



Engineering +
Environmental

May 30, 2014

Clark County, Washington
Attn: Mr. Jerry Barnett
23201 NE Pluss Road
Vancouver, Washington 98682

Re: Focused Groundwater Assessment for Perchlorate and Explosive Compounds
Lacamas Creek and Demolition Area 3 Wells
Camp Bonneville, Clark County, Washington
PBS Project No. 76151.005

Dear Mr. Barnett:

This letter report presents the results of a focused groundwater assessment conducted during the first quarter of 2014 at Camp Bonneville (Figure 1). This report has been prepared as a supplement to the routine quarterly groundwater monitoring conducted at the site. Please refer to the quarterly monitoring reports for information related to project setting, geology, and history.

PROJECT SCOPE DESCRIPTION

During the third quarter 2013 routine groundwater monitoring event, a low-level detection of the explosive HMX occurred in groundwater from monitoring well LC-MW01D. This well is part of the “Base Boundary” well grouping within the Lacamas Creek area (Figure 2) that is included in quarterly monitoring events. The sample collected from the well had a detection of HMX at 0.22 micrograms per liter ($\mu\text{g/L}$).

The remainder of the third quarter results for the Lacamas Creek wells was subsequently reviewed. Another well (LC-MW02D) had a detection of HMX between the method reporting limit (MRL) and the method detection limit (MDL). The MDL is defined as the minimum concentration that can be measured and reported with 99 percent confidence that the concentration is greater than zero, but the exact concentration cannot be reliably quantified.

The appearance of HMX at the down gradient Base Boundary location is anomalous, and it was decided that additional groundwater assessment was warranted in the area. Clark County (County) and the Washington Department of Ecology (Ecology) requested PBS to obtain laboratory reports that report the Base Boundary data to the MDLs for perchlorate, RDX, and HMX from the Base Boundary wells, and conduct groundwater monitoring at the five existing Demolition Area 3 wells (Figure 3) for four consecutive quarters. Demolition Area 3 is a potential source for the low level of contamination detected at the Base Boundary wells. The Demolition Area 3 wells were removed from the active monitoring program in the third quarter of 2006.

4412 SW Corbett Avenue, Portland, OR 97239
503.248.1939 Main
866.727.0140 Fax
888.248.1939 Toll-Free
www.pbsenv.com

Bend | Boise | Coos Bay | Eugene | Portland | Seattle | Tri-Cities | Vancouver

The County and Ecology also requested field filtering groundwater samples from the Base Boundary wells in March 2014 to determine if any detected explosives were dissolved in the groundwater, or adsorbed to soil.

MONITORING WELL INFORMATION

Table 1 provides information for the Demolition Area 3 wells. This table includes total depth, screened interval, and top-of-casing elevation. Information for the Lacamas Creek/Base Boundary wells is provided in the routine quarterly monitoring reports.

For Demolition Area 3, wells LC-MW05S, LC-MW07S, and LC-MW08S have screens installed between 270 and 290 feet above mean sea level (AMSL) and therefore can be evaluated for groundwater flow direction. The screen for well LC-MW05D is installed much deeper, between 246 and 256 feet AMSL, and the screen for well LC-MW06S is installed shallower between 291 and 298 AMSL. Therefore, these wells cannot be included in a flow direction discussion. It should be noted that the boring logs for these wells indicate that the soil in the screened interval is expected to have low permeability.

Figure 3 provides the locations of the wells. Please note that this figure has been modified slightly from the first focused assessment report (dated March 3, 2014). The locations of the Demolition Area 3 wells are slightly different based on historical site survey data.

GROUNDWATER MONITORING EVENT – MARCH 2014

Demolition Area 3 Field Activities

Groundwater samples were collected from one monitoring well pair (LC-MW05D and LC-MW05S) and three single wells (LC-MW06S, LC-MW07S and LC-MW08S) in Demolition Area 3 (Figure 3, Monitoring Well Locations) on March 14, 2014. This event represents the first quarter 2014 monitoring activities. A field duplicate sample (labeled 01Q14LCMW150W) was collected from monitoring well LC-MW05D. Extra volume of groundwater was collected from monitoring well LC-MW06S for laboratory matrix spike/matrix spike duplicate (MS/MSD) samples.

Groundwater monitoring was performed in accordance with the site Health and Safety Plan¹ (HASP), revised on September 14, 2010, and the Supplemental Groundwater Remedial Investigation Sampling and Analysis Plan and Quality Assurance Project Plan² (SAP/QAPP). Laboratory analytical services were provided by TestAmerica located in Portland, Oregon and Sacramento, California, under contract to PBS Engineering and Environmental Inc. (PBS).

