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December 27, 2012

Mr. Norm Hepner
Toxics Cleanup Program - CRO
State of Washington – Department of Ecology
15 W. Yakima Avenue, Suite 200
Yakima, Washington 98902-3152

RE: **Cleanup Status Report**
John Michael Lease Site
Adjacent to 5640 Sunset Highway, Cashmere, Washington
BNSF File No: WACAS-05-001
Facility/Site No.: 3154383
Cleanup Site No.: 2149
VCP Project No.: CE0278

Dear Mr. Hepner:

On behalf of the BNSF Railway Company (BNSF), TRC is pleased to provide this Cleanup Status Report for the John Michael Lease site (herein referred to as the Site) located adjacent to the property at 5640 Sunset Highway in Cashmere, Washington (Figure 1). The report is being submitted at the request of Ecology as a requirement to remain under the Voluntary Cleanup Program (VCP).

This report includes a summary of recent site investigation activities conducted to support independent cleanup action decisions to address Site soils and groundwater impacts. The approved cleanup action outlined in the August 19, 2012 *Cleanup Action Work Plan* prepared by Farallon Consulting, LLC (Farallon), includes excavation and off-site disposal of approximately 6,600 cubic yards of soil with concentrations of one or more of the Site chemicals of concern (COCs) above the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Use.

Upon thorough review of Site data, it was determined by TRC that an evaluation of additional soil and recent groundwater data was necessary before a decision could be made on implementation of the approved cleanup action.

The additional site investigation tasks completed in 2012 and summarized in this report include:

Task 1: Completion of a required Cultural Resources Survey
Task 2: Completion of Additional Subsurface Investigation Activities
Task 3: Completion of a Groundwater Monitoring Event

In addition, this submittal includes a response to Ecology comments included in the November 15, 2010 VCP opinion letter regarding the Terrestrial Ecological Evaluation (TEE). The TEE was summarized in the August 19, 2010 Cleanup Action Work Plan prepared by Farallon.

Task 1: Cultural Resources Survey

A cultural resources survey was conducted and the associated report was prepared and submitted to the appropriate parties as a condition of approval by the Chelan County Department of Community Development for the Shoreline Substantial Development, Shoreline Conditional Use, and Riparian Variance permits. These permits are required for the proposed cleanup activities (excavation) and cleanup activities could not be initiated until the survey was completed.

TRC retained Cascadia Archaeology, LLC (Cascadia) to conduct the cultural resources survey. Cascadia completed the cultural resources survey between June 25 and 26, 2012 and the report was submitted on August 14, 2012 to the Department of Archaeology & Historic Preservation, the Confederated Tribes and Bands of the Yakama Nation and the Tribal Historic Preservation Officer with Cultural Resources.

The scope of work for the cultural resources survey involved the installation of test pits within the proposed areas of excavation and inspection of materials removed from those test pits. A total of eight (8) test pits were installed as part of the survey with four (4) additional pits installed as part of the concurrent subsurface investigation. Two (2) of the cultural resources survey test pits were excavated in the area north of the BNSF railroad tracks (TP-33 and TP-34) near monitoring well MW-1, and six (6) were installed in the area south of the BNSF railroad tracks (TP-35, TP-36, TP-37, TP-39, TP-40 and TP-41), within the proposed area of excavation. The location of the cultural resources test pits are shown on Figure 2. The test pits were excavated to the depth of the water table and ranged from 7 to 18 feet below grade (fbg). The water table was encountered deeper in test pits installed on the north side of the tracks.

The Cultural Resources Survey Report concluded that no further archaeological investigation is recommended if remedial excavations remain within the three areas proposed for cleanup or along the river bank south of the northernmost test pit (TP-30). A copy of the Cultural Resources Survey Report is provided in Attachment A of this submittal.

Task 2: Additional Subsurface Investigation Activities

Additional subsurface investigation activities were completed concurrently with the cultural resources survey and involved the installation of four (4) additional test pits that were not part of the scope of the cultural resources survey. The additional investigation activities involved the collection of soil samples from the additional test pits installed along the bank of the river (TP-30, TP-31 and TP-32) east of the tracks, from two (2) of the test pits installed as part of the cultural resources survey (TP-33 and TP-34), and from one additional test pit located northeast of test pit TP-33. The excavation activities were observed by the archaeologist from Cascadia Archaeology, the cultural resources contractor, and conducted in conjunction with the requirements outlined for the cultural resource survey.

The additional subsurface investigation was conducted to determine if impacted soils are present between the railroad tracks and the river bank south and to the east of the proposed excavation areas. The test pit locations were based on current Site features and results from prior subsurface investigations.

The field activities included excavation of the test pits and collection and laboratory analysis of soil samples. Soil samples were collected every 2 feet using hand tools from 0 to 4 fbg and/or directly from the backhoe bucket from 4 to 14 fbg. In three of the four test pits, additional samples were collected from depths below the inferred/observed water table. Soils were observed during test pit excavation activities for any visual or olfactory signs of contamination, and described in accordance with the Unified Soil Classification System. Volatile organic vapors in each soil sample were measured using a photoionization detector (PID), and findings were recorded on a test pit log. Soil samples were selected for analysis based on observed soil conditions and PID readings at each test pit.

A total of two (2) soil samples were collected from the originally proposed test pits (TP-30, TP-31 and TP-32). Additionally, one (1) soil sample was collected from test pits TP-33 and TP-34 and four (4) soil samples were collected from test pit TP-38. The collected soil samples were transferred directly into laboratory-prepared glass sample containers fitted with Teflon-lined lids. The soil samples were placed on ice in a cooler under standard chain-of-custody procedures and delivered to the analytical laboratory. The soil samples were submitted for chemical analysis for TPH as oil-range organics (ORO), as diesel-range organics (DRO), and as gasoline-range organics (GRO); benzene, toluene, ethylbenzene, and xylenes (BTEX); and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). Upon completion of the sampling, the test pits were backfilled with the excavated soil.

The results for the soil sampling are presented in Tables 1 and 2 and shown on Figure 3. Of the samples with concentrations above their respective reporting limit, only two ORO results and one GRO result exceeded the MTCA Method A Soil Cleanup Levels.

The sample with the ORO and GRO exceedances was collected from test pit TP-34 located within an area of known soil impact immediately east of the tracks. The other sample with the ORO exceedance was collected from test pit TP-30, located approximately 50 feet east of test pit TP-34 and along the river bank. However, both samples with reported MTCA Method A exceedances were collected at a depth of 14 fbg, at the approximate depth to groundwater at those locations.

Task 3: Groundwater Monitoring and Sampling Activities

Groundwater samples were collected during the third quarter of 2012 from the three (3) on-site monitoring wells and the one (1) off-site monitoring well located in the City of Cashmere right-of-way west of the Site. The groundwater monitoring event was conducted by Farallon and took place on September 25, 2012.

During the groundwater monitoring event, the depth to groundwater in each of the monitoring wells was measured prior to sampling, using an electronic water-level meter with an accuracy of 0.01 foot. The depth to groundwater measurements were used to evaluate groundwater flow direction and gradient at the Site. Depth to groundwater measurements and groundwater elevation data for the third quarter 2012 monitoring event from the Site monitoring wells are provided in Table 3.

Each of the five (5) Site monitoring wells were purged at a low-flow rate ranging from 100 to 300 milliliters per minute using a submersible bladder pump and dedicated polyethylene tubing in accordance with U.S. Environmental Protection Agency (USEPA) low-flow groundwater sampling procedures. Dissolved oxygen, oxidation-reduction potential, temperature, pH, and conductivity were monitored and recorded during purging. Groundwater samples were collected following stabilization of the temperature, pH, and conductivity parameters.

Laboratory-prepared sample containers were filled directly from the pump outlet, with care taken to minimize turbulence. The samples were placed on ice in a cooler and submitted under standard chain-of-custody protocols to ESC Laboratories in Mt. Juliet Tennessee for the following laboratory analyses:

- DRO and ORO/RRO by Northwest Method NWTPH-Dx with silica gel cleanup;
- GRO by Northwest Method NWTPH-Gx;
- BTEX compounds by EPA Method 8021B;
- cPAHs by EPA method 8270C-SIM;
- Water Quality Parameters including:
    - Nitrate and Sulfate by EPA Method 9056.
    - Sulfide by SM 4500-S2.
    - Ferrous Iron by SM 3500-Fe.
    - Total and Dissolved Iron by EPA 6000/7000 Series Method.
    - Carbon Dioxide by SM 4500C.

Analytical results for the groundwater samples collected during the third quarter 2012 monitoring event are included in Tables 3 through 7. Petroleum hydrocarbon, BTEX and both carcinogenic and non-carcinogenic PAH concentrations were below their respective reporting limits in all groundwater samples from all four (4) Site monitoring wells.

Results from the third quarter 2012 monitoring event indicate that residual soil impacts at the Site do not appear to be contributing to the elevated concentrations of Site COCs in groundwater. Elevated concentrations of petroleum hydrocarbons, above the MTCA Method A Cleanup Levels, have been reported in soil samples collected from test pits installed in the immediate vicinity of well MW-1 and from soil samples collected during the installation of well MW-1 in 2008. However, current groundwater concentrations from well MW-1, as well as other Site monitoring wells sampled during this event and following their installation in 2008, indicate that those residual soil impacts do not contribute to elevated concentrations of those COCs in Site groundwater (Figure 5).

More specifically, test pits installed in the immediate vicinity of monitoring well MW-1 in 2008 (TP-25, -26 and -27) and in 2010 (TP-34) document Site soils with MTCA Method A Cleanup Level exceedances of DRO and ORO. However, despite those high DRO and ORO concentrations in soil, the current groundwater concentrations of Site COCs in MW-1 (and in all Site monitoring wells) are below the laboratory reporting limits.

Additional groundwater monitoring events will be conducted to confirm the non-detect concentrations in Site monitoring wells and to evaluate trends in water quality parameters. A summary report of groundwater concentrations obtained over four (4) consecutive quarters will be prepared during the fourth quarter 2013 and submitted to Ecology. That report will include recommendations for any additional site investigation deemed necessary, and will include updated and/or revised recommendations regarding the currently approved cleanup actions.

Response to Ecology Comments on Terrestrial Ecological Evaluation

Finally, BNSF is including in this submittal a formal response to Ecology comments presented in their November 15, 2012 VCP opinion letter regarding the Terrestrial Ecological Evaluation (TEE) prepared by Farallon.

In Section 2 b. (page 3) of the VCP opinion letter (Attachment B), Ecology requested that the TEE be fully supported and requested a copy of the completed Table 749-1 and a map demonstrating that less than three acres (as discussed in Section 3.5 of the Cleanup Action Work Plan) of undeveloped land are present on and within 500 feet of the site OR provide a terrestrial ecological evaluation in accordance with WAC-173-340-7490.

This submittal includes the requested Table 749-1, a map showing the outline of contiguous undeveloped land, and a summary of the procedures and assumptions used (by Farallon) to determine the contiguous undeveloped land acreage number for the simplified TEE. A copy of Table 749-1 and Figure 1 showing the acreage determination are included in Attachment C.

The Simplified TEE was conducted in accordance with the provisions of the MTCA Cleanup Regulation and the procedures outlined in WAC 173-340-7492(2)(a)(ii). Provided below is a summary of the process:

- A figure was developed by Farallon in Computer Aided Design and Drafting (CADD) using geo-referenced aerial mapping obtained from the Chelan County Geographic Information System Department.

- Areas of contamination on the Site, as defined in the *Cleanup Action Work Plan* and the property use within 500 feet of the Site were included on the figure.

- A 500-foot line was placed from the leading edge of the northwestern-most area of contamination to encompass areas of undeveloped land between the northeast side of the railroad tracks and the Wenatchee River (the area southwest of the railroad tracks is developed).

- Contiguous undeveloped land on the Site or within 500 feet of any areas of the Site, were outlined on the figure (see attachment) using the CADD Civil 3-D software. Every effort was made to accurately track along the embankment of the Wenatchee River.

The results of the calculation result in an estimated acreage of contiguous undeveloped land of 2.90 acres.

