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Technical Memorandum

Date:	July 10, 2020
To:	Frank Winslow, Washington State Department of Ecology
Copies to:	Jan Thompson, Wilbur Ellis Holdings II Megan Silcott, Nachurs Alpine Solutions Doug McReynolds, BNSF
From:	Melissa Asher, P.E. Luke Smith, P.E.
Subject:	**Response to Comments and Addendum to Groundwater Well Installation and Monitoring Work Plan** Former Nachurs Alpine Solutions Facility 101 North 1st Street, Sunnyside, Washington Ecology Cleanup Site ID: 14601 Facility/Site ID: 29243

Geosyntec Consultants, Inc. (Geosyntec) has prepared this technical memorandum (memo) on behalf of Nachurs Alpine Solutions (NAS) for its former facility located at 101 North 1st Street in Sunnyside, Washington (the Site). This document provides responses to the Washington State Department of Ecology's (Ecology) comments on the Groundwater Well Installation and Monitoring Work Plan (Work Plan)[1] and addendum to the Work Plan.

The Work Plan was submitted to Ecology for review on 30 April 2020, and Geosyntec received advisory comments from Ecology on 7 May 2020.[2] In a conference call on 22 May 2020, Geosyntec and Ecology discussed Ecology's Work Plan comments and NAS's proposed plan to modify the Work Plan based on the comments. After the conference call, Geosyntec received an email from Ecology (also on 22 May 2020) concurring with the discussed plan. In this memo, Geosyntec documents the discussion with Ecology, which includes updates to the planned work at the Site to include the collection of additional soil and grab-groundwater samples in advance of

[1] Geosyntec, 2020. Groundwater Well Installation and Monitoring Work Plan. Nachurs Alpine Solutions 101 North 1st Street, Sunnyside, Washington. 30 April 2020.
[2] Winslow, Frank. "Nachurs Alpine - CE0510 - Work Plan Comments." message to Luke Smith. 7 May 2020. E-mail.

the well installation detailed in the Work Plan. In addition, these sample results will be utilized to adjust the planned well installation locations at the Site.

Section 1 of this memorandum provides a response to Ecology's primary comments in its 7 May 2020 email. Section 2 outlines additional soil and grab-groundwater samples and modifications to the Work Plan based on Ecology's comments in Section 1. A Revised Table 1 and Revised Figure 2 from the Work Plan are attached and replace the previous version provided in the Work Plan. Additionally, a new Table 2 has been created that outlines the proposed soil and grab-groundwater sampling plan.

1. RESPONSES TO ECOLOGY'S COMMENTS

This section provides responses to Ecology's main comments regarding the Work Plan, which were received via email on 7 May 2020. This memorandum does not include responses to each individual comment provided by Ecology, as several of the comments were interrelated. The comments summarized below and other comments, such as including the historical sample locations and results on future table and figure submissions, are noted and will be incorporated into future Site reports.

Ecology Main Comment #1: Ecology believes it is too early in the process to rule out soil impacts from NAS operations. As a result, Ecology recommends that soil samples, in addition to groundwater samples be collected. Ecology believes it would be beneficial to conduct additional soil and groundwater investigation at the other eight soil boring locations from the 2018 Limited Phase II Subsurface Investigation (Phase II)[3] that did not have groundwater samples collected. Ecology also recommends collecting additional soil and groundwater samples around grab-groundwater location SB-9, which showed higher concentrations of constituents of potential concern (COPCs) in the groundwater compared to the other two groundwater samples collected during the Phase II.

Response: NAS will collect soil samples at a subset of the eight soil boring locations from the Phase II in addition to four proposed new locations that are step-outs to assess lateral extent of impacts around SB-9. The proposed locations are shown in the Revised Figure 2 attached. A

[3] August Mack, 2018. Limited Phase II Subsurface Investigation, 101 North 1st Street, Sunnyside, Washington, 22 February.

rationale for each location with depths and media to be sampled are outlined in the attached Table 2.

