loose or damaged		✓	
Metal bonds damaged		✓	
Connectors tight	✓		
Leads connected (no loose ends)	✓		
Down-conductors damaged, including fittings and bolts		✓	

Cap Drain Discharge Pipes:

	Yes	No	Remarks
Pipes damaged		✓	
Pipes clogged		✓	Water dripping out of all drain pipes.

ARCADIS

RCRA Landfill
Annual Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 12-12-11 Quarter: ✓

Inspected by (initial): CDA

Drainage System:

	Yes	No	Remarks
Ponded water (or signs of)		✓	
Channels blocked		✓	
Culverts blocked		✓	Removed some tumbleweeds.

Fences and Gates:

	Yes	No	Remarks
Warning signs in place (minimum 4)	✓		
Gate lock secured	✓		
Damaged fence or posts		✓	
Tumbleweeds (safety or fire hazard)		✓	Removed & discarded over fence.
No gaps / animal burrows beneath fence		✓	
Top wires secure		✓	
Check benchmark (1 north of gate)	✓		

General remarks and items requiring correction:

Inspection Requirements: Annual and after significant weather events.

ARCADIS

RCRA Leachate Collection System
Quarterly Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 12-12-11 0900 Quarter: 4

Inspected by: DAN SHAVER Signed: Dan Shaver

Leak Sump Inspection:

	Yes	No	Remarks
Leachate valve open	✓		
Sump alarm system tested	✓		
Secondary petcock checked	✓		
Quarterly wet test of leak alarm	✓		
Quarterly wet test of high level	✓		
Leachate in sump	✓		5½" of Leachate (35½ gallons)
If pumped, record gallons			

Leachate Drum Inspection:

	Yes	No	Remarks
Leachate stored in drums		✓	
If so, are drums properly marked			
If so, Hazardous Waste Decal w date			
Drum condition	✓		Good

Building and Slab:

	Yes	No	Remarks
Warning signs in place	✓		
Doors locked	✓		
Exit light checked	✓		
Emergency light checked	✓		
Emergency equipment	✓		
Roofing and siding	✓		
Outside dewatering pump	✓		
Concrete slab inspected	✓		
Sump inspected	✓		

General remarks and items requiring correction:

Inspection Requirements:

Weekly	Until leachate less than 250 gallons/month
Monthly	Until leachate less than 250 gallons/quarter
(Quarterly)	Until less than 250 gallons/year

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

The Dalles

Data Review

THE DALLES, OREGON

Miscellaneous Analyses

SDG #250-1109-1

Analyses Performed By:
TestAmerica Laboratories
Portland, Oregon

Report: #16203R
Review Level: Tier II
Project: GP000677.0015.NB000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #250-1109-1 for samples collected in association with the Dalles Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
					VOC	MET	MISC
MW-5S_20120322	250-1109-1	Water	3/22/2012				X
MW-17S_20120322	250-1109-2	Water	3/22/2012				X
MW-22S_20120322	250-1109-3	Water	3/22/2012				X
MW-23S_20120322	250-1109-4	Water	3/22/2012				X
MW-35S_20120322	250-1109-5	Water	3/22/2012				X
MW-36S_20120322	250-1109-6	Water	3/22/2012				X
MW-37S_20120322	250-1109-7	Water	3/22/2012				X
MW-100_20120322	250-1109-8	Water	3/22/2012	MW-37S_20120322			X
RINSATE-1_20120322	250-1109-9	Water	3/22/2012				X

Note:

1. Miscellaneous analysis includes cyanide (Total and Weak Acid Dissociable), fluoride and sulfate analysis.
2. The matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample locations MW-5S_20120322 and RINSATE-1_20120322 for sulfate and fluoride analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Sample receipt condition		X		X	
Requested analyses and sample results		X		X	
Collection Technique (grab, composite, etc.)		X		X	
Methods of analysis		X		X	
Reporting limits		X		X	
Sample collection date		X		X	
Laboratory sample received date		X		X	
Sample preservation verification (as applicable)		X		X	
Sample preparation/extraction/analysis dates		X		X	
Fully executed Chain-of-Custody (COC) form completed		X		X	
Narrative summary of QA or sample problems provided		X		X	
Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

FIELD DATA PACKAGE DOCUMENTATION

Field Sampling Log*	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sampling dates noted		X		X	
2. Sampling team indicated		X		X	
3. Sampling identification traceable to location collected		X		X	
4. Sample location		X		X	
5. Sample depth for water		X		X	
6. Collection technique (bailer, pump, etc.)		X		X	
7. Field sample preparation techniques		X		X	
8. Sample type (grab, composite)		X		X	
9. Sample container type		X		X	
10. Preservation methods		X		X	
11. Chain-of-Custody form completed		X		X	
12. Required analytical methods requested		X		X	
13. Field (water and soil) Sample Logs completed properly and signed		X		X	
14. Number and type of field QC samples collected (blanks, replicates, splits, etc.)		X		X	
15. Field equipment calibration		X		X	
16. Field equipment decontamination		X		X	
17. Field parameter data		X		X	
18. Sample shipping		X		X	
19. Laboratory Task Order		X		X	

QC - Quality Control
*Field Sampling Logs = Water and/or Soil/Sediment Sampling Logs

Comments:

All field data documentation (Water Sampling Logs and Daily Logs) was reviewed for the above referenced sampling event. Performance was acceptable with no exceptions.

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method SW-846 Methods 9056, EPA 300.0, 335.4, and SM 4500CN-I,E. Data were reviewed in accordance with USEPA National Functional Guidelines of July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

    U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

    B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

    E The reported value is estimated due to the presence of interference.

    N Spiked sample recovery is not within control limits.

    * Duplicate analysis is not within control limits.

- Validation Qualifiers

    J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

    UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

    UB Analyte considered non-detect at the listed value due to associated blank contamination.

    R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SM 4500CN-C,I,E (Weak Acid Dissociable Cyanide)	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of greater than 12.
	Soil		Cool to 4°C±2°C.
EPA 335.4 (Cyanide, Total)	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of greater than 12.
	Soil		Cool to 4°C±2°C.
EPA 300.0 (Sulfate)	Water	28 days from collection to analysis	Cool to 4°C±2°C.
SW-846 9056 (Fluoride)	Water	28 days from collection to analysis	Cool to 4°C±2°C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis exhibited recoveries within the control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

MS/MSD analysis was performed in addition of the laboratory duplicate analysis. The RPD between the MS and MSD recoveries and the laboratory duplicate analysis were acceptable.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices and 100% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
MW-37S_20120322/ MW-100_20120322	Fluoride (F-, Anion)	4.34	4.32	0.5%
	Sulfate	37	36.5	1.4%

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries results within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 300.0 and SM 4500CN-C,E	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

%R - percent recovery, RPD - relative percent difference,
%D – difference

VALIDATION PERFORMED BY: Todd Church

SIGNATURE:

DATE: May 9, 2012

PEER REVIEW BY: Joseph C. Houser

DATE: May 15, 2012

CORRECTED SAMPLE ANALYSIS DATA SHEETS AND COCs

250-1109

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name GP000677.0015

Project Location The Dalles OR / RCRA

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Thomas Nannini / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: Fluoride SW-846 9056	Sulfate, EPA 300.0	Free Cyanide (WAD) SM 4500-CN- I/Lachat 335.4 M	Total Cyanide, USEPA 335.4			Remarks	Total
MW-33	L	3/22/12 1322		X	X	X	X				2
MW-175	L	3/20/12 0920		X	X	X					2
MW-205	L	3/22/12 1418		X	X	X					2
MW-233	L	3/22/12 1235		X	X	X					2
MW-355	L	3/22/12 1307		X	X	X					2
MW-365	L	3/22/12 1107		X	X	X					2
MW-375	L	3/22/12 1147		X	X	X					2
MW-100	L	3/22/12 —		X	X	X					2
Rinsate-1	L	3/22/12 1430		X	X	X					2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 18

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 3/26/12	Time 08:30		
Received by: SAME DAY	Organization: Same Day	Date 3/26/12	Time 1630		Yes No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by: [signature]	Organization: TAP	Date 3/26/12	Time 1100		Yes No N/A

Special Instructions/Remarks:

EDDs Requested

Delivery Method: ☐ In Person ☑ Common Carrier Same Day (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

4-2°C / 12 DI 9:1 #1

AG 05-12/01

General Chemistry

Client Sample ID: MW-5s
Date Collected: 03/22/12 13:22
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**51.6**		1.00		mg/L			03/27/12 22:00	1
Cyanide, Total	**0.0767**		0.00500		mg/L		03/28/12 11:45	03/28/12 14:48	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:52	1
Fluoride	**4.10**		0.200		mg/L			04/06/12 12:16	2

Client Sample ID: MW-17s
Date Collected: 03/22/12 09:20
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**44.6**		1.00		mg/L			03/27/12 23:02	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:53	1
Fluoride	**0.240**		0.100		mg/L			04/05/12 21:41	1

Client Sample ID: MW-22s
Date Collected: 03/22/12 14:18
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**87.7**		1.00		mg/L			03/27/12 23:18	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:54	1
Fluoride	**0.340**		0.100		mg/L			04/05/12 21:58	1

Client Sample ID: MW-23s
Date Collected: 03/22/12 12:35
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**41.9**		1.00		mg/L			03/27/12 23:33	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:55	1
Fluoride	**0.200**		0.100		mg/L			04/05/12 22:14	1

Client Sample ID: MW-35s
Date Collected: 03/22/12 13:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**106**		10.0		mg/L			03/28/12 15:44	10
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:56	1
Fluoride	**0.520**		0.100		mg/L			04/05/12 22:31	1

Client Sample ID: MW-36s
Date Collected: 03/22/12 11:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**91.7**		10.0		mg/L			03/28/12 15:59	10
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:43	1
Fluoride	**0.170**		0.100		mg/L			04/05/12 22:47	1

Client Sample ID: MW-37s
Date Collected: 03/22/12 11:47
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**37.0**		1.00		mg/L			03/28/12 00:51	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:44	1
Fluoride	**4.34**		0.200		mg/L			04/06/12 13:05	2

General Chemistry

Client Sample ID: MW-100
Date Collected: 03/22/12 00:00
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**36.5**		1.00		mg/L			03/28/12 01:07	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:05	1
Fluoride	**4.32**		0.200		mg/L			04/06/12 13:22	2

Client Sample ID: Rinsate-1
Date Collected: 03/22/12 14:30
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 01:22	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:06	1
Fluoride	ND		0.100		mg/L			04/05/12 23:36	1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-1109-1
Client Project/Site: Arcadis-Montana--The Dalles
Revision: 1

For:
ARCADIS U.S., Inc.
1610 B Street
Helena, Montana 59601

Attn: Mike Risher

Vanessa Frahs

Authorized for release by:
4/14/2012 11:14:31 AM

Vanessa Frahs
Project Manager I
vanessa.frahs@testamericainc.com

Table of Contents

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1109-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-1109-1	MW-5s	Water	03/22/12 13:22	03/26/12 11:00
250-1109-2	MW-17s	Water	03/22/12 09:20	03/26/12 11:00
250-1109-3	MW-22s	Water	03/22/12 14:18	03/26/12 11:00
250-1109-4	MW-23s	Water	03/22/12 12:35	03/26/12 11:00
250-1109-5	MW-35s	Water	03/22/12 13:07	03/26/12 11:00
250-1109-6	MW-36s	Water	03/22/12 11:07	03/26/12 11:00
250-1109-7	MW-37s	Water	03/22/12 11:47	03/26/12 11:00
250-1109-8	MW-100	Water	03/22/12 00:00	03/26/12 11:00
250-1109-9	Rinsate-1	Water	03/22/12 14:30	03/26/12 11:00

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1109-1

Job ID: 250-1109-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-1109-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
No analytical or quality issues were noted.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1109-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1109-1

Client Sample ID: MW-5s — Lab Sample ID: 250-1109-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	51.6		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.0767		0.00500		mg/L	1		335.4	Total/NA
Fluoride	4.10		0.200		mg/L	2		9056	Total/NA

Client Sample ID: MW-17s — Lab Sample ID: 250-1109-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	44.6		1.00		mg/L	1		300.0	Total/NA
Fluoride	0.240		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-22s — Lab Sample ID: 250-1109-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	87.7		1.00		mg/L	1		300.0	Total/NA
Fluoride	0.340		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-23s — Lab Sample ID: 250-1109-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	41.9		1.00		mg/L	1		300.0	Total/NA
Fluoride	0.200		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-35s — Lab Sample ID: 250-1109-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	106		10.0		mg/L	10		300.0	Total/NA
Fluoride	0.520		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-36s — Lab Sample ID: 250-1109-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	91.7		10.0		mg/L	10		300.0	Total/NA
Fluoride	0.170		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-37s — Lab Sample ID: 250-1109-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	37.0		1.00		mg/L	1		300.0	Total/NA
Fluoride	4.34		0.200		mg/L	2		9056	Total/NA

Client Sample ID: MW-100 — Lab Sample ID: 250-1109-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	36.5		1.00		mg/L	1		300.0	Total/NA
Fluoride	4.32		0.200		mg/L	2		9056	Total/NA

Client Sample ID: Rinsate-1 — Lab Sample ID: 250-1109-9

No Detections

General Chemistry

Client Sample ID: MW-5s
Date Collected: 03/22/12 13:22
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**51.6**		1.00		mg/L			03/27/12 22:00	1
Cyanide, Total	**0.0767**		0.00500		mg/L		03/28/12 11:45	03/28/12 14:48	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:52	1
Fluoride	**4.10**		0.200		mg/L			04/06/12 12:16	2

Client Sample ID: MW-17s
Date Collected: 03/22/12 09:20
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**44.6**		1.00		mg/L			03/27/12 23:02	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:53	1
Fluoride	**0.240**		0.100		mg/L			04/05/12 21:41	1

Client Sample ID: MW-22s
Date Collected: 03/22/12 14:18
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**87.7**		1.00		mg/L			03/27/12 23:18	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:54	1
Fluoride	**0.340**		0.100		mg/L			04/05/12 21:58	1

Client Sample ID: MW-23s
Date Collected: 03/22/12 12:35
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**41.9**		1.00		mg/L			03/27/12 23:33	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:55	1
Fluoride	**0.200**		0.100		mg/L			04/05/12 22:14	1

Client Sample ID: MW-35s
Date Collected: 03/22/12 13:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**106**		10.0		mg/L			03/28/12 15:44	10
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 10:56	1
Fluoride	**0.520**		0.100		mg/L			04/05/12 22:31	1

Client Sample ID: MW-36s
Date Collected: 03/22/12 11:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**91.7**		10.0		mg/L			03/28/12 15:59	10
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:43	1
Fluoride	**0.170**		0.100		mg/L			04/05/12 22:47	1

Client Sample ID: MW-37s
Date Collected: 03/22/12 11:47
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**37.0**		1.00		mg/L			03/28/12 00:51	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:44	1
Fluoride	**4.34**		0.200		mg/L			04/06/12 13:05	2

General Chemistry

Client Sample ID: MW-100
Date Collected: 03/22/12 00:00
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**36.5**		1.00		mg/L			03/28/12 01:07	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:05	1
Fluoride	**4.32**		0.200		mg/L			04/06/12 13:22	2

Client Sample ID: Rinsate-1
Date Collected: 03/22/12 14:30
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1109-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 01:22	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:06	1
Fluoride	ND		0.100		mg/L			04/05/12 23:36	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 250-2840/6
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/27/12 18:07	1

Lab Sample ID: LCS 250-2840/7
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	30.74		mg/L		102	90 - 110		

Lab Sample ID: 250-1109-1 MS
Matrix: Water
Analysis Batch: 2840

Client Sample ID: MW-5s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	51.6		4.00	50.47	4	mg/L		-28	80 - 120		

Lab Sample ID: 250-1109-1 MSD
Matrix: Water
Analysis Batch: 2840

Client Sample ID: MW-5s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	51.6		4.00	50.49	4	mg/L		-27	80 - 120	0	20

Lab Sample ID: 250-1109-9 MS
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Rinsate-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	ND		4.00	3.927		mg/L		98	80 - 120		

Lab Sample ID: 250-1109-1 DU
Matrix: Water
Analysis Batch: 2840

Client Sample ID: MW-5s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	51.6			51.54		mg/L				0.09	20

Lab Sample ID: 250-1109-9 DU
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Rinsate-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	ND			ND		mg/L				NC	20

Lab Sample ID: MB 250-2892/3
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 15:12	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 250-2892/4
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	30.59		mg/L		102	90 - 110		

Lab Sample ID: 250-1110-A-13 MS
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	ND		4.00	3.942		mg/L		99	80 - 120		

Lab Sample ID: 250-1162-A-2 MSD
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	19.0		4.00	21.18	4	mg/L		55	80 - 120	0	20

Lab Sample ID: 250-1162-A-2 DU
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	19.0		19.00		mg/L		0.1	20

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 250-2851/1-A
Matrix: Water
Analysis Batch: 2920

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 2851

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.00500		mg/L		03/28/12 11:45	03/28/12 14:33	1

Lab Sample ID: LCS 250-2851/2-A
Matrix: Water
Analysis Batch: 2920

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 2851

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.200	0.1994		mg/L		100	90 - 110		

Method: 4500 CN I,E - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 250-2896/1-A
Matrix: Water
Analysis Batch: 2926

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 2896

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:31	1

Method: 4500 CN I,E - Cyanide, Weak Acid Dissociable (Continued)

Lab Sample ID: LCS 250-2896/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Weak Acid Dissociable			0.200	0.2005		mg/L		100	90 - 110		

Lab Sample ID: 250-1108-A-1-F MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Weak Acid Dissociable	0.0150		0.200	0.1251	F	mg/L		55	75 - 125		

Lab Sample ID: 250-1108-A-1-G MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.0150		0.200	0.1499	F	mg/L		67	75 - 125	18	20

Lab Sample ID: 250-1108-A-1-E DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.0150			0.01300		mg/L				14	20

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: MB 580-108776/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108776

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.100		mg/L			04/05/12 19:46	1

Lab Sample ID: LCS 580-108776/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108776

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			2.00	2.020		mg/L		101	90 - 110		

Lab Sample ID: 250-1109-1 MS — **Client Sample ID: MW-5s**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108776

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	4.10		16.0	20.75		mg/L		104	90 - 110		

Method: 9056 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 250-1109-1 DU
Matrix: Water
Analysis Batch: 108776

Client Sample ID: MW-5s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Fluoride	4.10			4.140		mg/L				1	10

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1109-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	Alaska (UST)	State Program	10	UST-012
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	Federal		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586
TestAmerica Seattle	Alaska (UST)	State Program	10	UST-022
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana (UST)	State Program	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	Federal		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

250-1109

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name GP000677.0015

Project Location The Dalles OR / RCRA

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Thomas Nannini / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: Fluoride SW-846 9056	Sulfate, EPA 300.0	Free Cyanide (WAD) SM 4500-CN- I/Lachat 335.4 M	Total Cyanide, USEPA 335.4			Remarks	Total
MW-33	L	3/22/12 1322		X	X	X	X				2
MW-175	L	3/20/12 0920		X	X	X					2
MW-205	L	3/22/12 1418		X	X	X					2
MW-233	L	3/22/12 1235		X	X	X					2
MW-355	L	3/22/12 1307		X	X	X					2
MW-365	L	3/22/12 1107		X	X	X					2
MW-375	L	3/22/12 1147		X	X	X					2
MW-100	L	3/22/12 —		X	X	X					2
Rinsate-1	L	3/22/12 1430		X	X	X					2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 18

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 3/26/12	Time 08:30		
Received by: SAME DAY	Organization: Same Day	Date 3/26/12	Time 1630		Yes No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by: [signature]	Organization: TAP	Date 3/26/12	Time 1100		Yes No N/A

Special Instructions/Remarks:

EDDs Requested

Delivery Method: ☐ In Person ☑ Common Carrier Same Day (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

4-2°C / 12 DI 9:1 #1

AG 05-12/01

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1109-1

Login Number: 1109

List Source: TestAmerica Portland

List Number: 1

Creator: Morgan, Jessica

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	True	

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1109-1

Login Number: 1109
List Number: 1
Creator: Gamble, Cathy

List Source: TestAmerica Seattle
List Creation: 03/31/12 04:37 PM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503) 906-9200

TestAmerica Job ID: PUK0090
Client Project/Site: GP000677.0015 MH002
Client Project Description: The Dalles

For:
Arcadis US, Inc. - Montana
1610 B Street
Helena, MT 59601

Attn: Mike Risher

Brian L Cone

Authorized for release by:
11/16/2011 4:05:27 PM

Brian Cone
Industrial Services Manager
brian.cone@testamericainc.com

Table of Contents

Sample Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PUK0090

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PUK0090-01	RCRA Sump	Water	11/02/11 08:05	11/02/11 11:20

Definitions/Glossary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PUK0090

Qualifiers

Wet Chem

Qualifier	Qualifier Description
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
R2	The RPD exceeded the acceptance limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PUK0090

Client Sample ID: RCRA Sump
Date Collected: 11/02/11 08:05
Date Received: 11/02/11 11:20

Lab Sample ID: PUK0090-01
Matrix: Water

Method: EPA 300.0 - Anions per EPA Method 300.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	21800		1000		mg/l		11/02/11 15:43	11/02/11 21:58	1000

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	147		5.00		mg/l		11/04/11 07:15	11/04/11 10:41	100

Method: EPA 9056 - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1740		500		mg/l		11/02/11 15:43	11/02/11 21:58	1000

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	0.209		0.0500		mg/l		11/04/11 07:17	11/04/11 10:41	10.0

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1330		100		mg/l		11/04/11 11:46	11/04/11 23:49	100

Method: EPA 300.0 - Anions per EPA Method 300.0

Lab Sample ID: 11K0091-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		11/02/11 15:43	11/02/11 19:53	1.00

Lab Sample ID: 11K0091-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	31.1		mg/l		104	90 - 110		

Lab Sample ID: 11K0091-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	11.6		4.00	14.8	M8	mg/l		79.2	80 - 120		

Lab Sample ID: 11K0091-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	11.6		4.00	14.9		mg/l		81.7	80 - 120	0.673	20

Lab Sample ID: 11K0091-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Sulfate	11.6			11.6		mg/l				0.690	20

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 11K0155-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0155 — **Prep Batch: 11K0155_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	ND		0.00500		mg/l		11/04/11 07:15	11/04/11 10:41	1.00

Lab Sample ID: 11K0155-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0155 — **Prep Batch: 11K0155_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (total)			0.200	0.220		mg/l		110	90 - 110		

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 11K0155-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0155 — **Prep Batch: 11K0155_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (total)	0.00350		0.200	0.226		mg/l		111	75 - 125

Lab Sample ID: 11K0155-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0155 — **Prep Batch: 11K0155_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (total)	0.00350		0.200	0.231		mg/l		114	75 - 125	2.23	20

Lab Sample ID: 11K0155-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0155 — **Prep Batch: 11K0155_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Cyanide (total)	0.00350		0.00430	R2	mg/l		20.5	20

Method: EPA 9056 - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 11K0091-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.500		mg/l		11/02/11 15:43	11/02/11 19:53	1.00

Lab Sample ID: 11K0091-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	4.00	3.79		mg/l		94.8	90 - 110

Lab Sample ID: 11K0091-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.0800		2.00	2.00		mg/l		96.0	80 - 120

Lab Sample ID: 11K0091-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.0800		2.00	2.04		mg/l		98.0	80 - 120	1.98	20

Method: EPA 9056 - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 11K0091-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: U003462 — **Prep Batch: 11K0091_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.0800		0.0800		mg/l		0.00	20

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 11K0157-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0157 — **Prep Batch: 11K0157_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	ND		0.00500		mg/l		11/04/11 07:17	11/04/11 10:41	1.00

Lab Sample ID: 11K0157-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0157 — **Prep Batch: 11K0157_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (weak acid dissociable)	0.200	0.202		mg/l		101	90 - 110

Lab Sample ID: 11K0157-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0157 — **Prep Batch: 11K0157_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (weak acid dissociable)	ND		0.200	0.189		mg/l		94.6	75 - 125

Lab Sample ID: 11K0157-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0157 — **Prep Batch: 11K0157_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (weak acid dissociable)	ND		0.200	0.182		mg/l		90.8	75 - 125	4.05	20

Lab Sample ID: 11K0157-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0157 — **Prep Batch: 11K0157_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Cyanide (weak acid dissociable)	ND		ND		mg/l			20

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Lab Sample ID: 11K0173-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0173 — **Prep Batch: 11K0173_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.00		mg/l		11/04/11 11:46	11/04/11 23:49	1.00

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods (Continued)

Lab Sample ID: 11K0173-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0173 — **Prep Batch: 11K0173_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			20.0	21.6		mg/l		108	85 - 115		

Lab Sample ID: 11K0173-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0173 — **Prep Batch: 11K0173_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.462		25.0	25.9		mg/l		102	75 - 125		

Lab Sample ID: 11K0173-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 11K0173 — **Prep Batch: 11K0173_P**

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	0.462			0.549		mg/l				17.3	20

Certification Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PUK0090

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	Alaska UST	10	UST-012
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	USDA		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

PUK0090

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name: GP006770015 MH002
Project Location: L.M.C. The Dalles, OR
Laboratory: Test America
Project Manager: Mike Risher
Sampler(s)/Affiliation: Dan Shaver

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Cyanide EPA 335.4 500 ml. NaOH	Free (WAD) cyanide SM 4500 c N/E 500 ml NaOH same bottle	sulfate EPA 3000 250 ml. unpreserved	Fluoride SW-846 9056 250 ml. unpreserved same bottle	TOC SM 5310C 250 ml H2SO4		Remarks	Total
RCRA sump	L	11-2-11 08:05		X	X	X	X	X			3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 3

Relinquished by: Dan Shaver	Organization: Arcadis	Date 11/2/11	Time 08:25	Seal Intact? (Yes) No N/A
Received by: MB	Organization: Same Day Stat Co	Date 11/2/11	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? (Yes) No N/A
Received by: Jemiaw Nyr	Organization: TAP	Date 11/2/11	Time 1120	

5.1°C

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☐ Common Carrier SPS (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

8

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Portland Sample Control Checklist

Work Order #: PUK0090 **Date/Time Received:** 11/2/11 1120
Client Name: Arcadis
Project Name: The Dalles
Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☑PDT/PST ☐AK ☐HI ☐OTHER

Unpacking Checks:
Cooler (s): 1
Temperature (s): 5.1
Digi #1 ☑ **Digi #2** ☐ **IR Gun** ☐ (☐Plastic ☐Glass)
IR Gun- Degree ☐ (☐Plastic)
Ice used: (circle one) GEL LOOSE BLUE NONE OTHER: _____ **Initials:** JM

Temperature out of Range:
__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Ice Not Needed
__ Other:_____

N/A	Yes	No	
☑	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☐	☑	☐	2. Cooler Seals intact? (N/A if hand delivered) if no and ESI client, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD. Along with "received by" & "relinquished by" signatures with date & time?
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Sampler name/signature documented on COC?
JM	☒	☑	7. Proper Container and preservatives used? If no, document on NOD. TOC recvd in a poly.
☑	☐	☐	8. pH for ESI samples checked and meet requirements? If no, document on NOD.
☐	☑	☐	9. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☑	☐	☐	10. HF Dilution required?
	☑	☐	11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
	☑	☐	12. Did chain of custody agree with samples received? If no, document on NOD.
☑	☐	☐	13. Were VOA samples received without headspace?
	☐	☑	14. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	17. Are analyses with short holding times received in hold?
	☑	☐	18. Were special log- in instructions read and followed?

No cmbr recv'd for TOC.
PSS

Checklist Reviewed: **Log-in initials:** PSS **Labeler initials:** PSS

Appendix B. Rainfall Data Summary

Met Data
Met Summary

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Oct-11	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	71	53			270	4	18
2	74	51	T		270	3	16
3	68	55	0.04		240	3	12
4	70	54	0.04		315	1	8
5	65	49	0.04		285	6	14
6	67	49	0.20		270	7	26
7	68	55			285	6	20
8	81	49			135	2	8
9	73	52	T		135	1	12
10	71	54	0.28		270	3	30
11	70	54	0.12		270	7	19
12	71	51	T		270	4	18
13	63	49	0.04		110	1	10
14	64	47	0.04		135	1	6
15	64	55	0.04		315	1	6
16	68	48	0.04		270	2	13
17	67	40			350	1	8
18	69	41			45	1	8
19	68	43			290	5	24
20	69	53			255	3	10
21	68	51			270	7	16
22	73	51			270	5	18
23	70	55			270	7	13
24	62	45			270	7	17
25	61	33			200	1	5
26	53	29			270	2	15
27	62	37			290	3	12
28	57	37			290	2	14
29	67	43			270	6	11
30	65	42			270	3	22
31	60	47			270	9	19
AVG	**67.1**	**47.5**	0.88	0.00	249.2	**3.7**	
MEDIAN	68.0	49.0				3.0	
MAX	**81**	55	**0.28**			**9.0**	**30**
MIN	53	**29**					
MEAN	**57.3**						

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Nov-11	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	61	33			285	2	10
2	66	27			315	2	14
3	58	36			270	6	13
4	56	32			270	5	19
5	56	36			315	1	14
6	60	32			285	1	7
7	56	30			270	2	12
8	61	34			285	1	5
9	57	36			315	1	5
10	56	31	0.19		315	0	4
11	59	29			270	5	29
12	53	41			285	8	18
13	60	50			285	17	20
14	56	46			315	0	7
15	57	30	0.16		270	6	11
16	37	28	0.39	1.00	285	0	6
17	53	36	0.16		285	5	21
18	51	37	0.04		270	3	12
19	45	37			90	2	7
20	39	36			90	3	7
21	46	36	0.16		105	2	7
22	63	43	0.08		135	3	12
23	63	42	0.12		285	8	22
24	47	33	0.08		135	2	21
25	58	38	0.20		285	5	11
26	57	39			285	1	5
27	59	35			285	4	25
28	57	34			270	2	13
29	52	36			315	3	21
30	59	34			270	4	17
31							
AVG	**55.3**	**35.6**	1.58	1.00	258.0	**3.5**	
MEDIAN	57.0	36.0				2.5	
MAX	**66**	50	**0.39**			**17.0**	**29**
MIN	37	**27**					
MEAN	**45.4**						

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Dec-11	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	50	30			315	1	7
2	58	32			270	5	15
3	49	26			285	3	23
4	54	29			105	2	14
5	49	25			315	1	5
6	51	24			270	1	7
7	49	27			285	1	5
8	38	24			30	1	9
9	32	28			30	3	8
10	32	28			45	2	4
11	34	31			30	2	7
12	38	26			285	2	6
13	35	26			285	1	10
14	35	26	0.04	1.00	90	2	6
15	42	33			360	0	5
16	44	35			90	0	6
17	37	33			90	2	6
18	56	32			165	4	16
19	40	37			90	2	6
20	55	35	0.08		270	6	24
21	53	25			105	3	24
22	44	22			285	1	7
23	45	23			285	1	5
24	42	27			270	0	4
25	49	29	0.12		270	3	28
26	46	33			225	1	11
27	45	35	0.24		315	1	7
28	59	45	0.87		135	2	27
29	59	45	0.39		270	4	29
30	52	40	0.51		270	6	26
31	44	31			285	2	25
AVG	**45.7**	**30.4**	2.25	1.00	207.1	**2.1**	
MEDIAN	45.0	29.0				2.0	
MAX	**59**	45	**0.87**			**6.0**	**29**
MIN	32	**22**					
MEAN	**38.0**						

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Jan-12	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	49	32			315	1	5
2	45	30			45	1	8
3	50	33			285	1	5
4	55	37	0.04		135	2	22
5	55	33	0.04		270	7	18
6	45	30			270	4	18
7	48	35			345	1	5
8	47	32			235	1	5
9	48	31			135	1	14
10	50	30			270	8	18
11	42	20			285	2	12
12	41	18			285	1	7
13	40	22			285	1	4
14	56	22	0.10		270	8	25
15	41	29		0.50	315	3	16
16	45	31			225	3	14
17	41	31	0.66	1.00	345	2	7
18	39	33	0.47	7.00	90	1	14
19	34	31	0.71		360	0	15
20	32	28	0.08		*	*	*
21	40	27	0.02				
22	43	31	0.01				
23	36	28					
24	41	29	0.35	1.00			
25	49	33	0.03				
26	46	33	0.05				
27	42	25					
28	41	28			195	0	4
29	50	28	0.22		180	0	10
30	52	39	0.01		180	2	10
31	52	28	0.06		180	0	7
AVG	**45.0**	**29.6**	2.85	9.50	239.1	**2.2**	
MEDIAN	45.0	30.0				1.0	
MAX	**56**	39	**0.71**			**8.0**	**25**
MIN	32	**18**					
MEAN	**37.3**						

* Wind direction and speed out from snow and ice storm

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Feb-12	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	56	41	0.04		285	9	24
2	59	31			180	1	9
3	51	27			30	2	13
4	46	27			195	0	9
5	44	27			180	0	9
6	39	30			45	1	11
7	43	34			45	1	9
8	46	37	0.04		360	0	0
9	45	38	0.20		180	0	8
10	45	39	0.12		180	0	8
11	54	37	0.04		285	2	14
12	60	33				0	5
13	57	37			270	10	16
14	51	35	0.04		270	7	32
15	53	32			315	6	29
16	55	33			270	4	25
17		39					
18							
19							
20	20	52			135	3	7
21	55	55				0	16
22	57	45	0.04		285	27	37
23	54	42			270	14	22
24	63	36			105	6	33
25	50	37	0.12		270	17	32
26	51	33			270	8	24
27	54	28			135	3	12
28	42	24	0.04		315	3	16
29	55	31			285	7	29
30							
31							
AVG	**50.2**	**35.6**	0.68	0.00	215.0	**5.0**	
MEDIAN	52.0	35.0				3.0	
MAX	**63**	55	**0.20**			**27.0**	**37**
MIN	20	**24**					
MEAN	**42.9**						

NORTHWEST ALUMINUM COMPANY

CLIMATE DATA

DATE Mar-12	HIGH	LOW	RAINFALL INCHES	SNOWFALL INCHES	WIND-DIR DAILY AVG	W-SPEED DAILY AVG	MAX WIND 15 min
1	51	35	0.12		270	10	38
2	55	36			285	12	19
3	60	42			285	11	28
4	66	35			270	5	23
5	59	39			270	13	30
6	50	31			270	14	30
7	62	30			345	5	19
8	64	28			315	2	10
9	69	32			285	10	37
10	64	43			285	11	26
11	54	31			270	12	37
12	50	30			345	5	25
13	53	32			285	10	31
14	51	32			345	3	11
15	58	41	0.12		270	5	36
16	62	36	0.08		315	8	25
17	55	28			285	10	24
18	53	40			285	12	30
19	55	36			285	6	15
20	50	36	0.35		315	5	31
21	41	36	0.47		105	1	17
22	58	36	0.04		285	5	16
23	63	33			30	3	17
24	62	38			30	4	12
25	65	35			345	5	29
26	63	44			285	15	28
27	62	44	0.04		30	4	24
28	64	41			285	7	32
29	54	45	0.12		345	2	18
30	54	44	0.55		285	3	20
31	60	42	0.08		345	3	13
AVG	**57.6**	**36.5**	1.97	0.00	266.1	**7.1**	
MEDIAN	58.0	36.0				5.0	
MAX	**69**	45	**0.55**			**15.0**	**38**
MIN	41	**28**					
MEAN	**47.1**						

NORTHWEST ALUMINUM RAINFALL WITH HISTORICAL RECORDS
1986-2012

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1986											0.89	0.68	1.57
1987	1.25	0.64	1.15	0.34	0.07	0.00	0.28	0.00	0.00	0.00	0.83	2.82	7.38
1988	1.63	0.33	0.81	1.65	0.32	0.82	0.01	0.02	0.12	0.00	4.05	0.78	10.54
1989	1.94	1.10	2.04	0.93	0.41	0.43	0.14	0.85	0.11	0.68	0.82	1.15	10.60
1990	3.27	0.44	0.67	1.85	1.72	0.28	0.02	**1.01**	0.09	1.01	1.57	2.19	14.12
1991	3.19	1.99	3.18	1.75	0.85	1.44	0.41	0.37	0.00	2.73	6.09	3.01	25.01
1992	2.40	6.01	0.72	**3.51**	0.10	0.20	0.57	0.12	0.83	2.35	4.53	7.38	28.72
1993	3.78	1.83	**3.69**	1.70	**2.66**	1.16	0.87	0.06	0.02	0.70	1.14	3.64	21.25
1994	3.86	4.33	1.11	1.24	1.77	0.99	0.01	0.00	0.11	**7.99**	2.20	3.40	27.01
1995	**9.08**	4.48	2.00	2.80	1.74	**1.80**	**1.94**	0.24	**1.64**	1.28	8.26	6.01	41.27
1996	6.25	**8.28**	3.28	2.13	1.40	0.31	0.07	0.00	0.96	2.65	**8.59**	**13.41**	**47.33**
1997	5.48	0.88	2.61	1.19	0.44	0.20	0.00	0.45	0.20	2.64	1.88	0.76	16.73
1998	3.77	2.26	1.24	0.84	2.30	0.89	0.01	0.00	1.06	0.30	2.76	3.12	18.55
1999	2.12	2.53	0.32	0.09	0.35	0.14	0.08	0.36	0.00	0.90	2.83	0.94	10.66
2000	3.60	3.52	0.74	0.41	0.33	0.09	0.00	0.00	0.25	0.49	1.29	1.04	11.76
2001	0.64	0.79	1.06	0.64	0.51	0.36	0.13	0.38	0.20	1.04	2.59	2.15	10.49
2002	1.35	1.50	0.90	0.42	0.46	0.53	0.30	0.00	0.18	0.10	0.72	3.65	10.11
2003	3.77	0.99	2.91	0.95	0.24	0.00	0.00	0.22	0.08	0.66	1.46	4.20	15.48
2004	2.78	1.79	0.73	0.64	0.42	0.89	0.08	0.99	0.31	0.54	0.20	1.20	10.57
2005	0.80	0.47	1.78	0.60	1.64	0.48	0.01	0.00	0.27	1.08	2.03	6.57	15.73
2006	4.38	0.98	1.11	0.79	0.87	0.73	0.04	0.00	0.01	0.39	4.42	3.90	17.62
2007	1.52	1.26	0.45	0.45	0.68	0.04	0.04	0.44	0.39	1.31	2.72	3.73	13.03
2008	4.07	0.80	1.22	0.36	0.76	0.12	0.16	0.40	0.04	0.64	1.90	2.01	12.48
2009	3.35	1.70	2.69	0.64	1.35	0.08	0.00	0.08	0.24	1.12	1.51	1.78	14.54
2010	3.05	1.31	1.30	1.02	1.19	1.30	0.00	0.08	0.67	1.31	1.90	3.53	16.66
2011	1.41	0.87	2.00	1.50	1.89	0.05	0.44	0.00	0.04	0.88	1.58	2.25	12.91
2012	2.85	0.68	1.97										
AVG	3.14	1.99	1.60	1.14	0.98	0.53	0.22	0.24	0.31	1.31	2.76	3.43	18.60
MAX	9.08	8.28	3.69	3.51	2.66	1.80	1.94	1.01	1.64	7.99	8.59	13.41	47.33
MIN	0.64	0.33	0.32	0.09	0.07	0.00	0.00	0.00	0.00	0.00	0.20	0.76	7.38

Historical 1875-2002, The Dalles, Oregon

AVG	2.64	1.87	1.26	0.67	0.57	0.52	0.16	0.23	0.54	1.07	2.24	2.70
MAX	7.80	9.41	6.07	2.05	2.94	2.81	1.38	1.91	5.77	4.80	9.41	10.79
	1970	**1858**	**1859**	**1917**	**1879**	**1947**	**1860**	**1968**	**1859**	**1875**	**1921**	**1858**

Appendix C. CERCLA Permit Requirements

Inspection – CERCLA Leachate Collection System_06-14-11
Inspection – CERCLA Landfill Inspection_06-15-11
Inspection – Scrubber Sludge Ponds Inspection_06-16-11
Inspection – CERCLA Leachate Collection System_09-14-11

LCS Discharge Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503) 906-9200

TestAmerica Job ID: PVA0062
Client Project/Site: GP000677.0015 MH002
Client Project Description: The Dalles

For:
Arcadis US, Inc. - Montana
1610 B Street
Helena, MT 59601

Attn: Mike Risher

Brian L Cone

Authorized for release by:
1/23/2012 11:53:17 AM

Brian Cone
Industrial Services Manager
brian.cone@testamericainc.com

Table of Contents

Sample Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVA0062

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PVA0062-01	CDS Tank	Water	01/04/12 06:15	01/04/12 11:35

Definitions/Glossary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVA0062

Qualifiers

Wet Chem

Qualifier	Qualifier Description
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
M2	The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVA0062

Client Sample ID: CDS Tank
Date Collected: 01/04/12 06:15
Date Received: 01/04/12 11:35

Lab Sample ID: PVA0062-01
Matrix: Water

Method: EPA 300.0 - Anions per EPA Method 300.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	161		10.0		mg/l		01/04/12 12:50	01/04/12 19:12	10.0

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	2.37		0.0500		mg/l		01/04/12 12:44	01/04/12 15:33	10.0

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	0.0333		0.00500		mg/l		01/04/12 12:45	01/04/12 15:33	1.00

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	41.9		10.0		mg/l		01/19/12 12:05	01/20/12 20:25	10.0

Method: EPA 300.0 - Anions per EPA Method 300.0

Lab Sample ID: 12A0048-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000021 — **Prep Batch: 12A0048_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		01/04/12 10:11	01/04/12 11:55	1.00

Lab Sample ID: 12A0048-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000021 — **Prep Batch: 12A0048_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	31.0		mg/l		103	90 - 110		

Lab Sample ID: 12A0048-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000021 — **Prep Batch: 12A0048_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	16.4		4.00	19.0	M8	mg/l		66.5	80 - 120		

Lab Sample ID: 12A0048-MS2 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0048 — **Prep Batch: 12A0048_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	3.10		4.00	6.87		mg/l		94.2	80 - 120		

Lab Sample ID: 12A0048-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000021 — **Prep Batch: 12A0048_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	16.4		4.00	19.0	M8	mg/l		65.0	80 - 120	0.315	20

Lab Sample ID: 12A0048-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000021 — **Prep Batch: 12A0048_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Sulfate	16.4		16.6		mg/l		1.21	20

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 12A0058-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0058 — **Prep Batch: 12A0058_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	ND		0.00500		mg/l		01/04/12 12:44	01/04/12 15:33	1.00

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 12A0058-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0058 — **Prep Batch: 12A0058_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (total)			0.200	0.199		mg/l		99.6	90 - 110		

Lab Sample ID: 12A0058-MS1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0058 — **Prep Batch: 12A0058_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (total)	2.37		0.200	2.51	M2	mg/l		70.0	75 - 125		

Lab Sample ID: 12A0058-MSD1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0058 — **Prep Batch: 12A0058_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (total)	2.37		0.200	2.58		mg/l		108	75 - 125	2.95	20

Lab Sample ID: 12A0058-DUP1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0058 — **Prep Batch: 12A0058_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Cyanide (total)	2.37		2.36		mg/l		0.424	20

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 12A0059-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0059 — **Prep Batch: 12A0059_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	ND		0.00500		mg/l		01/04/12 12:45	01/04/12 15:33	1.00

Lab Sample ID: 12A0059-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0059 — **Prep Batch: 12A0059_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (weak acid dissociable)			0.200	0.198		mg/l		98.8	90 - 110		

Lab Sample ID: 12A0059-MS1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0059 — **Prep Batch: 12A0059_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (weak acid dissociable)	0.0333		0.200	0.127	M2	mg/l		46.7	75 - 125		

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 12A0059-MSD1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0059 — **Prep Batch: 12A0059_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (weak acid dissociable)	0.0333		0.200	0.127	M2	mg/l		46.8	75 - 125	0.237	20

Lab Sample ID: 12A0059-DUP1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0059 — **Prep Batch: 12A0059_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Cyanide (weak acid dissociable)	0.0333		0.0327		mg/l		1.82	20

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Lab Sample ID: 12A0499-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0499 — **Prep Batch: 12A0499_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.00		mg/l		01/19/12 12:05	01/20/12 20:25	1.00

Lab Sample ID: 12A0499-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0499 — **Prep Batch: 12A0499_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	20.0	21.1		mg/l		105	85 - 115

Lab Sample ID: 12A0499-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0499 — **Prep Batch: 12A0499_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.97		25.0	30.2		mg/l		113	75 - 125

Lab Sample ID: 12A0499-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12A0499 — **Prep Batch: 12A0499_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	1.97		1.92		mg/l		2.84	20

Certification Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVA0062

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	Alaska UST	10	UST-012
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	USDA		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

PVA0062

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name GP0006770015 M1002

Project Location L.M.C. The Dalles, OR

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Dan Shaver

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total cyanide EPA 335.4 500mL	Free (WAD) cyanide SM 4500 CN/E 500mL same bottle NaOH	TOC SM 5310C 250mL H2SO4	Sulfate EPA 300.0 250mL unpreserved			Remarks	Total
CDS Tank	L	1-4-12 0615		X	X	X	X				3

ANALYSIS / METHOD / SIZE

Please Rush Total & Free Cyanide

THANKS

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 3

Relinquished by: Dan Shaver	Organization: Arcadis	Date 1/4/12	Time 0750	Seal Intact?		
Received by: Todd Teegman	Organization: Same Day Stage	Date 1/4/12	Time 9:45	(Yes)	No	N/A
Relinquished by: Todd Teegman	Organization: Same Day Stage	Date 1/4/12	Time 11:35	Seal Intact?		
Received by: Jennifer Myers	Organization: TAP	Date 1/4/12	Time 1135	(Yes)	No	N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier SDS (SPECIFY) ☐ Lab Courier ☐ Other 2.6°C (SPECIFY)

AG 05-12/01

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Portland Sample Control Checklist

Work Order #: PVA0062 **Date/Time Received:** 1/4/12 1135

Client Name: arcadis

Project Name: The Dalles

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☑PDT/PST ☐AK ☐HI ☐OTHER

Unpacking Checks:

Cooler (s): 1

Temperature (s): 2.6

Digi #1 ☑ **Digi #2** ☐ **IR Gun** ☐ (☐Plastic ☐Glass)

IR Gun- Degree ☐ (☐Plastic)

Temperature out of Range:
__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Ice Not Needed
__ Other:_____

Ice used: (circle one) GEL (LOOSE) BLUE NONE OTHER: _____ **Initials:** JM

N/A	Yes	No	
☐	☑	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☐	☑	☐	2. Custody seals intact? If ESI client and no is checked, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD. Along with "received by" & "relinquished by" signatures with date & time?
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Sampler name/signature documented on COC?
	☑	☐	7. Proper container and preservatives used? If no, document on NOD.
☒	☑	☐	8. pH for ESI samples checked and meets requirements? If no, document on NOD.
☐	☑	☐	9. Cyanide samples checked for sulfides and meets requirements? If no, notify PM.
☑	☐	☐	10. HF Dilution required?
	☑	☐	11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
	☑	☐	12. Did Chain of Custody agree with samples received? If no, document on NOD.
☑	☐	☐	13. Were VOA vial samples received without headspace?
☑	☐	☐	14. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	17. Are analyses with short holding times received in hold?
☐	☑	☐	18. Were special log- in instructions read and followed?
☐	☑	☐	19. Were lab sample labels verified against the client sample labels?

Checklist Reviewed: **Log-in initials:** PS **Labeler initials:** PS

9405 SW Nimbus Ave, Beaverton OR 97008 tel 503.906.9200 fax 503.906.9210 www.testamericainc.com

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503) 906-9200

TestAmerica Job ID: PVB0131
Client Project/Site: GP000677.0015 MH002
Client Project Description: The Dalles

For:
Arcadis US, Inc. - Montana
1610 B Street
Helena, MT 59601

Attn: Mike Risher

Brian L Cone

Authorized for release by:
2/13/2012 4:34:30 PM

Brian Cone
Industrial Services Manager
brian.cone@testamericainc.com

Table of Contents

Sample Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVB0131

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PVB0131-01	CDS Tank	Water	02/06/12 07:33	02/06/12 11:30

Definitions/Glossary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVB0131

Qualifiers

Wet Chem

Qualifier	Qualifier Description
R2	The RPD exceeded the acceptance limit.
M2	The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVB0131

Client Sample ID: CDS Tank
Date Collected: 02/06/12 07:33
Date Received: 02/06/12 11:30

Lab Sample ID: PVB0131-01
Matrix: Water

Method: EPA 300.0 - Anions per EPA Method 300.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	92.4		10.0		mg/l		02/08/12 15:49	02/08/12 18:26	10.0

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	2.22		0.500		mg/l		02/07/12 07:32	02/07/12 11:49	100

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	0.0237		0.00500		mg/l		02/07/12 07:34	02/07/12 11:49	1.00

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	36.4		1.00		mg/l		02/10/12 15:23	02/11/12 17:04	1.00

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVB0131

Method: EPA 300.0 - Anions per EPA Method 300.0

Lab Sample ID: 12B0201-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000442 — **Prep Batch: 12B0201_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/l		02/08/12 15:49	02/08/12 17:24	1.00

Lab Sample ID: 12B0201-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000442 — **Prep Batch: 12B0201_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	31.3		mg/l		104	90 - 110		

Lab Sample ID: 12B0201-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000442 — **Prep Batch: 12B0201_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	10.4		4.00	13.4	M8	mg/l		76.5	80 - 120		

Lab Sample ID: 12B0201-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000442 — **Prep Batch: 12B0201_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.4		4.00	13.4	M8	mg/l		76.5	80 - 120	0.00	20

Lab Sample ID: 12B0201-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: V000442 — **Prep Batch: 12B0201_P**

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Sulfate	10.4			10.3		mg/l				1.16	20

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 12B0150-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0150 — **Prep Batch: 12B0150_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (total)	ND		0.00500		mg/l		02/07/12 07:32	02/07/12 11:49	1.00

Lab Sample ID: 12B0150-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0150 — **Prep Batch: 12B0150_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide (total)			0.200	0.195		mg/l		97.6	90 - 110		

Method: EPA 335.4 - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 12B0150-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0150 — **Prep Batch: 12B0150_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (total)	0.00260		0.200	0.192		mg/l		95.0	75 - 125

Lab Sample ID: 12B0150-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0150 — **Prep Batch: 12B0150_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (total)	0.00260		0.200	0.200		mg/l		98.4	75 - 125	3.57	20

Lab Sample ID: 12B0150-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0150 — **Prep Batch: 12B0150_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Cyanide (total)	0.00260		0.00170	R2	mg/l		41.9	20

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods

Lab Sample ID: 12B0151-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0151 — **Prep Batch: 12B0151_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide (weak acid dissociable)	ND		0.00500		mg/l		02/07/12 07:34	02/07/12 11:49	1.00

Lab Sample ID: 12B0151-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0151 — **Prep Batch: 12B0151_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (weak acid dissociable)	0.200	0.194		mg/l		97.2	90 - 110

Lab Sample ID: 12B0151-MS1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0151 — **Prep Batch: 12B0151_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide (weak acid dissociable)	0.0237		0.200	0.110	M2	mg/l		43.4	75 - 125

Lab Sample ID: 12B0151-MSD1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0151 — **Prep Batch: 12B0151_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide (weak acid dissociable)	0.0237		0.200	0.110	M2	mg/l		43.1	75 - 125	0.454	20

Method: SM 4500-CN-I,E - Conventional Chemistry Parameters per APHA/EPA Methods (Continued)

Lab Sample ID: 12B0151-DUP1 — **Client Sample ID: CDS Tank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0151 — **Prep Batch: 12B0151_P**

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Cyanide (weak acid dissociable)	0.0237			0.0238		mg/l				0.421	20

Method: SM 5310C - Conventional Chemistry Parameters per Standard Methods

Lab Sample ID: 12B0291-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0291 — **Prep Batch: 12B0291_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.00		mg/l		02/10/12 15:23	02/11/12 17:04	1.00

Lab Sample ID: 12B0291-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0291 — **Prep Batch: 12B0291_P**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			20.0	17.9		mg/l		89.4	85 - 115		

Lab Sample ID: 12B0291-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0291 — **Prep Batch: 12B0291_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.737		25.0	24.6		mg/l		95.5	75 - 125		

Lab Sample ID: 12B0291-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 12B0291 — **Prep Batch: 12B0291_P**

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	0.737			0.851		mg/l				14.4	20

Certification Summary

Client: Arcadis US, Inc. - Montana
Project/Site: GP000677.0015 MH002

TestAmerica Job ID: PVB0131

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	Alaska UST	10	UST-012
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	USDA		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

250-146 PVB013

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name GP0006770015 MH002

Project Location L.M.C. The Dalles, OR.