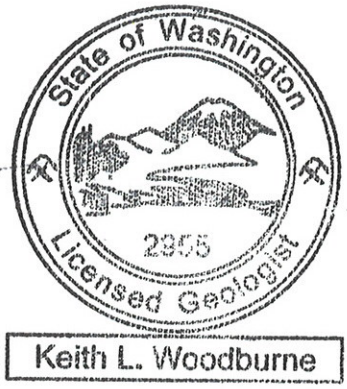
Summary

BNSF will conduct quarterly groundwater monitoring of the Site wells for a full year and will evaluate the groundwater results with respect to documented soil results. Following one year of groundwater monitoring and data evaluation, and any additional subsurface investigation deemed necessary during that time, BNSF will request a scoping meeting with Ecology to discuss future remedial actions and the path forward for Site closure.

Please give me a call or send me an e-mail if you have any questions or require additional details regarding the tasks summarized in this report.

Sincerely,

Keith Woodburne, P.G.
Senior Project Manager

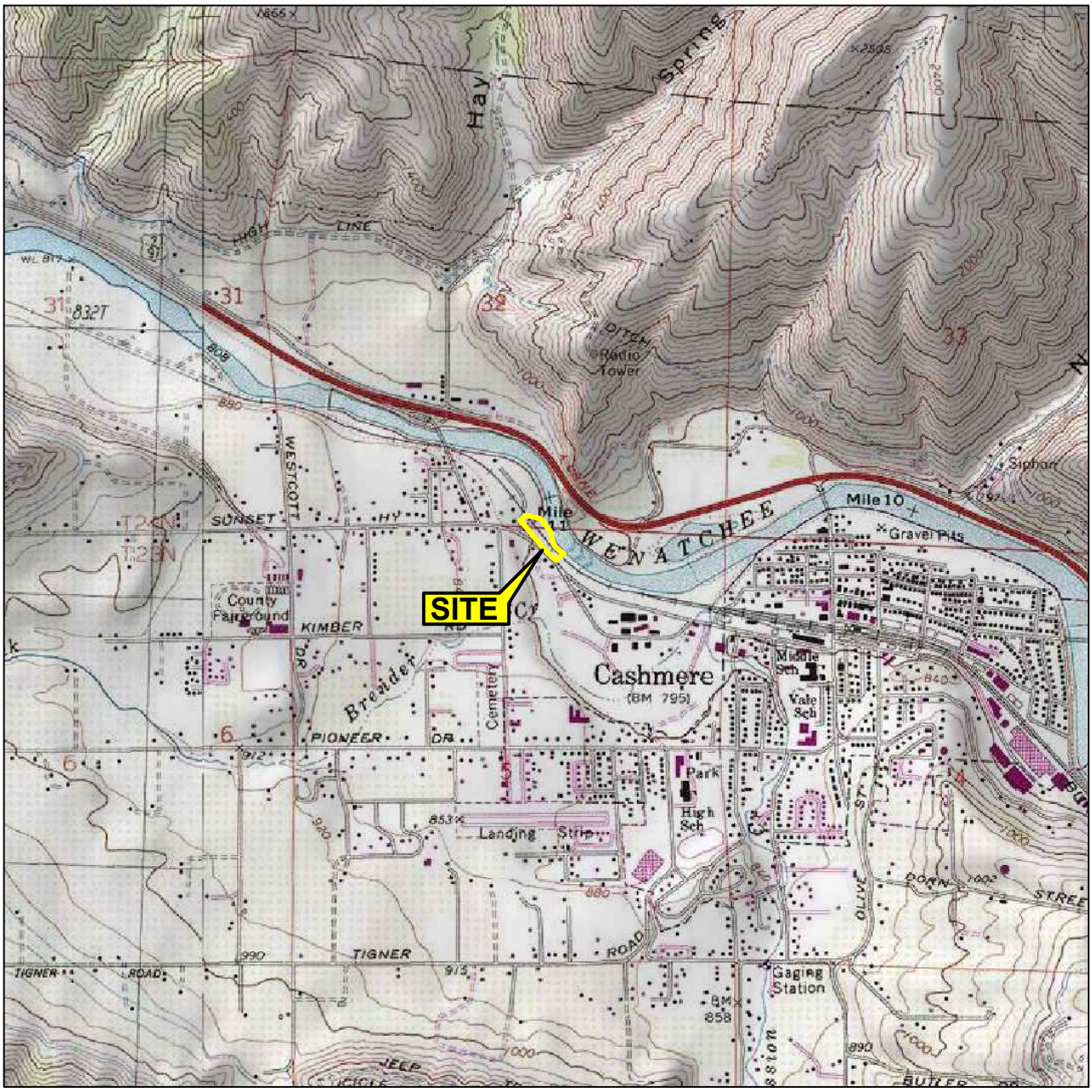


Figures:
1 – Vicinity Map
2 – Site Plan
3 – Soil Analytical Results – 2012 Subsurface Investigation
4 – Groundwater Monitoring Analytical Results – September 25, 2012

Tables:
1 – Summary of Soil Analytical Results - Total Petroleum Hydrocarbons and BTEX
2 – Summary of Soil Analytical Results - Carcinogenic Polycyclic Aromatic Hydrocarbons
3 – Summary of Groundwater Elevation Data - September 25, 2012
4 – Summary of Groundwater Analytical Results - Total Petroleum Hydrocarbons and BTEX
5 – Summary of Groundwater Analytical Results - Carcinogenic PAHs
6 – Summary of Groundwater Analytical Results - Non-Carcinogenic PAHs
7 – Summary of Natural Attenuation and Water Quality Parameter Results

Attachments:
A - Cultural Resources Survey Report (Cascadia), dated August 14, 2012
B - Ecology VCP Opinion Letter, dated November 15, 2012
C - Terrestrial Ecological Evaluation - Table 749-1 (Farallon)
Terrestrial Ecological Evaluation - Figure 1 (Farallon)

FIGURES



1 MILE 3/4 1/2 1/4 0 1 MILE

SCALE 1 : 24,000

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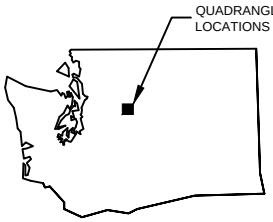
SOURCE:

United States Geological Survey
7.5 Minute Topographic Maps:
Cashmere and Peshastin Quadrangles,
Washington

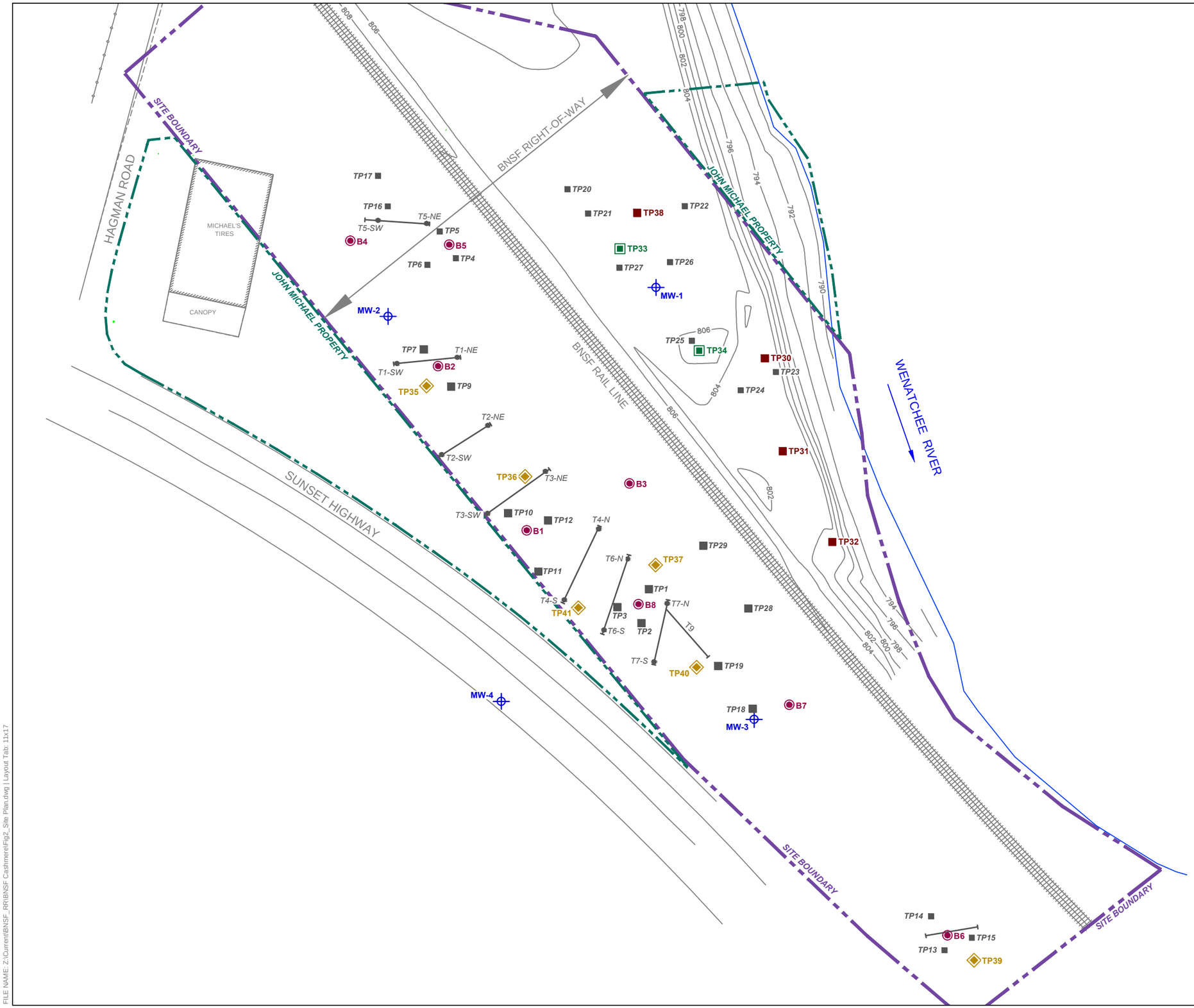


VICINITY MAP

John Michael Lease Site
Adjacent to 5640 Sunset Highway
Cashmere, Washington

TRC | 193668 | **FIGURE 1**

FILE NAME: Z:\Current\BNSF_RR\BNSF Cashmere\Fig1_Vicinity Map.dwg | Layout Tab: 8x11



LEGEND

- MW-4 — Monitoring well
- B8 — Boring
- T7-S / T7-N — Trench with soil sample location (Farallon, 2008)
- TP29 — Test pit (historical)
- TP38 — Supplemental investigation, soil sample test pit (Farallon, 2012)
- TP34 — Supplemental investigation, cultural survey and soil sample test pit (Farallon, 2012)
- TP41 — Supplemental investigation, cultural survey test pit (Farallon, 2012)

N

SCALE (FEET)

