Completion Report

North Cascade Ford Site
116 W Ferry Street, Sedro-Woolley, WA

Facility/Site No. 68313566
Cleanup Site No. 12075

Final

Prepared for:

Akers Railroad Holdings, LLC
October 27, 2023
Project No. M2584.01.002

Prepared by:

Maul Foster & Alongi, Inc.
1329 N State Street, Suite 301, Bellingham, WA 98225

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MAUL FOSTER ALONGI

Completion Report

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116 W Ferry Street, Sedro-Woolley, WA

Facility/Site No. 68313566
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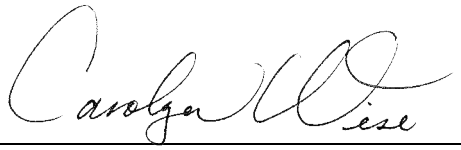
The material and data in this report were prepared under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.



Carolyn Wise, LHG
Project Hydrogeologist

Phil Wiescher, PhD
Principal Environmental Scientist

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Appendixes

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Abbreviations

BAI	BAI Environmental Services
bgs	below ground surface
BNSF	BNSF Railway
the City	the City of Sedro-Woolley
CMP	compliance monitoring plan
EC	Environmental Covenant
Ecology	Washington State Department of Ecology
MFA	Maul Foster & Alongi, Inc.
the Property	116 W Ferry Street in Sedro-Woolley, Washington
the Site	the North Cascade Ford site
WAC	Washington Administrative Code

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1 Introduction

On behalf of Akers Railroad Holdings, LLC, Maul Foster & Alongi, Inc. (MFA) has prepared this completion report to summarize site restoration activities associated with the North Cascade Ford site (the Site). The Site includes the North Cascade Ford property, located at 116 W Ferry Street in Sedro-Woolley, Washington (the Property) (see Figure 1-1). The Site is listed under Washington State Department of Ecology (Ecology) facility site identification number 58313566 and cleanup site identification number 12075.

1.1 Purpose

On June 12, 2023, the City of Sedro-Woolley (the City) informed Ecology that treated railroad ties were temporarily stored on the Property, resulting in a Notice of Violation and Order from the City (included as an attachment to Ecology's letter of Non-Compliance with Terms of Environmental Covenant [EC] [Ecology 2023]). Following a site visit by the City and MFA, it was determined that at least one monitoring well had been damaged and the protective gravel cap had been fouled with tie debris (Ecology 2023).

On July 22, 2023, Ecology issued a letter describing the non-compliance with terms of the EC for the Property. The letter outlined specific requirements and a schedule to resume compliance with the EC (see Section 4). As required by Ecology, this completion report summarizes the decommissioning of damaged monitoring wells, installation and development of replacement monitoring wells, and restoration of the gravel cap.

2 Background

2.1 Property Description

The Property is located in section 24 of township 35 north and range 4 east of the Willamette Meridian and is zoned for retail trade (automotive, marine craft, aircraft, and accessories). The physical address for the Property is 116 W Ferry Street in Sedro-Woolley, Washington (see Figure 1-1). The approximately 3.5-acre Property comprises nine tax parcels and is bisected by W Ferry Street. Two of the Property parcels have the same parcel identification number (P109239), but are separate parcels divided by the West Ferry Street right-of-way. The parcels north of West Ferry Street are bordered by an active BNSF Railway (BNSF) rail line and industrial property to the north, and an active fueling station and automobile parts store to the west. The parcels south of West Ferry Street are bordered by Rita Street and residential properties to the west, and West Woodworth Street, an electrical substation, and residential properties to the south. Property parcels are bordered by an inactive rail line, Eastern Avenue, and commercial properties to the east.

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2.2 Geology and Hydrogeology

The Site is located on a relatively flat alluvial plain between the Skagit River and Lyman Hill to the northeast. The Site is generally flat and at an elevation of approximately 56 feet above sea level. The ground surface consists of gravel, concrete or pavement. The rail lines on the north-adjacent BNSF property and the east-adjacent property were constructed on raised berms.

The subsurface at the Site consists of approximately 1- to 2.5-feet of surficial fill, underlain by brown to gray sandy silt with lenses of fine to medium sand to a depth of approximately 10 feet below ground surface (bgs). At depths greater than 10 feet bgs, an intermittent layer of well-sorted, medium sand, with traces of woody debris, extends up to 20 feet bgs (MFA 2020b). Numerous groundwater monitoring events have been completed at the Site, with groundwater typically measured between approximately 5 and 10 feet bgs (MFA 2022).

2.3 Site Status

Previous investigations identified environmental impacts in three areas of the Site, referred to as Areas of Concern 1 through 3 (MFA 2020b). In March 2020, a remedial action was completed to address environmental impacts in Areas of Concern 1 through 3 (MFA 2020b). Following completion of the remedial action, a groundwater compliance monitoring plan (CMP) and an associated addendum were developed in coordination with the Ecology to guide performance groundwater monitoring at the Site (MFA 2020a,c). Per Washington Administrative Code (WAC) 173-340(b), the purpose of performance monitoring is to confirm that the remedial action has reduced contaminant concentrations below cleanup levels.

Compliance groundwater monitoring was initiated in September 2020. Groundwater monitoring activities were conducted consistent with the Confirmation Groundwater Monitoring Plan described in EC no. 202210190027 recorded in Skagit County, the groundwater CMP (MFA 2020a), the groundwater CMP addendum (MFA 2020c), and the Washington State Model Toxics Control Act (WAC 173-340-410(b)) requirements for performance monitoring.

On January 4, 2023, Ecology presented its No Further Action opinion for the Property contingent upon the continued effectiveness of the institutional controls and performance groundwater monitoring (Ecology 2023). Groundwater monitoring is ongoing at the Site on a 15-month frequency, in accordance with the EC. The next compliance groundwater monitoring event is scheduled for December 2023.

3 Site Restoration Activities

Site restoration activities were initiated on September 25, 2023, and were completed on October 3, 2023. Restoration activities were completed consistent with the Ecology-approved work plan (MFA 2023).

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3.1 Monitoring Well Replacement

Three monitoring wells (MW01R, MW09, and MW10) were damaged and required replacement. Replacement monitoring wells have been named MW01R2, MW09R, and MW10R, respectively (see Figure 3-1).

3.1.1 Monitoring Well Decommissioning

On September 26, 2023, and October 3, 2023, groundwater monitoring wells MW01R, MW09, and MW10 were decommissioned by a licensed driller with Anderson Environmental Contracting, LLC of Kelso, Washington. Well decommissioning was performed consistent with WAC 173-160-381.

Monitoring wells MW09 and MW10 were decommissioned in-place using bentonite chips hydrated with potable water. Due to soil debris present in the damaged casing of MW01R, the well was decommissioned by over-drilling using a hollow stem auger. The entire well casing was removed.

Well decommissioning logs are included as Appendix A and photographs taken during the decommissioning are provided in Appendix B.

3.1.2 Monitoring Well Installation

On September 25 and 26, 2023, replacement monitoring wells MW01R2, MW09R, and MW10R (Washington State Department of Ecology Well No. BNM583, BNM581, and BNM582, respectively) were installed by a licensed driller with Anderson Environmental Contracting, LLC using a direct-push drill rig. The borings for these wells were initially advanced using a 2.25-inch core barrel with continuous soil cores collected for soil logging and volatile screening using a photoionization detector. The boring logs for these wells are provided in Appendix C. After the borings were advanced to the final depth and soil cores were logged, the borings were expanded to 4-inches in diameter using drill casings equipped with an expendable point for monitoring well installation.

