Prepared for

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CORRECTIVE ACTION IMPLEMENTATION – INJECTION REPORT AND COMPLIANCE MONITORING PLAN

Nachurs Alpine Solutions
101 North 1st Street
Sunnyside, Washington

Ecology Cleanup Site ID: 14601
Facility/Site ID: 29243

Prepared by

Geosyntec consultants

engineers | scientists | innovators

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Project Number: PNR0696D

11 July 2023

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Project Number: PNR0696D
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1. INTRODUCTION

This Corrective Action Implementation - Injection Report and Compliance Monitoring Plan documents the field implementation of the in situ denitrification injections conducted at the former Nachurs Alpine Solutions (NAS) site located at 101 North 1st Street in Sunnyside, Washington (Site) and the revised proposed plan for conducting post-injection compliance groundwater monitoring at the Site to evaluate denitrification and metals attenuation. This document was prepared by Geosyntec Consultants, Inc (Geosyntec) on behalf of Wilbur-Ellis Holdings II, Inc. (Wilbur-Ellis), the direct parent company of NAS, in accordance with the Remedial Investigation and Cleanup Action Plan (RI-CAP) dated 23 September 2022 (Geosyntec, 2022) and Ecology's comments in their Opinion on Proposed Cleanup for the following Property associated with a contaminated Site letter (Opinion Letter) dated 10 November 2022 (Ecology, 2022). The implementation of the in situ denitrification injections occurred in November 2022 and compliance monitoring is currently being conducted in accordance with the preliminary plan presented in the RI-CAP, Appendix F with modifications included herein to address Ecology's comments. This work is being completed under oversight by the Washington Department of Ecology (Ecology), as part of the Voluntary Cleanup Program (VCP). The Site location is shown in Figure 1.

The remainder of this document is organized as follows with supporting tables, figures, and attachments attached:

- Section 2 – Site Background: summarizes the relevant site use and environmental information for this document.
- Section 3 – Injection Implementation: provides injection methods and summarizes field activities for the completion of the remedial injections.
- Section 4 – Groundwater Compliance Monitoring Plan: provides the proposed methods, plans for conducting routine groundwater monitoring of the wells, and proposed sampling frequency.
- Section 5 – Conclusion: summarizes the activities and plans documents in this document.
- Section 6 – References: includes a list of previous documents referenced in this document.

2. SITE BACKGROUND

The Site is an approximately 0.35-acre property owned by Burlington Northern Santa Fe (BNSF) and bordered by a BNSF rail corridor to the north and a rail spur to the south and west. To the east is 1st Street and approximately 100 feet to the northeast is Bee-Jay Scales (a former drum storage facility that is currently being remediated). General land use in the Site vicinity is industrial.

Since approximately 1906, the surrounding area has been used for agricultural warehouses, lumber yards, coal storage, and railroad transportation activities (August Mack, 2017). Prior to NAS leasing the property, the land remained vacant since at least 1937, with the exception of a rail spur

on the southern portion of the property. In 1973, NAS began leasing the Site for fertilizer storage and distribution (August Mack, 2017). NAS' operations at the Site ceased in August 2017, and by late 2017, NAS had removed all equipment, concrete, and structures associated with their operations from the Site. NAS no longer operates at the Site and plans to terminate its lease with BNSF after completion of work under Ecology's VCP. The Site is currently a vacant, unpaved lot.

During NAS operations, NAS used the Site to receive fertilizer by rail spur and then distribute locally. Nitrogen, phosphate, and potassium-based fertilizer were stored in multiple aboveground storage tanks (ASTs). The ASTs were originally staged along the northern, southern, and eastern Site boundaries without secondary containment and consequently were relocated in 1999 to within a concrete containment area on the western portion of the property. The locations of these former AST storage areas, other former Site features, and groundwater gradient at the Site are shown in Figure 2.

Initial investigations at the Site were completed by August Mack Environmental (August Mack) as part of the Phase I Environmental Site Assessment (Phase I ESA) in 2017 and subsequent Limited Phase II Subsurface Investigation in 2018 (August Mack, 2017, 2018). Since 2020, Geosyntec has supported Wilbur-Ellis/NAS in enrolling the Site in Ecology's VCP to pursue a property no further action (NFA). Geosyntec has completed an on-Site and off-Site remedial investigation, which included the collection of 54 soil and 29 grab-groundwater samples. Additionally, the installation of four groundwater monitoring wells with six quarters of groundwater sampling has also been completed as part of the remedial investigation phase of the project.

Based on the results of the investigations, groundwater at the Site is first encountered between 7 and 10 feet below ground surface (ft bgs) in soil boreholes (August Mack, 2018), and water levels in monitoring wells screening across first encountered groundwater have ranged from 2.10 and 5.98 ft below top of casing (btoc) from September 2020 to present. Groundwater gradient at the Site has been calculated to be towards the southeast, based on Site water level measurements, water level measurements at wells within 0.2 miles (SECOR, 2007 and HDR, 2018), and surface topography. However, there may be localized variations in groundwater gradients.

Concentrations of constituents of potential concern (COPCs) at the Site above background levels and MTCA cleanup levels appeared to be limited to groundwater and include nitrate, arsenic, cobalt, and molybdenum. Soil concentrations were found to be low or within background levels and not a concern for the Site. Findings from the off-Site investigations conducted in June 2022 indicated that area-specific cleanup levels are required for nitrate and arsenic because of elevated background concentrations.

Following the investigation of the area-specific cleanup levels, Geosyntec prepared the RI-CAP (Geosyntec, 2022). This RI-CAP was submitted to Ecology on 22 September 2022 and presented the results of the on-site and off-site investigations, the nature and extent of the COPCs, and a feasibility study evaluation of five Site-specific remedial approaches to address the COPCs in

groundwater. The selected approach based on this evaluation was in situ denitrification with metals attenuation. A Corrective Action Engineering Design and Implementation Work Plan was also included in RI-CAP as Appendix F.

In response to the RI-CAP, Ecology provided informal comments via email on 28 September 2022 and incorporated these comments in their Opinion Letter, stating that no further remedial action will be likely based on the corrective action presented in the RI-CAP (Ecology, 2022). Relevant to this document, Ecology has the following comments in its Opinion Letter and informal email comments:

1. Prior to a NFA determination, Ecology states that they expect a minimum of four consecutive quarters of groundwater monitoring with COPC results below the site-specific/background cleanup levels.

2. Ecology agreed that the on-Site monitoring wells MW-2, MW-3, and MW-4 are appropriate locations for compliance monitoring, but that an additional well is needed in the western portion of the property.

3. Prior to the commencement of the in situ denitrification injections on the Site, injection locations were adjusted at Ecology's request to include amendment delivery in the northwest portion of the Site.

Following this, a revised map showing proposed injection locations was submitted to Ecology via email on 10 October 2022 to address comment number 3 above. In response, Ecology provided informal approval via email on 19 October 2022 of the proposed injection locations. Geosyntec then proceeded with the in situ denitrification injections, which were completed in November 2022. The field implementation of the injections is presented herein, along with the compliance monitoring plan, which has been updated to reflect Ecology's comments numbered 1, 2, and 3 above.

3. IN SITU DENITRIFICATION INJECTION IMPLEMENTATION

The in situ denitrification injections were conducted from 7 to 18 November 2022 by Cascade Remediation Services, LLC (Cascade) of Clackamas, Oregon, with oversight by Geosyntec field personnel. Implementation of the in situ denitrification injections were consistent with Appendix F from the RI-CAP approved by Ecology with field modifications summarized in Section 3.2.2 below. The implementation areas and injection locations are shown in Figure 3.

Implementation details for in situ denitrification injections are described in the following sections, which include a description of preparation activities, direct push technology (DPT) injections, and design modifications from the injection work plan presented in Appendix F of the RI-CAP. Total injection volumes are summarized in Table 1. Photographs taken during the injections are provided in Attachment 1. Cascade's Injection Report, which includes injection details by point, is provided in Attachment 2.

3.1 Preparation Activities

Prior to implementing fieldwork, the following field preparation activities were completed:

- Geosyntec obtained a Department of Ecology Underground Injection Control (UIC) Rule Authorization (Attachment 3).
- Geosyntec updated the Site-specific Task Hazard Analysis for field activities associated with drilling and in situ denitrification injections and the subsequent groundwater sampling.
- Geosyntec notified the Washington Utility Notification Center on 20 October 2022.
- On 3 November 2022, Geosyntec contracted with a private underground utility location service, Utilities Plus of Spokane Valley, Washington, to clear the proposed in situ denitrification injection locations.
- Geosyntec coordinated with the injection subcontractor (Cascade) and procured injection amendments, including:
    - From Tersus Environmental LLC (Tersus), EDS-ER™ emulsified vegetable oil (EVO); and
    - From JRW Bioremediation Wilclear® (60% sodium lactate).

3.2 Site In Situ Denitrification Injection Implementation

The Site injections were conducted in accordance with Appendix F of the RI-CAP, as outlined in Section 3.2.1, except for the field modifications described in Section 3.2.2. Field methods are summarized in Sections 3.2.3 with a summary of injection volumes, pressures, and flowrates summarized in Section 3.3.4.