0 50 100

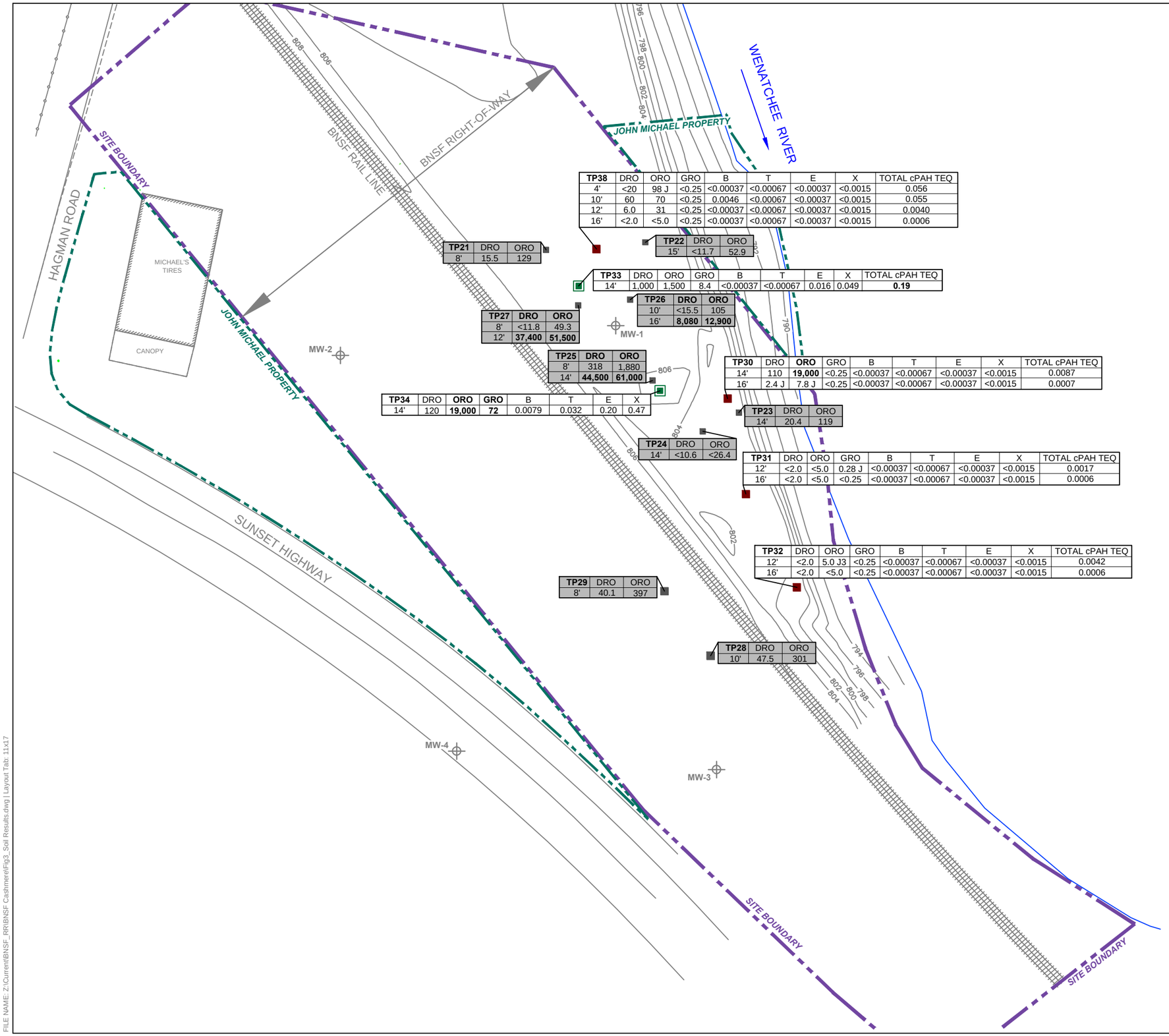
SOURCE: Site plan by Farallon Consulting, July 2012.

SITE PLAN

John Michael Lease Site
Adjacent to 5640 Sunset Highway
Cashmere, Washington

TRC | 193668 | **FIGURE 2**

FILE NAME: Z:\Current\BNSF_RR\BNSF Cashmere\Fig2_Site Plan.dwg | Layout Tab: 11x17



TP38	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
4'	<20	98 J	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.056
10'	60	70	<0.25	0.0046	<0.00067	<0.00037	<0.0015	0.055
12'	6.0	31	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0040
16'	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0006

TP21	DRO	ORO
8'	15.5	129

TP22	DRO	ORO
15'	<11.7	52.9

TP33	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
14'	1,000	1,500	8.4	<0.00037	<0.00067	0.016	0.049	**0.19**

TP26	DRO	ORO
10'	<15.5	105
16'	**8,080**	**12,900**

TP27	DRO	ORO
8'	<11.8	49.3
12'	**37,400**	**51,500**

TP25	DRO	ORO
8'	318	1,880
14'	**44,500**	**61,000**

TP30	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
14'	110	**19,000**	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0087
16'	2.4 J	7.8 J	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0007

TP34	DRO	ORO	GRO	B	T	E	X
14'	120	**19,000**	**72**	0.0079	0.032	0.20	0.47

TP23	DRO	ORO
14'	20.4	119

TP24	DRO	ORO
14'	<10.6	<26.4

TP31	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
12'	<2.0	<5.0	0.28 J	<0.00037	<0.00067	<0.00037	<0.0015	0.0017
16'	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0006

TP32	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
12'	<2.0	5.0 J3	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0042
16'	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0006

TP29	DRO	ORO
8'	40.1	397

TP28	DRO	ORO
10'	47.5	301

LEGEND

- MW-4 — Monitoring well
- Test pit (historical)
- Supplemental investigation, soil sample test pit (Farallon, 2012)
- Supplemental investigation, cultural survey and soil sample test pit (Farallon, 2012)

Soil analytical results (mg/kg) - Farallon, 2012:

TP32	DRO	ORO	GRO	B	T	E	X	TOTAL cPAH TEQ
12'	<2.0	5.0 J3	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0042
16'	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015	0.0006

Soil analytical results (mg/kg) - Farallon, 2008:

TP28	DRO	ORO
10'	47.5	301

Total petroleum hydrocarbons as:

- DRO — Diesel-range organics
- ORO — Oil-range organics
- GRO — Gasoline-range organics

- B — Benzene
- T — Toluene
- E — Ethyl-benzene
- X — Xylenes

TOTAL cPAH TEQ — Total carcinogenic polycyclic aromatic hydrocarbons, toxic equivalence

NOTES:

Depths are in feet below ground surface.

An analytical result in **BOLD** *indicates concentration exceeds Washington States Model Toxics Control Act Cleanup Regulation Method A cleanup levels for unrestricted land uses.*

J = Estimated value below the lowest calibration point. Confidence correlates with concentration.

J3 = The associated batch quality control was outside the established quality control range for precision.

N

SCALE (FEET)

0 50 100

SOURCE: Site plan by Farallon Consulting, July 2012.

SOIL ANALYTICAL RESULTS
2012 SUBSURFACE INVESTIGATION

John Michael Lease Site
Adjacent to 5640 Sunset Highway
Cashmere, Washington

TRC 193668 **FIGURE 3**

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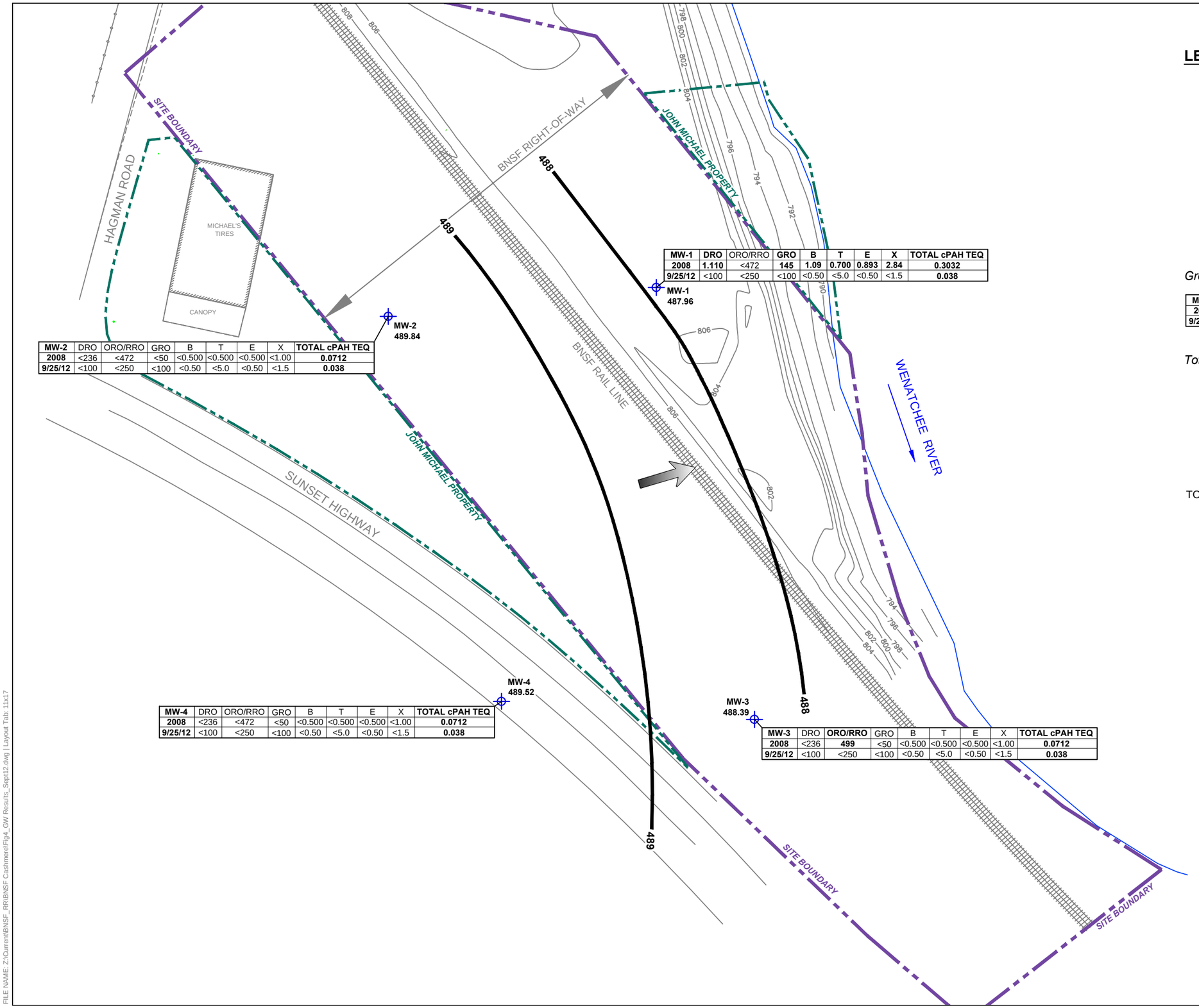

MW-2	DRO	ORO/RRO	GRO	B	T	E	X	TOTAL cPAH TEQ
2008	<236	<472	<50	<0.500	<0.500	<0.500	<1.00	**0.0712**
9/25/12	<100	<250	<100	<0.50	<5.0	<0.50	<1.5	**0.038**

MW-1	DRO	ORO/RRO	GRO	B	T	E	X	TOTAL cPAH TEQ
2008	**1.110**	<472	**145**	**1.09**	**0.700**	**0.893**	**2.84**	**0.3032**
9/25/12	<100	<250	<100	<0.50	<5.0	<0.50	<1.5	**0.038**

MW-4	DRO	ORO/RRO	GRO	B	T	E	X	TOTAL cPAH TEQ
2008	<236	<472	<50	<0.500	<0.500	<0.500	<1.00	**0.0712**
9/25/12	<100	<250	<100	<0.50	<5.0	<0.50	<1.5	**0.038**

MW-3	DRO	**ORO/RRO**	GRO	B	T	E	X	TOTAL cPAH TEQ
2008	<236	**499**	<50	<0.500	<0.500	<0.500	<1.00	**0.0712**
9/25/12	<100	<250	<100	<0.50	<5.0	<0.50	<1.5	**0.038**

LEGEND

- Monitoring well
- 487.96 — Groundwater elevation, September 25, 2012
- 480 — Groundwater elevation contour line, September 25, 2012
- General direction of groundwater gradient

Groundwater analytical results (ug/L):

MW-1	DRO	ORO/RRO	GRO	B	T	E	X	TOTAL cPAH TEQ
2008	**1.110**	<472	**145**	**1.09**	**0.700**	**0.893**	**2.84**	**0.3032**
9/25/12	<100	<250	<100	<0.50	<5.0	<0.50	<1.5	**0.038**

Total petroleum hydrocarbons as:

DRO	Diesel-range organics
ORO/RRO	Oil-range organics / residual-range organics
GRO	Gasoline-range organics
B	Benzene
T	Toluene
E	Ethyl-benzene
X	Xylenes
TOTAL cPAH TEQ	Total carcinogenic polycyclic aromatic hydrocarbons, toxic equivalence

N

SCALE (FEET)

0 50 100

SOURCE: Site plan by Farallon Consulting, July 2012.