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Dan Shaver

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Cyanide EPA 335.4 500mL NaOH	Free (WAD) Cyanide SM4500 500mL Same bottle NaOH	TOC SM 5310C 250 mL H2SO4	Sulfate EPA 300.0 250mL unpreserved			Remarks	Total
CDS Tank	L	2-6-12 0733		X	X	X	X				3

Please Rush Total & Free Cyanide
THANKS

Total No. of Bottles/ Containers: 3

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Dan Shaver	Organization: Arcadis	Date 2/6/12	Time 0750	Seal Intact?	
Received by: [illegible]	Organization: S.D.S.	Date 2/6/12	Time 0830	(Yes) No N/A	
Relinquished by: _____	Organization: _____	Date 1/1/2	Time _____	Seal Intact?	
Received by: [illegible]	Organization: TAO	Date 2/6/12	Time 1130	(Yes) No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier S.D.S. ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-12/01

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2/13/2012

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Portland Sample Control Checklist

Work Order #: PVB0131 **Date/Time Received:** 2/6/12 @ 1130
Client Name: ARCADIS
Project Name: L.M.C. THE DALLES
Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☑PDT/PST ☐AK ☐HI ☐OTHER

Unpacking Checks:
Cooler (s): 1
Temperature (s): 3.0
Digi #1 ☐ **Digi #2** ☐ **IR Gun** ☐ (☐Plastic ☐Glass)
IR Gun- Degree ☐ (☑Plastic)
Ice used: (circle one) GEL LOOSE BLUE NONE OTHER: _____ **Initials:** PS

Temperature out of Range:
__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Ice Not Needed
__ Other:_____

N/A	Yes	No	
☑	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☐	☑	☐	2. Custody seals intact? If ESI client and no is checked, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD. Along with "received by" & "relinquished by" signatures with date & time?
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Sampler name/signature documented on COC?
	☑	☐	7. Proper container and preservatives used? If no, document on NOD.
☑	☐	☐	8. pH for ESI samples checked and meets requirements? If no, document on NOD.
☐	☑	☐	9. Cyanide samples checked for sulfides and meets requirements? If no, notify PM.
☑	☐	☐	10. HF Dilution required?
	☑	☐	11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
	☑	☐	12. Did Chain of Custody agree with samples received? If no, document on NOD.
☑	☐	☐	13. Were VOA vial samples received without headspace?
☑	☐	☐	14. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	17. Are analyses with short holding times received in hold?
☑	☐	☐	18. Were special log- in instructions read and followed?
☐	☐	☐	19. Were lab sample labels verified against the client sample labels?

Checklist Reviewed: **Log-in initials:** PS **Labeler initials:** PS

9405 SW Nimbus Ave, Beaverton OR 97008 tel 503.906.9200 fax 503.906.9210 www.testamericainc.com

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-630-1
Client Project/Site: Arcadis-Montana--The Dalles

For:
ARCADIS U.S., Inc.
unknown
Helena, Montana 59601

Attn: Mike Risher

Vanessa Frahs

Authorized for release by:
3/13/2012 3:15:35 PM

Vanessa Frahs
Project Manager I
vanessa.frahs@testamericainc.com

Table of Contents

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-630-1	CDS Tank	Water	03/12/12 07:28	03/12/12 11:20

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Job ID: 250-630-1

Laboratory: TestAmerica Portland

Narrative

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
No analytical or quality issues were noted.

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Client Sample ID: CDS Tank **Lab Sample ID: 250-630-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyanide, Total	1.7		0.050		mg/L	10		335.4	Total/NA
Cyanide, Weak Acid Dissociable	0.021		0.0050		mg/L	1		SM 4500 CN I	Total/NA

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

General Chemistry

Client Sample ID: CDS Tank
Date Collected: 03/12/12 07:28
Date Received: 03/12/12 11:20

Lab Sample ID: 250-630-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	1.7		0.050		mg/L		03/13/12 09:00	03/13/12 10:30	10
Cyanide, Weak Acid Dissociable	0.021		0.0050		mg/L		03/13/12 07:46	03/13/12 10:21	1

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 250-2157/1-A
Matrix: Water
Analysis Batch: 2178

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 2157

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.0050		mg/L		03/13/12 09:00	03/13/12 09:57	1

Lab Sample ID: LCS 250-2157/2-A
Matrix: Water
Analysis Batch: 2178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 2157

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.200	0.197		mg/L		99	90 - 110

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 250-2158/1-A
Matrix: Water
Analysis Batch: 2180

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 2158

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.0050		mg/L		03/13/12 07:46	03/13/12 10:31	1

Lab Sample ID: LCS 250-2158/2-A
Matrix: Water
Analysis Batch: 2180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 2158

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.200	0.195		mg/L		97	90 - 110

Lab Sample ID: 250-630-1 MS
Matrix: Water
Analysis Batch: 2180

Client Sample ID: CDS Tank
Prep Type: Total/NA
Prep Batch: 2158

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.021		0.200	0.137	F	mg/L		58	75 - 125

Lab Sample ID: 250-630-1 MSD
Matrix: Water
Analysis Batch: 2180

Client Sample ID: CDS Tank
Prep Type: Total/NA
Prep Batch: 2158

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.021		0.200	0.127	F	mg/L		53	75 - 125	8	20

Lab Sample ID: 250-630-1 DU
Matrix: Water
Analysis Batch: 2180

Client Sample ID: CDS Tank
Prep Type: Total/NA
Prep Batch: 2158

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.021		0.0232		mg/L		10	20

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-630-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	Alaska (UST)	State Program	10	UST-012
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	Federal		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-630-1

Login Number: 630

List Number: 1

Creator: Morgan, Jessica

List Source: TestAmerica Portland

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

ARCADIS

CERCLA Leachate Collection System
Quarterly and Annual Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 3-14-12 12:45 Quarter: ✓

Inspected by: DAN SHAVER Signed: Dan Shaver

Quarterly:

	Yes	No	Remarks
LS #1: WL between floats	✓		
Pump pulled or checked		✓	
Alarm light tested	✓		will pull & clean in May or June
Electric cables good condition	✓		
Piping in good condition	✓		
LS #2: WL between floats	✓		
Pump pulled or checked		✓	will pull & clean in May or June
Alarm light tested	✓		
Electric cables good condition	✓		
Piping in good condition	✓		
LCS piping unobstructed (no biofouling)		✓	Pumped from Liftstation #2 to #1 Pumped good Pumped liftstation #1 down on 3-12-12 for Tank sample, pumped good.

Annually:

	Yes	No	Remarks
Double-wall pipe alarm tested			
Visual inspection of 300,000-gallon tank			
Visual inspection of 4,700-gallon tank			

General remarks and items requiring correction:

Inspection Requirements: (Quarterly) and Annually (see above)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-1108-1
Client Project/Site: Arcadis-Montana--The Dalles

For:
ARCADIS U.S., Inc.
1610 B Street
Helena, Montana 59601

Attn: Mike Risher

Authorized for release by:
4/10/2012 4:38:08 PM
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Designee for

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Table of Contents

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1108-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-1108-1	Liftstation #1	Water	03/22/12 09:01	03/26/12 11:00
250-1108-2	Liftstation #2	Water	03/22/12 09:12	03/26/12 11:00
250-1108-3	Manhole #2	Water	03/22/12 10:00	03/26/12 11:00
250-1108-4	Manhole #4	Water	03/22/12 09:44	03/26/12 11:00

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1108-1

Job ID: 250-1108-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-1108-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
Method(s) 300.0, 9056A: The matrix spike (MS) recoveries for batch 108586 were outside control limits for F. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1108-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1108-1

Client Sample ID: Liftstation #1 — Lab Sample ID: 250-1108-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	110		10		mg/L	10		300.0	Total/NA
Cyanide, Total	2.1		0.050		mg/L	10		335.4	Total/NA
Fluoride	11		0.10		mg/L	1		9056A	Total/NA
Cyanide, Weak Acid Dissociable	0.015		0.0050		mg/L	1		SM 4500 CN I	Total/NA
Total Organic Carbon	24		1.0		mg/L	1		SM 5310C	Total/NA

Client Sample ID: Liftstation #2 — Lab Sample ID: 250-1108-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	110		10		mg/L	10		300.0	Total/NA
Cyanide, Total	2.4		0.050		mg/L	10		335.4	Total/NA
Fluoride	11		0.10		mg/L	1		9056A	Total/NA
Cyanide, Weak Acid Dissociable	0.014		0.0050		mg/L	1		SM 4500 CN I	Total/NA
Total Organic Carbon	28		1.0		mg/L	1		SM 5310C	Total/NA

Client Sample ID: Manhole #2 — Lab Sample ID: 250-1108-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	270		10		mg/L	10		300.0	Total/NA
Cyanide, Total	2.6		0.050		mg/L	10		335.4	Total/NA
Fluoride	140		5.0		mg/L	50		9056A	Total/NA
Cyanide, Weak Acid Dissociable	0.033		0.0050		mg/L	1		SM 4500 CN I	Total/NA
Total Organic Carbon	770		10		mg/L	10		SM 5310C	Total/NA

Client Sample ID: Manhole #4 — Lab Sample ID: 250-1108-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	110		10		mg/L	10		300.0	Total/NA
Cyanide, Total	3.0		0.050		mg/L	10		335.4	Total/NA
Fluoride	17		0.10		mg/L	1		9056A	Total/NA
Cyanide, Weak Acid Dissociable	0.018		0.0050		mg/L	1		SM 4500 CN I	Total/NA
Total Organic Carbon	7.3		1.0		mg/L	1		SM 5310C	Total/NA

General Chemistry

Client Sample ID: Liftstation #1
Date Collected: 03/22/12 09:01
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1108-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	110		10		mg/L			03/27/12 19:56	10
Cyanide, Total	2.1		0.050		mg/L		03/28/12 11:45	03/28/12 14:38	10
Fluoride	11		0.10		mg/L			04/03/12 18:05	1
Cyanide, Weak Acid Dissociable	0.015		0.0050		mg/L		03/29/12 09:40	03/29/12 11:42	1
Total Organic Carbon	24		1.0		mg/L			03/30/12 12:05	1

Client Sample ID: Liftstation #2
Date Collected: 03/22/12 09:12
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1108-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	110		10		mg/L			03/27/12 20:27	10
Cyanide, Total	2.4		0.050		mg/L		03/28/12 11:45	03/28/12 14:45	10
Fluoride	11		0.10		mg/L			04/03/12 18:21	1
Cyanide, Weak Acid Dissociable	0.014		0.0050		mg/L		03/29/12 09:40	03/29/12 10:49	1
Total Organic Carbon	28		1.0		mg/L			03/30/12 12:18	1

Client Sample ID: Manhole #2
Date Collected: 03/22/12 10:00
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1108-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	270		10		mg/L			03/27/12 21:13	10
Cyanide, Total	2.6		0.050		mg/L		03/28/12 11:45	03/28/12 14:46	10
Fluoride	140		5.0		mg/L			04/05/12 23:53	50
Cyanide, Weak Acid Dissociable	0.033		0.0050		mg/L		03/29/12 09:40	03/29/12 10:50	1
Total Organic Carbon	770		10		mg/L			03/30/12 15:27	10

Client Sample ID: Manhole #4
Date Collected: 03/22/12 09:44
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1108-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	110		10		mg/L			03/27/12 21:45	10
Cyanide, Total	3.0		0.050		mg/L		03/28/12 11:45	03/28/12 14:47	10
Fluoride	17		0.10		mg/L			04/03/12 19:27	1
Cyanide, Weak Acid Dissociable	0.018		0.0050		mg/L		03/29/12 09:40	03/29/12 10:51	1
Total Organic Carbon	7.3		1.0		mg/L			03/30/12 12:31	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 250-2840/6
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.0		mg/L			03/27/12 18:07	1

Lab Sample ID: LCS 250-2840/7
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	30.7		mg/L		102	90 - 110		

Lab Sample ID: 250-1022-H-1 MS ^100
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	ND		400	400		mg/L		100	80 - 120		

Lab Sample ID: 250-1022-H-1 MSD ^100
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	ND		400	405		mg/L		101	80 - 120	1	20

Lab Sample ID: 250-1109-A-1 MS
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	52		4.00	50.5	4	mg/L		-28	80 - 120		

Lab Sample ID: 250-1109-A-1 MSD
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	52		4.00	50.5	4	mg/L		-27	80 - 120	0	20

Lab Sample ID: 250-1022-H-1 DU ^100
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	ND			ND		mg/L				NC	20

Lab Sample ID: 250-1109-A-1 DU
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	52			51.5		mg/L				0.09	20

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 250-2851/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.0050		mg/L		03/28/12 11:45	03/28/12 14:33	1

Lab Sample ID: LCS 250-2851/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.200	0.199		mg/L		100	90 - 110

Lab Sample ID: 250-1108-1 MS — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	2.1		0.200	2.37	4	mg/L		137	75 - 125

Lab Sample ID: 250-1108-1 MSD — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	2.1		0.200	2.37	4	mg/L		133	75 - 125	0	20

Lab Sample ID: 250-1108-1 DU — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Total	2.1		2.18		mg/L		4	20

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 580-108586/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108586

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10		mg/L			04/03/12 13:42	1

Lab Sample ID: LCS 580-108586/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108586

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	2.00	2.14		mg/L		107	90 - 110

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 580-108586/5
Matrix: Water
Analysis Batch: 108586

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride			2.00	2.18		mg/L		109	90 - 110	2	15

Lab Sample ID: 580-31942-D-1 MS
Matrix: Water
Analysis Batch: 108586

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	0.50		16.0	18.8	F	mg/L		114	90 - 110		

Lab Sample ID: 580-31942-D-1 DU
Matrix: Water
Analysis Batch: 108586

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Fluoride	0.40		0.490		mg/L				20	10

Lab Sample ID: MB 580-108776/5
Matrix: Water
Analysis Batch: 108776

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10		mg/L			04/05/12 19:46	1

Lab Sample ID: LCS 580-108776/6
Matrix: Water
Analysis Batch: 108776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			2.00	2.02		mg/L		101	90 - 110		

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 250-2896/1-A
Matrix: Water
Analysis Batch: 2926

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 2896

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.0050		mg/L		03/29/12 09:40	03/29/12 11:31	1

Lab Sample ID: LCS 250-2896/2-A
Matrix: Water
Analysis Batch: 2926

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 2896

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Weak Acid Dissociable			0.200	0.201		mg/L		100	90 - 110		

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable (Continued)

Lab Sample ID: 250-1108-1 MS — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.015		0.200	0.125	F	mg/L		55	75 - 125

Lab Sample ID: 250-1108-1 MSD — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.015		0.200	0.150	F	mg/L		67	75 - 125	18	20

Lab Sample ID: 250-1108-1 DU — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.015		0.0130		mg/L		14	20

Method: SM 5310C - TOC

Lab Sample ID: MB 250-2996/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2996

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			03/30/12 10:56	1

Lab Sample ID: LCS 250-2996/9 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2996

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	20.0	18.7		mg/L		94	85 - 115

Lab Sample ID: 250-1108-1 MS — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2996

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	24		25.0	47.4		mg/L		96	75 - 125

Lab Sample ID: 250-1108-1 DU — **Client Sample ID: Liftstation #1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2996

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	24		23.2		mg/L		1	20

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1108-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	Alaska (UST)	State Program	10	UST-012
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	Federal		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586
TestAmerica Seattle	Alaska (UST)	State Program	10	UST-022
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana (UST)	State Program	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	Federal		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

250-1108

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name GP00677 0015 M1002

Project Location L.M.C. The Dalles, OR

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Dan Shaver

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Cyanide EPA 335.4 500 mL NaOH	Free (WAD) cyanide SM 4500 CN/E 500mL same bottle NaOH	TOC SM 5310C 250mL H2SO4	Sulfate EPA 300.0 250 mL unpreserved	Fluoride 9056 250mL unpreserved same bottle		Remarks	Total
				ANALYSIS / METHOD / SIZE							
Liftstation #1	L	3-22-12 0901		X	X	X	X	X			3
Liftstation #2	L	3-22-12 0912		X	X	X	X	X			3
Manhole #2	L	3-22-12 10:00		X	X	X	X	X			3
Manhole #4	L	3-22-12 09:44		X	X	X	X	X			3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 12

Relinquished by:	Organization: Arcadis	Date 3/26/12	Time 0830	Seal Intact? (Yes) No N/A
Received by: Same Day	Organization: Same Day	Date 3/26/12	Time 0530	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? (Yes) No N/A
Received by:	Organization: TAP	Date 3/26/12	Time 1100	

Special Instructions/Remarks: 5.4°C IR | P | loose

Delivery Method: ☐ In Person ☑ Common Carrier SDS (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1108-1

Login Number: 1108

List Number: 1

Creator: Morgan, Jessica

List Source: TestAmerica Portland

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	True	

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1108-1

Login Number: 1108
List Number: 1
Creator: Gamble, Cathy

List Source: TestAmerica Seattle
List Creation: 03/31/12 04:38 PM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

FIELD

All-Weather Spiral
No. 353

LMC - LCS projects
1/24/05 →
TMN

4 5/8" x 7" - 64 Pages

(32) 9/25/11

@ 1013 began to purge MW-36S
@ 1027 collected sample

@ 1042 began to purge MW-37S
@ 1059 collected sample. Dup as MW-100

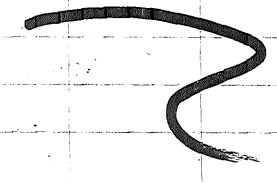
@ 11:21 began to purge MW-23S
@ 11:37 collected sample

@ 1155 began to purge MW-5S
@ 1214 collected sample

@ 1231 began to purge MW-22S
@ 1248 collected sample
@ 1300 collected Rinsate as Rinsate-1

packed samples for lab in cooler and ice, clean rental equipment and prepared for shipment.

@ 1610 left site



3/22/12 T. Nannini, A. Catlin (33)

The Dalles OR LMC Groundwater Sampling

Objective: Collect sample from RCRA and CERCLA monitoring wells.

Field equipment: Water level meter: Solinst model 101. pH, conductivity and temperature meter: YSI 556 MPS

Weather: sleet, cold mid 30°s

@ 0800 arrive at site.

Calibration:

Conductivity Standard 0.447 us/cm
Calibrated to 0.447 us/cm
Initial Read - 6.67

pH 7.00 - Calibrated to 7.00
4.01 - Initial Read - 4.44
Calibrated to - 4.01
10.01 - Initial Read - 10.56
Calibrated to - 10.08

(34) 3/22/12 T. Nannini A. Cattani

Decontamination Procedures: Prior to the beginning of any Fieldwork and after each use of any equipment that will be or has been in contact with the ground water, the Following procedures will be completed: ① initial rinse with deionized water ② spray and soak with deionized water and alconox soap mixture, ③ triple rinse with deionized water, ④ allow to air dry and/or pat dry with disposable paper towel.

@ 0847 Began to purge MW17S
@ 0920 collected sample MW17S

@ 0938 Began to purge MW35S
@ 1007 collected sample MW35S

@ 1027 Began to purge MW36S
@ 1107 collected sample MW36S

3/22/12 T. Nannini A. Cattani (35)

@ 1120 Began to purge MW37S
@ 1147 collected sample MW37S
2nd Field duplicate as MW-100

@ 1200 Began to purge MW23S
@ 1235 collected sample MW23S

@ 1248 Began to purge MW5S
@ 1322 collected sample MW5S

@ 1351 Began to purge MW22S
@ 1418 collected sample MW22S
@ 1430 collected rinsate as Rinsate-1

@ 1504 Began to purge MW29S
@ 1545 collected sample MW29S

@ 1603 Began to purge MW38S
@ 1626 collected sample MW38S

@ 1634 Began to purge MW6AA
@ 1706 collected sample MW6AA

(36) 3/23/12 T. Nannini A. Cattani

@ 0745 arrive at site and prepare for sampling event continued from 3/22/12. Process and procedures are followed as described in current SAP and on pages 33 and 34.

Weather: Mostly cloudy, breezy, 40's

calibrated Ultrameter using pH calibration solutions 7.00, 10.00 and 4.00 and using Conductivity solution 447.

@ 0814 Began to purge MW39S
@ 0908 well went dry

@ 0911 Began to purge MW12A
@ 0959 collected sample MW12A

@ 1005 Began to purge MW39S again
@ 1008 collected sample MW39S

@ 1018 Began to purge MW13A
@ 1113 collected sample MW13A

3/23/12 T. Nannini A. Cattani (37)

@ 1136 Began to purge MW40S
@ 1201 collected sample MW40S

@ 1214 Began to purge MW41S
@ 1245 collected sample MW41S

@ 1256 Began to purge MW7A
@ 1343 collected sample MW7A

@ 1409 Began to purge MW42S
@ 1520 collected sample MW42S and Field duplicate as MW200

@ 1538 Began to purge MW15S
@ 1607 collected sample MW15S

@ 1614 collected rinsate as Rinsate-2

@ 1720 Left the site.

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 7A

Page: 1 of 1

Date: 3/23/12

Start Time: 1256

Purging Device: Bladder pump

Sampler's Signature:

Well Casing Elevation: 132.70 ft.

Total Well Depth: 139.26 ft. [TOC]

Initial Depth to Water: 62.94 ft. [TOC]

Final Pump Intake Depth: 133.76 ft. [TOC]

Top of Screen: 129.26 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1258	63.21	15.1	279.6	8.02	0.2	0.1	0.2	
1303	63.17	15.3	282.2	7.87	1.5	0.12	0.2	
1308	62.97	15.2	284.4	7.91	2.5	0.2	0.2	
1313	63.15	15.1	286.6	7.90	3.75	0.3	0.2	
1318	62.97	15.2	287.0	7.88	5.0	0.4	0.2	
1323	63.10	14.9	288.9	7.88	7.0	0.5	0.2	
1328	63.07	15.2	288.6	7.85	8.5	0.6	0.25	
1333	62.98	15.0	289.6	7.86	9.75	0.7	0.2	
1338	63.05	15.0	291.1	7.85	11.0	0.9	0.2	
1343	63.11	15.1	291.5	7.81	12.25	1.0	0.2	Sample Collected

Water Column (ft): 70.32 Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 12.2

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AL

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 12A

Date: 3/23/12

Start Time: 0911

Purging Device: Bladder pump

Sampler's Signature: Thomas Nanni

Well Casing Elevation: 145.12 ft.

Total Well Depth: 134.13 ft. [TOC]

Initial Depth to Water: 76.21 ft. [TOC]

Final Pump Intake Depth: 128.93 ft. [TOC]

Top of Screen: 124. ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
0914	77.11	13.0	288.5	7.63	0.2	0.1	0.2	
0919	77.73	13.7	342.5	7.80	1.2	0.1	0.2	
0924	77.59	13.6	346.3	7.84	2.2	0.2	0.2	
0929	77.72	13.7	337.5	7.86	3.2	0.3	0.2	
0934	77.59	13.9	327.0	7.87	4.2	0.4	0.2	
0939	77.52	14.1	318.1	7.89	5.2	0.5	0.2	
0944	77.73	14.1	309.0	7.89	6.3	0.6	0.2	
0949	77.71	14.0	301.8	7.92	7.4	0.7	0.2	
0954	77.76	14.2	298.9	7.93	8.4	0.8	0.2	
0959	77.82	14.0	296.0	7.95	9.4	1.0	0.2	sample collected

Water Column (ft): 57.92 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 9.3

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS 569 6937

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 13A **Page:** 1 of 1

Date: 3/23/12 **Well Casing Elevation:** 143.71 ft.

Start Time: 1018 **Total Well Depth:** 134.75 ft. [TOC]

Purging Device: Bladder pump **Initial Depth to Water:** 74.49 ft. [TOC]

Sampler's Signature: [signature] **Final Pump Intake Depth:** 129.55 ft. [TOC]

Top of Screen: 124.75 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1023	74.51	13.4	230	7.97	0.2	0.1	0.2	
1028	74.52	13.9	228.6	8.01	1.5	0.1	0.2	
1033	74.48	14.0	225.4	8.05	2.5	0.2	0.2	
1038	74.51	14.6	223.9	8.07	3.25	0.3	0.2	
1043	74.49	14.3	225.2	8.09	4.00	0.4	0.2	
1048	74.48	14.2	223.8	8.09	5.0	0.5	0.2	
1053	74.52	14.3	225.9	8.12	6.0	0.6	0.2	
1058	74.55	14.3	224.3	8.12	7.25	0.7	0.2	
1103	74.59	14.4	224.7	8.12	8.00	0.8	0.2	
1108	74.48	14.4	224.4	8.12	9.00	0.9	0.2	
1113	74.48	14.3	223.7	8.13	9.75	1.1	0.2	sample collected

Water Column (ft): 60.26 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 9.6

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 15S

Page: 1 of 1

Date: 3/23/12

Start Time: 15:38

Purging Device: Bladder pump

Sampler's Signature: [signature]

Well Casing Elevation: 137.28 ft.

Total Well Depth: 53.45 ft. [TOC]

Initial Depth to Water: 27.88 ft. [TOC]

Final Pump Intake Depth: 48.45 ft. [TOC]

Top of Screen: 43.45 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
15:40	28.28	15.3	404.8	9.58	0.1	0.1	0.1	
15:45	28.81	15.1	407.8	9.74	1.1	0.1	0.2	
15:50	28.93	14.9	408.9	9.78	1.7	0.3	0.15	
15:55	29.03	14.8	407.3	9.83	2.5	0.4	0.15	
16:00	30.18	14.9	404.0	9.76	3.5	0.7	0.15	
16:05	30.35	14.9	402.5	9.69	4.0	0.8	0.15	
1607					4.2	1.1		sample collected

Water Column (ft): 25.57 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 4:1

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 29S

Page: 1 of 1

Date: 3/22/17

Start Time: 1504

Purging Device: Bladder Pump

Sampler's Signature:

Well Casing Elevation: 117.98 ft.

Total Well Depth: 25.70 ft. [TOC]

Initial Depth to Water: 11.27 ft. [TOC]

Final Pump Intake Depth: 21.70 ft. [TOC]

Top of Screen: 15.70 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
15:07	11.27	13.9	2143	7.27	0.5	0.2	0.16	
1512	11.26	13.2	1929	7.35	1.0	0.4	0.1	
1517	11.29	13.1	1666	7.37	2.0	0.9	0.2	
1522	11.28	13.0	1386	7.37	3.0	1.3	0.2	
1527	11.28	12.9	1185	7.41	3.9	1.7	0.2	
1532	11.29	12.9	1045	7.42	4.5	1.9	0.2	
1537	11.28	12.7	939.1	7.29	5.5	2.4	0.2	
1542	11.29	12.7	851.1	7.39	6.5	3.0	0.2	
1545	11.28	12.7	820.5	7.41	7.0	3.1	0.2	sample collected

Water Column (ft): 14.43 Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 2.3

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 38S

Page: 1 of 1

Date: 3/22/12

Start Time: 1603

Purging Device: Bladder pump

Sampler's Signature:

Well Casing Elevation: 132.98 ft.

Total Well Depth: 49.0 ft. [TOC]

Initial Depth to Water: 25.95 ft. [TOC]

Final Pump Intake Depth: 47.0 ft. [TOC]

Top of Screen: 39 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1606	27.49	13.9	460.9	8.02	<0.5	< 0.1	0.1	
1611	30.87	14.3	426.9	8.09	1.0	0.3	0.1	
1616	35.31	14.3	394.9	8.07	2.25	0.6	0.15	
1621	35.72	14.5	411.5	8.08	3.1	0.9	0.1	
1626	37.17	14.6	413.6	8.08	3.8	1.0	0.1	sample collected

Water Column (ft): 23.05 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 3.7

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500ml amber plastic bottle preserved with NaOH, 1-500ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 39S

Page: 1 of 2

Date: 3/23/12

Start Time: 0814

Purging Device: Bladder pump

Sampler's Signature: Thom Mann

Well Casing Elevation: 144.30 ft.

Total Well Depth: 55.0 ft. [TOC]

Initial Depth to Water: 35.29 ft. [TOC]

Final Pump Intake Depth: 50.0 ft. [TOC]

Top of Screen: 45 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
0816	37.32	9.8	182.6	7.26	0.1	<0.1	<0.1	
0821	39.31	11.5	290.1	7.92	0.5	0.2	<0.1	
0826	41.90	11.6	250.2	8.19	1.0	0.3	<0.1	
0831	43.71	11.3	215.1	8.09	1.25	0.4	<0.1	
0836	45.07	11.9	205.1	8.09	1.6	0.5	<0.1	
0841	46.61	12.6	184.5	7.97	1.75	0.5	<0.1	
0846	47.83	12.6	146.0	7.86	2.1	0.7	<0.1	
0851	48.27	12.1	110.3	7.83	2.5	0.8	<0.1	
0856	49.01	12.6	142.8	7.83	2.75	0.85	<0.1	
0901	49.47	12.6	185.2	8.11	3.1	0.9	<0.1	

Water Column (ft): 19.71 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 3.2

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500ml amber plastic bottle preserved with NaOH, 1-500ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

Well ID: [redacted] MW 395 Cont

Date: 3/23/12

LMC – The Dalles
The Dalles, Oregon

FIELD DATA LOG SHEET – PURGING

Start Time:	—	**Well Casing Elevation:**	— ft MSL
Purging Device:	Bladder pump	**Total Well Depth:**	— ft
Sampler's Signature:	—	**Initial Depth to Water:**	— ft
	—	**Final Pump Intake Depth:**	— ft

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
0906	50.19	12.5	203.4	8.24	3.5		< 0.1	
0908	—	—	—	—	—	—	—	DRY - Shutdown
1005					3.5		1.1	started backup
1008	50.22	13.2	214.1	8.25	3.8		1.2	collected sample

Water Column (ft): _____ Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): _____

Samples Collected: _____

Comments: _____

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 40S

Page: 1 of 1

Date: 3/23/12

Start Time: 1136

Purging Device: Bladder pump

Sampler's Signature: Thomas Nanni

Well Casing Elevation: 142.58 ft.

Total Well Depth: 67.65 ft. [TOC]

Initial Depth to Water: 50.34 ft. [TOC]

Final Pump Intake Depth: 64.00 ft. [TOC]

Top of Screen: 57.65 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1138	50.70	13.0	227.9	8.23	0.2	0.2	0.15	
1143	51.32	14.2	227.5	8.27	1.1	0.3	0.15	
1148	51.43	14.2	227.3	8.32	1.4	0.5	0.1	
1153	51.87	14.3	226.3	8.34	2.0	0.6	0.1	
1158	52.17	14.3	225.3	8.35	2.5	0.8	0.1	
1201	52.68	14.6	225.3	8.35	2.9	1.0	0.1	sample collected

Water Column (ft): 17.31 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 2.8

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 41S

Page: 1 of 1

Date: 3/23/11

Start Time: 12:14

Purging Device: Bladder pump

Sampler's Signature: Thom Nanni

Well Casing Elevation: 132.21 ft.

Total Well Depth: 46.90 ft. [TOC]

Initial Depth to Water: 36.12 ft. [TOC]

Final Pump Intake Depth: 44.00 ft. [TOC]

Top of Screen: 36.90 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
12:17	36.53	13.4	388.7	8.13	0.1	< 0.1	< 0.1	
1222	36.74	14.0	391.6	8.17	0.3	0.2	< 0.1	
1227	36.76	13.9	390.5	8.16	0.6	0.4	< 0.1	
1232	37.21	14.8	391.7	8.16	0.9	0.6	< 0.1	
1237	37.54	15.1	390.5	8.11	1.3	0.7	< 0.1	
1242	37.61	15.2	388.5	8.06	1.6	0.9	< 0.1	
1245	37.72	15.1	388.5	8.17	1.8	1.0	< 0.1	Sample collected

Water Column (ft): 10.78 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 1.7

Analysis: Total and free cyanide, fluoride and sulfate.

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved.

Decontamination Procedures: All decontamination procedures followed as outlined in the field logbook - acknowledge: TN/AC

Comments:

ARCADIS

LMC – The Dalles
The Dalles, Oregon
FIELD DATA LOG SHEET- PURGING

Well id: MW 42S

Page: 1 of 2

Date: 3/23/12

Start Time: 1409

Purging Device: peristalic pump

Sampler's Signature: [signature]

Well Casing Elevation: _____ ft. [MSL]

Total Well Depth: 50.00 ft. [TOC]

Initial Depth to Water: 8.07 ft. [TOC]

Final Pump Intake Depth: 42.00 ft. [TOC]

Top of Screen: 37.00 ft. [TOC]

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1415	11.02	13.9	301.8	7.84	0.4	<0.1	0.07	
1420	12.11	14.2	302.6	7.94	1.2	0.2	<0.1	
1425	13.41	13.8	301.6	7.96	1.6	0.25	<0.1	
1430	14.65	13.9	299.1	7.98	2.1	0.3	<0.1	
1435	15.42	13.9	297.9	7.99	2.6	0.4	<0.1	
1440	17.02	14.1	296.8	7.99	3.0	0.44	<0.1	
1445	18.31	14.0	295.1	7.97	3.5	0.5	<0.1	
1450	19.29	14.1	293.9	8.01	4.0	0.6	<0.1	
1455	20.24	14.5	292.4	8.01	4.5	0.7	<0.1	
1500	21.47	14.4	290.0	8.05	5.0	0.75	<0.1	

Water Column (ft): 41.93 **Casing Volume** (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): 6.7

Analysis: Total and Free cyanide, fluoride and sulfate

Sample Containers: 1-500 ml amber plastic bottle preserved with NaOH, 1-500 ml plastic bottle unpreserved

Decontamination Procedures: All decontaminated procedures followed as outlined in the Field logbook - acknowledge: TN/AC

Comments:

Well ID: ~~MW-5S~~ MW 42S cont

Date: 3/23/12

LMC – The Dalles
The Dalles, Oregon

FIELD DATA LOG SHEET – PURGING

Start Time: —

Purging Device: —

Sampler's Signature: —

—

Well Casing Elevation: — ft MSL

Total Well Depth: — ft

Initial Depth to Water: — ft

Final Pump Intake Depth: — ft

Time	Water Level (ft)	Temperature (°C)	Specific Conductance (µmhos/cm)	pH (standard units)	Gallons Purged	Casing Volumes Purged	Flow Rate (gpm)	Comments
1505	22.31	14.6	290.0	8.07	5.5		<0.1	
1510	23.33	14.7	289.2	8.08	6.0		<0.1	
1515	24.51	14.4	288.5	7.98	6.5		<0.1	
1520	25.17	14.5	288.2	8.04	7.0		<0.1	sample collected

Water Column (ft): — Casing Volume (0.16 gal/lin ft for 2" casing, 0.64 for 4", 1.47 for 6"): —

Samples Collected: —

Comments: Duplicate sample collected as MW-200

ARCADIS

CERCLA Leachate Collection System
Quarterly and Annual Post Closure Care Inspection
Lockheed Martin Corporation Site – The Dalles, Oregon

Date / Time: 12-16-11 / 13:00 Quarter: ✓

Inspected by: DAN SHAVER Signed: Dan Shaver

Quarterly:

	Yes	No	Remarks
LS #1: WL between floats	✓		
Pump pulled or checked		✓	
Alarm light tested	✓		
Electric cables good condition	✓		
Piping in good condition	✓		
LS #2: WL between floats	✓		
Pump pulled or checked		✓	
Alarm light tested	✓		
Electric cables good condition	✓		
Piping in good condition	✓		
LCS piping unobstructed (no biofouling)	✓		

Annually:

	Yes	No	Remarks
Double-wall pipe alarm tested			
Visual inspection of 300,000-gallon tank			
Visual inspection of 4,700-gallon tank			

General remarks and items requiring correction:

Inspection Requirements: Quarterly and Annually (see above)

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The Dalles

Data Review

THE DALLES, OREGON

Miscellaneous Analyses

SDG #250-1110-1

Analyses Performed By:
TestAmerica Laboratories
Portland, Oregon

Report: #16144R
Review Level: Tier II
Project: GP000677.0015.NB000

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #250-1110-1 for samples collected in association with the Dalles Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
					VOC	MET	MISC
MW-6AA_20120322	250-1110-1	Water	3/22/2012				X
MW-7A_20120323	250-1110-2	Water	3/23/2012				X
MW-12A_20120323	250-1110-3	Water	3/23/2012				X
MW-13A_20120323	250-1110-4	Water	3/23/2012				X
MW-15S_20120323	250-1110-5	Water	3/23/2012				X
MW-29S_20120322	250-1110-6	Water	3/22/2012				X
MW-38S_20120322	250-1110-7	Water	3/22/2012				X
MW-39S_20120323	250-1110-8	Water	3/23/2012				X
MW-40S_20120323	250-1110-9	Water	3/23/2012				X
MW-41S_20120323	250-1110-10	Water	3/23/2012				X
MW-42S_20120323	250-1110-11	Water	3/23/2012				X
MW-200_20120323	250-1110-12	Water	3/23/2012	MW-42S_20120323			X
RINSATE-2_20120323	250-1110-13	Water	3/23/2012				X

Note:

1. Miscellaneous analysis includes cyanide (Total and Weak Acid Dissociable), fluoride and sulfate analysis.
2. The matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample location RINSATE-2_20120323 for sulfate; MW-39S_20120323 for cyanide, total; MW-13A_20120323 for Cyanide, Weak Acid Dissociable; MW-42S_20120323 for fluoride analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Sample receipt condition		X		X	
Requested analyses and sample results		X		X	
Collection Technique (grab, composite, etc.)		X		X	
Methods of analysis		X		X	
Reporting limits		X		X	
Sample collection date		X		X	
Laboratory sample received date		X		X	
Sample preservation verification (as applicable)		X		X	
Sample preparation/extraction/analysis dates		X		X	
Fully executed Chain-of-Custody (COC) form completed		X		X	
Narrative summary of QA or sample problems provided		X		X	
Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

FIELD DATA PACKAGE DOCUMENTATION

Field Sampling Log*	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sampling dates noted		X		X	
2. Sampling team indicated		X		X	
3. Sampling identification traceable to location collected		X		X	
4. Sample location		X		X	
5. Sample depth for water		X		X	
6. Collection technique (bailer, pump, etc.)		X		X	
7. Field sample preparation techniques		X		X	
8. Sample type (grab, composite)		X		X	
9. Sample container type		X		X	
10. Preservation methods		X		X	
11. Chain-of-Custody form completed		X		X	
12. Required analytical methods requested		X		X	
13. Field (water and soil) Sample Logs completed properly and signed		X		X	
14. Number and type of field QC samples collected (blanks, replicates, splits, etc.)		X		X	
15. Field equipment calibration		X		X	
16. Field equipment decontamination		X		X	
17. Field parameter data		X		X	
18. Sample shipping		X		X	
19. Laboratory Task Order		X		X	

QC - Quality Control
*Field Sampling Logs = Water and/or Soil/Sediment Sampling Logs

Comments:

All field data documentation (Water Sampling Logs and Daily Logs) was reviewed for the above referenced sampling event. Performance was acceptable with no exceptions.

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method SW-846 Methods 9056, EPA 300.0, 335.4, and SM 4500CN-I,E. Data were reviewed in accordance with USEPA National Functional Guidelines of July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

    U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

    B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

    E The reported value is estimated due to the presence of interference.

    N Spiked sample recovery is not within control limits.

    * Duplicate analysis is not within control limits.

- Validation Qualifiers

    J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

    UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

    UB Analyte considered non-detect at the listed value due to associated blank contamination.

    R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SM 4500CN-C,I,E (Weak Acid Dissociable Cyanide)	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of greater than 12.
	Soil		Cool to 4°C±2°C.
EPA 335.4 (Cyanide, Total)	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of greater than 12.
	Soil		Cool to 4°C±2°C.
EPA 300.0 (Sulfate)	Water	28 days from collection to analysis	Cool to 4°C±2°C.
SW-846 9056 (Fluoride)	Water	28 days from collection to analysis	Cool to 4°C±2°C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following

analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
MW-13A_20120323	Cyanide, Weak Acid Dissociable	56%	86%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The MS/MSD was performed in addition of the laboratory duplicate analysis. Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Analyte
MW-13A_20120323	Cyanide, Weak Acid Dissociable

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices and 100% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
MW-42S_20120323/ MW-200_20120323	Cyanide	0.287	0.274	4.6%
	Fluoride (F-, Anion)	0.67	0.67	0.0%
	Sulfate	14.8	14.8	0.0%

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries results within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 300.0 and SM 4500CN-C,E	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

%R - percent recovery, RPD - relative percent difference,
%D – difference

VALIDATION PERFORMED BY: Todd Church

SIGNATURE: 

DATE: April 26, 2012

PEER REVIEW BY: Dennis Capria

DATE: May 7, 2012

CORRECTED SAMPLE ANALYSIS DATA SHEETS AND COCs

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

250-1110

Project Number/Name GP000677.0015

Project Location The Dalles OR/CERCLA

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Thomas Nannini (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Sulfate USEPA 300.0	Fluoride SW-846-9056	Total Cyanide, USEPA 335.4	Free Cyanide (WAD) SM 4500-CN-I/E/USEPA 335.4/M			Remarks	Total
MW-6AA	L	3/22/12 1706		X	X	X	X				2
MW-7A	L	3/23/12 1343		X	X	X	X				2
MW-12A	L	3/23/12 0911		X	X	X	X				2
MW-13A	L	3/23/12 1113		X	X	X	X				2
MW-15S	L	3/23/12 1107		X	X	X	X				2
MW-29S	L	3/22/12 1545		X	X	X	X				2
MW-38S	L	3/22/12 1621		X	X	X	X				2
MW-39S	L	3/23/12 1008		X	X	X	X				2
MW-40S	L	3/23/12 1201		X	X	X	X				2
MW-41S	L	3/23/12 1245		X	X	X	X				2
MW-42S	L	3/23/12 1330		X	X	X	X				2
MW-200	L	3/23/12 -		X	X	X	X				2
Rinsate-2	L	3/23/12 1614		X	X	X	X				2
	X										
	X										

Total No. of Bottles/Containers: 36

Sample Matrix: L = Liquid; S = Solid; A = Air

					Seal Intact?
Relinquished by:	Organization: ARCADIS	Date 3/26/12	Time 08:30		Yes No N/A
Received by: Same Day	Organization: Same Day	Date 3/26/12	Time 0830		
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization: TAP	Date 3/26/12	Time 1100		Yes No N/A

Special Instructions/Remarks:

EDDs Requested

Delivery Method: ☐ In Person ☑ Common Carrier Same Day (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

16 | Digi #1 | Horse

AG 05-12/01

General Chemistry

Client Sample ID: MW-6AA
Date Collected: 03/22/12 17:06
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	33.8		1.00		mg/L			03/28/12 02:09	1
Cyanide, Total	0.548		0.0500		mg/L		03/28/12 11:45	03/28/12 14:49	10
Cyanide, Weak Acid Dissociable	ND	J	0.00500		mg/L		03/29/12 09:40	03/29/12 11:07	1
Fluoride	0.640		0.100		mg/L			04/05/12 15:08	1

Client Sample ID: MW-7A
Date Collected: 03/23/12 13:43
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	16.2		1.00		mg/L			03/28/12 02:25	1
Cyanide, Total	0.234		0.00500		mg/L		03/28/12 11:45	03/28/12 14:50	1
Cyanide, Weak Acid Dissociable	ND	J	0.00500		mg/L		03/29/12 09:40	03/29/12 11:08	1
Fluoride	0.620		0.100		mg/L			04/05/12 15:24	1

Client Sample ID: MW-12A
Date Collected: 03/23/12 09:11
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	24.2		1.00		mg/L			03/28/12 02:40	1
Cyanide, Total	0.0715		0.00500		mg/L		03/28/12 11:45	03/28/12 14:51	1
Cyanide, Weak Acid Dissociable	ND	J	0.00500		mg/L		03/29/12 09:40	03/29/12 11:09	1
Fluoride	0.610		0.100		mg/L			04/05/12 15:40	1

Client Sample ID: MW-13A
Date Collected: 03/23/12 11:13
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	9.46		1.00		mg/L			03/28/12 03:27	1
Cyanide, Total	0.0111		0.00500		mg/L		03/28/12 11:45	03/28/12 14:52	1
Cyanide, Weak Acid Dissociable	ND	J	0.00500		mg/L		04/02/12 11:27	04/03/12 13:32	1
Fluoride	0.540		0.100		mg/L			04/05/12 15:57	1

Client Sample ID: MW-15S
Date Collected: 03/23/12 16:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	135		10.0		mg/L			03/28/12 16:15	10
Cyanide, Total	2.48		0.0500		mg/L		03/28/12 11:45	03/28/12 14:53	10
Cyanide, Weak Acid Dissociable	0.0128	J	0.00500		mg/L		04/02/12 11:27	04/03/12 13:34	1
Fluoride	1.00		0.100		mg/L			04/05/12 16:13	1

Client Sample ID: MW-29S
Date Collected: 03/22/12 15:45
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	238		10.0		mg/L			03/28/12 16:30	10
Cyanide, Total	ND		0.00500		mg/L		03/28/12 11:45	03/28/12 14:54	1
Cyanide, Weak Acid Dissociable	ND	J	0.00500		mg/L		04/02/12 11:27	04/03/12 12:39	1
Fluoride	2.92		0.100		mg/L			04/05/12 16:30	1

General Chemistry

Client Sample ID: MW-38S
Date Collected: 03/22/12 16:26
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	32.4		1.00		mg/L			03/28/12 18:19	1
Cyanide, Total	0.360		0.00500		mg/L		03/28/12 11:45	03/28/12 15:01	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:40	1
Fluoride	4.26		0.200		mg/L			04/06/12 12:00	2

Client Sample ID: MW-39S
Date Collected: 03/23/12 10:08
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.86		1.00		mg/L			03/28/12 18:35	1
Cyanide, Total	0.0109		0.00500		mg/L		03/28/12 12:25	03/28/12 14:14	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:42	1
Fluoride	0.520		0.100		mg/L			04/05/12 17:02	1

Client Sample ID: MW-40S
Date Collected: 03/23/12 12:01
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	10.1		1.00		mg/L			03/28/12 18:51	1
Cyanide, Total	0.181		0.00500		mg/L		03/28/12 12:25	03/28/12 14:15	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:43	1
Fluoride	0.530		0.100		mg/L			04/05/12 17:19	1

Client Sample ID: MW-41S
Date Collected: 03/23/12 12:45
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	74.1		1.00		mg/L			03/28/12 19:06	1
Cyanide, Total	0.395		0.00500		mg/L		03/28/12 12:25	03/28/12 14:16	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:44	1
Fluoride	0.300		0.100		mg/L			04/05/12 17:35	1

Client Sample ID: MW-42S
Date Collected: 03/23/12 13:20
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14.8		1.00		mg/L			03/28/12 19:22	1
Cyanide, Total	0.287		0.00500		mg/L		03/28/12 12:25	03/28/12 14:17	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:45	1
Fluoride	0.670		0.100		mg/L			04/05/12 18:24	1

Client Sample ID: MW-200
Date Collected: 03/23/12 00:00
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14.8		1.00		mg/L			03/28/12 19:37	1
Cyanide, Total	0.274		0.00500		mg/L		03/28/12 12:25	03/28/12 14:19	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 12:46	1
Fluoride	0.670		0.100		mg/L			04/05/12 19:14	1

General Chemistry

Client Sample ID: Rinsate-2
Date Collected: 03/23/12 16:14
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 19:53	1
Cyanide, Total	ND		0.00500		mg/L		03/28/12 12:25	03/28/12 14:20	1
Cyanide, Weak Acid Dissociable	ND	UJ	0.00500		mg/L		04/02/12 11:27	04/03/12 13:35	1
Fluoride	ND		0.100		mg/L			04/05/12 19:30	1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503)906-9200

TestAmerica Job ID: 250-1110-1
Client Project/Site: Arcadis-Montana--The Dalles
Revision: 1

For:
ARCADIS U.S., Inc.
1610 B Street
Helena, Montana 59601

Attn: Mike Risher

Vanessa Frahs

Authorized for release by:
4/14/2012 11:11:29 AM

Vanessa Frahs
Project Manager I
vanessa.frahs@testamericainc.com

Table of Contents

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
250-1110-1	MW-6AA	Water	03/22/12 17:06	03/26/12 11:00
250-1110-2	MW-7A	Water	03/23/12 13:43	03/26/12 11:00
250-1110-3	MW-12A	Water	03/23/12 09:11	03/26/12 11:00
250-1110-4	MW-13A	Water	03/23/12 11:13	03/26/12 11:00
250-1110-5	MW-15S	Water	03/23/12 16:07	03/26/12 11:00
250-1110-6	MW-29S	Water	03/22/12 15:45	03/26/12 11:00
250-1110-7	MW-38S	Water	03/22/12 16:26	03/26/12 11:00
250-1110-8	MW-39S	Water	03/23/12 10:08	03/26/12 11:00
250-1110-9	MW-40S	Water	03/23/12 12:01	03/26/12 11:00
250-1110-10	MW-41S	Water	03/23/12 12:45	03/26/12 11:00
250-1110-11	MW-42S	Water	03/23/12 13:20	03/26/12 11:00
250-1110-12	MW-200	Water	03/23/12 00:00	03/26/12 11:00
250-1110-13	Rinsate-2	Water	03/23/12 16:14	03/26/12 11:00

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Job ID: 250-1110-1

Laboratory: TestAmerica Portland

Narrative

Job Narrative
250-1110-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
No analytical or quality issues were noted.