The wells were installed in accordance with the Washington State well construction standards (WAC 173-160) and the procedures described in the Ecology-approved work plan (MFA 2023). The depth intervals for the well screen, filter pack, and annular seal were consistent with the previous well construction in each location. The construction details for each well are illustrated on the boring logs in Appendix C. The well screens consisted of 0.010 machine slot schedule 40 polyvinyl chloride well screens with a stainless-steel mesh filter prepacked with 10/20 silica sand. Size 10/20 silica sand was also used to fill the annular space surrounding the prepacked filter. The annular seals consisted of bentonite chips hydrated with potable water and the wells were finished with traffic grade flush-mount monitoring well vaults set in concrete.

3.1.3 Monitoring Well Development

The replacement monitoring wells were developed at least 24 hours after their installation by surging, bailing, and pumping to remove sediment that may have accumulated during installation and to improve the hydraulic connection with the water-bearing zone. Monitoring wells included in the compliance monitoring sampling network (MW02R, MW04, MW07) were also redeveloped.

Temperature, pH, specific conductance, dissolved oxygen, oxygen reduction potential, and turbidity were measured during well development. In general, the wells were developed until water quality parameters were stabilized or at least four well volumes were removed. Due to poor recharge at

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MW02R and MW04, purging was paused for several hours at a time to allow for groundwater to recharge and continue development. Therefore, a reduced pore volume was purged from these two monitoring wells. Development methods, purge volumes, and water quality parameters were recorded on well development forms (see Appendix D).

3.1.4 Monitoring Well Placement and Surveying

The locations of the existing wells in relation to the decommissioned wells are shown in Figure 3-1. In general, the replacement monitoring wells were installed approximately three feet west of the decommissioned wells.

Prior to the well installations, field staff navigated to the proposed well locations using a Trimble Geo7x handheld global positioning unit with submeter accuracy. Following the well installations and gravel replacement, the locations and measuring point elevation of newly installed monitoring wells were surveyed by a licensed surveyor with Pacific Surveying & Engineering, Inc. The surveyed locations and elevations are provided in Appendix E.

3.1.5 Management of Investigation-Derived Waste

Investigation-derived waste generated during well installation and development activities, including soil cuttings, purge water, and decontamination fluids, is temporarily stored on-site in secured, labeled, 55-gallon drums approved by the Washington State Department of Transportation. The drums were characterized as non-hazardous waste and will be disposed of off-site at an approved disposal facility.

3.2 Gravel Areas Restoration

During the July 20, 2023, monitoring well assessment, MFA observed railroad tie debris in the gravel area in the central portion of the Site (see Figure 3-2 and the photographs in Appendix B). MFA conducts ongoing compliance groundwater monitoring in this area as a component of the remedial action and requirement of the EC. If left in place, the residual treated wood debris from the railroad ties would have the potential to contribute to groundwater contamination by leaching chemicals into areas of ongoing remediation. Therefore, in accordance with Section 1(a) of the EC, gravel containing railroad tie debris was removed from the Site.

3.2.1 Extent of Gravel Contaminated with Railroad Tie Debris

The lateral extent of gravel areas mixed with railroad tie debris is shown on Figure 3-2. Between September 27 and 29, 2023, BAI Environmental Services (BAI) of Lynden, Washington, with oversight from MFA field personnel, completed the gravel removal and restoration activities on the Site. During gravel removal activities, railroad tie debris was observed to be mixed with surficial gravel up to six inches bgs in the eastern end of the two gravel areas tapering to approximately one-inch bgs in the western ends of each gravel area. During excavation, the intermixed railroad tie debris and gravel was distinguishable from the unimpacted gravel by a color change from dark reddish brown to greenish gray, respectively. Additionally, a change in texture from the fibrous pulverized railroad tie to the sandy gravel was a further indicator of intermixed gravel and railroad tie debris removal. Approximately 204 cubic yards of gravel intermixed with railroad tie debris was removed from the Site (see Figure 3-2).

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3.2.2 Site, Erosion and Sediment Control

All grading and erosion control materials, workmanship, and method of construction adhered to the current edition of Ecology's "Stormwater Management Manual for Western Washington". BAI coordinated with the City to obtain all necessary permits prior to implementation of the gravel removal and restoration work.

3.2.3 Export Gravel Disposal

Gravel intermixed with railroad debris was removed by BAI with oversight of MFA personnel. Identification of the gravel/contaminated wood material was based on visual observations. Export characterization and designation was conducted by BAI in coordination with Akers Railroad Holdings, LLC. The gravel was loaded into haul trucks and transported to the BNSF Railyard in Burlington, Washington used for scraping and storing railroad ties located near Charles Street adjacent to the BNSF railyard in Burlington, Washington.

3.2.4 Import Gravel Specifications and Sourcing

Consistent with previous gravel placement, permeable ballast material consistent with the Washington State Department of Transportation standard specification 9-03.9(2) was used to restore the gravel of the Site in areas where intermixed railroad debris and gravel material was removed.

The permeable ballast material was sourced directly from Skagit Aggregates Big Rock Pit at 14101 SR 9 in Mount Vernon, Washington. Approximately 420 cubic yards of material was placed on the Site to restore the gravel areas.

4 Inspection

A final inspection of the excavation work was completed on October 3, 2023. No other unresolved issues or work items remained at that time. Photographs of the Site after the completion of site restoration activities are provided in Appendix B.

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References

Ecology. 2023. Michael Warfel, LG, LHG, RG, Washington Department of Ecology. *Non-Compliance with Terms of Environmental Covenant North Cascade Ford Site, 116 West Ferry Street, Sedro Woolley WA 98284 Facility/Site No. 68313566; Cleanup Site No. 12075*. Letter to Coulter Properties, LLC c/o Joe Krivanek. June 22.

MFA. 2020a. *Groundwater Compliance Monitoring Plan, North Cascade Ford Property, Sedro-Woolley, Washington*. Prepared for VSF Properties, LLC. Maul Foster & Alongi, Inc., Bellingham, Washington. July 8.

MFA. 2020b. *Remedial Action Completion Report, North Cascade Ford Property, Sedro-Woolley, Washington*. Prepared for VSF Properties, LLC. Maul Foster & Alongi, Inc., Bellingham, Washington. July 13.

MFA. 2020c. J. Maul, Maul Foster & Alongi, Inc. *Addendum to Groundwater Compliance Monitoring Plan, North Cascade Ford Property, 116 W. Ferry Street, Sedro-Woolley, Washington, Facility Site ID: 58313566; Cleanup Site ID: 12075*. Memorandum to M. Warfel, Washington State Department of Ecology. August 10.

MFA. 2022. C. Wise and C. Sifford, Maul Foster & Alongi, Inc. *Eighth Quarterly Compliance Groundwater Monitoring Event, North Cascade Ford Property, Sedro-Woolley, Washington, VCP Number: NW3031, CSID: 12075, FSID: 58313566*. Letter to M. Warfel, Washington State Department of Ecology. September 8.

MFA. 2023. *Work Plan, North Cascade Ford Site, 116 W Ferry Street, Sedro-Woolley, WA, Facility Site No. 68313566, Cleanup Site No. 12075.* Prepared for Akers Railroad Holdings, LLC. Maul Foster & Alongi, Inc., Bellingham, Washington. August 4.