Low-Flow Purging

A low-flow, minimal-drawdown technique was used for groundwater purging and sampling using the QED Sample Pro[®] portable bladder pump constructed of a stainless steel body and polyethylene

¹ PBS Engineering and Environmental Inc. (September 14, 2010). *Site Health and Safety Plan, Soil and Groundwater Sampling*.

² PBS Engineering and Environmental Inc. (January 2014). *Supplemental Groundwater and Surface Water Remedial Investigation Sampling and Analysis Plan and Quality Assurance Project Plan – Remedial Action Units 2C and 3*.

disposable bladders. New one-quarter-inch tubing was used at each monitoring well. The low-flow purging technique is described in detail in the SAP. Low-flow sampling minimizes disturbance to the aquifer and is designed to ensure that samples collected from the wells are representative of groundwater.

Groundwater Sample Collection

Groundwater samples were collected into new laboratory-supplied sample containers directly from the end of the disposable tubing discharge hose. The laboratory analytical method for perchlorate complies with a Department of Defense recommendation for this chemical.³ The method requires that sample collection include field filtering. The filtering is accomplished by using a laboratory-provided 60-milliliter (mL) graduated syringe and a 0.2 micrometer (μm) polyethersulfone (PES) filter. The filter is connected to the end of the syringe and approximately 120 milliliter (mL) of groundwater is filtered from the discharge hose through the syringe into a laboratory-provided, pre-sealed 250-mL polyethylene container using method guidelines. Additional sample volume is required for the matrix spike/matrix duplicate (MS/MSD) sample. Samples are stored with headspace to minimize the possibility of anaerobic conditions developing that can lead to the breakdown of perchlorate in solution.

For the March 2014 event only, an additional sample was collected from each Base Boundary well and field-filtered through a 0.45 μm filter for submittal for explosives analysis. This sampling protocol modification was conducted to determine if the recent HMX detections in several wells could be related to suspended soil particles in the samples.

Quality Assurance/Quality Control Samples

One duplicate sample was collected and one MS/MSD sample was collected for analysis. An equipment blank was not included with this sample collection.

Deviations from SAP/QAPP

This section is intended to discuss deviations from established protocols as well as to note unusual conditions or equipment issues encountered. Unless noted otherwise, the issues did not affect the quality of the samples collected during this event.

- Water levels in wells LC-MW05S, LC-MW05D, LC-MW07S, and LC-MW08S continued to drop during low-flow purging, likely due to low-permeability soil in the screened intervals. Therefore, depth to water readings would not equilibrate, as required in the PBS SOP for low-flow sampling. This is consistent with observations from the previous sampling event and the well redevelopment in December 2013. The remaining field parameters (temperature, specific conductivity, dissolved oxygen [DO], pH, and oxidation reduction potential [ORP]) were within an acceptable range. The deviation is not considered significant, and PBS considers the samples representative of aquifer conditions.
- Due to an oversight by field personnel, the turbidity was not measured for well LC-MW07S.

³ Department of Defense Environmental Data Quality Workgroup. (August 2007). *DoD Perchlorate Handbook, Revision 1, Change 1*

Investigation-Derived Waste

Gloves and other disposable field supplies were disposed of as solid waste. Purged groundwater was placed in 55-gallon drums that were sealed, labeled, and placed next to the wells.

GROUNDWATER MONITORING RESULTS

Analytical results reported to the MDL for all groundwater samples are presented in Table 2, Base Boundary Wells Analytical Results and Table 3, Demo Area 3 Analytical Results. The MRLs are also noted on the tables. Groundwater field parameters (i.e., pH, temperature, conductivity, ORP, DO, and turbidity) recorded at the time of sampling are presented in Table 4. The analytical reports and the Level III Data Package from the March 2014 focused assessment are provided on the enclosed compact disc.

Groundwater analytical results were compared to the State of Washington Model Toxics Control Act (MTCA) Method B cleanup levels. MTCA Method B cleanup levels and applicable, relevant, and appropriate state and federal groundwater screening values were obtained from the Ecology Cleanup Levels and Risk Calculations (CLARC)⁴ database.

Base Boundary Wells

A discussion of groundwater elevations and analytical results was provided in the routine groundwater monitoring report⁵ for the Base Boundary Wells and is not repeated here. There were no data quality issues in this sampling event that resulted in the flagging or rejection of any data for these wells.

There was a detection of perchlorate in Base Boundary well LCMW04S at 0.16 micrograms per liter ($\mu\text{g/L}$), which is between the MRL and MDL. There were no other detections of target compounds above the MDL for both the regular groundwater samples and the samples that were field filtered. Given the lack of detections for explosives, the comparison of standard samples to field-filtered samples could not be accomplished during this field event.