GROUNDWATER MONITORING ANALYTICAL RESULTS
September 25, 2012
John Michael Lease Site
Adjacent to 5640 Sunset Highway
Cashmere, Washington

TRC | 193668 | **FIGURE 4**

FILE NAME: Z:\Current\BNSF_RR\BNSF Cashmere\Fig4_GW Results_Sept12.dwg | Layout Tab: 11x17

TABLES

Table 1
Summary of Soil Analytical Results - Total Petroleum Hydrocarbons and BTEX
John Michael Lease Site
Cashmere, Washington

Test Pit Location	Sample Identification	Sampled By	Sample Date	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)						
					DRO[2]	ORO[2]	GRO[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]
TP30	TP30-062512-14.0	Farallon	6/25/2012	14	110	**19,000**	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP30	TP30-062512-16.0	Farallon	6/25/2012	16	2.4 J	7.8 J	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP31	TP31-062512-12.0	Farallon	6/25/2012	12	<2.0	<5.0	0.28 J	<0.00037	<0.00067	<0.00037	<0.0015
TP31	TP31-062512-16.0	Farallon	6/25/2012	16	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP32	TP32-062612-12.0	Farallon	6/26/2012	12	<2.0	<5.0 J3	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP32	TP32-062612-16.0	Farallon	6/26/2012	16	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP33	TP33-062512-14.0	Farallon	6/25/2012	14	1,000	1,500	8.4	<0.00037	<0.00067	0.016	0.049
TP34	TP34-062512-14.0	Farallon	6/25/2012	14	120	**19,000**	**72**	0.0079	0.032	0.20	0.47
TP38	TP38-062612-4.0	Farallon	6/26/2012	4	<20	98 J	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP38	TP38-062612-10.0	Farallon	6/26/2012	10	60	70	<0.25	0.0046	<0.00067	<0.00037	<0.0015
TP38	TP38-062612-12.0	Farallon	6/26/2012	12	6.0	31	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
TP38	TP38-062612-16.0	Farallon	6/26/2012	16	<2.0	<5.0	<0.25	<0.00037	<0.00067	<0.00037	<0.0015
MTCA Method A Cleanup Levels for Soil[5]					**2,000**	**2,000**	**30**	**0.03**	**7**	**6**	**9**

NOTES:

Results in **bold** denote concentrations above applicable cleanup levels.

< denotes analyte not detected at or above the laboratory method detection limit listed.

[1]Depth in feet below ground surface.

[2]Analyzed by Northwest Method NWTPH-Dx.

[3]Analyzed by Northwest Method NWTPH-Gx.

[4]Analyzed by U.S. Environmental Protection Agency Method 8021B.

[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended November 2007.

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

Farallon = Farallon Consulting, L.L.C.

GRO = TPH as gasoline-range organics

J = Estimated value below the lowest calibration point. Confidence correlates with concentration.

J3 = The associated batch quality control was outside the established quality control range for precision.

ORO = TPH as oil-range organics

Table 2
Summary of Soil Analytical Results - Carcinogenic Polycyclic Aromatic Hydrocarbons
John Michael Lease Site
Cashmere, Washington

Test Pit Location	Sample Identification	Sampled By	Sample Date	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram) [2]							
					Benzo (a) pyrene	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno (1,2,3-cd) pyrene	Total cPAH TEQ [4, 5]
TP30	TP30-062512-14.0	Farallon	6/25/2012	14	0.0064 J	0.0055 J	0.0083	<0.0013	0.012	0.0018 J	0.0057 J	0.0087
TP30	TP30-062512-16.0	Farallon	6/25/2012	16	<0.00062	0.0012 J	0.0011 J	<0.0013	<0.0011	<0.0011	<0.0012	0.0007
TP31	TP31-062512-12.0	Farallon	6/25/2012	12	0.0012 J	0.0018 J	0.0015 J	<0.0013	<0.0011	<0.0011	<0.0012	0.0017
TP31	TP31-062512-16.0	Farallon	6/25/2012	16	<0.00062	<0.00092	<0.00082	<0.0013	<0.0011	<0.0011	<0.0012	0.0006
TP32	TP32-062612-12.0	Farallon	6/26/2012	12	0.0031 J	0.0032 J	0.0046 J	<0.0013	0.0026 J	<0.0011	0.0021 J	0.0042
TP32	TP32-062612-16.0	Farallon	6/26/2012	16	<0.00062	<0.00092	<0.00082	<0.0013	<0.0011	<0.0011	<0.0012	0.0006
TP33	TP33-062512-14.0	Farallon	6/25/2012	14	0.14 J	0.22 J	0.14 J	<0.067	0.63	<0.056	<0.058	**0.19**
TP34	TP34-062512-14.0	Farallon	6/25/2012	14	0.27 J	1.0	0.24 J	<0.067	<0.055	<0.056	<0.058	**0.40**
TP38	TP38-062612-4.0	Farallon	6/26/2012	4	0.039 J	0.045 J	0.059 J	<0.027	0.026 J	<0.022	0.035 J	0.056
TP38	TP38-062612-10.0	Farallon	6/26/2012	10	0.034 J	0.097	0.082 J	<0.013	0.11	<0.011	<0.012	0.055
TP38	TP38-062612-12.0	Farallon	6/26/2012	12	0.0031 J	<0.00092	0.0022 J	<0.0013	0.0029 J	0.0029 J	0.0024 J	0.0040
TP38	TP38-062612-16.0	Farallon	6/26/2012	16	<0.00062	<0.00092	<0.00082	<0.0013	<0.0011	<0.0011	<0.0012	0.0006
MTCA Method A Cleanup Levels for Soil[3]												**0.1**

NOTES:

Results in **bold** denote concentrations above applicable cleanup levels.

< denotes analyte not detected at or above the laboratory method detection limit listed.

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Method 8270C SIMS.

[3]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as amended November 2007.

[4]Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) derived using the total toxicity equivalency (TEQ) method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.

[5]For concentrations reported as not detected, half the method detection limit was used to calculate the TEQ.

Farallon = Farallon Consulting, L.L.C.

J = Estimated value below the lowest calibration point. Confidence correlates with concentration.

TEQ = Toxicity Equivalency

Test Pit Number	Sample Identification	Date Sampled	Sample Depth (feet)[1]	Analytical Results in milligrams per kilogram (mg/kg) [2]							
				Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Total cPAH TEQ [4, 5]
TP30	TP30-062512-14.0	6/25/2012	14	0.0055	0.012	0.0083	0.00130	0.0064	0.0057	0.0018	0.0087
TP30	TP30-062512-16.0	6/25/2012	16	0.0012	0.00110	0.0011	0.00130	0.00062	0.0012	0.00110	0.0007
TP31	TP31-062512-12.0	6/25/2012	12	0.0018	0.00110	0.0015	0.00130	0.0012	0.0012	0.00110	0.0017
TP31	TP31-062512-16.0	6/25/2012	16	0.00092	0.00110	0.00082	0.00130	0.00062	0.0012	0.00110	0.0006
TP32	TP32-62612-12.0	6/26/2012	12	0.0032	0.0026	0.0046	0.00130	0.0031	0.0021	0.00110	0.0042
TP32	TP32-62612-16.0	6/26/2012	16	0.00092	0.00110	0.00082	0.00130	0.00062	0.0012	0.00110	0.0006
TP33	TP33-062512-14.0	6/25/2012	14	0.22	0.63	0.14	0.0670	0.14	0.058	0.056	**0.1914**
TP34	TP34-062512-14.0	6/25/2012	14	1.0	0.0550	0.24	0.0670	0.27	0.058	0.056	**0.4033**
TP38	TP38-62612-4.0	6/26/2012	4	0.045	0.026	0.059	0.0270	0.039	0.035	0.0220	0.0556
TP38	TP38-62612-10.0	6/26/2012	10	0.097	0.11	0.082	0.0130	0.034	0.012	0.0110	0.0548
TP38	TP38-62612-12.0	6/26/2012	12	0.00092	0.0029	0.0022	0.00130	0.0031	0.0024	0.0029	0.0040
TP38	TP38-62612-16.0	6/26/2012	16	0.00092	0.00110	0.00082	0.00130	0.00062	0.0012	0.00110	0.0006
MTCA Method A Cleanup Levels for Soil[3]				**0.14**	**0.14**	**0.14**	**NC**	**0.14**	**0.14**	**NC**	**0.1**

NOTES:

Results in **BOLD** indicate concentrations above potentially applicable cleanup levels shown.

< denotes no detectable concentrations above the listed laboratory practical quantization limit (PQL).

[1] Depth of sample collected in feet below ground surface (bgs).

[2] Analyzed by U.S. Environmental Protection Agency Method 8270C SIMS.

[3] Washington State Department of Ecology Cleanup Levels and Risk Calculations (CLARC), under the Model Toxics Control Act Cleanup Regulation Version 3.1, Standard Method B, Soil Cleanup Levels for Direct Contact Pathway, Unrestricted Land Use, Ecology Publication No. 94-145, as updated November 2001.

[4] Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code (WAC).

[5] For concentrations reported as not detected, half the MDL was use to calculate the TEQ.

TEQ = Total Toxic Equivalence

Table 3
Summary of Groundwater Elevation Data
John Michael Lease Site
Cashmere, Washington

Monitoring Well	Date Measured	Sampled by	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Elevation of Groundwater (feet)[1]
MW-1	9/25/2012	Farallon	501.94	13.98	487.96
MW-2	9/25/2012	Farallon	499.14	9.30	489.84
MW-3	9/25/2012	Farallon	496.09	7.70	488.39
MW-4	9/25/2012	Farallon	495.85	6.33	489.52

NOTES:

[1] Elevations based on an arbitrary 100-foot datum established at the Site.

[2] In feet below top of well casing.

Farallon = Farallon Consulting, L.L.C.

Table 4
Summary of Groundwater Analytical Results - Total Petroleum Hydrocarbons and BTEX
John Michael Lease Site
Cashmere, Washington

Monitoring Well	Sample Identification	Sampled By	Sample Date	Analytical Results (micrograms per liter)						
				DRO[1]	RRO[1]	GRO[2]	Benzene[2]	Toluene[2]	Ethyl-benzene[2]	Xylenes[2]
MW-1	MW1-092512	Farallon	9/25/2012	<100	<250	<100	<0.50	<5.0	<0.50	<1.5
MW-2	MW2-092512	Farallon	9/25/2012	<100	<250	<100	<0.50	<5.0	<0.50	<1.5
MW-3	MW3-092512	Farallon	9/25/2012	<100	<250	<100	<0.50	<5.0	<0.50	<1.5
MW-4	MW4-092512	Farallon	9/25/2012	<100	<250	<100	<0.50	<5.0	<0.50	<1.5
MTCA Method A Cleanup Levels for Groundwater[3]				**500**	**500**	**800[4]/1,000[5]**	**5**	**1,000**	**700**	**1,000**

NOTES:

< denotes analyte not detected at or above the reporting limit listed.

[1] Analyzed by Northwest Method NWTPH-Dx.

[2] Analyzed by Northwest Method NWTPH-Gx.

[3] Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[4] Benzene present in groundwater

[5] No detectable benzene in groundwater

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

Farallon = Farallon Consulting, L.L.C.

GRO = TPH as gasoline-range organics

RRO = TPH as residual-range organics

Table 5
Summary of Groundwater Analytical Results - Carcinogenic Polycyclic Aromatic Hydrocarbons
John Michael Lease Site
Cashmere, Washington

Monitoring Well	Sample Identification	Sampled By	Sample Date	Analytical Results (micrograms per liter) [1]							
				Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Total cPAH TEQ [2,3]
MW-1	MW1-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.038
MW-2	MW2-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.038
MW-3	MW3-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.038
MW-4	MW4-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.038
MTCA Method A Cleanup Levels for Groundwater[4]											**0.10**

NOTES:

< denotes analyte not detected at or above the reporting limit listed.

Farallon = Farallon Consulting, L.L.C.

[1]Analyzed by U.S. Environmental Protection Agency Method 8270C-S.

[2] For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEQ.

[3]Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) derived using the total toxicity equivalency (TEQ) method presented in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.

[4]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

Table 6
Summary of Groundwater Analytical Results - Non-Carcinogenic Polycyclic Aromatic Hydrocarbons
BNSF - John Michael Lease Site
Cashmere, Washington

Monitoring Well	Sample Identification	Sampled By	Sample Date	Analytical Results in micrograms per liter (µg/l)[1]								
				Acenaphthene	Anthracene	Fluorene	Naphthalene	1-Methyl naphthalene	2-Methyl naphthalene	2-Chloro naphthalene	Phenanthrene	Pyrene
MW-1	MW1-092512	Farallon	9/25/2012	0.022 J	0.027 J	0.011 J	0.079 J	0.15 J	0.024J	<0.25	0.0091 J	0.040 J
MW-2	MW2-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.25	0.0085 J	0.012 J	<0.25	<0.050	<0.050
MW-3	MW3-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	<0.25	0.0086 J	0.011 J	<0.25	<0.050	<0.050
MW-4	MW4-092512	Farallon	9/25/2012	<0.050	<0.050	<0.050	0.028 J	<0.25	0.011 J	<0.25	<0.050	<0.050
MTCA Method B Cleanup Level for Groundwater [2]				**960**	**4800**	**640**	**160**	**1.5**	**32**	**640**	**NE**	**480**

NOTES:

< denotes analyte not detected at or above the reporting limit listed.

