



Northwest Groundwater  
Consultants, LLC

February 29, 2024

Project No. 01127-02

Mr. William Wooding  
Lake Erie Pit 1 LLC  
13540 Rosario Road  
Anacortes, Washington 98221

**Subject: Lake Erie Pit Groundwater Evaluation**

Dear Bill:

Northwest Groundwater Consultants, LLC (NWGC) has prepared this groundwater evaluation to support a special use permit application for the expansion of the Lake Erie Pit mine located at 13540 Rosario Road near Anacortes, Washington (the Mine or Site) (Attachment A, Figure 1). The Site is located within Section 11, Township 34 North, Range 1 East in Skagit County, Washington. The Mine currently operates on the following tax parcels; P19108, P19162, and P19165 under Skagit County Conditional Use Permit PL16-0056, and its owner and operator, Pit 1, LLC (Pit 1), wishes to expand operations to include the following tax parcels; P19161, P19164, P19158, P90028, and P19155 (collectively, “the Property”). The Mine and Property are owned by Pit 1. The Mine, as discussed in this report, comprises the existing permitted parcels and the proposed expansion parcels.

The Skagit County Planning and Development Services (SCPDS) requires a hydrogeologic assessment of the Mine to be conducted as part of the mining special use permit application and in accordance with Skagit County Code (SCC) 14.16.440(8)(b). This groundwater evaluation supplements the hydrogeologic assessment prepared September 26, 2016 (MFA, 2016). Excerpts from the hydrogeologic assessment are included in this report. Further, this groundwater evaluation was prepared in response to the request of the Skagit County Board of Commissioners.

## BACKGROUND

Pit 1 is applying for a mining special use permit from Skagit County for the development of the following tax parcels as a surface mine for aggregate resources: P19161, P19164, P19158, P90028, and P19155. The currently permitted and expansion parcels are zoned as Rural Resource-Natural Resource Lands (RRc-NRL) (Attachment A, Figure 2).

The Mine will be dry mined using standard surface mining equipment (i.e., front end loaders and excavators). The mined aggregate will be loaded into trucks and transported off the Property. The maximum floor depth of the Mine is proposed to be no lower than 250 feet



mean sea level (msl) and will not go below 10 feet above the seasonal high groundwater table beneath the Property. Storm water will be directed to the east portion of the Site by means of maintaining a positive grade.

## SITE AND VICINITY CONDITIONS

The Mine is located in an upland area on Fidalgo Island approximately two miles south-southeast of Anacortes, Washington. The topography of the Mine slopes downward to the northeast toward Lake Erie and ranges in elevation from approximately 240 feet msl along the northeast boundary of the proposed expansion area to approximately 340 feet msl in the south portion of the proposed expansion area. The Mine is accessed from Rosario Road; the entrance is approximately 0.13 mile east of Marine Drive.

Mean annual precipitation at the Site is approximately 28.6 inches per year based on the 30-year period from 1981 to 2010 (WRCC, 2024). During the groundwater investigation presented in this letter report, an “atmospheric river” event brought large amounts of precipitation to the region. Precipitation during the months of December 2023 and January 2024 measured approximately 4.52 and 4.32 inches (CoCoRaHS, 2024), respectively.

### Surface Soils

Soils in Skagit county is mapped by the Natural Resource Conservation Service (NRCS) in the 1980s (NRCS, 1989). Site soils are mapped as predominantly Catla gravelly fine sandy loam, Keystone loamy sand, and Laconner very gravelly loamy sand (Attachment A, Figure 3). Mapped soils at the Site have no frequency of flooding or ponding (NRCS, 1989).

The Catla gravelly fine sandy loam is characterized as being moderately well drained, a very low to moderately low capacity to transmit water, and very low water storage. These soils are derived from glacial drift (i.e., till) and occupy the unmined areas of the central portion (current permitted parcels) and east portion (expansion parcels) of the Site.

The Keystone loamy sand is characterized as excessively drained, high to very high capacity to transmit water, and low water storage. The Keystone loamy sand is derived from glacial outwash and occupies the unmined areas of the west portion (expansion parcels) of the Site.

The Laconner very gravelly loamy sand is characterized as being moderately well drained, very low to moderately low capacity to transmit water, and very low water storage. The Laconner gravelly loamy sand occupies the unmined areas of the north portion (current permitted parcel) of the Site.



## Geology

Detailed descriptions of the surficial and subsurface geology of the Site and vicinity are presented in a map completed by the U.S. Geological Survey (Miller and Pessel, 1986). The geology of the Site consists predominantly of Fraser-age continental glacial till (Qgt) (unmined areas of the east and central portions of the Site) and Fraser-age continental glacial outwash (Qgas and Qgos) (west portion of the Site). These unconsolidated deposits are part of the Vashon Stade. The Qgt is the predominant geologic unit present at the ground surface in the unmined areas of the east and central portions of the Site (Attachment A, Figure 4). The Qgas is exposed at the ground surface in the northwest portion of the Site and the Qgos is exposed at the ground surface in the southwest portion of the Site. These deposits are typically comprised of boulders, cobbles, pebbles, sand, silt, and clay in a poorly sorted mixture. Well logs in the vicinity of the Site indicate these deposits can exceed 300 feet thick.

Jurassic-age Fidalgo ophiolite outcrops (Ji[f]) are present in the west portion of the Site (Attachment A, Figure 4). This formation extends to the west of the Site and comprises the coastal bluff west of Rosario Road. Based on nearby outcrops of the Fidalgo ophiolite to the north and east of the Site, it is inferred that this formation underlies the unconsolidated sediments at the Site. This formation would also limit the extent of mining to the west in the northwest portion of Parcel P19158.

## PAST INVESTIGATIONS

Additional investigations subsequent to the Hydrogeologic Assessment (MFA, 2016) were conducted in support of the Skagit County permitting process. Reports of these investigations are summarized below.

### Observation Well (East Well) Installation

An observation well (Washington State Department of Ecology [Ecology] Well ID BJJ-103) was drilled in the south portion of the Site (MFA, 2017). A licensed geologist observed and



documented subsurface conditions and installation and construction details, and prepared the geologic log (Attachment B)<sup>1</sup>.

The purpose of the well was to determine if a perched water-bearing unit existed that might be hydraulically connected to Devil's Elbow lake. The well was completed to a total depth of 277 feet below ground surface (ft bgs). Drilling encountered glacial till in the upper 35 feet and glacial outwash deposits below. The glacial till is consistent with the Catla sandy loam described above.

No perched groundwater was encountered. The static water level (SWL) measured at the time of drilling was approximately 263 ft bgs (groundwater elevation 183 feet above mean sea level [amsl]). Another SWL of 255.4 ft bgs was measured four days after completion of the well. This SWL is equivalent to a groundwater elevation of 190.2 feet amsl. Drilling and installation of the observation well determined that groundwater underlying the Site is in an unconfined aquifer approximately 190 feet amsl elevation. This elevation is approximately 60 feet below the proposed mine floor elevation prior to reclamation.

## Lake Erie Pit Hydrologic Analysis

A hydrologic analysis was conducted to estimate the peak discharge for the 25-year, 24-hour storm event within the Lake Erie Pit permit boundary (NWGC, 2019a). Precipitation depth and intensity for the 25-year, 24-hour storm event was estimated to be 2.4 inches and 0.10 inches per hour (in/hr), respectively. Peak flow rate expected from the 25-year, 24-hour event was estimated using the Rational Method. A runoff coefficient (C) of 0.30 based on unimproved areas was selected. Based on the hydrologic data and calculated areas, the estimated peak discharges for the 25-year, 24-hour event is approximately 1.52 cubic feet per second (cfs) which is equivalent to 683 gallons per minute (gpm). Stormwater will be conveyed to the east portion of the Site.

## Lake Erie Pit Well Reconnaissance

To address Skagit County concerns on the direction of groundwater flow as it may be relative to nearby slopes west of the Site, it was agreed upon with Mr. John Cooper, Skagit County Planning and Development Service to measure groundwater levels in three wells (NWGC, 2019b). Several wells were identified (three wells north of the Site and two wells

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<sup>1</sup> Well drillers are required by Ecology to prepare and submit well logs. These well logs are typically not as detailed, and in many cases, less reliable than geologist-prepared logs.



east of the Site) and communicated to the Client so that the Client could contact the respective owners for permission to measure groundwater levels. Only one owner (Reisner well) provided permission. The other two wells included well BJF-103 (observation well on site) and the Wooding well located north of Rosario Road, both owned by the Client.

Groundwater levels in these three wells were measured on March 7, 2019. In addition, elevations at each well were established using a survey-grade GPS. Plotting of groundwater elevations determined that the groundwater flow direction beneath the Site was approximately North 9° East.

## SCOPE OF WORK

The scope of work conducted in December 2023 and January 2024 included drilling and completion of two observation wells, collection of groundwater samples, and measuring groundwater levels in select wells located at and near the subject property. Groundwater levels were used to develop groundwater contours and determine the groundwater flow direction.

## Well Drilling Observations and Findings

Lake Erie Pit contracted Aquatech Well Drilling and Pumps, Inc. (Aquatech) of Sedro-Woolley, Washington to drill and install two observation wells. A licensed geologist from Aspect Consulting (Aspect) (under contract to Lake Erie Pit) observed the drilling and documented subsurface conditions and well installation and construction details. Aspect also assisted NWGC in the preparation of figures and well logs presented in this report.

Well locations were selected to investigate groundwater conditions in the north and west portions of the Site. Final locations were determined based on access for the drill rig and support truck.

Aquatech drilled two observation wells during the period from December 5 to December 8, 2023. The wells were drilled using a GEFECO Speedstar 30K air rotary rig. During well construction, Aquatech advanced a 10-inch diameter steel casing from the ground surface to approximately 18 ft bgs and then advanced a 6-inch diameter steel casing to final depth. A bentonite seal was installed between the 10-inch and 6-inch casing before removing the 10-inch casing. The north well is assigned the ID MW-1 (Ecology Well Tag No. BPN970), and the south well is assigned the ID MW-2 (Ecology Well Tag No. BPN971). Well



coordinates and ground surface elevations<sup>2</sup>, as measured with a Trimble R1 GNSS Receiver, are contained within the well logs (Attachment B).

#### MW-1

MW-1 is located in the north portion of the Site in Parcel P19108 approximately 90 feet south of Rosario Road. Ground surface elevation is approximately 278 feet. The well was drilled to a total depth of 110 feet. Gravel, sand, and silty sand were encountered during the drilling. Sand and gravel were the predominant materials from ground surface to 24 feet deep. From 24 to 91 ft bgs, well-graded sand was encountered. These materials were noted to be dry. From 91 to 96 ft bgs, wet, silty sand was present. And from 96 to 110 ft bgs, wet, well-graded sand was encountered. Groundwater was first encountered at 92 ft bgs. Subsequent static water level (SWL) measurements indicated that groundwater levels varied from 89 to 90 ft bgs.

#### MW-2

MW-2 is located in Parcel P19168 approximately 200 feet east of Rosario Road and 190 feet south of Parcel 19158. Parcel P19168 is owned by Pit 1 LLC but is outside the proposed expansion parcels. Ground surface elevation is approximately 332 feet. The well was drilled to a total depth of 169 feet. Sand and gravel were generally encountered from ground surface to 80 ft bgs (Attachment B). A poorly-graded sand layer was encountered from 80 to 92 ft bgs. Silty sand extended from 92 to 160 ft bgs and poorly-graded sand was present from 160 to 169 ft bgs. A perched water zone was present at 80 ft bgs and groundwater was encountered at 148 ft bgs. The material between the perched water and groundwater was observed to be dry. Subsequent SWLs indicated groundwater levels were approximately 140 ft bgs.

### Water Quality Sampling

Water quality sampling consisted of collecting samples from three site wells, four private wells, and two springs. The three site wells included MW-1, MW-2, and the East Well (Well Tag No. BJF-103 drilled in September 2017). Private wells included wells located on properties owned by Devries, Calvert, Reisner and Wooding. Water samples from private wells were collected from outside faucets. The two springs included a spring located in the

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<sup>2</sup> Ground surface elevations were measured with the Trimble R1 (sub-meter precision) and corrected using 3DEP LiDAR digital elevation model from the USGS.



slope area northwest of Lake Erie Pit, referred to as the North Spring, and the Dodson Canyon Spring. Table 1 below summarizes sample locations.