Demolition Area 3 Wells

Groundwater elevations are provided in Table 4. Elevations in the wells ranged from 302.37 to 309.94 feet AMSL. For the three wells screened at the same interval (LC-MW05S, LC-MW07S, and LC-MW08S), groundwater flow direction is to the west-northwest toward Lacamas Creek. For the nested wells (LC-MW05S and LC-MW05D), the vertical gradient is upward.

Please note that the highest groundwater elevation measurement (309.94 feet AMSL) was from well LC-MW05D, which is an artesian well that often overflows the top of the PVC casing. Given the presence of low permeability soil noted previously in boring logs, it is apparent that this well is screened in a semi-confined or confined water-bearing unit. Accurate measurement of groundwater elevation in this well would require modification of the casing. If the Demolition Area 3 wells continue to be

⁴ <https://fortress.wa.gov/ecy/clarc/Reporting/CLARCReporting.aspx>

⁵ PBS Engineering and Environmental Inc. (May 2014). First Quarter 2014 Groundwater Sampling and Analysis Report, Camp Bonneville, Vancouver, Washington.

monitored, a modification (temporary during each field event) will be designed by PBS for County and Ecology approval.

There were no detections above the MDL of any analyzed compound in the Demolition Area 3 wells. Table 3 provides the MDLs and MRLs for the contaminants of concern.

DATA QUALITY REVIEW AND VALIDATION

For this focused assessment, the Base Boundary wells from the first quarter 2014 event had a separate laboratory data package generated with results reported to the MDL. The data package analytical results from the March 2014 Demolition Area 3 sampling event were also reported to the MDL. The data quality evaluation was performed for the Base Boundary/Lacamas Creek wells in the quarterly report prepared for the routine monitoring and is not repeated here. This section focuses on the supplemental monitoring that occurred in the Demolition Area 3 wells.

The overall data quality objective is to provide data of known and sufficient quality to evaluate the physical extent and concentration ranges of the chemicals of potential concern from analysis of groundwater samples, and to assure compliance with environmental and health-related agencies. Data quality objectives for laboratory analysis are presented in the QAPP. Laboratory analytical data were evaluated with respect to quality assurance objectives for precision, accuracy, representativeness, comparability, and completeness parameters.

The project specifications were met for all analytes, indicating that the sampling and analysis procedures were reproducible. The TestAmerica laboratory report narratives, presented in the attachments, state that all quality control parameters that affect sample analysis were met.

Data Validation

All analytical data were validated at a Level II review standard. Level II validation and reporting include a brief narrative of the laboratory data along with presentation of the sample results and related QA/QC analyses. Additionally, 20 percent of the analytical data (1 of 5 samples) were validated at a Level III review standard. Level III validation adds the following to the reporting (not all of these method requirements are necessarily applicable to the analyses in this sampling event):

- Internal standards
- Blank association
- Serial dilution results
- Post-digestion spike results
- gas chromatograph/mass spectrometer (GC/MS) tune table
- Initial calibration table
- Continuing calibration verifications
- Calibration blanks
- Interference check solution A/ interference check solution AB (ICSA/AB), contract required detection limit (CRDL), method detection limit/instrument detection limit (MDL/IDL) form

- Column confirmation
- Instrument run log

These data validation levels follow the criteria in the Environmental Protection Agency's (EPA) "Data Quality Objectives for Remedial Response Activities Development Process",⁶ National Technical Information Service.

Presentation of Data

There were two sample submissions on March 14, 2014. Samples were placed in two sample delivery groups (SDGs). One of the SDGs (250-17797-1) was processed at Level II and one (250-17796-1) at Level III. Laboratory reports and the Level III data package from the March 2014 Demolition Area 3 event are included on the enclosed compact disc.

Sample Handling and Control

The chain-of-custody forms indicate that samples were maintained under proper custody. Forms were signed upon release from the field and receipt at the laboratory. Samples were received by the laboratory at temperatures within acceptable limits and with proper preservation. All analyses from which results were reported were performed within applicable method-specified holding times.

Method Reporting Limits

All samples met laboratory-specified MRLs and, additionally, were reported to the lower MDLs for this supplemental evaluation.

Field Data Quality Assessment

There are no specific data quality objectives for the measurement of field parameters (e.g., temperature, pH, ORP, conductivity, DO, and turbidity). Specific conductance, temperature, ORP, DO, and pH were measured during purging. Turbidity is measured during sample collection. PBS' SOP on low-flow groundwater sampling describes the acceptable criteria for the measurement of field parameters. A copy of the SOP is provided in the SAP/QAPP.