3.2.1 Injection Overview

In situ denitrification injections began on the east, downgradient side of the Site, closest to 1st Street, and moved west (upgradient). Injections began on 7 November 2022 and concluded on 18 November 2022. A total of approximately 102,000 gallons of solution, 1,065 gallons of EVO, and 208 gallons of sodium lactate were injected into the ground at 32 locations (Attachment 2). Injections occurred at up to seven locations simultaneously with injections occurring in two 5-foot lifts at each location, targeting 5 to 15 feet below ground surface. The injection areas of the Site were split into two subareas: lower nitrate concentration subareas and higher nitrate concentration subareas (Figure 4). For the lower nitrate concentration subareas, the injection solution was targeted to be 0.9% EVO and 0.1% sodium lactate. In the higher nitrate concentration subarea, the injection solution had increased amounts of both EVO and sodium lactate due to the elevated concentrations of nitrate. The dosing percentages in the higher concentration subarea were targeted to be 1.1% EVO and 0.2% sodium lactate.

3.2.2 Field Modifications from the Work Plan

For injection crew safety, injection locations were adjusted in the field based on the presence of underground utilities, specifically an abandoned communication line that ran through the middle of the Site, and to maintain a safe distance from the centerline of the rail line.

Total injection volumes of the amendments were achieved on Site, but due to the shallow target injection interval (5 to 15 feet below ground surface) field modifications occurred due to surfacing of the amendments at 22 of the 32 locations. When surfacing was observed, Cascade reduced the injection flowrate to approximately 1.5 gallons per minute (gpm). If surfacing continued to occur, injections at that location were stopped with the borehole grouted, and Cascade stepped over within approximately 10 feet of the original location to continue injections with the remaining volume targeted for the original location. Step-outs were drilled at five locations (2, 3, 19, 22, and 25). Naming for these locations followed the original injection location name, with a dash and the number of attempted sublocation (2-1, 3-1, etc.), as shown in Figure 3. Storm drains were monitored by Geosyntec field staff to assess if any injection amendments were entering these drains and/or leaving the Site, and no amendments were observed in the storm drains. In most cases, the surfaced amendments infiltrated readily back into the subsurface.

The total volume of EVO, sodium lactate, and water was within two percent of the designed injection volume. Injection locations 9 and 24 both received less than 10% of the design injection volume due to repeated surfacing. As a result, the remaining injection volume from these two locations was redistributed to the surrounding injection points in their respective subareas, location 9 in the lower and 24 in the higher.

3.2.3 EVO and Sodium Lactate Injections

Cascade utilized the Geoprobe® 7822DT direct-push drill rig to deliver amendments to the groundwater. DPT injections were completed in two, 5-foot lifts from the bottom up (i.e., the deepest interval was completed first, and then drilling rods were pulled up to the next interval).

Potable municipal water from a nearby fire hydrant was blended with EVO and sodium lactate in approximately 20,000-gallon batches prior to the injections. Blending ratios were consistent with the ratios presented in Appendix F of the RI-CAP. The injection solution was mixed in an aboveground 21,000-gallon frac tank and pumped through manifolded injection lines connected to multiple hollow-steel, direct-push rods and injected into the target interval at each location. After the targeted injection volume at a given interval was achieved or surfacing was observed, even with a reduced flowrate, the injection tooling was pulled up to the next interval to repeat the injection process. Following completion of each injection location, the boreholes were filled with bentonite pellets and patched at grade to match the surrounding gravel ground surface.

3.2.4 Injection Monitoring and Injection Volumes Summary

Injection monitoring consisted of monitoring manifold pressures, flowrates, and volumes, monitoring groundwater elevation changes in nearby wells, and visually monitoring for amendment surfacing. Each line on the injection manifold was outfitted with a pressure gauge and flow meter/totalizer to monitor the pressure, flowrate, and total injection volume for each point. Injections were conducted by simultaneously injecting at up to seven DPT points using a manifold system and mixing tank. Digital flow meters equipped at the manifold and at each dosing pump were used to monitor overall flowrates during injections. As a quality control check, remaining amendment volumes in the frac tank and product containers were visually estimated daily to confirm consistency between digital flow meter injection volume and actual injection volume.

As shown in Attachment 2, injection pressures initially were up to approximately 59 pounds per square inch (psi), but injections were sustained at lower pressures (3 to 48 psi). Flowrates varied by injection location and depth interval. In the first, deeper interval (10 to 15 ft bgs), general flowrates sustained an average of 5.3 gpm, and in the second, shallow interval (5 to 10 ft bgs), general flowrates sustained an average of 4.3 gpm.

Field personnel conducted frequent site walks to check for surfacing of injection fluid. As mentioned in Section 3.2.2, surfacing was observed at multiple locations across the Site, given the shallow nature of the injections and the number of previous borings completed at the Site. Injection fluid was not observed in the monitoring wells onsite. As previously mentioned, surfacing prevention included operating at lower flowrates/pressures, stepping out to inject into a new borehole, or redistributing remaining amendment volumes to other nearby locations.

As summarized in Table 1, target injection volumes were met overall. Total volumes of amendments were 1,065 gallons of EVO (approximately 100% of design target volume) and 208 gallons of sodium lactate were injected (approximately 101% of design target volume).

4. GROUNDWATER COMPLIANCE MONITORING PLAN

The groundwater compliance monitoring plan, including wells and analyses, is summarized in Table 2 and includes plans for monitoring groundwater levels, COPCs, and geochemical parameters following the November 2022 amendment injections. As previously discussed, this plan was originally presented in Appendix F of the RI-CAP and had been modified per Ecology's Opinion Letter. Preparation and monitoring procedures are outlined below. Groundwater monitoring consists of monthly sampling events for the first three months following amendment injections followed by routine monitoring according to the schedule outlined in Section 4.2.

4.1 Compliance Monitoring Well Network

The compliance monitoring well network consists of the five groundwater monitoring wells shown in Figure 4. These wells are installed in first groundwater at depth intervals that align with the in

situ denitrification injections and include wells upgradient, within, and downgradient of the injection areas. Please find below a list of the compliance monitoring wells with an explanation of their purposes.

- MW-1 is an upgradient well installed in the northwest corner of the Site, proximal to the railroad track, and is designed to monitor groundwater upgradient from the Site and assess background groundwater conditions. This well is upgradient to injections and previous NAS operations, including the tank farm installed with secondary containment in 1999 and upgradient to the previous tank storage areas prior to 1999.
- MW-2 is installed in the center of the Site, immediately downgradient of the area where multiple fertilizer ASTs and a concrete pad that were used for loading of fertilizer at the site were once located. This is in the higher concentration injection subarea. The purpose of this monitoring well is to assess potential groundwater impact from historical fertilizer storage and loading/unloading activities, as well as COPC changes in the higher concentration injection subarea post injections.
- MW-3 was installed in the northeast corner of the Site. The purpose of this well is to achieve spatial distribution for evaluating groundwater gradients at the Site and to monitor COPC concentrations in cross-gradient/upgradient groundwater at the edge of the injection area, providing additional information on background concentrations in the Site vicinity.
- MW-4 was installed in the southeast corner of the Site and downgradient of historical Site operations and is located on the southeastern edge (immediately downgradient) of the injection area. The purpose of this well is to evaluate COPC concentrations in groundwater downgradient from the Site and impact of the injections on downgradient groundwater.
- MW-5 was installed in the western portion of the Site, as per Ecology's Opinion Letter. The purpose of this well is to provide better coverage of compliance points and monitor Site COPCs on the western portion of the Site.

4.2 Sampling Frequency

Post injection groundwater samples were collected during the three months following the amendment injections. Following the initial three months, subsequent analysis is dependent on the analyte. Initially, groundwater samples will be collected on a quarterly basis for the COPCs and field parameters listed in Section 4.5. Iron, manganese, sulfate, and dissolved organic carbon are proposed to be collected and analyzed semi-annually following the initial three months of monthly sampling.

Based on the initial analytical results the sampling frequency may be adjusted, but at a minimum will be sampled annually. As noted in Ecology's Opinion Letter four consecutive quarters of groundwater sampling with COPCs below site-specific cleanup levels is required prior to requesting an NFA. As such, the frequency of COPC monitoring of these compliance wells leading up to a request for an NFA will be quarterly.

Table 2 outlines the proposed analyses and sampling frequency moving forward. The proposed schedule is consistent with the RI-CAP Appendix F, with modifications to account for the additional well and allow for flexibility in the frequency of monitoring based upon results to date and best professional judgement.

4.3 Preparation Activities

Prior to the groundwater monitoring events, the following tasks will be completed:

- Geosyntec will subcontract the groundwater monitoring to Blaine Tech Services of Auburn, Washington, (Blaine Tech), and coordinate with Blaine Tech regarding the scope and schedule for each monitoring event.
- Geosyntec will coordinate with the analytical laboratory regarding the specified sampling and analyses herein.
- Geosyntec will coordinate with NAS and BNSF for Site access.
- Geosyntec will coordinate with NAS and a licensed waste hauler regarding storage, pickup, and disposal of investigation derived waste (IDW).

4.4 Depth to Groundwater Measurements

During each monitoring event, groundwater level and total depth measurements will be obtained using an electronic depth to water meter at the on-Site monitoring wells, prior to groundwater sample collection. These measurements will be collected relative to the top of the polyvinyl chloride (PVC) casing inside the surface monument from a marked point that has been previously surveyed (i.e., the north side of the casing) and recorded on field data collection forms. If water is observed inside the well monument, it will be removed until the level is below the top of casing such that it will not flow into the well once the well cap is removed. The depth to water meter will be decontaminated using an Alconox or Liquinox wash and rinse upon arriving on Site and between use at each well.

4.5 Groundwater Sampling

During the groundwater sampling events, one groundwater sample will be collected from each monitoring well, and one duplicate sample will be collected per event. Monitoring wells will be sampled using low-flow sampling techniques, and each well will have dedicated tubing.