**Table 1. Groundwater Sampling Locations**

<b>Sample Location</b>	<b>Sample Date</b>	<b>Lab Sample ID</b>	<b>Property Owners(s)</b>	<b>Latitude</b>	<b>Longitude</b>
East Well	1/3/2024	S07	Wooding	48.4496	-122.6523
MW-1 (North well)	1/3/2024	S03	Wooding	48.4520	-122.6511
MW-2 (South well)	1/3/2024	S06	Wooding	48.4479	-122.6569
Wooding Shop Well (Faucet)	1/3/2024	S05	Wooding	48.4524	-122.6486
Calver Well (Faucet)	1/3/2024	S01	Calvert, Wilson & Lori	48.4494	-122.6471
Reisner Well (Faucet)	1/3/2024	S02	Reisner, Theodore & Barbara	48.4486	-122.6459
DeVries Well (Faucet)	1/3/2024	S04	DeVries, Case	48.4531	-122.6504
Spring NW of pit (Grab)	1/4/2024	S08	San Juan Preservation Trust	48.4531	-122.6547
Dodson Canyon Spring (Grab)	1/4/2024	S09	Del Mar Community Service	48.4480	-122.6585

Prior to the collection of groundwater samples from the observation wells, the wells were purged to eliminate stagnant water in the well casing and to reduce the turbidity to the point the samples will be representative of the dissolved contaminant concentrations. During



purging, water quality parameters were monitored including temperature, specific conductance, dissolved oxygen, pH, ORP, and turbidity using a YSI ProPlus water quality meter and a handheld turbidity meter. For MW-1 and MW-2, adequate purging was achieved when the pH and specific conductance of the groundwater had stabilized, and the turbidity had either stabilized or was below 10 NTUs. Parameter stabilization criteria followed the EPA groundwater sampling procedures. Stabilization criteria could not be achieved from the East well due to the low volume of water available in the casing. Approximately 20 gallons of water were removed from this well prior to sampling.

Collection of the water quality samples from spring sources and private water systems followed guidance available from the DOH, EPA, and Edge Analytical. Samples taken from faucets were flushed for approximately 5 minutes prior to sampling.

Samples were collected at each location in laboratory-prepared bottles. Water quality sampling included the following analyses:

- Major Cations (calcium, magnesium, potassium, sodium)
- Major Anions (bicarbonate, carbonate, chloride, sulfate)
- Alkalinity (as  $\text{CaCO}_3$ )
- Fluoride, iron, manganese, total dissolved solids
- Ammonia, nitrate, nitrite, phosphorus

Samples were analyzed by Edge Analytical, Inc., a Washington State-certified laboratory in Burlington, Washington. Attachment C presents the laboratory analytical reports.

### Major Cation/Anion Results

To provide the means for comparing analyses with each other, or to emphasize differences and similarities, graphical procedures such as trilinear diagrams (Piper diagrams) and Stiff diagrams are used. Analytical results received from the laboratory are typically reported in milligrams per liter (mg/L). Concentrations of the cation and anion analytes are then converted to milliequivalents per liter (meq/L) to make direct comparisons between samples (Table 2).

Piper diagrams (Figure 1) provide the means to compare the water samples to each other on the same plot. Cation and anion concentrations (in meq/L) and expressed as a percentage of total ions, are plotted on the appropriate equilateral triangles (cations and anions) and on the diamond plot (total ions). Water quality samples collected from the East Well and the Wooding Well show distinct differences from the other sample locations in both cations and anions. Further, waters samples from the two springs show some differences





from the remaining wells in cations. A more detailed comparison of cation/anion concentrations is made through the use of Stiff diagrams.

General classification of water types is performed using Stiff diagrams (Figure 2). Concentrations (in meq/L) of the four major cations and the four major anions for each sample are plotted to the right and to the left, respectively of the zero concentration for each sample.

Analytical results indicate that the groundwater and spring samples can be generally classified as following water types (Figure 2):

- Calcium-bicarbonate: MW-1, MW-2, Wooding Well
- Sodium-bicarbonate: East Well
- Magnesium-bicarbonate: Devries Well, Calvert Well, Reisner Well, North Spring, Dodson Canyon Spring

A more detailed review of the stiff diagrams shows that cation/anion concentrations (in meq/L) are similar in MW-1 and MW-2. Groundwater in the East Well has much lower concentrations of magnesium, sulfate, calcium, bicarbonate, sodium and chloride than those of generally similar water types in the other two site wells, three private wells, and the two springs. Further review also shows that magnesium and calcium concentrations in the three private wells are more similar to each other and that there is a greater difference in magnesium and calcium concentrations in the two springs. Sodium concentrations in the two springs are also greater than those in the private wells.

### General Water Quality

General water quality included the following analytes: alkalinity, fluoride iron, manganese, total dissolved solids, ammonia, nitrate, nitrite, and phosphorus. Analytical results (Table 2 and Figure 3) show the following:

- Alkalinity and total dissolved solids are similar in all water samples.
- The highest iron concentrations were detected in the East Well, North Spring, MW-2, and Dodson Canyon Spring.
- Fluoride concentrations are at or near their practical quantitation limit (PQL).
- Ammonia was detected in the two springs, MW-2, East Well, Wooding Well, and Calvert Well.
- Nitrate was detected in the two springs, MW-2 and to a much lesser concentration in the Wooding Well.



## Groundwater Levels

Groundwater levels were measured in site and private wells on January 31, 2024. Spring elevations were recorded on January 4, 2024 during water quality sampling. Groundwater levels were measured in MW-1, MW-2, and the East Well using a Waterline Envirotech water level meter. Groundwater levels were measured in the private wells using a Global WL650 Sonic water level meter. Pumps installed in the private wells were not operating at the time the measurements were taken. The locations and elevations of each well were established using a Trimble R1 GNSS Receiver. Table 3 below presents measured groundwater and spring elevations.

**Table 3. Groundwater/Spring Elevations**

Well/Spring ID	Measuring Point Elevation (ft)	DTW (ft bMP)	Groundwater/Spring Elevation (ft)
East Well	448.42	256.95	191.5
MW-1 (North well)	281.86	90.50	191.4
MW-2 (South well)	334.59	139.70	194.9
Calvert Well	246.9	56.25	190.6
Reisner Well	226.7	38.66	188.0
De Vries Well	238.3	53.80	184.5
Wooding Well	241.5	53.24	188.3
North Spring			169.3
Dodson Canyon Spring			232.9

Notes:

ft = feet NAVD88

ft bMP = feet below measuring point

NA = Not applicable

**Water levels measured on 1/31/2024**

## Geologic Cross Sections

Three cross sections were developed through the Site (Figures 4, 5, and 6). These cross sections present general lithology encountered in the wells, inferred water table, topography, and approximate limits of the proposed mining and subsequent reclamation surfaces. Geologic logs for MW-1, MW-2 and the East Well, prepared by licensed



geologists, are presented in Appendix B. Well logs for the private wells are also presented in Appendix B. No record of a well log was available for the Wooding Well.

Cross section A-A' shows that the elevation of the North Spring is approximately 22 feet lower than the groundwater elevation measured in MW-1. Although these differences in elevation suggest that the hydraulic gradient is towards the spring, analytical data discussed above indicates that there are distinct differences in water chemistry between the North Spring and that of the groundwater beneath the Site. As such, a hydrologic connection between groundwater beneath the Site and the North Spring may not exist.

As can be seen from the cross sections, the mining surface floor will extend no deeper than 250 feet elevation. The water table is generally 59 feet lower in elevation. Cross section B-B' shows that the elevation of the Dodson Canyon Spring is approximately 38 feet higher than the groundwater elevation measured in MW-2. The spring elevation is consistent with the elevation of perched groundwater that was encountered during the drilling of MW-2.

### Groundwater Flow

Groundwater contours developed using the water levels measured on January 31 shows that most groundwater in the central and east portions of the Site generally flows to the northeast and smaller components flow to the north and northwest (Figure 7). Although groundwater contours appear to suggest that groundwater flow in the northwest is hydrologically connected to the North Spring, water quality results again suggest that there are distinct differences in water chemistry between the North Spring (and Dodson Canyon Spring) and that of the groundwater beneath the Site. These differences in the water quality do not substantiate that a hydrologic connection exists. Thus, groundwater contours were not extended beyond Rosario Road.

As previously discussed in the Geology section above, bedrock (Fidalgo ophiolite) is mapped in the northwest portion of Parcel P19158. Its presence at or near surface likely creates a no flow boundary in the northwest portion of Parcel P19158. Groundwater flow from the southwest portion of the Site likely is redirected to the central portion of the of the Site due to the presence of this bedrock. Because of the uncertainty to the extent of the bedrock in the subsurface, groundwater contours in this area may not reflect groundwater flow being redirected.

## DISCUSSION

As discussed above, overlying glacial till occupies the unmined areas of the central and east portions of the Site. These soils have a relatively low capacity to transmit water (i.e., infiltration from precipitation). Upon the removal of these soils, the underlying glacial



outwash materials (e.g., sands and gravels), have a much higher capacity to transmit water. Comparatively, the glacial till soils are absent in the west portion of the Site.

Differences in the overlying soil types are perceived to have an effect on groundwater conditions to the extent that if overlying glacial till is removed, increased infiltration will occur into the groundwater and the groundwater flow will increase to the detriment of the unstable slope areas west of the Site. However, given the absence of the glacial till in the west portion of the Site and that during the drilling of MW-1 and MW-2, it was observed that much of the subsurface sands and gravels were dry until drilling reached the water table, the premise that there will be increased infiltration due to mining the very same sands and gravels is not substantiated. Even in MW-2, where a perched water was encountered at approximately 80 feet deep, the materials above and below the perched zone were observed to be dry. It should also be noted that during the drilling of MW-1 and MW-2, unseasonable amounts of precipitation was recorded for the region due to an “atmospheric river” event that was affecting the entire region and that groundwater levels measured in the two new wells did not significantly change.

Thus, the removal of the glacial till in the unmined areas of the central and east portions of the Site, where groundwater flow is generally to the north and northeast, are not expected to result in significant changes to groundwater flow given that the underlying glacial outwash materials are similar to those found in the west portion of the Site. Further, the removal of materials in the west portion of the Site also is not expected to affect the underlying groundwater flow as noted above.

## SUMMARY AND CONCLUSIONS

This groundwater evaluation was prepared to address the requirements for special use permit application under SCC 14.16.440(8)(b). The currently permitted and expansion parcels are zoned as Rural Resource-Natural Resource Lands (RRc-NRL). Glacial till occupies the east and central portions of the Site and is absent in the west portion of the Site. Coarser grained and more permeable glacial outwash underlies the glacial till and extends throughout the Site. Completion of two wells in the west portion of the Site, which occurred during an “atmospheric river” event, observed that much of the glacial outwash material is dry until the water table.

Water quality sampling identified distinct differences in groundwater beneath the Site and that of the springs. Differences in the water types indicate that the springs may not be hydrologically connected to Site groundwater. Groundwater elevations measured in Site and private wells show that most groundwater in the central and east portions of the Site generally flows to the northeast and smaller components flow to the north and northwest.

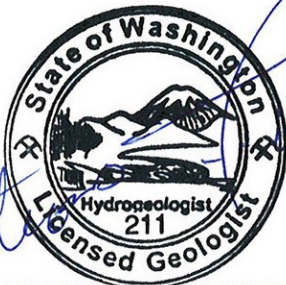
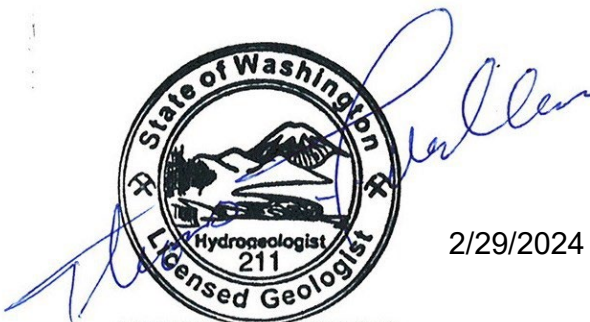


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The premise that increased infiltration of precipitation into the groundwater due to the removal of the overlying glacial till in the central and east portions of the Site will increase groundwater flow is not substantiated due to 1) groundwater levels in the two new wells did not change significantly during the “atmospheric river” event, 2) exposed glacial outwash in the west portion of the Site is seen to be dry, and 3) groundwater flow in the central and east portions of the Site where the glacial till is present is generally to the northeast with a small component to the north. Removal of materials in the west portion of the Site also is not expected to affect underlying groundwater flow.