Field Quality Control Sample Assessment

Duplicates

One duplicate sample was collected. The duplicate sample was analyzed for the same constituents as the source sample. The relative percent difference (RPD) was calculated as the difference between the values divided by the average of the values. For samples with results greater than five times the practical quantification limit (PQL), an RPD of less than 20 percent is considered good duplication. For samples with results less than five times the PQL, the difference between the sample and its duplicate must be less than the PQL in order to meet the quality assurance acceptance criteria. A significant difference between duplicate values for a few parameters indicates potential problems with the

⁶ Environmental Protection Agency (EPA). (1987b). *Data Quality Objectives for Remedial Response Activities-Development Process*. EPA/540/G-87/003, OSWER Directive 9355.07B, EPA, Washington, D.C. (PB88-131370).

precision of specific analyses. A significant difference for many parameters indicates potential problems with the sample collection procedures.

- Demolition Area 3 - The field duplicate analysis for well LC-MW05D met all quality control requirements.

Laboratory Quality Control Assessment

The analytical data quality evaluations performed by TestAmerica are presented in the laboratory reports in the attachments. No analysis results required qualification. Case narratives describing sample receipt, identification, and general comments by laboratory personnel are included in each report.

Laboratory Quality Control Samples/Indicators

- Blanks - There were no detections of target compounds in any blanks for any analyses.
- Laboratory Control Spikes (LCS) - LCS samples had recoveries within specified control limits.
- Matrix Spike/Matrix Spike Duplicates - MS and MSD recoveries and RPDs for MS/MSD pairs were within specified control limits.

Level III Data Review

The data package for SDG 250-17796-1 receiving Level III data reporting was reviewed for adherence to method criteria that exceeds Level II reporting. There were no deviations from method criteria.

CONCLUSION AND RECOMMENDATIONS

For the Demolition Area 3 wells, there was no detection of perchlorate, RDX, or HMX above the MDL. Sampling will continue in these wells for an additional two quarters (June 2014 and September 2014) to provide a full year of seasonal monitoring data.

For the Base Boundary wells, perchlorate was detected in well LCMW04S between the MRL and MDL. There was no detection above the MDL of any compound in the other wells. MDL reports will continue to be evaluated for the Base Boundary wells in conjunction with the Demolition Area 3 well monitoring (two more quarterly events through September 2014).

Please feel free to contact me at at 360.213.0461 if you have any questions.

Sincerely,
PBS Engineering and Environmental Inc.



Heidi Yantz, LG
Senior Hydrogeologist, Principal



Heidi W Yantz



Dulcy Berri, LHG
Principal Hydrogeologist

SB/HY/DB/sj

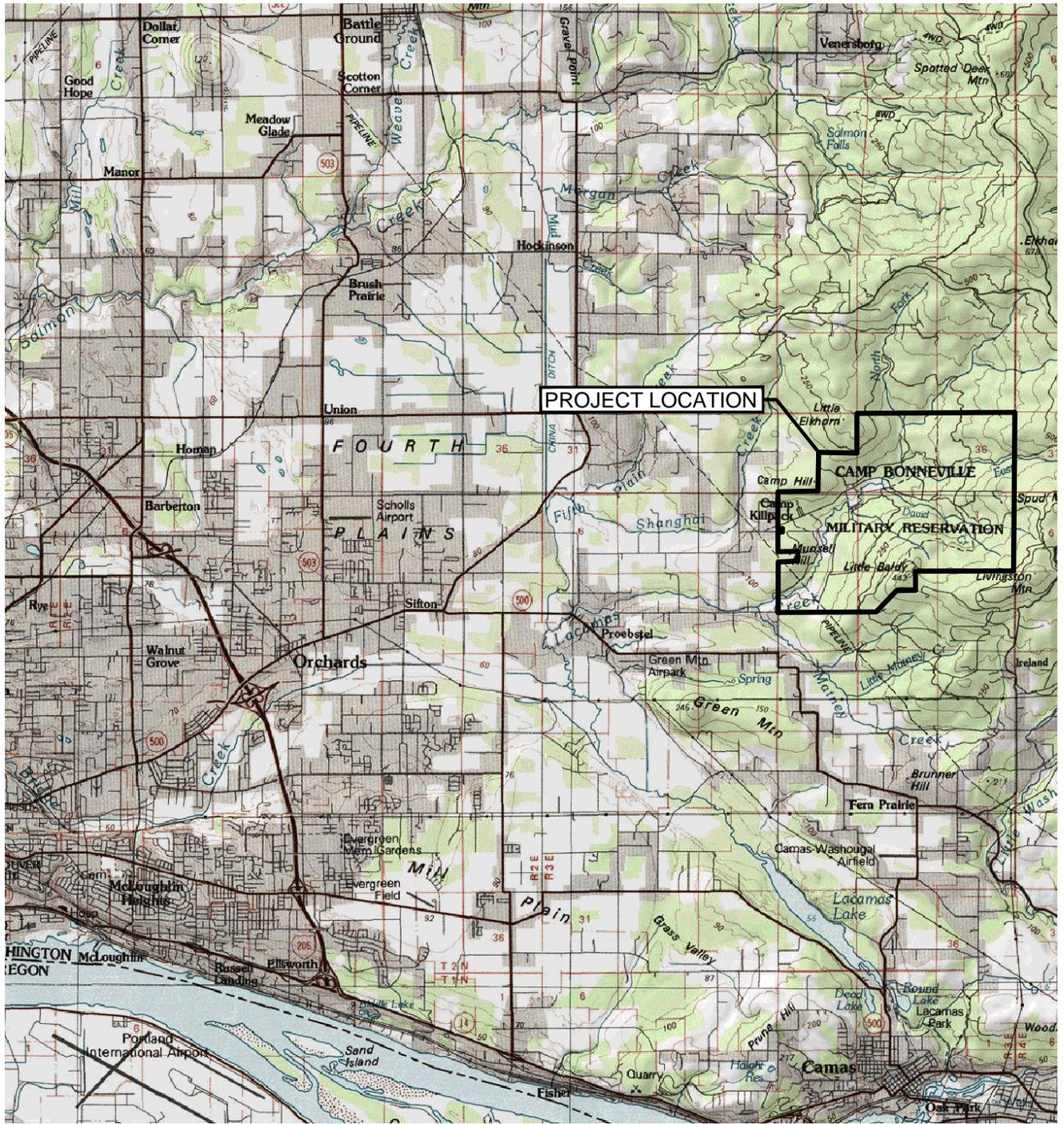
Attachments: Figure 1 – Vicinity Map
Figure 2 – Investigation Areas within Camp Bonneville
Figure 3 – Monitoring Well Locations near Demo Area 3
Table 1 – Demolition Area 3 Well Number and Construction Details
Table 2 – Base Boundary (Lacamas Creek) Wells Analytical Results
Table 3 – Demolition Area 3 Analytical Results
Table 4 – Demolition Area 3 Field Parameters for Groundwater Samples
Laboratory Reports and Sample Chain-of-Custody Forms