[1] Analyzed by U.S. Environmental Protection Agency Method 8270C-S.

[2]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Cleanup Levels and Risk Calculations, Standard Method B Values for Groundwater, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

Farallon = Farallon Consulting, L.L.C.

J = estimated value below lowest calibration point

NE = not established

Table 7
Summary of Natural Attenuation and Water Quality Parameter Results
John Michael Lease Site
Cashmere, Washington

Monitoring Well	Sample Identification	Sampled By	Sample Date	Nitrate[1] (mg/l)	Sulfate[1] (mg/l)	Free Carbon Dioxide[2] (mg/l)	Ferrous Iron[3] (mg/l)	Sulfide[4] (mg/l)	Iron[5] (mg/l)	Iron, Dissolved[5] (mg/l)	Dissolved Oxygen[6] (mg/l)	pH[6]	Temperature[6] (Celsius)	Conductivity[6] (mS/cm)	ORP[6] (mV)
MW-1	MW1-092512	Farallon	9/25/2012	2	16	29 T	<0.050 T	<0.050	0.240	<0.100	0.99	6.42	13.29	0.546	110.2
MW-2	MW2-092512	Farallon	9/25/2012	3.8	16	22 T	<0.050 T	<0.050	0.170	<0.100	4.31	6.63	14.83	0.530	145.7
MW-3	MW3-092512	Farallon	9/25/2012	1.4	9.9	39 T	<0.050 T	<0.050	0.046 J	<0.100	0.81	6.38	16.43	0.534	137.6
MW-4	MW4-092512	Farallon	9/25/2012	4	14	22 T	<0.050 T	<0.050	0.057 J	<0.100	4.14	6.46	14.30	0.532	157.0

NOTES:

[1]Analyzed by U.S. Environmental Protection Agency (EPA) Method 9056.

[2]Analyzed by SM 4500C.

[3]Analyzed by Conventional Chemistry Parameters by EPA Method/American Public Health Association (APHA) Methods, SM 3500-Fe.

[4]Analyzed by SM 4500-S2.

[5]Analyzed by EPA 6000/7000 Series Method.

[6]Measured using a YSI multimeter and flow-through cell after stabilization.

J = estimated value below lowest calibration point

Petroleum-Degrading Bacteria = Bacterial colonies known to result in biodegradation of petroleum hydrocarbons

mg/l = milligrams per liter; equivalent to parts per million

MPN/ml = most probable number per milliliter

mS/cm = milliSiemens per centimeter; specific conductance units

mV = millivolts

ORP = oxidation-reduction potential

T = Sample received past/too close to holding time expiration

TBD = to be determind after biotrap results available

ATTACHMENTS

ATTACHMENT A

CULTURAL RESOURCES SURVEY REPORT
(CASCADIA ARCHEOLOGY)

One Concord Center
2300 Clayton Road, Suite 610
Concord, CA 94520

925.688.1200 PHONE
925.688.0388 FAX

www.TRCsolutions.com

August 14, 2012

Ms. Anne Hessburg
Planner - Shorelines, Critical Areas, Current
Chelan County, Community Development
316 Washington Street, Suite 301
Wenatchee, WA 98801

RE: **Cultural Resources Survey Report**
BNSF John Michael Lease Site
Cashmere, Chelan County, Washington

Dear Ms. Hessburg:

TRC Solutions, Inc. (TRC) is providing the attached *Cultural Resources Survey Report* prepared on behalf of the Burlington Northern Santa Fe Railway Company (BNSF) by Cascadia Archeology for the John Michael Lease property (the Site) located in Cashmere, Washington. The survey was conducted and the attached Cultural Resources Survey Report prepared as condition of approval by the Chelan County Department of Community Development for the Shoreline Substantial Development, Shoreline Conditional Use, and Riparian Variance permits for the proposed cleanup activities at the Site.

If you have any questions regarding the submittal or the proposed scopes or work for the cleanup actions, please contact me at (925) 688-2488.

Sincerely,

Keith Woodburne, PG
Senior Project Manager

Cc: Mark Engdahl, BNSF
Kristen Darnell, Farallon Consulting, L.L.C.
Gretchen Kaehler, Department of Archaeology & Historic Preservation
Johnson Meninick, Confederated Tribes and Bands of the Yakama Nation
Kate Valdez, Tribal Historic Preservation Officer, Cultural Resources

CULTURAL RESOURCES REPORT COVER SHEET

Author: Teresa Trost

Title of Report: Cultural Resources Survey for the John Michael Lease Site Cleanup, Cashmere, Chelan County, Washington

Date of Report: July 30, 2012

County(ies): CH Section: 5 Township: 23 Range: 19 E

Quad: Cashmere, WA (1987) Acres: 1.8

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Export Files submitted? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

DAHP Archaeological Site #:

- Submission of paper copy is required.
- Please submit paper copies of reports ***unbound.***
- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

Cultural Resources Survey for the John Michael Lease Site Cleanup Cashmere, Chelan County, Washington

Report prepared by:
Teresa Trost

Prepared for:
TRC Companies, Inc.
One Concord Center
2300 Clayton Road, Suite 610
Concord, CA 94520

CONTAINS CONFIDENTIAL INFORMATION;
NOT FOR GENERAL DISTRIBUTION

July 30, 2012

CASCADIA ARCHAEOLOGY

P.O. Box 51058
Seattle, WA 98115

ABSTRACT

The BNSF Railway Company is currently investigating the extent of contaminated sediments and groundwater resulting from a historic oil spill that occurred along the railroad right-of-way during the 1940s. TRC Companies, Inc. (TRC) is providing BNSF environmental consulting and engineering support services for the ongoing site investigation and is evaluating the currently proposed and approved approach for remediation of contaminated site soils and groundwater. TRC retained Cascadia Archaeology, LLC to conduct a cultural resources survey of the proposed undertaking as required by Chelan County Department of Community Development. Cascadia Archaeology completed the cultural resources survey for this project June 25-26, 2012.

No further archaeological investigation is recommended if excavations for this project remain within the three areas proposed for cleanup or along the river bank south of test pit 30. No prehistoric or historic cultural resources were identified within the Area of Potential Disturbance (APD). The APD is probably on the periphery of the Cashmere Landfill documented in Freiberg and Nelson (2009a); however, this area appears to contain debris less than 50 years of age. The sediments exposed appear to be largely disturbed local material or imported fill. Often the fill was placed above oil-saturated sediment. In some cases the oil saturated sediment appears to be disturbed while in other cases it may be intact alluvial sediment. Undisturbed sediments are generally poorly sorted gravelly silt and sand, which are likely of glacial outwash origin.

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1.0 INTRODUCTION

The BNSF Railway Company is currently investigating the extent of contaminated sediments and groundwater resulting from a historic oil spill that occurred along the railroad right-of-way during the 1940s. TRC Companies, Inc. (TRC) is providing BNSF environmental consulting and engineering support services for the ongoing site investigation and is evaluating the currently proposed and approved approach for remediation of contaminated soils and groundwater. TRC retained Cascadia Archaeology, LLC to conduct a cultural resources survey of the proposed undertaking as required by Chelan County Department of Community Development (Gary Gunderson, personal communication).

The currently proposed cleanup project consists of excavation and off-site disposal of approximately 6,643 cubic yards of soil with concentrations of petroleum hydrocarbons exceeding the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) cleanup levels for soil. However, additional site investigation activities are planned to further evaluate the extent of soil and groundwater impacts, and to determine if excavation and off-site disposal remains the most effective and feasible approach to remediation. Other options for remediation that would require less ground disturbance may be considered based on their established effectiveness and potential for regulatory approval.

Cascadia Archaeology completed a cultural resources survey for this project June 25-26, 2012. The following sections of this survey report describe the project, the project site's environmental setting, cultural resource expectations, survey design, methods and results, and management recommendations.

2.0 PROJECT LOCATION AND DESCRIPTION

The Area of Potential Disturbance (APD) encompasses approximately 1.8 acres of Section 5, Township 23 North, Range 19 East, Willamette Meridian (Figure 1). It is located on the northeast corner of Sunset Highway and Hagman Road, Cashmere, Washington.

Although alternatives to removal of sediments are being evaluated, the cultural resources survey was designed anticipating the removal of approximately 6,643 cubic yards of soil. If excavation is required, it is proposed to extend from the ground surface to a depth of approximately 12 to 16 ft. below ground surface. Excavations will be conducted in three areas, covering a total estimated area of 0.4 acres (Figure 2). The remainder of the APD could possibly suffer shallow ground disturbance due to vehicles traversing the area and staging of equipment.

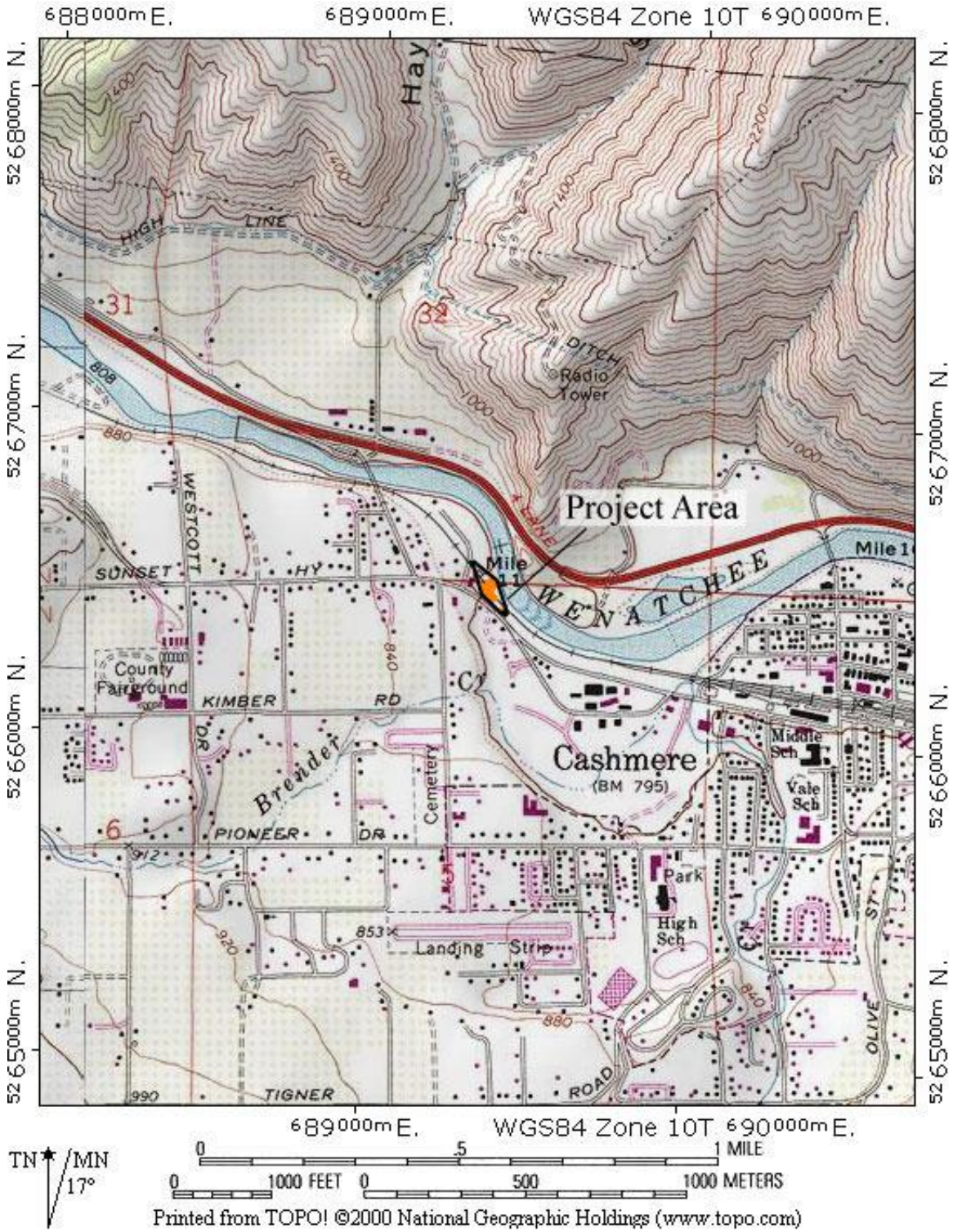

Figure 1. John Michael Lease Site Cleanup vicinity, Section 5, T. 23 N., R. 19 E. USGS 7.5' quadrangle Cashmere, WA (1987).