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS or MSD exceeds the control limits
F	RPD of the MS and MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Client Sample ID: MW-6AA — Lab Sample ID: 250-1110-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	33.8		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.548		0.0500		mg/L	10		335.4	Total/NA
Fluoride	0.640		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-7A — Lab Sample ID: 250-1110-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	16.2		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.234		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.620		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-12A — Lab Sample ID: 250-1110-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	24.2		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.0715		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.610		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-13A — Lab Sample ID: 250-1110-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	9.46		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.0111		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.540		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-15S — Lab Sample ID: 250-1110-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	135		10.0		mg/L	10		300.0	Total/NA
Cyanide, Total	2.48		0.0500		mg/L	10		335.4	Total/NA
Cyanide, Weak Acid Dissociable	0.0128		0.00500		mg/L	1		4500 CN I,E	Total/NA
Fluoride	1.00		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-29S — Lab Sample ID: 250-1110-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	238		10.0		mg/L	10		300.0	Total/NA
Fluoride	2.92		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-38S — Lab Sample ID: 250-1110-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	32.4		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.360		0.00500		mg/L	1		335.4	Total/NA
Fluoride	4.26		0.200		mg/L	2		9056	Total/NA

Client Sample ID: MW-39S — Lab Sample ID: 250-1110-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	6.86		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.0109		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.520		0.100		mg/L	1		9056	Total/NA

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Client Sample ID: MW-40S — Lab Sample ID: 250-1110-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	10.1		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.181		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.530		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-41S — Lab Sample ID: 250-1110-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	74.1		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.395		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.300		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-42S — Lab Sample ID: 250-1110-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	14.8		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.287		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.670		0.100		mg/L	1		9056	Total/NA

Client Sample ID: MW-200 — Lab Sample ID: 250-1110-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	14.8		1.00		mg/L	1		300.0	Total/NA
Cyanide, Total	0.274		0.00500		mg/L	1		335.4	Total/NA
Fluoride	0.670		0.100		mg/L	1		9056	Total/NA

Client Sample ID: Rinsate-2 — Lab Sample ID: 250-1110-13

No Detections

General Chemistry

Client Sample ID: MW-6AA
Date Collected: 03/22/12 17:06
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**33.8**		1.00		mg/L			03/28/12 02:09	1
Cyanide, Total	**0.548**		0.0500		mg/L		03/28/12 11:45	03/28/12 14:49	10
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:07	1
Fluoride	**0.640**		0.100		mg/L			04/05/12 15:08	1

Client Sample ID: MW-7A
Date Collected: 03/23/12 13:43
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**16.2**		1.00		mg/L			03/28/12 02:25	1
Cyanide, Total	**0.234**		0.00500		mg/L		03/28/12 11:45	03/28/12 14:50	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:08	1
Fluoride	**0.620**		0.100		mg/L			04/05/12 15:24	1

Client Sample ID: MW-12A
Date Collected: 03/23/12 09:11
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**24.2**		1.00		mg/L			03/28/12 02:40	1
Cyanide, Total	**0.0715**		0.00500		mg/L		03/28/12 11:45	03/28/12 14:51	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:09	1
Fluoride	**0.610**		0.100		mg/L			04/05/12 15:40	1

Client Sample ID: MW-13A
Date Collected: 03/23/12 11:13
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**9.46**		1.00		mg/L			03/28/12 03:27	1
Cyanide, Total	**0.0111**		0.00500		mg/L		03/28/12 11:45	03/28/12 14:52	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 13:32	1
Fluoride	**0.540**		0.100		mg/L			04/05/12 15:57	1

Client Sample ID: MW-15S
Date Collected: 03/23/12 16:07
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**135**		10.0		mg/L			03/28/12 16:15	10
Cyanide, Total	**2.48**		0.0500		mg/L		03/28/12 11:45	03/28/12 14:53	10
Cyanide, Weak Acid Dissociable	**0.0128**		0.00500		mg/L		04/02/12 11:27	04/03/12 13:34	1
Fluoride	**1.00**		0.100		mg/L			04/05/12 16:13	1

Client Sample ID: MW-29S
Date Collected: 03/22/12 15:45
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**238**		10.0		mg/L			03/28/12 16:30	10
Cyanide, Total	ND		0.00500		mg/L		03/28/12 11:45	03/28/12 14:54	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:39	1
Fluoride	**2.92**		0.100		mg/L			04/05/12 16:30	1

General Chemistry

Client Sample ID: MW-38S
Date Collected: 03/22/12 16:26
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	32.4		1.00		mg/L			03/28/12 18:19	1
Cyanide, Total	0.360		0.00500		mg/L		03/28/12 11:45	03/28/12 15:01	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:40	1
Fluoride	4.26		0.200		mg/L			04/06/12 12:00	2

Client Sample ID: MW-39S
Date Collected: 03/23/12 10:08
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.86		1.00		mg/L			03/28/12 18:35	1
Cyanide, Total	0.0109		0.00500		mg/L		03/28/12 12:25	03/28/12 14:14	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:42	1
Fluoride	0.520		0.100		mg/L			04/05/12 17:02	1

Client Sample ID: MW-40S
Date Collected: 03/23/12 12:01
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	10.1		1.00		mg/L			03/28/12 18:51	1
Cyanide, Total	0.181		0.00500		mg/L		03/28/12 12:25	03/28/12 14:15	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:43	1
Fluoride	0.530		0.100		mg/L			04/05/12 17:19	1

Client Sample ID: MW-41S
Date Collected: 03/23/12 12:45
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	74.1		1.00		mg/L			03/28/12 19:06	1
Cyanide, Total	0.395		0.00500		mg/L		03/28/12 12:25	03/28/12 14:16	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:44	1
Fluoride	0.300		0.100		mg/L			04/05/12 17:35	1

Client Sample ID: MW-42S
Date Collected: 03/23/12 13:20
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14.8		1.00		mg/L			03/28/12 19:22	1
Cyanide, Total	0.287		0.00500		mg/L		03/28/12 12:25	03/28/12 14:17	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:45	1
Fluoride	0.670		0.100		mg/L			04/05/12 18:24	1

Client Sample ID: MW-200
Date Collected: 03/23/12 00:00
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14.8		1.00		mg/L			03/28/12 19:37	1
Cyanide, Total	0.274		0.00500		mg/L		03/28/12 12:25	03/28/12 14:19	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 12:46	1
Fluoride	0.670		0.100		mg/L			04/05/12 19:14	1

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

General Chemistry

Client Sample ID: Rinsate-2
Date Collected: 03/23/12 16:14
Date Received: 03/26/12 11:00

Lab Sample ID: 250-1110-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 19:53	1
Cyanide, Total	ND		0.00500		mg/L		03/28/12 12:25	03/28/12 14:20	1
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 13:35	1
Fluoride	ND		0.100		mg/L			04/05/12 19:30	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 250-2840/6
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/27/12 18:07	1

Lab Sample ID: LCS 250-2840/7
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	30.74		mg/L		102	90 - 110		

Lab Sample ID: 250-1109-A-1 MSD
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	51.6		4.00	50.49	4	mg/L		-27	80 - 120	0	20

Lab Sample ID: 250-1109-A-9 MS
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	ND		4.00	3.927		mg/L		98	80 - 120		

Lab Sample ID: 250-1109-A-9 DU
Matrix: Water
Analysis Batch: 2840

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	ND		ND		mg/L		NC	20

Lab Sample ID: MB 250-2892/3
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.00		mg/L			03/28/12 15:12	1

Lab Sample ID: LCS 250-2892/4
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			30.0	30.59		mg/L		102	90 - 110		

Lab Sample ID: 250-1110-13 MS
Matrix: Water
Analysis Batch: 2892

Client Sample ID: Rinsate-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	ND		4.00	3.942		mg/L		99	80 - 120		

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 250-1162-A-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2892

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	19.0		4.00	21.18	4	mg/L		55	80 - 120	0	20

Lab Sample ID: 250-1162-A-2 DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2892

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	19.0		19.00		mg/L		0.1	20

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 250-2851/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.00500		mg/L		03/28/12 11:45	03/28/12 14:33	1

Lab Sample ID: LCS 250-2851/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.200	0.1994		mg/L		100	90 - 110

Lab Sample ID: 250-1108-A-1-B MS ^10 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	2.10		0.200	2.374	4	mg/L		137	75 - 125

Lab Sample ID: 250-1108-A-1-C MSD ^10 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	2.10		0.200	2.367	4	mg/L		133	75 - 125	0	20

Lab Sample ID: 250-1108-A-1-A DU ^10 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2851**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Total	2.10		2.184		mg/L		4	20

Method: 335.4 - Cyanide, Total (Continued)

Lab Sample ID: MB 250-2852/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2852**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.00500		mg/L		03/28/12 12:25	03/28/12 15:02	1

Lab Sample ID: LCS 250-2852/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2852**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.200	0.2009		mg/L		100	90 - 110

Lab Sample ID: 250-1110-8 MS — **Client Sample ID: MW-39S**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2852**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0109		0.200	0.2099		mg/L		100	75 - 125

Lab Sample ID: 250-1110-8 MSD — **Client Sample ID: MW-39S**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2852**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0109		0.200	0.2098		mg/L		99	75 - 125	0	20

Lab Sample ID: 250-1110-8 DU — **Client Sample ID: MW-39S**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2920 — **Prep Batch: 2852**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Total	0.0109		0.01160		mg/L		6	20

Method: 4500 CN I,E - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 250-2896/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		03/29/12 09:40	03/29/12 11:31	1

Lab Sample ID: LCS 250-2896/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 2926 — **Prep Batch: 2896**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.200	0.2005		mg/L		100	90 - 110

Method: 4500 CN I,E - Cyanide, Weak Acid Dissociable (Continued)

Lab Sample ID: 250-1108-A-1-E DU
Matrix: Water
Analysis Batch: 2926

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 2896

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	0.0150		0.01300		mg/L		14	20

Lab Sample ID: MB 250-3017/1-A
Matrix: Water
Analysis Batch: 3148

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3017

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.00500		mg/L		04/02/12 11:27	04/03/12 13:22	1

Lab Sample ID: LCS 250-3017/2-A
Matrix: Water
Analysis Batch: 3148

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3017

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.200	0.1972		mg/L		99	90 - 110

Lab Sample ID: 250-1110-4 MS
Matrix: Water
Analysis Batch: 3148

Client Sample ID: MW-13A
Prep Type: Total/NA
Prep Batch: 3017

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	ND		0.200	0.1129	F	mg/L		56	75 - 125

Lab Sample ID: 250-1110-4 MSD
Matrix: Water
Analysis Batch: 3148

Client Sample ID: MW-13A
Prep Type: Total/NA
Prep Batch: 3017

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	ND		0.200	0.1726	F	mg/L		86	75 - 125	42	20

Lab Sample ID: 250-1110-4 DU
Matrix: Water
Analysis Batch: 3148

Client Sample ID: MW-13A
Prep Type: Total/NA
Prep Batch: 3017

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	ND		ND		mg/L		NC	20

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: MB 580-108774/3
Matrix: Water
Analysis Batch: 108774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.100		mg/L			04/05/12 12:07	1

Method: 9056 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 580-108774/4
Matrix: Water
Analysis Batch: 108774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			2.00	2.040		mg/L		102	90 - 110		

Lab Sample ID: 250-1110-11 MS
Matrix: Water
Analysis Batch: 108774

Client Sample ID: MW-42S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	0.670		16.0	17.35		mg/L		104	90 - 110		

Lab Sample ID: 580-32171-A-1 MSD
Matrix: Water
Analysis Batch: 108774

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.440		16.0	16.80		mg/L		102	90 - 110	2	15

Lab Sample ID: 250-1110-11 DU
Matrix: Water
Analysis Batch: 108774

Client Sample ID: MW-42S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Fluoride	0.670			0.6700		mg/L				0	10

Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Arcadis-Montana--The Dalles

TestAmerica Job ID: 250-1110-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Portland	Alaska	State Program	10	OR00040
TestAmerica Portland	Alaska (UST)	State Program	10	UST-012
TestAmerica Portland	California	State Program	9	2597
TestAmerica Portland	Oregon	NELAC	10	OR100021
TestAmerica Portland	USDA	Federal		P330-11-00092
TestAmerica Portland	Washington	State Program	10	C586
TestAmerica Seattle	Alaska (UST)	State Program	10	UST-022
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana (UST)	State Program	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	Federal		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

250-1110

Project Number/Name GP000677.0015

Project Location The Dalles OR/CERCLA

Laboratory Test America

Project Manager Mike Risher

Sampler(s)/Affiliation Thomas Nannini (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Sulfate USEPA 300.0	Fluoride SW-846-9056	Total Cyanide, USEPA 335.4	Free Cyanide (WAD) SM 4500-CN-I/E/USEPA 335.4/M			Remarks	Total
MW-6AA	L	3/22/12 1706		X	X	X	X				2
MW-7A	L	3/23/12 1343		X	X	X	X				2
MW-12A	L	3/23/12 0911		X	X	X	X				2
MW-13A	L	3/23/12 1113		X	X	X	X				2
MW-15S	L	3/23/12 1107		X	X	X	X				2
MW-29S	L	3/22/12 1545		X	X	X	X				2
MW-38S	L	3/22/12 1621		X	X	X	X				2
MW-39S	L	3/23/12 1008		X	X	X	X				2
MW-40S	L	3/23/12 1201		X	X	X	X				2
MW-41S	L	3/23/12 1245		X	X	X	X				2
MW-42S	L	3/23/12 1330		X	X	X	X				2
MW-200	L	3/23/12 -		X	X	X	X				2
Rinsate-2	L	3/23/12 1614		X	X	X	X				2
	X										
	X										

Total No. of Bottles/Containers: 36

Sample Matrix: L = Liquid; S = Solid; A = Air

					Seal Intact?
Relinquished by:	Organization: ARCADIS	Date 3/26/12	Time 08:30		Yes No N/A
Received by: Same Day	Organization: Same Day	Date 3/26/12	Time 0830		
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization: TAP	Date 3/26/12	Time 1100		Yes No N/A

Special Instructions/Remarks:

EDDs Requested

Delivery Method: ☐ In Person ☑ Common Carrier Same Day (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

16 | Digi #1 | Horse

AG 05-12/01

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1110-1

Login Number: 1110

List Source: TestAmerica Portland

List Number: 1

Creator: Morgan, Jessica

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	True	

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 250-1110-1

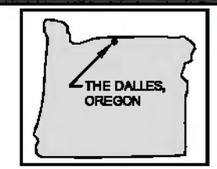
Login Number: 1110
List Number: 1
Creator: Gamble, Cathy

List Source: TestAmerica Seattle
List Creation: 03/31/12 04:39 PM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LEGEND

- MW-41S — CERCLA LANDFILL MONITORING WELL LOCATION
- MW-37S — RCRA LANDFILL MONITORING WELL LOCATION
- LOCKHEED MARTIN CORPORATION OWNERSHIP



N

0 350 700 1050

APPROXIMATE SCALE IN FEET
1" = 700'

Drafter	M. HOEFER
Project Manager	K.W. SMITH
Task Manager	M. RISHER
Technical Review	M. RISHER / KW SMITH

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LOCKHEED MARTIN CORPORATION
SITE LAYOUT - FACILITIES AND PROJECT AREAS

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number	MH000986.0001
Drawing Date	12/03/10
Figure	1

Acad Version : R17.0s (LMS Tech) Date\Time : Fri, 03 Dec 2010 – 9:51am Current Plotstyle : ByColor
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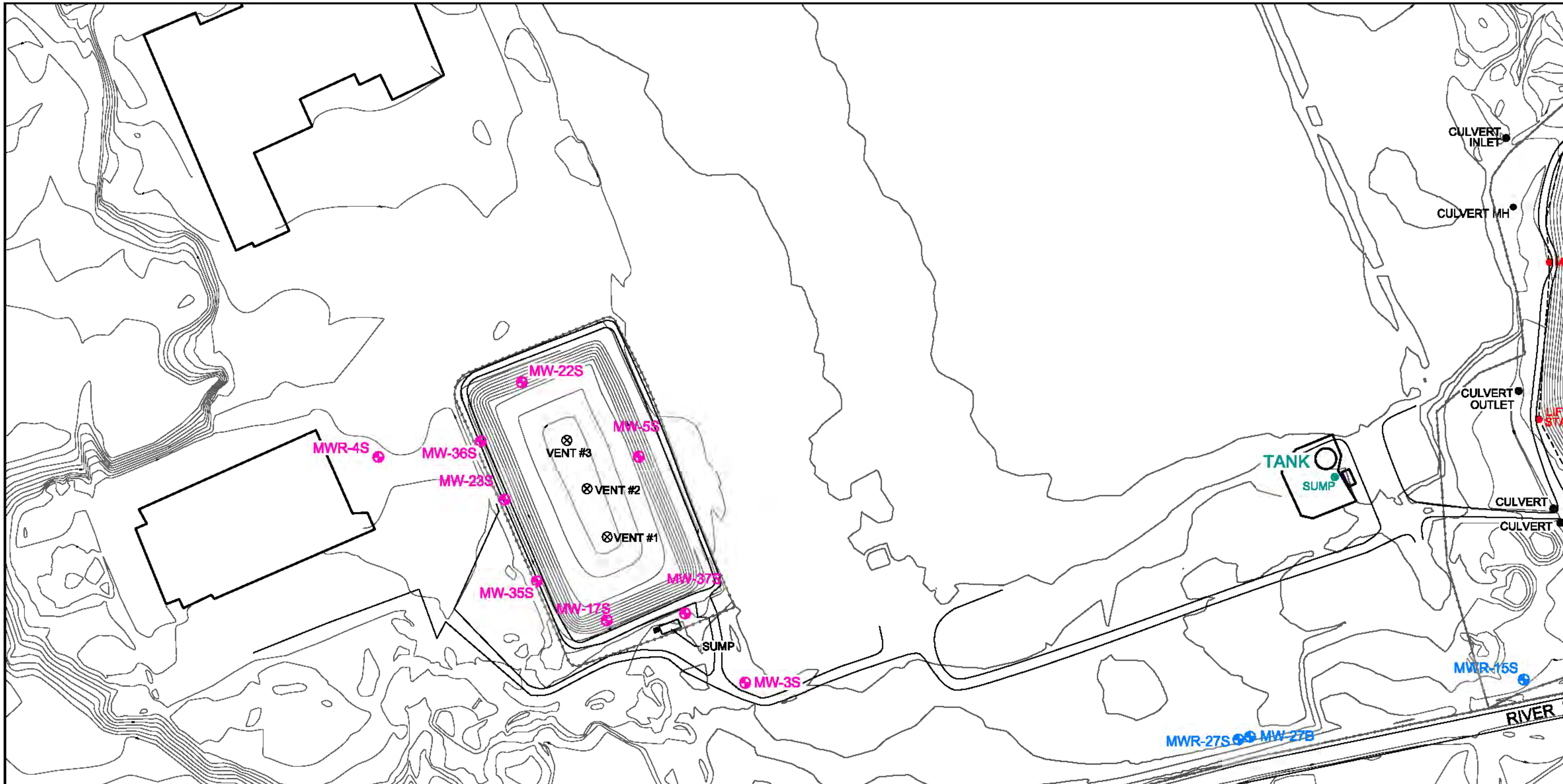

LEGEND

MW-41S — CERCLA LANDFILL MONITORING WELL LOCATION

MW-37S — RCRA LANDFILL MONITORING WELL LOCATION

MH #4 — MANHOLE

N

0 100' 200' 300'

APPROXIMATE SCALE IN FEET
1" = 200'

Drafter	M. HOEFER
Project Manager	K.W. SMITH
Task Manager	M. RISHER
Technical Review	M. RISHER / K.W. SMITH

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RCRA LANDFILL

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number	GP000677.0013
Drawing Date	05/26/10
Figure	2a

Acad Version : R17.0s (LMS Tech) Date\Time : Wed, 09 Jun 2010 — 3:35pm Current_Plotstyle : ByColor
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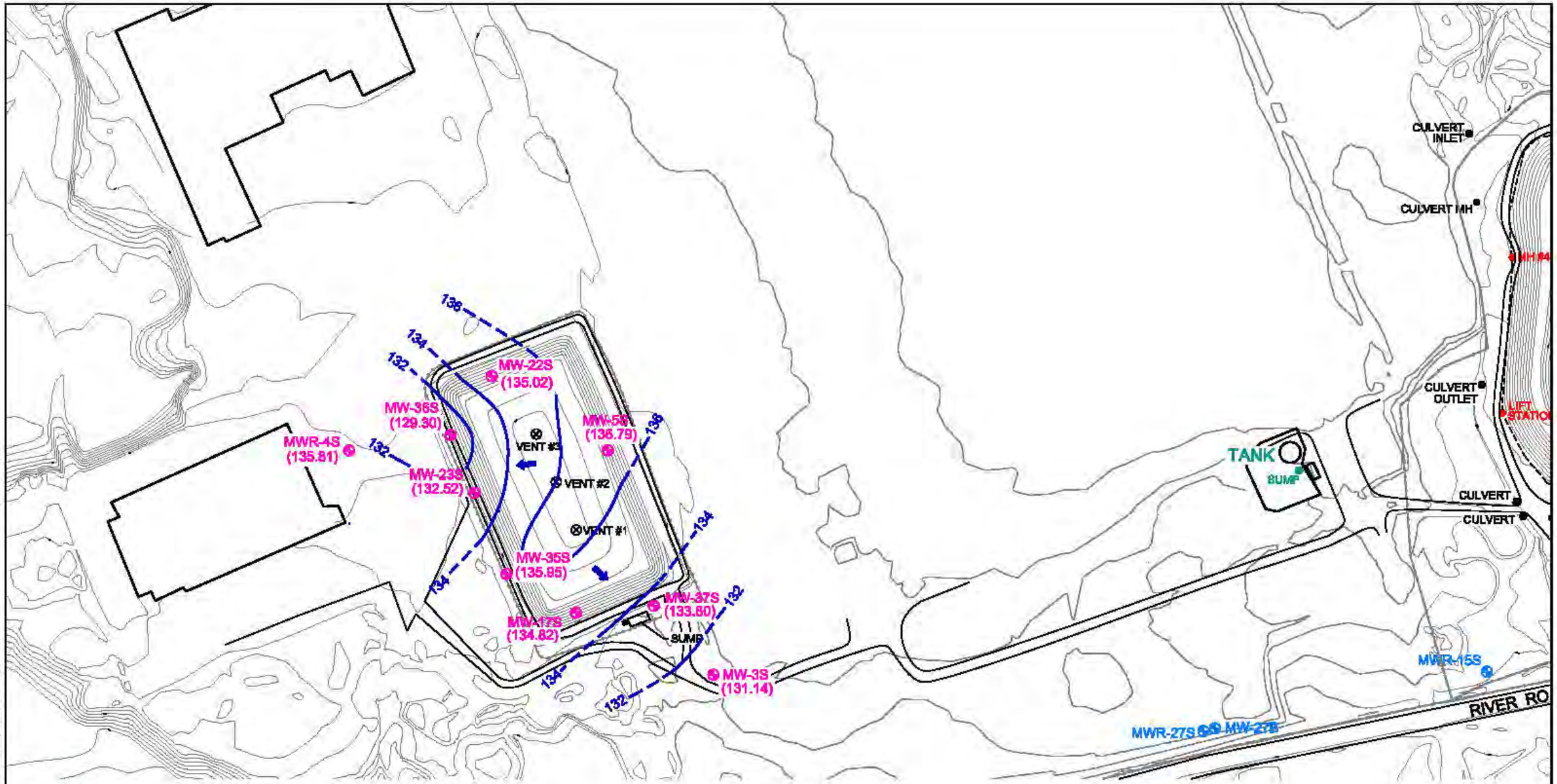

Drafter: M. HOEFER
Project Manager: KW. SMITH
Task Manager: M. RISHER
Technical Reviewer: M. RISHER / K.W. SMITH

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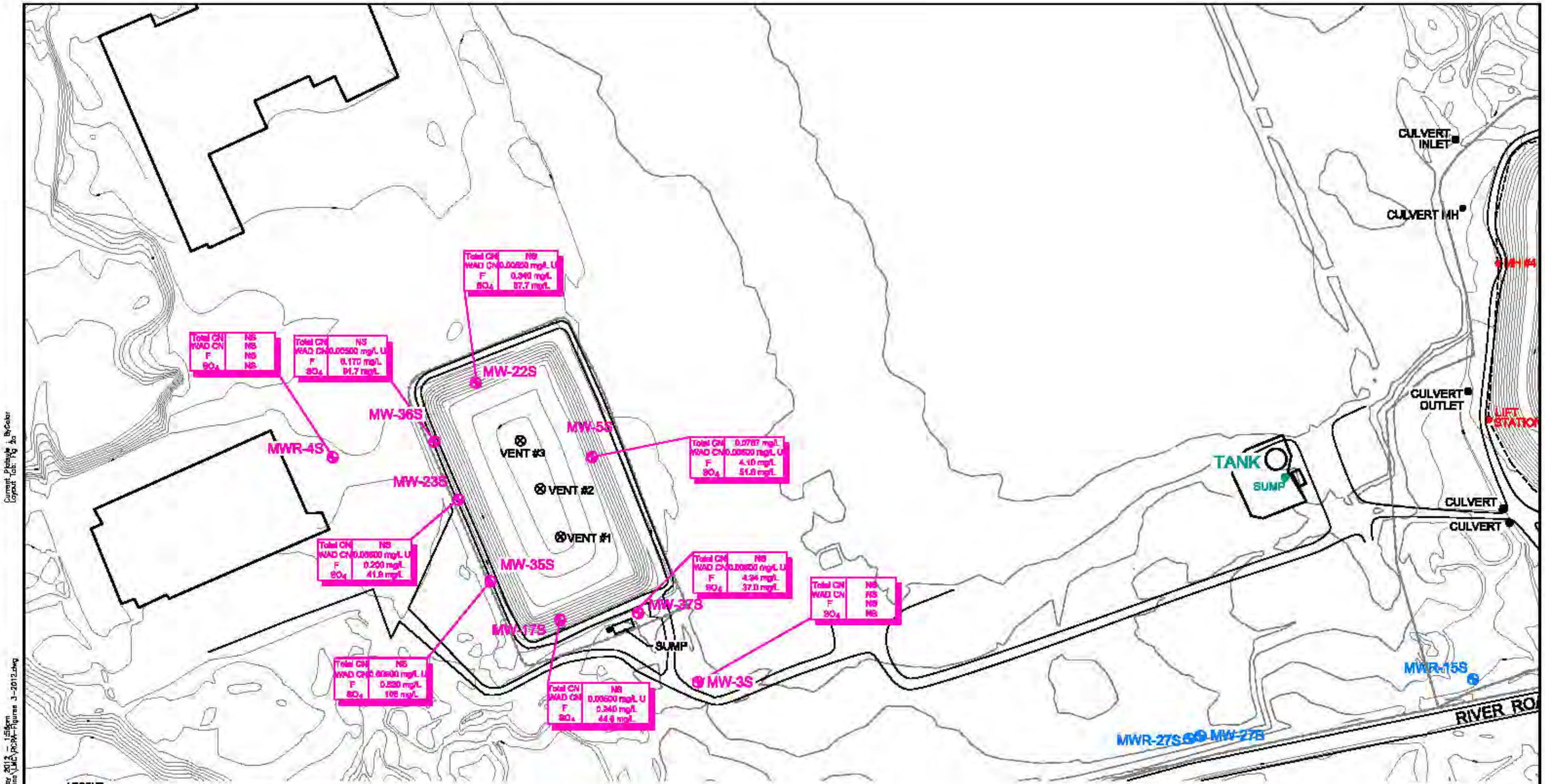
RCRA LANDFILL GROUNDWATER ELEVATION MAP
S AQUIFER, MARCH 2012

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number: GP000677.0015
Drawing Date: 05/01/12
Figure: 2b



Drawn By: M. HOEPER
Project Manager: K.W. SMITH
Task Manager: M. RIMER
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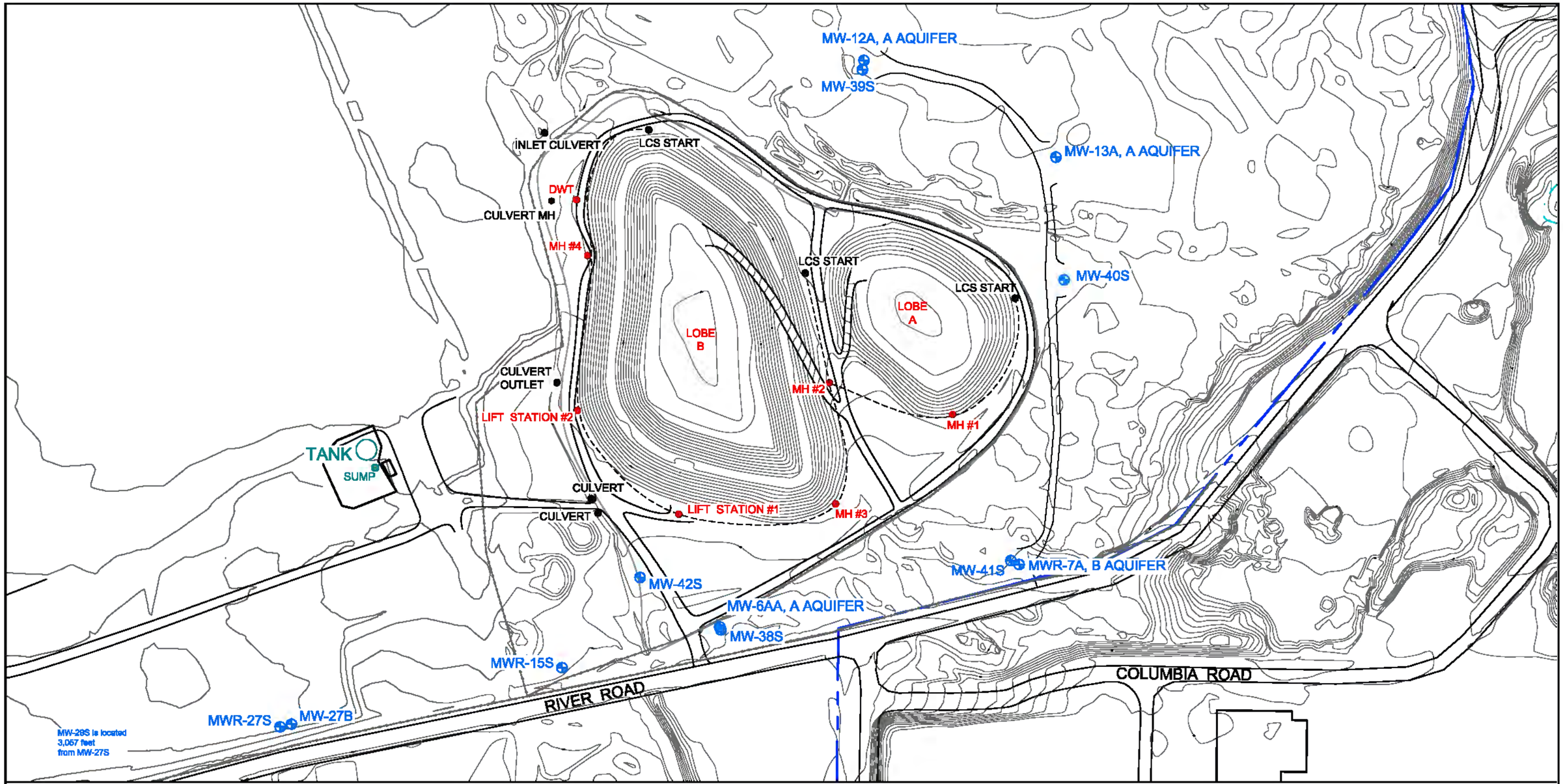
RCRA LANDFILL GROUNDWATER QUALITY MAP
MARCH 2012

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number: GP000677.0019
Drawing Date: 08/01/12
Figure: 2c



LEGEND

MW-41S CERCLA LANDFILL MONITORING WELL LOCATION

MH #3 MANHOLE

N

0 100' 200' 300'

APPROXIMATE SCALE IN FEET
1" = 200'

Drafter	M. HOEFER
Project Manager	K.W. SMITH
Task Manager	M. RISHER
Technical Review	M. RISHER / K.W. SMITH

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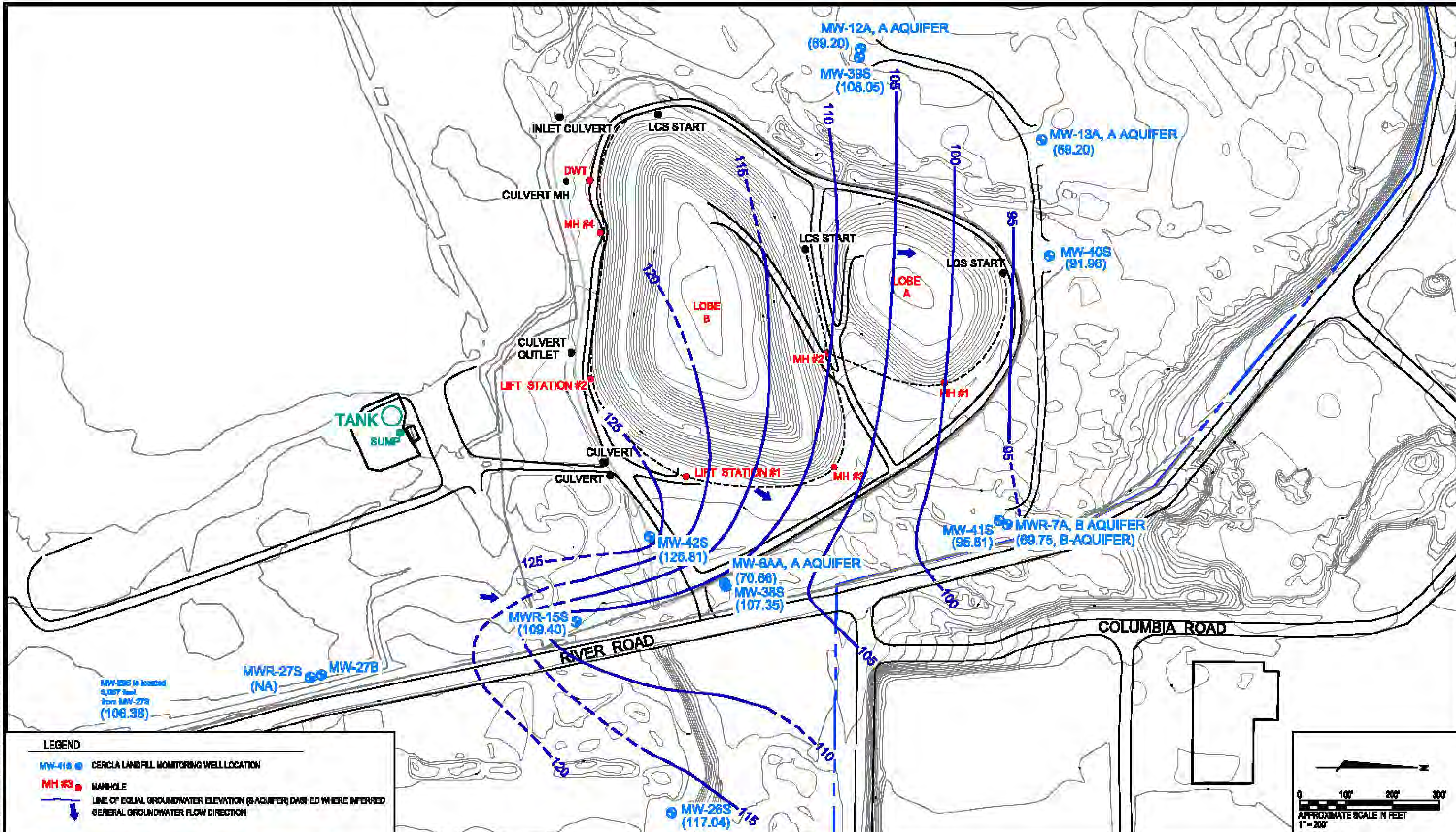
CERCLA LANDFILL

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number	GP000677.0012
Drawing Date	5/28/10
Figure	3a


MW-12A, A AQUIFER
(69.20)
MW-39S
(106.05)
MW-13A, A AQUIFER
(69.20)
INLET CULVERT
LCS START
DWT
CULVERT MH
MH #4
LCS START
LCS START
MW-40S
(91.96)
LOBE
B
LOBE
A
CULVERT
OUTLET
MH #2
MH #1
LIFT STATION #2
TANK
SUMP
CULVERT
CULVERT
LIFT STATION #1
MH #3
MW-41S
(95.81)
MWR-7A, B AQUIFER
(69.75, B-AQUIFER)
MW-42S
(125.81)
MW-8AA, A AQUIFER
(70.66)
MW-38S
(107.35)
MWR-15S
(109.40)
COLUMBIA ROAD
RIVER ROAD
MWR-27S
(NA)
MW-27B
(106.38)
MW-26S
(117.04)
125
120
115
110
105
100
95
LEGEND
MW-41S CERCLA LANDFILL MONITORING WELL LOCATION
MH #3 MANHOLE
LINE OF EQUAL GROUNDWATER ELEVATION (S AQUIFER) DASHED WHERE INFERRED
GENERAL GROUNDWATER FLOW DIRECTION
0 100' 200' 300'
APPROXIMATE SCALE IN FEET
1" = 200'

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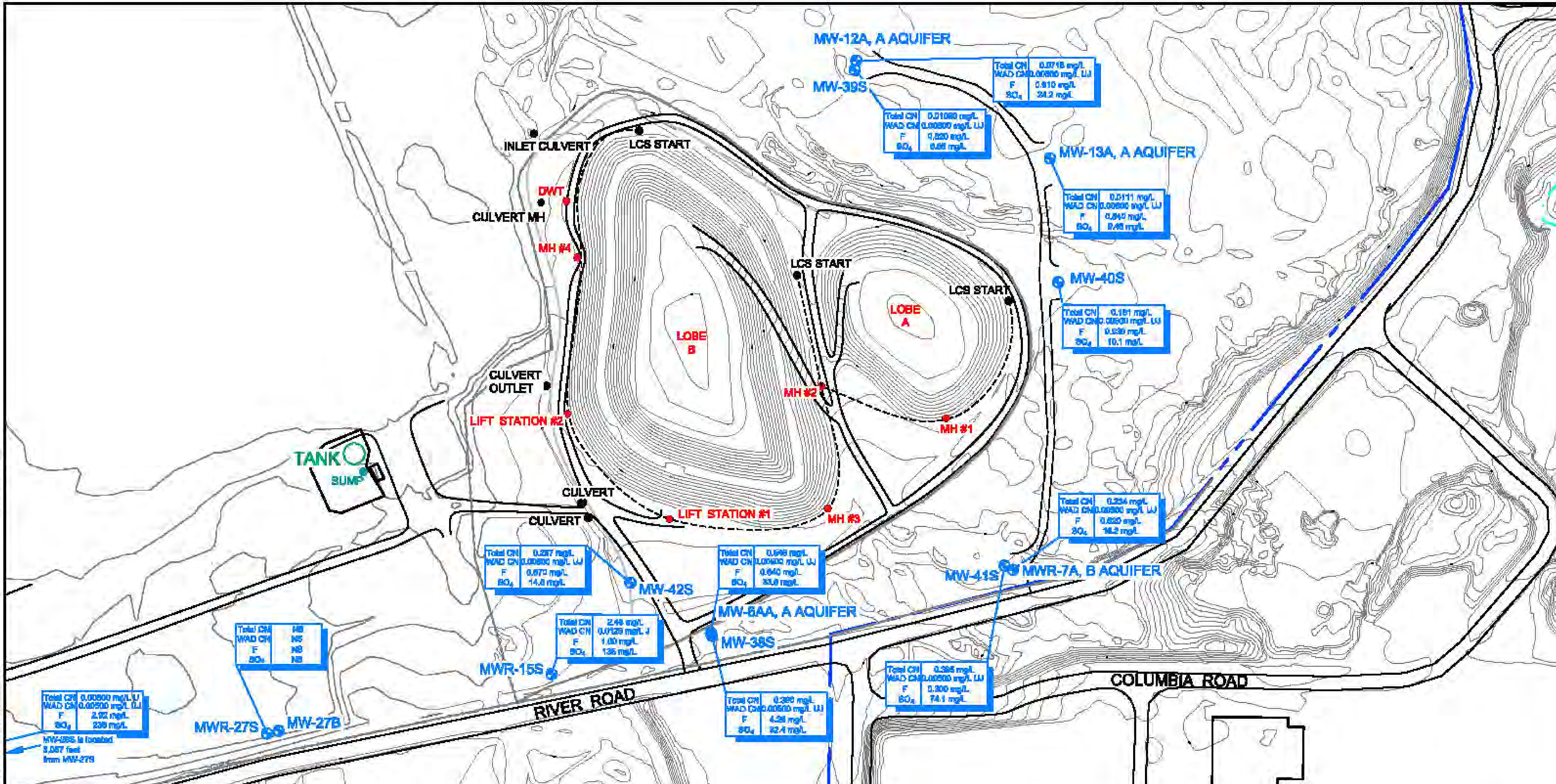
CERCLA LANDFILL GROUNDWATER ELEVATION MAP
S AQUIFER, MARCH 2012

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number: GP000677.0012
Drawing Date: 03/01/12
Figure: 3b



LEGEND

MW-41S — CERCLA LANDFILL MONITORING WELL LOCATION
MH #3 — MANHOLE
NS — NOT SAMPLED
J — ESTIMATED VALUE
U — NOT DETECTED AT THE REPORTING LIMIT SHOWN
UB — ANALYTE CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION
UJ — NOT DETECTED AT REPORTING LIMIT SHOWN, HOWEVER THE DETECTION LIMIT IS ESTIMATED

WAD = WEAK ACID DISSOCIABLE
CN = CYANIDE
F = FLUORIDE
SO_4 = SULFATE
mg/L = MILLIGRAMS PER LITER

0 100 200 300
APPROXIMATE SCALE IN FEET
1" = 200'

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Current Plotstyle : BkColor
Layout Tab: Fig 3c

Drafter	M. HOEFER
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Task Manager	M. FUSHER
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CERCLA LANDFILL GROUNDWATER QUALITY MAP
MARCH 2012

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number	GP000677.0012
Drawing Date	06/01/12
Figure	3c

Chart 1a. RCRA LEACHATE PRODUCTION
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

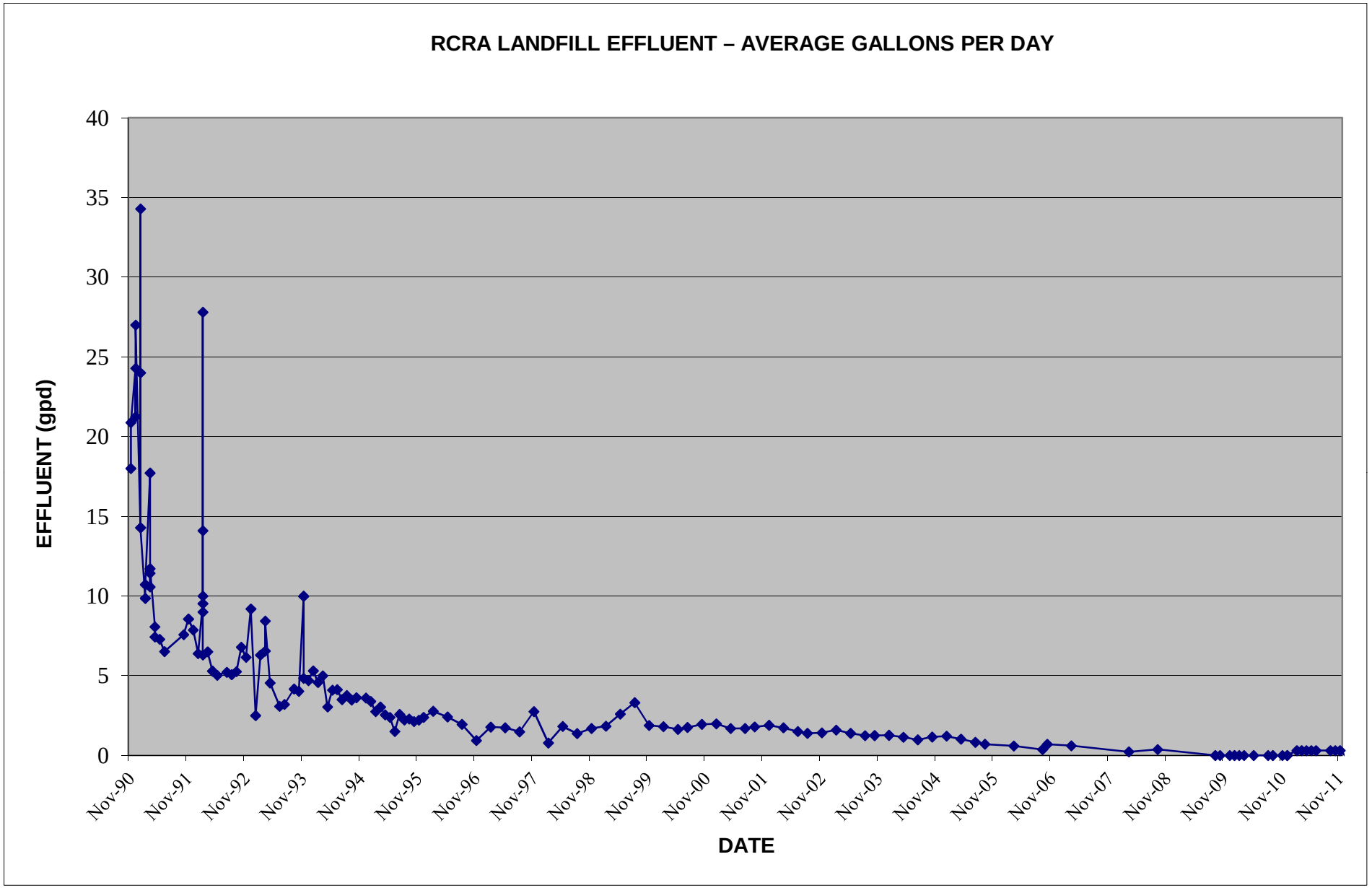


Chart 1b. RCRA LEACHATE TOTAL CYANIDE AND pH
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

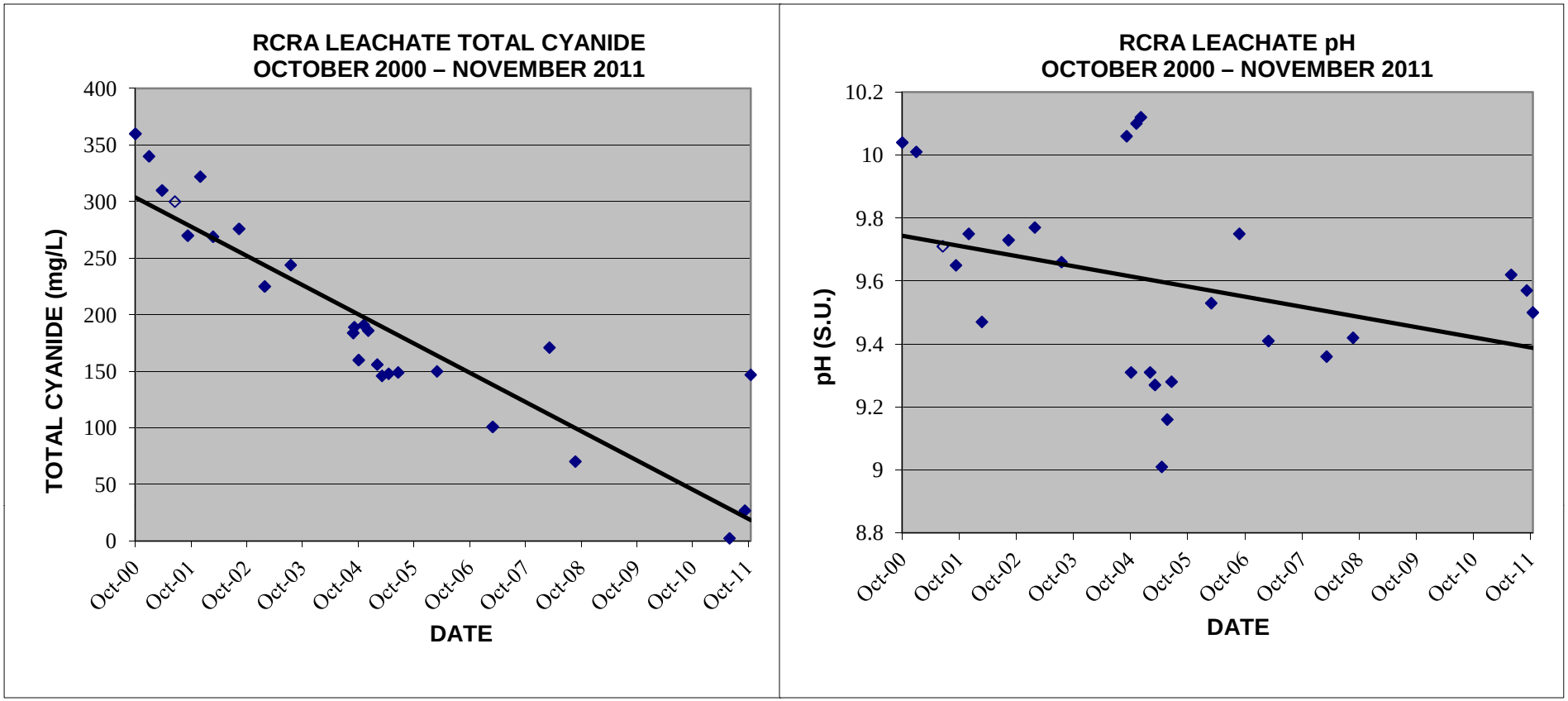


Chart 2a. RCRA GROUNDWATER HYDROGRAPHS – S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