Figures

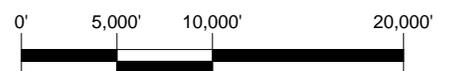
Figure 1 – Vicinity Map

Figure 2 – Investigation Areas within Camp Bonneville

Figure 3 – Monitoring Well Locations Near Demo Area 3



SOURCE: USGS 100K MAP SERIES



SCALE: 1" = 10,000'



PROJECT #
76151.005

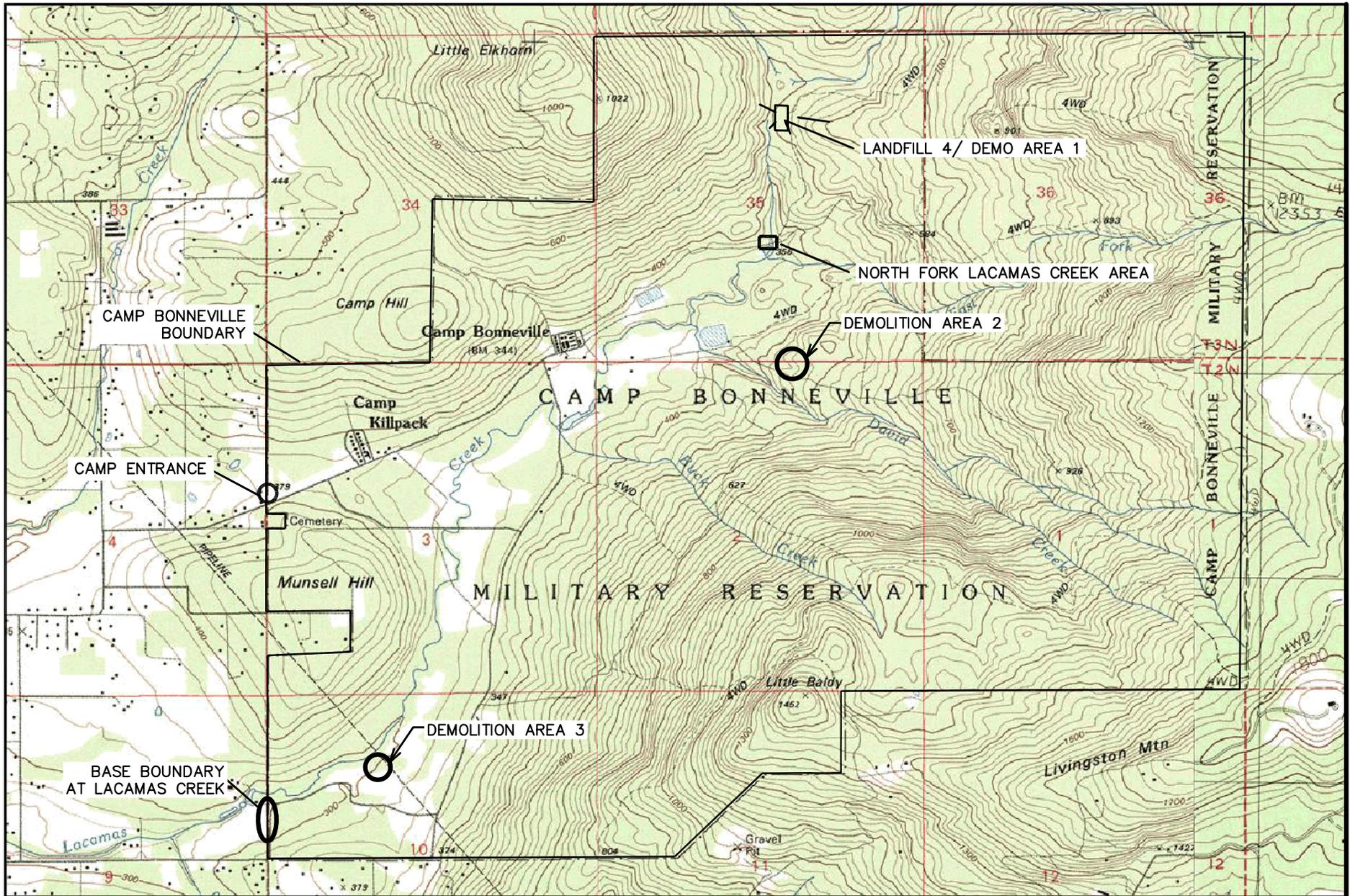
DATE
MAY 2014

VICINITY MAP
CAMP BONNEVILLE
CLARK COUNTY, WASHINGTON

FIGURE

1

L:\Projects\76000\76100-76199\76151_Camp Bonneville, Vancouver\DWG\76151.005_0007_FIG-2_MAY2014.dwg May 01, 2014 04:49pm donj