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Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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Figures

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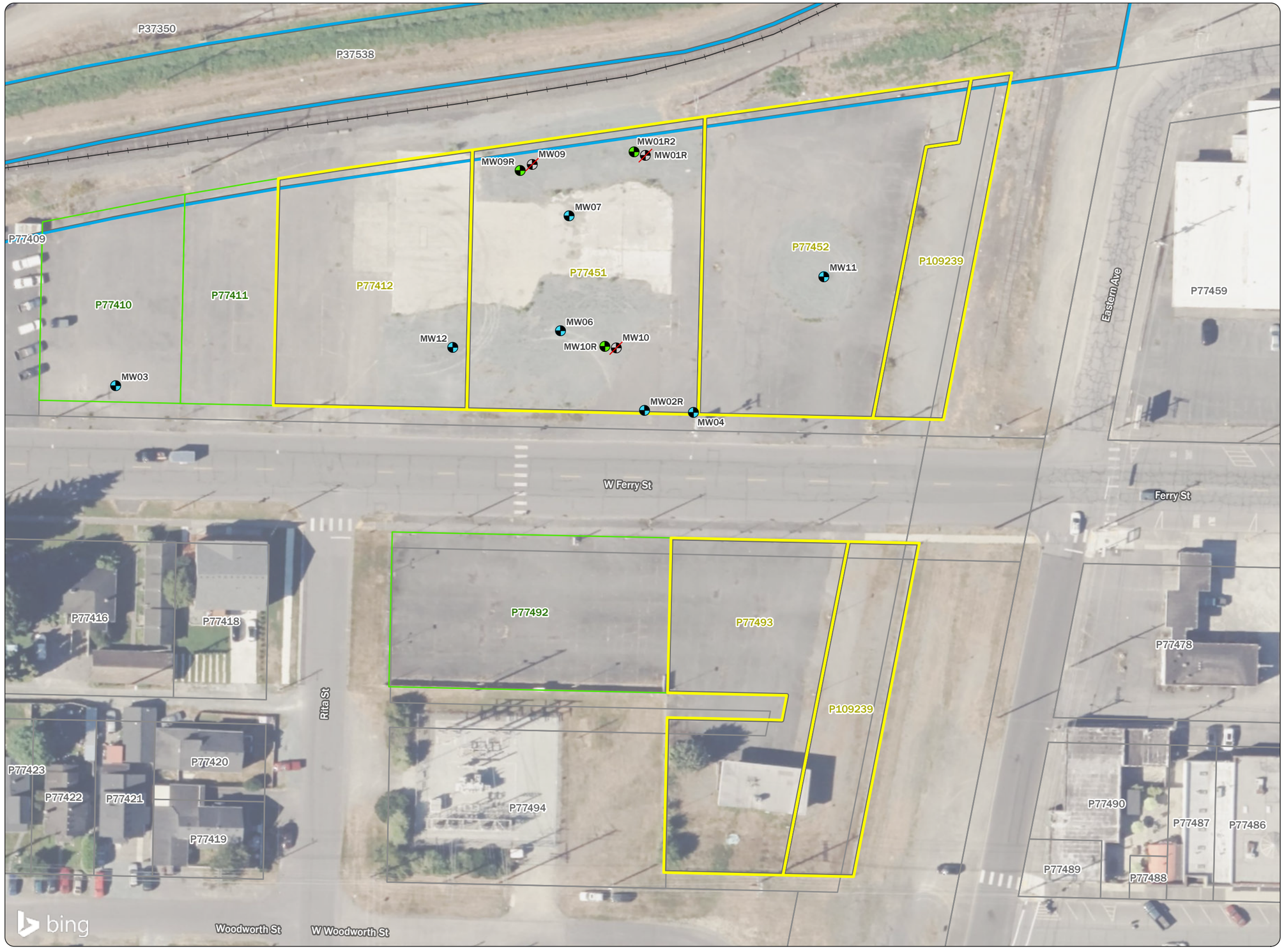
Figure 1-1
Property Location
North Cascade Ford Property
Sedro-Woolley, WA



Legend

- Replacement Monitoring Well
- Existing Monitoring Well
- Decommissioned Monitoring Well
- BNSF Railway
- Environmental Covenant Parcel (Surveyed)
- BNSF-Owned Parcel (Skagit County GIS)
- Other Surveyed Parcels
- Parcel (Skagit County GIS)

Notes
All features are approximate.
The surveyed environmental covenant parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the surveyed parcels and BNSF parcels.
BNSF = Burlington Northern Santa Fe Railway.
Environmental covenant parcel = North Cascade Ford Property.

0 60
Feet

Data Sources
Aerial photograph obtained from Microsoft Bing; parcel data obtained from Skagit County; parcel boundaries surveyed by Wilson Engineering, LLC.

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Path: X:\O_MFA_Projects\M2584\01\002\Pro\M2584_01_002_003.aprx\Fig 1-1 Property Location
Print Date: 10/30/2023
Reviewed By: csifford
Produced By: jroberts
Project: M2584 01 002

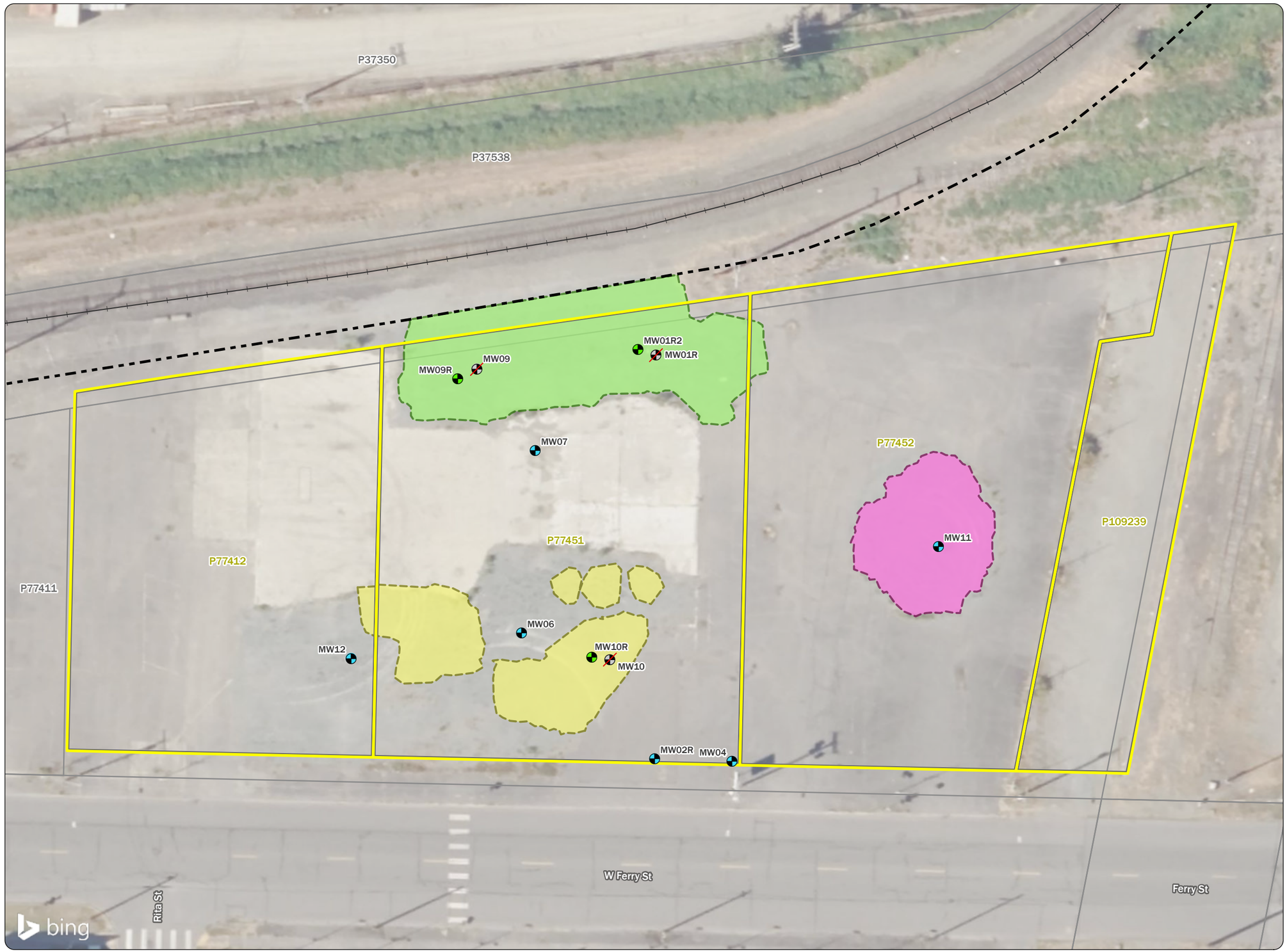

Figure 3-1
Replacement and Decommissioned Monitoring Wells

North Cascade Ford Property
Sedro-Woolley, WA

Legend

- Replacement Monitoring Well
- Existing Monitoring Well
- Decommissioned Monitoring Well
- BNSF Railway
- BNSF Railway Centerline 25-foot Setback
- AOC 1 Excavation
- AOC 2 Excavation
- AOC 3 Excavation
- Environmental Covenant Parcel (Surveyed)
- Parcel (Skagit County GIS)

Notes

All features are approximate.
The excavations areas are set back from the BNSF railroad centerline by 25 feet.
The surveyed environmental covenant parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the surveyed parcels and BNSF parcels.
AOC = area of concern.
BNSF = Burlington Northern Santa Fe Railway.
Environmental covenant parcel = North Cascade Ford Property.