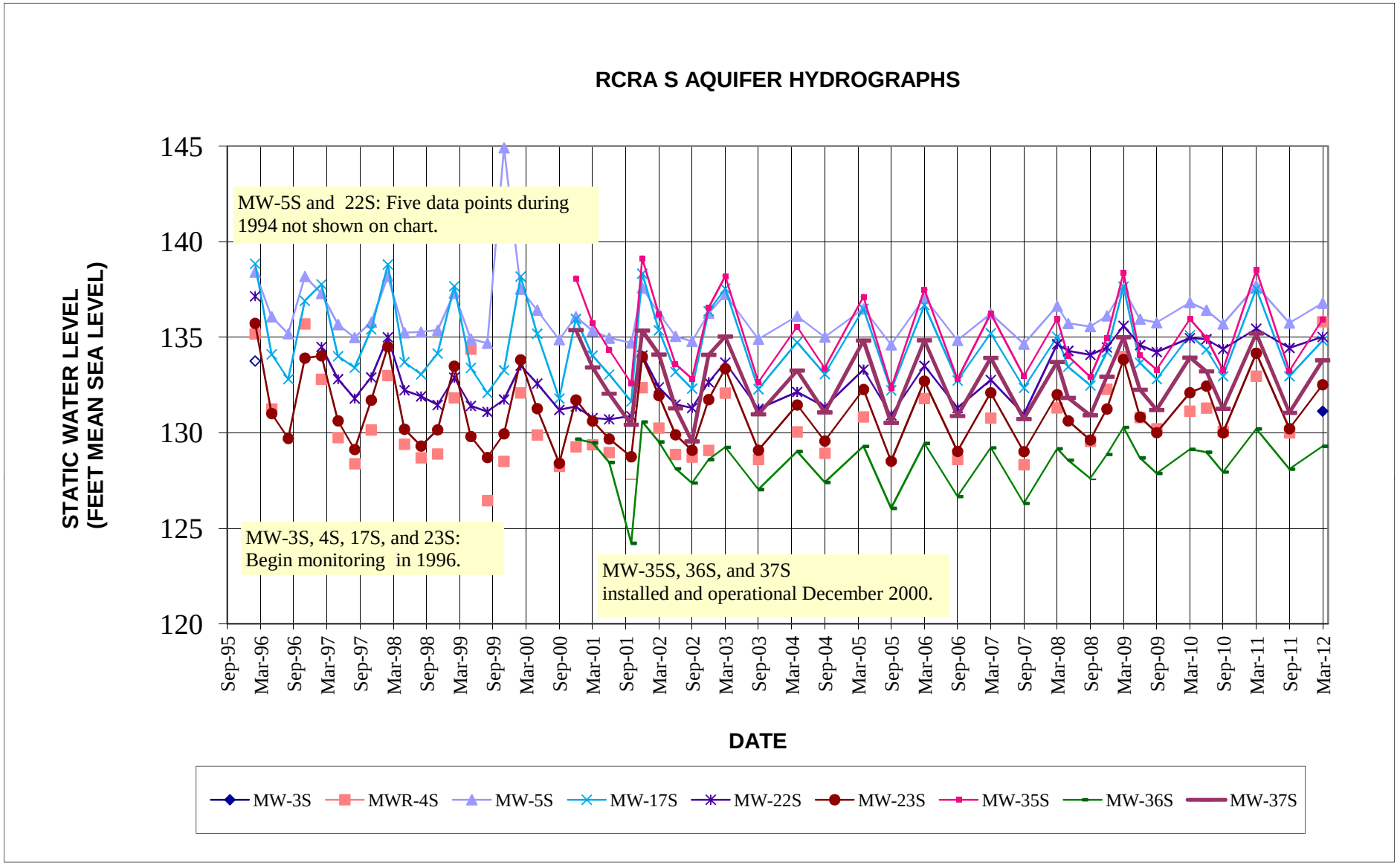


Chart 2b. RCRA GROUNDWATER ANALYTICAL DATA – TOTAL CYANIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

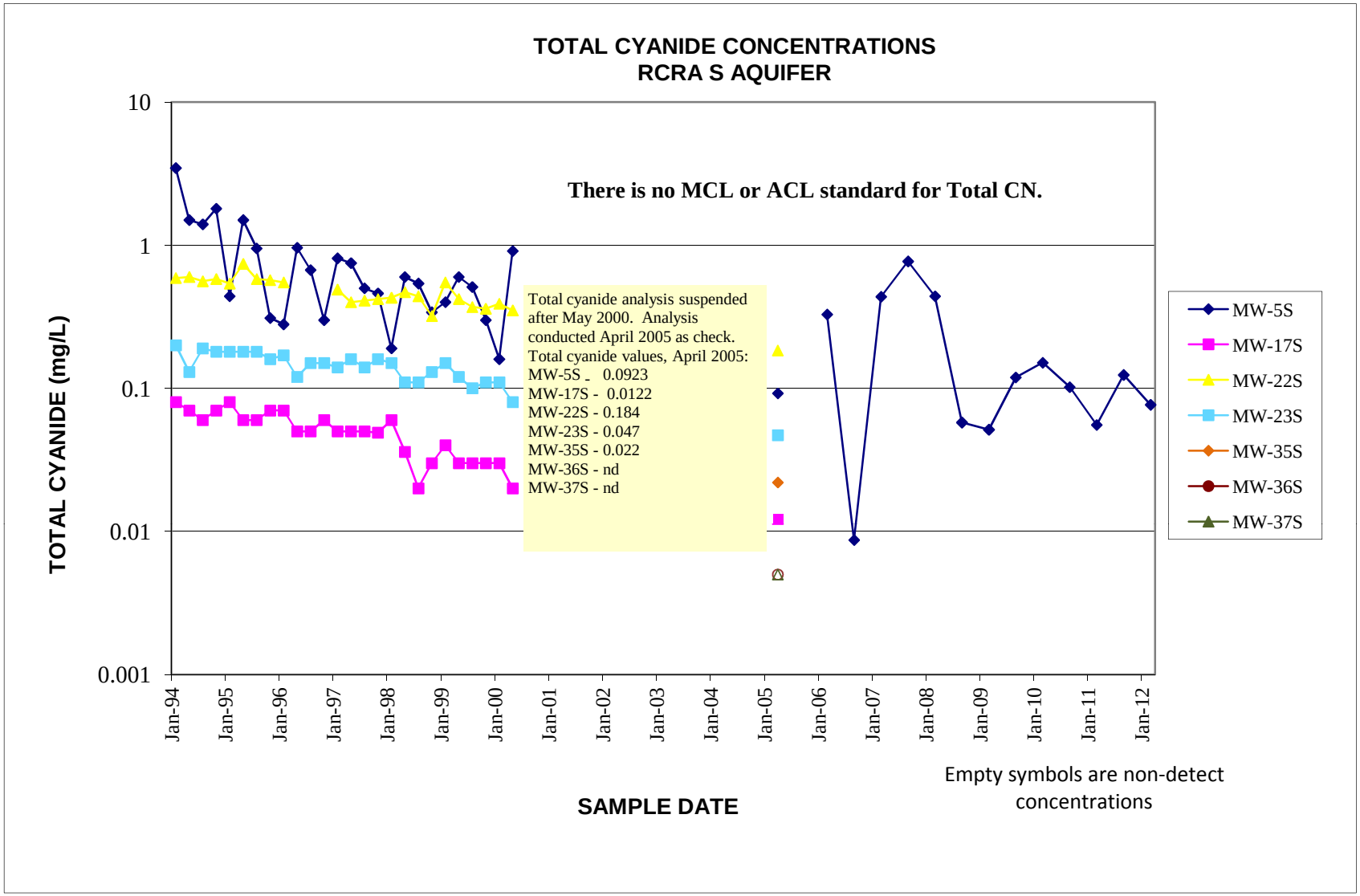


Chart 2c. RCRA GROUNDWATER ANALYTICAL DATA – WAD CYANIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

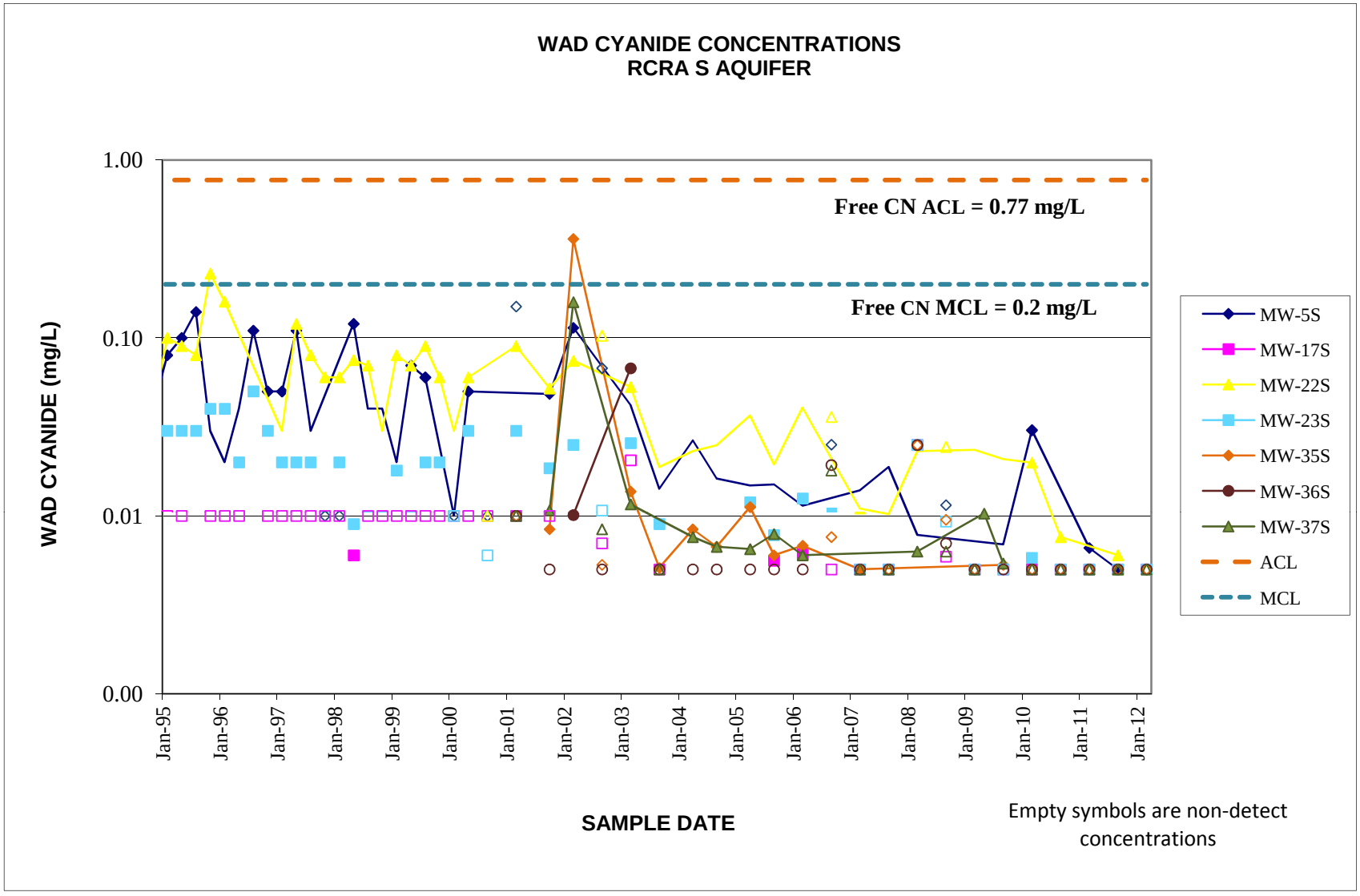


Chart 2d. RCRA GROUNDWATER ANALYTICAL DATA – FLUORIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

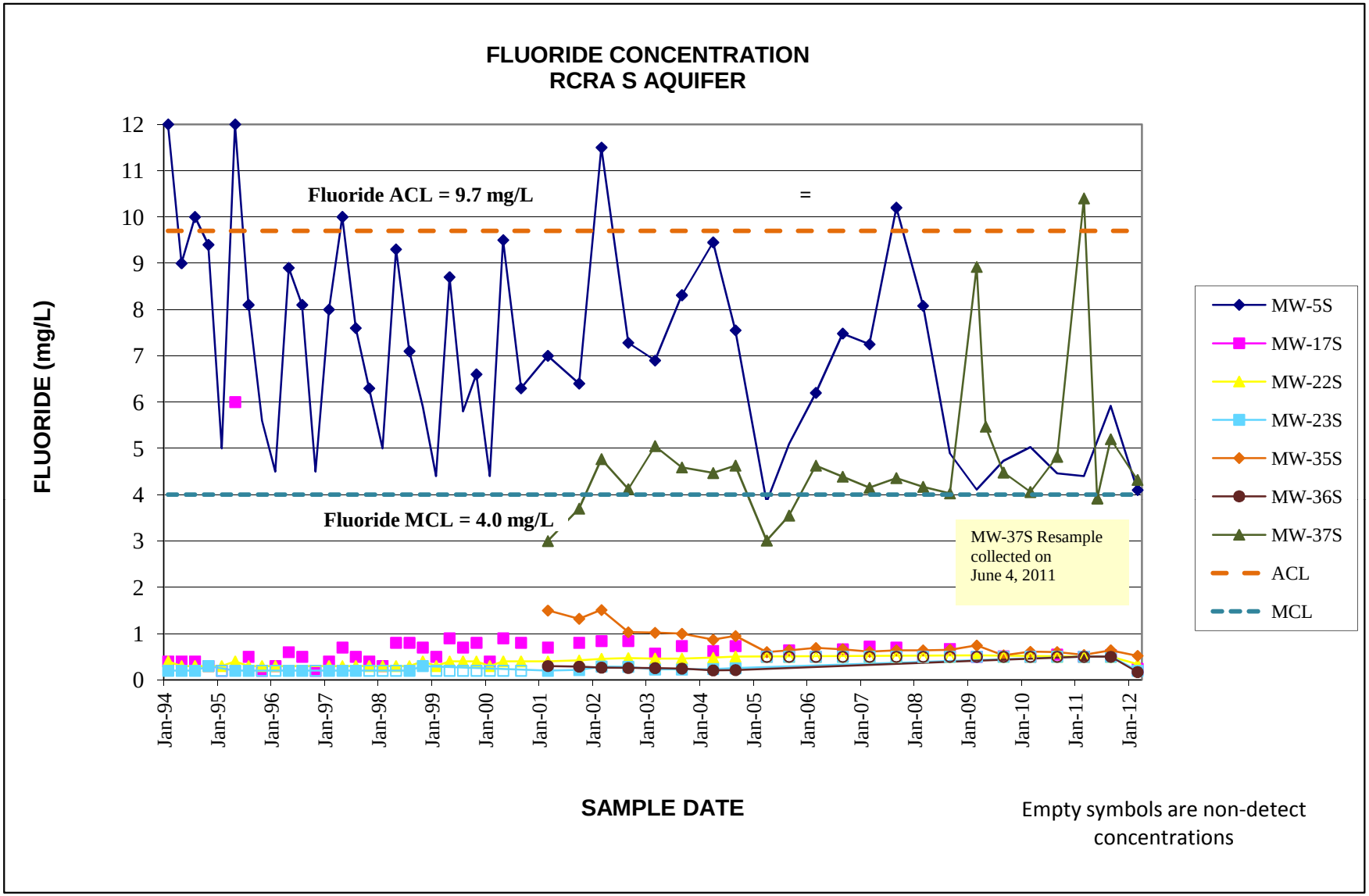


Chart 2e. RCRA GROUNDWATER ANALYTICAL DATA – SULFATE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

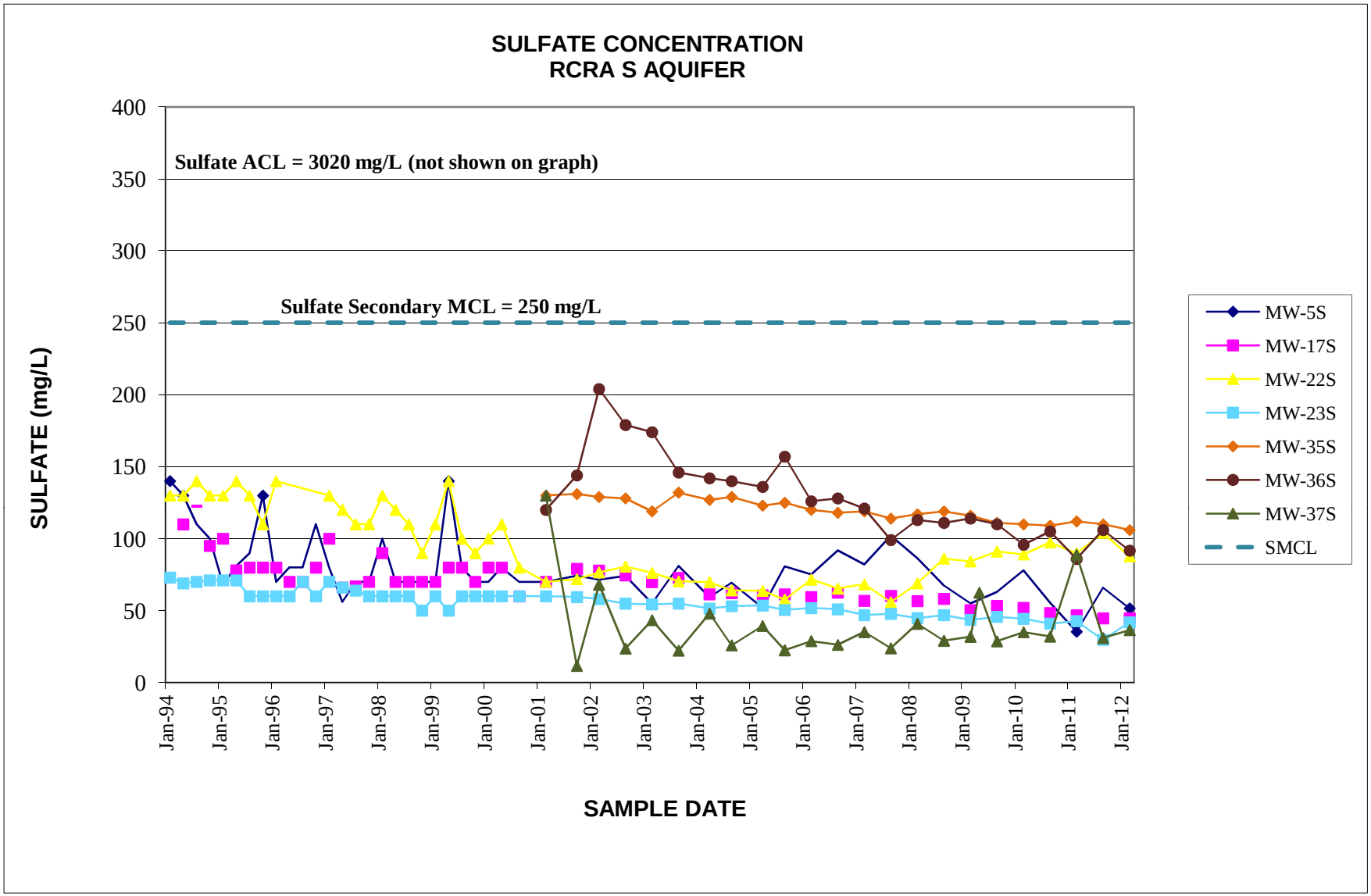


Chart 3a. CERCLA LEACHATE PRODUCTION vs RAINFALL
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

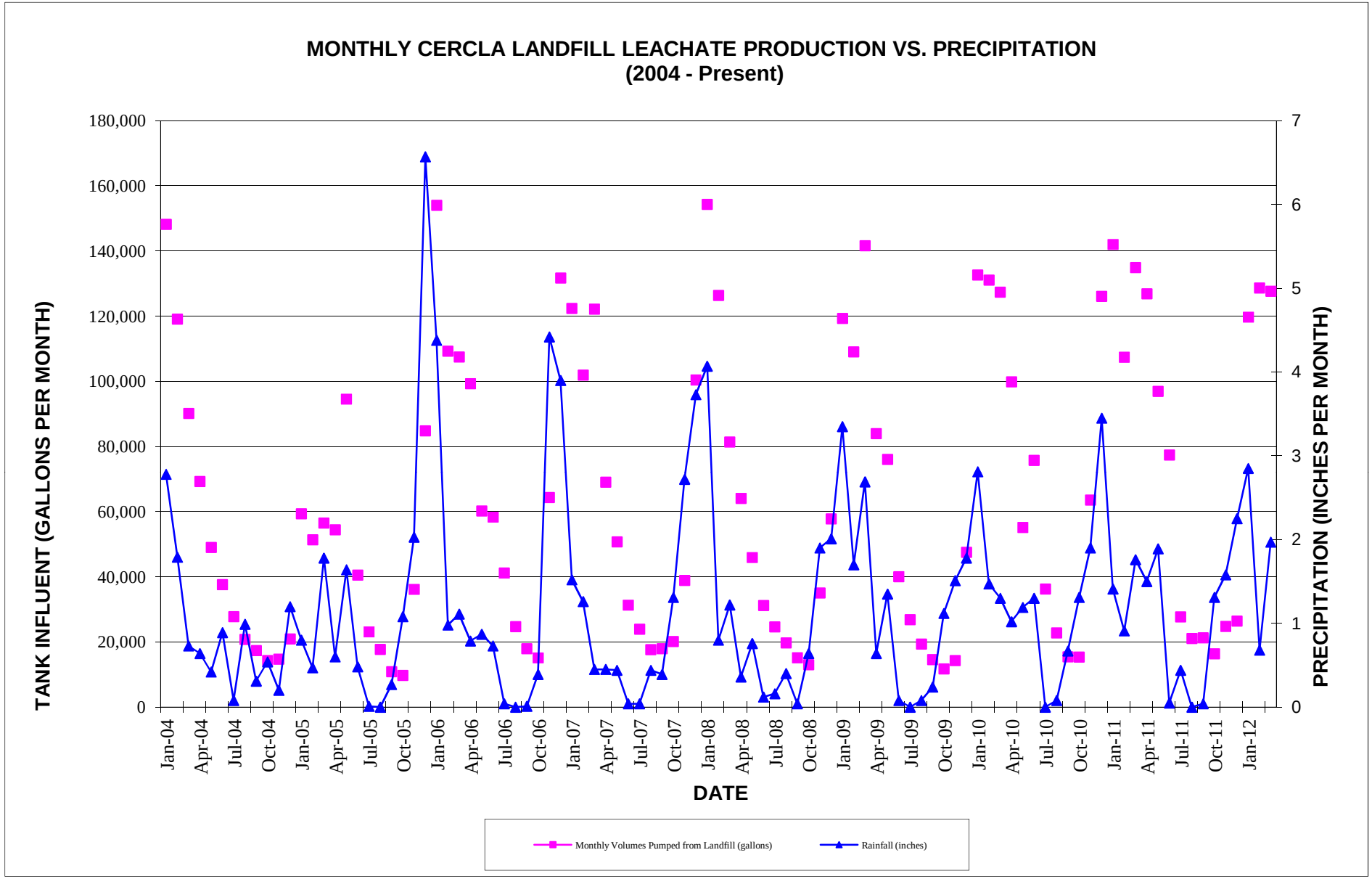
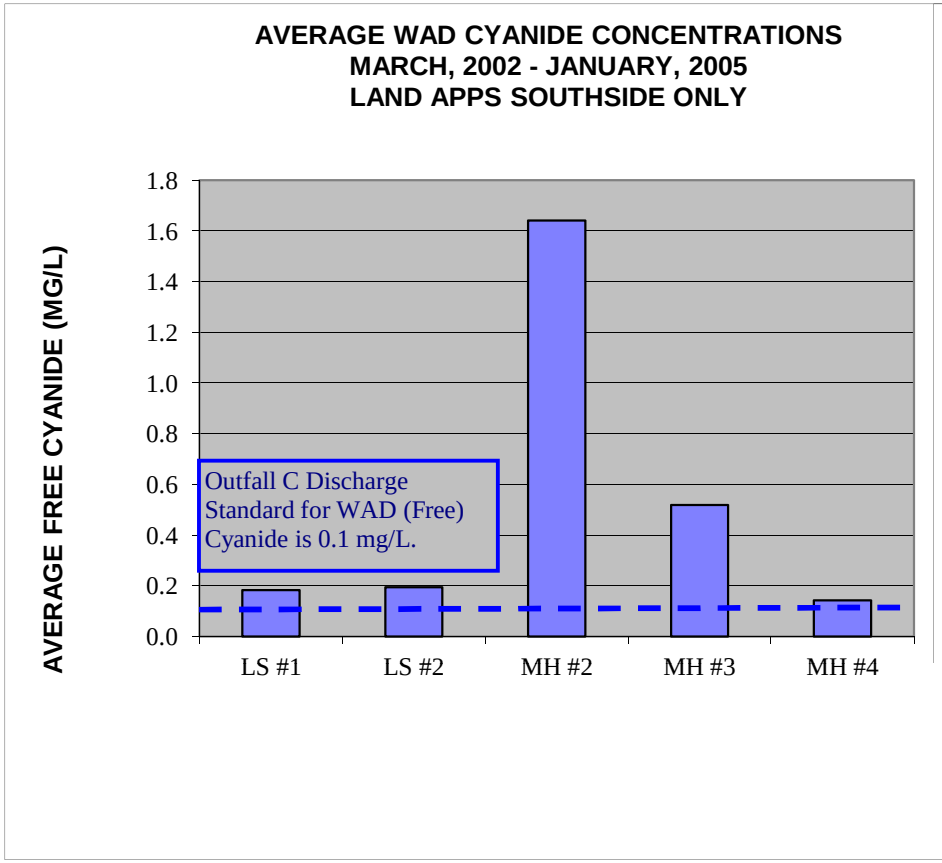
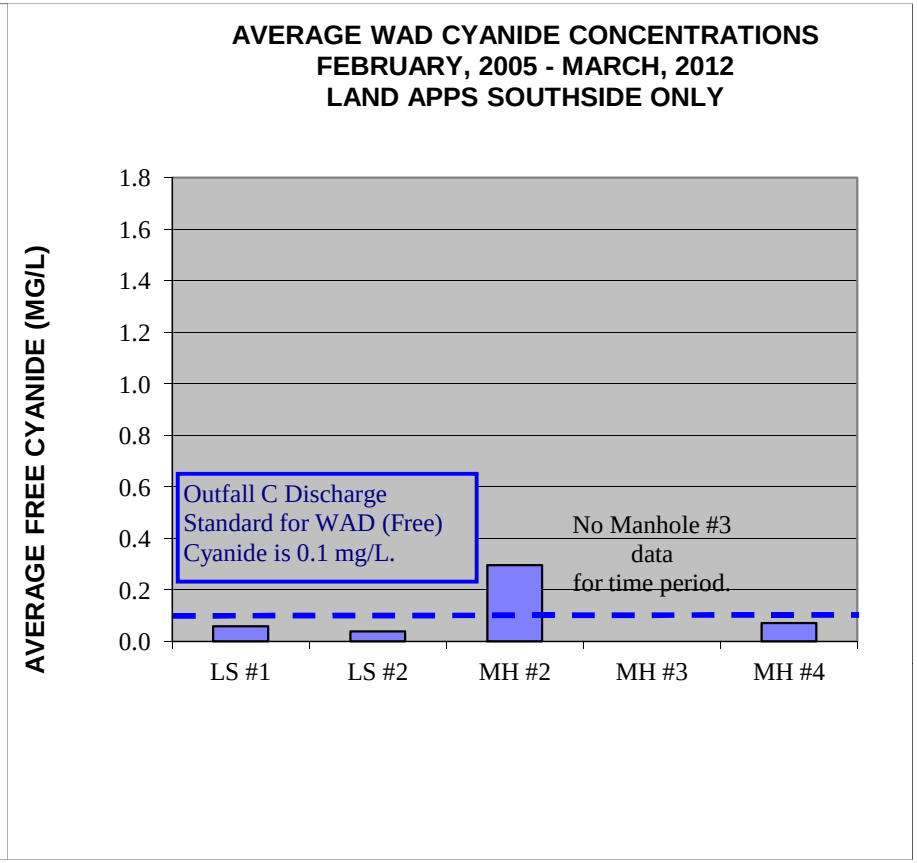


Chart 3b. CERCLA LEACHATE COLLECTION SYSTEM ANALYTICAL COMPARISONS - AVERAGE WAD CYANIDE
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON





Notes: Land applications of nutrients for period March 2002 - January 2005 took place upgradient from Manhole 4 only.
In-LCS injection of nutrients began in Manhole 4 December 2004. Periodic manual dosing in Manholes 2 & 3 began February 2005.
Lift Station 1 sampled quarterly. Starting March 2007, annual sampling only for Lift Station 2 and Manholes 2 & 4.

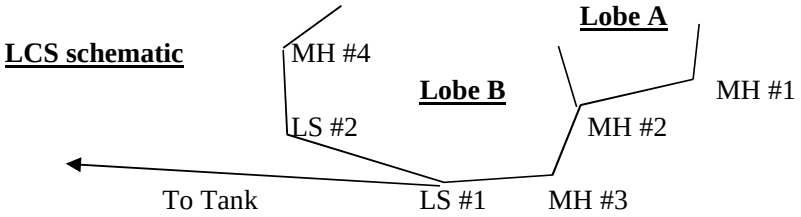
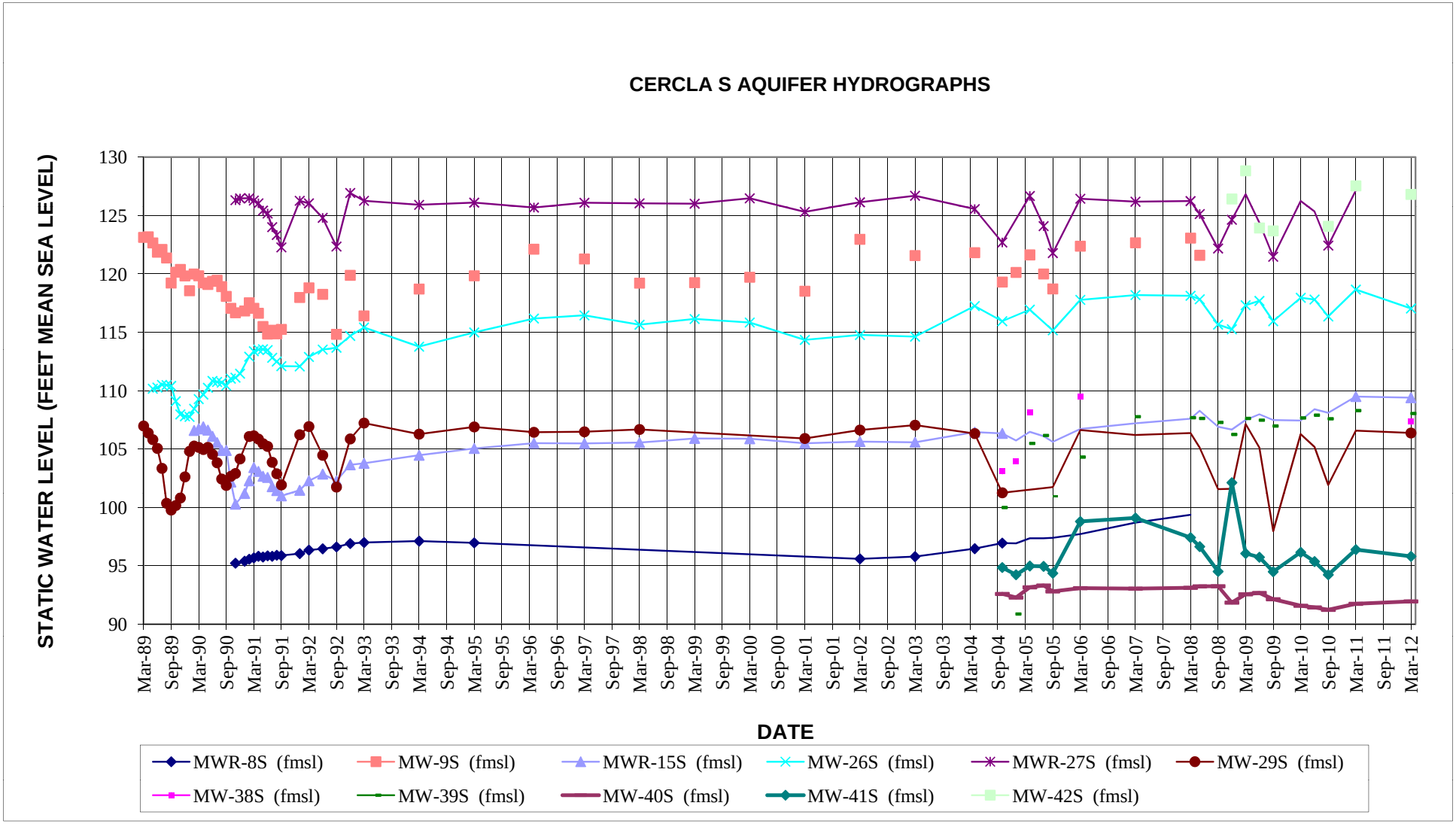


Chart 4a. CERCLA GROUNDWATER HYDROGRAPHS - S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON



Notes: MWR-8S: Water level data not available 1996, 1997, 1998, 1999, 2000 and 2001 (water level below top of pump).
MWR-8S and MW-9S: Abandoned in Fall of 2008 during removal of Landfill Cells MWR-8S and MW-9S.
MW-29S: 1999 begin periodic monitoring.
MW-38S, MW-39S, MW-40S, and MW-41S: Installed September, 2004, outside the CERCLA Landfill site boundary to further characterize potential impacts to the S Aquifer.
MW-42S: Installed in November, 2008, as a replacement for abandoned wells MWR-8S and MW-9S.

Chart 4b. CERCLA GROUNDWATER HYDROGRAPHS - A AND B AQUIFERS
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

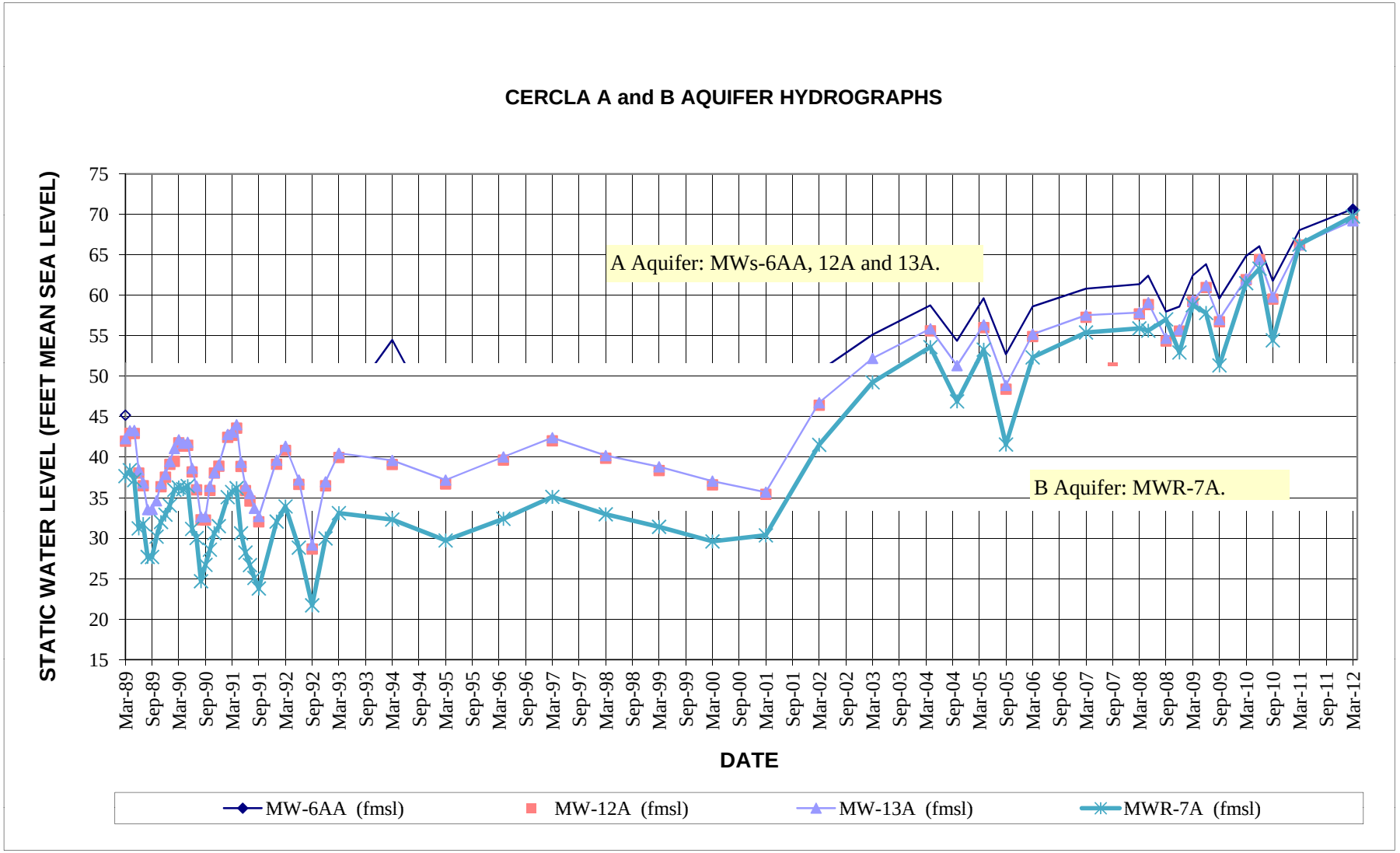


Chart 4c. CERCLA GROUNDWATER ANALYTICAL DATA - TOTAL CYANIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

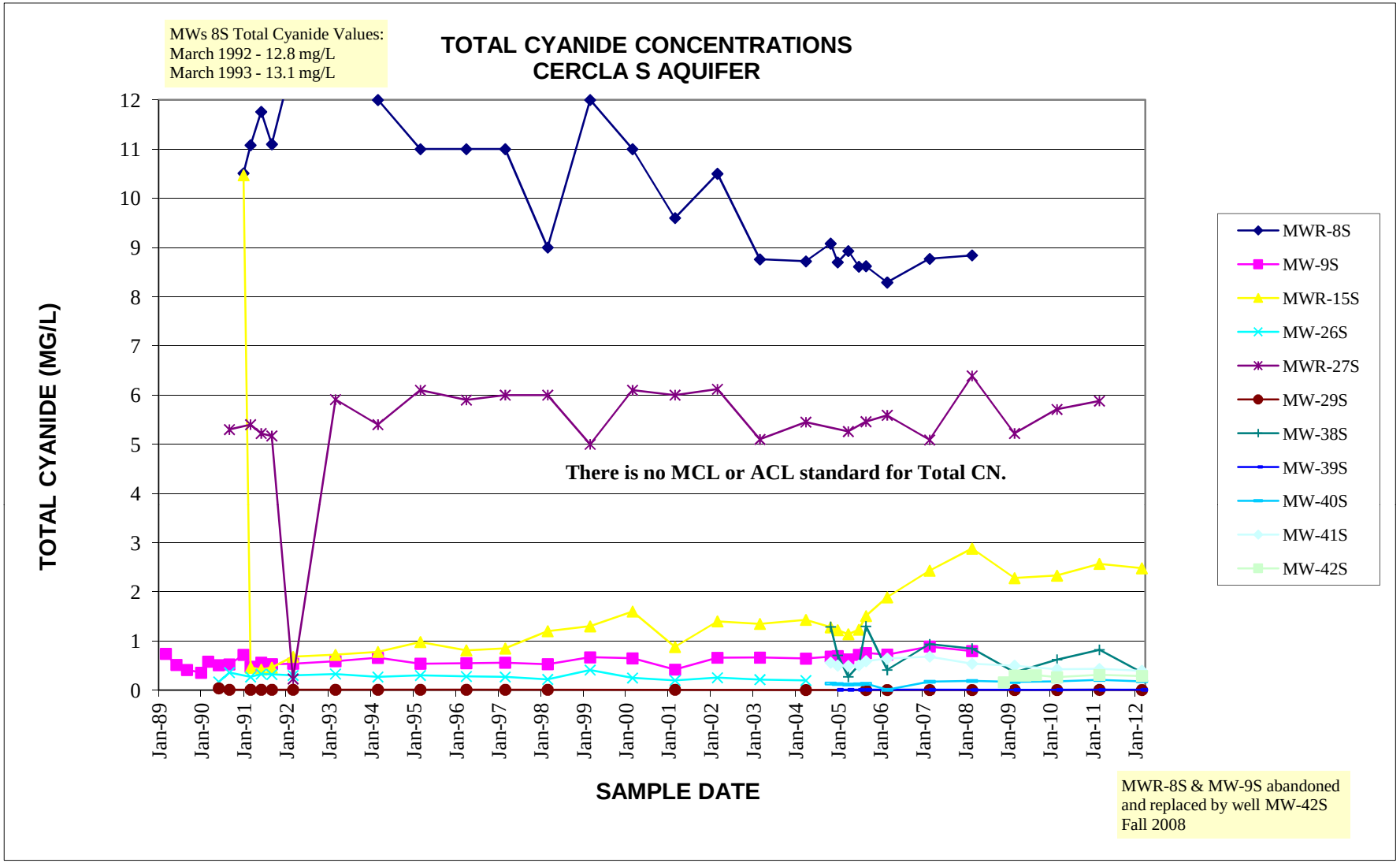


Chart 4d. CERCLA GROUNDWATER ANALYTICAL DATA - WAD CYANIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

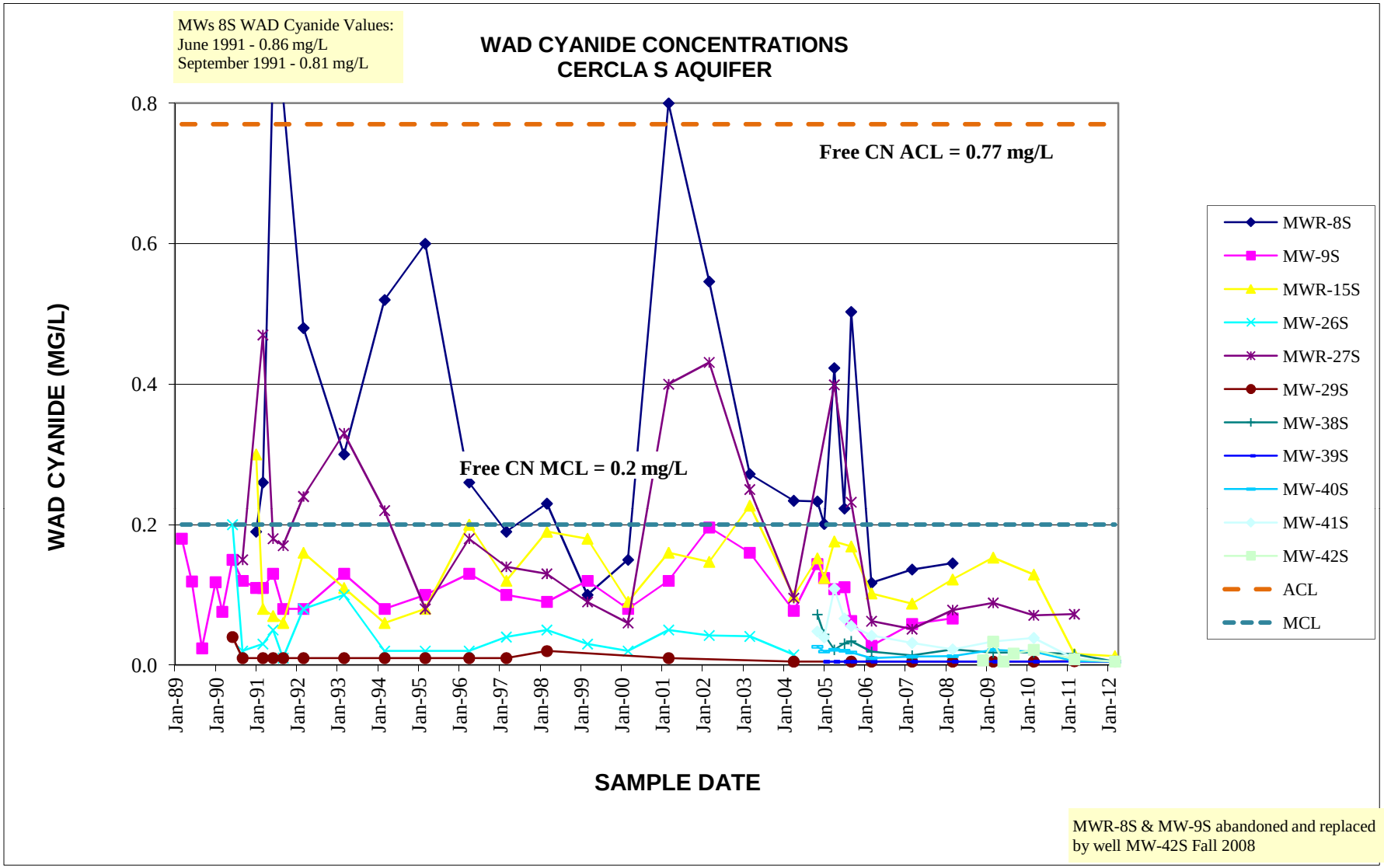


Chart 4e. CERCLA GROUNDWATER ANALYTICAL DATA - FLUORIDE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

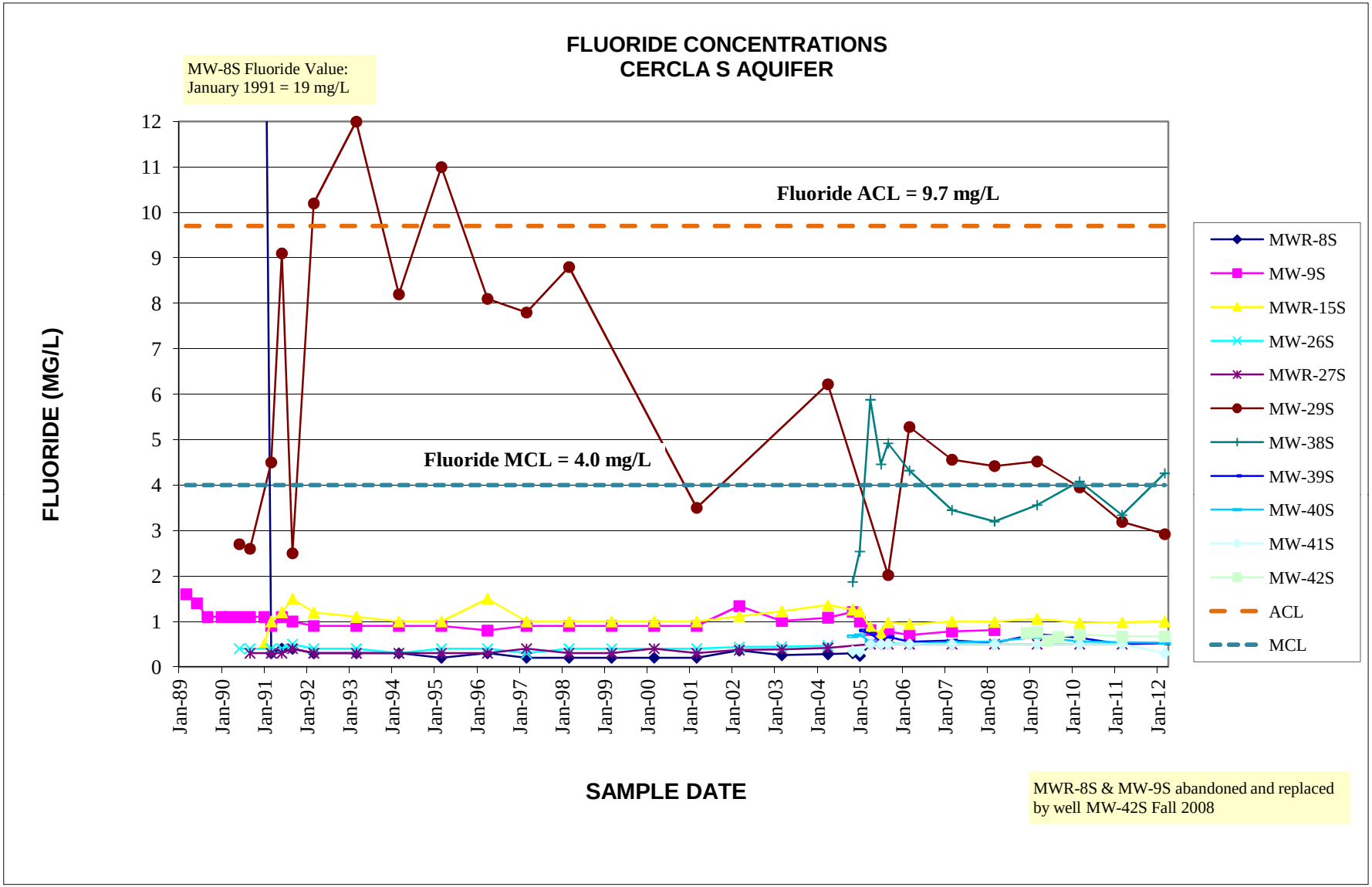


Chart 4f. CERCLA GROUNDWATER ANALYTICAL DATA - SULFATE, S AQUIFER
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