PROJECT #
76151.005

DATE
MAY 2014

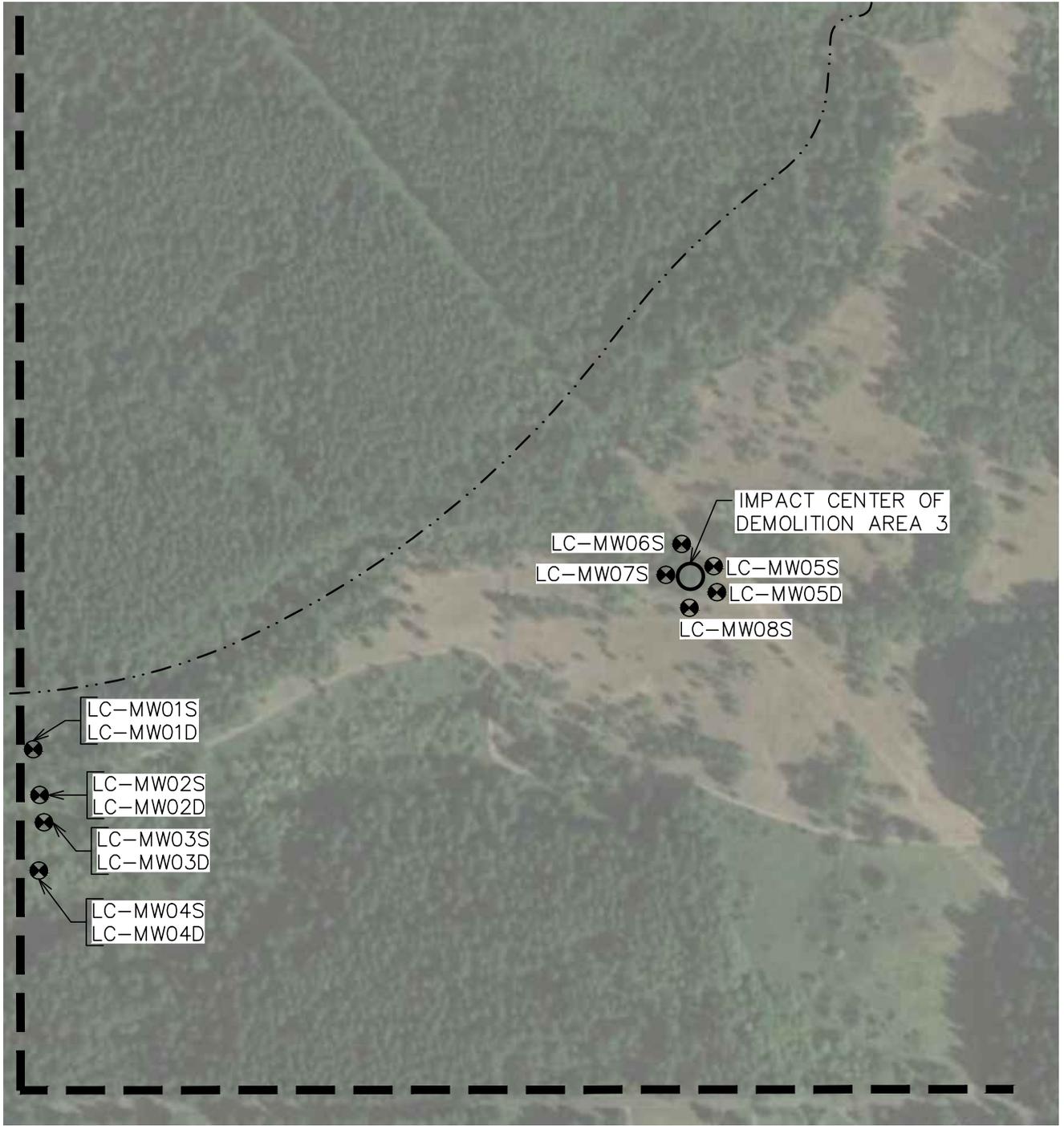


**INVESTIGATION AREAS WITHIN
CAMP BONNEVILLE BOUNDARY**

CAMP BONNEVILLE
CLARK COUNTY, WASHINGTON

FIGURE
2

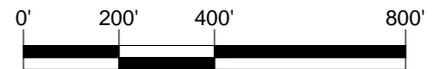
L:\Projects\76000\76100-76199\76151_Camp Bonneville_Vancouver\DWG\76151.005_0007_FIG-3_MAY2014.dwg May 01, 2014 04:45pm donj



SOURCE: © 2011 GOOGLE EARTH PRO, © 2012 GOOGLE

LEGEND

-  MONITORING WELL AND WELL NUMBER
- LC-MW01S
LC-MW01D
- · --- LACAMAS CREEK
- ■ --- BASE BOUNDARY



SCALE: 1" = 400'



PROJECT #
76151.005

DATE
MAY 2014

MONITORING WELL LOCATIONS
 NEAR DEMOLITION AREA 3
 CAMP BONNEVILLE
 CLARK COUNTY, WASHINGTON

FIGURE

3

Tables

- Table 1 – Demolition Area 3 Well Number and Construction Details
- Table 2 – Base Boundary (Lacamas Creek) Wells Analytical Results
- Table 3 – Demolition Area 3 Analytical Results
- Table 4 – Demolition Area 3 Field Parameters for Groundwater Samples

**Table 1: Demolition Area 3 Well Number and Construction Details
Camp Bonneville, Vancouver, Washington**

Well No. in PBS Work Contract	Well Location	Well Log Total Depth (feet)*	Screened Interval (feet)**	Top of PVC Casing Elevation (feet amsl)
LC-MW05S	Demolition Area 3	37	22-37	310.10
LC-MW05D	Demolition Area 3	62	52-62	309.94
LC-MW06S	Demolition Area 3	15	8-15	308.27
LC-MW07S	Demolition Area 3	37	22-37	308.92
LC-MW08S	Demolition Area 3	37	22-37	309.78

Notes:

* = casing depth in feet recorded on well log