0 30
Feet

Data Sources

Aerial photograph obtained from Microsoft Bing; parcel data obtained from Skagit County; excavation extents surveyed by Pacific Geomatic Services, Inc. in March 2020; environmental covenant parcel boundaries surveyed by Wilson Engineering, LLC.

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Path: X:\O_MFA_Projects\M2584\01\002\Pro\M2584_01_002_003.aprx\Fig 3-1 Replacement and Decom Monitoring Wells
Print Date: 10/30/2023
Reviewed By: csifford
Produced By: jroberts
Project: M2584.01.002

Path: X:\0_MFA_Projects\M2584\01\002\Pro\M2584_01_002_003.aprx\Fig 3-2 Gravel Restoration Areas
Print Date: 10/30/2023
Reviewed By: csifford
Produced By: jroberts
Project: M2584.01.002

Figure 3-2
Gravel Restoration Areas

North Cascade Ford Property
Sedro-Woolley, WA

Legend

- Replacement Monitoring Well
- Existing Monitoring Well
- Decommissioned Monitoring Well
- BNSF Railway
- BNSF Railway Centerline 25-foot Setback
- Gravel Restoration Area
- Environmental Covenant Parcel (Surveyed)
- Parcel (Skagit County GIS)

Notes

All features are approximate.
The surveyed environmental covenant parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the surveyed parcels and BNSF parcels.
BNSF = Burlington Northern Santa Fe Railway.
Environmental covenant parcel = North Cascade Ford Property.

0 30
Feet

Data Sources

Aerial photograph obtained from Microsoft Bing; parcel data obtained from Skagit County; environmental covenant parcel boundaries surveyed by Wilson Engineering, LLC.

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Appendix A

Decommissioned Well Logs

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DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE19936

Ecology Well ID Tag No. BMP-357

Site Well Name MW10

Consulting Firm MAUL FOSTER

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Phillips, Blake

Driller/Engineer/Trainee Signature *Blake Phillips*

License No. 3328

Company Name Anderson Environmental Contracting LLC

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE79864

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner COULTER PROPERTIES LLC.

Well Street Address 116 WEST FERRY STREET

City SEDRO WOOLLEY County SKAGIT

Tax Parcel No. P77451

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ SW ¼, Section 24 Town 35N Range 4E

Latitude (Example: 47.12345) 48.505562

Longitude (Example: -120.12345) -122.241609

(WGS 84 Coordinate System)

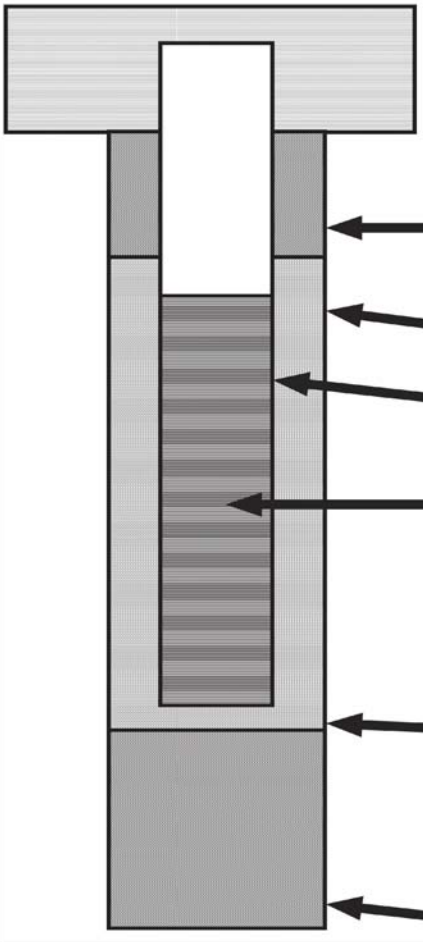
Borehole diameter 3 inches Casing diameter 2 inches

Static water level 11 ft below top of casing Date 09/26/2023

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 09/26/2023 Completed Date 09/26/2023

Construction/Design	Well Data		Formation Description
	Concrete Surface Seal Depth	2' FT	FT
	Blank Casing (dia x dep)		CHIP IN PLACE BACKFILLED FROM BOTTOM TO TOP WITH BENT CHIPS
	Material		
	Backfill	FT	
	Type		FT
	Seal	FT	
	Gravel Pack	FT	
	Material		
	Screen (dia x dep)		FT
	Slot Size		
	Material		
	Well Depth	FT	
	Backfill	20'	
	Material	CHIPS	
	Total Hole Depth	20' FT	

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE19936

Ecology Well ID Tag No. BMP-359

Site Well Name MW09

Consulting Firm MAUL FOSTER

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Phillips, Blake

Driller/Engineer/Trainee Signature *Blake Phillips*

License No. 3328

Company Name Anderson Environmental Contracting LLC

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE79792

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner COULTER PROPERTIES LLC.

Well Street Address 116 WEST FERRY STREET

City SEDRO WOOLLEY County SKAGIT

Tax Parcel No. P77451

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ SW ¼, Section 24 Town 35N Range 4E

Latitude (Example: 47.12345) 48.505596

Longitude (Example: -120.12345) -122.241563

(WGS 84 Coordinate System)

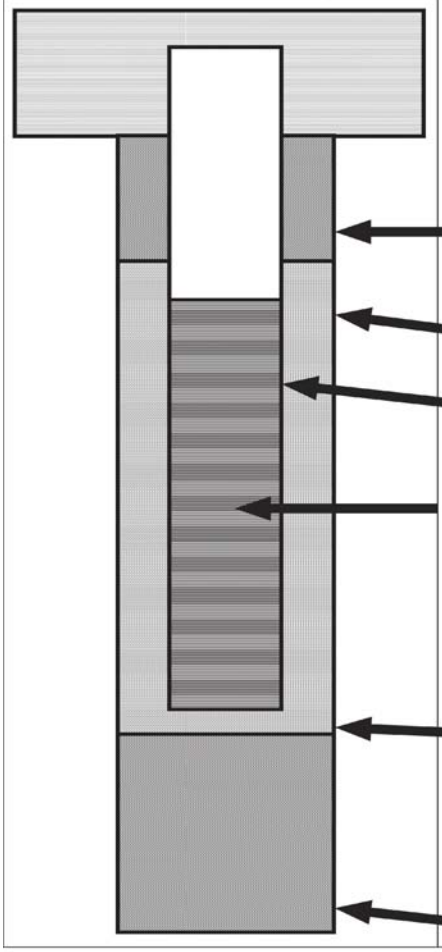
Borehole diameter 3 inches Casing diameter 2 inches

Static water level 11 ft below top of casing Date 09/26/2023

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 09/26/2023 Completed Date 09/26/2023