If you have any questions, or wish to discuss any items further, please do not hesitate to contact me at (208) 755-1094.

Sincerely,



2/29/2024

Thomas F. Mullen

Thomas F. Mullen, LHG  
Principal Hydrogeologist

Attachments:

- Limitations
- References
- Table
- Figures
- Attachment A – Hydrogeologic Assessment Figures
- Attachment B - Well Logs
- Attachment C – Laboratory Analytical Reports

## LIMITATIONS

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The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by NWGC and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that NWGC relied upon any information prepared by other parties not under contract to NWGC, NWGC makes no representation as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.

Results of any investigations or testing and any findings presented in this report apply solely to conditions existing at the time when NWGC investigative work was performed. It must be recognized that any such investigative or testing activities are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the project site may vary from those at the locations where data was collected. NWGC's ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. As such, 100 percent confidence in site investigation conclusions cannot reasonably be achieved.

NWGC, therefore, does not provide any guarantees, certifications, or warranties regarding any conclusions regarding subsurface conditions of any such property. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

## REFERENCES

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- Community Collaborative Rain, Hail and Snow Network (CoCoRaHS), 2024, Viewing Station: WA-SG-32: Anacortes 4.7 SSW: <https://dex.cocorahs.org/stations/WA-SG-32/>.
- Maul, Foster & Alongi, Inc. (MFA), 2016, Hydrogeologic Site Assessment Report, Lake Erie Pit Expansion, Skagit County, Washington. Prepared for McLucas & Associates, Inc. September 26.
- MFA, 2017, Observation Well Installation, Lake Erie Pit Expansion: Letter to McLucas & Associates, Inc. September 28.
- Miller, R.D. and F. Pessel, Jr., 1986, Map showing unconsolidated deposits grouped on the basis of texture, Port Townsend 30' x 60' Quadrangle, Puget Sound region, Washington. USGS Miscellaneous Investigations Series, Map I-1198-D, scale 1:100,000.
- NRCS, 1989, Soil survey of Skagit County Area, Washington. U.S. Department of Agriculture, Soil Conservation Service, September.
- Northwest Groundwater Consultants, LLC (NWGC), 2019a, Lake Erie Pit Hydrologic Analysis: Letter to McLucas & Associates, Inc. January 16.
- NWGC, 2019b, Lake Erie Pit Well Reconnaissance: Letter to McLucas & Associates, Inc. March 11.
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), 1973, NOAA Atlas 2, Precipitation-Frequency Atlas of the Western United States, Volume 5, Idaho.
- Western Regional Climate Center (WRCC), 2024, Anacortes, Washington (450176) 1981-2010 Monthly Climate Summary: <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa0176>

TABLE

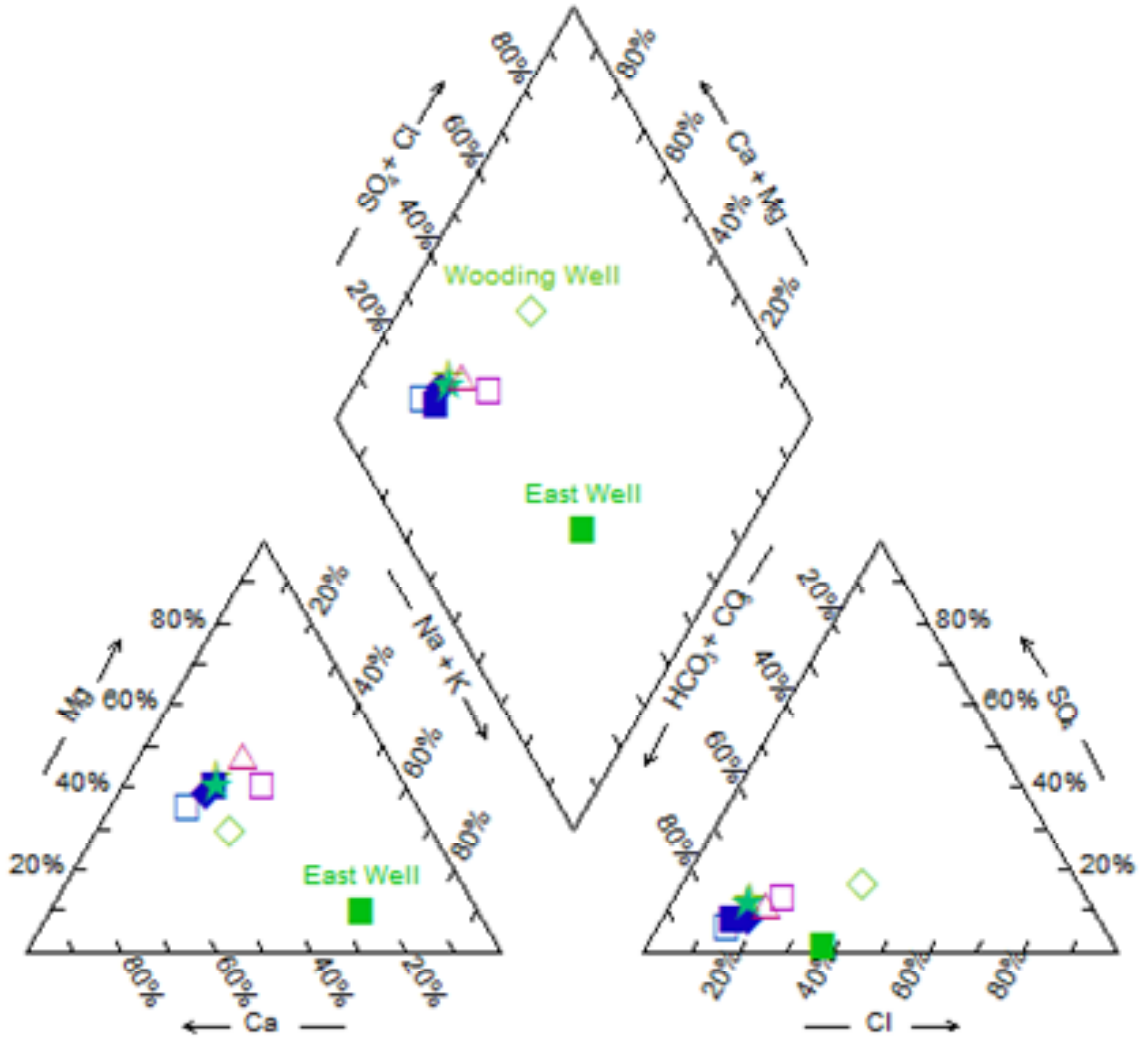
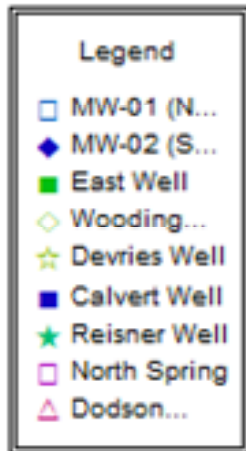



TABLE 3  
Water Quality Results

Sample Location	MW-1		MW-2		East Well		Wooding Well		Devries Well		Calvert Well		Reisner Well		North Spring		Dobson Canyon Spring	
Lab ID	SO3		SO6		SO7		SO5		SO4		SO1		SO2		SO8		SO9	
Date Sampled	1/3/2024		1/3/2024		1/3/2024		1/3/2024		1/3/2024		1/3/2024		1/3/2024		1/4/2024		1/4/2024	
Units	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
<b>Major Cations/Anions</b>																		
Bicarbonate	187	3.065	178	2.917	ND	ND	56.2	0.9211	150	2.458	154	2.524	148	2.426	127	2.081	166	2.721
Calcium	41	2.046	38.2	1.906	3.8	0.1896	19.1	0.9531	29	1.447	27.8	1.387	28.1	1.402	22	1.098	28.7	1.432
Carbonate	ND	ND	ND	ND	17.6	0.5866	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	20.9	0.5895	25.4	0.7164	12.8	0.361	27.4	0.7729	20.4	0.5754	17.5	0.4936	19.8	0.5585	26.6	0.7503	30.5	0.8603
Magnesium	18.1	1.489	20.8	1.712	0.9	0.07406	8	0.6583	19.3	1.588	16.9	1.391	17.2	1.415	17.9	1.473	25.8	2.123
Potassium	2.6	0.0665	1.9	0.0486	1.0	0.02558	2.1	0.05371	2.5	0.06394	2.8	0.07161	2.9	0.07417	3.4	0.08696	2.3	0.05883
Sodium	14.6	0.6351	18.1	0.7873	11.3	0.4915	13.8	0.6003	15.5	0.6742	14.3	0.622	14.8	0.6438	23	1	22.9	0.9961
Sulfate	10.5	0.2186	14.8	0.3081	0.5	0.01041	15.8	0.3289	20.7	0.431	12.2	0.254	18.7	0.3893	19.7	0.4101	18.4	0.3831
<b>General Water Chemistry</b>																		
Alkalinity (mg CaCO <sub>3</sub> /L)	187		178		22.8		56.2		150		154		148		127		166	
Ammonia (mg/L)	ND		0.016		0.59		0.007		ND		0.01		ND		0.027		0.012	
Fluoride (mg/L)	0.11		0.1		0.11		ND		ND		0.11		0.11		0.11		0.11	
Iron (mg/L)	0.4		3.2		19.2		1.62		0.006		0.63		1.08		0.74		0.31	
Manganese (mg/L)	0.018		0.0622		0.14		0.0344		0.0198		0.0371		0.0298		0.114		0.0554	
Nitrate (mg/L)	ND		3.34		ND		0.19		ND		ND		ND		1.43		5.55	
Phosphorus (mg/L)	0.081		0.053		0.026		0.034		0.02		0.076		0.157		0.088		0.07	
Total Dissolved Solids (mg/L)	236		257		38		189		222		205		213		218		263	

Notes:  
mg/L = milligrams per liter  
meq/L = milliequivalents per liter  
mg CaCO<sub>3</sub>/L = milligrams calcium carbonate per liter  
ND = not detected