** = screened interval reported on well completion logs; feet below ground surface

amsl = above mean sea level

**Table 2: Base Boundary (Lacamas Creek) Wells
Low-Level Analytical Results; Reported to MDL
3rd and 4th Quarters 2013, 1st Quarter 2014
Camp Bonneville, Vancouver, Washington**

Analyte	MTCA Method B Cleanup Values	LCMW01DW	LCMW01DW Duplicate	LCMW01SW	LCMW01SW Duplicate	LCMW02DW	LCMW02SW	LCMW03DW	LCMW03SW	LCMW04DW	LCMW04DW Duplicate	LCMW04SW	MRL/range
		Third Quarter 2013											
Perchlorate	11	< 0.082	< 0.082	< 0.082		< 0.082	< 0.082	< 0.082	< 0.082	< 0.082		0.20 (0.082)	0.5
HMX	4,000	0.22 (0.028)	< 0.028	< 0.028		0.040 (0.029)	< 0.027	< 0.028	< 0.028	< 0.028		< 0.028	0.10-0.11
RDX	0.8	< 0.068	< 0.066	< 0.067		< 0.069	< 0.066	< 0.067	< 0.066	< 0.067		< 0.067	0.10-0.11
Fourth Quarter 2013													
Perchlorate	11	< 0.082		< 0.082		< 0.082	< 0.082	0.082 (0.082)	< 0.082	< 0.082	< 0.082	0.21 (0.082)	0.5
HMX	4,000	< 0.028		< 0.028		< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	0.10-0.11
RDX	0.8	< 0.067		< 0.068		< 0.068	< 0.069	< 0.067	< 0.068	< 0.067	< 0.068	< 0.068	0.10-0.11
First Quarter 2014													
Perchlorate	11	< 0.082		< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082		0.16 (0.082)	0.5
HMX	4,000	< 0.028		< 0.027	< 0.027	< 0.028	< 0.027	< 0.028	< 0.028	< 0.027		< 0.027	0.10
RDX	0.8	< 0.066		< 0.066	< 0.066	< 0.067	< 0.065	< 0.067	< 0.066	< 0.066		< 0.065	0.10