Construction/Design	Well Data		Formation Description
	Concrete Surface Seal Depth	2' FT	FT
	Blank Casing (dia x dep)		CHIP IN PLACE BACKFILLED FROM BOTTOM TO TOP WITH BENT CHIPS
	Material		
	Backfill	FT	
	Type		FT
	Seal	FT	
	Gravel Pack	FT	
	Material		
	Screen (dia x dep)		FT
	Slot Size		
	Material		
	Well Depth	FT	
	Backfill	20'	
	Material	CHIPS	
	Total Hole Depth	20' FT	

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE19936

Ecology Well ID Tag No. BMP-360

Site Well Name MW01R

Consulting Firm MAUL FOSTER

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

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☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

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Well Street Address 116 WEST FERRY STREET

City SEDRO WOOLLEY County SKAGIT

Tax Parcel No. P77451

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ SW ¼, Section 24 Town 35N Range 4E

Latitude (Example: 47.12345) 48.505771

Longitude (Example: -120.12345) -122.241820

(WGS 84 Coordinate System)

Borehole diameter 4 inches Casing diameter ____ inches

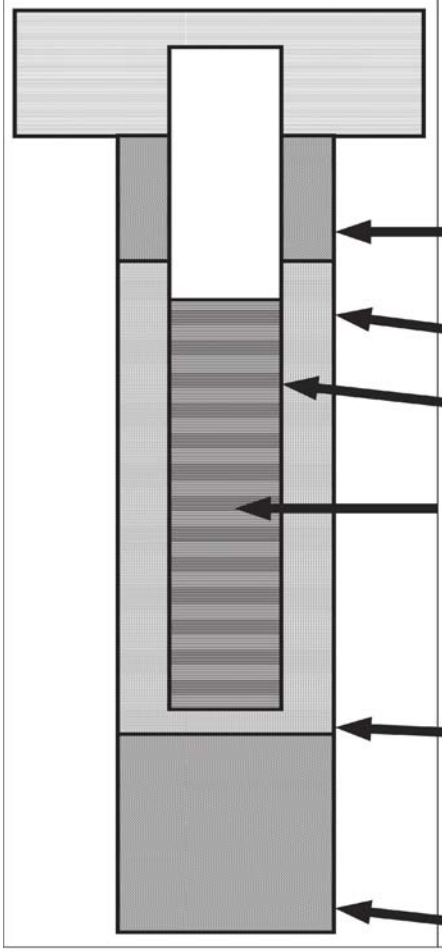
Static water level 11 ft below top of casing Date 10/03/2023

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 10/03/2023 Completed Date 10/03/2023

Construction/Design



Well Data

Concrete Surface Seal Depth	2'	FT
Blank Casing (dia x dep)		
Material		
Backfill		FT
Type		
Seal		FT
Gravel Pack		FT
Material		
Screen (dia x dep)		
Slot Size		
Material		
Well Depth		FT
Backfill	15'	
Material	CHIPS	
Total Hole Depth	15'	FT

Formation Description

FT

WELL ADANDONMENT BY OVERDRILL WITH 3 BAGS OF CHIPS.

FT

ALL WELL MATERIAL REMOVED AND RESTORED TO SURFACE.

FT

Appendix B

Site Photographs

MAUL FOSTER ALONGI

Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 1.

Description

Photo looking east at the southern gravel area on prior to removing intermixed railroad tie debris and gravel.

Photo No. 2.

Description

Photo looking southwest at the southern gravel area prior to removing intermixed railroad tie debris and gravel.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 3.

Description

Photo looking northwest towards MW06 (under the traffic cone) during gravel removal activities.

Photo No. 4.

Description

Photo of removed and stockpiled gravel intermixed with railroad tie debris.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 5.

Description

Photo from the center of the southern gravel area looking north at MW-06 flush-mount well monument (underlying traffic cone) following removal of approximately 6-inches of intermixed gravel and railroad tie debris.

Photo No. 6.

Description

Photo looking west from the east side of the northern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 7.

Description

Photo looking southwest from the northeast corner of the northern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

Photo No. 8.

Description

Photo looking east from the northwest corner of the northern gravel area after removal of the railroad tie debris, prior to gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 9.

Description

Photo looking northeast from the southwest corner of the northern gravel area after removal of the intermixed gravel and railroad tie debris and sweeping of the concrete pad areas, prior to gravel replacement.

Photo No. 10.

Description

Photo looking west across the southern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 11.

Description

Photo looking west across the southern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

Photo No. 12.

Description

Photo looking east from the southwest corner of the southern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 13.

Description

Photo looking east from the southwest corner of the southern gravel area after removal of the intermixed gravel and railroad tie debris, prior to gravel replacement.

Photo No. 14.

Description

Photo looking west from the southeast corner of the northern gravel area after gravel replacement towards the traffic cone covering the damaged MW01R well casing.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 15.

Description

Photo looking east from the northwest corner of the northern gravel area after gravel replacement.

Photo No. 16.

Description

Photo looking west from the southeast corner of the southern gravel area after gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 17.

Description

Photo looking west-southwest from the northeast corner of the southern gravel area after gravel replacement.

Photo No. 18.

Description

Photo looking southeast from the northwest corner of the southern gravel area after gravel replacement.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 19.

Description

Photo looking northeast from the southwest corner of the southern gravel area after gravel replacement.

Photo No. 20.

Description

Photo of the eastern boundary of the Property looking south from the northeast corner of the Property.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 21.

Description

Photo of the eastern boundary of the Property looking north from the southeast corner of the Property.

Photo No. 22.

Description

Photo of MW11 looking north-northwest from the southeast corner of the graveled AOC 3 excavation area.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 23.

Description

Photo looking southeast towards the graveled AOC 3 excavation area.

Photo No. 24.

Description

Photo of the western portion of the Property looking west from the southwest corner of the northern gravel area.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 25.

Description

Photo of the western portion of the Property looking southwest from the southwest corner of the northern gravel area.

Photo No. 26.

Description

Photo of the western portion of the Property looking northeast from the southwest corner of Property.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 27.

Description

Photo of the western portion of the Property looking southeast from the northwest corner of Property.

Photo No. 28.

Description

Photo looking southeast at the replacement monitoring well MW01R2 after gravel replacement in the center-right in relation to the damaged MW01R well casing (underlying the traffic cone).

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 29.

Description

Photo looking east at the hollow stem auger over drilling the MW01R well casing with the completed installation of MW01R2 in the foreground.

Photo No. 30.

Description

Photo looking southeast from near MW01R2 showing the location of the decommissioned MW01R after the over drilled boring had been filled with bentonite and covered with gravel.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 31.

Description

Photo looking north at MW10R under the traffic cone on the left in relation to the damaged MW10 on the right surrounded by marking flags, prior to gravel replacement and decommissioning.

Photo No. 32.

Description

Photo looking east at the completed replacement well MW10R.

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Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 33.

Description

Photo looking northeast at decommissioned MW09 filled with hydrated bentonite chips and MW09R under the traffic cone on the left, prior to gravel replacement.

Photo No. 34.

Description

Photo looking east toward MW09R from the west side of the northern gravel replacement area with MW01R2 in the background.

© 2023 Maul Foster & Alongi, Inc.

Photographs

Project Name: Site Restoration, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, Washington

Photo No. 35.

Description

Photo looking east-northeast from the center of the southern gravel area showing the monument for MW06.

Photo No. 36.

Description

Photo looking northeast from the west side of the southern gravel area showing the monument for MW12.