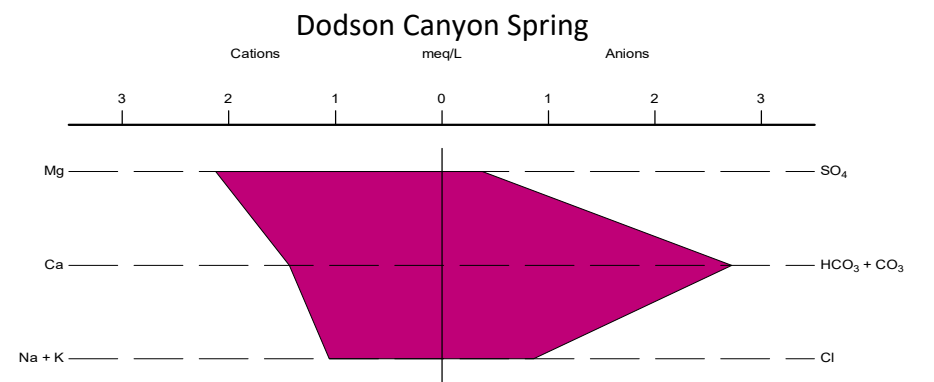
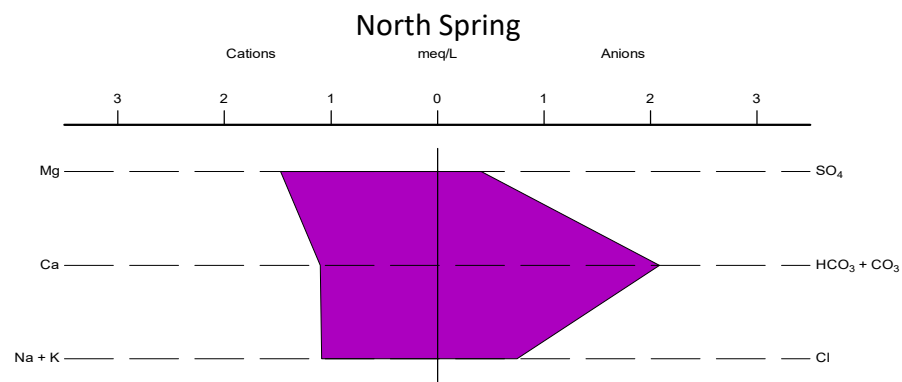
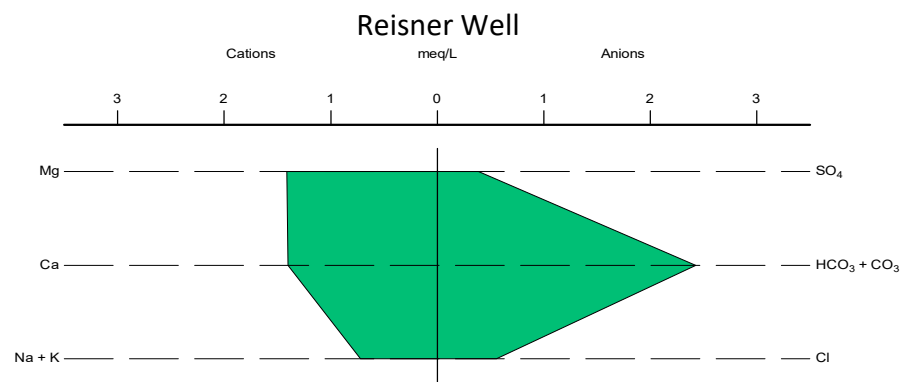
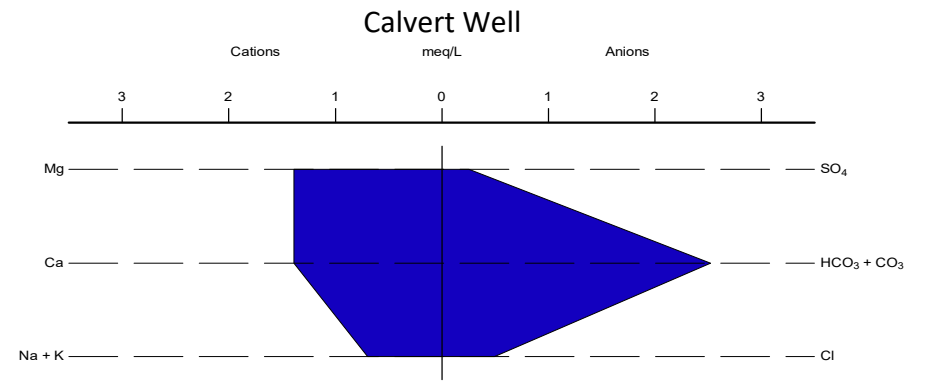
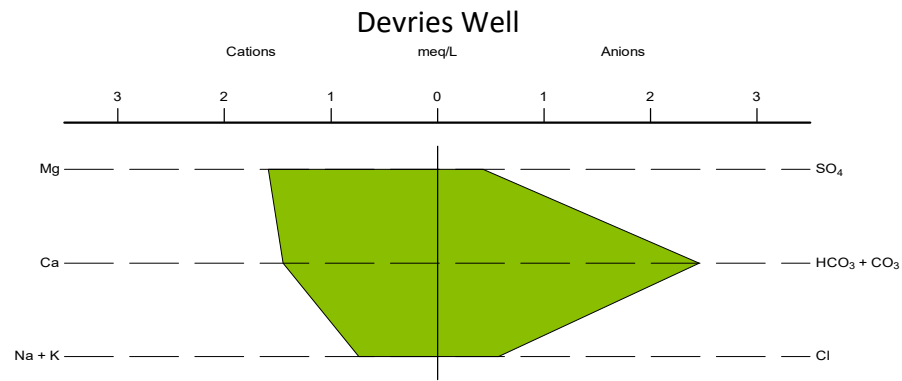
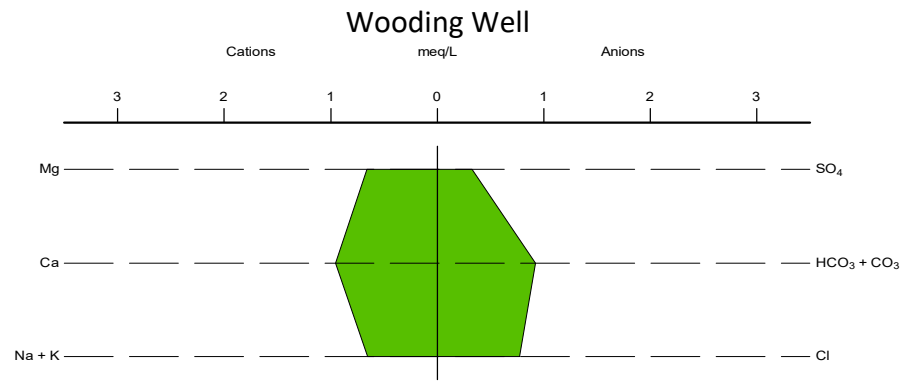
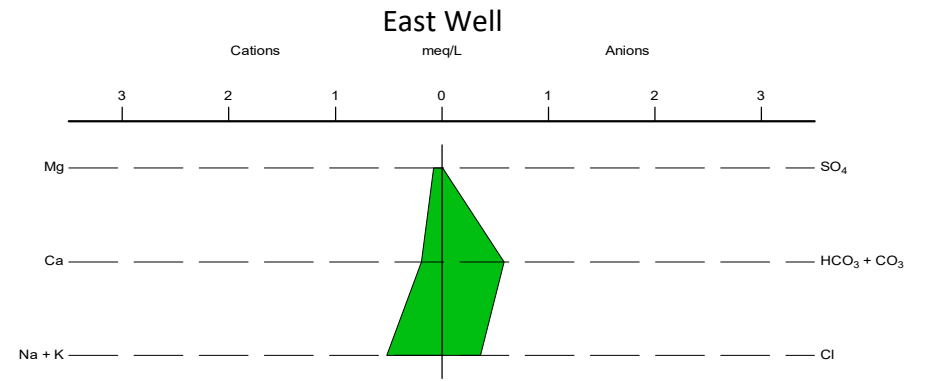
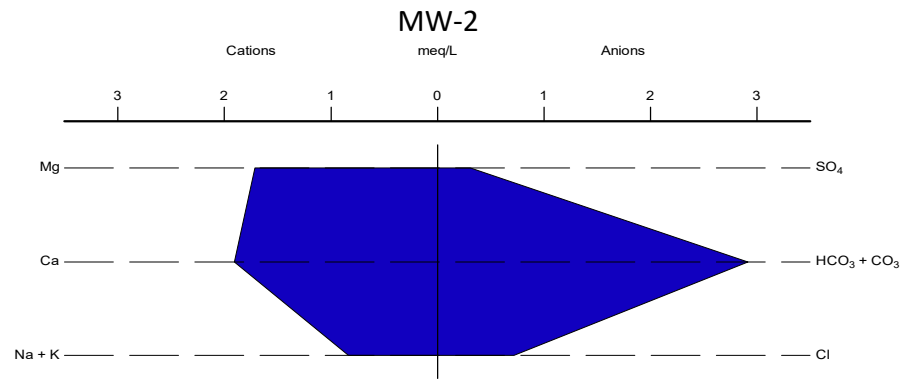
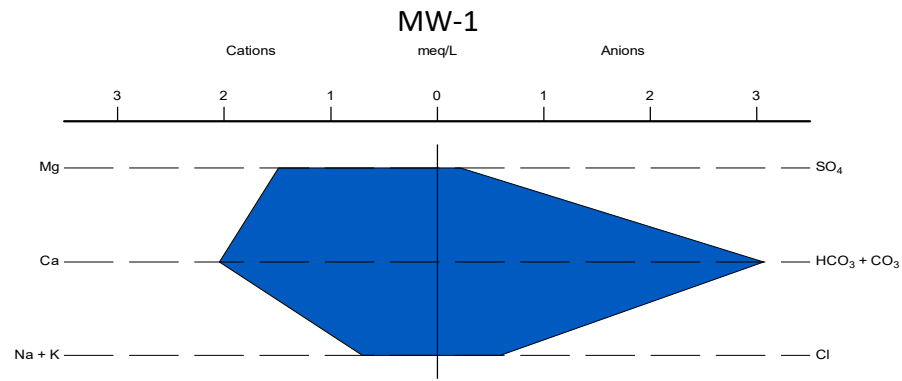
## FIGURES



 <b>Northwest Groundwater Consultants, LLC</b>	
01127-02	FEBRUARY 2024
<b>PIPER DIAGRAM</b> LAKE ERIE PIT GROUNDWATER EVALUATION SKAGIT COUNTY, WASHINGTON	
<b>FIGURE</b>  <span style="font-size: 2em; font-weight: bold;">1</span>	

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C:\Users\lfrmul\OneDrive\NWGC\Projects\01127-02 February 14, 2024