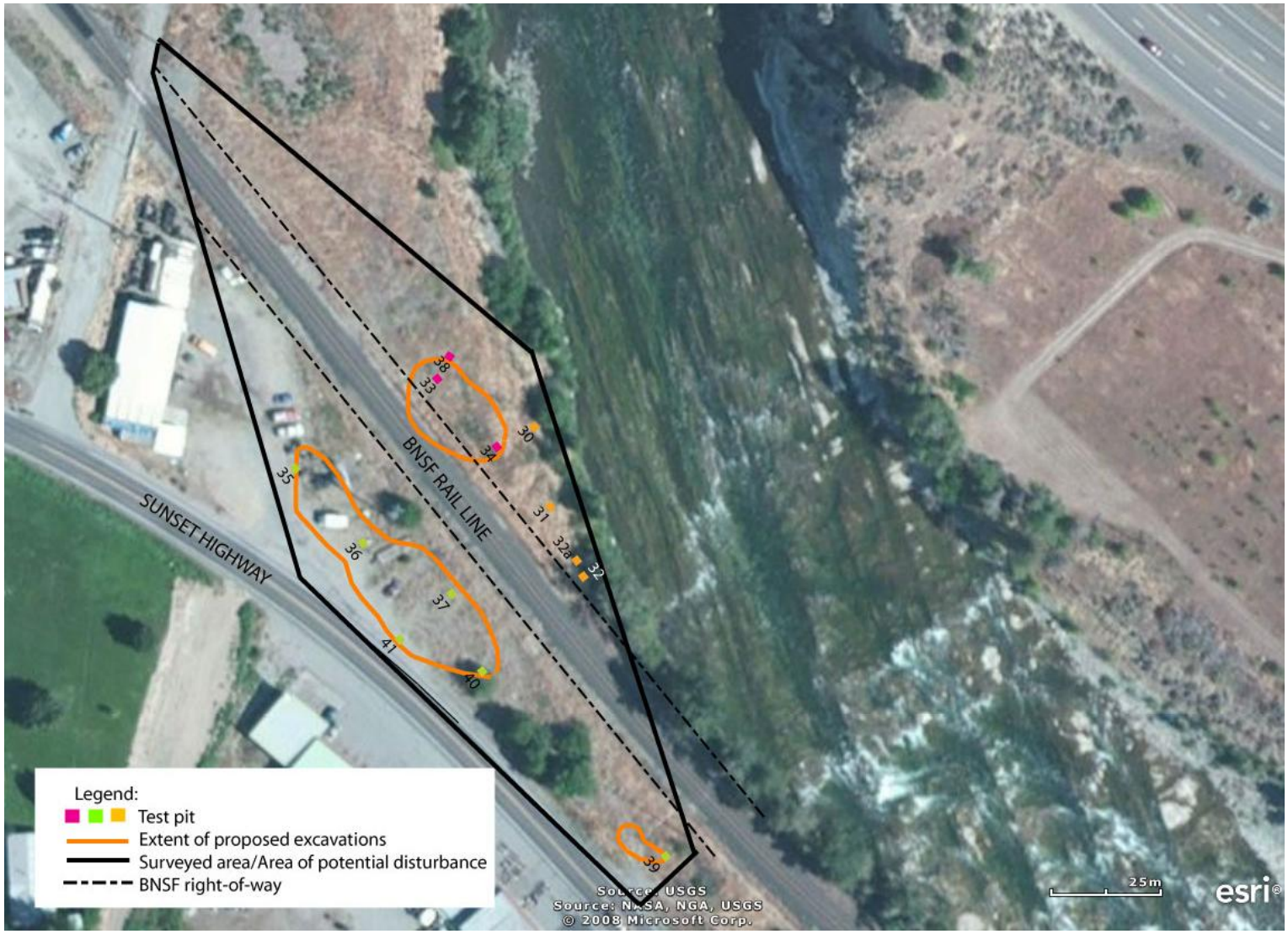

Figure 2. Survey map.

3.0 ENVIRONMENTAL CONTEXT

The project area is located on the south shore of the Wenatchee River at about 800 ft. above sea level and approximately 10.4 miles upstream from its confluence with the Columbia River. In the vicinity of Cashmere, the valley floor is about 1.5 miles wide. However, across from the project area, a toe of the Entiat Mountains slopes down to the river's edge. The project area is within the *Pseudotsuga menziesii* Zone, which is dominated by Douglas fir, ponderosa pine, lodgepole pine, and western larch (Franklin and Dyrness 1973). Today, the area is sparsely populated with grasses and shrubs. The project area is on the floodplain of the Wenatchee River, on deposits of Holocene alluvium. The river floodplain is cut into an older terrace of glacial outwash that lies a few meters above the floodplain, and is outside of the APD (Tabor et al. 1987). Soils in the project vicinity are mapped as Beverly fine sandy loam, a soil that develops on terraces in alluvial parent material (NRCS 2009). Logs for test pits, trenches, and monitoring wells excavated to determine the extent of contaminated soils were provided by Farallon Consulting. The logs indicated fill material and "construction debris" in the southeast portion of the APD and fill in test pits and trenches in the middle of the APE. Other sediments were described as coarse gravel with sand, sand, sand with gravel, or silty sand.

4.0 CULTURAL CONTEXT

4.1 Prehistory

The prehistory of north central Washington has been intensively studied along the length of the Columbia River as part of mitigation for construction of dams and associated impoundments. Shorelines of the reservoirs behind Wanapum, Rock Island, Rocky Reach, Wells, and Chief Joseph dams were methodically examined in the 1960s, 1970s, and early 1980s. From these studies chronologically based phases were developed for the different reaches of the Columbia which highlight localized variation in settlement and subsistence patterns over the past 7,000 plus years. Discovery of the East Wenatchee Clovis Cache in 1987 extended the human record in the region back to more than 11,000 years, near the end of Pleistocene glaciation.

Archaeological investigations for the Wells Reservoir Project in 1983 and 1984 provided a guide to prehistory and early environments of this region (Chatters 1986a, 1986b). By ca. 5,800 to 8,000 years Before Present (B.P.), people lived in small groups, moving frequently and living opportunistically without processing and storing food for later consumption. Sites were located mainly along the rivers. Between ca. 5,800 to 3,500 B.P., the previously warm, dry climatic conditions had moderated, and people began living in pit houses along the major rivers, fishing and traveling into the mountains for big game and plant foods. By 3,500 B.P., patterns familiar in the ethnographic record appeared, with people living in winter villages along the rivers and ranging widely during other seasons to collect specific foods and process them to store for winter use. Summer camps were located both along and away from rivers at resource collecting locations. By

about 600-500 B.P., people lived generally as described in the late nineteenth and early twentieth century ethnographies. As harvest and storage technologies evolved, the unpredictability of resource availability was moderated and populations increased.

Contact with Euroamerican culture profoundly affected Native American life in the region. Introduction of the horse to the Northwest in the mid-1700s changed traditional subsistence by allowing transport of heavier, bulkier loads over longer distances and into a much larger territory. Imported diseases had an even greater impact, decimating native populations (Boyd 1985; Campbell 1989).

4.2 Ethnography

Cashmere is in the traditional territory of the Wenatchi, a Middle Columbia Salish-speaking people also known as the Wenatshapam or Pisquouse. They lived in the Wenatchee River watershed and on the Columbia River from just south of the Entiat River to Moses Coulee (Teit 1928). They had a number of permanent villages along the Wenatchee and Columbia rivers, usually at the mouths of tributaries. One of the largest Wenatchi villages, with a population of about 400 people, was *ntua´tckam*, located at the mouth of Mission Creek at present-day Cashmere (Ray 1936). There were several important salmon fisheries along the Wenatchee River; the principal one was Wenatshapam, at the mouth of Icicle Creek near present-day Leavenworth. Some of the Wenatchi fisheries were also frequented by Yakama, Colville, and Chelan, as well as some people from the Puget Sound area (Gibbs 1855; Ray 1936, 1974).

The Wenatchi included five bands that lived primarily in the Wenatchee River watershed, although they traveled widely to trade. They followed a subsistence round based on the seasonal availability of plant and animal resources (Hollenbeck and Carter 1986:132-150). Winters were spent in villages in protected areas near the river. In spring, small groups left the villages to gather roots and shoots, and to fish spring-run salmon and steelhead. Bitterroot and Lomatium (e.g., Indian carrot and Indian celery) were collected from the valleys. Camas was dug from near what is now Leavenworth and from a large meadow near Blewett Pass. Tiger lily bulbs and service berries were also collected. Later in the season, currants, blackberries, chokecherries, and Oregon grape were gathered in the canyons around Cashmere. In the summer and fall, some groups moved to higher elevations to hunt deer and mountain goats and to gather huckleberries, while others stayed by the rivers to fish the salmon runs. Large quantities of salmon were caught at favored fisheries such as Wenatshapam and preserved for winter consumption.

During the 1850s, the Wenatchi and 13 other bands were assigned to the Yakama Reservation under terms of the Yakima Treaty, but only a few Wenatchi moved there. The Wenatshapam fishery also was to be reserved for Native American use but instead was sold off. After the short-lived Columbia or Moses Reservation, established for the Wenatchi and other Middle Columbia Salish, was terminated, its residents were sent to the Colville Reservation or offered allotments. Most Wenatchi remained in their

traditional lands along the Wenatchee River, a few settling on homesteads near present-day Cashmere (Scheuerman 1982). Currently, most Wenatchi and Chelan descendents are affiliated with the Confederated Tribes of the Colville Reservation.

4.3 History

The first Euroamericans in Chelan County were probably trappers for the Pacific Fur, Northwest, and Hudson's Bay Companies, who were in the area from 1810 through the 1840s. Federal policies encouraging immigration from the east, combined with placer mine strikes in the Fort Colville area in 1854, led to hostilities between new settlers and Native populations during which many would-be settlers were killed. The U.S. Army prepared for an offensive in the spring of 1856; however, their actions were preempted by volunteer militias who carried out indiscriminate attacks on Native villages. These actions and reprisals led to closure of the area east of the Cascades to new settlement from 1856 to 1859 (Beckham 1998:152-155).

The first attempted settlement in Chelan County following the war took place around 1863 by Chinese prospectors coming from the gold rush in California. Their fledgling settlement was located on the Columbia River opposite the mouth of the Chelan River. The store, garden and other buildings were burned by Methow River Indians and many of the newcomers were killed, resulting in abandonment of the town (Wilma 2008).

In 1873, the Jesuit missionary Father Urban Grassi built a small church near present-day Cashmere, which replaced an Oblate mission that had burned down. A U.S. Army camp was installed at Lake Chelan in 1880 and renewed settlement in the Cashmere district soon followed.

Initially, travel in the region was difficult with supplies arriving over torturous roads across Blewett Pass or by steamboat along the Columbia River. The Great Northern Railway (GN) was completed 1892-1893 and the town of Dryden was established in 1907 along the GN line. The railway in the vicinity of Cashmere generally follows a trail shown on the 1884 GLO survey map. The railway in combination with irrigation assured the future growth and development of Chelan County. The first fruit trees in the valley may have been planted around 1882. In the 1930s, the Sunset Highway, an improved county road, became an alternative travel route. Highway 2 provided a second road link between eastern and western Washington and eventually eclipsed the Sunset Highway in importance.

Cashmere, originally named Mission, was incorporated in 1904. Irrigation projects had begun informally, including by the ill-fated Chinese settlers. In 1901 fundraising began for the Wenatchee Canal Company to complete the first stretch of canal from Dryden to Wenatchee. The Federal Government established funds to acquire land for irrigation projects in 1902 (Arksey 2008). Dryden, Cashmere and other towns on the lower Wenatchee River grew with the completion of two main irrigation canals, the Icicle and Highline, in 1912 (Hull 1929; Steele 1904). With reliable water and transportation in

place, the area developed rapidly. Agriculture, particularly orchard agriculture, intensified during this period, driving development of the town. Telephones, electricity, paved streets and sidewalks were in place before 1920.