Prior to sampling, wells will be purged at a rate of between 100 and 500 milliliters per minute (mL/min) with the depth to water being measured frequently and recorded on field data sheets. The purge rate will be adjusted to minimize drawdown (target of less than 0.1 feet of drawdown). A water quality meter, calibrated prior to the start of each field day, will be used to monitor field parameters during purging. Field parameters will be recorded on field data sheets approximately every five minutes while purging. Purging will continue until pH, temperature, specific

conductance, oxygen reduction potential (ORP), dissolved oxygen (DO), and turbidity stabilize (three consecutive readings), which are defined as follows:

- ±0.1 units for pH;
- ±3% for specific conductance;
- ±10 mV for ORP;
- ±10% for temperature;
- ±10% for turbidity; and
- ±10% for DO.

In case the above criteria for stabilization are not met, a maximum of three well volumes will be purged prior to sample collection.

Groundwater samples will be collected in laboratory-supplied containers and as detailed in Table 2. Samples planned for dissolved metals analysis will be field filtered using a disposable 0.45-micrometer (μm) filter. Samples will be placed into a cooler with ice, shipped using standard chain-of-custody procedures, and analyzed for total and dissolved metals (arsenic, cobalt, iron, manganese, and molybdenum, by EPA Method 200.8 or equivalent), nitrate as nitrogen (EPA Method 300.0 or equivalent), sulfate (EPA Method 300.0), and dissolved organic carbon (EPA Method 9060A).

4.6 Investigation Derived Wastes

Blaine Tech will containerize IDW purge and decontamination water generated from each sampling event in labeled Department of Transportation-approved steel drums. Geosyntec will coordinate with NAS on IDW profiling, transportation, and disposal at an appropriate off-site facility, including the review and signature of profiles and manifests.

4.7 Quality Assurance and Quality Control Samples and Review

Blaine Tech will collect one duplicate sample during each monitoring event, submitted blind to the analytical laboratory. The duplicate will be analyzed for the same constituents as the original sample, as outlined in Table 2.

Upon receipt of the Blaine Tech field report and laboratory analysis results, Geosyntec will review the field records and the groundwater data for quality assurance/quality control (QA/QC). Field data sheets will be reviewed for completeness and conformance with the monitoring procedures outlined herein, and Geosyntec will complete a data validation checklist for the laboratory analytical report. The checklist will include: a review of data completeness; sample contamination; conformance with holding times; and detection limits within acceptable ranges, as well as ensuring that the associated quality control results of each sample are within the specified method criteria.

Based on this checklist, laboratory data will be deemed acceptable or unacceptable for use for the purposes of this project.

4.8 Results Evaluation and Reporting

Following QA/QC of the laboratory data, Geosyntec will evaluate the groundwater results in relation to historical results and applicable site-specific screening levels. An annual report summarizing data will present the results from the year's sampling events. Each annual report is to be completed by the end of the calendar year. Following the report submission, the analytical data will be uploaded to Ecology's Environmental Information Management System (EIM) online database.

5. CONCLUSION

Following Ecology's issuance of their Opinion Letter, in situ denitrification injections occurred at the Site from 7 to 18 November 2022. A total of approximately 102,000 gallons of solution, 1,065 gallons of EVO, and 208 gallons of sodium lactate were injected into the ground at 32 locations. The five on-Site monitoring wells, including four pre-existing wells and one new well installed in May 2023, are proposed to be monitored as part of the compliance monitoring program following the schedule outlined in Table 2, with frequencies adjusted depending on compliance monitoring results.

6. REFERENCES

August Mack Environmental (August Mack), 2017. Phase I Environmental Site Assessment, 101 North 1st Street, Sunnyside, Washington. 8 December.

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

Ecology, 2022. Opinion on Proposed Cleanup for the following Property associated with a contaminated Site. State of Washington Department of Ecology. 10 November 2022.

Geosyntec, 2022. Remedial Investigation and Cleanup Action Plan. Former Nachurs Alpine Solutions. 23 September 2022.

HDR, 2018. Monitoring Well Sampling Update, Simplot Grower Solutions, Sunnyside, Washington, June.

SECOR, 2007. Phase III Remedial Investigation Report for the Bee-Jay Scales Site, Sunnyside, Washington, 26 October.

TABLES

11 July 2023

Table 1 - Injections Summary
Former Nachurs Alpine Solutions Facility, Sunnyside, WA

Injection Subarea	Injection Date Range	Target Injection Volume - EVO (gal)	Taget Injection Volume - Sodium Lactate (gal)	Target Injection Volume - Solution (gal)	Actual Injection Volume - EVO[1] (gal)	Actual Injection Volume - Lactate[1] (gal)	Actual Injection Volume - Water/EVO/Lactate (gal)
Lower Concentration	11/7/2022 to 11/15/2022	780	132	79,400	815	138	80,612
Higher Concentration	11/16/2022 to 11/18/2022	280	75	22,400	250	70	21,402
Total Overall		**1,060**	**205**	**101,800**	**1,065**	**208**	**102,014**
Percent Injected from Design					*100%*	*101%*	*100%*

Notes:
1 - Volumes were based off assumption that batch mixture in above ground tank resulted in even distribution of amendments into each location
Target injection volumes are based off of Table 1 of Appendix F of the September 2022 RI-CAP.
Actual injection volumes are based off of Cascade's injection report and Geosyntec field notes.
Acronyms:
bgs = below ground surface
EVO = emulsified vegetable oil
ft = feet

Table 2 - Groundwater Compliance Sampling and Analysis Plan
Former Nachurs Alpine Solutions Facility, Sunnyside, WA

Well	Location Relative to Injection Area	Monitoring Plan				
		COPCs[1]	Geochemical Parameters			
			Field Parameters[2]	Iron and Manganese[3]	Sulfate[4]	Dissolved Organic Carbon[5]
MW-1	Upgradient/Background	Q	Q	S	S	S
MW-2	High Concentration Injection Area	Q	Q	S	S	S
MW-3	Upgradient (Northeastern) Edge of Injection Area	Q	Q	S	S	S
MW-4	Downgradient (Southeastern) Edge of Injection Area	Q	Q	S	S	S
MW-5	Upgradient (Northwestern) Edge of Injection Area	Q*	Q*	S*	S*	S*

Notes:

All analytes will be measured the first three months following injections. After the third monthly sampling event, the parameters will be sampled based on the schedule shown in the table and may be adjusted based on results and professional judgement.

[1] COPCs include nitrate as nitrogen analyzed by EPA Method 300.0, total and dissolved metals (arsenic, cobalt, and molybdenum) analyzed by EPA method 200.8. Dissolved metals samples will be field filtered with a 0.45-micron filter.

[2] Field parameters will include measurements of depth to water, pH, dissolved oxygen, electrical conductivity, turbidity, oxidation reduction potential, and temperature.

[3] Iron and manganese samples will be analyzed for total and dissolved metals by EPA method 200.8. Dissolved metals samples will be field filtered with a 0.45-micron filter.

[4] Sulfate will be analyzed by EPA method 300.0.

[5] Dissolved organic carbon will be analyzed by EPA method 9060A.

*MW-5 was installed on 3 May 2023 after injections. As such, this location was not sampled monthly following injections and will be folded into the current quarterly monitoring frequency.

Acronyms:

COPCs = Constituents of Potential Concern

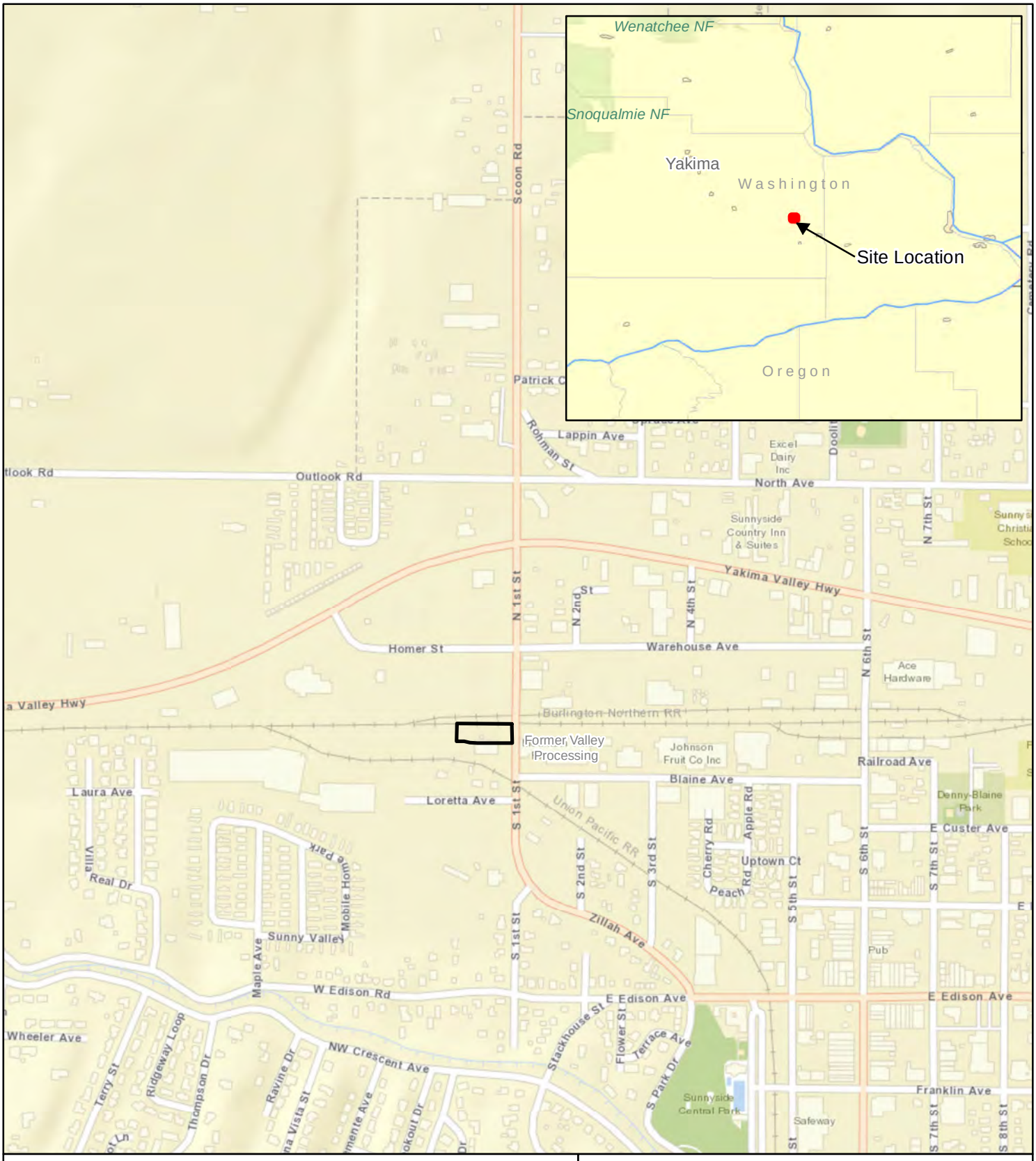
EPA = Environmental Protection Agency

MW = monitoring well

Q = monthly for the first quarter following injections and then tentatively quarterly based on best professional judgement.

S = monthly for the first quarter following injections and then tentatively semi-annually based on best professional judgement.

FIGURES



Legend

Site Location

N

0 0.05 0.1 0.2 0.3 Miles

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Site Location Map

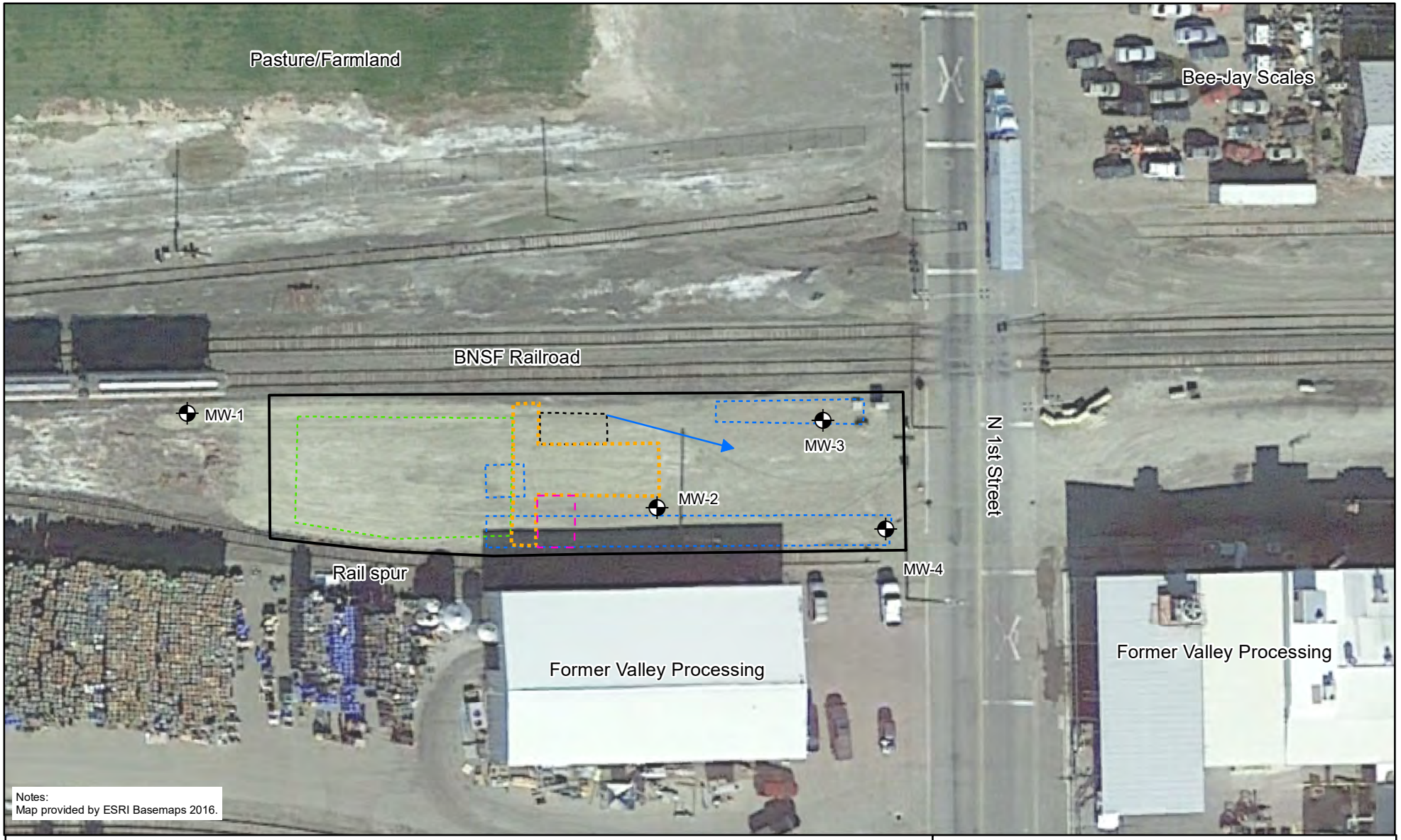
101 North 1st Street
Sunnyside, Washington

Geosyntec consultants

PNR0696D	July 2023

Figure 1

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Revisions050323\Figure 1 Site Location Map.mxd 5/3/2023 10:23:59 AM



Legend

- Groundwater Monitoring Well
- General Groundwater Gradient
- 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

Former Site Features and Monitoring Well Locations

101 North 1st Street
Sunnyside, Washington

Geosyntec consultants

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Figure 2

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Revisions050323\Figure 2 Former Site Features and Monitoring Wells.mxd 5/3/2023 10:20:43 AM

Notes:
Map provided by ESRI Basemaps 2016.
MW=Monitoring Well
ROI= Theoretical Radius of Influence for each injection location (Approximately 10 ft radius).
The Site Boundary is the approximate area leased by NAS from BNSF.
General groundwater flow direction based on gradients observed at MW-1, MW-2, MW-3, and MW-4 during the 2020 and 2021 quarterly groundwater sampling events.
Injections were completed 7 to 18 November 2022.
#-# indicates a step-out location from the original location due to surfacing. For example, 2-1 is a step-out location from location 2.

Legend

- Monitoring Well Location
- General Groundwater Gradient
- Site Boundary
- Lower Concentration Subarea Injection Location
- Higher Concentration Subarea Injection Location

N

0 50 Feet

Injection Locations

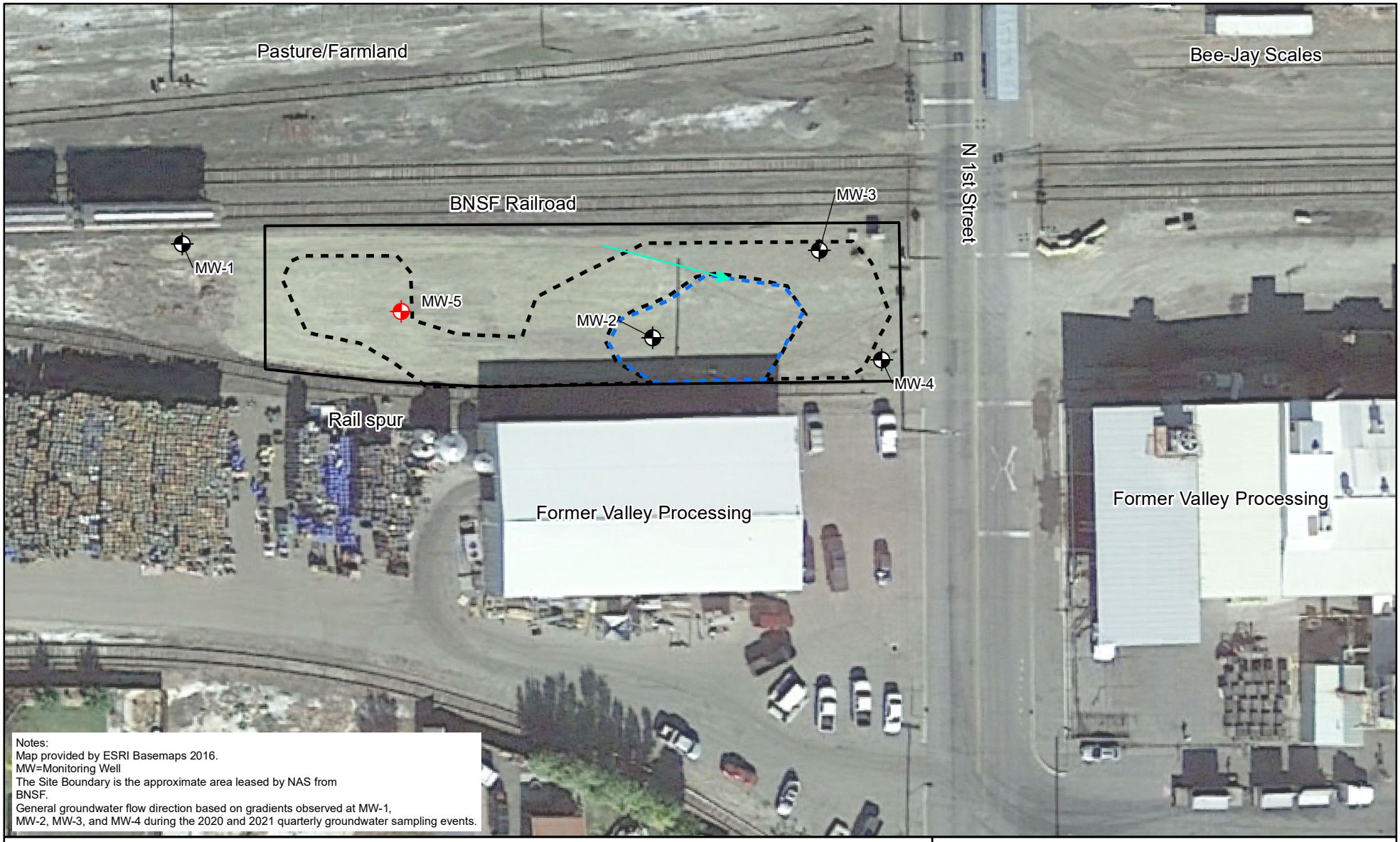
101 North 1st Street
Sunnyside, Washington