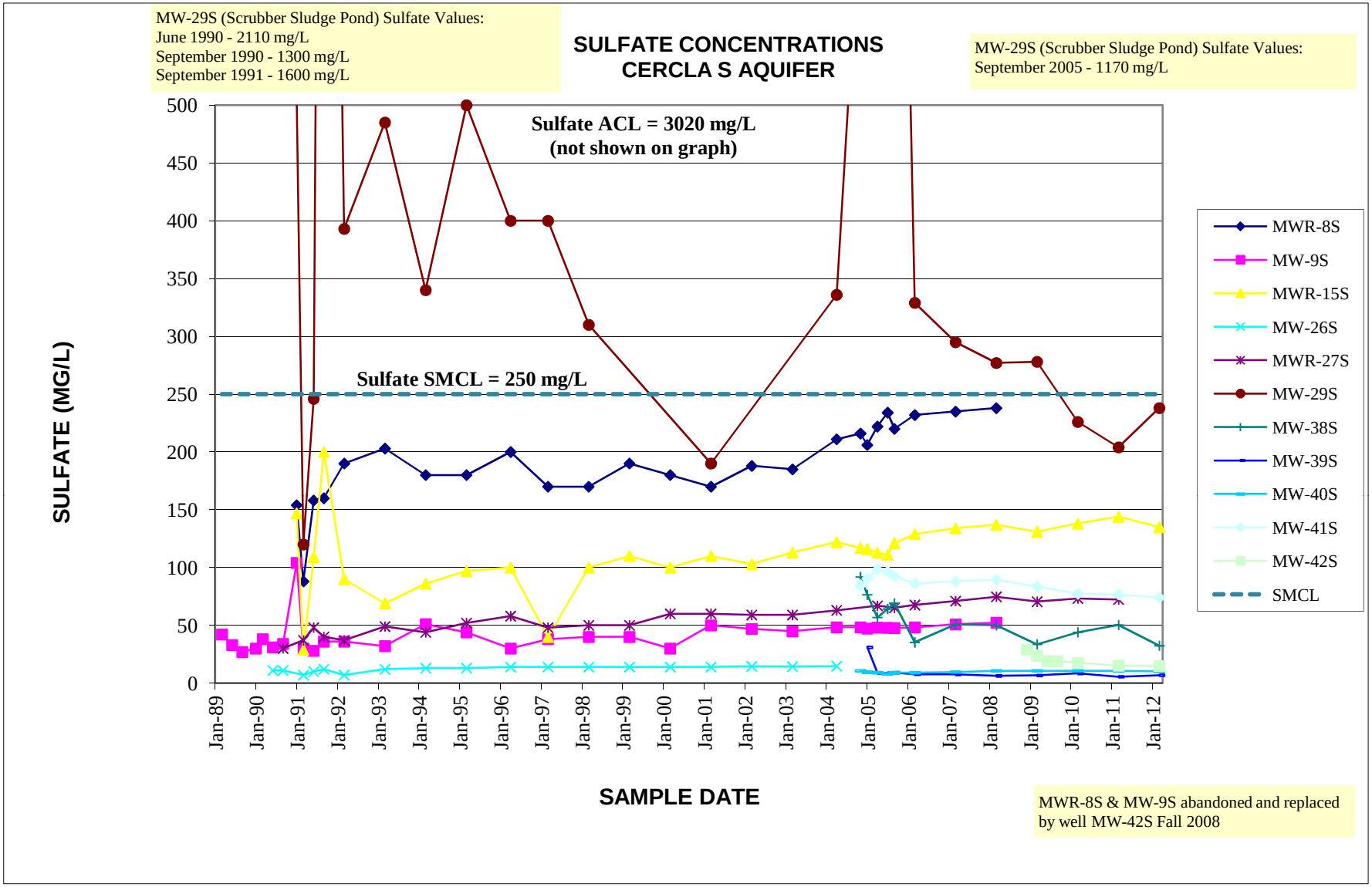


Chart 4g. CERCLA GROUNDWATER ANALYTICAL DATA - TOTAL CYANIDE, A AND B AQUIFERS
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

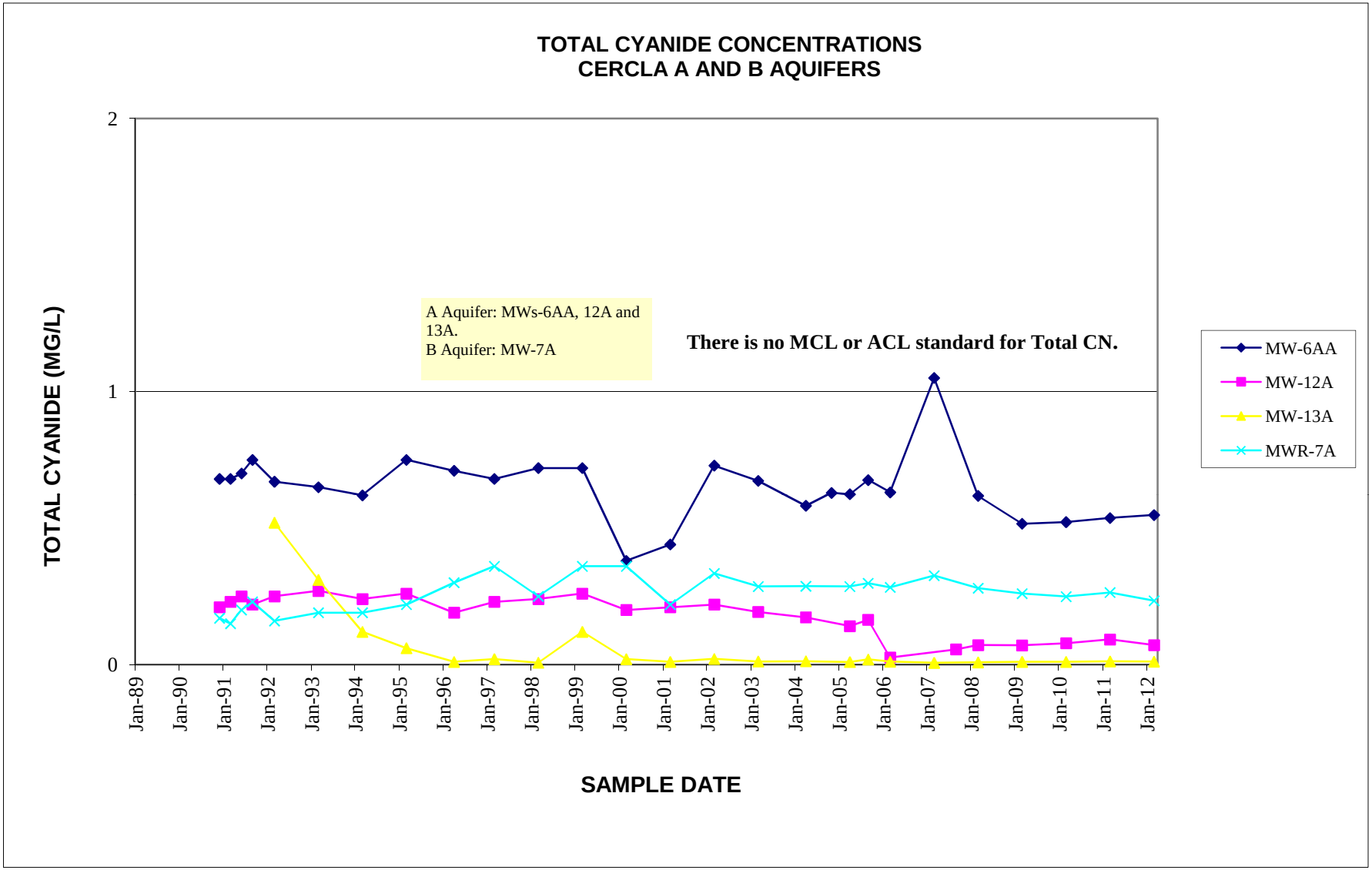


Chart 4h. CERCLA GROUNDWATER ANALYTICAL DATA - WAD CYANIDE, A AND B AQUIFERS
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

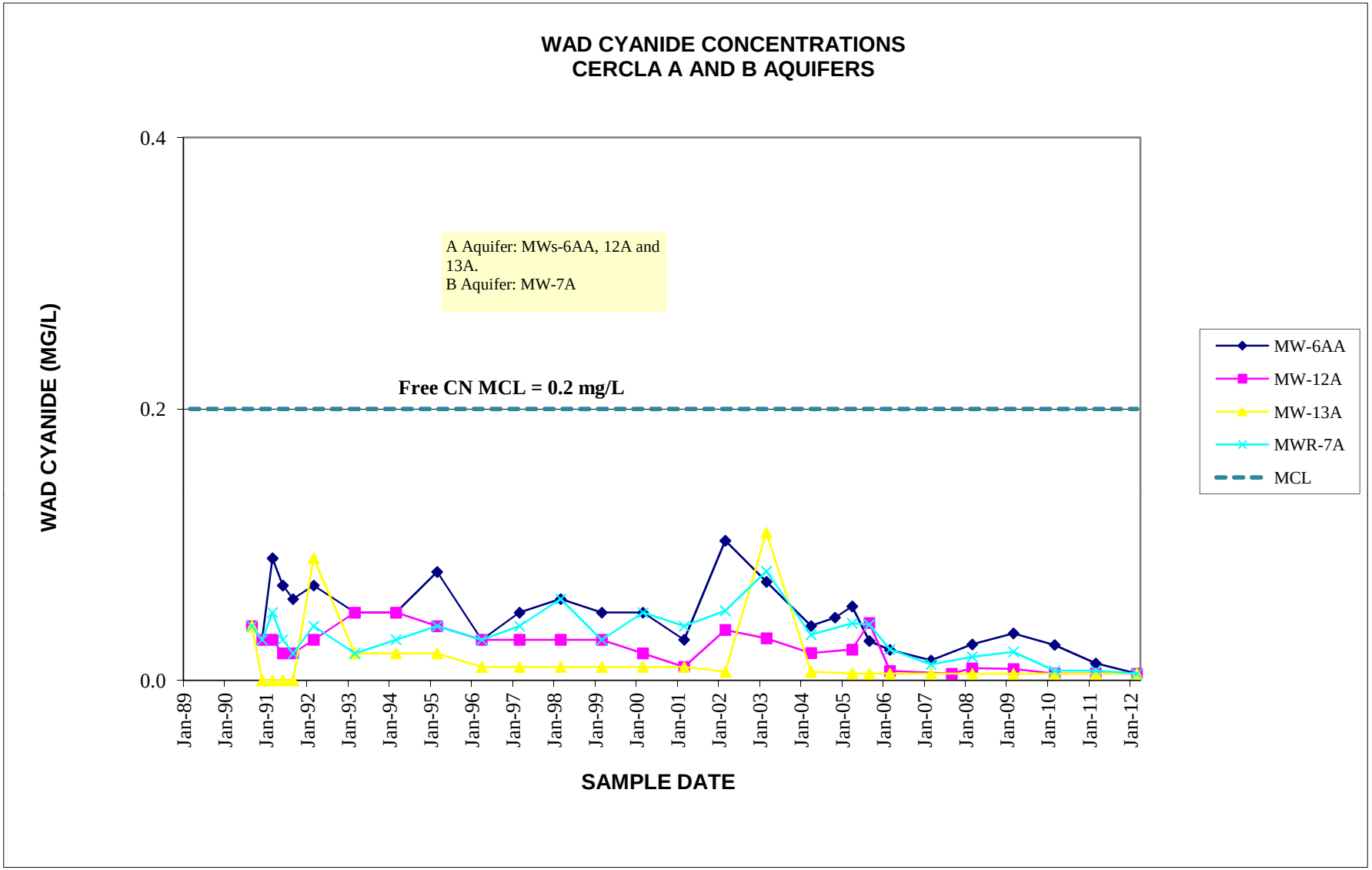


Chart 4i. CERCLA GROUNDWATER ANALYTICAL DATA - FLUORIDE, A AND B AQUIFERS
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

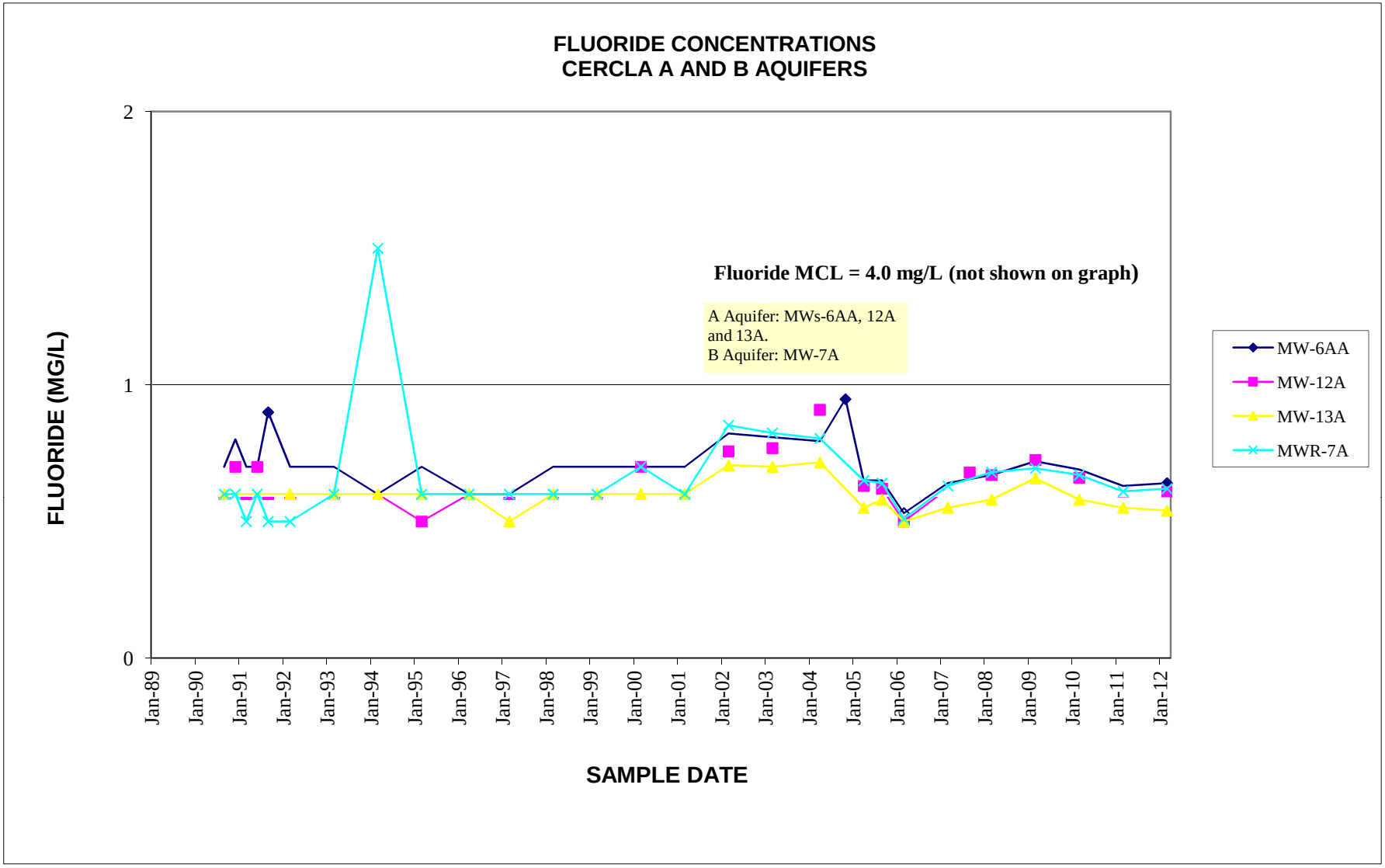


Chart 4j. CERCLA GROUNDWATER ANALYTICAL DATA - SULFATE, A AND B AQUIFERS
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

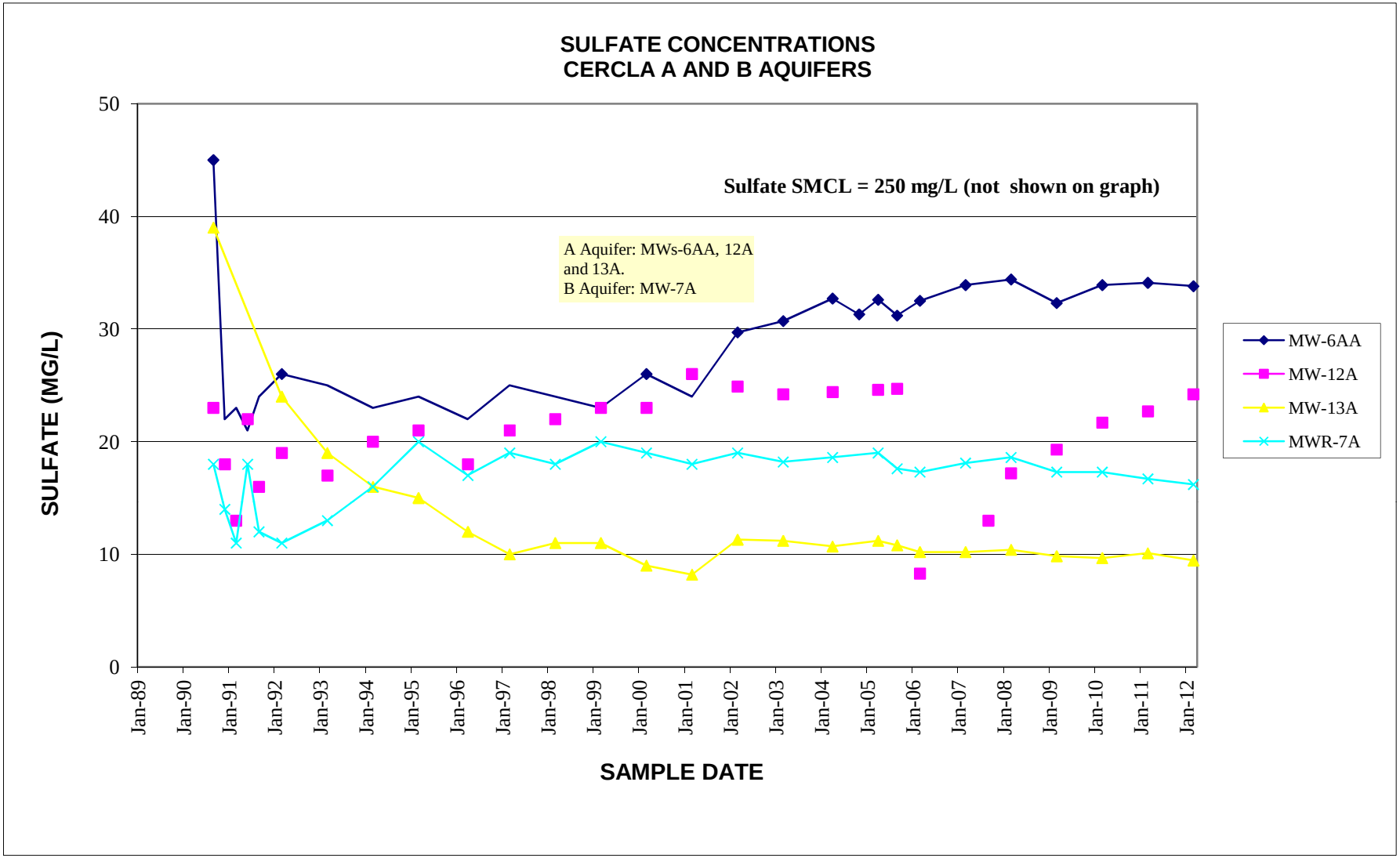


Table 1a. RCRA LEACHATE TRANSFERS **NOVEMBER 1990 THROUGH MARCH 2012**
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

DATE	ELAPSED TIME (days)	LEACHATE TRANSFERRED (gallons)	DAILY PRODUCTION (gal/day)	DATE	ELAPSED TIME (days)	LEACHATE TRANSFERRED (gallons)	DAILY PRODUCTION (gal/day)	DATE	ELAPSED TIME (days)	LEACHATE TRANSFERRED (gallons)	DAILY PRODUCTION (gal/day)	DATE	ELAPSED TIME (days)	LEACHATE TRANSFERRED (gallons)	DAILY PRODUCTION (gal/day)
11/08/90	Start			12/21/92	21	193	9.2	05/16/96	91	220	2.4	07/07/05	90	75	0.8
11/21/90	13	234	18.0	01/08/93	18	45	2.5	08/19/96	95	185	1.9	09/30/05	85	60	0.7
11/29/90	8	167	20.9	02/04/93	27	170	6.3	11/18/96	91	85	0.9	03/19/06	170	101	0.6
12/06/90	7	170	24.3	03/05/93	29	190	6.6	02/19/97	93	166	1.8	09/13/06	178	67	0.4
12/14/90	8	170	21.3	03/12/93	7	59	8.4	05/19/97	89	155	1.7	10/18/06	35	25	0.7
12/21/90	7	189	27.0	04/21/93	40	182	4.6	08/18/97	91	135	1.5	03/18/07	151	92	0.6
01/04/91	14	200	14.3	06/11/93	51	157	3.1	11/19/97	93	256	2.8	06/20/07		0	0.0
01/11/91	7	168	24.0	07/30/93	49	157	3.2	02/16/98	89	70	0.8	09/30/07		0	0.0
01/18/91	7	240	34.3	09/10/93	42	175	4.2	05/18/98	91	166	1.8	12/29/07		0	0.0
01/25/91	7	100	14.3	10/21/93	41	165	4.0	08/17/98	91	125	1.4	03/21/08	369	83	0.2
02/08/91	14	138	9.9	11/03/93	13	130	10.0	11/17/98	92	156	1.7	09/09/08	172	72	0.4
02/22/91	14	150	10.7	11/04/93	1	10	10.0	02/09/99	84	154	1.8	02/15/09		0	0.0
03/01/91	7	124	17.7	11/23/93	19	92	4.8	05/07/99	87	226	2.6	03/14/09		0	0.0
03/08/91	7	80	11.4	12/23/93	30	141	4.7	08/18/99	103	341	3.3	06/09/09		0	0.0
03/15/91	7	74	10.6	01/28/94	36	191	5.3	11/08/99	82	155	1.9	09/26/09		0	0.0
03/22/91	7	82	11.7	02/28/94	31	142	4.6	02/04/00	88	159	1.8	10/01/09		0	0.0
04/05/91	14	113	8.1	03/30/94	30	150	5.0	05/02/00	88	144	1.6	12/30/09		0	0.0
04/19/91	14	104	7.4	04/07/94	8	24	3.0	07/28/00	87	153	1.8	01/22/10		0	0.0
05/17/91	28	204	7.3	05/26/94	49	201	4.1	10/20/00	84	164	2.0	02/22/10		0	0.0
06/21/91	35	228	6.5	06/27/94	32	132	4.1	01/18/01	90	179	2.0	03/20/10		0	0.0
10/31/91	132	1000	7.6	07/29/94	32	112	3.5	04/13/01	85	144	1.7	05/26/10		0	0.0
11/27/91	27	231	8.6	08/25/94	27	102	3.8	07/06/01	84	142	1.7	08/08/10		0	0.0
12/26/91	29	228	7.9	09/29/94	35	122	3.5	09/28/01	84	151	1.8	09/06/10		0	0.0
01/31/92	36	230	6.4	10/27/94	28	102	3.6	12/19/01	82	155	1.9	11/01/10		0	0.0
02/21/92	21	200	9.5	12/29/94	63	227	3.6	03/13/02	84	146	1.7	12/02/10		0	0.0
02/22/92	1	28	27.8	01/26/95	28	95	3.4	06/05/02	84	126	1.5	12/29/10		0	0.0
02/24/92	2	28	14.1	02/23/95	28	77	2.8	08/30/02	86	119	1.4	02/08/11		0	0.0
02/25/92	1	9	9.0	03/30/95	35	106	3.0	11/20/02	82	117	1.4	03/02/11		0	0.0
02/26/92	1	10	10.0	04/26/95	27	69	2.5	02/14/03	86	137	1.6	04/15/11		0	0.0
02/28/92	2	13	6.3	05/25/95	29	69	2.4	05/09/03	84	116	1.4	05/16/11		0	0.0
03/13/92	14	91	6.5	06/15/95	21	32	1.5	08/04/03	87	109	1.2	06/11/11		0	0.0
04/16/92	34	180	5.3	07/27/95	42	108	2.6	10/30/03	87	109	1.3	08/27/11		0	0.0
05/22/92	36	181	5.0	08/31/95	35	78	2.2	01/22/04	84	106	1.3	09/14/11		0	0.0
07/02/92	41	214	5.2	09/29/95	29	67	2.3	04/19/04	88	101	1.1	10/17/11		0	0.0
08/14/92	43	218	5.1	10/26/95	27	58	2.1	07/15/04	87	85	1.0	11/02/11	1148	95	0.1
09/25/92	42	221	5.3	11/30/95	35	78	2.2	10/13/04	90	104	1.2	12/12/11		0	0.0
10/29/92	34	231	6.8	12/14/95	14	34	2.4	01/10/05	89	108	1.2	02/18/12		0	0.0
11/30/92	32	197	6.2	02/15/96	63	175	2.8	04/08/05	88	90	1.0	03/10/12		0	0.0

Table 1b. RCRA LEACHATE ANALYTICAL AND COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

SAMPLE DATE	LABORATORY ANALYSIS					FIELD PARAMETERS			CO_2	LEACHATE	NOTES
	CN TOTAL (mg/L)	CN FREE (mg/L)	TOC (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	PH (S.U.)	COND (mS/cm)	TEMP (^oC)	INJECTED (lbs)	TRANSFER VOLUME (gallons)	
10/20/00	360	-	-	-	-	10.04	-	-	-	-	
01/18/01	340	-	-	-	-	10.01	-	-	-	-	
04/13/01	310	-	-	-	-		-	-	-	-	
07/06/01	300	-	-	-	-	9.71	-	-	-	-	
09/28/01	270	-	-	-	-	9.65	-	-	-	-	
12/19/01	322	-	-	-	-	9.75	-	-	-	-	
03/13/02	269	-	-	-	-	9.47	-	-	-	-	
08/30/02	276	-	-	-	-	9.73	-	-	-	-	
02/14/03	225	-	-	-	-	9.77	-	-	-	-	
08/04/03	244	-	-	-	-	9.66	-	-	-	-	
Previously collected total cyanide and pH data included for chart trendline (10/20/00 - 8/4/03).											
01/22/04	144	1.79	-	887 [1]	4900	9.76 (lab)	88700	-	-	-	Semiannual sample. Total alkalinity = 45,600 mg/L.
05/27/04	166	1.77	-	727	4450	9.47 (lab)	-	-	-	-	Pre-pilot test sample.
07/15/04	181	2.11	-	813	4510	10	52.9	21	-	85.2	Semiannual sample.
09/01/04	184	10.9 [2]	-	830	-	-	-	-	-	-	From pilot test KO88 sample analysis.
09/02/04	-	-	-	-	-	-	-	-	-	-	Begin CO_2 injection.
09/08/04	-	-	-	-	-	10.66	-	21.9		-	pH directly from sump.
09/10/04	-	-	-	-	-	9.64	-	20.4	4,800	-	Begin pH reading from petcock effluent.
09/17/04	-	-	-	-	-	9.70	-	18.4		-	
09/22/04	-	-	-	-	-	10.06	50.8	20.1	-	-	
09/23/04	189	1.85	399	-	-	-	-	-	-	-	Pilot test sump sample.
09/29/04	-	-	-	-	-	9.89	5.27	20.1	-	-	Assumed typo on conductivity.
10/06/04	-	-	-	-	-	9.74	53.0	20.3	-	-	
10/13/04	-	-	-	-	-	9.31	52.4	18.3	6,400	-	
10/20/04	-	-	-	-	-	9.66	52.7	17.1	6,800	-	Begin spreading out CO_2 injection (1 bottle Wed. & 1 Fri. or Mon.).
10/21/04	160	0.858	1170	-	-	-	-	-	7,200	104.3	Pilot test sump sample.
10/27/04	-	-	-	-	-	9.78	53.2	15.5	7,600	-	
11/04/04	-	-	-	-	-	10.09	61.1	11.3	8,400	-	
11/10/04	-	-	-	-	-	9.72	53.8	12.8	9,200	-	
11/18/04	-	-	-	-	-	9.85	53.0	12.2	10,000	-	
11/24/04	191	0.894	433		-	10.10	58.6	11.4	10,800	-	Pilot test sump sample.
12/02/04	-	-	-	-	-	10.12	56.8	11.4	11,600	-	
12/08/04	-	-	-	-	-	10.48	38.0	11.1	12,400	-	
12/14/04	-	-	-	-	-	9.70	39.0	10.7	13,200	-	
12/22/04	-	-	-	-	-	10.55	52.3	10.2	14,000	-	
12/23/04	186	2.04	401	927	-	-	-	-	-	-	From pilot test KO88 sample analysis.
12/29/04	-	-	-	-	-	10.12	44.2	9.2	14,400	-	
01/05/05	-	-	-	-	-	9.89	41.4	8.4	15,600	-	
01/10/05	182	1.53	472	896	5600	10.02	50	8.9	16,000	108.1	Semiannual sample.
01/17/05	-	-	-	-	-	-	-	-	16,800	-	
01/19/05	-	-	-	-	-	-	-	-	17,200	-	
01/26/05	-	-	-	-	-	9.60	55.8	10.9	18,000	-	
01/31/05	-	-	-	-	-	-	-	-	18,400	-	

Table 1b. RCRA LEACHATE ANALYTICAL AND COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

SAMPLE DATE	LABORATORY ANALYSIS					FIELD PARAMETERS			CO_2	LEACHATE	NOTES
	CN TOTAL (mg/L)	CN FREE (mg/L)	TOC (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	PH (S.U.)	COND (mS/cm)	TEMP (°C)	INJECTED (lbs)	TRANSFER VOLUME (gallons)	
02/02/05	-	-	-	-	-	9.31	55.2	10.8	18,800	-	
02/09/05	-	-	-	-	-	9.31	55.8	9.6	19,600	-	
02/11/05	-	-	-	-	-	-	-	-	20,000	-	
02/16/05	-	-	-	-	-	9.41	55.8	8.5	20,800	-	
02/20/05	156	1.88	455	-	-	9.31	56.9	10.6	20,800	-	Pilot test sump sample.
02/24/05	-	-	-	-	-	9.62	57.1	11.8	21,200	-	
03/19/05	-	-	-	-	-	9.28	56.4	13.7	22,000	-	
03/23/05	146	1.27	409	-	-	9.54	57.2	13.0	22,400	-	Pilot test sump sample.
03/30/05	-	-	-	-	-	9.27	56.1	14.9	23,600	-	
04/08/05	-	-	-	-	-	9.03	56.12	15.7	-	90	Inspection and transfer. No sample required.
05/04/05	148	1.48	-	720	4830	9.01	55.4	16.4	28,000	-	Pilot test sump sample.
05/11/05	-	-	-	-	-	8.79	55.2	19.7	28,400	-	
05/18/05	-	-	-	-	-	8.80	55.5	17.9	29,200	-	
05/25/05	-	-	-	-	-	9.10	55.9	19.0	30,000	-	
06/01/05	-	-	-	-	-	9.00	55.6	19.0	30,800	-	
06/08/05	-	-	-	-	-	9.07	55.9	18.1	31,600	-	
06/09/05	167	1.14	-	741	-	9.16	56.1	17.3	31,600	-	From pilot test KO88 sample analysis.
06/15/05	-	-	-	-	-	9.00	56.2	19.7	32,400	-	
06/22/05	-	-	-	-	-	9.02	55.9	19.2	33,200	-	
06/29/05	-	-	-	-	-	9.33	57.8	20.3	34,000	-	
07/06/05	149	1.28	369	741	4710	9.28	57.1	20.8	35,200	75	Semiannual sample.
08/24/05	-	-	-	-	-	-	-	-	36,000	-	Stop injection of CO_2.
08/30/05	-	-	-	-	-	-	-	-	-	-	Install vacuum blower on Vent 1. Cap other two vents.
09/30/05	-	-	-	-	-	-	-	-	-	60	Transfer RCRA leachate.
03/18/06	150	1.03	397	792	5300	9.53	62.3	11.5	-	101	Transfer RCRA leachate after 170 days (previously < 90).
09/13/06	135	1.86	393	736	6030	9.75	61.6	20.2	-	67	Transfer RCRA leachate after 178 days (previously < 90).
10/18/06	-	-	-	-	-	-	-	-	-	25	Transfer RCRA leachate to install heat source.
03/18/07	101	1.05	-	793	8100	9.41	68.3	14.7	-	92	Transfer RCRA leachate after 151 days (previously < 90).
09/30/07	-	-	-	-	-	9.91	103.1	20.4	-	0	Not enough leachate to transfer (196 days from previous).
03/24/08	171	1.25	916	1190	12500	9.36	83.9	14.0	-	83	Transfer RCRA leachate after 369 days (previously < 90).
09/09/08	70.4	0.785	642	952	10300	9.42	88.8	23.8	-	72	Transfer RCRA leachate after 172 days (previously < 90).
06/16/11	2.46	0.295	-	1250	15900	9.62	90.6	20.2	-	-	Check sample, no transfer. WAD analysis. Sample from sump.
09/24/11	27.0	0.0620	-	487	6040	9.57	58.8	22.7	-	-	Check sample, no transfer. WAD analysis. Sample from drips.
11/02/11	147	0.209	1330	1740	21800	9.50	98.6	24.0	-	95	Transfer RCRA leachate. WAD analysis. Sample from sump.

NOTES:

[1] Fluoride per USEPA method 300.0. By USEPA method 340.2, value is 779 mg/L.

[2] KO88 analysis on sample dated 9/1/04 is for Cyanide, Amenable (USEPA Method 334.5), due to incomplete instructions on chain-of-custody. All subsequent samples were analyzed in accordance with project SAP (EPA Method 3354M).

-= Not sampled, measured, analyzed, or not available

°C = degrees Celsius
CO_2 = carbon dioxide
COND = conductivity
CN = cyanide
lbs = pounds
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
RCRA = Resource Conservation and Recovery Act
SAP = Sampling and Analysis Plan
TOC = total organic carbon
USEPA = United States Environmental Protection Agency
S.U. = Standard Units
WAD = Weak Acid Dissociable

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		TOX (mg/L)		NOTES
MW-3S	Aug-87	-	-	-	-	-	-	0.005	U	0.005	U	0.7		15		-		-		
	Aug-87	-	-	-	-	-	-	0.01	U	0.01	U	1.0	U	5	U	-		-		
	Dec-87	-	-	-	-	-	-	0.005	U	0.005	U	0.4		14.39		-		-		
	Jan-88	-	-	132.35	-	-	-	0.005	U	0.005	U	0.6		16.39		-		-		
	Apr-88	-	-	129.35	-	-	-	0.01	U	0.01	U	0.5		15.5		-		-		
	Jul-88	-	-	127.60	-	-	-	0.01	U	0.01	U	0.4		-		-		-		
	Aug-88	-	-	-	-	-	-	-		-		0.4		17.7		-		-		
	Oct-88	-	-	125.56	-	-	-	0.01	U	0.01	U	0.4		-		-		-		
	Dec-88	-	-	-	-	-	-	-		-		0.4		16		-		-		
	Jan-89	-	-	131.54	-	-	-	0.01	U	0.01	U	0.3		15.8		-		-		
	Apr-89	-	-	130.05	8.06	262	-	0.01	U	0.01	U	0.4		-		29.2		-		
	Jul-89	-	-	127.78	7.67	267	-	0.01	U	0.01	U	0.2		-		2		-		
	Aug-89	-	-	-	-	-	-	-		-		0.2		17		-		-		
	Oct-89	-	-	127.13	7.76	268	-	0.01	U	0.01	U	0.2		-		1		-		
	Jan-90	-	-	132.51	7.82	212	-	0.01	U	0.01	U	0.4		15.89		2		-		
	Apr-90	-	-	129.24	8.26	306	-	0.01	U	0.01	U	0.4		-		0.61		-		
	Jul-90	-	-	128.59	8.60	261	-	0.01	U	0.01	U	0.4		-		1		-		
	Aug-90	-	-	-	-	-	-	-		-		0.4		-		-		-		
	Oct-90	-	-	125.15	7.63	280	-	0.04	UJ	0.04	UJ	0.4		-		1		-		
	Feb-94	-	-	-	8.34	290	-	0.01	U	0.01	U	0.3		24		2		0.005		
	May-94	-	-	-	8.31	320	-	0.01	U	0.01	U	0.3		29		1		0.023		
	Aug-94	-	-	-	8.41	320	-	0.01	U	0.01	U	0.5		24		2		0.018		
	Nov-94	-	-	-	8.16	240	-	0.01	U	0.01	U	0.3		25		1		0.030		
	Feb-95	-	-	-	8.23	310	-	0.01	U	0.01	U	0.3		38		1		-		
	May-95	-	-	-	8.24	290	-	0.01	U	0.01	U	0.4		27		1	U	0.011		
	Aug-95	-	-	-	8.25	290	-	0.01	U	0.01	U	0.3		25		1		0.036		
	Nov-95	-	-	-	8.28	290	-	0.01	U	0.01	U	0.3		25		0.5		0.024		
	Feb-96	-	-	133.76	8.18	310	15.0	0.01	U	0.01	U	0.2	U	29		1	U	0.021		
	May-96	-	-	130.37	8.39	279	14.9	0.01	U	0.01	U	0.3		30		0.9		0.039		
	Aug-96	-	-	129.42	8.27	309	16.7	0.01	U	0.01	U	0.3		28		0.8		0.021		
	Nov-96	-	-	133.52	8.34	302	16.5	0.01	U	0.01	U	0.2		31		0.8		0.026		
	Feb-97	-	-	132.12	8.21	314	14.1	0.01	U	0.01	U	0.3		33		0.6		0.023		
	May-97	-	-	130.02	8.32	328	15.4	0.01	U	0.01	U	0.3		30		0.8		0.012		
	Aug-97	-	-	128.92	8.46	311	17.4	0.01	U	0.01	U	0.3		35		0.5		0.024		
	Nov-97	-	-	131.27	8.63	316	16.1	0.01	U	0.01	U	0.2		30		0.7		0.020		
	Feb-98	-	-	134.02	8.69	319	14.3	0.01	U	0.01	U	0.3		31		0.6		0.023		
	May-98	-	-	129.76	7.86	314	14.8	0.01	U	0.01	U	0.3		35		0.7		0.013		
	Aug-98	-	-	129.09	8.20	310	16.0	0.01	U	0.01	U	0.3		32		0.6		0.021		
	Nov-98	-	-	129.23	8.22	312	16.9	0.01	U	0.01	U	0.3		30		0.8		0.010		
	Feb-99	-	-	132.99	8.54	311	13.9	0.01	U	0.01	U	0.2		34		0.5		0.015		
	May-99	-	-	129.42	8.64	317	14.4	0.01	U	0.01	U	0.3		30		0.8		0.015		
	Aug-99	-	-	128.34	8.37	259	16.6	0.01	U	0.01	U	0.3		33		0.3		0.016		
	Nov-99	-	-	128.23	8.09	314	16.6	0.01	U	0.01	U	0.3		30		0.5		0.040		
	Feb-00	-	-	132.98	8.03	324	14.9	0.01	U	0.01	U	0.3		33		0.5		0.016		
	May-00	-	-	131.27	8.17	330	14.3	0.01	U	0.01	U	0.3		38		0.6		0.020		
	Sep-00	-	-	128.43	-	-	-	-		-		-		-		-		-		
	Dec-00	141.76	11.29	130.47	-	-	-	-		-		-		-		-		-		
	Mar-01	141.76	11.69	130.07	-	-	-	-		-		-		-		-		-		
	Jun-01	141.76	12.48	129.28	-	-	-	-		-		-		-		-		-		
	Oct-01	141.76	13.14	128.62	-	-	-	-		-		-		-		-		-		
	Dec-01	141.76	8.36	133.40	-	-	-	-		-		-		-		-		-		
	Mar-02	141.76	10.66	131.10	-	-	-	-		-		-		-		-		-		
	Jun-02	141.76	12.34	129.42	-	-	-	-		-		-		-		-		-		

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)	WAD CYANIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MW-3S	Sep-02	141.76	12.95	128.81	-	-	-	-	-	-	-	-	-	
	Dec-02	141.76	11.16	130.60	-	-	-	-	-	-	-	-	-	
	Mar-03	141.76	9.41	132.35	-	-	-	-	-	-	-	-	-	
	Sep-03	141.76	12.71	129.05	-	-	-	-	-	-	-	-	-	
	Apr-04	141.76	11.36	130.40	-	-	-	-	-	-	-	-	-	
	Sep-04	141.76	12.71	129.05	-	-	-	-	-	-	-	-	-	
	Apr-05	141.76	10.31	131.45	-	-	-	-	-	-	-	-	-	
	Sep-05	141.76	18.50	123.26	8.28	322.90	18.40	-	0.005 UJ	0.5 U	35.50	-	-	
	Mar-06	141.76	10.11	131.65	-	-	-	-	-	-	-	-	-	
	Sep-06	141.76	12.59	129.17	-	-	-	-	-	-	-	-	-	
	Mar-07	141.76	10.79	130.97	-	-	-	-	-	-	-	-	-	Depth to water only
	Sep-07	141.76	12.84	128.92	-	-	-	-	-	-	-	-	-	Depth to water only
	Mar-08	141.76	10.96	130.80	-	-	-	-	-	-	-	-	-	Depth to water only
	May-08	141.76	12.02	129.74	-	-	-	-	-	-	-	-	-	Monitoring Potential Rebound**
	Sep-08	141.76	12.67	129.09	-	-	-	-	-	-	-	-	-	Depth to water only
	Dec-08	141.76	11.50	130.26	-	-	-	-	-	-	-	-	-	Monitoring Potential Rebound**
	Mar-09	141.76	9.33	132.43	-	-	-	-	-	-	-	-	-	Depth to water only
	Jun-09	141.76	11.85	129.91	-	-	-	-	-	-	-	-	-	Monitoring Potential Rebound**
	Sep-09	141.76	17.26	124.50	-	-	-	-	-	-	-	-	-	Depth to water only
	Mar-10	141.76	10.82	130.94	-	-	-	-	-	-	-	-	-	Depth to water only
	Jun-10	141.76	11.02	130.74	-	-	-	-	-	-	-	-	-	Depth to water only
	Sep-10	141.76	12.13	129.63	-	-	-	-	-	-	-	-	-	Depth to water only
	Mar-11	141.76	8.33	133.43	-	-	-	-	-	-	-	-	-	Depth to water only
	Sep-11	141.76	12.33	129.43	-	-	-	-	-	-	-	-	-	Depth to water only
	Mar-12	141.76	10.62	131.14	-	-	-	-	-	-	-	-	-	Depth to water only
MWR-4S	Jun-84	-	-	-	7.69	240		0.01	-	0.6	-	-	-	
	Dec-84	-	-	-	7.19	320		0.01	0.00	0.51	-	-	-	
	Jan-85	-	-	-	7.48	336		0.01	0.00	0.56	-	-	-	
	Feb-85	-	-	-	7.48	444		0.01	0.00	0.52	-	-	-	
	Mar-85	-	-	-	8.48	491		0.01	0.00	0.37	-	-	-	
	Apr-85	-	-	-	7.88	520		0.01	0.00	0.5	-	-	-	
	May-85	-	-	-	7.88	574		0.01	0.00	0.52	-	-	-	
	Jun-85	-	-	-	8.05	480		0.01	0.00	0.64	-	-	-	
	Jul-85	-	-	-	7.84	509		0.01	0.00	0.37	-	-	-	
	Aug-85	-	-	-	7.44	503		0.01	0.00	0.46	-	-	-	
	Sep-85	-	-	-	7.57	604		0.03	0.00	0.58	-	-	-	
	Oct-85	-	-	-	7.80	479		0.02	0.00	0.54	-	-	-	
	Nov-85	-	-	-	8.44	474		0.02	0.00	0.57	-	-	-	
	Dec-85	-	-	-	8.02	473		0.02	0.00	0.5	-	-	-	
	Jan-86	-	-	-	8.13	436		0.02	0.00	0.37	-	-	-	
	Aug-86	-	-	-	-	-		0.04	0.01	0.82	98	-	-	
	Aug-87	-	-	-	-	-		0.02	0.01	0.1	91.5	-	-	
	Aug-87	-	-	-	-	-		-	-	1	66	-	-	
	Dec-87	-	-	-	-	-		-	-	0.1	25	-	-	
	Jan-88	-	-	133.13	-	-		-	-	0.31	118	-	-	
	Apr-88	-	-	125.91	-	-		-	-	0.21	48.5	-	-	
	Aug-88	-	-	-	-	-		-	-	0.21	47.9	-	-	
	Dec-88	-	-	-	-	-		-	-	0.25	69.69	-	-	
	Jan-89	-	-	131.35	-	-		-	-	0.15	141	-	-	
	Aug-89	-	-	-	-	-		-	-	0.38	61.09	-	-	
	Jan-90	-	-	128.00	-	-		-	-	0.2	62.59	-	-	
	Aug-90	-	-	-	-	-		-	-	0.2	80.5	-	-	

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MWR-4S	Feb-94	-	-	-	7.62	320	-	0.01		0.01		0.2		41	1	-	
	May-94	-	-	-	7.60	290	-	0.01	U	0.01	U	0.2	U	33	1	0.006	
	Aug-94	-	-	-	7.55	400	-	0.01		-		0.2	U	50	1	0.011	
	Nov-94	-	-	-	7.44	280	-	0.01	U	0.01	U	0.2	U	27	2	0.01	
	Feb-95	-	-	-	7.55	260	-	0.01	U	0.01	U	0.2	U	27	2	0.01	
	May-95	-	-	-	7.65	260	-	0.01	U	0.01	U	0.2	U	22	2	0.01	
	Aug-95	-	-	-	7.57	340	-	0.01	U	0.01	U	0.2	U	40	2	0.01	
	Nov-95	-	-	-	7.34	320	-	0.01	U	0.01	U	0.2	U	40	0.7	0.006	
	Feb-96	-	-	135.18	7.30	390	16.0	0.01	U	0.01	U	0.2	U	60	1.0	0.005	
	May-96	-	-	131.25	7.16	411	14.1	0.01	U	0.01	U	0.2	U	60	1.3	0.016	
	Aug-96	-	-	-	-	-	-	-		-		-		-	-	-	
	Nov-96	-	-	135.70	7.07	536	15.5	0.01	U	0.01	U	0.2	U	50	1.3	0.008	
	Feb-97	-	-	132.80	6.87	665	15.0	0.01	U	0.01	U	0.2	U	100	1.4	0.01	
	May-97	-	-	129.75	7.03	672	15.6	0.01	U	0.01	U	0.2	U	71	1.4	0.007	
	Aug-97	-	-	128.38	7.16	635	16.3	0.006		0.01	U	0.2	U	81	1.4	0.012	
	Nov-97	-	-	130.15	7.39	663	16.4	0.01	U	0.01	U	0.2	U	70	1.5	0.009	
	Feb-98	-	-	133.00	7.21	722	16.5	0.01	U	0.01	U	0.2	U	90	1.2	0.009	
	May-98	-	-	129.41	7.04	695	16.0	0.01	U	0.01	U	0.2	U	80	1.3	0.009	
	Aug-98	-	-	128.70	7.00	700	17.0	0.01	U	0.01	U	0.2	U	80	1.68	0.009	
	Nov-98	-	-	128.90	6.84	689	17.2	0.01	U	0.01	U	0.2	U	70	1.5	0.011	
	Feb-99	-	-	131.83	7.11	680	16.6	0.01	U	0.01	U	0.5		80	0.8	-	
	May-99	-	-	134.38	7.22	705	16.1	0.01	U	0.01	U	0.2	U	120	1.2	0.079	
	Aug-99	-	-	126.46	6.77	565	16.8	0.01	U	0.01	U	0.2	U	80	0.8	-	
	Nov-99	-	-	128.51	7.47	685	17.2	0.01	U	0.01	U	0.3		70	1.2	0.01	
	Feb-00	-	-	132.09	6.82	696	17.0	0.01	U	0.01	U	0.2	U	100	0.7	0.012	
	May-00	-	-	129.89	7.23	627	16.8	0.01	U	0.01	U	0.6		80	1.9	0.018	
	Sep-00	-	-	128.25	-	-	-	-		-		-		-	-	-	
	Dec-00	143.53	14.47	129.26	-	-	-	-		-		-		-	-	-	
	Mar-01	143.53	14.35	129.38	-	-	-	-		-		-		-	-	-	
	Jun-01	143.53	14.76	128.97	-	-	-	-		-		-		-	-	-	
	Oct-01	143.53	15.95	127.78	-	-	-	-		-		-		-	-	-	
	Dec-01	143.53	11.37	132.36	-	-	-	-		-		-		-	-	-	
	Mar-02	143.53	13.48	130.25	-	-	-	-		-		-		-	-	-	
	Jun-02	143.53	14.86	128.87	-	-	-	-		-		-		-	-	-	
	Sep-02	143.53	15.00	128.73	-	-	-	-		-		-		-	-	-	
	Dec-02	143.53	14.65	129.08	-	-	-	-		-		-		-	-	-	
	Mar-03	143.53	11.65	132.08	-	-	-	-		-		-		-	-	-	
	Sep-03	143.53	15.12	128.61	-	-	-	-		-		-		-	-	-	
	Apr-04	143.53	13.68	130.05	-	-	-	-		-		-		-	-	-	
	Sep-04	143.53	14.80	128.93	-	-	-	-		-		-		-	-	-	
	Apr-05	143.53	12.70	130.83	-	-	-	-		-		-		-	-	-	
	Sep-05	143.53	20.37	123.16	7.18	621	18.8	-		0.005	UJ	0.5	U	52.5	-	-	
	Mar-06	143.53	11.73	131.80	-	-	-	-		-		-		-	-	-	
	Sep-06	143.53	14.92	128.61	-	-	-	-		-		-		-	-	-	
	Mar-07	143.53	12.76	130.77	-	-	-	-		-		-		-	-	-	Depth to water only
	Sep-07	143.53	15.19	128.34	-	-	-	-		-		-		-	-	-	Depth to water only
	Mar-08	143.53	12.22	131.31	-	-	-	-		-		-		-	-	-	Depth to water only
	Sep-08	143.53	13.97	129.56	-	-	-	-		-		-		-	-	-	Depth to water only
	Dec-08	143.53	11.25	132.28	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Mar-09	143.53	9.53	134.00	-	-	-	-		-		-		-	-	-	Depth to water only
	Jun-09	143.53	12.73	130.80	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-09	143.53	13.31	130.22	-	-	-	-		-		-		-	-	-	Depth to water only
	Mar-10	143.53	12.40	131.13	-	-	-	-		-		-		-	-	-	Depth to water only