Notes:

MDL = method detection limit

MRL = Method Reporting Limit

All values in micrograms per liter (µg/L)

The most stringent MTCA Method B Standard value is used

Bold = detected value

0.22 (0.028) = detected value (MDL)

< 0.082 = not detected above the indicated MDL

Table 3: Demolition Area 3 Analytical Results
Low-Level Results Reported to MDL
Fourth Quarter 2013, 1st Quarter 2014
Camp Bonneville, Vancouver, Washington

Analyte	MTCA Method B Std. Cleanup Values	LCMW05DW	LCMW05DW Duplicate	LCMW05SW	LCMW06SW	LCMW07SW	LCMW07SW Duplicate	LCMW08SW	MRL/range
Fourth Quarter 2013									
Perchlorate	11	< 0.082	X	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	0.5
HMX	4,000	< 0.038		< 0.037	< 0.037	< 0.037	< 0.037	< 0.037	0.10-0.11
RDX	0.8	< 0.068		< 0.067	< 0.067	< 0.067	< 0.066	< 0.066	0.10-0.11
First Quarter 2014									
Perchlorate	2.8	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	X	< 0.082	0.10-0.13
HMX	3.8	< 0.037	< 0.037	< 0.037	< 0.037	< 0.036		< 0.037	0.10-0.14
RDX	4.8	< 0.067	< 0.066	< 0.066	< 0.066	< 0.065		< 0.067	0.10-0.15

Notes:

MDL = method detection limit

MRL = Method Reporting Limit

All values in micrograms per liter (µg/L)

The most stringent MTCA Method B Standard value is used

Bold = detected value

0.22 (0.028) = detected value (MDL)

< 0.082 = not detected above the indicated MDL

**Table 4: Demolition Area 3 Field Parameters for Groundwater Samples
4th Quarter 2013, 1st Quarter 2014
Camp Bonneville, Vancouver, Washington**

Sample ID	Date	Depth to Water	Water Elevation	Dissolved Oxygen	Oxidation Reduction Potential	pH	Specific Conductivity	Temperature	Turbidity
		feet below TOC*	feet amsl**	mg/L	millivolts	pH units	µS/cm	degrees Celsius	NTU
Fourth Quarter 2013									
LC-MW05S	12/04/2013	6.21	303.89	9.51	150.1	6.89	151	10.60	3.56
LC-MW05D	12/04/2013	0.00	309.94 ¹	6.14	116.2	6.90	151	9.42	29.02
LC-MW06S	12/05/2013	6.36	301.91	4.68	118.1	5.92	95	10.47	27.16
LC-MW07S	12/05/2013	6.25	302.67	9.09	77.6	7.11	152	10.29	4.45
LC-MW08S	12/05/2013	6.40	303.38	9.51	88.7	7.09	154	10.90	4.49
First Quarter 2014									
LC-MW05S	03/14/2014	6.47	303.63	6.61	231.4	6.83	149	10.94	1.41
LC-MW05D	03/14/2014	0.00	309.94 ¹	5.47	274.2	5.86	144	10.63	5.74
LC-MW06S	03/14/2014	5.43	302.84	1.45	173.2	5.41	93	9.41	11.78
LC-MW07S	03/14/2014	6.55	302.37	8.13	207.5	7.25	158	11.10	NR
LC-MW08S	03/14/2014	6.07	303.71	6.63	202.4	6.68	149	10.92	1.21

Notes:

Depth to water measurements taken on January 2, 2014

¹ This is an artesian well. Determination of an accurate depth to water was not possible during this monitoring event. Water elevation may be higher than noted.

* depth in feet measured from top of well PVC casing

** water level in feet above mean sea level, relative to top of PVC casing elevation survey

Field parameters were measured using a YSI 556 and a flow-through cell, with the exception of turbidity, which was measured using a HF Scientific TPW Meter

TOC = top of casing

amsl = above mean sea level

mg/L = milligrams per liter

µS/cm = micro-siemens per centimeter

NTU = Nephelometric Turbidity Units

NR = No reading

Laboratory Reports and Sample Chain-Of-Custody Forms

Level III Data Package

(Electronic files provided on enclosed CD)