NORTHWEST GROUNDWATER CONSULTANTS, LLC

01127-02

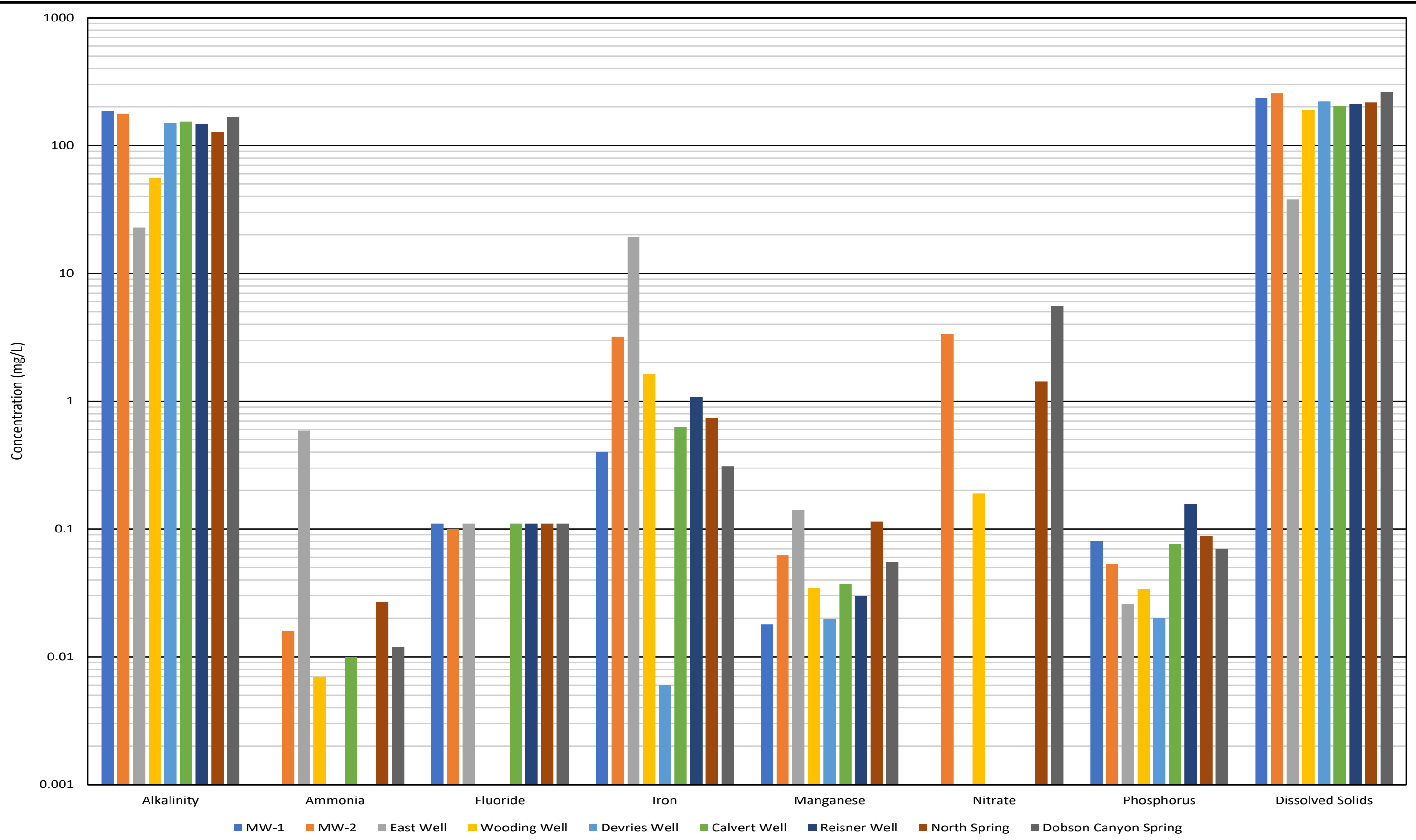
FEBRUARY 2024

**STIFF DIAGRAMS**

LAKE ERIE PIT  
GROUNDWATER EVALUATION  
SKAGIT COUNTY, WASHINGTON

**FIGURE**

**2**



NORTHWEST GROUNDWATER CONSULTANTS, LLC

01127-02

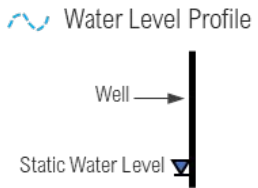
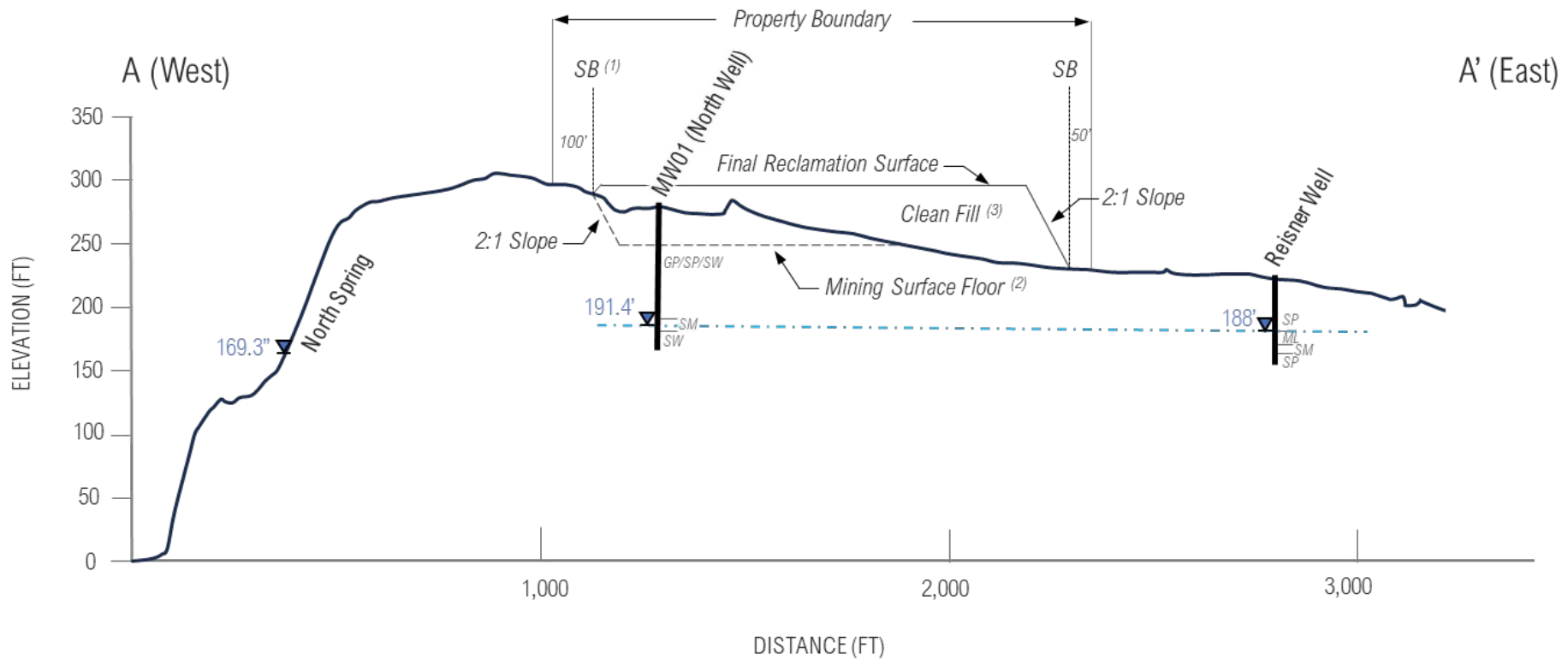
FEBRUARY 2024

**GENERAL WATER QUALITY**

LAKE ERIE PIT  
GROUNDWATER EVALUATION  
SKAGIT COUNTY, WASHINGTON

**FIGURE**

**3**



**Notes:**

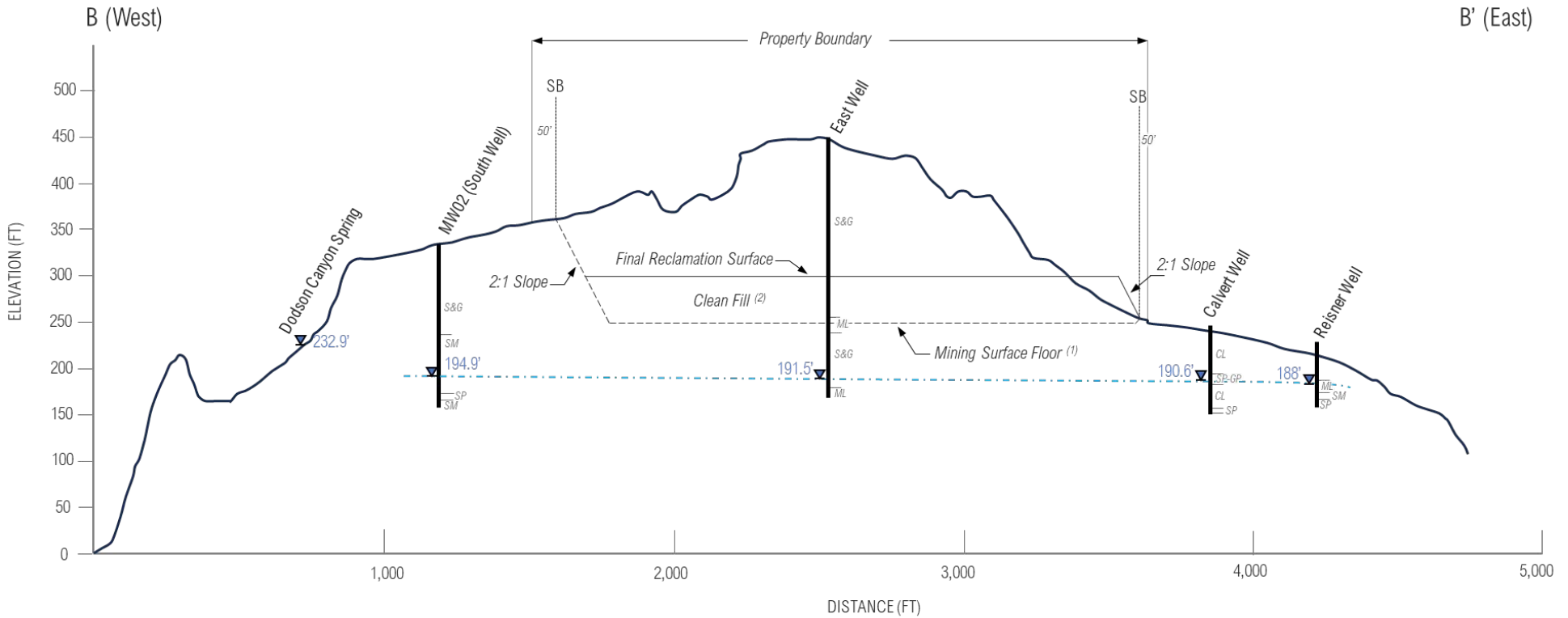
- (1) 100-ft setback to final reclamation is only applicable to Parcel 19108. All other parcels will maintain a 50-ft setback to final reclamation surface.
  - (2) Mine to 50 ft above water table.
  - (3) Mine floor raised to 300 ft elevation.
- SB = Setback  
 Groundwater elevations measured on 1/31/2024

**General Lithology:**

MW-1	Reisner Well
0 – 91': GP, SP, SW	0 – 18': CL, SP, GP
91 – 96': SM	18 – 41': SP
96 – 110': SW	41 – 55': ML
	55 – 62': SM
	62 – 71': SP

**Geologic Materials:**

- GP = Poorly-graded gravel
- GW = Well-graded gravel
- SP = Poorly-graded sand
- SW = Well-graded sand
- SM = Silty sand
- ML = Silt



Water Level Profile



**Notes:**

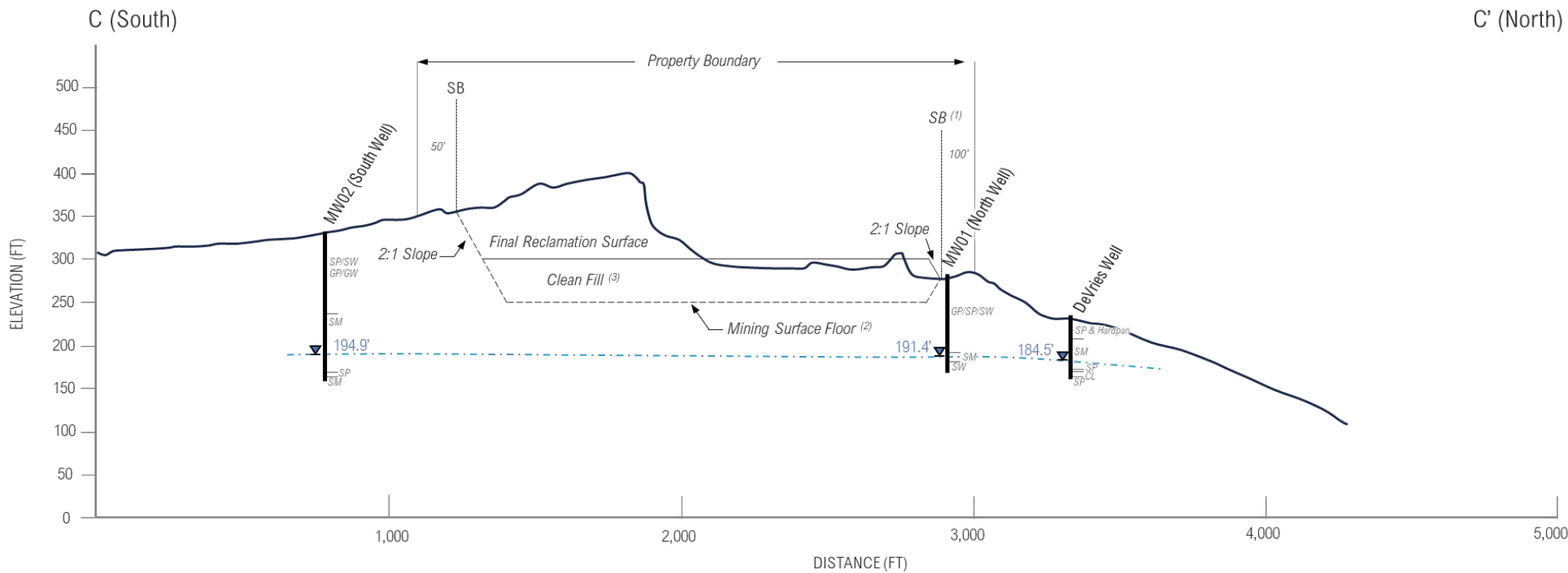
- (1) Mine to 50 ft above water table.
- (2) Mine floor raised to 300 ft elevation.
- SB = Setback
- Groundwater elevations measured on 1/31/2024

**Geologic Materials:**

- GP = Poorly-graded gravel
- GW = Well-graded gravel
- SP = Poorly-graded sand
- SW = Well-graded sand
- SM = Silty sand
- ML = Silt
- CL = Clay