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		TOX (mg/L)		NOTES
MW-5S	Jun-10	143.53	12.23	131.30	-	-	-	-		-		-		-		-		-		Depth to water only
	Sep-10	143.53	13.45	130.08	-	-	-	-		-		-		-		-		-		Depth to water only
	Mar-11	143.53	10.57	132.96	-	-	-	-		-		-		-		-		-		Depth to water only
	Sep-11	143.53	13.53	130.00	-	-	-	-		-		-		-		-		-		Depth to water only
	Mar-12	143.53	7.72	135.81	-	-	-	-		-		-		-		-		-		Depth to water only
	Aug-87	-	-	-	-	-	-	24.29		0.13		72		552		-		-		
	Aug-87	-	-	-	-	-	-	34.09		0.21		57		680		-		-		
	Dec-87	-	-	-	-	-	-	6.84		0.08		64		182		-		-		
	Jan-88	-	-	136.14	-	-	-	7.05		0.23		28.5		54.5		-		-		
	Apr-88	-	-	133.37	-	-	-	14.69		0.21		29.5		182		-		-		
	Jul-88	-	-	131.77	-	-	-	11.39		0.33		38		-		-		-		
	Aug-88	-	-	-	-	-	-	-		-		38		133		-		-		
	Oct-88	-	-	132.64	-	-	-	12.10		0.10		36.7		-		-		-		
	Dec-88	-	-	-	-	-	-	-		-		36.7		59.4		-		-		
	Jan-89	-	-	135.61	-	-	-	2.95		0.18		19.39		94.3		-		-		
	Mar-89	-	-	134.91	9.1	-	12	3.40		0.26	J	**16.8**		74		-		-		
	Jun-89	-	-	132.21	8.02	2,140	15	13.80		0.476		**28.4**		136		-		-		
	Sep-89	-	-	131.52	8.17	1,300	19	8.72	J	0.043	J	**31.1**		80		-		-		
	Jan-90	-	-	135.85	7.63	1,280	15	7.76		0.553	J	**22.3**	J	106		-		-		
	Mar-90	-	-	133.16	7.98	1,544	12	10.40		0.465		**17.6**		121		-		-		
	Jun-90	-	-	132.34	8.28	206	15	4.72		0.58		**30**	J	130	J	-		-		
	Sep-90	-	-	130.44	7.92	2,160	19	21.80	J	**3.71**	J	**32.3**	J	191	J	-		-		
	Jan-91	-	-	-	8.86	1,450	12	1.53		0.16		5.2		76		-		-		
	Mar-91	-	-	132.01	7.86	1,593	19	6.42		0.25		**13.7**		146		-		-		
	Jun-91	-	-	131.55	8.45	300	14	13.94		**0.97**		**18.3**		166		-		-		
	Nov-91	-	-	133.54	7.88	1,440	15	5.08		0.14	J	**19**		140	J	-		-		
	Dec-91	-	-	132.96	7.05	1,220	14	2.92	J	0.03	J	**10**		130		-		-		
	Mar-92	-	-	133.29	6.97	1,600	16	3.95		0.17		**14.8**		114	J	-		-		
	Jun-92	-	-	132.04	7.2	1,820	17	4.70		0.43		**12**		165	J	-		-		
	Sep-92	-	-	131.77	7.04	1,740	15	4.40		0.35		**11**		137		-		-		
	Nov-92	-	-	-	6.59	1,360	15	1.16		0.26		7.7		100		-		-		
	Nov-92*	-	-	-	-	-	-	1.33		0.18		7.9		110		-		-		Duplicate
	Mar-93	-	-	134.31	6.8	1,090	15	0.89		0.07	J	7.4		79		-		-		
	May-93	-	-	-	7.07	1,919	17	4.70		0.48	J	**15**		123	J	-		-		
	Aug-93	-	-	-	6.91	1,680	15	1.50		0.22	J	9.7		134		-		-		
	Dec-93	-	-	-	6.86	1,260	15	0.75		0.03		7.4		170		-		-		
	Feb-94	-	-	135.89	6.98	1850	-	3.46		0.09		**12**		140		7		0.028		
	May-94	-	-	135.49	6.89	1650	-	1.50		0.12		9		130		6		0.038		
	Aug-94	-	-	135.27	6.91	1650	-	1.40		0.14		**10**		110		7		0.033		
	Nov-94	-	-	134.14	6.83	1370	-	1.80		0.04		9.4		100		1	U	0.037		
	Feb-95	-	-	-	6.56	980	-	0.44		0.08		5		68		8		0.019		
	May-95	-	-	-	6.84	1480	-	1.50		0.1		**12**		81		16		0.04		
	Aug-95	-	-	-	6.93	1570	-	0.95		0.14		8.1		90		6		0.04		
	Nov-95	-	-	-	6.86	1080	-	0.31		0.03		5.6		130		3		0.03		
	Feb-96	-	-	138.41	6.73	1130	16.0	0.28		0.02		4.5		70		3		0.021		
	May-96	-	-	136.07	7.09	1430	14.8	0.96		0.04		8.9		80		4.3		0.036		
	Aug-96	-	-	135.19	6.91	1660	15.2	0.67		0.11		8.1		80		4.7		0.027		
	Nov-96	-	-	138.19	6.87	1060	15.1	0.30		0.05		4.5		110		3.2		0.022		
	Feb-97	-	-	137.29	6.86	1480	14.9	0.81		0.05		8		80		4.1		0.031		
	May-97	-	-	135.67	7.02	1590	15.1	0.75		0.11		**10**		56		4.0		0.023		
	Aug-97	-	-	134.99	7.02	1570	15.6	0.50		0.03		7.6		70		4.1		0.023		
	Nov-97	-	-	135.79	7.11	1330	14.9	0.46		0.01	U	6.3		70		3.6		0.02		
	Feb-98	-	-	138.19	7.00	1000	15.0	0.19		0.01	U	5		100		2.2		0.013		

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)	SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MW-5S	May-98	-	-	135.24	7.78	1470	14.7	0.60		0.12		9.3	70	3.4	0.023	
	Aug-98	-	-	135.28	6.90	1500	15.0	0.54		0.04		7.1	70	3.9	0.02	
	Nov-98	-	-	135.37	6.88	1400	15.2	0.34		0.04		5.9	70	3.5	0.018	
	Feb-99	-	-	137.31	6.99	1110	15.0	0.40		0.02		4.4	70	2.2	0.032	
	May-99	-	-	134.91	7.21	1440	14.5	0.60		0.07		8.7	140	3.8	0.018	
	Aug-99	-	-	134.69	6.96	1420	15.2	0.51		0.06		5.8	80	3.7	0.012	
	Nov-99	-	-	144.92	7.12	1360	15.1	0.30		0.02		6.6	70	3.1	0.022	
	Feb-00	-	-	137.52	6.64	1140	15.1	0.16		0.01	U	4.4	70	2.8	0.011	
	May-00	-	-	136.42	7.10	1500	14.9	0.91		0.05		9.5	80	3.0	0.031	
	Sep-00	-	-	134.88	7.12	1470	15.1	-		0.01	U	6.3	70	-	-	
	Dec-00	158.92	22.84	136.08	-	-	-	-		-		-	-	-	-	
	Mar-01	158.92	23.58	135.34	6.89	1136	18.4	-		0.15		7.0	70	-	-	
	Jun-01	158.92	23.96	134.96	-	-	-	-		-		-	-	-	-	
	Oct-01	158.92	24.21	134.71	6.92	1202	16.0	-		0.0484		6.4	74.3	-	-	
	Dec-01	158.92	21.34	137.58	-	-	-	-		-		-	-	-	-	
	Mar-02	158.92	22.66	136.26	7.25	1377	15.6	-		0.114		**11.5**	71.5	-	-	Exceeds Fl g.w. protection standar
	Jun-02	158.92	23.87	135.05	7.21	1317	18.1	-		-		9.16	-	-	-	
	Sep-02	158.92	24.13	134.79	7.17	1366	16.1	-		0.0676	U	7.28	74.2	-	-	
	Sep-02*									0.0553	U					Duplicate
	Dec-02	158.92	22.66	136.26	-	-	-	-		-		-	-	-	-	
	Mar-03	158.92	21.68	137.24	6.85	1667	15.8	-		0.042		6.90	55.0	-	-	
	Sep-03	158.92	24.02	134.90	6.85	1597	17.2	-		0.0142		8.31	81.1	-	-	
	Apr-04	158.92	22.81	136.11	6.66	1720	16.8	-		0.0265		9.45	59.4	-	-	
	Sep-04	158.92	23.91	135.01	6.60	1549	21.3	-		0.0162		7.55	69.4	-	-	
	Sep-04*	-	-	-	-	-	-	-		0.0160		7.39	69.3	-	-	Duplicate
	Apr-05	158.92	22.43	136.49	7.00	1025	15.8	0.0923	J	0.0148		3.84	52.1	-	-	
	Apr-05*	-	-	-	-	-	-	0.0867	J	0.0156		3.85	52.4	-	-	Duplicate
	Sep-05	158.92	24.31	134.61	7.08	1341	16.2	-		0.0150		5.10	80.7	-	-	
	Mar-06	158.92	21.86	137.06	7.25	868	14.7	0.328		0.0114		6.20	75.1	-	-	ODEQ split sample
	Mar-06	158.92	22.92	136.00	7.3	820	14.6	0.29		0.010		6.5	76.7	-	-	ODEQ lab results
	Sep-06	158.92	24.08	134.84	7.23	896	17.3	0.0087		0.0251	U	7.48	91.9	-	-	
	Sep-06*	-	-	-	-	-	-	-		0.0184	U	7.46	91.5	-	-	Duplicate
	Mar-07	158.92	22.69	136.23	7.33	952.5	15.6	0.436		0.0139	J	7.25	82.1	-	-	
	Sep-07	158.92	24.27	134.65	7.58	1022	15.3	0.77		0.0188	J	**10.2**	102	-	-	Exceeds Fl g.w. protection standar
	Jan-08	158.92	20.60	138.32	6.85	586	14.3	-		-		5.22	-	-	-	Compliance resamplng even
	Jan-08*	-	-	-	-	-	-	-		-		5.01	-	-	-	Duplicate
	Feb-08	-	-	-	-	-	-	-		-		4.62	-	-	-	Compliance resamplng even
	Mar-08	158.92	22.29	136.63	7.25	844	15.7	0.436		0.00780		8.08	86.4	-	-	
	May-08	158.92	23.19	135.73	-	-	-	-		-		-	-	-	-	Monitoring Potential Rebound**
	Sep-08	158.92	23.36	135.56	7.16	859.7	16.0	0.0577		0.01150	U	4.89	67.6	-	-	
	Dec-08	158.92	22.80	136.12	-	-	-	-		-		-	-	-	-	Monitoring Potential Rebound**
	Mar-09	158.92	21.37	137.55	7.19	572.2	14.3	0.0514		0.00500	U	4.11	55.0	-	-	
	Jun-09	158.92	22.97	135.95	-	-	-	-		-		-	-	-	-	Monitoring Potential Rebound**
	Sep-09	158.92	23.15	135.77	7.28	689	17.2	0.119		0.00690		4.73	63.0	-	-	
	Mar-10	158.92	22.10	136.82	7.20	648	15.5	0.151		0.0303		5.03	78.0	-	-	
	Jun-10	158.92	22.50	136.42	-	-	-	-		-		-	-	-	-	Monitoring Potential Rebound**
	Sep-10	158.92	23.22	135.70	7.29	559.2	17.1	0.102		0.00500	U	4.46	55.5	-	-	
	Mar-11	158.92	21.22	137.70	7.32	394.4	14.8	0.0554		0.00660		4.40	35.4	-	-	
	Sep-11	158.92	23.17	135.75	7.78	612.0	16.7	0.124		0.00500		5.92	65.9	-	-	
	Mar-12	158.92	22.13	136.79	7.23	664.7	14.8	0.0767		0.00500	U	4.10	51.6	-	-	

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		TOX (mg/L)		NOTES
MW-17S	Aug-86	-	-	-	-	-	-	0.77		0.02		1.29		-		-		-		
	Aug-86	-	-	-	-	-	-	0.77		0.02		0.88		143		-		-		
	Jan-87	-	-	-	7.46	744		0.99		0.17		0.31		101		7.86		-		
	Jul-87	-	-	-	-	-	-	0.54		0.02		1		1130	J	-		-		
	Aug-87	-	-	-	-	-	-	0.56		0.01		0.52		95.59		-		-		
	Dec-87	-	-	-	-	-	-	0.38		0.005	U	0.38		93.9		-		-		
	Jan-88	-	-	134.46	-	-	-	0.31		0.01		0.92		90.8		-		-		
	Apr-88	-	-	131.05	-	-	-	0.39		0.02		1.17		91.59		-		-		
	Jul-88	-	-	128.26	6.94	768	-	0.32		0.03		0.54		-		88.59		-		
	Aug-88	-	-	-	-	-	-	-		-		0.54		91.09		-		-		
	Oct-88	-	-	126.30	6.92	727	-	0.40		0.01		0.52		-		78.69		-		
	Dec-88	-	-	-	-	-	-	-		-		0.52		90.8		-		-		
	Jan-89	-	-	133.73	-	-	-	0.31		0.02		0.36		89.69		-		-		
	Apr-89	-	-	131.99	6.92	690	-	0.28		0.02		0.56		-		70.19		-		
	Jul-89	-	-	128.58	6.90	717	-	0.27		0.02		0.47		-		1		-		
	Aug-89	-	-	127.53	-	-	-	-		-		0.47		82		-		-		
	Oct-89	-	-	126.29	7.07	693	-	0.28		0.03		0.28		95		4		-		
	Jan-90	-	-	134.25	6.96	619	-	0.25		0.02		0.45		-		5		-		
	Apr-90	-	-	130.57	6.92	723	-	0.27		0.02		0.6		3135		3.22		-		
	Apr-90	-	-	-	6.90	5218	-	20.00		-		0.25		-		1		-		
	Jul-90	-	-	129.48	7.71	705	-	0.28		0.03		0.5		-		3		-		
	Aug-90	-	-	128.33	-	-	-	-		-		0.5		-		-		-		
	Sep-90	-	-	128.07	6.69	790	17.0	0.29	J	0.04	UR	0.6		74	J	-		-		
	Oct-90	-	-	127.67	4.05	760	-	0.13	J	0.04	UJ	0.6		-		1	U	-		
	Jan-91	-	-	126.85	8.01	430	15.0	0.16		0.01		0.5		82		-		-		
	Mar-91	-	-	130.52	6.82	690	18.0	0.22		0.02		0.5		62		-		-		
	Jun-91	-	-	128.36	7.07	710	17.0	0.23		0.03		0.5		87		-		-		
	Sep-91	-	-	126.93	6.76	730	16.0	0.22		0.05		0.5		80		-		-		
	Mar-92	-	-	133.19	6.82	740	16.0	0.14		0.04		0.4		112		-		-		
	Mar-93	-	-	134.95	6.94	740	15.0	0.09		0.02	J	0.3		126		-		-		
	Feb-94	-	-	-	6.78	830	-	0.08		0.01		0.4		120		5		0.012		
	May-94	-	-	-	6.78	890	-	0.07		0.02		0.4		110		3		0.019		
	Aug-94	-	-	-	6.74	910	-	0.06		0.01		0.4		120		3		0.021		
	Nov-94	-	-	-	6.83	700	-	0.07		0.01	U	0.3		95		1	U	0.016		
	Feb-95	-	-	-	6.76	750	-	0.08		0.01		0.2	U	100		4		0.011		
	May-95	-	-	-	6.76	790	-	0.06		0.01	U	6		78		6		0.022		
	Aug-95	-	-	-	6.68	810	-	0.06		0.01		0.5		80		3		0.029		
	Nov-95	-	-	-	8.88	660	-	0.07		0.01	U	0.2		80		1.3		0.013		
	Feb-96	-	-	138.85	6.77	720	16.0	0.07		0.01	U	0.3		80		2.0		0.017		
	May-96	-	-	134.11	6.75	563	14.7	0.05		0.01	U	0.6		70		1.9		0.023		
	Aug-96	-	-	132.81	6.88	739	15.4	0.05		0.01		0.5		70		1.6		0.017		
	Nov-96	-	-	136.91	6.95	613	14.7	0.06		0.01	U	0.2		80		1.2		0.010		
	Feb-97	-	-	137.77	6.79	688	14.0	0.05		0.01	U	0.4		100		1.5		0.024		
	May-97	-	-	134.01	6.82	733	14.8	0.05		0.01	U	0.7		66		1.6		0.011		
	Aug-97	-	-	133.41	6.87	696	14.9	0.05		0.01	U	0.5		67		1.5		0.011		
	Nov-97	-	-	135.41	7.19	678	14.4	0.05		0.01	U	0.4		70		1.5		0.011		
	Feb-98	-	-	138.81	7.14	616	14.3	0.06		0.01	U	0.3		90		1.2		0.010		
	May-98	-	-	133.70	7.04	719	14.9	0.04		0.006		0.8		70		1.4		0.011		
	Aug-98	-	-	133.06	6.60	720	15.0	0.02		0.01	U	0.8		70		1.5		0.010		
	Nov-98	-	-	134.15	6.76	698	14.7	0.03		0.01	U	0.7		70		1.6		0.009		
	Feb-99	-	-	137.67	6.90	705	14.5	0.04		0.01	U	0.5		70		1.4		0.021		
	May-99	-	-	133.40	7.18	722	14.3	0.03		0.01	U	0.9		80		1.9		0.012		
	Aug-99	-	-	132.09	6.66	592	14.8	0.03		0.01	U	0.7		80		1.1				

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)	TOX (mg/L)	NOTES
MW-17S	Nov-99	-	-	133.27	7.19	654	14.6	0.03		0.01	U	0.8		70		1.3	0.016	
	Feb-00	-	-	138.18	6.64	697	14.6	0.03		0.01	U	0.4		80		1.1	0.016	
	May-00	-	-	135.19	6.98	738	14.7	0.02		0.01	U	0.9		80		1.1	0.020	
	Sep-00	-	-	131.80	7.21	747	15.5	-		0.01	U	0.8		60		-	-	
	Dec-00	151.56	15.60	135.96	-	-	-	-		-		-		-		-	-	
	Mar-01	151.56	17.52	134.04	6.87	677	18.5	-		0.01	U	0.7		70		-	-	
	Jun-01	151.56	18.51	133.05	-	-	-	-		-		-		-		-	-	
	Oct-01	151.56	19.92	131.64	6.75	750	15.4	-		0.01		0.803		79.1		-	-	
	Dec-01	151.56	13.23	138.33	-	-	-	-		-		-		-		-	-	
	Mar-02	151.56	16.20	135.36	7.05	775	13.8	-		0.0133		0.839		77.8		-	-	
	Jun-02	151.56	18.38	133.18	-	-	-	-		-		-		-		-	-	
	Sep-02	151.56	19.25	132.31	7.11	707	15.4	-		0.007	U	0.842		74.6		-	-	
	Dec-02	151.56	15.20	136.36	-	-	-	-		-		-		-		-	-	
	Mar-03	151.56	14.02	137.54	6.60	780	15.0	-		0.0205		0.570		69.8		-	-	
	Sep-03	151.56	19.28	132.28	6.79	759	19.3	-		0.005	U	0.733		72.8		-	-	
	Apr-04	151.56	16.83	134.73	6.70	810	15.1	-		0.0071		0.626		61.4		-	-	
	Sep-04	151.56	18.49	133.07	6.91	445	19.6	-		0.0064		0.733		62.2		-	-	
	Apr-05	151.56	15.07	136.49	7.01	654	16.3	0.0122	J	0.0063		0.5	U	60.6		-	-	
	Sep-05	151.56	19.33	132.23	7.02	692.7	15.8	-		0.0056		0.64		61.3		-	-	
	Mar-06	151.56	14.88	136.68	7.02	668.7	15.5	-		0.0061		0.5	U	59.5		-	-	
	Sep-06	151.56	18.82	132.74	6.96	604.2	15.4	-		0.005	U	0.66		62.6		-	-	
	Mar-07	151.56	16.35	135.21	6.98	644.5	15.2	-		0.005	U	0.720		56.8		-	-	
	Sep-07	151.56	19.21	132.35	7.18	574.4	15.9	-		0.005	UJ	0.7		60.3		-	-	
	Mar-08	151.56	16.53	135.03	6.89	521.5	14.3	-		0.025	UJ	0.500	U	56.6		-	-	WAD CN SM4500-CN-I
	May-08	151.56	18.10	133.46	-	-	-	-		-		-		-		-	-	Monitoring Potential Rebound**
	Sep-08	151.56	19.08	132.48	7.04	548.3	16.2	-		0.00590	UJ	0.670		58.2		-	-	
	Sep-08*	-	-	-	-	-	-	-		0.01010	UJ	0.650		57.9		-	-	duplicate
	Dec-08	151.56	17.33	134.23	-	-	-	-		-		-		-		-	-	Monitoring Potential Rebound**
	Mar-09	151.56	13.91	137.65	6.94	507.60	14.80	-		0.00500	U	0.500	U	50.4		-	-	
	Jun-09	151.56	17.90	133.66	-	-	-	-		-		-		-		-	-	Monitoring Potential Rebound**
	Sep-09	151.56	18.75	132.81	7.11	548.2	17.6	-		0.00500	U	0.510		53.4		-	-	
	Sep-09*	-	-	-	-	-	-	-		0.00500	U	0.560		54.8		-	-	duplicate
	Mar-10	151.56	16.45	135.11	7.08	475.8	14.3	-		0.00500	U	0.500	U	52.0		-	-	
	Jun-10	151.56	17.20	134.36	-	-	-	-		-		-		-		-	-	Monitoring Potential Rebound**
	Sep-10	151.56	18.60	132.96	6.99	505.1	16.2	-		0.00500	U	0.550		48.4		-	-	
	Mar-11	151.56	14.02	137.54	7.07	468.3	13.2	-		0.00500	U	0.500	U	46.8		-	-	
	Sep-11	151.56	18.60	132.96	7.06	444.0	15.2	-		0.00500	UJ	0.540		44.7		-	-	
	Mar-12	151.56	16.74	134.82	7.11	610.0	14.2	-		0.00500	U	0.240		44.6		-	-	
MW-22S	Aug-87	-	-	-	-	-	-	0.03		0.007		0.41		18.1		-	-	
	Aug-87	-	-	-	-	-	-	0.11		0.010		1.00	U	46	J	-	-	
	Dec-87	-	-	-	-	-	-	0.17		0.010		0.54		29		-	-	
	Jan-88	-	-	135.35	-	-	-	0.40		0.020		0.76		69.69		-	-	
	Apr-88	-	-	131.64	-	-	-	0.30		0.030		0.52		61		-	-	
	Jul-88	-	-	123.01	-	-	-	0.65		0.050		0.47		-		-	-	
	Aug-88	-	-	-	-	-	-	-		-		0.47		103		-	-	
	Oct-88	-	-	130.62	-	-	-	0.66		0.070		0.45		-		-	-	
	Dec-88	-	-	-	-	-	-	-		-		0.45		103		-	-	
	Jan-89	-	-	134.11	-	-	-	0.62		0.050		0.38		116		-	-	
	Apr-89	-	-	131.99	8.14	522	-	0.75		0.020		0.38		-		5.5	-	
	Jul-89	-	-	128.97	7.71	583	-	0.91		0.100		0.25		-		3	-	
	Aug-89	-	-	-	-	-	-	-		-		0.25		131		-	-	
	Oct-89	-	-	126.65	7.46	654	-	0.82		0.070		0.20		-		4	-	

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)	TOC (mg/L)		TOX (mg/L)	NOTES
MW-22S	Jan-90	-	-	134.58	7.76	649	-	0.88		0.080		0.24		176	5		-	
	Apr-90	-	-	128.54	7.82	856	-	0.97		0.050		0.20		-	2.98		-	
	Jul-90	-	-	128.34	8.10	692	-	1.23		0.100		0.30		-	1		-	
	Aug-90	-	-	-	-	-	-	-		-		0.30		-	-		-	
	Oct-90	-	-	126.40	7.88	585	-	0.92	J	0.090	J	0.20		-	2		-	
	Feb-94	-	-	-	7.91	590	-	0.59		0.05		0.4		130	3		0.03	
	May-94	-	-	-	7.93	590	-	0.60		0.12		0.3		130	3		0.07	
	Aug-94	-	-	127.51	7.80	680	-	0.56		0.16		0.3		140	3		0.051	
	Nov-94	-	-	-	7.89	520	-	0.58		0.04		0.3		130	1	U	0.045	
	Feb-95	-	-	-	7.79	560	-	0.54		0.1		0.3		130	4		0.015	
	May-95	-	-	-	7.90	520	-	0.74		0.09		0.4		140	4		0.065	
	Aug-95	-	-	-	7.91	550	-	0.58		0.08		0.3		130	3		0.052	
	Nov-95	-	-	-	7.98	530	-	0.57		0.23		0.3		110	1.9		0.054	
	Feb-96	-	-	137.15	7.90	570	17.0	0.55		0.16		0.3		140	2.0		0.033	
	May-96	-	-	-	-	-	-	-		-		-		-	-		-	
	Aug-96	-	-	-	-	-	-	-		-		-		-	-		-	
	Nov-96	-	-	-	-	-	-	-		-		-		-	-		-	
	Feb-97	-	-	134.50	7.76	569	15.1	0.49		0.03		0.3		130	2.6		0.053	
	May-97	-	-	132.81	7.88	593	16.4	0.40		0.12		0.3		120	2.3		0.046	
	Aug-97	-	-	131.80	7.93	527	17.0	0.41		0.08		0.3		110	2.0		0.03	
	Nov-97	-	-	132.90	8.39	487	15.0	0.42		0.06		0.3		110	2.0		0.058	
	Feb-98	-	-	135.00	8.10	518	15.1	0.43		0.06		0.3		130	2.0		0.031	
	May-98	-	-	132.23	7.85	524	15.7	0.47		0.075		0.3		120	1.9		0.043	
	Aug-98	-	-	131.91	8.00	480	16.0	0.44		0.07		0.3		110	1.9		0.036	
	Nov-98	-	-	131.46	8.01	431	15.1	0.32		0.03		0.4		90	1.5		0.04	
	Feb-99	-	-	132.89	8.27	483	14.6	0.55		0.08		0.3		110	1.7		0.023	
	May-99	-	-	131.41	8.38	469	15.3	0.42		0.07		0.4		140	1.9		0.02	
	Aug-99	-	-	131.10	8.00	372	16.7	0.37		0.09		0.4		100	1.3		0.03	
	Nov-99	-	-	131.74	8.47	414	15.0	0.36		0.06		0.4		90	1.5		0.02	
	Feb-00	-	-	133.52	7.94	481	14.9	0.39		0.03		0.3		100	1.5		0.03	
	May-00	-	-	132.58	8.45	474	15.7	0.35		0.06		0.4		110	1.5		0.048	
	Sep-00	-	-	131.20	8.46	397	16.5	-		0.01	U	0.4		80	-		-	
	Dec-00	155.80	24.42	131.38	-	-	-	-		-		-		-	-		-	
	Mar-01	155.80	25.02	130.78	8.24	354	14.8	-		0.09		0.4		70	-		-	
	Jun-01	155.80	25.09	130.71	-	-	-	-		-		-		-	-		-	
	Oct-01	155.80	24.92	130.88	7.85	402	17.0	-		0.052		0.421		71.9	-		-	
	Dec-01	155.80	21.75	134.05	-	-	-	-		-		-		-	-		-	
	Mar-02	155.80	23.42	132.38	8.33	400	14.1	-		0.0744		0.455		76.6	-		-	
	Jun-02	155.80	24.31	131.49	-	-	-	-		-		-		-	-		-	
	Sep-02	155.80	24.50	131.30	8.20	365	16.3	-		0.103	U	0.469		80.6	-		-	
	Dec-02	155.80	23.15	132.65	-	-	-	-		-		-		-	-		-	
	Mar-03	155.80	22.12	133.68	8.13	439	15.7	-		0.053		0.461		76.3	-		-	
	Sep-03	155.80	24.54	131.26	7.10	374	19.8	-		0.0188		0.462		70.4	-		-	
	Apr-04	155.80	23.66	132.14	7.82	391	17.7	-		0.0231		0.479		69.8	-		-	
	Sep-04	155.80	24.44	131.36	7.55	361	22.0	-		0.0249		0.504		64.1	-		-	
	Apr-05	155.80	22.49	133.31	8.09	340	16.5	0.184	J	0.0366		0.5	U	63.8	-		-	
	Sep-05	155.80	24.88	130.92	8.04	332.4	16.6	-		0.0194		0.5	U	57.7	-		-	
	Mar-06	155.80	22.29	133.51	8.09	362.5	15.4	-		0.0406		0.5	U	71.6	-		-	
	Sep-06	155.80	24.50	131.30	8.06	331	17.4	-		0.036	U	0.5	U	65.4	-		-	
	Mar-07	155.80	23.03	132.77	8.11	375.1	16.0	-		0.0110	J	0.5	U	68.3	-		-	
	Sep-07	155.80	24.83	130.97	8.14	304.6	16.3	-		0.0102	J	0.5	U	55.9	-		-	
	Mar-08	155.80	21.16	134.64	7.90	332.0	15.4	-		0.0231		0.500	U	68.9	-		-	
	Mar-08*	-	-	-	-	-	-	-		0.0175		0.500	U	68.6	-		-	duplicate

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		TOX (mg/L)	NOTES
	May-08	155.80	21.51	134.29	-	-	-	-		-		-		-		-		-	Monitoring Potential Rebound**
	Sep-08	155.80	21.72	134.08	8.00	383.1	17.3	-		0.0244	U	0.500	U	86.1		-		-	
	Dec-08	155.80	21.33	134.47	-	-	-	-		-		-		-		-		-	Monitoring Potential Rebound**
	Mar-09	155.80	20.20	135.60	7.95	405.3	15.00	-		0.0235		0.528	J	84.2		-		-	
	Jun-09	155.80	21.21	134.59	-	-	-	-		-		-		-		-		-	Monitoring Potential Rebound**
	Sep-09	155.80	21.57	134.23	7.95	426.7	18.1	-		0.0208		0.500	U	91.1		-		-	
	Mar-10	155.80	20.84	134.96	7.98	399.7	14.6	-		0.0199		0.500	U	89.1		-		-	
	Jun-10	155.80	20.90	134.9	-	-	-	-		-		-		-		-		-	Monitoring Potential Rebound**
	Sep-10	155.80	21.42	134.38	7.92	420.3	17.9	-		0.00760		0.500	U	97.4		-		-	
	Mar-11	155.80	20.35	135.45	7.93	428.1	15.4	-		0.00500	U	0.500	U	89.7		-		-	
	Mar-11*	-	-	-	-	-	-	-		0.00660		0.500	U	89.9		-		-	Duplicate
	Sep-11	155.80	21.36	134.44	8.44	438	17.5	-		0.00600		0.500	U	104		-		-	
	Mar-12	155.80	20.78	135.02	8.07	413.6	15.2	-		0.00500	U	0.340		87.7		-		-	
MW-23S	Jul-87	-	-	-	-	-	-	0.18	J	0.01		1.00		16.0	J	-		-	
	Aug-87	-	-	-	-	-	-	0.12		0.007		0.38		19.3		-		-	
	Dec-87	-	-	-	-	-	-	0.12		0.0085		0.23		41.5		-		-	
	Jan-88	-	-	132.27	-	-	-	0.20		0.02		0.43		18.6		-		-	
	Apr-88	-	-	128.27	-	-	-	0.23		0.03		0.27		64.3		-		-	
	Jul-88	-	-	124.52	-	-	-	0.27		0.02		0.26		-		-		-	
	Aug-88	-	-	-	-	-	-	-		-		0.26		67.8		-		-	
	Oct-88	-	-	123.94	-	-	-	0.31		0.02		0.23		-		-		-	
	Dec-88	-	-	-	-	-	-	-		-		0.23		67.6		-		-	
	Jan-89	-	-	130.41	-	-	-	0.34		0.09		0.20		73.2		-		-	
	Apr-89	-	-	129.51	7.94	468	-	0.34		0.02		0.21		-		34.00		-	
	Jul-89	-	-	125.99	7.55	565	-	0.47		0.06		0.14		-		1.00	U	-	
	Aug-89	-	-	-	-	-	-	-		-		0.12		85.3		-		-	
	Oct-89	-	-	124.20	8.02	523	-	0.37		0.1		0.20		-		1.00	U	-	
	Jan-90	-	-	131.56	7.90	490	-	0.38		0.04		0.20		97.0		2.00		-	
	Apr-90	-	-	127.82	8.02	450	-	0.40		0.03		0.20		-		1.99		-	
	Jul-90	-	-	126.62	8.28	487	-	0.41		0.03		0.20		-		2.00		-	
	Aug-90	-	-	-	-	-	-	-		-		0.20		-		-		-	
	Oct-90	-	-	125.15	8.00	480	-	0.21	J	0.04	J	0.20		-		1.00		-	
	Feb-94	-	-	-	7.98	470	-	0.20		0.04		0.2		73		3		0.01	
	May-94	-	-	-	7.98	460	-	0.13		0.04		0.2		69		2		0.028	
	Aug-94	-	-	-	7.98	480	-	0.19		0.03		0.2		70		2		0.014	
	Nov-94	-	-	-	7.95	370	-	0.18		0.01		0.3		71		1.00		0.019	
	Feb-95	-	-	-	7.92	430	-	0.18		0.03		0.2	U	71		1		0.008	
	May-95	-	-	-	7.91	410	-	0.18		0.03		0.2		71		2		0.017	
	Aug-95	-	-	-	7.98	410	-	0.18		0.03		0.2		60		2		0.027	
	Nov-95	-	-	-	7.98	430	-	0.16		0.04		0.2	U	60		1.5		0.026	
	Feb-96	-	-	135.73	7.98	490	16.0	0.17		0.04		0.2	U	60		2.0		0.013	
	May-96	-	-	131.01	7.96	320	14.8	0.12		0.02		0.2		60		1.8		0.016	
	Aug-96	-	-	129.71	7.97	421	15.7	0.15		0.05		0.2		70		1.7		0.021	
	Nov-96	-	-	133.91	8.01	415	14.7	0.15		0.03		0.2	U	60		1.4		0.021	
	Feb-97	-	-	134.03	7.91	385	14.3	0.14		0.02		0.2		70		1.5		0.021	
	May-97	-	-	130.63	8.01	410	15.0	0.16		0.02		0.2		66		1.5		0.013	
	Aug-97	-	-	129.13	8.05	392	15.4	0.14		0.02		0.2		64		1.5		0.017	
	Nov-97	-	-	131.71	8.45	380	14.6	0.16		0.01		0.2	U	60		1.4		0.025	
	Feb-98	-	-	134.51	8.30	394	14.7	0.15		0.02		0.2	U	60		1.4		0.016	
	May-98	-	-	130.19	8.14	381	14.7	0.11		0.009		0.2	U	60		1.3		0.012	
	Aug-98	-	-	129.31	7.90	360	16.0	0.11		0.01		0.2		60		1.3		0.011	
	Nov-98	-	-	130.16	7.93	363	15.0	0.13		0.01		0.3		50		1.2		0.017	

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MW-23S	Feb-99	-	-	133.49	8.19	365	14.5	0.15		0.018		0.2	U	60	1.2	0.010	
	May-99	-	-	129.81	8.39	395	14.6	0.12		0.01		0.2	U	50	1.3	0.012	
	Aug-99	-	-	128.71	8.00	326	15.3	0.10		0.02		0.2	U	60	1.0	0.015	
	Nov-99	-	-	129.95	8.13	397	14.8	0.11		0.02		0.2	U	60	1.3	0.019	
	Feb-00	-	-	133.82	7.87	365	14.6	0.11		0.01	U	0.2	U	60	1.0	0.017	
	May-00	-	-	131.27	8.42	407	15.1	0.08		0.03		0.2	U	60	1.2	0.018	
	Sep-00	-	-	128.41	8.29	394	16.2	-		0.006	U	0.2	U	60	-	-	
	Dec-00	144.36	12.64	131.72	-	-	-	-		-		-		-	-	-	
	Mar-01	144.36	13.74	130.62	8.20	375	14.7	-		0.03		0.2		60	-	-	
	Jun-01	144.36	14.68	129.68	-	-	-	-		-		-		-	-	-	
	Oct-01	144.36	15.61	128.75	7.75	422	15.3	-		0.0185		0.214		59.5	-	-	
	Dec-01	144.36	10.38	133.98	-	-	-	-		-		-		-	-	-	
	Mar-02	144.36	12.41	131.95	8.16	350	16.9	-		0.025		0.289		58.1	-	-	
	Jun-02	144.36	14.46	129.90	-	-	-	-		-		-		-	-	-	
	Sep-02	144.36	15.27	129.09	8.23	371	15.5	-		0.0107	U	0.284		54.9	-	-	
	Dec-02	144.36	12.62	131.74	-	-	-	-		-		-		-	-	-	
	Mar-03	144.36	11.00	133.36	8.12	415	15.2	-		0.0256		0.225		54.4	-	-	
	Sep-03	144.36	15.27	129.09	7.70	385	18.8	-		0.0090		0.225		55.0	-	-	
	Apr-04	144.36	12.90	131.46	7.67	387	16.7	-		0.0102		0.234		51.5	-	-	
	Sep-04	144.36	14.79	129.57	7.89	235	19.7	-		0.0097		0.253		53.1	-	-	
	Apr-05	144.36	12.09	132.27	8.05	364	16.6	0.047	J	0.0119		0.5	U	53.6	-	-	
	Sep-05	144.36	15.84	128.52	8.06	362.9	16.4	-		0.0078		0.5	U	50.5	-	-	
	Sep-05*	-	-	-	-	-	-	-		0.0081		0.5	U	50.8	-	-	duplicate
	Mar-06	144.36	11.65	132.71	8.11	362.3	15.1	-		0.0125		0.5	U	51.8	-	-	
	Mar-06*	-	-	-	-	-	-	-		0.0165		0.5	U	51.7	-	-	duplicate
	Sep-06	144.36	15.33	129.03	8	345.9	15.5	-		0.0104	U	0.5	U	51.0	-	-	
	Mar-07	144.36	12.26	132.10	8.10	378.5	15.2	-		0.005	U	0.5	U	47.0	-	-	
	Mar-07*	-	-	-	-	-	-	-		0.005	U	0.5	U	48.1	-	-	duplicate
	Sep-07	144.36	15.34	129.02	8.07	323.4	17.7	-		0.005	UJ	0.5	U	47.8	-	-	
	Sep-07*	-	-	-	-	-	-	0.0444		0.005	UJ	0.5	U	47.2	-	-	duplicate
	Mar-08	144.36	12.36	132.00	7.92	327.7	14.3	-		0.025	UJ	0.500	U	44.8	-	-	WAD CN SM4500-CN-I
	May-08	144.36	13.73	130.63	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-08	144.36	14.73	129.63	8.12	325.2	16.1	-		0.00930	U	0.500	U	46.9	-	-	
	Dec-08	144.36	13.11	131.25	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Mar-09	144.36	10.52	133.84	8.08	340.70	13.90	-		0.00500	U	0.500	U	43.6	-	-	
	Jun-09	144.36	13.53	130.83	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-09	144.36	14.35	130.01	8.03	329.1	18.1			0.00500	U	0.500	U	45.7	-	-	
	Mar-10	144.36	12.26	132.10	7.95	323.6	15.0	-		0.00580		0.500	U	44.4	-	-	
	Jun-10	144.36	11.91	132.45	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-10	144.36	14.36	130.00	8.03	307.1	18.8	-		0.00500	U	0.500	U	41.0	-	-	
	Mar-11	144.36	10.19	134.17	8.05	335.2	13.5	-		0.00500	U	0.500	U	42.7	-	-	
	Sep-11	144.36	14.14	130.22	8.32	277.0	17.1	-		0.00500	U	0.500	U	29.7	-	-	
	Mar-12	144.36	11.84	132.52	8.15	325.0	14.6	-		0.00500	U	0.200		41.9	-	-	
MW-35S	Dec-00	146.95	8.87	138.08													
	Mar-01	146.95	11.21	135.74	6.68	500	14.9	-		0.01	U	1.5		130	-	-	
	Jun-01	146.95	12.60	134.35	8.13	443	16.8	-		-		-		-	-	-	
	Oct-01	146.95	14.37	132.58	7.88	573	15.2	-		0.0084		1.32		131	-	-	
	Dec-01	146.95	7.82	139.13	8.05	459	10.3	-		-		-		-	-	-	
	Mar-02	146.95	10.76	136.19	8.27	550	14.4	-		0.36		1.51		129	-	-	
	Jun-02	146.95	13.36	133.59	8.15	531	16.5	-		-		-		-	-	-	
	Sep-02	146.95	14.11	132.84	8.24	519	17.9	-		0.0053	U	1.03		128	-	-	
	Dec-02	146.95	10.41	136.54	7.67	494	14.1	-		-		-		-	-	-	

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MW-35S	Mar-03	146.95	8.75	138.20	8.22	569	15.2	-		0.0137		1.02		119	-	-	
	Sep-03	146.95	14.30	132.65	7.52	573	19.5	-		0.0051		0.997		132	-	-	
	Apr-04	146.95	11.40	135.55	7.76	554	17.1	-		0.0084		0.868		127	-	-	
	Sep-04	146.95	13.57	133.38	7.68	353	19.9	-		0.0067		0.949		129	-	-	
	Apr-05	146.95	9.84	137.11	8.13	516	14.2	0.02		0.0112		0.600		123	-	-	
	Sep-05	146.95	14.61	132.34	8.12	521	17.9	-		0.0060		0.640		125	-	-	
	Mar-06	146.95	9.45	137.50	8.09	507	15.2	-		0.0068		0.690		120	-	-	
	Sep-06	146.95	14.14	132.81	8.03	510	16.1	-		0.0076	U	0.660		118	-	-	
	Mar-07	146.95	10.71	136.24	8.08	531.6	15.4	-		0.0050		0.610		119	-	-	
	Sep-07	146.95	13.99	132.96	8.09	481.8	17.2	-		0.0050	UJ	0.640		114	-	-	
	Mar-08	146.95	10.98	135.97	7.91	473.8	13.4	-		0.025	UJ	0.640		117	-	-	WAD CN SM4500-CN-I
	May-08	146.95	12.93	134.02	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-08	146.95	14.03	132.92	8.07	484.1	17.2	-		0.00950	U	0.650		119	-	-	
	Dec-08	146.95	11.99	134.96	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Mar-09	146.95	8.58	138.37	7.78	488.1	14.2	-		0.00500	U	0.698	J	116	-	-	
	Mar09*	-	-	-	-	-	-	-		0.00500	U	0.743	J	115	-	-	duplicate
	Jun-09	146.95	12.90	134.05	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-09	146.95	13.64	133.31	8.04	490.0	18.6	-		0.00530		0.530		111	-	-	
	Mar-10	146.95	10.99	135.96	7.98	472.0	14.6			0.00500	U	0.590		110	-	-	
	Mar-10*	-	-	-	-	-	-	-		0.00500	U	0.610		111	-	-	
	Jun-10	146.95	11.98	134.97	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-10	146.95	13.65	133.30	8.06	459.8	17.8	-		0.00500	U	0.600		109	-	-	
	Mar-11	146.95	8.43	138.52	8.10	485.5	12.6	-		0.00500	U	0.540		112	-	-	
	Sep-11	146.95	13.71	133.24	8.24	429.0	16.3	-		0.00500	U	0.640		110	-	-	
	Mar-12	146.95	11.00	135.95	7.99	667.0	13.7	-		0.00500	U	0.520		106	-	-	
MW-36S	Dec-00	146.98	17.30	129.68													
	Mar-01	146.98	17.49	129.49	6.90	400	15.5	-		0.01	U	0.3		120	-	-	
	Jun-01	146.98	18.52	128.46	8.03	403	17.3	-		-		-		-	-	-	
	Oct-01	146.98	22.75	124.23	8.02	405	17.2	-		0.005	U	0.287		144	-	-	
	Dec-01	146.98	16.40	130.58	8.14	591	11.2	-		-		-		-	-	-	
	Mar-02	146.98	17.45	129.53	8.30	617	14.0	-		0.0101		0.266		204	-	-	
	Jun-02	146.98	18.85	128.13	8.01	570	16.9	-		-		-		-	-	-	
	Sep-02	146.98	19.60	127.38	8.25	587	17.4	-		0.005	U	0.258		179	-	-	
	Dec-02	146.98	18.37	128.61	8.04	589	14.1	-		-		-		-	-	-	
	Mar-03	146.98	17.73	129.25	8.19	622	15.7	-		0.0675		0.255		174	-	-	
	Sep-03	146.98	19.94	127.04	8.06	494	17.5	-		0.005	U	0.245		146	-	-	
	Apr-04	146.98	17.95	129.03	7.69	479	16.6	-		0.005	U	0.206		142	-	-	
	Sep-04	146.98	19.57	127.41	7.01	489	20.8	-		0.005	U	0.213		140	-	-	
	Apr-05	146.98	17.68	129.30	8.03	484	15.3	0.005	U	0.005	U	0.5	U	136	-	-	
	Sep-05	146.98	20.93	126.05	8.02	532	17.2	-		0.005	U	0.5	U	157	-	-	
	Mar-06	146.98	17.53	129.45	8.00	474	15.1	-		0.005	U	0.5	U	126	-	-	ODEQ Split
	Mar-06	146.98	17.47	129.51	8.1	452	14.9	-		0.005	U	0.2		129	-	-	ODEQ lab results
	Mar-06	146.98	17.47	129.51	8.1	455	15.0	-		0.005	U	0.2		131	-	-	ODEQ lab results
	Sep-06	146.98	20.31	126.67	8.01	476	17.1	-		0.0193	U	0.5	U	128	-	-	
	Mar-07	146.98	17.76	129.22	8.05	484.3	16.2	-		0.005	U	0.5	U	121	-	-	
	Sep-07	146.98	20.67	126.31	7.87	402.4	17.8	-		0.005	UJ	0.5	U	99.1	-	-	
	Mar-08	146.98	17.81	129.17	7.85	395.5	14.6	-		0.025	UJ	0.500	U	113	-	-	WAD CN SM4500-CN-I
	May-08	146.98	18.41	128.57	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-08	146.98	19.36	127.62	7.91	418.7	17.3	-		0.00700	U	0.500	U	111	-	-	
	Dec-08	146.98	18.11	128.87	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Mar-09	146.98	16.69	130.29	7.76	422.90	14.80	-		0.00500	U	0.500	U	114	-	-	
	Jun-09	146.98	18.29	128.69	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES
MW-36S	Sep-09	146.98	19.10	127.88	7.84	450.1	18.5	-		0.00500	U	0.500	U	110	-	-	
	Mar-10	146.98	17.84	129.14	7.87	401.1	15.4	-		0.00500	U	0.500	U	95.8	-	-	
	Jun-10	146.98	17.99	128.99	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-10	146.98	19.03	127.95	7.77	448.8	17.2	-		0.00500	U	0.500	U	105	-	-	
	Mar-11	146.98	16.77	130.21	7.71	419.2	14.7	-		0.00500	U	0.500	U	85.9	-	-	
	Sep-11	146.98	18.88	128.10	7.75	466.0	16.8	-		0.00500	U	0.500	U	106	-	-	
	Mar-12	146.98	17.68	129.30	7.85	439.4	15.0	-		0.00500	U	0.170		91.7	-	-	
MW-37S	Dec-00	144.25	8.87	135.38	-	-	-	-		-		-		-	-	-	
	Mar-01	144.25	10.82	133.43	6.97	725	14.9	-		0.01	U	3		130	-	-	
	Jun-01	144.25	12.20	132.05	6.69	515	15.4	-		-		-		-	-	-	
	Oct-01	144.25	13.82	130.43	6.84	379	17.9	-		0.0107		3.7		11.7	-	-	
	Dec-01	144.25	8.90	135.35	7.11	817	12.1	-		-		-		-	-	-	
	Mar-02	144.25	10.15	134.10	7.18	549	14.2	-		0.159		4.77		68.0	-	-	
	Jun-02	144.25	12.96	131.29	7.14	615	16.4	-		-		-		-	-	-	
	Sep-02	144.25	14.70	129.55	6.90	411	19.3	-		0.0084	U	4.12		23.7	-	-	
	Dec-02	144.25	10.17	134.08	6.69	581	13.8	-		-		-		-	-	-	
	Mar-03	144.25	9.21	135.04	6.96	523	13.1	-		0.0116		5.05		43.4	-	-	
	Sep-03	144.25	13.28	130.97	6.71	426	19.6	-		0.005	U	4.59		22.2	-	-	
	Apr-04	144.25	10.99	133.26	6.76	657	13.9	-		0.0076		4.47		48.0	-	-	
	Sep-04	144.25	13.18	131.07	6.76	314	19.8	-		0.0067		4.63		25.9	-	-	
	Apr-05	144.25	9.42	134.83	7.12	559	12.9	0.005	U	0.0065		3.01		39.4	-	-	
	Sep-05	144.25	13.72	130.53	7.03	423	18.4	-		0.0079		3.55		22.5	-	-	
	Mar-06	144.25	9.41	134.84	7.26	364	12.0	-		0.0060		4.63		28.8	-	-	ODEQ split sample
	Mar-06	144.25	9.46	134.79	7.3	346	12.0	-		0.005	U	4.9		28.4	-	-	ODEQ lab results
	Sep-06	144.25	13.37	130.88	7.05	378	18.7	-		0.018	U	4.39		26.3	-	-	
	Mar-07	144.25	10.33	133.92	7.38	406.4	12.5	-		0.005	U	4.15		35.2	-	-	
	Sep-07	144.25	13.52	130.73	7.07	334.3	18.1	-		0.005	UJ	4.36		23.9	-	-	
	Mar-08	144.25	10.54	133.71	7.15	407.8	11.9	-		0.00630		4.17		40.9	-	-	
	May-08	144.25	12.42	131.83	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-08	144.25	13.33	130.92	7.11	376.2	17.5	-		0.00630	U	4.03		29.1	-	-	
	Dec-08	144.25	11.31	132.94	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Mar-09	144.25	9.25	135.00	7.42	459.50	11.80	-		0.00500	U	8.92		31.9	-	-	
	May-09	144.25	-	-	7.10	540.50	14.30	-		0.0103		5.47		62.6	-	-	Re-sample to check high fluoride
	Jun-09	144.25	12.00	132.25	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-09	144.25	13.05	131.20	7.84	373.8	20.5	-		0.00540		4.48		28.7	-	-	
	Mar-10	144.25	10.31	133.94	7.26	387.6	13.8	-		0.00500	U	4.06		35.1	-	-	
	Jun-10	144.25	11.03	133.22	-	-	-	-		-		-		-	-	-	Monitoring Potential Rebound**
	Sep-10	144.25	12.99	131.26	7.12	373.9	19.1	-		0.00500	U	4.82		32.0	-	-	
	Sep-10*	-	-	-	-	-	-	-		0.00500	U	4.81		31.7	-	-	Duplicate
	Mar-11	144.25	9.05	135.20	8.71	1136	10.4	-		0.00500	U	**10.4**		88.9	-	-	
	Jun-11	144.25	10.60	133.65	7.64	381.5	14.7	-		-		3.92	J	-	-	-	Fluoride resample
	Sep-11	144.25	13.20	131.05	7.30	399.0	18.2	-		0.00500	U	5.17		30.8	-	-	
	Sep-11*	-	-	-	-	-	-	-		0.00500	U	5.20		31.0	-	-	Duplicate
	Mar-12	144.25	10.45	133.80	7.54	511.1	11.8	-		0.00500	U	4.34		37.0	-	-	
	Mar-12*	-	-	-	-	-	-	-		0.00500	U	4.32		36.5	-	-	Duplicate