The success of the orchard fruit industry led to a surplus supply, which created an opportunity for the Armenian entrepreneurs Armen Tertsagian and Mark Balaban, who arrived in the valley around 1915. They used the surplus fruit to recreate an Armenian confection made of jellied fruit and walnuts which they named Aplets and Cotlets for the U.S. market. The factory in Cashmere is still in operation and is one of the area's primary tourist attractions.

5.0 ARCHAEOLOGY

Within approximately one mile of the APE, eight cultural resources surveys have been completed since 1995, according to the Washington Information System for Architectural and Archaeological Records Database (WISAARD) (Table 1). Amongst these surveys is one completed in 2008 by Cascadia Archaeology (Freiberg and Nelson 2009). That survey was for stream bank restoration along the same land on which the APD sits (Figure 2). The survey extended 20 ft. inland from the Ordinary High Water Mark (OHWM) and along Hagman Road. One isolated lithic flake and a possible flaked cobble (45CH761, 45CH762) and two sites were recorded (45CH763, 45CH764). The flaked cobble (45CH761) was found on the surface approximately 8 m north of the APD. The recorders noted it may have been flaked by vehicle traffic versus being a prehistoric artifact. A flaked petrified wood fragment was found 20 cm below surface at the north end of the landform in what was believed to be undisturbed native sediments. The Cashmere Landfill (45CH763) was exposed in the cutbank from near the railroad tracks

Table 1. Cultural Resource Surveys within Approximately One Mile of the APE.

Reference	Survey Type	Findings and Comments
Tingwall et. al (2009)	Investigation of sediments from 2 borings, 4 shovel probes	Two historic structures recommended ineligible for listing on the National Register.
Freiberg and Nelson (2009a)	Transects at 3 m intervals, 6 shovel probes	Possible flaked cobble, flaked petrified wood, Cashmere landfill (not evaluated), County Bridge No. 10 (not evaluated)
Schumacher (2008)	Pedestrian survey within urban area.	No cultural resources identified.
Sparks et. al (2009)	Monitoring of 4 test pits, 11 shovel probes, pedestrian surface survey.	No cultural resources identified.
Kelly (2009)	Pedestrian surface survey including cutbank exposures.	No cultural resources identified.
Freiberg and Nelson (2009b)	Pedestrian surface survey.	Peshastin Irrigation Ditch
Ellis (2011)	Pedestrian surface survey at 20 m intervals, 20 shovel probes at selectively chosen locations.	No cultural resources identified.
Cowan (2010)	Pedestrian surface survey.	No cultural resources identified.

National Register = National Register of Historic Places.

to the south, and extended 155 m north. The western boundary of the landfill was not investigated other than a shovel probe placed 3 m inland at 12 m south of the northern extent. The probe contained "Crushed glass, ceramics, unidentifiable heavily oxidized cans and iron fragments, and other materials …encountered in similar densities at 90 cm as closer to the surface" (Freiberg and Nelson 2009a). A remnant of County Bridge No. 10, commonly known as Tibbetts Bridge, 45CH764) was recorded north of the APD. Two other archaeological resources are within approximately one mile of the APD. A burial site (45CH222) is recorded but at the farthest extent of this researched area. Near to the APD but on the opposite side of the river a burial (45CH311) eroded out of the river bank. All material from that burial was found on the beach. One ornamental shell artifact was recovered and several pieces of "leather/rubber" and metal may also have been associated with the burial (Welch 1987).

6.0 METHODS

6.1 Background Research

Background research was conducted to determine if known cultural resources are or are likely to be present within the APD. Background research included a search for previous cultural resource studies and recorded sites in the vicinity; a review of local histories and historic maps available at the University of Washington, Washington State University, and Cascadia Archaeology libraries; and on-line historical, geological, and soils information.

6.2 Field Survey Expectations

Based on the results of the survey by Cascadia Archaeology in 2008, the probability of encountering historic isolates and archaeology was high due to the proximity of the Cashmere landfill site. The likelihood of prehistoric archaeology or a burial being present was considered moderate based on the paucity of undisturbed sediments observed during the 2008 Cascadia Archaeology survey.

6.3 Survey Design

Prior to TRC contracting Cascadia Archaeology, the placement of the test pits at approximately 20 m intervals within the areas to be excavated had already been proposed and reviewed. Supervising Archaeologist Teresa Trost agreed with the plans. A Geologist from Farallon Consulting was planned to be on site during the survey to collect additional soil samples.

Mechanical excavation was not to exceed 16 ft. below surface. Strata that did not contain toxins were to have approximately 20 liters screened over ¼-inch mesh. Sediments that contained toxins were to be shaken slowly out of the backhoe bucket while spreading across a surface and then raked through.

If an isolated artifact were found, a State isolate inventory form would be completed and the supervising archaeologist contacted by phone. Artifacts were to be placed in a spun polypropelene white bag and returned to original location as much as possible. If archaeological sediments were found, excavation would be halted and standard field documentation would be completed. The supervising archaeologist was to be contacted by phone to determine if the hole should be expanded horizontally to further investigate the deposit. Prior to refilling the hole, geotextile cloth was to be placed over the exposure, about 1 ft. (30 cm) of spoils would be placed, and then another layer of geotextile would be placed before completely infilling. Bags and geotextile were to serve as markers for relocation.

6.4 Field Survey Methods

René Small, B.A., HAZWOPER certified, conducted the field survey June 25-26, 2012 under the supervision of Teresa Trost, M.A. Methods were modified in the field as matrix above the water table was unconsolidated such that objects were visible when being shaken out of the bucket, and because of the contamination of sediments. For each test pit, the uppermost 1 m of sediment was placed in one location as the artifacts identified in 2008 came from within 1 m of the surface and the remainder placed in another pile. Spoils were troweled or raked through. This approach was used successfully during data recovery excavations at 45IS2, the Cama Beach shell midden, to recover artifacts and fragmentary and complete mammal and bird bones. The APD was surface surveyed while walking between probes and by 15 m transects (Figure 2).

The eight planned test pits and five others were excavated. Four of the additional test pits (no. 30, 31, 32, 38) were completed as Farallon Consulting needed further soils information. Test pit 32a was required because test pit 32 had to be terminated when bedding for the rail line was encountered. Test pits ranged in depth from 7 to 18 ft. below surface. The water table was lower on the north side of the rail line so test pits there reached depths of 12 to 18 ft. below surface. On the south side the water table prevented reaching the proposed depth of cleanup excavation, and test pits ranged from 7 to 14 ft. below surface. Test pits averaged 4-5 ft. wide (1.2-1.5 m) and 10 ft.(3 m) in length.

7.0 RESULTS

7.1 Sediments

The sediments within the APD are highly disturbed (Figures 3-4; Appendix A). Debris (discussed below) was found to depths exceeding 9 ft. Four test pits (no. 33, 35, 36, 40) had less obvious disturbance and debris was absent below depths ranging from 3 to 8 ft. In general, sediments were brown/yellow-brown/gray-brown sandy silt with 10-15 percent pebbles to small boulders. The sediments appear locally derived but whether disturbed *in situ* or imported could not be determined. Test pits closest to the river bank (no. 30, 31, 32b, 38) had sand and gravel at 10, 12, and 14 ft. below surface (Figure 5).

Figure 3. Test pit 35 nearing the water table at 7 ft. below surface.

Figure 4. Test pit 39 at 14 ft. below surface.

Figure 5. Test pit 31 at 12 ft. below surface.

Those sediments are thought to be alluvium. In test pit 38, the gravelly alluvium was overlain with 2 ft. of fine gray sand.

7.2 Cultural Resources

Debris was usually dispersed with occasional concentrations of lumber or metal objects. A Royal Crown Cola bottle probably dates to the 1960s, but an exact match to the label was not found (Figure 6). A condiment bottle that is probably a Heinz Ketchup bottle has a maker's mark which may represent Owens-Illinois bottle makers (Figures 7 and 8). The dot in the middle of the oval is unusual and, where the date typically is shown, an "S" was present. The plant code may indicate the Oakland plant, which was open in the 1930s to 1943 (Toulouse 1971). However, the Heinz code appears to date the bottle to 1969 or later.

8.0 DISCUSSION AND RECOMMENDATIONS

No prehistoric or historic cultural resources were identified within the APD. The APD is probably on the periphery of the Cashmere Landfill documented in Freiberg and Nelson (2009a). However, this area appears to contain debris less than 50 years of age. The Royal Crown Cola and Ketchup bottles may be exceptions but definitive ages for the objects could not be determined.

Figure 6. Diagnostics from test pit 35.

Figure 7. Condiment bottle.

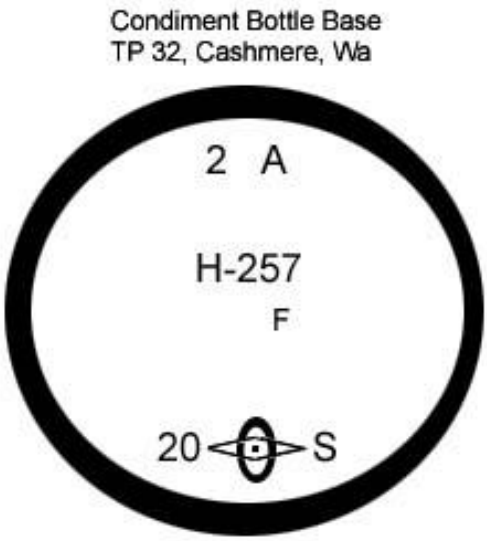

Figure 8. Base of condiment bottle.

The sediments appear to be largely disturbed local material or imported fill. Often the fill was placed above oil-saturated sediment. In some cases the oil saturated sediment appears to be disturbed while in other cases it may be intact alluvial sediment. Undisturbed sediments under the disturbed material are generally poorly sorted gravelly silt and sand, which are mostly likely of glacial outwash origin.

No further archaeological investigation is recommended if excavations for this project remain within the three areas proposed for cleanup or the area along the bank south of test pit 30.

8.1 Inadvertent Discovery Plan

Although no cultural resources were identified by this survey, it is possible that cultural materials not discovered during this investigation could be exposed during construction. Compliance with all applicable laws pertaining to archaeological resources (RCW 27.53, 27.44, WAC 25-48) and human remains (RCW 68.50) is required.

Should archaeological materials (e.g. bones, concentrations of freshwater shell, stone tools, beads, ceramics, hearths, etc.) be observed during project activities, all work in the immediate vicinity should stop and the State Department of Archaeology and Historic Preservation (360-586-3065) and Chelan County should be contacted as soon as possible.

If possible human remains are encountered, work must cease immediately in the vicinity of the remains, the find secured, and the Chelan County sheriff and coroner contacted. They will determine if the site is a crime scene. If the remains are determined not to be associated with a crime scene, the State Physical Anthropologist will be contacted. Work may not resume in the area of the find until the sheriff or the Washington State Department of Archaeology and Historic Preservation, whichever has jurisdiction, gives a notice to proceed.

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APPENDIX A: DESCRIPTION OF TEST PIT CONTENTS

Test Pit #
Soil Description
Artifacts

TP30
Photos 49-58
North side of RR, 5 m from river bank.
0-3 ft: yellowish brown sandy silt with cobbles, mulch & charcoal.
3-4 ft: contaminated black soil. Loose consistency.
14 ft: loose coarse sand & gravels, water table.
8-14 ft: metal debris, car parts.
10 ft- Beer bottle

TP31
Photos 70-79
5 m from river bank
0-10 ft: Fine grayish brown sandy silt with large cobbles.
10-18 ft: Coarse sand & gravel.
0-10 ft: Milled wood, metal and modern dump debris, Culvert in wall

TP32
Photos 80-94
Is at the far SE end of the APE, between the RR & 5 meters from river bank.
0-5 ft: Fine sandy silt with subrounded cobbles & heavy wood debris.
5-12 ft: Large angular boulders. Terminated at RR Grade 12 ft.
0-8 ft: Condiment bottle, micro irrigation tubing, carpet, plastic. Condiment bottle (see 'TP32 Bottle base'.jpg graphic)
10-12 ft: exposed RR base-large rip rap.

TP32B
Photos 85-100
Offset TP32; 5 m from river bank.
0-12 ft: Wood mulch mixed with fine sandy silt & cobbles.
12-16 ft: Coarse sand and gravels Water table at 12 ft.
0-5 ft: wood mulch

TP 33
Photos 59-67
20 m North of RR & 30 m from river.
0-4 ft: Fine sandy silt mixed with large cobbles, rounded & angular & mixed with modern debris.
4-18 ft: heavy oil contamination to water table.
0-5 ft milled wood, brick, terra cotta pipe fragment, concrete chunks. Modern debris.