The 2018 Phase II includes samples from three depth horizons: two in soil at 0-3 feet below ground surface (ft bgs) and 4-6 ft bgs and one in first encountered groundwater at 7-10 ft bgs; however, not all three depth horizons were sampled at each location in 2018 resulting in data gaps. As such, for the previous 2018 boring locations, samples will be collected from the horizons that were previously not sampled. For the new step-out locations around SB-9, samples will be collected at all three depth horizons.

In addition to the above proposed soil and grab-groundwater sampling, two soil samples (0-3 and 4-6 ft bgs) will be collected from the each of the four proposed monitoring well locations during installation.

Per Ecology Main Comment 2 below, soil samples will be analyzed for metals (arsenic, cobalt, molybdenum, and nickel) by Environmental Protection Agency (EPA) Method 6020 (or equivalent) and nitrate as nitrogen by EPA Method 300.0 Modified (or equivalent). Grab-groundwater samples will be analyzed for metals (arsenic, cobalt, molybdenum, and nickel) by EPA Method 200.8 (or equivalent) and nitrate as nitrogen by EPA Method 300.0 Modified (or equivalent).

Ecology Main Comment #2: Ecology considers the site COPCs in groundwater to be nitrates, arsenic, cobalt, molybdenum, and nickel and recommends that metals be sampled for filtered and unfiltered.

Response: The groundwater analyte list will be amended to include the Ecology recommended COPCs: metals (arsenic, cobalt, molybdenum, and nickel) and nitrate as nitrogen. Consistent with the Work Plan, both filtered and unfiltered metals samples will be collected (see Work Plan Table 1 and text page 8).

Ecology Main Comment #3: Ecology considers it premature at this time to assume that Industrial Method A concentrations will apply at this site; therefore, Method A and Method B cleanup levels should be referenced at this time.

Response: Soil and groundwater analytical results will be compared against MTCA Method A (Industrial), Method A (Unrestricted), and Method B (Unrestricted) cleanup levels, until applicable site-specific cleanup goals are established for this Site. Although August Mack referenced the US EPA Screening levels in the 2018 Limited Phase II Subsurface Investigation, these historical results will be compared to MTCA levels on future submissions.

Ecology Main Comment #4: Ecology doesn't believe quarterly sampling is important right now and instead the focus should be identifying potential source(s) of contamination, and further delineation. However, Ecology recommends that if we choose to proceed with installation of the monitoring wells at this time, rather than a direct push investigation, shifting the locations of MW-2 and MW-3 to the southwest slightly to be directly downgradient of the former above ground storage tank (AST) areas.

Response: We believe it is important to install monitoring wells at this stage for the following reasons:

- *To collect site-specific groundwater elevation data for interpretation of groundwater gradient and flow direction,*
- *To collect groundwater well samples, which we anticipate having a lower turbidity than then grab-groundwater samples and will provide higher quality samples for total and dissolved metals analysis, and*
- *To conduct quarterly groundwater sampling in order to gain an understanding of any seasonal variability that might be present.*

Proposed well locations for MW-2 and MW-3 will be adjusted per Ecology's suggestion, and approximate revised locations for these wells are shown in Figure 2. These locations will be refined based on results from the proposed additional soil and grab-groundwater sampling (see response to Ecology Main Comment #1). The proposed monitoring well locations for MW-1 and MW-4 will remain at their originally proposed locations, designed to monitor groundwater entering (background) and exiting the Site, respectively (Figure 2).

2. WORK PLAN ADDENDUM – PROPOSED SOIL AND GRAB-GROUNDWATER SAMPLING

This addendum provides an updated approach for the Site investigation based on Ecology's recommendations outlined in Section 1. The investigation will be divided into two phases: Phase 1 is the soil and grab-groundwater investigation that will address data gaps in the 2018 Phase II, and Phase 2 will include the installation of the monitoring wells originally proposed in the Work Plan. Unless otherwise noted, modifications outlined below should be considered addendums to the Scope of Work presented in Section 3 of the Work Plan.

Phase 1: Initial Soil and Groundwater Direct Push Investigation

A direct-push drilling rig will be mobilized in Phase 1 to collect the samples outlined in Table 2. During drilling, soil cores will be collected using vinyl acetate sleeves, and a Geosyntec field geologist will log the soil in accordance with the Unified Soil Classification System (USCS).