Table 2. RCRA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP (°C)	TOTAL CYANIDE (mg/L)	WAD CYANIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	TOC (mg/L)	TOX (mg/L)	NOTES

NOTES:

COND =	conductivity	RCRA =	Resource Conservation and Recovery Ac	*	Duplicate sample
°C =	degress Celcius	S.U. =	standard units	-	Not sampled, measured, analyzed, or not available
ft msl =	feet above mean sea level	TOC =	Total Organic Carbon	J	Estimated value
g.w. =	groundwater	TOX =	Total Organic Halogens	U	Not detected at the reporting limit shown
µhos/cm =	micromhos per centimeter	WAD =	Weak Acid Dissociable	**Bold**	Concentration exceeds Alternate Concentration Limit groundwater protection standard
mg/L =	milligrams per liter				
NAC =	Northwest Aluminum Company				
ODEQ =	Oregon Department of Environmental Qualit				

March 2001 field parameter data (pH, specific conductance, and temperature measurements) were suspect due to a faulty instrume
All monitoring well casing elevations were corrected to October 2004 resurvey data. There was a difference of 0.6 to 0.9 foot on four of the top of casing elevations. Three were
to casing being added to the wells for placement of pumps after the 2000 survey (MWs-35S, 36S, and 37S were all 0.9 foot higher per the 2004 survey) and one due to removal of a casing se
previously used for pumping (MW-22S was 0.6 foot lower). All other top of casing elevations were within 1 to 2 hundredths of a f
Water level elevations recorded prior to 1996 are relative to a datum other than the datum currently used at the
**Data collected to monitor potential rebounding of water levels from post-plant demolition and cessation of NAC pumping operati

Table 3a. CERCLA LEACHATE PRODUCTION AND DISCHARGES
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

DATE	RAIN	LIFT STATION 2			LIFT STATION 1				DISCHARGE
		TOTAL	AVG FLOW	AVG FLOW	TOTAL	AVG FLOW	AVG FLOW	LS 1 NET	PER EVENT
	(inches)	(gallons)	(gpd)	(gpm)	(gallons)	(gpd)	(gpm)	(gallons)	(gallons)
Dec-03	4.20				**80,038**				
Jan-04	2.78	**92,722**	2,991	2.1	**148,192**	4,780	3.3	**55,470**	**414,483**
Feb-04	1.79	**80,107**	2,762	1.9	**119,129**	4,108	2.9	**39,022**	
Mar-04	0.73	**70,209**	2,265	1.6	**90,156**	2,908	2.0	**19,947**	**133,054**
Apr-04	0.64	**57,931**	1,931	1.3	**69,257**	2,309	1.6	**11,326**	
May-04	0.42	**41,361**	1,334	0.9	**49,050**	1,582	1.1	**7,689**	
Jun-04	0.89	**35,310**	1,177	0.8	**37,591**	1,253	0.9	**2,281**	**140,491**
Jul-04	0.08	**23,987**	774	0.5	**27,756**	895	0.6	**3,768**	
Aug-04	0.99	**18,271**	589	0.4	**20,792**	671	0.5	**2,521**	
Sep-04	0.31	**15,158**	505	0.4	**17,341**	578	0.4	**2,183**	
Oct-04	0.54	**12,665**	409	0.3	**14,325**	462	0.3	**1,660**	
Nov-04	0.20	**11,999**	400	0.3	**14,711**	490	0.3	**2,712**	**113,500**
Dec-04	1.20	**18,269**	589	0.4	**20,915**	675	0.5	**2,646**	
Jan-05	0.80	**48,399**	1,561	1.1	**59,351**	1,915	1.3	**10,952**	**37,100**
Feb-05	0.47	**40,479**	1,446	1.0	**51,358**	1,834	1.3	**10,880**	**231,500**
Mar-05	1.78	**43,861**	1,409	1.0	**56,522**	1,823	1.3	**12,661**	
Apr-05	0.60	**43,576**	1,525	1.1	**54,470**	1,816	1.3	**10,894**	**173,300**
May-05	1.64	**68,198**	2,200	1.5	**94,564**	3,050	2.1	**26,366**	
Jun-05	0.48	**33,516**	1,117	0.8	**40,545**	1,352	0.9	**7,029**	**145,000**
Jul-05	0.01	**20,147**	650	0.5	**23,114**	746	0.5	**2,967**	
Aug-05	0.00	**15,333**	495	0.3	**17,757**	573	0.4	**2,424**	
Sep-05	0.27	**9,237**	308	0.2	**10,902**	363	0.3	**1,665**	
Oct-05	1.08	**8,230**	265	0.2	**9,747**	314	0.2	**1,517**	
Nov-05	2.03	**25,000**	833	0.6	**36,163**	1,205	0.8	**11,163**	**124,500**
Dec-05	6.57	**50,500**	1,629	1.1	**84,833**	2,737	1.9	**34,333**	
Jan-06	4.38	**82,060**	2,647	1.8	**154,040**	4,969	3.5	**71,980**	**168,900**
Feb-06	0.98	**66,200**	2,364	1.6	**109,270**	3,903	2.7	**43,070**	**166,500**
Mar-06	1.11	**71,915**	2,320	1.6	**107,493**	3,468	2.4	**35,578**	
Apr-06	0.79	**64,044**	2,135	1.5	**99,302**	3,310	2.3	**35,257**	**200,100**
May-06	0.87	**43,450**	1,402	1.0	**60,250**	1,944	1.3	**16,800**	
Jun-06	0.73	**44,083**	1,469	1.0	**58,335**	1,945	1.4	**14,252**	**157,500**
Jul-06	0.04	**24,902**	803	0.6	**41,157**	1,328	0.9	**16,255**	
Aug-06	0.00	**17,163**	554	0.4	**24,713**	797	0.6	**7,550**	
Sep-06	0.01	**12,463**	415	0.3	**17,913**	597	0.4	**5,449**	
Oct-06	0.39	**9,730**	314	0.2	**15,126**	488	0.3	**5,396**	**141,000**
Nov-06	4.42	**35,177**	1,173	0.8	**64,362**	2,145	1.5	**29,185**	
Dec-06	3.90	**61,330**	1,978	1.4	**131,755**	4,250	3.0	**70,425**	**144,500**
Jan-07	1.52	**70,090**	2,261	1.6	**122,395**	3,948	2.7	**52,305**	**138,000**
Feb-07	1.26	**59,580**	2,128	1.5	**101,950**	3,641	2.5	**42,370**	
Mar-07	0.45	**72,682**	2,345	1.6	**122,170**	3,941	2.7	**49,488**	**156,500**
Apr-07	0.45	**47,710**	1,590	1.1	**69,090**	2,303	1.6	**21,380**	**143,300**
May-07	0.68	**34,820**	1,161	0.8	**50,720**	1,691	1.2	**15,900**	
Jun-07	0.04	**21,390**	713	0.5	**31,310**	1,044	0.7	**9,920**	
Jul-07	0.04	**15,679**	523	0.4	**23,910**	797	0.6	**8,231**	
Aug-07	0.44	**11,920**	397	0.3	**17,630**	588	0.4	**5,710**	
Sep-07	0.39	**10,736**	358	0.2	**17,958**	536	0.4	**7,222**	**155,500**
Oct-07	1.31	**14,391**	464	0.3	**20,162**	711	0.5	**5,771**	
Nov-07	2.72	**25,460**	849	0.6	**38,910**	1,297	0.9	**13,450**	
Dec-07	3.73	**52,320**	1,688	1.2	**100,467**	3,241	2.3	**48,147**	**172,750**

Table 3a. CERCLA LEACHATE PRODUCTION AND DISCHARGES
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

DATE	RAIN	LIFT STATION 2			LIFT STATION 1				DISCHARGE
		TOTAL	AVG FLOW	AVG FLOW	TOTAL	AVG FLOW	AVG FLOW	LS 1 NET	PER EVENT
	(inches)	(gallons)	(gpd)	(gpm)	(gallons)	(gpd)	(gpm)	(gallons)	(gallons)
Jan-08	4.07	**82,920**	2,675	1.9	**154,349**	4,979	3.5	**71,429**	**154,100**
Feb-08	0.80	**72,875**	2,351	1.6	**126,385**	4,077	2.8	**53,510**	
Mar-08	1.22	**56,970**	1,838	1.3	**81,420**	2,626	1.82	**24,450**	**144,600**
Apr-08	0.36	**46,140**	1,538	1.1	**64,110**	2,137	1.5	**17,970**	
May-08	0.76	**27,360**	883	0.6	**45,930**	1,482	1.0	**18,570**	**163,000**
Jun-08	0.12	**22,140**	738	0.5	**31,230**	1,041	0.7	**9,090**	
Jul-08	0.16	**17,517**	565	0.4	**24,662**	796	0.6	**7,145**	
Aug-08	0.40	**13,693**	442	0.3	**19,718**	636	0.4	**6,025**	
Sep-08	0.04	**9,805**	316	0.2	**15,155**	489	0.3	**5,350**	
Oct-08	0.64	**8,715**	281	0.2	**12,995**	419	0.3	**4,280**	
Nov-08	1.90	**23,160**	772	0.5	**35,070**	1,169	0.8	**11,910**	
Dec-08	2.01	**33,612**	1,084	0.8	**57,820**	1,865	1.3	**24,208**	**143,800**
Jan-09	3.35	**66,440**	2,143	1.5	**119,330**	3,849	2.7	**52,890**	**140,500**
Feb-09	1.70	**66,410**	2,372	1.6	**109,060**	3,895	2.7	**42,650**	
Mar-09	2.69	**78,130**	2,520	1.8	**141,640**	4,569	3.17	**63,510**	**153,500**
Apr-09	0.64	**53,680**	1,789	1.2	**83,970**	2,799	1.94	**30,290**	
May-09	1.35	**51,910**	1,675	1.2	**76,070**	2,454	1.70	**24,160**	
Jun-09	0.08	**26,950**	898	0.6	**40,020**	1,334	0.9	**13,070**	**150,300**
Jul-09	0.00	**19,680**	635	0.4	**26,850**	866	0.60	**7,170**	
Aug-09	0.08	**13,870**	447	0.3	**19,350**	624	0.4	**5,480**	
Sep-09	0.24	**10,340**	345	0.2	**14,580**	486	0.3	**4,240**	
Oct-09	1.12	**8,280**	267	0.2	**11,720**	378	0.3	**3,440**	
Nov-09	1.51	**9,410**	314	0.2	**14,290**	476	0.3	**4,880**	
Dec-09	1.78	**30,220**	975	0.7	**47,530**	1,533	1.1	**17,310**	**136,750**
Jan-10	2.81	**71,315**	2,300	1.6	**132,664**	4,279	3.0	**61,349**	**150,700**
Feb-10	1.47	**71,967**	2,570	1.8	**131,087**	4,682	3.3	**59,120**	**141,250**
Mar-10	1.30	**81,270**	2,622	1.8	**127,425**	4,110	2.9	**46,155**	
Apr-10	1.02	**64,888**	2,163	1.5	**99,844**	3,328	2.3	**34,956**	**149,600**
May-10	1.19	**20,380**	657	0.5	**55,150**	1,779	1.2	**34,770**	
Jun-10	1.30	**49,540**	1,651	1.1	**75,792**	2,526	1.8	**26,252**	**187,500**
Jul-10	0.00	**28,090**	906	0.6	**36,298**	1,171	0.8	**8,208**	
Aug-10	0.08	**19,734**	637	0.4	**22,761**	734	0.5	**3,027**	
Sep-10	0.67	**14,126**	471	0.3	**15,430**	514	0.4	**1,304**	
Oct-10	1.31	**12,570**	405	0.3	**15,370**	496	0.3	**2,800**	
Nov-10	1.90	**41,650**	1,388	1.0	**63,610**	2,120	1.5	**21,960**	**155,900**
Dec-10	3.45	**53,580**	1,728	1.2	**126,120**	4,068	2.8	**72,540**	**145,600**
Jan-11	1.41	**84,590**	2,729	1.9	**142,050**	4,582	3.2	**57,460**	**170,000**
Feb-11	0.91	**71,000**	2,536	1.8	**107,430**	3,837	2.7	**36,430**	
Mar-11	1.76	**97,107**	3,132	2.2	**149,960**	4,837	3.4	**52,853**	**151,900**
Apr-11	1.50	**75,270**	2,509	1.7	**126,890**	4,230	2.9	**51,620**	**149,800**
May-11	1.89	**67,220**	2,168	1.5	**96,930**	3,127	2.2	**29,710**	**166,600**
Jun-11	0.05	**55,830**	1,861	1.3	**77,430**	2,581	1.8	**21,600**	
Jul-11	0.44	**20,630**	665	0.5	**27,710**	894	0.6	**7,080**	**151,850**
Aug-11	0.00	**16,084**	519	0.4	**21,090**	680	0.5	**5,006**	
Sep-11	0.04	**15,912**	513	0.4	**21,270**	686	0.5	**5,358**	
Oct-11	1.31	**10,544**	340	0.2	**16,400**	529	0.4	**5,856**	
Nov-11	1.58	**16,650**	555	0.4	**24,800**	827	0.6	**8,150**	
Dec-11	2.25	**28,300**	913	0.6	**41,884**	1,351	0.9	**13,584**	
Jan-12	2.85	**66,090**	2,132	1.5	**119,730**	3,862	2.7	**53,640**	**157,000**
Feb-12	0.68	**72,290**	2,493	1.7	**128,710**	4,438	3.1	**56,420**	**145,200**
Mar-12	1.97	**75,760**	2,444	1.7	**127,660**	4,118	2.9	**51,900**	**151,700**

NOTES:

AVG = average

gpd = gallons per day

gpm = gallons per minute

LS = lift station

Mar-2011. LS 2 total flow and rates corrected. Meter plugged, avg percentages uses.

Dec-2011. LS 1 total flow and rates corrected. Meter plugged, avg percentages uses.

Table 3b. CERCLA LEACHATE COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

	LEACHATE TANK					LIFT STATION #1					LIFT STATION #2					MANHOLE #2					MANHOLE #3					MANHOLE #4					NOTES
SAMPLE DATE	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	
03/20/02	***Nutrient Application at CERCLA***					*No analytical data for Lift Stations 1 & 2 and Manholes 1 - 4 prior to this date. Tank influent / effluent only. Influent was from large holding tank to CDS Shack and effluent was from small tank.*																									
03/22/02	-	-	-	-	-	-	0.164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/11/02	-	-	-	-	-	-	-	-	-	-	-	0.065	-	-	166	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/15/02	2.21	1.750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
04/21/02	2.13	1.690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/24/02	-	-	-	-	-	-	-	-	-	-	-	0.090	-	-	175	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/07/02	1.33	0.866	-	-	-	3.85	0.184	-	-	54.6	3.34	0.087	-	-	191	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
05/08/02	1.39	0.695	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/12/02	-	-			-	4.04	0.190	-		33.3	2.66	0.046	-		223	-	-	-		-	-	-	-		-	-	-	-		-	
05/16/02	1.85	1.210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/20/02	1.21	0.395	-	-	-	5.00	0.038	14.1	-	13.1	2.95	0.029	14.6	-	178	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Last use and shut down of CDS May 21, 2002.																														
06/05/02	-	-	-	-	-	7.46	0.070	12.9	-	64.2	3.68	0.047	15.6	-	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
06/07/02	-	0.836	-	-	37.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
06/12/02	-	-	-	-	-	4.38	0.063	15.5	-	39.3	2.60	0.037	18.0	-	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
06/19/02	-	-	-	-	-	5.11	0.767	14.1	-	27.8	2.90	3.040	15.7	-	48.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-		LS #2 Free CN > Total CN.
06/26/02	0.30	0.044	-	-	24.1	4.34	0.107	15.4	-	12.2	2.98	0.134	14.8	-	52.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
07/03/02	-	-	-	-	-	5.22	0.065	13.7	-	-	3.32	0.105	14.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
07/10/02	-	-	-	-	-	10.80	0.163	13.8	-	17.7	3.23	0.094	15.1	-	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
07/16/02	-	-	-	-	-	7.25	0.038	14.8	-	18.3	3.38	0.102	14.7	-	15.5	-	-	-	-	-	10.10	0.820	18.3	-	-	-	-	-	-	-	
07/19/02	0.19	0.033	-	-	21.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
07/24/02	-	-	-	-	-	9.25	0.038	13.4	-	16.6	3.39	0.081	16.0	-	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
07/31/02	-	-	-	-	-	9.12	0.132	12.4	-	11.5	3.54	0.064	14.6	-	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08/07/02	-	-	-	-	-	7.47	0.156	13.5	-	7.95	3.46	0.058	16.1	-	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08/12/02	0.21	0.046	-	-	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08/14/02	-	-	-	-	-	11.70	0.104	-	-	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08/23/02	0.20	0.045			18.3	4.70	0.227	-		7.50	3.51	0.209	-		8.19	-	-	-		-	12.00	0.879	-		12.5	-	-	-		-	
08/30/02	0.32	0.084	-	-	17.5	2.98	0.350	-	-	9.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
09/06/02	0.17	0.037	-	-	15.4	4.79	0.143	-	-	8.69	3.71	0.076	-	-	7.78	-	-	-	-	-	14.30	0.656	-	-	12.9	-	-	-	-	-	
09/13/02	0.19	0.015	-	-	34.9	5.10	0.601	-	-	6.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
09/21/02	0.23	0.025	-	-	31.3	5.58	0.380	-	-	7.73	3.99	0.178	-	-	6.75	-	-	-	-	-	14.00	0.788	-	-	14.0	-	-	-	-	-	
09/23/02	0.24	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10/14/02	0.27	0.016	-	-	43.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10/18/02	***Start of first tank discharge using new biological treatment process.***																														
10/23/02	-	0.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11/11/02	2.58	0.492	-	-	14.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11/21/02	-	-	-	-	-	-	-	-	-	-	5.01	0.133	-	-	7.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11/21/02	***Nutrient application at CERCLA***																														
12/02/02	3.15	0.344	-	-	105	-	-	-	-	-	4.26	0.185	-	-	8.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12/08/02	-	-	-	-	-	-	-	-	-	-	5.44	0.121	-	-	8.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12/20/02	2.09	0.218	-	-	78.7	-	-	-	-	-	4.70	0.095	-	-	8.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12/30/02	2.79	0.269	-	-	42.6	-	-	-	-	-	4.46	0.085	-	-	8.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/06/03	2.22	0.294	-	-	57.5	-	-	-	-	-	7.38	0.104	-	-	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/13/03	1.91	0.245	-	-	67.4	-	-	-	-	-	3.99	0.146	-	-	7.77	-	-	-	-	-	2.42	0.217	-	-	6.4	-	-	-	-	-	
01/23/03	1.92	0.102	-	-	209	-	-	-	-	-	4.24	0.160	-	-	6.73	-	-	-	-	-	2.05	0.109	-	-	4.01	-	-	-	-	-	
01/24/03	1.90	0.136	-	-	209	-	-	-	-	-	4.08	0.081	-	-	6.72	-	-	-	-	-	1.96	0.126	-	-	4.70	-	-	-	-	-	
01/27/03	1.91	0.061	-	-	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/06/03	-	0.086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/13/03	-	0.087	-	-	-	-	-	-	-	-	3.67	0.098	-	-	5.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/06/03	-	0.075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/31/03	-	0.101	-	-	5.32	-	-	-	-	-	-	0.144	-	-	5.40	-	-	-	-	-	-	0.111	-	-	3.13	-	-	-	-	-	
04/11/03	-	0.133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/29/03	0.82	0.033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/05/03	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/05/03	-	-	-	-	-	-	-	-	-	-	3.50	0.286	-	-	-	-	-	-	-	-	2.48	0.293	-	-	-	-	-	-	-	-	
05/12/03	-	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
06/02/03	0.87	0.345	-	-	-	-	-	-	-	-	4.31	0.277	-	-	-	-	-	-	-	-	3.62	0.497	-	-	-	-	-	-	-	-	Tank Free CN inconsistent with other tank data.
06/27/03	0.50	0.097	-	-		-	-	-	-	-	3.78	0.268	-	-	-	-	-	-	-	-	6.71	0.616	-	-	-	-	-	-	-	-	
07/18/03	0.31	0.061	-	-	20.7	-	-	-	-	-	4.58	0.234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 3b. CERCLA LEACHATE COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

SAMPLE	LEACHATE TANK					LIFT STATION #1					LIFT STATION #2					MANHOLE #2					MANHOLE #3					MANHOLE #4					NOTES
DATE	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	
07/31/03	***Nutrient application at CERCLA***																														
08/12/03	0.49	0.083	-	-	23.5	5.41	0.153	-	-	6.43	5.33	0.136	-	-	6.51	-	-	-	-	-	12.30	0.950	-	-	12.2	-	-	-	-	-	
09/12/03	-	-	-	-	-	-	-	-	-	-	-	-	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
09/15/03	0.41	0.076	-	-	20.7	-	-	-	-	-	0.27	0.167	-	-	7.2	-	-	-	-	-	13.40	1.030	-	-	13.0	-	-	-	-	-	
10/06/03	0.38	0.015	-	-	28.8	-	-	-	-	-	5.33	0.171	-	-	9.88	-	-	-	-	-	2.82	0.852	-	-	15.4	-	-	-	-	-	
10/13/03	0.49	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11/21/03	-	0.019	-	-	402	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12/18/03	1.79	0.036			336	-	-	-		-	4.28	0.152	-		8.17	-	-	-		-	2.43	0.226	-		-	-	-	-		-	
01/09/04	2.11	0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/15/04	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge. End 1/31/04.
01/22/04	-	0.030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/29/04	-	0.152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/06/04	-	0.323	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/04/04	1.85	0.358	-	-	-	-	0.073	-	-	-	-	0.076	-	-	-	-	-	-	-	-	-	0.121	-	-	-	-	-	-	-	-	
03/12/04	-	0.057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/19/04	1.26	0.044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/24/04	-	-	-	-	-	3.42	0.008	-	-		2.76	0.076	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/29/04	-	0.034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/31/04	-	0.048	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/07/04	0.39	0.178	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Sample labeled LCS-1. Collected by Parametrix.
05/16/04	0.75	0.129	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
05/26/04	0.48	0.046	-	-	-	-	0.151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LS-1 sample labeled Field Leachate.
06/03/04	-	0.028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge. End 6/10/04.
08/31/04	***Nutrient application at CERCLA, ~4400 gallos, 40% sugar, bromide added.***										*Outside fence from Post 2115 (start of LCS) south (toward plant) to corner of fence, and 2 locations on landfill from Post 2115 to Manhole 4 - above bench and above estimated bottom of liner (above road).*																				
09/01/04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAC analytical results (Coffey Lab). Total 0.07, free nd.
09/09/04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.0	-	-	-	-	-	-	-	-	-	14.5	
																		(Br = nd)										(Br = nd)			
09/22/04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.4	1.50	-	-	14.2	-	-	-	-	-	8.19	0.201	-	-	20.6	
																		(Br = 0.5 mg/L)										(Br = nd)			
10/20/04	0.58	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10/27/04	0.60	0.064	-	-	-	-	0.176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11/02/04	-	0.047	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAC (Coffey) analytical results.
11/11/04	-	0.113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge. Analysis returned 11/12/04.
11/11/04	-	0.085	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Discharge duplicate sample analyzed 11/18/04.
11/16/04	-	0.106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Stop discharge, resample tank. Analysis on 11/18/04.
12/02/04	***Start nutrient injection to LCS at MH # 4 (2 gallons/10,000 gallons leachate).***																														
12/03/04	-	-	-	-	-	5.19	0.221	-	-	6.73	5.32	0.127	-	-	10.2	-	-	-	-	-	-	-	-	-	-	9.63	0.142	-	-	15.5	
								(Br = nd)					(Br = nd)															(Br = nd)			
12/22/04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.7	1.78	-	-	21.0	-	-	-	-	-	8.81	0.085	-	-	55.6	Begin in-LCS treatment at MH #4.
																												(Br = nd)			
01/07/05	-	-	-	-	-	4.23	0.156	-	-	24.4	3.90	0.077	-	-	30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								(Br = 1.94 mg/L)					(Br = 3.41 mg/L)					(Br = 0.56 mg/L)													
01/10/05	1.40	0.191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/19/05	1.69	0.300	-	-	-	-	-	-	-	-	nd [1]	nd [1]	-	-	7.19 [1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Leakage into LS2 sampled.
01/25/05	1.62	0.344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Yeast, molasses, milk treatment 1/24/05.
02/01/05	***Start manual application of nutrients into Manholes 1, 2, and 3 on Lobe A side of landfill.***																														Added sodium bicarbonate 1/31/05.
02/01/05	2.20	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Coffey Lab analysis. Start discharge 2/2/05, 12:30.
02/03/05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Stop discharge 2/3/05, 17:30 (ODEQ concerns).
02/07/05	1.84	0.169	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NCA - lab comparison sample. Analyzed 2/9/05.
02/07/05	2.00	0.180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Coffey - lab comparison sample. Analyzed 2/8/05.
02/20/05	-	-	-	-	-	4.12	0.110	-	-	-	4.61	0.072		-	-	3.53	0.486	-	-	-	-	-	-	-	-	7.89	0.122	-	-	-	
								(Br = 1.40 mg/L)					(Br = 2.56 mg/L)					(Br = nd)										(Br = 0.73 mg/L)			
02/21/05	1.46	0.148	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NCA - lab comparison. Analyzed 2/22/05.
02/21/05	1.68	0.040	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SVL - lab comparison. Free nd, WAD = 0.040 mg/L.
02/23/05	1.47	0.124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Discharge (0.1 mg/L requirement).

Table 3b. CERCLA LEACHATE COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

	LEACHATE TANK					LIFT STATION #1					LIFT STATION #2					MANHOLE #2					MANHOLE #3					MANHOLE #4					NOTES
SAMPLE DATE	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	
03/28/05	***Environmental"Bird" Balls placed in tank.***																														
04/04/05	1.84	0.171	-	-	18.8	2.73	0.070	12.4	112	13.4	4.44	0.063	12.1	96.4	17.7	12.0	0.318	-	-	43.5	-	-	-	-	-	5.65	0.085	24.5	168	12.6	NCA
						(Br = 1.55 mg/L)					(Br = 3.77 mg/L)					(Br = nd)										(Br = 1.05 mg/L)					NCA
04/04/05	2.06	<0.10	-	-	20	3.06	<0.10	-	-	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Duplicate samples to SVL.
04/26/05	1.92	0.060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NCA. Begin discharge 4/29/05 at approx 09:20.
04/26/05 [2]	2.03	0.053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Duplicate to SVL (WAD method).
05/05/05	-	-	-	-	-	4.21	0.120	-	-	23.2	6.02	0.081	-	-	16.4	8.97	0.677	-	-	134	-	-	-	-	-	4.97	0.116	-	-	11.1	High TOC in MH 2 likely due to manual dosing.
						(Br = 2.21 mg/L)					(Br = 2.53 mg/L)					(Br = nd)										(Br = 1.21 mg/L)					
05/20/05	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					*Outside fence from Post 2115 (start of LCS) south (toward plant) to corner of fence, and 2 locations on landfill from Post 2115 to Manhole 4 - above bench and above estimated bottom of liner (above road).*																				
05/27/05	2.73	0.054	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
06/07/05	2.92	0.108	-	-	-	3.15	0.100	-	-	6.73	3.28	0.021	-	-	16.8	11.6	0.171	-	-	8.6	-	-	-	-	-	2.49	0.029	-	-	69.7	Begin discharge 6/9/05 at approx 17:00.
						(Br = 0.78 mg/L)					(Br = 4.25 mg/L)					(Br = nd)										(Br = 2.54 mg/L)					
07/07/05	-	-	-	-	-	4.84	0.064	-	-	50.5	5.58	0.091	-	-	55.7	17.3	0.473	-	-	13.3	-	-	-	-	-	10.1	0.088	-	-	21.3	
						(Br = 2.86 mg/L)					(Br = 3.58 mg/L)					(Br = nd)										(Br = 3.02 mg/L)					
08/01/05	***Stop injection of nutrients into LCS per end of TA period. Resume August 23 with approval from ODEQ.***																														
08/23/05	3.22	0.213	-	-	11.9	4.10	0.128	-	-	7.24	3.90	0.034	-	-	51.5	27.20	0.799	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
09/29/05	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					***Application area expanded to include the landfill slopes between Manhole 4 and Lift Station 2 and the trace of the LCS between Lobes A and B (both sides of Manhole 2).***																				
09/30/05	2.89	0.0569	-	-	27.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
11/07/05	3.08	0.107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 11/8/05 at approx 15:27.
11/08/05	***Collect three samples from Outfall 1.***					***Pre-Discharge Baseline: 11/8/05, 13:45 - Total CN = ND, Free CN = ND.***										Post Discharge 1: 11/9/05, 09:00 - Total CN = 0.0362, Free CN = 0.0069.										Post Discharge 2: 11/9/05, 16:45 - Total CN = 0.0239, Free CN = 0.0058.					
12/27/05	3.74	0.091	-	-	15.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
01/10/06	3.30	0.097	-	-	60.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 1/12/06 at approx 14:15.
01/31/06	3.14	0.058	-	-	9.17	1.86	0.040		-	5.13	3.94	0.033	-	-	8.55	18.7	0.039	-	-	6.42	-	-	-	-	-	3.80	0.053	-	-	11.7	ARCADIS "check" sample for tank.
02/08/06	2.85	0.085	-	-	8.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 2/9/06 at 15:45.
03/22/06	2.79	0.174	-	-	22.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tank sample.
03/27/06	2.75	0.209	-	-	53.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tank sample.
04/02/06	-	-	-	-	-	3.49	0.048		-	105	3.89	0.027	-	-	40.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
04/03/06	2.55	0.118	-	-	90.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 4/5/06 at 14:02.
04/25/06	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					***Expanded application area.***																				
05/16/06	2.52	0.0536	-	-	16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
06/04/06	2.74	0.0478	-	-	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 6/7/06 at 15:45.
06/22/06	-	-	-	-	-	4.58	0.117	11.1	100	13.2	3.82	0.070	11.2	111	19.7	-	-	-	-	-	3.17	0.020	nd	272	3410	3.20	0.106	17.8	115	14.2	Manhole 3 in place of Manhole 2
09/12/06	-	-	-	-	-	3.90	0.045	-	-	36.4	4.96	0.034	-	-	59.9	22.6	0.256	-	-	1490	-	-	-	-	-	6.90	0.088	-	-	18.8	
10/23/06	2.28	0.0501	-	-	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 10/25/06 at 17:14.
11/06/06	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					***Expanded application area.***																				
12/07/06	-	-	-	-	-	4.15	0.042	-	-	44.3	6.14	0.048	-	-	19.0	31.4	0.363	14.9	553	222	-	-	-	-	-	7.45	0.138	20.7	183	15.0	
12/18/06	3.70	0.0652	12.4	115	38.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 12/19/06 at 17:05. WAD CN.
01/13/07	3.51	0.0556	-	-	12.7	2.82	0.018	-	-	60.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/15/07	3.30	<0.025	-	-	44.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 01/17/07 at 15:45. WAD CN.
02/28/07	2.67	0.0202	-	-	35.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 03/01/07 at 09:28.
04/01/07	-	-	-	-	-	2.18	0.085	11.5	106	14.1	3.66	0.029	12.1	87.8	12.3	14.3	0.288	<50.0	549	2400	-	-	-	-	-	3.36	0.071	188	1170	9.37	Sample as part of GW Monitoring Plan.
04/11/07	2.59	0.141	-	-	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 04/13/07 at 16:05.
04/23/07	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					***Expanded application area.***																				
06/21/07	-	-	-	-	-	3.91	0.038	11.1	145	14.1	4.10	0.029	12.8	119	23.6	24.9	0.180	15.3	637	689	-	-	-	-	-	0.377	0.039	19.5	145	14.0	
08/28/07	1.95	0.0229	-	-	47.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 09/02/07 at 18:40.
09/30/07	-	-	-	-	-	7.23	0.152	9.84	82.6	74.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10/22/07	***Nutrient application at CERCLA***					*~ 4400 gallons, 40% sugars*					***Expanded application area.***																				
12/19/07	Wrong analysis on 1st discharge sample.					LS #1 sample lost by laboratory.					-	-	-		-	-	-	-		-	-	-	-		-	-	-	-		-	Lab mistakes on discharge sample. No discharge.
12/25/07	3.00	0.036	-	-	61.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 12/28/07 at 08:20.
12/25/07	2.80	0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tank sample split and sent to Specialty Analytical.
01/20/08	2.79	0.057	-	-	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ARCADIS "check" sample.
01/27/08	1.84	0.055	-	-	39.6	0.79	0.034	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 01/30/08 at 17:10.
03/04/08	2.35	0.071	-	-	48.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 03/06/08 at 15:30.
03/15/08	-	-	-	-	-	3.02	0.030	12.6	95.6	12.8	3.10	0.014	12.8	94.5	14.4	17.50	0.034	12.9	194	309				-		3.23	0.034	20.4	138	17.3	Sample as part of GW Monitoring Plan.
05/19/08	2.13	0.0276	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 05/21/08 at 16:10.
09/18/08	2.85	0.202	18.7	150	17.5	3.97	0.021	-		54.7	5.74	0.021	-		69.4	116.00	0.384	-		1240	-	-	-		-	8.25	0.086	-		21.4	
12/02/08	3.32	0.020	-	-	57.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/18/09	3.07	0.015	-	-	40.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 3b. CERCLA LEACHATE COLLECTION SYSTEM DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

SAMPLE DATE	LEACHATE TANK					LIFT STATION #1					LIFT STATION #2					MANHOLE #2					MANHOLE #3					MANHOLE #4					NOTES
	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	TOTAL CN (mg/L)	FREE CN (mg/L)	FL (mg/L)	SO_4 (mg/L)	TOC (mg/L)	
03/01/09	2.78	0.020	-	-	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 3/3/2010, 18:03
03/20/09	2.06	0.0942	11.9	92.9	19.2	2.01	0.011	11.9	96.0	21.6	2.87	0.012	11.4	87.1	26.8	2.18	<0.010	15.3	142	458	-	-	-	-	-	2.41	0.010	18.4	120	23.6	Apex
	-	<0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Free Cyanide by USEPA Method 9014 (Specialty Lab)
06/08/09	1.74	0.048	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Begin discharge 06/10/08 at 14:30. (Test America)
09/16/09	-	-	-	-	-	3.22	0.0368	9.55	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DWT: CN=0.246, Free=0.0248, Fl=15.7, SO_4=44.4
12/20/09	2.51	0.0731	-	-	55.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 12/23/09, 17:45.
01/26/10	3.27	0.0299	-	-	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 1/28/2010, 8:35
02/22/10	2.44	0.0775	-	-	36.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 2/25/2010, 15:15
04/05/10	2.18	0.132	-	-	36.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 4/7/2010, 16:30
04/17/10	-	-	-	-	-	2.74	0.0101	9.85	96.9	7.29	2.71	0.0289	10.5	90.5	-	13.80	0.200	10.3	401	-	-	-	-	-	-	2.47	0.0569	15.8	121	-	
06/06/10	1.87	0.189	-	-	43.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
06/14/10	1.70	0.0262	7.15	-	58.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 6/15/2010, 15:35
11/15/10	2.17	0.0098	13.1 *	114	61.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 11/18/2010, 15:55
12/13/10	-	-	-	-	-	1.71	0.0211	12.7	85.4	4.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 11/18/2010, 15:55
12/19/10	2.61	0.0204	12	107	46.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 12/22/2010, 16:55
01/24/11	2.50	0.0268	-	92.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 01/26/2011, 17:12
03/09/11	2.37	0.0331	-	93.1	30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 03/09/2011, 16:02
03/25/11	-	-	-	-	-	2.04	0.0125	11.3	83.6	-	2.61	0.0053	11.2	80.8	-	-	-	-	-	-	1.87	>0.005	14.6	100	-	2.80	0.0120	18.1	121	-	
04/10/11	1.75	0.11	-	88.9	27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 04/15/2011, 10:33
05/16/11	1.40	0.0158	-	86.5	40.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 05/18/2011, 08:15
07/19/11	1.45	0.0555	-	93.9	38.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 07/21/2011, 15:48
01/04/12	2.37	0.0333	-	161	41.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 01/06/2012, 16:15
02/06/12	2.22	0.0237	-	92.4	36.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Initiate discharge 02/07/2012, 13:05
03/12/12	1.70	0.021	-	94	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
03/22/12	-	-	-	-	-	2.1	0.015	11	110	24	2.4	0.014	11	110	28	2.6	0.033	140	270	770	-	-	-	-	-	3.0	0.018	17	110	7.3	
04/15/12	1.50	0.054	-	110	33																										

* Fluoride sample collected and analyzed on site by NAC.

Note: All sample dates are date of collection. Analysis is generally 2 days to 2 weeks after collection date. All samples analyzed by TestAmerica Laboratory (formerly North Creek Analytical) in Portland unless otherwise noted. Other labs include Coffey (Portland), SVL (Kellogg, Idaho), and Apex (Portland).

Averages, minimums, and maximums are for entire data set from March 22, 2002 to present.

	Tank					LS # 1					LS # 2					MH # 2					MH # 3					MH # 4					
	TTL CN	FREE CN	FL	SO_4	TOC	TTL CN	FREE CN	FL	SO_4	TOC	TTL CN	FREE CN	FL	SO_4	TOC	TTL CN	FREE CN	FL	SO_4	TOC	TTL CN	FREE CN	FL	SO_4	TOC	TTL CN	FREE CN	FL	SO_4	TOC	
Average	1.9	0.148	12.3	106	50	4.5	0.123	12.5	108	24	3.9	0.144	13.7	97	38	20.9	0.469	34.8	392	490	6.6	0.489	16.5	186	319	5.2	0.079	36.0	239	21	**Average**
Min	0.2	0.010	7.2	87	5	0.8	0.008	9.6	83	5	0.3	0.005	10.5	81	5	2.2	0.033	10.3	142	6	1.9	0.020	14.6	100	3	0.4	0.010	15.8	110	7	**Min**
Max	3.7	1.75	18.7	161	402	11.7	0.77	15.5	186	105	7.4	3.04	18.0	119	223	116.0	1.78	140.0	637	2,400	14.3	1.03	18.3	272	3,410	10.1	0.20	188.0	1,170	70	**Max**

NOTES: **Free CN actually a WAD CN result. Switch from USEPA method 335.4M (Modified) to SM4500CN-I during 2009. The difference between the two methods is in the sample preparation.**

- = Not sampled, measured, analyzed, or not available
Br = Bromide
CDS = Cyanide Destruction System
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CN = cyanide
DWT = Dewatering Trench
FL = Fluoride
GW = Groundwater
LCS = Leachate Collection System
mg/L = milligrams per liter
NAC = Northwest Aluminum Company
NCA = North Creek Analytical Lab
nd = non-detect
NPDES discharge limit for free CN is 0.1 mg/L
ODEQ = Oregon Department of Environmental Quality
SO_4 = Sulfate
SVL = SVL Lab
TA = Temporary Authorization
TOC = total organic carbon
USEPA = U.S. Environmental Protection Agency
WAD = Weak Acid Dissociable

[1] Sample collected from leakage into Lift Station #2 from upper part of manhole, not from leachate collection system piping (Bromide = 20.2 mg/L.)

[2] Duplicate sample sent to SVL. Free CN results (0.110 mg/L) determined by use of probe in raw sample. Total and WAD results determined using probe in distilled sample.

Table 3c. CERCLA NUTRIENT APPLICATIONS AND LCS DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

	CERCLA In-Situ LCS Treatment Monitoring - LCS								CERCLA Surface (Land) Application Monitoring - Leachate								
	Lift Station #1				Lift Station #2				Manhole #2				Manhole #4				Notes
Sample Date	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	
03/20/02	***Nutrient Land Application***																
11/21/02	***Nutrient Land Application***																
07/31/03	***Nutrient Land Application***																
05/26/04	-	0.151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08/31/04	***Nutrient Land Application***				*~ 4400 gallons, 40% sugar, bromide added.*												Bromide tracer added to nutrients.
09/22/04	-	-	-	-	-	-	-	-	14.4	1.50	-	14.2	8.19	0.201	-	20.6	
10/27/04	-	0.176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12/02/04	***Start nutrient injection to LCS at MH # 4 (Lobe B).***																
12/03/04	5.19	0.221	-	6.73	5.32	0.127	-	10.2	-	-	-	-	9.63	0.142	-	15.5	
12/22/04	-	-	-	-	-	-	-	-	16.7	1.78	-	21.0	8.81	0.085	-	55.6	
01/07/05	4.23	0.156	-	24.4	3.90	0.077	-	30.4	-	-	-	-	-	-	-	-	
02/01/05	***Start manual application of nutrients into Manholes 1, 2 and 3 (Lobe A).***																
02/20/05	4.12	0.110	-	-	4.61	0.072	-	-	3.53	0.486	-	-	7.89	0.122	-	-	
04/04/05	2.73	0.070	12.4	13.4	4.44	0.063	12.1	17.7	12.0	0.318	-	43.5	5.65	0.085	24.5	12.6	
05/05/05	4.21	0.120	-	23.2	6.02	0.081	-	16.4	8.97	0.677	-	134	4.97	0.116	-	11.1	
05/20/05	***Nutrient Land Application***				~ 4400 gallons, 40% sugars												
06/07/05	3.15	0.100	-	6.73	3.28	0.021	-	16.8	11.6	0.171	-	8.6	2.49	0.029	-	69.7	
07/07/05	4.84	0.064	-	50.5	5.58	0.091	-	55.7	17.3	0.473	-	13.3	10.1	0.088	-	21.3	End of Bromide analysis
08/01/05	***Stop injection of nutrients into LCS per end of TA period. Resume August 23 with approval from ODEQ. Regular weekly dosing in Manholes 2 and 3.***																
08/23/05	4.10	0.128	-	7.24	3.90	0.034	-	51.5	27.2	0.799	-	-	-	-	-	-	
09/29/05	***Nutrient Land Application***				~ 4400 gallons, 40% sugars				Expanded application area includes landfill slopes near Manholes 2 and 3.								
01/31/06	1.86	0.040	-	5.13	3.94	0.033	-	8.55	18.70	0.039	-	6.42	3.80	0.053	-	11.7	
04/02/06	3.49	0.048	-	105	3.89	0.027	-	40.3	-	-	-	-	-	-	-	-	
04/25/06	***Nutrient Land Application***				~ 4400 gallons, 40% sugars				Expanded application area.								
06/22/06	4.58	0.117	11.1	13.2	3.82	0.070	11.2	19.7	3.17	0.020	-	3410	3.20	0.106	17.8	14.2	Manhole 3 in place of Manhole 2
09/12/06	3.90	0.0448	-	36.4	4.96	0.034	-	59.9	22.6	0.256	-	1490	6.90	0.088	-	18.8	
11/06/06	***Nutrient Land Application***				~ 4400 gallons, 40% sugars				Expanded application area.								
12/07/06	4.15	0.042	-	44.3	6.14	0.048	-	19	31.4	0.363	14.9	222	7.45	0.138	20.7	15	
01/13/07	2.82	0.0176	-	60.3	-	-	-	-	-	-	-	-	-	-	-	-	
04/01/07	2.18	0.085	11.5	14.1	3.66	0.029	12.1	12.3	14.30	0.288	<0.50	2400	3.36	0.071	18.8	9.37	

LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

CERCLA In-Situ LCS Treatment Monitoring - LCS **CERCLA Surface (Land) Application Monitoring - Leachate**

Sample Date	Lift Station #1				Lift Station #2				Manhole #2				Manhole #4				Notes
	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	Total CN (mg/L)	Free CN (mg/L)	Fl (mg/L)	TOC (mg/L)	
04/23/07	***Nutrient Land Application***				~ 4400 gallons, 40% sugars				Expanded application area.								
06/21/07	3.91	0.038	11.1	14.1	4.10	0.029	12.8	23.6	24.9	0.180	15.3	689	0.377	0.039	19.5	14.0	
09/30/07	7.23	0.152	9.8	74.8	-	-	-	-	-	-	-	-	-	-	-	-	backed up LCS to clean tank
10/22/07	***Nutrient Land Application***				~ 4400 gallons, 40% sugars				Expanded application area.								
01/27/08	0.79	0.034	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	
03/15/08	3.02	0.030	12.6	12.8	3.10	0.014	12.8	14.4	17.50	0.034	12.9	309	3.23	0.034	20.4	17.3	
05/19/08	2.13	0.0276	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
09/18/08	3.97	0.021	-	54.7	5.74	0.021	-	69.4	116.0	0.384	-	1240	8.25	0.086	-	21.4	
03/20/09	2.01	0.011	-	21.6	2.87	0.012	-	26.8	2.18	<0.010	-	458	2.41	0.010	-	23.6	
04/17/10	2.74	0.0101	9.85	7.29	2.71	0.0289	10.5	-	13.80	0.2	10.3	-	2.47	0.0569	15.8	-	
12/13/10	1.71	0.0211	12.7	4.88	-	-	-	-	-	-	-	-	-	-	-	-	
03/25/11	2.04	0.0125	11.3	-	2.61	0.0053	11.2	-	-	-	-	-	2.80	0.012	18.1	-	
03/22/12	2.1	0.015	11	24	2.4	0.014	11	28	2.6	0.033	140	770	3.0	0.018	17	7.3	

SUMMARY STATISTICS TABLE

	LS # 1				LS # 2				MH # 2				MH # 4			
	Ttl CN	Free CN	Fl	TOC	Ttl CN	Free CN	Fl	TOC	Ttl CN	Free CN	Fl	TOC	Ttl CN	Free CN	Fl	TOC
Average	3.35	0.07	11.34	27.75	4.14	0.04	11.71	28.93	19.94	0.44	38.68	701.81	5.25	0.08	19.18	21.12
Min	0.79	0.01	9.84	4.88	2.40	0.01	10.50	8.55	2.18	0.02	10.30	6.42	0.38	0.01	15.80	7.30
Max	7.23	0.22	12.70	105.00	6.14	0.13	12.80	69.40	116.00	1.78	140.00	3,410	10.10	0.20	24.50	69.70