**General Lithology:**

	MW-2	East Well	Calvert Well	Reiser Well
	0 – 92': SP, SW, GP, GW	0 – 180': SP, SW, GP, GW	0 – 55': CL	0 – 18': CL, SP, GP
	92 – 160': SM	180 – 189': SW-SM	55 – 59': SP, GP	18 – 41': SP
	160 – 169': SP	189 – 209': ML	59 – 92': CL	41 – 55': ML
	169 – 174': SM	209 – 240': SW, GW, SP	92 – 96': SP	55 – 62': SM
		240 – 257': SP-SM		62 – 71': SP
		257 – 277': ML		



**Notes:**

- (1) 100-ft setback to final reclamation is only applicable to Parcel 19108. All other parcels will maintain a 50-ft setback to final reclamation surface.
  - (2) Mine to 50 ft above water table.
  - (3) Mine floor raised to 300 ft elevation.
- SB = Setback  
 Groundwater elevations measured on 1/31/2024

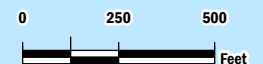
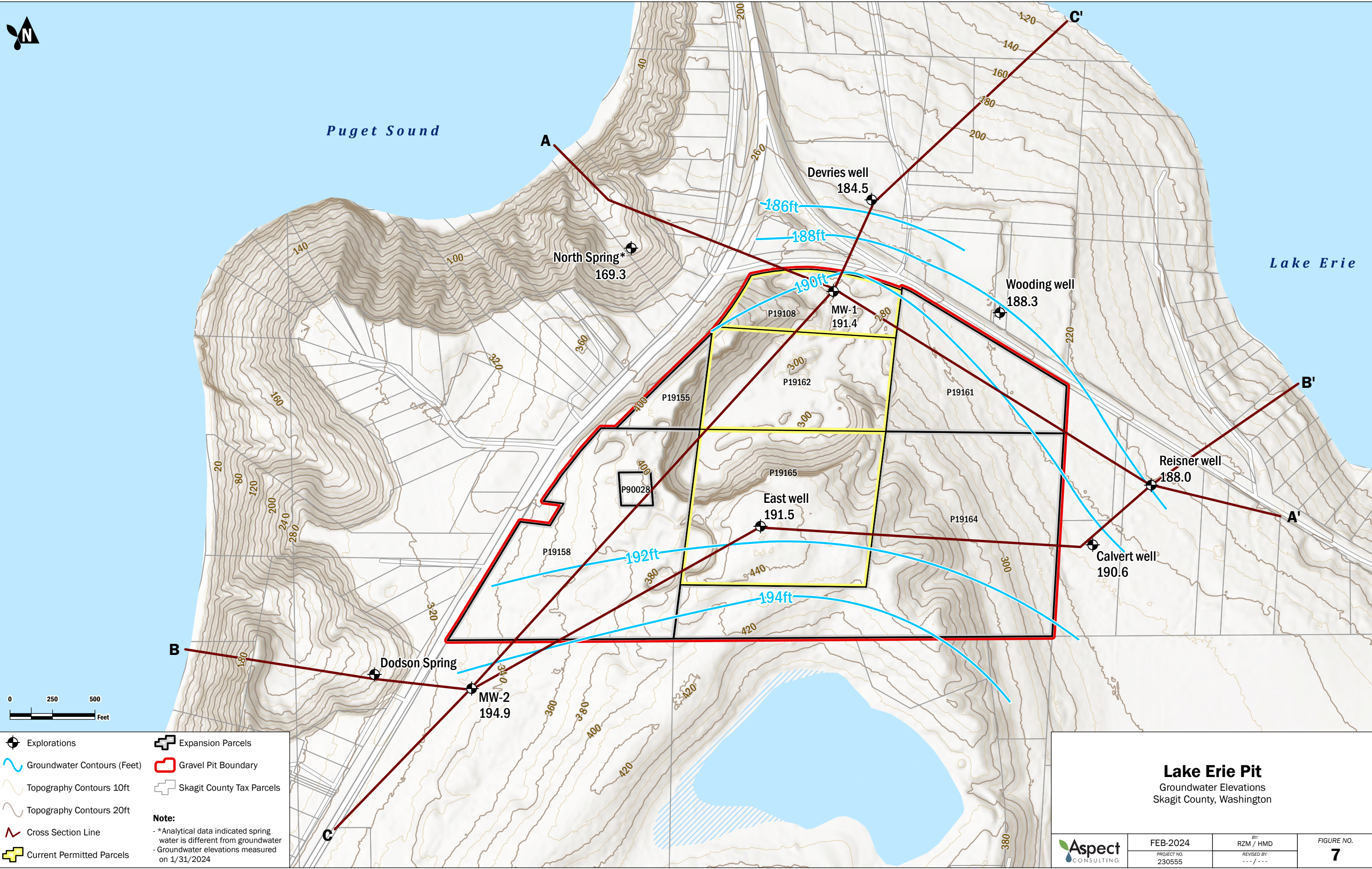
**Geologic Materials:**

- GP = Poorly-graded gravel
- GW = Well-graded gravel
- SP = Poorly-graded sand
- SW = Well-graded sand
- SM = Silty sand
- CL = Clay

**General Lithology:**

MW-2	MW-1	Devries Well
0 – 92': SP, SW, GP, GW	0 – 91': GP, SP, SW	0 – 23': SP & Hardpan
92 – 160': SM	91 – 96': SM	23 – 59': SM
160 – 169': SP	96 – 110': SW	59 – 64': SP
169 – 174': SM		64 – 67': CL
		67 – 77': SP





**Legend:**

- Explorations
- Expansion Parcels
- Groundwater Contours (Feet)
- Topography Contours 10ft
- Topography Contours 20ft
- Cross Section Line
- Current Permitted Parcels
- Skagit County Tax Parcels
- Gravel Pit Boundary

**Note:**

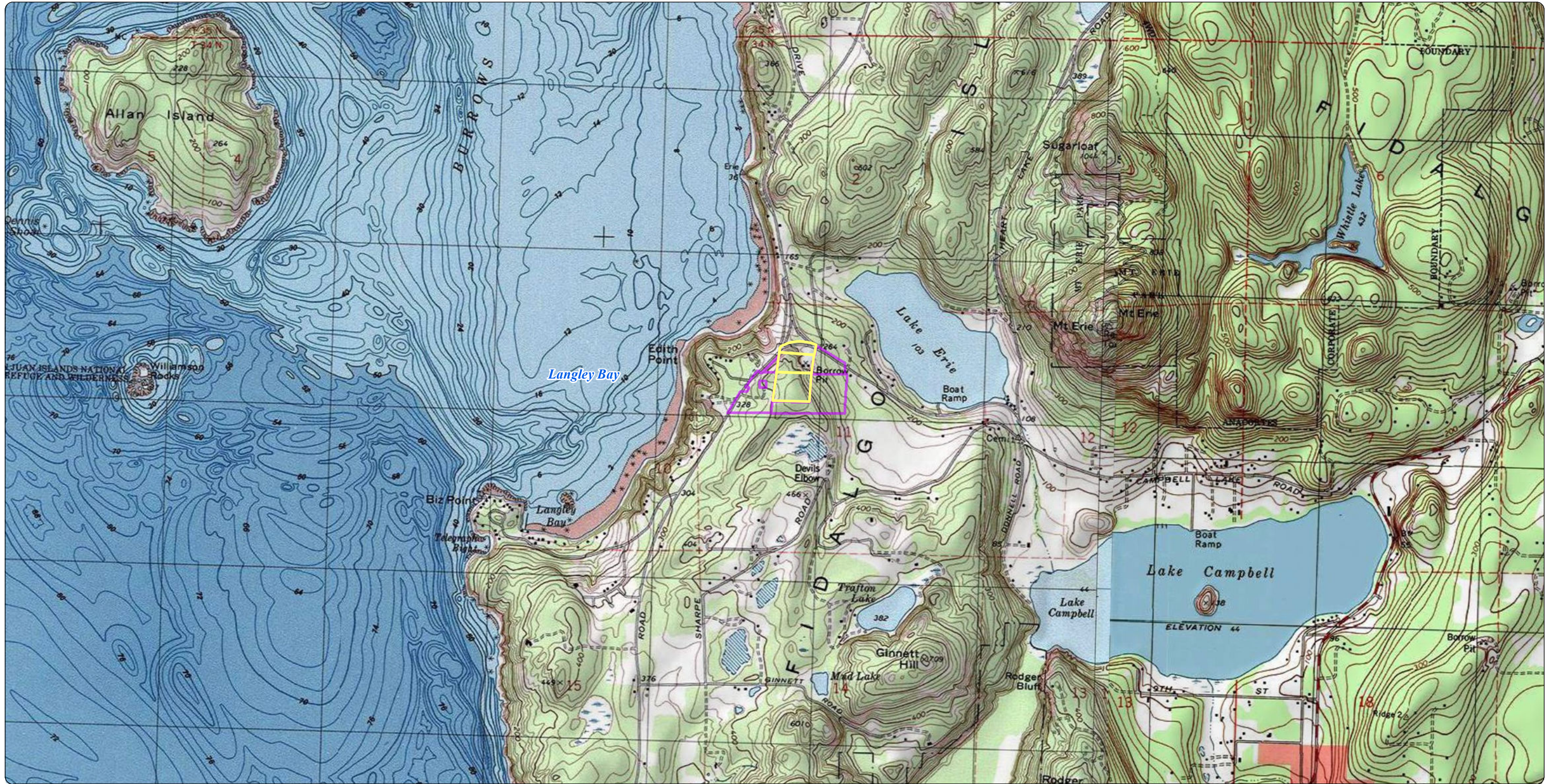
- \*Analytical data indicated spring water is different from groundwater
- Groundwater elevations measured on 1/31/2024