Soil samples will be analyzed for metals (arsenic, cobalt, molybdenum, and nickel) by EPA Method 6020 (or equivalent) and nitrate as nitrogen by EPA Method 300.0 Modified (or equivalent). Groundwater samples will be collected using a Hydropunch™ or temporary well with a screen placed in first groundwater. Groundwater samples will be analyzed for total and dissolved metals (arsenic, cobalt, molybdenum, and nickel) by EPA Method 200.8 (or equivalent) and nitrate as nitrogen by EPA Method 300.0 (or equivalent). Borings will be grouted after sampling, and samples will be transported to the analytical laboratory under chain-of-custody and on ice. Any investigation-derived waste, such as soil cuttings or decontamination water will be containerized on-Site for profiling and eventual off-Site disposal.

Phase 2: Monitoring Well Installation and Additional Soil Sampling

Consistent with the Work Plan, four monitoring wells will be installed at the Site. Proposed monitoring well locations MW-1 and MW-4 will remain the same as outlined in the Work Plan (Figure 2). MW-2 and MW-3 locations will be selected following a review of findings from Phase 1 of the investigation. During installation of the four monitoring wells, two soil samples will be collected at each well location (0-3 and 4-6 ft bgs). Soil samples will be analyzed for metals (arsenic, cobalt, molybdenum, and nickel) by EPA Method 6020 (or equivalent) and nitrate as nitrogen by EPA Method 300.0 Modified (or equivalent).

Wells will be installed, developed, and sampled quarterly in accordance with the Work Plan. The analyte list for quarterly groundwater sampling will be expanded to include the updated COPC list discussed in Section 1 above and as indicated in the attached Revised Work Plan Table 1.

3. CLOSING

Geosyntec appreciates Ecology's feedback, both written (via email 7 May 2020) and verbal (via conference call on 22 May 2020), on the Work Plan for the NAS Site in Sunnyside, Washington. As per Ecology's previous 22 May 2020 email concurrence with the scope presented herein, Geosyntec is not requesting additional feedback on the Work Plan addendum. We look forward to working closely with Ecology throughout the Voluntary Cleanup Program (VCP) process.

Please contact Melissa Asher (206-496-1449) or Luke Smith (206-496-1452) if you have any questions regarding this memo.

Sincerely,

Luke Smith

Luke Smith, P.E. (WA, OR)
Project Engineer

Melissa Asher

Melissa Asher, P.E. (WA, CA, CO, ID)
Senior Principal

Attachments:

Revised Table 1 – Groundwater Monitoring Plan
Table 2 – Soil and Groundwater Sample Matrix
Revised Figure 2 – Proposed Monitoring Well and Sample Locations

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ATTACHMENTS

Revised Table 1
Groundwater Monitoring Plan
Sunnyside, Washington

Well	Type	Monitoring Plan		
		Depth to Water Measurement	Nitrate as Nitrogen by EPA 300.0	Dissolved & Total Metals by EPA Method 200.8[1]
MW-1	Upgradient/Background	Q	Q	Q
MW-2	On-Site	Q	Q	Q
MW-3	Downgradient	Q	Q	Q
MW-4	Downgradient	Q	Q	Q

Notes:

[1] Samples will be analyzed for total and dissolved arsenic, cobalt, molybdenum, and nickel. Dissolved metals samples will be field filtered with a 0.45-micron filter.