LCS = Leachate Collection System

LS = Lift Station

CN = Cyanide

mg/L = milligrams per liter

MH = Manhole

Fl = Fluoride

TOC = total organic carbon

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (^{o}C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)	NOTES
AQUIFER SYSTEM: S																	
MWR-8S	Jan-91	144.55	49.15	95.40	8.45	340	13	10.51		0.19		**19**		154		-	
	Mar-91	144.55	48.86	95.69	7.91	529	16	11.08		0.26		0.3		88		-	
	Jun-91	144.55	48.69	95.86	8.44	590	17	11.76		**0.86**		0.4		158		-	
	Sep-91	144.55	48.67	95.88	8.91	540	15	11.1		**0.81**	J	0.4		160	J	-	
	Mar-92	144.55	48.20	96.35	8.45	560	15	12.8		0.48		0.3		190		-	
	Mar-93	144.55	47.55	97.00	8.31	470	14	13.1		0.3		0.3		203	J	-	
	Mar-94	144.55	47.43	97.12	8.31	550	15	12		0.520	J	0.3		180		-	
	Mar-95	144.55	47.58	96.97	8.2	580	16	11		0.600		0.2		180		-	
	Apr-96	-	-	-	7.69	492	15.2	11		0.260		0.3		200		-	
	Mar-97	-	-	-	8.29	561	14.4	11		0.190		0.2		170		-	
	Mar-98	-	-	-	8.17	567	14.5	9		0.230		0.2		170		-	
	Mar-99	-	-	-	8.38	567	14.1	12		0.100		0.2		190		-	
	Mar-00	-	-	-	8.29	576	14.6	11		0.150		0.2		180		-	
	Mar-01	-	-	-	8.07	640	19.5	9.6		**0.800**		0.2		170		-	
	Mar-02	144.55	48.95	95.60	8.50	590	14.4	10.5	J	0.546		0.36		188		-	
	Mar-03	144.55	48.76	95.79	8.51	699	14.7	8.76		0.272	J	0.258		185		-	
	Apr-04	144.55	48.08	96.47	7.81	773	20.3	8.72		0.234		0.278		211		-	
	Oct-04	144.55	47.60	96.95	-	-	-	-		-		-		-		-	
	Nov-04	144.55	47.71	96.84	6.88	615	16.4	9.08		0.233		0.298		216		-	Surface application monitoring.
	Jan-05	144.55	47.62	96.93	7.78	608	13	8.70		0.201		0.242		206		8.10	Surface app. Lab pH and conductivity.
	Jan-05*	-	-	-	8.00	613	-	8.71		0.180		0.260		218		8.05	Duplicate
	Apr-05	144.55	47.19	97.36	7.99	622	14.5	8.93		0.423		0.500	U	222		7.89	CERCLA annual monitoring.
	Jul-05	144.55	47.19	97.36	8.28	605	19.6	8.61		0.223		0.500	U	234		9.62	Surface application monitoring.
	Sep-05	144.55	47.15	97.40	8.18	612	15.9	8.62		0.503	J	0.500	U	220		7.82	Quarterly monitoring - TA
	Mar-06	144.55	46.83	97.72	8.18	634	15	8.29		0.117		0.500	U	232		-	CERCLA annual monitoring.
	Mar-06		46.71		8.2	589	15.2	8		0.17		-		-		-	ODEQ lab result - passive
	Mar-06		46.71		8.2	595	15.1	7.8		0.15		-		-		-	ODEQ lab results - hybrid
	Mar-06		46.71		8.2	595	15.1	8		0.12		0.2		228		-	ODEQ lab split sample analysis
	Mar-07	144.55	45.85	98.70	8.2	677	14.8	8.77		0.136	J	0.500	U	235		-	
	Mar-08	144.55	45.18	99.37	8.08	602	14.3	8.84	J	0.145		0.500	U	238		-	
	Sep-08	-	-	-	-	-	-	-		-		-		-		-	Well abandoned
MW-9S	Mar-89	144.78	21.65	123.13	8.2	357	18	0.739		0.18		1.6		42		-	
	Jun-89	144.78	22.92	121.86	7.8	390	15	0.517		0.119		1.4		33		-	
	Sep-89	144.78	25.56	119.22	7.95	370	16	0.414	J	0.024	J	1.1		27		-	
	Jan-90	144.78	26.22	118.56	8.2	240	15	0.358		0.118	J	1.1	J	30		-	
	Mar-90	144.78	24.94	119.84	9	385	14	0.582		0.076		1.1		38		-	
	Jun-90	144.78	25.41	119.37	7.22	300	16	0.51		0.15		1.1	J	31	J	-	
	Sep-90	144.78	26.70	118.08	7.56	380	16	0.523	R	0.12	R	1.1	J	34	J	-	
	Jan-91	144.78	27.95	116.83	8.87	130	14	0.72		0.11		1.1		104		-	
	Mar-91	144.78	27.72	117.06	8.49	345	17	0.48		0.11		0.9		30		-	
	Jun-91	144.78	29.93	114.85	8.23	330	15	0.56		0.13		1.1		28		-	
	Sep-91	144.78	29.53	115.25	8.4	360	16	0.53		0.08		1		36		-	
	Mar-92	144.78	25.97	118.81	7.64	330	15	0.54		0.08		0.9		36		-	
	Mar-93	144.78	28.37	116.41	7.98	230	14	0.59		0.13		0.9		32	J	-	
	Mar-94	144.78	26.07	118.71	8.21	320	16	0.66		0.08		0.9		51	J	-	
	Mar-95	144.78	24.94	119.84	8.3	340	16	0.54		0.1		0.9		44		-	
	Apr-96	144.78	22.66	122.12	7.76	277	14.7	0.55		0.13		0.8		30		-	
	Mar-97	144.78	23.50	121.28	8.33	322	14.4	0.56		0.1		0.9		38		-	
	Mar-98	144.78	25.57	119.21	8.3	311	14.6	0.53		0.09		0.9		40		-	

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MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-9S	Mar-99	144.78	25.53	119.25	8.41	306	14.3	0.67		0.12		0.9		40		-		
	Mar-99*	-	-	-	8.41	306	14.3	0.66		0.14		0.9		40		-		Duplicate
	Mar-00	144.78	25.06	119.72	8.27	322	14.6	0.65		0.08		0.9		30		-		
	Mar-01	144.78	26.26	118.52	7.55	389	17.5	0.42		0.12		0.9		50		-		
	Mar-02	144.78	21.81	122.97	8.53	348	14.3	0.661	J	0.196		1.34		46.9		-		
	Mar-03	144.78	23.21	121.57	8.31	341	14.6	0.665		0.160	J	1.01		44.9		-		
	Apr-04	144.78	22.96	121.82	8.18	376	17.5	0.644		0.0773		1.08		48.3		-		
	Oct-04	144.78	25.47	119.31	-	-	-	-		-		-		-		-		
	Nov-04	144.78	25.98	118.80	7.16	337	15.8	0.682		0.144	J	1.21		48.3		-		Surface application monitoring.
	Jan-05	144.78	24.65	120.13	8.03	346	-	0.694		0.124		1.00		47.2		1.69		Surface application monitoring.
	Apr-05	144.78	23.15	121.63	7.96	348	13.8	0.629		0.108		0.810		48.0		1.54		CERCLA annual monitoring.
	Jul-05	144.78	24.78	120.00	8.38	344	17.8	0.720		0.111		0.630		47.9		2.76		Surface application monitoring.
	Sep-05	144.78	26.06	118.72	8.17	345	15.1	0.756		0.0629	J	0.780		47.7		1.51		Quarterly monitoring - TA
	Mar-06	144.78	22.40	122.38	8.18	354	14.2	0.723		0.0273		0.700		48.2		-		CERCLA annual monitoring.
	Mar-07	144.78	22.11	122.67	8.21	376	14.4	0.888		0.0585	J	0.780		50.9		-		
	Mar-08	144.78	21.71	123.07	8.09	333	13.8	0.795	J	0.0664		0.810		52.3		-		
	May-08	144.78	23.18	121.60	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	-	-	-	-	-	-	-		-		-		-		-		Well abandoned
MWR-15S	Jan-91	137.28	36.08	101.20	11	240	14	10.47		0.3		0.5		147		-		
	Mar-91	137.28	33.87	103.41	10.05	382	17	0.46		0.08		1		29		-		
	Jun-91	137.28	34.71	102.57	10.25	380	15	0.42		0.07		1.2		109		-		
	Sep-91	137.28	36.29	100.99	9.89	350	15	0.46		0.06		1.5		200		-		
	Mar-92	137.28	35.00	102.28	10.15	370	15	0.68		0.16		1.2		90		-		
	Mar-93	137.28	33.50	103.78	9.73	340	14	0.72		0.11		1.1		69	J	-		
	Mar-94	137.28	32.81	104.47	9.83	320	16	0.78		0.06		1	J	86	J	-		
	Mar-95	137.28	32.23	105.05	9.65	390	16	0.98		0.08		1		97		-		
	Apr-96	137.28	31.78	105.50	8.78	308	15.2	0.81		0.2		1.5		100		-		
	Mar-97	137.28	31.80	105.48	9.79	366	14.7	0.85		0.12		1		40		-		
	Mar-98	137.28	31.73	105.55	9.82	382	14.6	1.2		0.19		1		100		-		
	Mar-98*	-	-	-	-	-	-	1.2		0.3		1		100		-		Duplicate
	Mar-99	137.28	31.37	105.91	9.91	376	14.5	1.3		0.18		1		110		-		
	Mar-00	137.28	31.40	105.88	10.06	385	14.9	1.6		0.09		1		100		-		
	Mar-01	137.28	31.79	105.49	9.77	376	18.3	0.88		0.16		1		110		-		
	Mar-02	137.28	31.64	105.64	10.27	374	14.5	1.4	J	0.147		1.11		103		-		
	Mar-03	137.28	31.70	105.58	9.15	399	16.7	1.35		0.227		1.22		113		-		
	Apr-04	137.28	30.83	106.45	9.18	489	17.4	1.43		0.098		1.36		122		-		
	Apr-04*	-	-	-	-	-	-	1.42		0.133		1.26		121		-		Duplicate
	Oct-04	137.28	30.94	106.34	-	-	-	-		-		-		-		-		
	Nov-04	137.28	31.52	105.76	9.23	376	15.7	1.28		0.152		1.26	J	117		-		Surface application monitoring.
	Jan-05	137.28	31.55	105.73	9.54	378	-	1.22		0.124		1.22		116		1.67		Surface application monitoring.
	Apr-05	137.28	30.81	106.47	9.53	377	15.2	1.14		0.176		0.870		113		1.63		CERCLA annual monitoring.
MWR-15S	Apr-05*	-	-	-	-	-	-	1.09	J	0.239		0.860		108		1.70		Duplicate
	Jul-05	137.28	31.18	106.10	9.93	373.2	18.70	1.23		0.123		0.730		111		3.26		Surface application monitoring.
	Sep-05	137.28	31.66	105.62	9.68	374	16.0	1.51		0.169	J	0.980		121		1.68		Quarterly Monitoring - TA
	Mar-06	137.28	30.56	106.72	9.65	395	15.7	1.89		0.102		0.940		129		-		CERCLA annual monitoring.
	Mar-07	137.28	30.07	107.21	9.52	428.3	15.1	2.43		0.088		1.00		134		-		
	Mar-08	137.28	29.68	107.60	9.51	388.5	14.5	2.88		0.122		0.990		140		-		
	Mar-08*	-	-	-	-	-	-	2.52		0.146		1.00		137		-		Duplicate
	May-08	137.28	29.00	108.28	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	137.28	30.37	106.91	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	137.28	30.61	106.67	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**

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MWR-15S	Mar-09	137.28	29.78	107.50	8.99	401.5	15.0	2.28		0.153		1.06		131	J	-	
	Jun-09	137.28	29.30	107.98	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-09	137.28	29.80	107.48	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-10	137.28	29.84	107.44	9.11	386.5	16.7	2.33		0.129		0.970		138		-	
	Jun-10	137.28	28.87	108.41	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-10	137.28	29.18	108.10	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-11	137.28	27.78	109.50	9.17	399.3	15.2	2.57		0.0159		0.980		144		-	
	Sep-11	137.28	28.53	108.75	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-12	137.28	27.88	109.40	9.69	402.5	14.9	2.48		0.0128	J	1.00		135		-	
MW-26S	Jul-87	136.15	-	-	-	-	-	0.01	UJ	0.01	U	1	U	22	J	-	
	Sep-90	136.15	25.72	110.43	7.74	290	15	0.17	J	<0.2	R	0.4	J	11		-	
	Dec-90	136.15	24.69	111.46	9.51	130	14	0.36		0.02		0.4		11		-	
	Mar-91	136.15	22.77	113.38	8.41	237	17	0.27		0.03		0.4		7		-	
	Jun-91	136.15	22.67	113.48	8.32	220	14	0.33		0.05		0.4		10		-	
	Dec-91	-	-	-	8.29	230	14	0.32		0.01		0.5		12		-	
	Mar-92	136.15	23.26	112.89	8.42	230	14	0.3		0.08		0.4		7	J	-	
	Mar-93	136.15	20.74	115.41	8.58	220	14	0.33		0.1		0.4		12		-	
	Mar-94	136.15	22.38	113.77	8.51	270	18	0.27	J	0.02	J	0.3		13	J	-	
	Mar-95	136.15	21.16	114.99	8.28	230	16	0.3		0.02		0.4		13		-	
	Apr-96	136.15	19.97	116.18	8.25	196	13.8	0.28		0.02		0.4		14		-	
	Mar-97	136.15	19.70	116.45	8.23	220	13.9	0.27		0.04		0.3		14		-	
	Mar-98	136.15	20.50	115.65	8.67	223	14	0.22		0.05		0.4		14		-	
	Mar-99	136.15	20.01	116.14	8.76	218	14	0.41		0.03		0.4		14		-	
	Mar-00	136.15	20.31	115.84	8.22	226	14	0.25		0.02		0.4		14		-	
	Mar-01	136.15	21.80	114.35	7.92	249	15.8	0.2		0.05		0.4		14		-	
	Mar-02	136.15	21.38	114.77	8.89	225	14.1	0.254	J	0.0422		0.436		14.5		-	
	Mar-03	136.15	21.52	114.63	8.60	305	14.1	0.216		0.0409	U	0.446		14.3		-	
	Apr-04	136.15	18.90	117.25	8.22	230	15.2	0.198		0.0148		0.466		14.7		-	
	Oct-04	136.15	20.20	115.95	-	-	-	-		-		-		-		-	MW-26S removed from sample list.
	Apr-05	136.15	19.21	116.94	-	-	-	-		-		-		-		-	Depth to water only
	Sep-05	136.15	20.98	115.17	-	-	-	-		-		-		-		-	Depth to water only
	Mar-06	136.15	18.37	117.78	-	-	-	-		-		-		-		-	Depth to water only
	Mar-07	136.15	17.96	118.19	-	-	-	-		-		-		-		-	Depth to water only
	Mar-08	136.15	18.02	118.13	-	-	-	-		-		-		-		-	Depth to water only
	May-08	136.15	18.32	117.83	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-08	136.15	20.49	115.66	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Dec-08	136.15	20.89	115.26	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-09	136.15	18.83	117.32	-	-	-	-		-		-		-		-	Depth to water only
	Jun-09	136.15	18.46	117.69	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-09	136.15	20.20	115.95	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-10	136.15	18.19	117.96	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Jun-10	136.15	18.34	117.81	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-10	136.15	19.79	116.36	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-11	136.15	17.49	118.66	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-11	136.15	19.95	116.20	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-12	136.15	19.11	117.04	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
MWR-27S	Dec-90	141.80	15.33	126.47	9.33	240	15	5.3		0.15		0.3		30		-	
	Mar-91	141.80	15.51	126.29	7.97	399	17	5.4		0.47		0.3		37		-	
	Jun-91	141.80	16.62	125.18	8.3	410	16	5.22		0.18		0.3		48		-	
	Sep-91	141.80	19.52	122.28	8.74	410	15	5.17		0.17	J	0.4		40	J	-	
	Mar-92	141.80	15.75	126.05	7.89	360	15	0.23		0.24		0.3		37	J	-	

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)	NOTES
MWR-27S	Mar-93	141.80	15.53	126.27	8.18	350	15	5.91		0.33		0.3		49	J	-	
	Mar-94	141.80	15.88	125.92	8.12	350	17	5.4		0.22	J	0.3		44		-	
	Mar-95	141.80	15.69	126.11	8.13	380	17	6.1		0.08		0.3		52		-	
	Apr-96	141.80	16.11	125.69	7.67	320	15.6	5.9		0.18		0.3		58		-	
	Mar-97	141.80	15.70	126.10	8.01	359	15.2	6		0.14		0.4		48		-	
	Mar-98	141.80	15.75	126.05	8.28	359	15.6	6		0.13		0.3		50		-	
	Mar-99	141.80	15.78	126.02	8.26	361	15.2	5		0.09		0.3		50		-	
	Mar-00	141.80	15.32	126.48	8.24	377	15.7	6.1		0.06		0.4		60		-	
	Mar-01	141.80	16.48	125.32	8.23	365	16.5	6		0.4		0.3		60		-	
	Mar-02	141.80	15.66	126.14	8.44	392	15.0	6.12	J	0.431		0.37		59.0		-	
	Mar-03	141.80	15.10	126.70	8.17	442	15.6	5.1		0.25		0.382		59.0		-	
	Apr-04	141.80	16.24	125.56	7.74	503	18.1	5.45		0.0953		0.417		63.0		-	
	Oct-04	141.80	19.10	122.70	-	-	-	-		-		-		-		-	MWR-27S, depth to water only
	Apr-05	141.80	15.12	126.68	7.94	399	15.1	5.21		0.399		0.500	U	66.9		-	MWR-27S placed back on sample list.
	Jul-05	141.80	17.70	124.10	-	-	-	-		-		-		-		-	Depth to water only
	Sep-05	141.80	20.01	121.79	8.07	394	16.6	5.46		0.232	J	0.500	U	65.2		3.99	Quarterly monitoring - TA
	Mar-06	141.80	15.36	126.44	8.1	415.2	15.6	5.59		0.0625		0.500	U	67.6		-	CERCLA annual monitoring.
	Mar-06		15.23		8.1	392	15.7	5.4		0.09		0.3		70.0		-	ODEQ lab split sample analysis
	Mar-07	141.80	15.61	126.19	8.12	443.2	15.4	5.09		0.0513		0.500	U	71.0		-	
	Mar-08	141.80	15.56	126.24	8.02	392.1	15.5	6.39		0.0783		0.500	U	74.7		-	
	May-08	141.80	16.67	125.13	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-08	141.80	19.62	122.18	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Dec-08	141.80	17.16	124.64	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-09	141.80	14.97	126.83	7.78	414.1	16.1	5.22		0.0886		0.500	U	70.5	J	-	
	Jun-09	141.80	17.42	124.38	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-09	141.80	20.33	121.47	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-10	141.80	15.56	126.24	7.81	400.5	15.8	5.71		0.0709		0.500	U	73.2		-	
	Jun-10	141.80	16.46	125.34	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Sep-10	141.80	19.37	122.43	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-11	141.80	14.65	127.15	7.87	413.1	14.9	5.88		0.0725		0.500	U	72.4		-	
	Sep-11	141.80	19.43	122.37	-	-	-	-		-		-		-		-	Monitoring Potential Rebound**
	Mar-12	141.80	-	-	-	-	-	-		-		-		-		-	Inaccessible
MW-29S	Aug-87	117.98	-	-	-	-	-	0.01	U	0.01	U	1.0	U	3020		-	
(Scrubber	Sep-90	117.98	16.09	101.89	7.11	3,460	15	0.04	R	0.04	R	2.7		2110	J	-	
Sludge)	Dec-90	117.98	13.82	104.16	8.4	2,100	15	0.01	U	0.01	U	2.6		1300		-	
	Mar-91	117.98	11.84	106.14	7.24	784	-	0.01	U	0.01	U	4.5		120		-	
	Jun-91	117.98	12.75	105.23	7.24	990	14	0.01	U	0.01	U	9.1		246		-	
	Sep-91	117.98	16.05	101.93	7.15	3,610	17	0.01	U	0.01	U	2.5		1600		-	
	Mar-92	117.98	11.05	106.93	6.76	1,330	13	0.01	U	0.01	U	**10.2**		393		-	
	Mar-93	117.98	10.75	107.23	7.24	1,530	12	0.01	U	0.01	U	**12**		485	J	-	
	Mar-94	117.98	11.70	106.28	7.29	1,110	14	0.01	U	0.01	U	8.2		340	J	-	
	Mar-95	117.98	11.08	106.90	7.06	1,560	14	0.01	U	0.01	U	**11**		500		-	
	Apr-96	117.98	11.54	106.44	-	-	12	0.01	U	0.01	U	8.1		400		-	
	Apr-97	117.98	11.50	106.48	7.18	1,470	11	0.01	U	0.01	U	7.8		400		-	
	Apr-98	117.98	11.30	106.68	7.21	1,030	12.7	0.01	U	0.01	U	8.8		310		-	
	Mar-99	-	-	-	-	-	-	-		-		-		-		-	
	Mar-00	-	-	-	-	-	-	-		-		-		-		-	
	Mar-01	117.98	12.07	105.91	6.77	740	30.7	0.01	U	0.01	U	3.5		190		-	
	Mar-02	117.98	11.35	106.63	-	-	-	-		-		-		-		-	
	Mar-03	117.98	10.93	107.05	-	-	-	-		-		-		-		-	
	Apr-04	117.98	11.65	106.33	6.92	1230	14.3	0.005	U	0.005	U	6.22		336		-	
	Oct-04	117.98	16.72	101.26	-	-	-	-		-		-		-		-	
	Sep-05	117.98	16.24	101.74	7.14	2,555	17	0.005	U	0.005	U	2.02		1170		11.60	Added back to sample list - Class 2

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-29S	Mar-06	117.98	11.35	106.63	7.27	1,200	12.7	0.005	U	0.005	U	5.28		329		-		CERCLA annual monitoring.
(Scrubber	Mar-06	-	11.36	-	7.4	1,149	12.9	0.01	U	0.01	J	5.5		319		-		ODEQ lab split sample analysis
Sludge)	Mar-07	117.98	11.77	106.21	7.24	1,037	13.0	0.005	U	0.005	U	4.56		295		-		
	Mar-08	117.98	11.61	106.37	7.08	902	12.4	0.00500	U	0.005	U	4.42		277		-		
	May-08	117.98	12.86	105.12	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	117.98	16.41	101.57	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	117.98	16.38	101.60	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	117.98	10.84	107.14	7.07	1003	12.4	0.00500	U	0.00500	U	4.52		278	J	-		
	Jun-09	117.98	12.86	105.12	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	117.98	20.00	97.98	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	117.98	11.70	106.28	7.12	816.2	12.7	0.00500	U	0.00500	U	3.95		226		-		
	Jun-10	117.98	12.79	105.19	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	117.98	16.05	101.93	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	117.98	11.40	106.58	7.14	727.4	12.9	0.00940	UB	0.00550		3.19		204		-		
	Sep-11	117.98	16.19	101.79	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	117.98	11.60	106.38	7.41	820.5	12.7	0.00500	U	0.00500	UJ	2.92		238		-		
MW-38S	Oct-04	132.98	29.88	103.10	8.31	385	14.2	1.29	J	0.072		1.87		91.8		2.1		New well. Surface application monitoring.
	Oct-04*	-	-	-	-	-	-	1.36	J	0.0669		1.75		92.0		1.89		Duplicate
	Jan-05	132.98	29.01	103.97	8.09	564	-	0.711		0.0436		2.54		76.5		1.84		Surface app. Lab pH and conductivity.
	Apr-05	132.98	24.82	108.16	7.79	622	15.2	0.272		0.0218		5.88		56.8		1.81		CERCLA annual monitoring.
	Jul-05	132.98	27.15	105.83	7.79	675	18.8	0.514		0.0307		4.46		64.2		3.39		Surface application monitoring
	Sep-05	132.98	31.49	101.49	7.79	533	15.8	1.300		0.0341	J	4.92		69.1		2.05		Quarterly Monitoring - TA
	Mar-06	132.98	23.5	109.48	8.26	387.3	15.4	0.413		0.0191		4.32		35.3		-		CERCLA annual monitoring.
	Mar-06		23.59		8.3	368	15.3	0.38		0.03		5.60		35.2		-		ODEQ Lab split sample analysis
	Mar-07	132.98	27.20	105.78	8.13	441.9	15.1	0.936		0.0137		3.45		50.7		-		
	Mar-08	132.98	27.36	105.62	8.08	390.6	15	0.848		0.0223		3.20		50.0		-		
	May-08	132.98	28.81	104.17	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	132.98	31.70	101.28	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	132.98	30.95	102.03	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	132.98	26.24	106.74	7.85	385.3	14.9	0.364		0.0178		3.56		33.5	J	-		
	Jun-09	132.98	27.52	105.46	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	132.98	30.45	102.53	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	132.98	26.81	106.17	7.91	411.9	14.7	0.621		0.0180		4.08		44.0		-		
	Jun-10	132.98	27.07	105.91	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	132.98	29.85	103.13	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	132.98	26.32	106.66	7.92	442.7	14.5	0.821		0.0156		3.34		50.3		-		
	Sep-11	132.98	29.48	103.50	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	132.98	25.63	107.35	8.08	413.6	14.6	0.360		0.00500	UJ	4.26		32.4		-		
MW-39S	Oct-04	144.30	44.30	100.00	-	-	-	-		-		-		-		-		New survey data. Well not developed.
	Jan-05	144.30	53.42	90.88	8.15	397	-	0.0086		0.005	U	0.803		31.0		1	U	Surface app. Lab pH and conductivity.
	Apr-05	144.30	38.81	105.49	8.36	239	18	0.0099	J	0.005	U	0.730		8.90		1	U	CERCLA annual monitoring.
	Jul-05	144.30	38.13	106.17	8.45	244	19.8	0.0104		0.005	U	0.550		8.63		2.06		Surface application monitoring
	Sep-05	144.30	43.33	100.97	8.32	259	18	0.0091		0.005	U	0.660		9.16		1	U	Quarterly monitoring - TA
	Mar-06	144.30	39.98	104.32	8.26	244.2	15.4	0.0123	U	0.005	U	0.550		7.69		-		CERCLA annual monitoring.
	Mar-06		39.6		8.4	232	15.3	0.01	U	0.01	J	0.9		9.42		-		ODEQ Lab split sample analysis
	Mar-07	144.30	36.52	107.78	8.10	272.7	12.2	0.0108		0.005	U	0.580		7.61		-		
	Mar-08	144.30	36.61	107.69	7.89	170.0	14.3	0.00710		0.00500	U	0.530		6.32		-		
	May-08	144.30	36.67	107.63	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	144.30	37.01	107.29	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	144.30	38.04	106.26	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	144.30	36.67	107.63	7.78	239.7	15.2	0.0102	U	0.00500	U	0.720	J	6.67	J	-		

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-39S	Jun-09	144.30	36.82	107.48	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	144.30	37.32	106.98	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	144.30	36.63	107.67	8.13	244.1	13	0.0100		0.00500	U	0.640		8.36		-		
	Jun-10	144.30	36.39	107.91	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	144.30	36.70	107.60	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	144.30	36.00	108.30	8.08	242.1	13.4	0.00770	UB	0.00500	U	0.500	U	5.57		-		
	Sep-11	144.30	36.68	107.62	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	144.30	36.25	108.05	8.25	214.1	13.2	0.01090		0.00500	UJ	0.520		6.86		-		
MW-40S	Oct-04	142.58	49.98	92.60	8.47	185	14.9	0.139	J	0.0262		0.676		10.7		1.02		New well. Surface application monitoring.
	Jan-05	142.58	50.29	92.29	8.16	220	-	0.129		0.0193		0.702		9.57		1	U	Surface app. Lab pH and conductivity.
	Apr-05	142.58	49.41	93.17	8.12	221	15.7	0.117	J	0.0220		0.560		9.15		1	U	CERCLA annual monitoring.
	Jul-05	142.58	49.26	93.32	8.42	217	18.9	0.121		0.0205		0.500	U	8.08		1.45		Surface application monitoring
	Jul-05*	-	-	-	-	-	-	0.122		0.0181		0.500	U	8.15		1.59		Duplicate
	Sep-05	142.58	49.76	92.82	8.34	221.7	18.1	0.134		0.0181		0.520		9.15		1	U	Quarterly monitoring - TA
	Mar-06	142.58	49.49	93.09	8.33	226.2	15.4	0.128		0.01		0.500	U	9.07		-		CERCLA annual monitoring.
	Mar-07	142.58	49.53	93.05	8.31	238.2	16.4	0.173		0.0120		0.540		9.60		-		
	Mar-08	142.58	49.46	93.12	8.14	214.4	15.2	0.188		0.0127		0.560		10.7		-		
	May-08	142.58	49.33	93.25	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	142.58	49.32	93.26	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	142.58	50.73	91.85	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	142.58	50.02	92.56	7.89	225.1	15.7	0.167		0.0217		0.653	J	10.7	J	-		
	Jun-09	142.58	49.90	92.68	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	142.58	50.44	92.14	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	142.58	50.99	91.59	8.07	217.7	15.3	0.177		0.0192		0.560		10.7				
	Jun-10	142.58	51.14	91.44	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	142.58	51.35	91.23	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	142.58	50.83	91.75	8.02	224.4	14.8	0.210		0.00580		0.540		10.5		-		
	Sep-11	142.58	50.75	91.83	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	142.58	50.62	91.96	8.35	225.3	14.6	0.181		0.00500	UJ	0.530		10.1		-		
MW-41S	Oct-04	132.21	37.55	94.66	8.4	347	14.7	0.563	J	0.0481		0.348		84.7		2.08		New well. Surface application monitoring.
	Jan-05	132.21	37.97	94.24	8.04	468	-	0.502		0.0396		0.338		90.5		1.75		Surface app. Lab pH and conductivity.
	Apr-05	132.21	37.22	94.99	7.95	524	16.5	0.496	J	0.1090		0.500	U	98.3		1.85		CERCLA annual monitoring.
	Jul-05	132.21	37.25	94.96	8.19	481	18.7	0.503		0.0664		0.500	U	96.5		3.11		Surface application monitoring
	Sep-05	132.21	37.84	94.37	8.15	471	18.4	0.590		0.0556	J	0.500	U	92.4		1.81		Quarterly monitoring - TA
	Mar-06	132.21	33.41	98.80	8.09	426	15.1	0.645		0.042		0.500	U	86		-		CERCLA annual monitoring.
	Mar-07	132.21	33.11	99.10	8.01	446.1	16.8	0.683		0.0315		0.500	U	88.1		-		
	Mar-08	132.21	34.79	97.42	7.91	424	15.1	0.539		0.0224		0.500	U	89.5		-		
	May-08	132.21	35.56	96.65	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	132.21	37.69	94.52	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	132.21	30.08	102.13	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	132.21	36.15	96.06	7.79	416.5	15.1	0.498		0.0335		0.500	U	83.5		-		
	Jun-09	132.21	36.47	95.74	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	132.21	37.71	94.50	-	-	-	-		-		-		-		-		Depth to water only
	Mar-10	132.21	36.05	96.16	7.67	389.3	15.9	0.427		0.0386		0.500	U	77.4		-		
	Jun-10	132.21	36.84	95.37	-	-	-	-		-		-		-		-		Depth to water only
	Sep-10	132.21	37.97	94.24	-	-	-	-		-		-		-		-		Depth to water only
	Mar-11	132.21	35.82	96.39	7.78	395.3	14.6	0.435		0.00930		0.500	U	76.8		-		
	Sep-11	132.21	37.41	94.80	-	-	-	-		-		-		-		-		Depth to water only
	Mar-12	132.21	36.40	95.81	8.17	388.5	15.1	0.395		0.00500	UJ	0.300		74.1		-		

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (^{o}C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-42S	Dec-08	134.94	8.49	126.45	-	-	-	-		-		-		-		-		New well (Oct-08) - Mon Potential Rebound
	Dec-08	134.94	8.52	126.42	7.91	307.2	13.6	0.159	J	0.007	U	0.747		29.1		-		New well to replace MWR-8S and MW-9S.
	Dec-08*	-	-	-	-	-	-	0.132		0.007	U	0.750		30.0		-		Duplicate
	Mar-09	134.94	6.11	128.83	7.77	305.5	14.5	0.298		0.0333		0.767	J	23.8	J	-		
	Jun-09	134.94	11.00	123.94	7.87	293	16.8	0.297		0.00500	U	0.575		19.0		-		
	Sep-09	134.94	11.25	123.69	8.09	291	15.2	0.307		0.0163		0.660		19.1		-		
	Mar-10	134.94	8.63	126.31	7.94	279	14.5	0.264		0.0217		0.710		17.6		-		
	Jun-10	134.94	9.38	125.56	-	-	-	-		-		-		-		-		Depth to water only
	Sep-10	134.94	10.86	124.08	-	-	-	-		-		-		-		-		Depth to water only
	Mar-11	134.94	7.40	127.54	7.84	286.1	14.4	0.312		0.00840		0.670		15.1		-		
	Sep-11	134.94	11.30	123.64	-	-	-	-		-		-		-		-		Depth to water only
	Mar-12	134.94	8.13	126.81	8.04	288.2	14.5	0.287		0.00500	UJ	0.670		14.8		-		
	Mar-12*	-	-	-	-	-	-	0.274		0.00500	UJ	0.670		14.8		-		Duplicate
AQUIFER SYSTEM: A																		
MW-6AA	Sep-86	133.66	-	-	-	-	-	0.31		0.03		0.97		8.3		-		
	Aug-87	133.66	-	-	-	-	-	0.55		0.06		1		22		-		
	Sep-90	133.66	98.80	34.86	8.04	380	16	0.72	J	0.04	J	0.7		45		-		
	Dec-90	133.66	90.44	43.22	8.27	190	15	0.68		0.03		0.8		22		-		
	Mar-91	133.66	84.92	48.74	7.98	299	18	0.68		0.09		0.7		23		-		
	Jun-91	133.66	90.75	42.91	8.03	310	15	0.7		0.07		0.7		21		-		
	Sep-91	133.66	95.81	37.85	8.59	340	16	0.75		0.06	J	0.9		24	J	-		
	Mar-92	133.66	88.02	42.56	7.99	330	-	0.67		0.07		0.7		26		-		
	Mar-93	133.66	88.32	42.26	8.19	250	14	0.65		0.05		0.7		25		-		
	Mar-93*	-	-	-	-	-	-	0.64		0.08		0.8		23		-		Duplicate
	Mar-94	133.66	88.32	45.34	7.9	340	17	0.62	J	0.05	J	0.6		23	J	-		
	Mar-95	133.66	79.17	54.49	8	290	17	0.75		0.08		0.7		24		-		
	Mar-96	133.66	91.45	42.21	7.58	240	14.7	0.74		0.03		0.7		22		-		
	Apr-96	133.66	88.91	44.75	-	-	-	0.71		0.03		0.6		22		-		
	Mar-97	133.66	86.70	46.96	8.23	267	14.9	0.68		0.05		0.6		25		-		
	Mar-98	133.66	88.60	45.06	8.12	275	15.1	0.72		0.06		0.7		24		-		
	Mar-99	133.66	89.61	44.05	8.3	263	14.8	0.72		0.05		0.7		23		-		
	Mar-00	133.66	91.32	42.34	8.19	271	15	0.38		0.05		0.7		26		-		
	Mar-01	133.66	93.75	39.91	8.07	279	18	0.44		0.03	J	0.7		24		-		
	Mar-02	133.66	83.04	50.62	8.47	284	14.5	0.729	J	0.103		0.822		29.7		-		
	Mar-03	133.66	78.52	55.14	8.16	398	15.6	0.673		0.0727	J	0.808		30.7		-		
	Apr-04	133.66	74.89	58.77	8.10	312	16.2	0.582		0.0402		0.794		32.7		-		
	Oct-04	133.66	79.28	54.38	-	-	-	-		-		-		-		-		
	Nov-04	133.66	78.95	54.71	6.99	279	16.7	0.629		0.0463		0.948	J	31.3		-		
	Nov-04	-	-	-	-	-	-	0.608		0.0483		0.925	J	31.4		-		Duplicate
	Apr-05	133.66	74.02	59.64	7.97	291	15.2	0.624		0.0546		0.650		32.6		-		CERCLA annual monitoring
	Sep-05	133.66	80.94	52.72	8.17	287	15.8	0.676		0.0291	J	0.650		31.2		1	U	Quarterly monitoring - TA
	Mar-06	133.66	75.03	58.63	8.15	294	14.9	0.631		0.0225		0.530		32.5		-		CERCLA annual monitoring.
	Mar-07	133.66	72.84	60.82	8.12	314.6	15.0	1.05		0.0148		0.640		33.9		-		
	Mar-08	133.66	72.29	61.37	7.94	273	14.9	0.618	J	0.0266		0.670		34.4		-		
	May-08	133.66	71.24	62.42	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	133.66	75.67	57.99	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	133.66	75.05	58.61	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
AQUIFER SYSTEM: A																		
MW-6AA	Mar-09	133.66	71.21	62.45	7.83	288	15	0.516		0.0347		0.720	J	32.3	J	-		
	Mar-09*	-	-	-	-	-	-	0.473		0.0317		0.727	J	33.2	J	-		Duplicate
	Jun-09	133.66	69.81	63.85	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	133.66	74.05	59.61	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-6AA	Mar-10	133.66	68.79	64.87	8.06	282.7	14.4	0.522		0.0262		0.690		33.9		-		
	Mar-10*	-	-	-	-	-	-	0.591		0.0282		0.680		33.8		-		Duplicate
	Jun-10	133.66	67.60	66.06	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	133.66	71.87	61.79	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	133.66	65.62	68.04	7.99	289.7	14.7	0.537		0.0126		0.630		34.1		-		
	Sep-11	133.66	67.03	66.63	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	133.66	63.00	70.66	8.2	291.2	14.6	0.548		0.00500	UJ	0.640		33.8		-		
MW-12A	Aug-86	145.12	-	-	-	-	-	0.084		0.013		0.89		13		-		
	Jul-87	145.12	-	-	-	-	-	0.096	J	0.01	U	1	U	5		-		
	Sep-90	145.12	112.88	32.24	8.3	330	16	0.222	R	0.04	R	0.6	J	23		-		
	Dec-90	145.12	106.23	38.89	8.48	240	16	0.21		0.03		0.7		18		-		
	Mar-91	145.12	102.42	42.70	7.8	300	17	0.23		0.03		0.6		13		-		
	Jun-91	145.12	109.25	35.87	7.94	370	16	0.25		0.02		0.7		22		-		
	Sep-91	145.12	113.10	32.02	8.46	300	16	0.22		0.02		0.6		16		-		
	Mar-92	145.12	104.28	40.84	7.99	300	16	0.25		0.03		0.6		19	J	-		
	Mar-93	145.12	105.16	39.96	8.16	260	15	0.27		0.05		0.6		17		-		
	Apr-94	145.12	106.02	39.10	8.04	280	18	0.24		0.05		0.6		20		-		
	Mar-95	145.12	108.42	36.70	7.92	310	17	0.26		0.04		0.5		21		-		
	Apr-96	145.12	105.47	39.65	7.66	268	15	0.19		0.03		0.6		18		-		
	Mar-97	145.12	103.10	42.02	8.16	301	15.6	0.23		0.03		0.6		21		-		
	Mar-98	145.12	105.25	39.87	8.19	302	15.7	0.24		0.03		0.6		22		-		
	Mar-99	145.12	106.77	38.35	8.23	298	15.5	0.26		0.03		0.6		23		-		
	Mar-00	145.12	108.53	36.59	7.78	308	15.4	0.2		0.02		0.7		23		-		
	Mar-01	145.12	109.70	35.42	7.49	278	17.4	0.21		0.01		0.6		26		-		
	Mar-02	145.12	98.70	46.42	8.41	306	15.2	0.22	J	0.0372		0.757		24.9		-		
	Mar-03	145.12	93.12	52.00	8.15	422	15.0	0.193		0.0311	U	0.769		24.2		-		
	Apr-04	145.12	89.50	55.62	7.52	314	17.7	0.173		0.0202		0.909		24.4		-		
	Oct-04	145.12	94.09	51.03	-	-	-	-		-		-		-		-		
	Apr-05	145.12	89.11	56.01	7.78	313	14.8	0.141		0.0228		0.630		24.6		-		CERCLA annual monitoring
	Sep-05	145.12	96.72	48.40	8.03	303	17.6	0.164		0.0424		0.620		24.7		1	U	Quarterly monitoring - TA
	Mar-06	145.12	90.21	54.91	7.61	270	15.7	0.0257	U	0.0070		0.500	U	8.3		-		CERCLA annual monitoring.
	Mar-07	145.12	87.83	57.29	-	-	-	-		-		-		-		-		Well casing broken, unable to sample.
	Aug-07	145.45	-	-	-	-	-	-		-		-		-		-		Well repaired and resurveyed.
	Sep-07	145.45	93.61	51.84	7.66	260	18	0.0556		0.005	UJ	0.680		13		-		
	Mar-08	145.45	87.75	57.70	7.59	266.5	15.5	0.0713	J	0.009		0.670		17.2		-		
	May-08	145.45	86.59	58.86	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	145.45	91.09	54.36	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	145.45	89.86	55.59	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	145.45	86.21	59.24	7.49	285.90	15.90	0.0704		0.00850		0.725	J	19.3	J	-		
	Jun-09	145.45	84.48	60.97	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	145.45	88.71	56.74	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	145.45	83.51	61.94	7.6	282.8	15.4	0.0782		0.00510		0.660		21.7		-		
	Jun-10	145.45	81.03	64.42	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	145.45	85.91	59.54	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	145.45	79.23	66.22	7.64	291.3	14.7	0.0920		0.00510		0.610		22.7		-		
	Sep-11	145.45	80.90	64.55	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	145.45	76.25	69.20	7.95	296.0	14.0	0.0715		0.00500	UJ	0.610		24.2		-		
MW-13A	Aug-86	143.71	-	-	-	-	-	0.12		0.01	U	0.85		20		-		
	Jul-87	143.71	-	-	-	-	-	0.24		0.03		1	U	21	J	-		
	Sep-90	143.71	111.06	32.11	7.98	340	16	0.139	R	0.0400	R	0.600	J	39.0		-		
	Dec-90	143.71	104.67	38.50	-	-	-	-		-		-		-		-		

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MW-13A	Mar-91	143.71	100.60	42.57	-	-	-	-		-		-		-		-		
	June-91	143.71	107.29	35.88	-	-	-	-		-		-		-		-		
	Dec-91	143.71	-	-	-	-	-	-		-		-		-		-		
	Mar-92	143.71	102.35	40.82	7.48	300	16	0.520		0.0900		0.600		24.0	J	-		
	Mar-93	143.71	103.23	39.94	8.15	230	15	0.310		0.0200		0.600		19.0		-		
	Mar-93*	-	-	-	-	-	-	0.300		0.0200		0.600		20.0		-		
	Mar-94	143.71	104.10	39.07	8	330	18	0.120		0.0200		0.600		16.0		-		
	Mar-95	143.71	106.53	36.64	8	240	17	0.060		0.0200		0.600		15.0		-		
	Apr-96	143.71	103.67	39.50	7.62	206	15.6	0.010	U	0.010	U	0.600		12.0		-		
	Mar-97	143.71	101.30	41.87	8.08	226	15.9	0.02		0.010	U	0.5		10		-		
	Mar-98	143.71	103.50	40.21	8.17	229	16	0.007		0.010	U	0.6		11		-		
	Mar-99	143.71	104.89	38.82	8.19	227	15.5	0.12		0.010	U	0.6		11		-		
	Mar-00	143.71	106.66	37.05	7.67	236	15.8	0.02		0.010	U	0.6		9		-		
	Mar-01	143.71	108.03	35.68	8.65	220	21.1	0.01		0.010	U	0.6		8.2		-		
	Mar-02	143.71	96.97	46.74	8.41	234	15.3	0.0208		0.0065		0.706		11.3		-		
	Mar-03	143.71	91.50	52.21	8.13	329	15.5	0.0115	U	0.109		0.7		11.2		-		
	Apr-04	143.71	87.84	55.87	7.90	258	16.9	0.0124		0.0065		0.716		10.7		-		
	Oct-04	143.71	92.39	51.32	-	-	-	-		-		-		-		-		
	Apr-05	143.71	87.35	56.36	7.87	230	15.7	0.0094		0.0051		0.550		11.2		-		CERCLA annual monitoring
	Sep-05	143.71	94.83	48.88	8.11	232	17.4	0.0190		0.0050	U	0.580		10.8		1	U	Quarterly Monitoring - TA
	Mar-06	143.71	88.51	55.20	8.09	231	15.8	0.0108	U	0.0050	U	0.500	U	10.0		-		CERCLA annual monitoring
	Mar-06*	-	-	-	-	-	-	0.0102		0.0050	U	0.500	U	10.2		-		Duplicate
	Mar-07	143.71	86.16	57.55	8.06	243.6	15.7	0.00660		0.0050	U	0.550		10.2		-		
	Mar-07*	-	-	-	-	-	-	0.00630		0.0050	U	0.560		10.3		-		Duplicate
	Mar-08	143.71	85.84	57.87	7.89	216.1	15.3	0.00830	J	0.00500	U	0.580		10.4		-		
	May-08	143.71	84.61	59.10	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	143.71	89.02	54.69	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	143.71	87.95	55.76	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	143.71	84.33	59.38	7.64	223.9	16	0.0102	U	0.00500	U	0.658	J	9.84	J	-		
	Jun-09	143.71	82.50	61.21	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	143.71	86.69	57.02	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	143.71	81.65	62.06	7.81	218.2	15.4	0.0101		0.00500	U	0.580		9.67		-		
	Jun-10	143.71	79.25	64.46	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	143.71	83.93	59.78	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	143.71	77.44	66.27	7.76	223.3	15	0.0116	UB	0.00500	U	0.530		10.1		-		
	Mar-11*	-	-	-	-	-	-	0.0118	UB	0.00500	U	0.550		10.1		-		Duplicate
	Sep-11	143.71	78.9	64.81	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	143.71	74.51	69.20	8.13	223.7	14.3	0.0111		0.00500	UJ	0.540		9.46		-		
AQUIFER SYSTEM: B																		
MWR-7A	Aug-87	132.70	-	-	-	-	-	0.80		0.09		1.00	U	28.00		-		
	Sep-90	132.70	106.00	26.70	7.76	320	16	0.172	R	0.04	R	0.6	J	18		-		
	Dec-90	132.70	101.22	31.48	7.2	270	15	0.170		0.03		0.6		14		-		
	Mar-91	132.70	97.00	35.70	7.45	320	18	0.150		0.05		0.5		11		-		
	Jun-91	132.70	104.48	28.22	7.53	380	17	0.200		0.03		0.6		18		-		
	Sep-91	132.70	108.92	23.78	7.9	320	17	0.230		0.02		0.5		12		-		
	Mar-92	132.70	98.77	33.93	7.46	320	16	0.160		0.04		0.5		11	J	-		
	Mar-92*	-	-	-	-	-	-	0.160		0.02		0.5		14	J	-		Duplicate
	Mar-93	132.70	99.60	33.10	7.73	310	15	0.190		0.02		0.6		13		-		
	Mar-94	132.70	100.40	32.30	7.57	360	17	0.190		0.03		1.5		16		-		
	Mar-95	132.70	102.98	29.72	7.77	300	18	0.220		0.04		0.6		20		-		
	Apr-96	132.70	100.31	32.39	7.35	263	15.3	0.300		0.03		0.6		17		-		
	Mar-97	132.70	97.60	35.10	7.83	286	15.5	0.360		0.04		0.6		19		-		

Table 4. CERCLA GROUNDWATER DATA
LOCKHEED MARTIN CORPORATION SITE, THE DALLES, OREGON

MONITOR WELL ID	DATE SAMPLED	CASING ELEV. (ft msl)	DEPTH TO WATER (ft)	G.W. ELEV. (ft msl)	PH (S.U.)	COND. (µhos/cm)	TEMP. (°C)	TOTAL CYANIDE (mg/L)		WAD CYANIDE (mg/L)		FLUORIDE (mg/L)		SULFATE (mg/L)		TOC (mg/L)		NOTES
MWR-7A	Mar-97*	-	-	-	-	-	-	0.370		0.02		0.6		19		-		Duplicate
	Mar-98	132.70	99.75	32.95	7.78	286	15.7	0.250		0.06		0.6		18		-		
	Mar-99	132.70	101.30	31.40	7.87	284	15.5	0.360		0.03		0.6		20		-		
	Mar-00	132.70	103.10	29.60	7.36	286	15.6	0.360		0.05		0.7		19		-		
	Mar-01	132.70	102.35	30.35	7.54	342	22.1	0.220		0.04		0.6		18		-		
	Mar-02	132.70	91.17	41.53	8.14	294	15.7	0.334	J	0.0514		0.852		19.0		-		
	Mar-03	132.70	83.45	49.25	7.85	359	16.6	0.286		0.0804	J	0.824		18.2		-		
	Apr-04	132.70	79.09	53.61	7.85	326	17.3	0.287		0.0337		0.804		18.6		-		
	Oct-04	132.70	85.80	46.90	-	-	-	-		-		-		-		-		
	Apr-05	132.70	79.41	53.29	7.68	295	14.9	0.286		0.0421		0.650		19.0		-		CERCLA annual monitoring
	Sep-05	132.70	91.13	41.57	7.93	285	17.3	0.298		0.0412	J	0.640		17.6		1	U	Quarterly Monitoring - TA
	Sep-05*							0.297		0.0282	J	0.610		17.6		1	U	Duplicate
	Mar-06	132.70	80.37	52.33	7.85	295	15.5	0.283		0.0229		0.510		17.3		-		CERCLA annual monitoring
	Mar-07	132.70	77.29	55.41	7.81	310.7	16.6	0.326		0.0118		0.630		18.1		-		
	Mar-08	132.70	76.78	55.92	7.64	276	15.6	0.28	J	0.0174		0.680		18.6		-		
	May-08	132.70	77.06	55.64	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-08	132.70	75.67	57.03	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Dec-08	132.70	79.76	52.94	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-09	132.70	73.92	58.78	7.49	288.9	15.8	0.260		0.0211		0.695	J	17.3	J	-		
	Jun-09	132.70	74.87	57.83	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-09	132.70	81.36	51.34	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-10	132.70	71.19	61.51	7.41	280.2	16	0.249		0.00720		0.670		17.3				
	Jun-10	132.70	69.40	63.30	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Sep-10	132.70	78.26	54.44	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-11	132.70	66.43	66.27	7.38	290.1	15.3	0.264		0.00730		0.610		16.7		-		
	Sep-11	132.70	73.37	59.33	-	-	-	-		-		-		-		-		Monitoring Potential Rebound**
	Mar-12	132.70	62.95	69.75	7.81	291.5	15.1	0.234		0.00500	UJ	0.620		16.2		-		

NOTES:

CERCLA =	Comprehensive Environmental Response, Compensation, and Liability Act				
COND =	conductivity	S.U. =	standard units	*	Duplicate sample
°C =	degress Celcius	TA =	Temporary Authorization	-	Not sampled, measured, analyzed, or not available
ft msl =	feet above mean sea level.	TOC =	Total Organic Carbon	J	Estimated value
g.w. =	groundwater	WAD =	Weak Acid Dissociable	R	Unusable value
µhos/cm =	micromhos per centimeter			U	Not detected at the reporting limit shown
mg/L =	milligrams per liter			UJ	Not detected at the reporting limit shown, however the detection limit is estimated
NAC =	Northwest Aluminum Company			UB	Analyte considered non-detect at the listed value due to associated blank contamination
ODEQ =	Oregon Department of Environmental Quality			**Bold**	Concentration exceeds Alternate Concentration Limit groundwater protection standard

Groundwater elevation data for the 1990s may be plus or minus several days to 1 month from date shown (placed with closest analytical data).
March 2001 field parameter data (pH, specific conductance, and temperature measurements) were suspect due to a faulty instrument.
Well elevation corrections made to all wells using October 2004 survey data.
**Data collected to monitor potential rebounding of water levels from post-plant demolition and cessation of NAC pumping operations.