Geosyntec consultants

PNR0696D | July 2023

Figure 3

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Revisions050323\Figure 3 Injection Locations.mxd 5/3/2023 10:31:28 AM



Notes:
Map provided by ESRI Basemaps 2016.
MW=Monitoring Well
The Site Boundary is the approximate area leased by NAS from BNSF.
General groundwater flow direction based on gradients observed at MW-1, MW-2, MW-3, and MW-4 during the 2020 and 2021 quarterly groundwater sampling events.

Legend

- Proposed Monitoring Well Location
- Monitoring Well Location
- General Groundwater Gradient
- Site Boundary
- Lower Concentration Subarea Injection Area
- Higher Concentration Subarea Injection Area

N

0 50 Feet

Groundwater Compliance Monitoring Well Locations

101 North 1st Street
Sunnyside, Washington

Geosyntec consultants

PNR0696D | July 2023

Figure 4

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Revisions032123\Figure 4 Groundwater Compliance Monitoring .mxd 5/4/2023 5:22:19 AM

ATTACHMENT 1

Injection Photographs

11 July 2023

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Wilbur-Ellis Holdings II	**Project Number:** PNR0696D
Site Name: Former NAS	**Site Location:** Sunnyside, WA

Photograph 1

Date: 11/7/2022

Direction: West

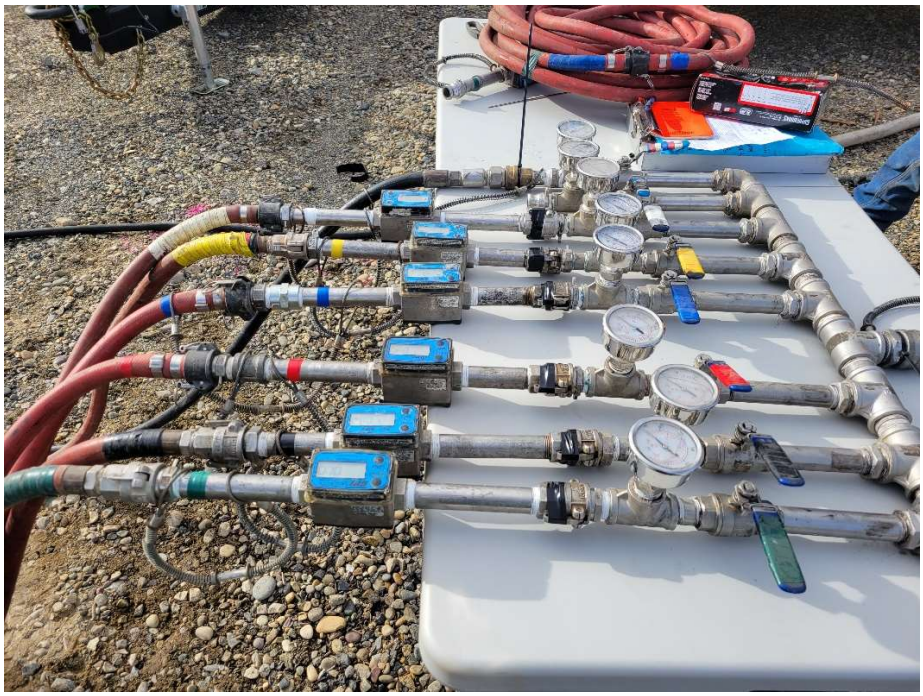
Comments: Injection amendments shown to the right, with the 21,000-gallon mixing tank shown in the background.

Photograph 2

Date: 11/7/2022

Direction: West

Comments: Batch 1 in the mixing tank.

Photograph 3	
Date: 11/7/2022	
Direction: NA	
Comments: Photograph depicting the manifold setup for simultaneous injection at multiple locations.	
Photograph 4	
Date: 11/7/2022	
Direction: Northwest	
Comments: Setup of multiple injection locations.	

Photograph 5	
Date: 11/9/2022	
Direction: NA	
Comments: Injection tooling used.	

Photograph 6	
Date: 11/11/2022	
Direction: Northeast	
Comments: Photograph depicting the observed surfacing of the injection amendments.	

Geosyntec consultants

ATTACHMENT 2

Cascade Injection Report

11 July 2023

WEEKLY PROJECT SUMMARY

PROJECT NAME/NUMBER: Geosyntec/ 306-22-1150

Day	Date	On-site Time	Off-site Time	Wells Completed	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)
					EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)			
Monday	11/7/2022	6:45 AM	7:15 PM	0.0	90.0	18.5	9,801.5	9,910.0	125.0	10,035.0
Tuesday	11/8/2022	6:45 AM	5:45 PM	5.0	105.0	18.5	9,801.5	9,925.0	125.0	10,050.0
Wednesday	11/9/2022	6:45 AM	6:45 PM	1.0	210.4	37.5	19,605.2	19,852.0	125.0	19,977.0
Thursday	11/10/2022	6:45 AM	6:30 PM	4.0	107.7	21.2	10,038.6	10,165.0	150.0	10,315.0
Friday	11/11/2022	7:00 AM	6:00 PM	3.0	105.5	22.0	9,834.4	9,960.0	150.0	10,110.0
Monday	11/14/2022	6:30 AM	6:45 PM	1.0	104.7	20.6	9,755.0	9,878.0	175.0	10,053.0
Tuesday	11/15/2022	6:45 AM	7:30 PM	6.0	115.7	22.8	10,786.1	10,922.0	175.0	11,097.0
Wednesday	11/16/2022	6:45 AM	6:45 PM	0.0	67.9	12.6	6,331.0	6,410.0	125.0	6,535.0
Thursday	11/17/2022	6:45 AM	6:15 PM	1.0	113.3	23.5	10,574.9	10,710.0	300.0	11,010.0
Friday	11/18/2022	6:45 AM	5:30 PM	4.0	45.3	11.0	4,226.6	4,282.0	175.0	4,457.0
Monday	11/21/2022	8:15 AM	5:30 PM	-	-	-	-	-	-	-
Tuesday	11/22/2022	6:45 AM	12:45 PM	-	-	-	-	-	-	-
			Totals	25	1,065.5	208.2	100,754.8	102,014.0	1,625.0	103,639.0

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Geosyntec/ 306-22-1150

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes.