MW = monitoring well

Q = quarterly

EPA = Environmental Protection Agency

Table 2
Proposed Soil and Grab-Groundwater Sampling and Analysis Plan
Sunnyside, Washington

Sampling Location[a]	Proposed Samples[b,c]			Purpose and Notes
	Soil Sample (0-3 ft bgs)	Soil Sample (4-6 ft bgs)	Groundwater Sample (7-10 ft bgs)	
Soil Borings and Grab-Groundwater Samples				
SB-3		x	x	Downgradient of former concrete loading pad. Collect samples from deeper soil and first groundwater (not sampled by August Mack, 2018).
SB-4		x	x	Located along the upgradient edge of property. Collect samples from deeper soil and first groundwater (not sampled by August Mack, 2018).
SB-5		x	x	Located on the downgradient corner of the former AST secondary containment. Collect samples from deeper soil and first groundwater (not sampled by August Mack, 2018).
SB-8		x	x	SB-8 contained the highest nitrate as nitrogen concentration in shallow soil along the northern, upgradient edge of the property. Collect samples from deeper soil and first groundwater (not sampled by August Mack, 2018).
SB-9	x			High groundwater COPC concentrations in 2018. Collect samples from shallow soil (not sampled by August Mack, 2018).
SB-10	x			Beneath former concrete loading pad. Collect samples from shallower soil (not sampled by August Mack, 2018).
SB-12	x	x	x	Delineate extent of impacts around SB-9 (north), and aid in selection of MW-3 well location.
SB-13	x	x	x	Delineate extent of impacts around SB-9 (west), and aid in selection of MW-3 well location.
SB-14	x	x	x	Delineate extent of impacts around SB-9 (south), and aid in selection of MW-3 well location.
SB-15	x	x	x	Delineate extent of impacts around SB-9 (east), and aid in selection of MW-3 well location.
Monitoring Well Boring Samples				
MW-1	x	x	See Table 1	Soil samples from planned upgradient well, to assess background concentrations.
MW-2	x	x	See Table 1	Soil samples from well location in vicinity of area that formerly housed multiple fertilizer ASTs and within the area that formerly contained a concrete pad likely used for loading of fertilizer at the site. Well location will be selected based on soil and grab-groundwater results from the locations above.
MW-3	x	x	See Table 1	Soil samples from well location in vicinity of area that formerly housed multiple fertilizer ASTs and in vicinity of SB-9. Well location will be selected based on soil and grab-groundwater results from the locations above.
MW-4	x	x	See Table 1	Soil samples from planned downgradient well, adjacent to former AST area.

Notes:

[a] Locations SB-3, SB-4, SB-5, SB-8, SB-9, and SB-10 were previously sampled during the Phase II (August Mack, 2018).