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Appendix C

Replacement Well Logs

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Geologic Borehole Log

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Project Number	Well Number	Sheet
M2584.01.002	MW01R2	1 of 1

Project Name	North Cascade Ford Site	TOC Elevation (feet)	
Project Location	116 W Ferry Street, Sedro-Woolley, WA	Surface Elevation (feet)	
Start/End Date	9/26/2023 to 9/26/2023	Northing	
Driller/Equipment	Anderson Environmental Contracting, LLC/Direct Push	Easting	
Geologist/Engineer	C. Sifford	Total Depth of Borehole	15.0 feet
Sample Method	Core Barrel	Outer Hole Diam	2.25 inch

Depth (feet, bgs)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1			58		0		0.0 to 2.9 feet: GRAVELLY SAND (SW); grayish brown; 60% sand, fine to coarse; 40% gravel, fine to medium, rounded to subrounded; loose; slight organic-like odor in upper 0.5 feet bgs; 20% woodchips in upper 0.5 feet bgs; moist.
2					0		
3							2.9 to 5.0 feet: NO RECOVERY.
4							
5							
6			70		0		5.0 to 6.0 feet: GRAVELLY SAND (SW); grayish brown; 60% sand, fine to coarse; 40% gravel, fine to medium, rounded to subrounded; loose; no odor; moist.
7					0		6.0 to 7.8 feet: SANDY GRAVEL (GP); brown; 20% sand, medium to coarse; 80% gravel, fine to medium, rounded to subrounded; loose; no odor; moist.
8					14.0		7.8 to 8.5 feet: SILTY SAND (SM); gray; 30% fines, low plasticity; 70% sand, fine; trace organic material (decayed wood); dense; slight petroleum hydrocarbon-like odor; moist.
9							8.5 to 10.0 feet: NO RECOVERY.
10							
11		▽ ▼	80		2		10.0 to 10.9 feet: SILTY SAND (SM); gray; 30% fines, low plasticity; 70% sand, fine; trace organic material (decayed wood); dense; no odor; moist. @ 10.4 feet: Becomes wet.
12					1		10.9 to 13.6 feet: SAND (SP); dark gray; 100% sand, fine to medium; medium dense; slight petroleum hydrocarbon-like odor; wet.
13							
14					0		13.6 to 14.0 feet: SILT (ML); gray; 90% fines, low plasticity; 10% sand, fine; firm; no odor; wet.
15							14.0 to 15.0 feet: NO RECOVERY.

Total Depth = 15.0 feet bgs

NOTES:

1) Depths are relative to feet bgs. 2) bgs = below ground surface. 3) ID = identification. 4) PID = photoionization detector. 5) ppm = parts per million.

Borehole Completion Details

0.0 to 1.0 feet: Concrete.
1.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 14.8 feet: 10/20 silica sand filter pack.
14.8 to 15.0 feet: Slough.

Monitoring Well Completion Details

Washington State Department of Ecology Well No. BNM583
Traffic-grade, flush-mounted, monitoring well vault set in concrete.
0.2 to 4.6 feet: 2-inch diameter, schedule 40 polyvinyl chloride riser pipe.
4.6 to 14.6 feet: 2-inch diameter, schedule 40 polyvinyl chloride, 0.010 machine slot, prepacked well screen.
14.6 to 14.8 feet: threaded polyvinyl chloride end cap.

▽ Soil becomes wet at 10.4 feet bgs as observed in core. ▼ Water level 10.89 feet bgs prior to well development on 9/28/23.

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\2548.01.002\MW01R2_MW09R_MW10R.GPJ 10/16/23

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
M2584.01.002	MW09R	1 of 2

Project Name	North Cascade Ford Site	TOC Elevation (feet)	
Project Location	116 W Ferry Street, Sedro-Woolley, WA	Surface Elevation (feet)	
Start/End Date	9/25/2023 to 9/25/2023	Northing	
Driller/Equipment	Anderson Environmental Contracting, LLC/Direct Push	Easting	
Geologist/Engineer	C. Sifford	Total Depth of Borehole	20.0 feet
Sample Method	Core Barrel	Outer Hole Diam	2.25 inch

Depth (feet, bgs)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1					0		0.0 to 2.3 feet: GRAVELLY SAND (SW); grayish brown; 60% sand, fine to coarse; 40% gravel, fine to medium, subangular to rounded; very loose; no odor; moist.
2							
3			46				2.3 to 5.0 feet: NO RECOVERY.
4							
5					0		5.0 to 5.6 feet: GRAVELLY SAND (SW); grayish brown; 60% sand, fine to coarse; 40% gravel, fine to medium, subangular to rounded; very loose; no odor; moist.
6							5.6 to 5.8 feet: SILTY SAND (SM); dark grayish brown; 25% fines, low plasticity; 75% sand, fine to medium; medium dense; no odor; moist.
7					0		5.8 to 6.1 feet: COBBLE; light gray; crystalline; granodiorite.
							6.1 to 7.2 feet: GRAVEL WITH SAND (GP); brown; 15% sand, medium to coarse; 85% gravel, fine to medium, rounded to subrounded; very loose; no odor; moist.
8			70				7.2 to 10.0 feet: NO RECOVERY.
9							
10							
11					1		10.0 to 10.6 feet: GRAVEL WITH SAND (GP); brown; 15% sand, medium to coarse; 85% gravel, fine to medium, rounded to subrounded; very loose; no odor; moist.
							10.6 to 11.5 feet: GRAVELLY SAND WITH SILT (SP-SM); dark gray; 10% fines; 70% sand, fine to medium; 20% gravel, fine to medium, rounded to subrounded; loose; no odor; moist.
12							11.5 to 11.9 feet: GRAVEL WITH SAND (GP); brown; 15% sand, medium to coarse; 85% gravel, fine to medium, rounded to subrounded; very loose; no odor; wet.
13			80		0		11.9 to 12.8 feet: SILT (ML); gray; 100% fines, low plasticity; trace organic material; stiff; no odor; moist.
							12.8 to 14.0 feet: SAND (SP); dark gray; 100% sand, medium; medium dense; no odor; moist.
14					1		@ 13.3 to 13.4 feet: Layer of SILT; gray; 100% fines, low plasticity; trace organic material; stiff; no odor; moist .
							14.0 to 15.0 feet: NO RECOVERY.
15							
16					0		15.0 to 16.8 feet: SAND (SP); dark gray; 100% sand, medium; medium dense; no odor; wet.
17							16.8 to 17.8 feet: SILTY SAND (SM); dark gray; 30% fines, low plasticity; 70% sand, fine to medium; medium dense; no odor; fines increase to 50% with depth; wet.
18			76				17.8 to 18.3 feet: SANDY SILT (ML); dark gray; 70% fines, low plasticity; 30% sand, fine; soft; no odor; wet.
					1		18.3 to 18.8 feet: SILTY SAND (SM); dark gray; 40% fines, low plasticity; 60% sand, fine to medium; medium dense; no odor; wet.
19							18.8 to 20.0 feet: NO RECOVERY.
20							

Total Depth = 20.0 feet bgs

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\2548.01.002\MW01R2_MW09R_MW10R.GPJ 10/16/23

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Geologic Borehole Log

Project Number	Well Number	Sheet
M2584.01.002	**MW09R**	**2 of 2**

NOTES:

1) Depths are relative to feet bgs. 2) bgs = below ground surface. 3) ID = identification. 4) PID = photoionization detector. 5) ppm = parts per million.

Borehole Completion Details
0.0 to 1.0 feet: Concrete.
1.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 19.8 feet: 10/20 silica sand filter pack.
19.8 to 20.0 feet: Slough.

Monitoring Well Completion Details
Washington State Department of Ecology Well No. BNM581
Traffic-grade, flush-mounted, monitoring well vault set in concrete.
0.3 to 4.5 feet: 2-inch diameter, schedule 40 polyvinyl chloride riser pipe.
4.5 to 19.5 feet: 2-inch diameter, schedule 40 polyvinyl chloride, 0.010 machine slot, prepacked well screen.
19.5 to 19.8 feet: 3-inch-long threaded polyvinyl chloride end cap.