**Lake Erie Pit**  
Groundwater Elevations  
Skagit County, Washington

<b>Aspect</b> CONSULTING	FEB-2024 PROJECT NO. 230555	BY: RZM / HMD REVISED BY: --- / ---
		FIGURE NO. <b>7</b>

## ATTACHMENT A

### Hydrogeologic Assessment Figures

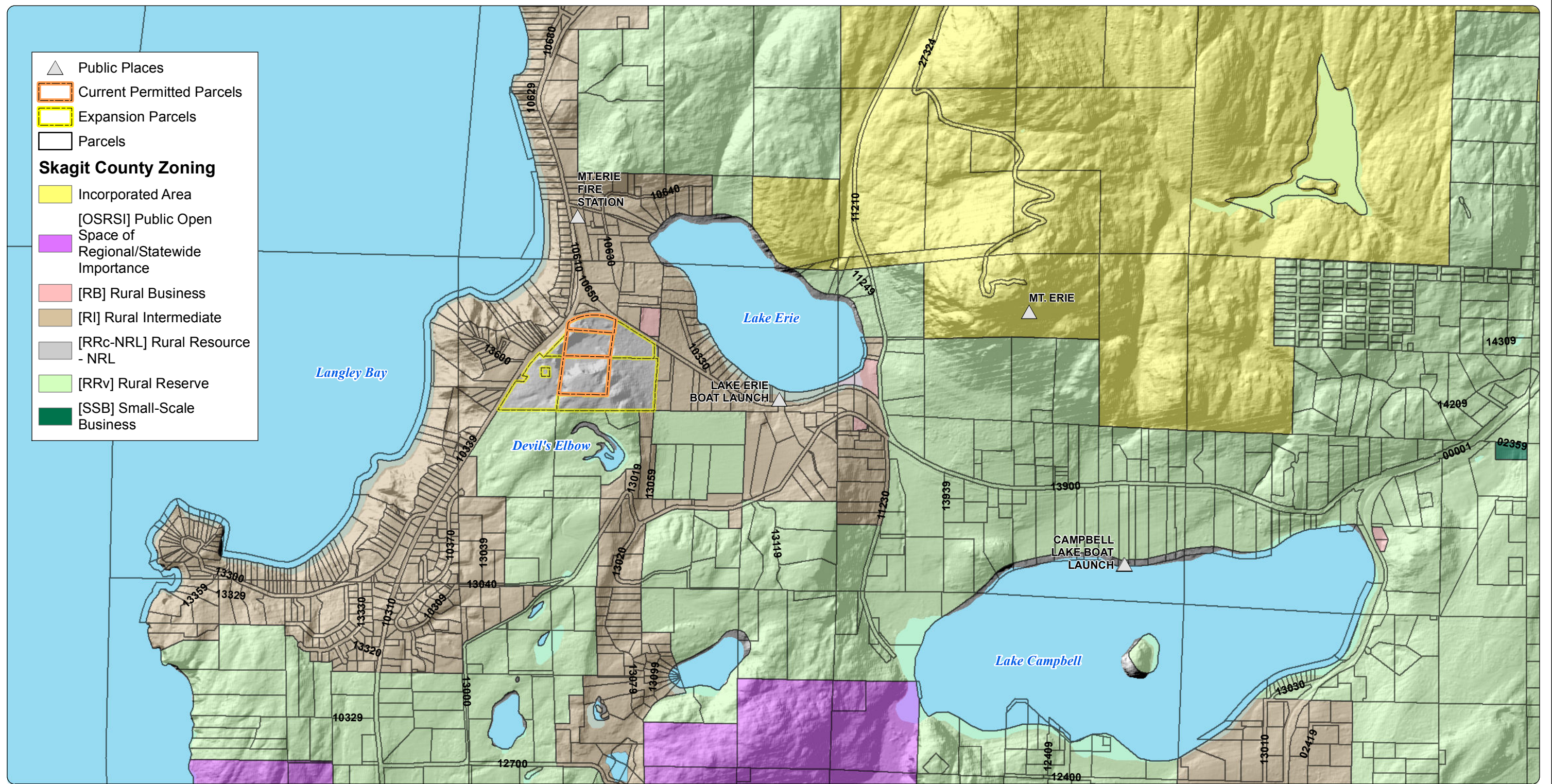


Source: USGS Quadrangle maps obtained from Esri ArcGIS Online

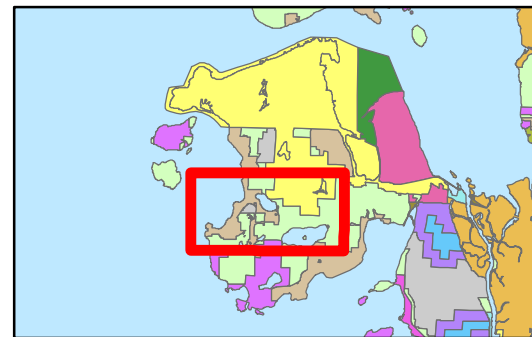
- Current Permitted Parcels
- Expansion Parcels

**Figure 1**  
**Site Vicinity**  
 Lake Erie Pit Mine  
 Anacortes, Washington





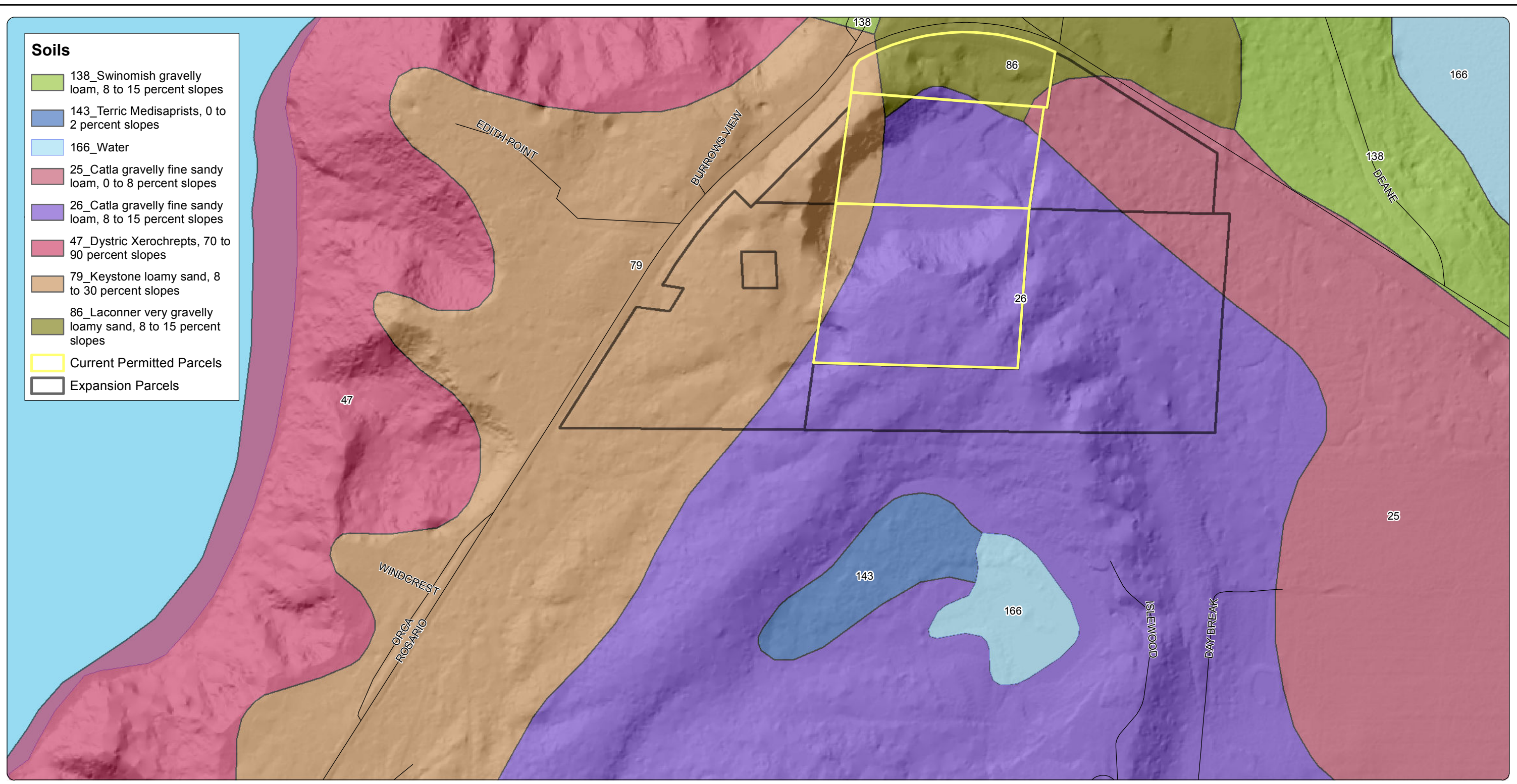
Source: Skagit County Zoning.



**Figure 2**  
**Skagit County Zoning**  
Lake Erie Pit Mine  
Anacortes, Washington



Path: X:\1266.02\_McLucas\_and\_Associates\Project\Hydrogeologic\Site\_Map\_soil\_sile.mxd  
Print Date: 9/28/2016  
Produced By: estrandhagen Approved By:  
Project:



**Soils**

- 138\_Swinomish gravelly loam, 8 to 15 percent slopes
- 143\_Terric Medisaprists, 0 to 2 percent slopes
- 166\_Water
- 25\_Catla gravelly fine sandy loam, 0 to 8 percent slopes
- 26\_Catla gravelly fine sandy loam, 8 to 15 percent slopes
- 47\_Dystric Xerochrepts, 70 to 90 percent slopes
- 79\_Keystone loamy sand, 8 to 30 percent slopes
- 86\_Laconner very gravelly loamy sand, 8 to 15 percent slopes
- Current Permitted Parcels
- Expansion Parcels

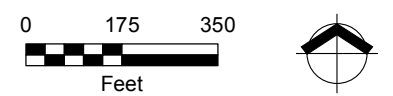
Source: Aerial photograph obtained from Esri ArcGIS Online

Notes:  
1. Soil data provided by the Natural Resources Conservation Service.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Figure 3**  
**NRCS Soil**  
Lake Erie Pit Mine  
Anacortes, Washington



**Current Permitted Parcels** (Yellow outline)  
**Expansion Parcels** (Purple outline)

**Faults**

**Movement Unknown**

- Fault, unknown offset - Identity and existence certain, location accurate [1]
- - - - Fault, unknown offset - Identity and existence certain, location concealed [3]
- - - - Fault, unknown offset - Identity or existence questionable, location concealed [6]

— Contact - Identity and existence certain, location accurate [1]  
 - - - - Contact - Identity and existence certain, location concealed [2]

— Shoreline [5]

**Geologic Units**

- Quaternary alluvial fans, beach deposits, undifferentiated sedimentary deposits, lacustrine deposits, landslides, peat, terraced deposits, and talus
- Pleistocene continental glacial, glaciolacustrine, and outburst flood deposits, Fraser-age

**Sedimentary and Volcanic Rocks**

- Cretaceous-Jurassic volcanic, volcanoclastic, and mixed volcanic and sedimentary rocks

**Intrusive Igneous Rocks**

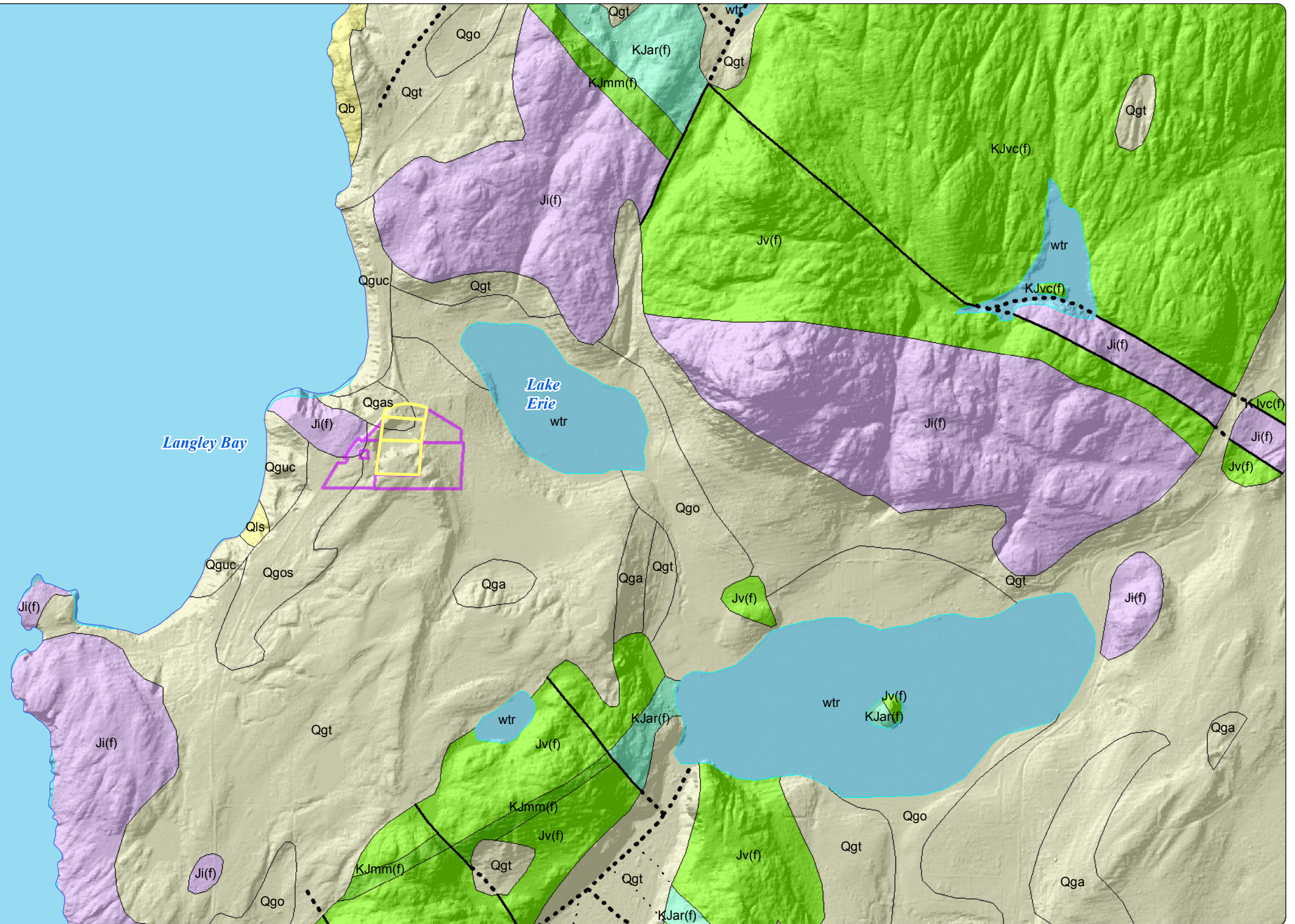
- Mesozoic intrusive igneous rocks

**Metasedimentary and Metavolcanic Rocks (Greenschist Facies and Lower)**

- Cretaceous-Jurassic marine metasedimentary and metavolcanic rocks
- Mesozoic metasedimentary and metavolcanic rocks

**Other Features**

- Water



Source: Aerial photograph obtained from Esri ArcGIS Online

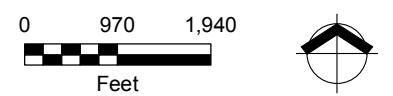
Notes:  
 1. 1:100,000 scale Geology data provided Washington Department of Natural Resources.