INJECTION APPROACH: 5' perforated screen utilizing bottom up method.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)					
1	11/16/2022	12:14 PM	11/16/2022	5:25 PM	10.0	to	15.0	29	33	5.0	16.2	2.9	1,508.2	1,527.0	25.0	1,552.0		
	11/17/2022	8:20 AM	11/17/2022	11:29 AM	10.0	to	15.0	42	38	5.2	10.1	2.0	948.0	960.0	25.0	985.0		9:06 slowed flow.
	11/17/2022	11:41 AM	11/17/2022	5:10 PM	5.0	to	10.0	17	13	3.1	10.4	2.0	979.5	992.0	25.0	1,017.0	X	12:28 Surfacing 14' away, slowed flow.
	11/18/2022	10:00 AM	11/18/2022	3:48 PM	5.0	to	10.0	15	7	2.7	9.8	1.9	917.4	929.0	25.0	954.0	X	Surfacing 16' from point, slowed flow at 11:55.
										TOTALS	**46.5**	**8.8**	**4,353.1**	**4,408.0**	**100.0**	**4,508**		
2	11/16/2022	12:14 PM	11/16/2022	5:25 PM	10.0	to	15.0	14	20	5.1	16.4	3.0	1,529.0	1,548.0	25.0	1,573.0	X	Minor surfacing 7' from point.
	11/17/2022	8:20 AM	11/17/2022	1:28 PM	10.0	to	15.0	17	8	3.0	9.5	1.9	884.8	896.0	25.0	921.0	X	Surfacing 7' - 10' from point, 9:06 slowed flow.
	11/17/2022	1:38 PM	11/17/2022	5:10 PM	5.0	to	10.0	12	8	2.7	5.8	1.3	539.0	546.0	25.0	571.0	X	Surfacing 6'-7' slowed flow
	11/18/2022	10:20 AM	11/18/2022	1:54 PM	5.0	to	10.0	11	7	2.2	4.8	1.1	444.2	450.0	25.0	475.0	X	Surfacing 3' - 7' from point. Mounding observed. Slowed flow.
2--1	11/17/2022	1:12 PM	11/17/2022	1:28 PM	10.0	to	15.0	22	22	2.7	0.5	0.1	42.4	43.0	0.0	43.0		
	11/17/2022	1:30 PM	11/17/2022	5:10 PM	5.0	to	10.0	12	14	4.2	9.5	2.2	876.5	888.0	25.0	913.0		
	11/18/2022	10:16 AM	11/18/2022	1:54 PM	5.0	to	10.0	9	9	3.4	7.9	1.6	731.6	741.0	0.0	741.0		
	11/18/2022	3:22 PM	11/18/2022	3:48 PM	5.0	to	10.0	7	7	3.6	0.7	0.5	67.7	69.0	25.0	94.0		Inject remaining mix tank volume.
										TOTALS	**55.0**	**11.7**	**5,115.2**	**5,181.0**	**150.0**	**5,331**		
3	11/16/2022	12:14 PM	11/16/2022	5:25 PM	10.0	to	15.0	11	10	4.2	13.7	2.5	1,280.0	1,296.0	0.0	1,296.0	X	Surfacing 2' away, slowed flow.
	11/17/2022	8:20 AM	11/17/2022	12:03 PM	10.0	to	15.0	6	5	1.6	3.5	0.9	326.6	331.0	25.0	356.0	X	Minor surfacing 3' from point.
	11/17/2022	12:09 PM	11/17/2022	5:10 PM	5.0	to	10.0	5	5	1.5	4.3	1.0	407.6	413.0	25.0	439.0	X	12:51 surfacing multiple locations 2'-4', slowed flow.
	11/18/2022	10:00 AM	11/18/2022	10:38 AM	5.0	to	10.0	5	5	2.5	0.7	0.5	68.7	70.0	25.0	95.0	X	Surfacing 2' - 4' observed at multiple locations, slowed flow. Inject remaining mix tank volume.
3--1	11/17/2022	9:02 AM	11/17/2022	11:20 AM	10.0	to	15.0	10	12	3.8	5.2	1.2	488.6	495.0	25.0	520.0		
	11/17/2022	11:29 AM	11/17/2022	5:10 PM	5.0	to	10.0	11	10	3.1	11.0	2.2	1,033.0	1,046.0	25.0	1,071.0		
	11/18/2022	10:00 AM	11/18/2022	10:41 AM	5.0	to	10.0	12	12	2.6	1.1	0.6	103.3	105.0	0.0	105.0		
	11/18/2022	10:49 AM	11/18/2022	3:48 PM	5.0	to	10.0	11	11	3.2	10.0	2.0	934.2	946.0	25.0	971.0	X	Surfacing 4' from point, slowed flow at 11:44.
3--2	11/17/2022	9:38 AM	11/17/2022	11:19 AM	10.0	to	10.0	7	7	3.6	3.8	1.0	360.2	365.0	0.0	365.0		
	11/17/2022	11:22 AM	11/17/2022	5:10 PM	5.0	to	10.0	6	5	2.8	9.9	2.0	929.3	941.0	25.0	966.0	X	Surfacing 4' from point.
	11/18/2022	10:00 AM	11/18/2022	10:28 AM	5.0	to	10.0	5	5	2.7	0.5	0.5	49.0	50.0	25.0	75.0	X	Surfacing 4' from point. Slowed flow. Inject remaining mix tank volume.
										TOTALS	**63.8**	**14.4**	**5,980.5**	**6,058.0**	**200.0**	**6,259**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Geosyntec/ 306-22-1150

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes.

INJECTION APPROACH: 5' perforated screen utilizing bottom up method.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
											EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)					
4	11/16/2022	12:14 PM	11/16/2022	5:25 PM	10.0	to	15.0	7	15	5.1	16.4	3.0	1,529.0	1,548.0	25.0	1,573.0		
	11/17/2022	8:20 AM	11/17/2022	11:27 AM	10.0	to	15.0	14	15	5.2	9.9	1.9	927.3	939.0	25.0	964.0		9:06 slowed flow.
	11/17/2022	11:34 AM	11/17/2022	5:10 PM	5.0	to	10.0	13	14	5.4	19.0	3.5	1,773.0	1,795.0	25.0	1,820.0		
	11/18/2022	10:00 AM	11/18/2022	1:21 PM	5.0	to	10.0	14	12	4.1	8.7	1.8	819.6	830.0	0.0	830.0	X	Minor surfacing 3' from point.
	11/18/2022	3:22 PM	11/18/2022	3:48 PM	5.0	to	10.0	10	10	4.5	1.0	0.6	90.4	92.0	25.0	117.0		Inject remaining mix tank volume.
										TOTALS	**55.0**	**10.8**	**5,139.3**	**5,204.0**	**100.0**	**5,304**		
5	11/7/2022	2:24 PM	11/7/2022	6:20 PM	10.0	to	15.0	26	26	8.5	18.0	3.7	1,960.3	1,982.0	25.0	2,007.0		
	11/8/2022	8:14 AM	11/8/2022	12:30 PM	5.0	to	10.0	24	31	8.9	22.5	4.0	2,220.6	2,248.0	25.0	2,273.0		Increased volume by 263 gallons to account for shutdown on point 9.
										TOTALS	**40.5**	**7.7**	**4,180.9**	**4,230.0**	**50.0**	**4,280**		
6	11/7/2022	2:24 PM	11/7/2022	6:20 PM	10.0	to	15.0	27	33	8.5	18.0	3.7	1,960.3	1,982.0	25.0	2,007.0		
	11/8/2022	8:14 AM	11/8/2022	12:30 PM	5.0	to	10.0	24	30	8.9	22.5	4.0	2,220.6	2,248.0	25.0	2,273.0		Increased volume by 263 gallons to account for shutdown on point 9.
										TOTALS	**40.5**	**7.7**	**4,180.9**	**4,230.0**	**50.0**	**4,280**		
7	11/10/2022	1:04 PM	11/10/2022	5:39 PM	10.0	to	15.0	59	47	7.3	21.0	3.7	1,960.3	1,985.0	25.0	2,010.0		
	11/11/2022	9:09 AM	11/11/2022	4:43 PM	5.0	to	10.0	27	6	3.4	16.2	2.9	1,508.2	1,527.0	25.0	1,552.0	X	Surfacing 3' from point.
	11/14/2022	9:59 AM	11/14/2022	2:44 PM	5.0	to	10.0	5	5	1.6	4.9	1.2	452.1	458.0	0.0	458.0		
										TOTALS	**42.0**	**7.8**	**3,920.6**	**3,970.0**	**50.0**	**4,020**		
8	11/7/2022	2:24 PM	11/7/2022	6:20 PM	10.0	to	15.0	27	36	8.5	18.0	3.7	1,960.3	1,982.0	25.0	2,007.0		
	11/8/2022	8:14 AM	11/8/2022	12:30 PM	5.0	to	10.0	28	47	8.9	22.5	4.0	2,220.6	2,248.0	25.0	2,273.0		Increased volume by 263 gallons to account for shutdown on point 9.
										TOTALS	**40.5**	**7.7**	**4,180.9**	**4,230.0**	**50.0**	**4,280**		
9	11/7/2022	2:24 PM	11/7/2022	6:20 PM	10.0	to	15.0	41	41	8.5	18.0	3.7	1,960.3	1,982.0	25.0	2,007.0		
	11/8/2022	8:14 AM	11/8/2022	10:19 AM	5.0	to	10.0	36	45	7.6	9.3	1.9	918.4	930.0	25.0	955.0	X	9:46 observed minor surfacing 4' from point. Slowed flow at 10:00. Shutdown at 10:19 due to increased surfacing. Remaining volume distributed between points 5,6,8, and 11.
										TOTALS	**27.3**	**5.6**	**2,878.7**	**2,912.0**	**50.0**	**2,962**		
10	11/9/2022	11:52 AM	11/9/2022	4:54 PM	10.0	to	15.0	24	10	6.6	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Minor surfacing 8' from point.
	11/9/2022	4:58 PM	11/9/2022	5:47 PM	5.0	to	10.0	12	16	7.4	3.4	0.9	331.5	336.0	25.0	361.0	X	Minor surfacing 5'- 8' from point.
	11/10/2022	11:56 AM	11/10/2022	5:39 PM	5.0	to	10.0	14	11	4.2	15.0	2.7	1,394.6	1,412.0	25.0	1,437.0	X	Surfacing 2' from point.
	11/11/2022	9:09 AM	11/11/2022	10:14 AM	5.0	to	10.0	10	10	3.6	2.5	0.8	233.7	237.0	0.0	237.0	X	Surfacing 2' from point.
										TOTALS	**41.8**	**8.1**	**3,920.1**	**3,970.0**	**50.0**	**4,020**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Geosyntec/ 306-22-1150

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes.