▽ *Soil becomes wet at 11.5 feet bgs as observed in core.* ▼ *Water level 11.81 feet bgs prior to well development on 9/26/23.*

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\2548.01.002\MW01R2_MW09R_MW10R.GPJ 10/16/23

Geologic Borehole Log

MAUL FOSTER ALONGI

Project Number	Well Number	Sheet
M2584.01.002	MW10R	1 of 2

Project Name	North Cascade Ford Site	TOC Elevation (feet)	
Project Location	116 W Ferry Street, Sedro-Woolley, WA	Surface Elevation (feet)	
Start/End Date	9/25/2023 to 9/25/2023	Northing	
Driller/Equipment	Anderson Environmental Contracting, LLC/Direct Push	Easting	
Geologist/Engineer	C. Sifford	Total Depth of Borehole	20.0 feet
Sample Method	Core Barrel	Outer Hole Diam	2.25 inch

Depth (feet, bgs)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1							0.0 to 2.4 feet: GRAVELLY SAND WITH SILT (SW-SM); dark gray; 10% fines; 60% sand, fine to coarse; 30% gravel, fine to coarse, subangular to rounded; medium dense; no odor; 10% wood chips from 0 to 0.3 feet bgs; moist.
2					0		
3			50				2.4 to 2.5 feet: SANDY GRAVEL (GP); brown; 20% sand, medium to coarse; 80% gravel, fine to medium, rounded to subrounded; very loose; no odor; moist.
4							2.5 to 5.0 feet: NO RECOVERY.
5							
6					0		5.0 to 6.4 feet: SANDY GRAVEL (GP); brown; 20% sand, medium to coarse; 80% gravel, fine to medium, rounded to subrounded; very loose; no odor; moist.
7					42		6.4 to 7.0 feet: SAND WITH SILT (SP-SM); dark bluish gray; 10% fines; 90% sand, fine to medium; loose; moderate petroleum hydrocarbon-like odor; moist.
8			48				7.0 to 7.4 feet: SILT (ML); gray; 90% fines, low plasticity; 10% sand, fine; soft; slight petroleum hydrocarbon-like odor; moist.
9							7.4 to 10.0 feet: NO RECOVERY.
10		▼					
11							10.0 to 10.2 feet: SILT (ML); gray; 90% fines, low plasticity; 10% sand, fine; soft; slight petroleum hydrocarbon-like odor; moist.
12					0		10.2 to 10.4 feet: Decayed wood; no odor.
13			62				10.4 to 11.3 feet: SAND WITH SILT (SP-SM); dark gray; 10% fines; 90% sand, fine to medium; medium dense; no odor; wet.
14					0		11.3 to 12.6 feet: SILT (ML); gray; 90% fines, low plasticity; 10% sand, fine; soft; no odor; moist to wet.
15							@ 12.0 to 12.2 feet: Decayed wood; no odor.
16					0		12.6 to 13.1 feet: SILTY SAND (SM); gray; 40% fines, low plasticity; 60% sand, fine to medium; medium dense; no odor; wet.
17							13.1 to 15.0 feet: NO RECOVERY.
18			60		0		15.0 to 15.3 feet: SILTY SAND (SM); gray; 40% fines, low plasticity; 60% sand, fine to medium; medium dense; no odor; wet.
19							15.3 to 17.5 feet: SAND (SP); gray; 100% sand, fine to medium; medium dense; no odor; wet.
20							17.5 to 17.8 feet: SILTY SAND (SM); gray; 40% fines, low plasticity; 60% sand, fine to medium; medium dense; no odor; wet.
							17.8 to 18.0 feet: Decayed wood; no odor.
							18.0 to 20.0 feet: NO RECOVERY.

Total Depth = 20.0 feet bgs

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\2548.01.002\MW01R2_MW09R_MW10R.GPJ 10/16/23

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
M2584.01.002	**MW10R**	**2 of 2**

NOTES:

1) Depths are relative to feet bgs. 2) bgs = below ground surface. 3) ID = identification. 4) PID = photoionization detector. 5) ppm = parts per million.

Borehole Completion Details
0.0 to 1.0 feet: Concrete.
1.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 19.8 feet: 10/20 silica sand filter pack.
19.8 to 20.0 feet: Slough.

Monitoring Well Completion Details
Washington State Department of Ecology Well No. BNM582
Traffic-grade, flush-mounted, monitoring well vault set in concrete.
0.6 to 4.5 feet: 2-inch diameter, schedule 40 polyvinyl chloride riser pipe.
4.5 to 19.5 feet: 2-inch diameter, schedule 40 polyvinyl chloride, 0.010 machine slot, prepacked well screen.
19.5 to 19.7 feet: 3-inch-long threaded polyvinyl chloride end cap.

▽ *Soil becomes wet at 10.4 feet bgs as observed in core.* ▼ *Water level 10.22 feet bgs prior to well development on 9/26/23.*

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\2548.01.002\MW01R2_MW09R_MW10R.GPJ 10/16/23

Appendix D

Well Development Forms

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Well Development Form

Project No.: M2584.01.002	Date: 9/28/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW01R2	
Name: C. Sifford	Initial DTB: 14.84 feet	Final DTB: 14.84 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 10.89 feet	Final DTW: 11.33 feet
Total Water Removed: 4.9 gallons	Pore Volume: 0.64 gallons	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
11:17	0.0	--	--	--	--	--	--	Begin surging; bailer.
11:23	0.0	--	--	--	--	--	--	Complete surging.
11:23	0.0	--	--	--	--	--	--	Begin purging; bailer.
11:26	1.4	--	--	--	--	--	--	Pause purging; bailer.
11:29	1.4	--	--	--	--	--	--	Resume purging; peristaltic pump.
11:36	1.7	126	--	--	--	--	--	Continue purging; peristaltic pump.
11:43	2.4	16.1	6.54	566.8	16.1	0.43	-140.9	Continue purging; peristaltic pump.
11:52	2.9	4.96	6.52	514	16.1	0.13	-151.2	Continue purging; peristaltic pump.
11:59	3.6	2.96	6.51	506.9	16.2	0.11	-154.8	Continue purging; peristaltic pump.
12:08	4.2	2.24	6.51	503.9	16.2	0.09	-159	Continue purging; peristaltic pump.
12:17	4.8	1.79	6.5	500.5	16.2	0.08	-164	Continue purging; peristaltic pump.
12:19	4.9	--	--	--	--	--	--	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
ORP = oxygen reduction potential.
uS/cm = microsiemens per centimeter.
vol. = volume.

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MAUL FOSTER ALONGI

Well Development Form

Project No.: M2584.01.002	Date: 9/25/23 - 9/26/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW02R	
Name: C. Sifford	Initial DTB: 14.80 feet	Final DTB: 14.80 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 10.72 feet	Final DTW: 12.60 feet
Total Water Removed: 2.8 gallons	Pore Volume: 0.67 gallons	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
15:23	0.0	--	--	--	--	--	--	Begin surging; bailer.
15:29	0.0	--	--	--	--	--	--	Complete surging.
15:29	0.0	--	--	--	--	--	--	Begin purging; bailer.
15:32	0.5	--	--	--	--	--	--	Well dry; pause for recharge.
9/26/2023								
10:29	0.5	--	--	--	--	--	--	Resume purging; peristaltic pump.
10:34	0.6	24.7	6.92	640	17.2	--	--	Continue purging; peristaltic pump.
10:47	1.2	34.5	6.82	630	18	--	--	Continue purging; peristaltic pump.
10:51	1.3	--	--	--	--	--	--	Well dry; pause for recharge.
13:54	1.3	--	--	--	--	--	--	Resume purging; peristaltic pump.
13:57	1.4	7.59	6.93	576.4	17	1.26	42.7	Continue purging; peristaltic pump.
14:12	1.9	6.45	6.90	584	17.5	0.79	56.7	Continue purging; peristaltic pump.
14:20	2.2	--	--	--	--	--	--	Well dry; pause for recharge.
15:54	2.2	--	--	--	--	--	--	Resume purging; peristaltic pump.
15:57	2.3	3.11	6.95	577.4	17.4	2.09	47.4	Continue purging; peristaltic pump.
16:11	2.8	3.70	6.93	580	17.6	1.41	53.7	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
ORP = oxygen reduction potential.
uS/cm = microsiemens per centimeter.
vol. = volume.