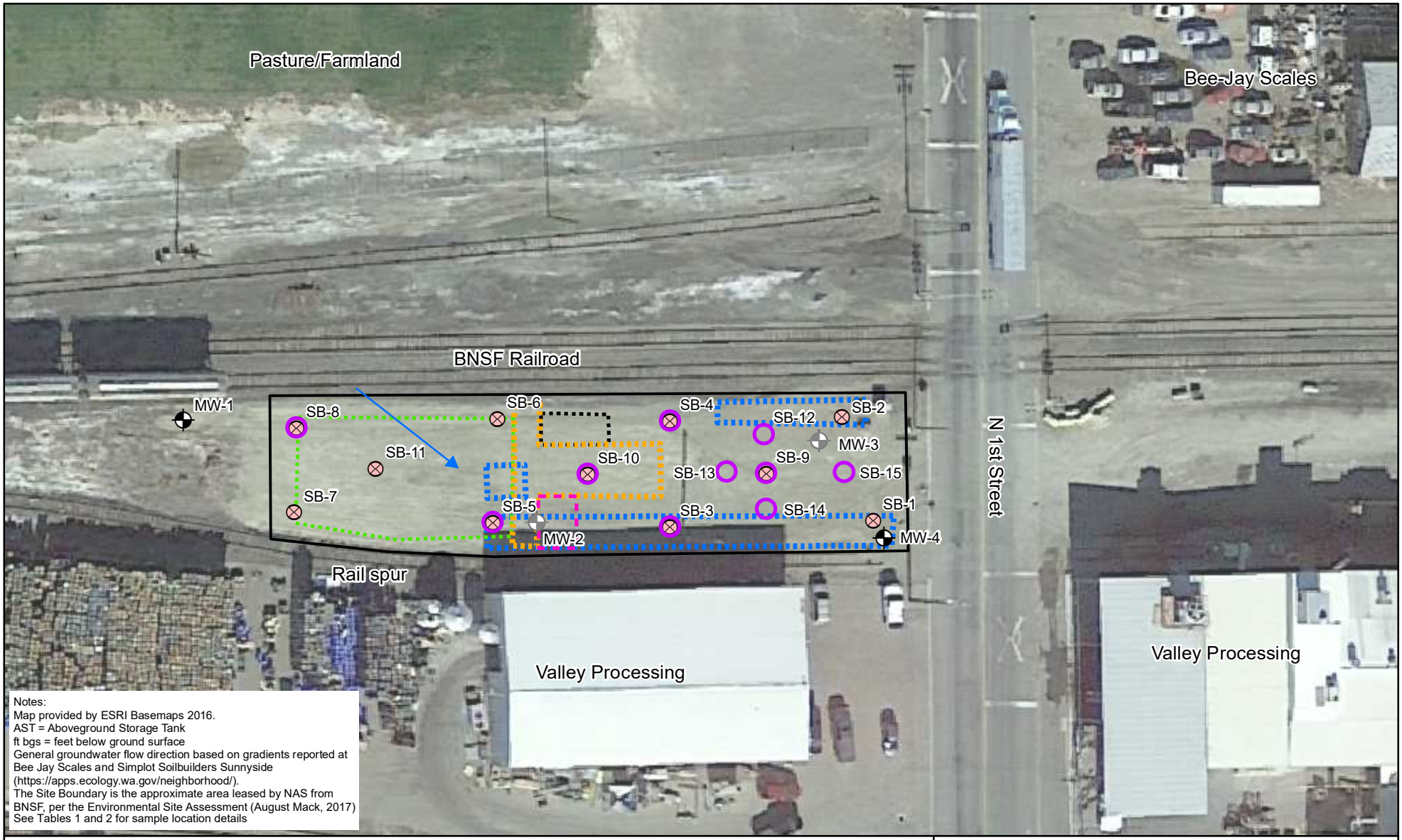
[b] Soil samples will be analyzed for nitrate by EPA 300.0 (or equivalent) and arsenic, nickel, cobalt, and molybdenum by EPA 6020 (or equivalent).

[c] Groundwater samples will be analyzed for nitrate as nitrogen by EPA 300.0 (or equivalent) and total and dissolved metals, including arsenic, nickel, cobalt, and molybdenum by EPA 200.8 (or equivalent). Dissolved metals samples will be field filtered with a 0.45-micron filter.

AST = above ground storage tank
COPC = constituent of potential concern
EPA = Environmental Protection Agency
ft bgs = feet below ground surface

Reference:

August Mack Environmental, 2018. Limited Phase II Subsurface Investigation, 101 North 1st Street, Sunnyside, Washington 22 February.



Notes:
Map provided by ESRI Basemaps 2016.
AST = Aboveground Storage Tank
ft bgs = feet below ground surface
General groundwater flow direction based on gradients reported at Bee Jay Scales and Simplot Soilbuilders Sunnyside (https://apps.ecology.wa.gov/neighborhood/).
The Site Boundary is the approximate area leased by NAS from BNSF, per the Environmental Site Assessment (August Mack, 2017)
See Tables 1 and 2 for sample location details

Legend

- Proposed Boring Locations with Soil and/or Grab-Groundwater Samples
- Proposed Monitoring Well and Soil Sample Location
- Proposed Monitoring Well and Soil Sample Location to be selected by proposed soil and grab-groundwater sample results
- Phase II Sample Location (2018)
- General Groundwater Flow Direction
- Site Boundary
- Former AST Area (Pre-1999)
- Former Building Location (Pre-1999)
- Former AST Area with Secondary Containment (1999-2017)
- Former Building Location (1999-2017)
- Former Concrete Loading Pad (1999 – 2017)

N

0 50 Feet

Proposed Sample and Monitoring Well Locations

101 North 1st Street
Sunnyside, Washington

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PNR0696-01 | June 2020

Figure 2

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Figure 2 Proposed Well LocationsV2.mxd 6/3/2020 2:51:11 PM