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Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)					
11	11/7/2022	2:24 PM	11/7/2022	6:20 PM	10.0 to 15.0	19	20	8.5	18.0	3.7	1,960.3	1,982.0	25.0	2,007.0		
	11/8/2022	8:14 AM	11/8/2022	12:30 PM	5.0 to 10.0	19	23	8.9	22.5	4.0	2,220.6	2,248.0	25.0	2,273.0		Increased volume by 263 gallons to account for shutdown on point 9.
					TOTALS				**40.5**	**7.7**	**4,180.9**	**4,230.0**	**50.0**	**4,280**		
12	11/9/2022	8:08 AM	11/9/2022	12:24 PM	10.0 to 15.0	36	36	7.9	21.5	3.8	2,003.2	2,028.0	0.0	2,028.0		
	11/9/2022	12:40 PM	11/9/2022	5:23 PM	5.0 to 10.0	29	22	7.1	21.0	3.7	1,960.3	1,985.0	25.0	2,010.0		
					TOTALS				**42.5**	**7.5**	**3,963.5**	**4,013.0**	**25.0**	**4,038**		
13	11/10/2022	2:17 PM	11/10/2022	5:39 PM	10.0 to 15.0	47	48	8.5	18.0	3.2	1,677.2	1,698.0	25.0	1,723.0		
	11/11/2022	9:09 AM	11/11/2022	9:45 AM	10.0 to 15.0	26	26	8.0	3.0	0.9	283.1	287.0	0.0	287.0		
	11/11/2022	9:51 AM	11/11/2022	2:11 PM	5.0 to 10.0	25	25	8.3	22.8	3.9	2,123.6	2,150.0	0.0	2,150.0	X	Surfacing 7' from point.
					TOTALS				**43.8**	**8.0**	**4,083.9**	**4,135.0**	**25.0**	**4,160**		
14	11/9/2022	8:08 AM	11/9/2022	12:37 PM	10.0 to 15.0	29	24	7.4	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Minor surfacing 2' from point.
	11/9/2022	1:11 PM	11/9/2022	5:47 PM	5.0 to 10.0	18	22	6.4	18.5	3.3	1,726.6	1,748.0	25.0	1,773.0	X	Minor surfacing 3' from point.
	11/10/2022	11:56 AM	11/10/2022	12:42 PM	5.0 to 10.0	21	15	5.2	2.5	0.8	233.7	237.0	0.0	237.0	X	Surfacing 2' from point.
					TOTALS				**42.0**	**7.8**	**3,920.6**	**3,970.0**	**25.0**	**3,995**		
15	11/9/2022	8:08 AM	11/9/2022	1:34 PM	10.0 to 15.0	29	12	6.1	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Minor surfacing between points 15 and 16.
	11/9/2022	1:36 PM	11/9/2022	5:47 PM	5.0 to 10.0	13	16	5.1	13.3	2.5	1,239.5	1,255.0	25.0	1,280.0	X	Minor surfacing 10' from point.
	11/10/2022	11:56 AM	11/10/2022	2:21 PM	5.0 to 10.0	15	10	5.0	7.7	1.6	720.8	730.0	0.0	730.0		
					TOTALS				**42.0**	**7.8**	**3,920.6**	**3,970.0**	**25.0**	**3,995**		
16	11/9/2022	8:08 AM	11/9/2022	2:34 PM	10.0 to 15.0	28	10	5.1	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Surfacing 6' from point, slowed flow.
	11/9/2022	2:37 PM	11/9/2022	5:47 PM	5.0 to 10.0	12	20	5.5	10.7	2.1	1,000.4	1,013.0	25.0	1,038.0	X	Minor surfacing 5' from point.
	11/10/2022	12:16 PM	11/10/2022	4:07 PM	5.0 to 10.0	15	11	4.2	10.3	2.0	959.9	972.0	0.0	972.0	X	Minor surfacing 5' from point.
					TOTALS				**42.0**	**7.8**	**3,920.6**	**3,970.0**	**25.0**	**3,995**		
17	11/14/2022	9:57 AM	11/14/2022	3:55 PM	10.0 to 15.0	18	16	5.5	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0		
	11/14/2022	4:07 PM	11/14/2022	5:25 PM	5.0 to 10.0	15	15	5.9	4.6	1.1	426.4	432.0	25.0	457.0	X	Surfacing 12' from point.
	11/15/2022	9:36 AM	11/15/2022	4:35 PM	5.0 to 10.0	8	8	3.7	16.2	2.9	1,514.2	1,533.0	25.0	1,558.0	X	Surfacing 6' from point.
					TOTALS				**41.8**	**7.7**	**3,900.9**	**3,950.0**	**50.0**	**4,000**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Geosyntec/ 306-22-1150

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes.

INJECTION APPROACH: 5' perforated screen utilizing bottom up method.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)					
18	11/10/2022	11:56 AM	11/10/2022	5:39 PM	10.0 to 15.0	46	13	3.9	13.9	2.6	1,298.8	1,315.0	25.0	1,340.0	X	Surfacing 2' from point.
	11/11/2022	9:09 AM	11/11/2022	12:55 PM	10.0 to 15.0	10	11	3.0	7.1	1.5	661.5	670.0	0.0	670.0	X	Surfacing 2' from point.
	11/11/2022	1:00 PM	11/11/2022	4:43 PM	5.0 to 10.0	12	7	2.6	5.9	1.3	546.9	554.0	25.0	579.0		
	11/14/2022	9:59 AM	11/14/2022	5:25 PM	5.0 to 10.0	5	5	1.5	6.7	1.4	623.0	631.0	25.0	656.0	X	Surfacing 2' from point.
	11/15/2022	9:36 AM	11/15/2022	12:17 PM	5.0 to 10.0	5	5	5.5	9.4	1.9	877.9	889.0	0.0	889.0	X	Surfacing 2' from point.
	11/15/2022	4:04 PM	11/15/2022	5:56 PM	5.0 to 10.0	6	6	5.1	5.7	1.3	535.0	542.0	25.0	567.0	X	Surfacing 2' from point.
					TOTALS				**48.7**	**10.0**	**4,543.1**	**4,601.0**	**100.0**	**4,701**		
19	11/10/2022	2:47 PM	11/10/2022	5:39 PM	10.0 to 15.0	22	15	4.4	7.7	1.6	718.8	728.0	25.0	753.0	X	Surfacing 6' from point.
	11/11/2022	9:09 AM	11/11/2022	2:22 PM	10.0 to 15.0	10	10	3.7	12.3	2.3	1,150.6	1,165.0	0.0	1,165.0	X	Surfacing 3' - 4' from point. Shut down.
	11/11/2022	3:18 PM	11/11/2022	4:43 PM	5.0 to 10.0	7	4	2.7	2.1	0.7	204.1	207.0	25.0	232.0	X	Surfacing 3' from point.
	11/14/2022	2:54 PM	11/14/2022	5:25 PM	5.0 to 10.0	5	5	2.4	3.6	1.0	331.5	336.0	25.0	361.0	X	Surfacing 3.5' from point.
	11/15/2022	9:36 AM	11/15/2022	12:17 PM	5.0 to 10.0	5	5	3.6	6.0	1.3	565.7	573.0	0.0	573.0		
19--1	11/11/2022	1:34 PM	11/11/2022	1:43 PM	10.0 to 15.0	9	9	13.8	1.3	0.6	122.1	124.0	0.0	124.0		
	11/11/2022	3:13 PM	11/11/2022	4:43 PM	5.0 to 10.0	6	6	2.6	2.2	0.7	207.1	210.0	25.0	235.0	X	Surfacing 5' from point.
	11/14/2022	2:59 PM	11/14/2022	5:25 PM	5.0 to 10.0	7	7	2.4	3.5	0.9	321.6	326.0	25.0	351.0	X	Surfacing 6' from point.
	11/15/2022	9:36 AM	11/15/2022	12:17 PM	5.0 to 10.0	5	5	0.0	6.5	1.4	606.2	614.0	0.0	0.0		
	11/15/2022	3:58 PM	11/15/2022	5:56 PM	5.0 to 10.0	9	9	3.5	4.1	1.0	385.9	391.0	25.0	416.0	X	Surfacing 2' from point.
					TOTALS				**49.3**	**11.5**	**4,613.6**	**4,674.0**	**150.0**	**4,210**		
20	11/14/2022	9:57 AM	11/14/2022	5:25 PM	10.0 to 15.0	16	16	4.3	20.2	3.6	1,886.6	1,910.0	25.0	1,935.0	X	Minor surfacing 3' from point.
	11/15/2022	9:36 AM	11/15/2022	9:58 AM	10.0 to 15.0	6	6	3.4	0.8	0.5	73.7	75.0	0.0	75.0		
	11/15/2022	10:01 AM	11/15/2022	6:05 PM	5.0 to 10.0	5	5	4.2	21.0	3.7	1,960.3	1,985.0	25.0	2,010.0	X	Surfacing 6' from point.
					TOTALS				**42.0**	**7.8**	**3,920.6**	**3,970.0**	**50.0**	**4,020**		
21	11/14/2022	9:57 AM	11/14/2022	4:41 PM	10.0 to 15.0	22	21	4.9	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Surfacing 4' from point.
	11/14/2022	4:46 PM	11/14/2022	5:25 PM	5.0 to 10.0	17	17	4.2	1.5	0.6	136.9	139.0	25.0	164.0		
	11/15/2022	9:36 AM	11/15/2022	6:22 PM	5.0 to 10.0	5	5	3.6	19.5	3.4	1,823.4	1,846.0	25.0	1,871.0	X	Surfacing 2' from point.
					TOTALS				**42.0**	**7.7**	**3,920.6**	**3,970.0**	**50.0**	**4,020**		

CASCADE
DRILLING | TECHNICAL SERVICES

INJECTION FIELD LOG

PROJECT NUMBER/NAME: Geosyntec/ 306-22-1150

LEAD OPERATOR: Kyle King

SCOPE OF WORK: Cascade will mob to site, setup equipment and perform a site walk. A custom injection platform equipped with mixing tanks and manifolds will be utilized. Cascade will record pressures, flows, and volumes.

INJECTION APPROACH: 5' perforated screen utilizing bottom up method.