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MAUL FOSTER ALONGI

Well Development Form

Project No.: M2584.01.002	Date: 9/25/23 - 9/27/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW04	
Name: C. Sifford	Initial DTB: 13.59 feet	Final DTB: 13:59 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 11.07 feet	Final DTW: 13.07 feet
Total Water Removed: 1.8 gallons	Pore Volume: 0.41 gallons	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
15:50	0.0	--	--	--	--	--	--	Begin surging; bailer.
15:55	0.0	--	--	--	--	--	--	Complete surging.
15:55	0.0	--	--	--	--	--	--	Begin purging; bailer.
15:57	0.4	-	--	--	--	--	--	Well dry; pause for recharge.
9/26/2023								
10:56	0.4	--	--	--	--	--	--	Resume purging; peristaltic pump.
10:59	0.5	7.06	6.70	580	16.6	--	--	Continue purging; peristaltic pump.
11:06	0.9	--	--	--	--	--	--	Well dry; pause for recharge.
14:31	0.9	--	--	--	--	--	--	Resume purging; peristaltic pump.
14:34	1.0	5.06	6.79	554.4	16.1	2.66	93.7	Continue purging; peristaltic pump.
14:41	1.3	--	--	--	--	--	--	Well dry; pause for recharge.
16:15	1.3	--	--	--	--	--	--	Resume purging; peristaltic pump.
16:20	1.4	1.66	6.78	553.8	16.4	3.92	92.7	Continue purging; peristaltic pump.
16:23	1.5	--	--	--	--	--	--	Well dry; pause for recharge.
9/27/2023								
13:35	1.5	--	--	--	--	--	--	Resume purging; peristaltic pump.
13:49	1.8	3.30	6.74	551.1	16.7	0.81	175.6	Continue purging; peristaltic pump.
13:50	1.8	--	--	--	--	--	--	Well dry.
13:50	1.8	--	--	--	--	--	--	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
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vol. = volume.

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Well Development Form

Project No.: M2584.01.002	Date: 9/25/23 - 9/26/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW07	
Name: C. Sifford	Initial DTB: 19.63 feet	Final DTB: 19.63 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 11.22 feet	Final DTW: 11.87 feet
Total Water Removed: 12.2 gallons	Pore Volume: 1.37 gallons	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
16:19	0.0	--	--	--	--	--	--	Begin surgin; bailer.
16:27	0.0	--	--	--	--	--	--	Complete surging.
16:27	0.0	--	--	--	--	--	--	Begin purging; bailer.
16:41	4.5	--	--	--	--	--	--	Pause puging; bailer.
9/26/2023								
9:41	4.5	--	--	--	--	--	--	Resume purging; peristaltic pump.
9:56	5.5	4.98	6.54	544.2	14.7	0.49	74.3	Continue purging; peristaltic pump.
10:15	6.8	2.18	6.50	413.1	14.6	0.11	40.3	Continue purging; peristaltic pump.
10:40	8.5	1.14	6.50	389.8	14.6	0.19	52.2	Continue purging; peristaltic pump.
11:03	10.0	1.26	6.51	387.4	14.7	0.09	53.0	Continue purging; peristaltic pump.
11:37	12.2	1.65	6.51	388.0	14.7	0.12	58.4	Continue purging; peristaltic pump.
11:37	12.2	--	--	--	--	--	--	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
ORP = oxygen reduction potential.
uS/cm = microsiemens per centimeter.
vol. = volume.

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Well Development Form

Project No.: M2584.01.002	Date: 9/26/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW09R	
Name: C. Sifford	Initial DTB: 19.75 feet	Final DTB: 19.74 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 11.81 feet	Final DTW: 11.71 feet
Total Water Removed: 7.6 gallon	Pore Volume: 1.29 gallon	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
12:01	0.0	--	--	--	--	--	--	Begin surging; bailer.
12:16	0.0	--	--	--	--	--	--	Complete surging.
12:16	0.0	--	--	--	--	--	--	Begin purging; bailer.
12:24	2.5	--	--	--	--	--	--	Pause purging; bailer.
12:26	2.5	--	--	--	--	--	--	Resume purging; peristaltic pump.
12:45	4.0	332	Too turbid to hook up YSI					Continue purging; peristaltic pump.
12:56	4.7	18.4	7.06	707	16	0.43	-125.6	Continue purging; peristaltic pump.
13:12	6.0	6.35	7.10	707	15.8	0.30	-128.8	Continue purging; peristaltic pump.
13:36	7.6	1.48	7.07	703	15.6	0.31	-123.3	Continue purging; peristaltic pump.
13:36	7.6	--	--	--	--	--	--	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
ORP = oxygen reduction potential.
uS/cm = microsiemens per centimeter.
vol. = volume.

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Well Development Form

Project No.: M2584.01.002	Date: 9/26/23	
Site Location: 116 W Ferry St, Sedro-Woolley, WA	Well: MW10R	
Name: C. Sifford	Initial DTB: 19.73 feet	Final DTB: 19.73 feet
Development Method: Bailer surge and peristaltic pump purge	Initial DTW: 10.22 feet	Final DTW: 10.85 feet
Total Water Removed: 7.0 gallons	Pore Volume: 1.55 gallons	
Water Contained: 55-gallon drum	Casing Diameter: 2 inches	

Time	Cum. Vol. Removed	Turbidity (NTU)	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	ORP (mV)	Comments
14:01	0.0	--	--	--	--	--	--	Begin surging; bailer.
14:11	0.0	--	--	--	--	--	--	Complete surging.
14:13	0.0	--	--	--	--	--	--	Begin purging; bailer.
14:20	2.3	--	--	--	--	--	--	Pause purging; bailer.
14:26	2.3	--	--	--	--	--	--	Resume purging; peristaltic pump.
14:49	4.1	24.4	6.95	657	16.1	0.81	-91.7	Continue purging; peristaltic pump.
15:10	5.5	1.82	6.95	653	16.1	0.89	-95.3	Continue purging; peristaltic pump.
15:32	7.0	0.83	6.95	656	16.1	0.96	-90.5	Continue purging; peristaltic pump.
15:32	7.0	--	--	--	--	--	--	Development complete.

Notes:
cum. = cumulative.
DO = dissolved oxygen.
DTB = depth to bottom.
DTW = depth to water.
ft = feet.
gal = gallon.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity unit.
ORP = oxygen reduction potential.
uS/cm = microsiemens per centimeter.
vol. = volume.

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Appendix E

Monitoring Well Survey

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Appendix E
Survey Data for Replacement Monitoring Wells
North Cascade Ford Site
116 W Ferry Street, Sedro-Woolley, WA

Well	Measurement Location	Northing US survey feet, NAD 83/11	Easting US survey feet, NAD 83/11	Elevation feet, NAVD 88
MW01R2	Top of Monument	552453.1567	1299100.3594	56.90
	Top of PVC Casing			56.66
MW09R	Top of Monument	552440.9615	1299026.6739	56.86
	Top of PVC Casing			56.60
MW10R	Top of Monument	552326.1504	1299082.0575	56.34
	Top of PVC Casing			55.75

Notes

Measurements were taken from the north side of the flush mount monument or PVC casing.

Horizontal positions are per previous on-site control, per WSDOT published GP monuments.

Elevations are per previous on-site control, per WSDOT published BM monuments.

Field survey performed by Pacific Surveying & Engineering, Inc. of Bellingham, Washington on 10/10/2023 via total station & electronic data collection.

NAD 83/11 = North American Datum of 1983, National Adjustment of 2011.

NAVD 88 = North American Vertical Datum of 1988.

PVC = polyvinyl chloride.

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