TP34
Photos 36-48
North 20 m of RR.
0-6 ft: Fine sand & silt, dry alluvial deposit, very deep, mixed with large cobbles.
6-16 ft: Oil contaminated sediment, continues to become more saturated with depth.
0-10 ft: Milled & split wood, modern debris.

TP35
Photos 6-14
30 m from Sunset Hwy
0-5 ft: Fine to medium sandy silt with poorly sorted subrounded cobbles.
5-7 ft: Oil contamination to water table. Disturbed.
0-6 ft: Modern and late debris, metal, asphalt chunks, wood, soda bottle & cans, oil containers.

TP 36
Photos 15-26
40 m SE of TP 35, S of RR.
0-8 ft fine to medium sandy silt with cobbles throughout
5-8 ft Oil contamination to water table.
0-5 ft: Large chunks of concrete mixed with modern debris;
2 Coors beer cans, one has pull tab opening, milled lumber, barbed wire.
Soil test indicate high photo ionization levels.

TP37
Photos 27-35
NE 30m of Sunset Hwy, S of RR
3-12 ft: fine sandy silt with cobbles.
10-12 ft: Black, saturated sediments to water table.
Surface: Modern debris mixed with fill; bricks, plastic, foam, metal bolts and glass.
0-3 ft: intact concrete
9-12 ft: Concrete & milled wood
11- ft: Soil test indicate high photo ionization levels, very combustible.

TP38
Photos 101-114
20 m N of RR, 20 m from well.
0-4 ft Large angular & rounded cobbles mixed with fine-grained sand & silt.
4-10 ft Black-stained soil with burned wood & other dump materials.
11-14 ft: Fine gray sand
14-16 ft: Coarse gray sand & gravels to water table.
0-3 ft: Concrete chunks
3-12 ft: Burned milled wood, metal debris.

TP39
Photos 115-123
TP at southern edge of APE.
0-3 ft: Fine sandy silt with large cobbles throughout, water table at 12 ft, terminated at 14ft.
0-3 ft: Modern beer can, chunks of concrete.
3-9 ft: metal debris, brick, mulch & other wood debris.

TP40
Photos 124-130
25 m S of RR & 20 m N of Sunset Hwy.
0-14ft: Fine sandy silt mixed with cobbles throughout.
Black contaminated soils 9-14ft
Water table at 12ft.
0-3 ft: Concrete & Asphalt chunks

TP41
Photos 131-142
5 m off Sunset Hwy
0-5 ft: Concrete road overlying yellow sands
5-14 ft: fine sandy silt with cobbles to water table.
0-3 ft: Intact concrete
9-10 ft: cluster of wire fencing & barbed wire.

ATTACHMENT B

DEPARTMENT OF ECOLOGY VCP OPINION LETTER
NOVEMBER 15, 2010

Dan

RECEIVED

NOV 17 2010

Farallon Consulting, L.L.C.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

November 15, 2010

Mr. Bruce Sheppard
BNSF Railway Company
2454 Occidental Avenue South, Suite 1A
Seattle, WA 98134

Re: Further Action at the following Site:

- **Site Name:** Michael Irrigation
- **Site Address:** 5640 Sunset Highway, Cashmere
- **Facility/Site No.:** 3154383
- **VCP Project No.:** CE0278

Dear Mr. Sheppard:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Michael Irrigation facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and it's implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Diesel-range organics, gasoline-range organics, oil-range organics, benzene, and polyaromatic hydrocarbons into soil

- Diesel-range organics, oil-range organics, benzene, and polyaromatic hydrocarbons into ground water

A detailed diagram of the Site as currently known to Ecology is shown in Figures 2 thru 7 of the Cleanup Action Work Plan.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site is affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. EMR Inc., *Limited Phase II Assessment Report*, January 12, 2005.
2. Farallon Consulting, *Subsurface Investigation Report*, March 3, 2009.
3. Farallon Consulting, *Cleanup Action Work Plan*, August 19, 2010
4. Correspondence file, Michael Irrigation Site, CRO.

Those documents are kept at the Central Regional Office of Ecology (CRO) for review by appointment only. You can make an appointment by calling Roger Johnson, at (509) 454-7658.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. NOTE: The BNSF active railroad line and that area defined as a 'limited work area' in Figure 5 of the Cleanup Action Work Plan is part of the site; Ecology understands that cleanup actions in this area may be limited,

however, limited work, institutional controls, and confirmation sampling in this area may be required to qualify the site for a No Further Action.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels you established for the Site meet the substantive requirements of MTCA; however, the TEE discussion in Section 3.5 needs to fully supported.

a. Cleanup levels.

The MTCA Method A soil and groundwater cleanup levels for Unrestricted Land Uses shall be used throughout the Site.

b. Terrestrial Ecological Evaluation (TEE).

The TEE discussion in Section 3.5 of Farallon's Cleanup Action Work Plan for the site did not include a completed Table 749-1. Based on a review of the Chelan County Assessor's website and 2006 aerial image map function, it would appear that in excess of four acres of contiguous undeveloped land exists on or within 500' of any area of the site. Please provide a completed Table 749-1 and a map demonstrating that less than three acres (as discussed in Section 3.5) of undeveloped land are present on and within 500' of the site OR provide a terrestrial ecological evaluation in accordance with WAC 173-340-7490.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA. The Cleanup Action selected is appropriate for site conditions and is described as 'excavation and off-site disposal of approximately 6,600 cubic yards of soil with concentrations of one or more of the COCs above MTCA cleanup levels to the maximum extent practicable; and groundwater monitoring after soil removal has been completed.'

Following soil removal, groundwater monitoring wells will be constructed and groundwater evaluated to determine the cleanup action's effectiveness. If groundwater contamination is present, monitored natural attenuation will be evaluated for its ability to meet cleanup standards.

4. Cleanup.

A cleanup action has not been conducted at the Site. Confirmation sampling during and following cleanup is required.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (509) 457-7127 or e-mail at norm.hepner@ecy.wa.gov.

Sincerely,

Norman Hepner, P.E.
Site Manager
CRO Toxics Cleanup Program

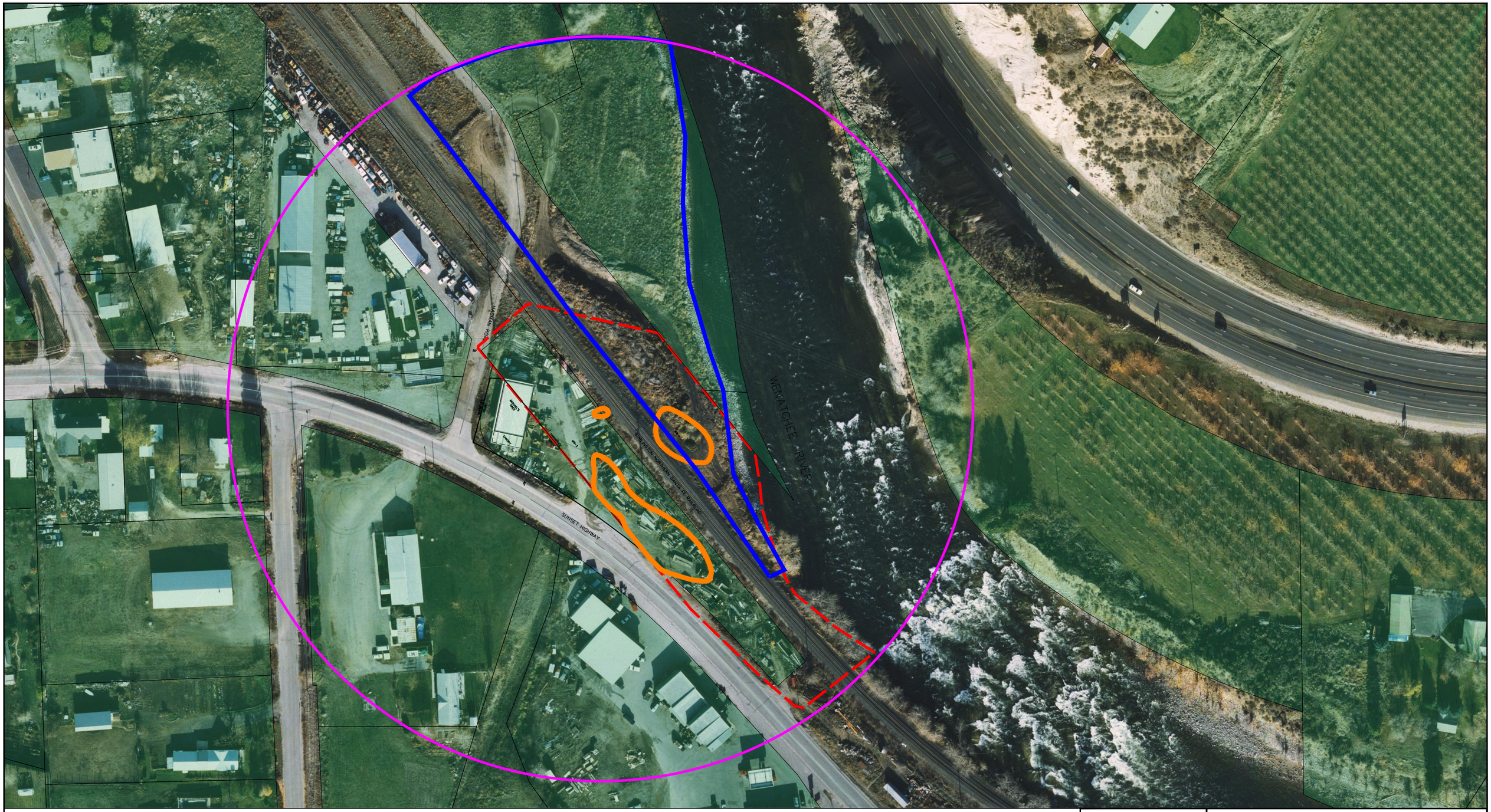
cc: Daniel Caputo, Farallon Consulting

ATTACHMENT C

TERRESTRIAL ECOLOGICAL EVALUATION (FARALLON)
TABLE 749-1
FIGURE 1

Table 749-1 Simplified Terrestrial Ecological Evaluation
Exposure Analysis Procedure Under WAC 173-340-7492(2)(a)(ii)

Estimate the areas of contiguous (connected) undeveloped land on the site or within 500 feet of any areas of the site to the nearest ½ acre (1/4 acre if the area is less than 0.5 area). "Undeveloped land" means land that is not covered by existing buildings, roads, paved areas or other barriers that will prevent wildlife from feeding on plants, earthworms, insects or other food in or on the soil.	
1) From the table below, find the number of points corresponding to the area and enter this number in the box to the right	
Area (acres) Points 0.25 or less 4 0.5 5 1.0 6 1.5 7 2.0 8 2.5 9 3.0 10 3.5 11 4.0 or more 12	**10**
2) Is this an industrial or commercial property? If yes, enter a score of 3 in the box to the right. If no, enter a score of 1	**3**
3) Enter a score in the box to the right for the habitat quality of the site, using the rating system shown below (high = 1, Intermediate = 2, Low = 3)	**3**
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2.	**2**
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexchlorbenzene, pentachlorophenol, pentachlorbenzen? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.	**4**
6) Add the number in the boxes on lines 2 through 5 and enter this number in the box to the right. If this number is larger than the number in the box on line1, the simplified terrestrial ecological evaluation may be ended under WAC 1273-340-7492 (2)(a)(ii).	**12**



LEGEND

- APPROXIMATE SITE BOUNDARY
- 500 FOOT BOUNDARY FOR SIMPLIFIED TERRESTRIAL ECOLOGICAL EVALUATION
- CONTIGUOUS UNDEVELOPED LAND ON THE SITE OR WITHIN 500 FEET OF ANY AREA OF THE SITE.
- APPROXIMATE AREA OF CONSTITUENTS OF CONCERN EXCEEDING THE MTCA METHOD A CLEANUP LEVELS

0 120
Scale in feet

N

FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 1

SIMPLIFIED TERRESTRIAL ECOLOGICAL EVALUATION AREAS
JOHN MICHAEL LEASE SITE
5640 SUNSET HIGHWAY
CASHMERE, WASHINGTON

FARALLON PN: 283-006

Drawn By: DEW	Checked By: AED	Date: 12/19/12	Disk Reference: 283006