Well ID	Start Date	Start Time	End Date	End Time	Injection Interval	Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution			% Solution Injected (Gallons)	Flush Water Injected (Gal)	Total Injected (Gal)	Day Lighting	Field Notes
									EVO (Gallons)	Sodium Lactate (Gallons)	Water (Gallons)					
22	11/14/2022	10:08 AM	11/14/2022	5:25 PM	10.0 to 15.0	4	5	2.8	12.6	2.4	1,172.3	1,187.0	25.0	1,212.0	X	Surfacing 3' from point.
	11/15/2022	9:36 AM	11/15/2022	2:32 PM	10.0 to 15.0	5	5	2.7	8.5	1.7	788.0	798.0	0.0	798.0	X	Surfacing 2' from point.
	11/15/2022	2:35 PM	11/15/2022	6:22 PM	5.0 to 10.0	5	5	3.8	8.8	1.8	824.5	835.0	25.0	860.0	X	Surfacing 2' - 3' from point.
22--1	11/15/2022	12:50 PM	11/15/2022	6:22 PM	5.0 to 10.0	9	5	2.6	8.9	1.8	830.5	841.0	25.0	866.0		
								TOTALS	**38.7**	**7.7**	**3,615.3**	**3,661.0**	**75.0**	**3,736**		
23	11/9/2022	8:38 AM	11/9/2022	1:05 PM	10.0 to 15.0	30	23	7.4	21.0	3.7	1,960.3	1,985.0	0.0	1,985.0	X	Injection screen clogged during drilling, Replaced screen. Minor surfacing 10' from point.
	11/9/2022	1:10 PM	11/9/2022	5:47 PM	5.0 to 10.0	14	20	5.7	16.6	3.0	1,542.8	1,562.0	25.0	1,587.0	X	Minor surfacing 5' - 10' from point.
	11/10/2022	11:56 AM	11/10/2022	2:08 PM	5.0 to 10.0	17	10	3.2	4.5	1.1	417.5	423.0	0.0	423.0	X	Surfacing 6' from point.
								TOTALS	**42.0**	**7.8**	**3,920.6**	**3,970.0**	**25.0**	**3,995**		
24	11/16/2022	12:14 PM	11/16/2022	3:48 PM	10.0 to 15.0	6	6	2.4	5.2	1.2	484.7	491.0	25.0	516.0	X	Surfacing 2' from point, slowed flow and eventually shut down at 15:48.
	11/17/2022	8:20 AM	11/17/2022	9:18 AM	10.0 to 15.0	5	5	1.0	0.6	0.5	58.8	60.0	0.0	60.0	X	Minor surfacing 2' from point. Shut down at 9:18.
								TOTALS	**5.8**	**1.7**	**543.5**	**551.0**	**25.0**	**576**		
25	11/10/2022	12:45 PM	11/10/2022	3:21 PM	10.0 to 15.0	14	3	1.9	3.2	0.9	296.0	300.0	0.0	300.0	X	Surfacing 5' from point from multiple locations. Shut down.
25--1	11/10/2022	4:27 PM	11/10/2022	5:39 PM	10.0 to 15.0	16	17	5.4	3.9	1.0	360.2	365.0	25.0	390.0	X	Point added due to surfacing from point 25. Surfacing 3' from point.
	11/11/2022	9:09 AM	11/11/2022	1:43 PM	10.0 to 15.0	6	6	2.7	7.8	1.6	728.7	738.0	0.0	738.0	X	Surfacing 7' from point.
	11/11/2022	1:49 PM	11/11/2022	4:43 PM	5.0 to 10.0	11	4	7.2	12.9	2.4	1,205.9	1,221.0	25.0	1,246.0		
25--2	11/11/2022	11:02 AM	11/11/2022	1:43 PM	10.0 to 15.0	19	14	3.7	6.3	1.4	587.4	595.0	0.0	595.0	X	Point added due to surfacing. Surfacing 5' from point
	11/11/2022	1:52 PM	11/11/2022	4:43 PM	5.0 to 10.0	13	6	1.8	2.9	0.9	271.3	275.0	25.0	300.0		
	11/14/2022	9:59 AM	11/14/2022	2:57 PM	5.0 to 10.0	5	5	1.6	5.1	1.2	482.6	489.0	0.0	489.0		
								TOTALS	**42.1**	**9.4**	**3,932.1**	**3,983.0**	**75.0**	**4,058**		

CASCADE
DRILLING | TECHNICAL SERVICES

Geosyntec consultants

ATTACHMENT 3

UIC Rule Authorization

11 July 2023

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

September 26, 2022

Jan Thompson
Wilbur-Ellis Holdings II
345 California Street, 27th Floor
San Francisco, CA 94101
jthompson@wilburellis.com

RE: UIC Site 37010 – Well Registration and Authorization with the Underground Injection Control (UIC) Program, Voluntary or Independent Cleanup Sites, Nachurs Alpine Solutions (Site), 101 N 1st St, Sunnyside, WA

Jan Thompson:

Ecology's UIC Program has reviewed your UIC registration application for the above-mentioned Site. Based on the information provided in the registration and the additional information provided per Ecology's request, the UIC wells are **Conditionally Rule-Authorized** and a State Waste Discharge Permit is not required to operate the wells under WAC 17-218 authorities.

The UIC registration number is 37010. The Site is undergoing independent remedial cleanup activities under Ecology's Voluntary Cleanup Program (VCP). That remedial cleanup work may be evaluated by the VCP to determine if the substantive requirements of the Model Toxics Control Act (MTCA) have been met; the VCP Project Number is CE0510, Facility Site Identification Number is 29243.

Nitrate and metals groundwater contamination occurring at the Site is attributed to former Nachurs Alpine Solutions operations. Groundwater constituents of concern (COCs) are nitrate and remobilized metals including arsenic, cobalt, and molybdenum. The remedial action work

plan[1] (RAWP) describes one round of injections that will utilize emulsified vegetable oil (EVO) and sodium lactate. The EVO and sodium lactate mixture will be injected into 25 direct push locations. A total of 1,060 gallons of EVO and 208 gallons of lactate will be blended with water during injections.

There are inherent environmental risks associated with injecting compounds into groundwater. It is incumbent upon the owner and their representative to carefully characterize, manage, and monitor the Site surface and subsurface conditions to minimize risk and prevent unforeseen degradation of groundwater quality and other environmental risks.

Conditional Rule-Authorization - Conditions of Use

Ecology will Rule-Authorize a UIC registration to operate when the two basic UIC Program requirements for Rule Authorization are met:

1. Registration of UIC wells (prior to use), and

2. The UIC well must meet the nonendangerment standard (WAC 173-218-080).

This Site does not meet the nonendangerment standard for Rule Authorization. Additional conditions are needed to allow for Rule-Authorization and the remedial work to proceed.

The following Site-specific UIC Program requirements for **Conditionally Rule-Authorization** include:

- Onsite groundwater is not approved for use to mix with the remediation products for injection into the subsurface;
- Nitrate, mobilized metals or other hazardous substances, injected chemicals, or hazardous bi-products, are not allowed to migrate beyond the site property boundary.
- The injection activities must follow the RAWP. Any deviations from RAWP are not allowed unless the VCP Site Manager has approved those changes;
- The injections should not cause a further degradation to groundwater quality criteria at the down-gradient monitoring points per state or federal applicable criteria. If such groundwater degradation occurs, the injection activities shall cease and Ecology shall be notified no later than 24-hours from the groundwater degradation discovery;

[1] Corrective Action Engineering Design and Implementation Work Plan, Former Nachurs Alpine Solutions Facility, Sunnyside Washington, Wilbur-Ellis Holdings II, Inc., by Geosyntec Consultants, Inc., dated September 2, 2022.

- Notification to Ecology's UIC Program of any change in UIC well status is a required element to this registration;
- The planned start date is for October 2022.

The Site will be **Conditionally Rule-Authorized** for as long as the Groundwater Quality Standards continue to be met and the above items have been completed. Failure to capture any of the performance data required or cause a violation of the applicable cleanup standards may result in a denial, modification, or termination of the UIC registration.

The Ecology Toxics Cleanup Program VCP Site Cleanup Manager will have final authority to determine if the cleanup actions described in your UIC registration have met the substantive requirement of the MTCA.

At any time, Ecology may require you to apply for, and obtain, a Waste Discharge Permit for the continued use of these compounds. You would need to obtain a formal waste discharge approval for this project through the Ecology's State Waste Discharge Permit Program or the Toxics Cleanup Program.

The owner is responsible to keep the UIC registration information current and retain all registration documents, plans, modeling, monitoring results, interim, and final reports. Upon Ecology request, the owner shall provide these documents to the UIC Program.

This UIC registration was evaluated under the presumptive approach, Ecology has presumed the conditions listed above, in the RAWP, and associated documents will be protective of Site groundwater quality and Ecology will presume the nonendangerment standard requirements of WAC 173-218-080 have been met.

Any material misrepresentations or omissions of fact supplied in this application may result in the denial or revocation of this registration authorization. Ecology's UIC Program has the authority to rescind a rule authorization if Ecology determines the system no longer meets the nonendangerment standard.

Please contact Eugene Radcliff at UICwells@ecy.wa.gov if you have any questions. You can find additional information on the UIC Program can at our website:

https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Underground-injection-control-program

Sincerely,

Eugene Radcliff

Eugene Radcliff, LG, LHG
Statewide UIC Program Coordinator
Water Quality Program

Cc:

Luke Smith, Geosyntec Consultants, luke.smith@geosyntec.com
Frank Winslow, Department of Ecology (VCP), fwin461@ECY.WA.GOV
Department of Ecology - Internal UIC Database
Department of Ecology - UIC Resource Mailbox