Geology Unit	Lithology
Ji(f)	intrusive rocks, undivided
Jv(f)	volcanic rocks
KJar(f)	argillite
KJmm(f)	marine metasedimentary rocks
KJvc(f)	volcanoclastic deposits or rocks
Qb	beach deposits
Qga	advance continental glacial outwash, Fraser-age
Qgas	advance continental glacial outwash, sand, Fraser-age
Qgo	continental glacial outwash, Fraser-age
Qgos	continental glacial outwash, sand, Fraser-age
Qgt	continental glacial till, Fraser-age
Qguc	glacial and non-glacial deposits, undivided
Qls	mass-wasting deposits, mostly landslides
wtr	water



This product is for informational purposes and may not have been prepared for, or be suitable for legal engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Figure 4**  
**Geology of Site and Vicinity**  
 Lake Erie Pit Mine  
 Anacortes, Washington



ATTACHMENT B

Well Logs



# Lake Erie Pit - 230555

# Monitoring Well Log

Project Address & Site Specific Location

Coordinates (Lat, Lon WGS84)

Exploration Number

13540 Rosario Road, Anacortes, WA 98221, North Well

48.4520, -122.6511

**MW01**

Contractor

Equipment

Sampling Method

Ground Surface Elev. (NAVD88)

Aquatech

Rotary drill rig

Grab

277.96'

Ecology Well Tag No.  
BPN970

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (NAVD88)

Depth to Water (Below GS)

Brandon

Air rotary

12/5/2023 to 12/6/2023

281.86'

90.5' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	280	Compression Cap						0
0	275	6-inch Diameter Steel Casing					<b>Fill</b> GRAVEL WITH SAND AND COBBLES (GP); mixed sand and cobbles; surface fill.	0
5	270	Bentonite Seal					<b>Unconsolidated Deposits</b> GRAVEL WITH SAND (GP); dry, gray to dark gray-brown; medium to coarse, subrounded to rounded sand; fine, subrounded to rounded gravel.	5
10	265	Driller added water to mitigate heaving sands.					Increase in gravel content at 9 ft below ground surface. SAND WITH GRAVEL (SP); dry, gray; medium to coarse, subrounded to subangular sand; fine to coarse, subrounded up 2-inch diameter gravel. Trace fines (silt).	10
15	260	Temporary 10-inch casing advanced to 18 ft below ground surface during drilling.					SAND WITH GRAVEL (SW); dry, gray; fine, subrounded sand; fine, rounded gravel; trace fines.	15
20	255						SAND (SW); dry, gray; fine, subrounded sand; trace medium gravel; trace fines.	20
25	250						SAND WITH GRAVEL (SW); dry, light gray; fine to medium, subrounded sand; fine, subrounded gravel.	25
30	245						SAND (SW); dry, gray; fine to medium, subrounded sand; trace fine to medium gravel.	30
35	240						Becomes mostly medium sand; coarsening downward.	35
40	235						Becomes fine sand.	40
45	230						Becomes medium to coarse sand.	45
50	225							50
55	220							55
60	215							60
65	210							65
70	205							70

**Legend**

Sample Type

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: Ryan M  
Approved by:

**Exploration Log MW01**

Sheet 1 of 2

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\230555 - LAKE ERIE GRAVEL PIT.GPJ February 16, 2024

Review Stage: DRAFT Rev.2





# Lake Erie Pit - 230555

# Monitoring Well Log

Project Address & Site Specific Location

Coordinates (Lat, Lon WGS84)

Exploration Number

13540 Rosario Road, Anacortes, WA 98221, North Well

48.4520, -122.6511

**MW01**

Contractor

Equipment

Sampling Method

Ground Surface Elev. (NAVD88)

Aquatech

Rotary drill rig

Grab

277.96'

Ecology Well Tag No.  
BPN970

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (NAVD88)

Depth to Water (Below GS)

Brandon

Air rotary

12/5/2023 to 12/6/2023

281.86'

90.5' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
205							SAND (SW); dry, gray; fine to medium, subrounded sand; trace fine to medium gravel. (continued)	75
75								80
200							Becomes gray-brown, fine to medium sand; trace fine, subrounded gravel.	85
80								90
195								95
85								100
190		▼ 12/6/2023						105
90		▼ 1/31/2024						110
185		∇ 12/5/2023 Water encountered at 92 ft below ground surface during drilling.					SILTY SAND (SM); dry becoming wet, gray; fine sand; decreasing silt content.	115
95								120
180							SAND (SW); wet, light gray; fine to medium, subrounded sand; trace silt.	125
100								130
175								135
105		5 ft of 10-slot screen with packer.						140
170								145
110							Bottom of exploration at 110 ft. bgs.	150
165								155
115								160
160								165
120								170
155								175
125								180
150								185
130								190
145								195
135								200
140								205
145								210

**Legend**

Sample Type

Water Level

- ▼ Static Water Level
- ∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: Ryan M  
Approved by:

**Exploration Log MW01**

Sheet 2 of 2

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\230555 - LAKE ERIE GRAVEL PIT.GPJ February 16, 2024

Review Stage: DRAFT Rev.2



### Lake Erie Pit - 230555

### Monitoring Well Log

Project Address & Site Specific Location

Coordinates (Lat, Lon WGS84)

Exploration Number

13540 Rosario Road, Anacortes, WA 98221, South Well

48.4479, -122.6569

**MW02**

Contractor

Equipment

Sampling Method

Ground Surface Elev. (NAVD88)

Aquatech

Rotary drill rig

Grab

331.59'

Ecology Well Tag No.  
BPN971

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (NAVD88)

Depth to Water (Below GS)

Brandon

Air rotary

12/5/2023 to 12/8/2023

334.59'

139.7' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	330	Compression Cap 6-inch Diameter Steel Casing						0
5	325	Bentonite Seal					<b>Unconsolidated Deposits</b> SAND WITH GRAVEL (SP); gray-brown; medium to coarse, subrounded to subangular sand; fine to coarse, subrounded up to 2-inch diameter gravel.	5
10	320	Temporary 10-inch casing advanced to 18 ft below ground surface during drilling.					SAND WITH GRAVEL (SW); gray-brown; medium to coarse, subrounded to subangular sand; fine to coarse, subrounded up to 2-inch diameter gravel.	10
15	315						SAND WITH GRAVEL (SP); dark gray; medium sand; fine to coarse, subrounded up to 2-inch diameter gravel.	15
20	310						SAND (SP); brown; fine to medium sand	20
25	305						GRAVEL WITH SAND (GW); brown; fine to coarse, subrounded sand; mostly fine, rounded to subangular gravel. Becomes mostly coarse sand; increasing sand content with depth	25
30	300	Driller indicates rough drilling conditions					SAND (SW); gray-brown; coarse sand	30
35	295						GRAVEL (GW); gray-brown; little fine to coarse sand; few cobbles and broken rock fragments	35
40	290						GRAVEL WITH SAND (GP); gray; medium to coarse sand; fine, subrounded to subangular, fine to medium gravel; broken rock fragments.	40
45	285							45
50	280							50
55	275						Mostly cobbles 55 ft to 57 ft below ground surface.	55
60	270							60
65	265	Slow, difficult drilling conditions						65
70	260						Decreasing sand content; large rock fragments in	70

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\230555 - LAKE ERIE GRAVEL PIT.GPJ February 16, 2024

**Legend**

Sample Type

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: Ryan M  
Approved by:

**Exploration Log MW02**

Sheet 1 of 3

Review Stage: DRAFT Rev.2



# Lake Erie Pit - 230555

# Monitoring Well Log

Project Address & Site Specific Location

Coordinates (Lat, Lon WGS84)

Exploration Number

13540 Rosario Road, Anacortes, WA 98221, South Well

48.4479, -122.6569

**MW02**

Contractor

Equipment

Sampling Method

Ground Surface Elev. (NAVD88)

Aquatech

Rotary drill rig

Grab

331.59'

Ecology Well Tag No.  
BPN971

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (NAVD88)

Depth to Water (Below GS)

Brandon

Air rotary

12/5/2023 to 12/8/2023

334.59'

139.7' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
75	255	12/6/2023 Perched water zone encountered during drilling				drilling cuttings.	SAND WITH GRAVEL (SW); gray; fine to coarse, subrounded to subangular sand; fine, subrounded to subangular gravel.	75
80	250					SAND (SP); brown; fine to medium, subrounded sand; trace silt.	80	
85	245					SILTY SAND (SM); blue-gray; low plasticity fines; fine to medium sand.	85	
90	240					Increase in sand content	90	
95	235							95
100	230							100
105	225							105
110	220							110
115	215							115
120	210							120
125	205							125
130	200							130
135	195						SILTY SAND (SM); moist, light brown; low plasticity fines; fine, subrounded sand; grades into unit above.	135
140	190	1/31/2024 12/8/2023						140
145	185							145

**Legend**

Sample Type

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: Ryan M  
Approved by:

**Exploration Log MW02**

Sheet 2 of 3

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\230555 - LAKE ERIE GRAVEL PIT.GPJ February 16, 2024

Review Stage: DRAFT Rev.2



### Lake Erie Pit - 230555

### Monitoring Well Log

Project Address & Site Specific Location

Coordinates (Lat, Lon WGS84)

Exploration Number

13540 Rosario Road, Anacortes, WA 98221, South Well

48.4479, -122.6569

**MW02**

Contractor

Equipment

Sampling Method

Ground Surface Elev. (NAVD88)

Ecology Well Tag No.  
BPN971

Aquatech

Rotary drill rig

Grab

331.59'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (NAVD88)

Depth to Water (Below GS)

Brandon

Air rotary

12/5/2023 to 12/8/2023

334.59'

139.7' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
150	180	12/7/2023					SILTY SAND (SM); moist, light brown; low plasticity fines; fine, subrounded sand; grades into unit above. (continued)	150
155	175							155
160	170						SAND (SP); gray; fine, subrounded sand.	160
165	165	5 ft of 10-slot screen with packer.						165
170	160						SILTY SAND (SM); grey; low plasticity fines; fine to medium sand.	170
175	155						Bottom of exploration at 169 ft. bgs.	175
180	150							180
185	145							185
190	140							190
195	135							195
200	130							200
205	125							205
210	120							210
215	115							215
220	110							220

**Legend**

Sample Type

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: Ryan M  
Approved by:

**Exploration Log MW02**

Sheet 3 of 3

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\230555 - LAKE ERIE GRAVEL PIT.GPJ February 16, 2024

Review Stage: DRAFT Rev.2



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with Department of Ecology  
Second Copy - Owner's Copy  
Third Copy - Driller's copy

105679

# WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No.

P19111

424849  
34-1E11G

Notice of Intent W207527

UNIQUE WELL I.D. # ALQ297

(1) OWNER: Name Nels Strandberg Address P.O. Box 319, Anacortes, WA 98221

(2) LOCATION OF WELL: County skagit - SW 1/4 NE 1/4 Sec 11 T. 34 N., R. 1E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 13507 Rosario Rd Anacortes

TAX PARCEL NO. \_\_\_\_\_

(3) PROPOSED USE:  Domestic  Industrial  Municipal  
 Irrigation  Test Well  Other  
 DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) \_\_\_\_\_  
 New Well Method: \_\_\_\_\_  
 Deepened  Dug  Bored  
 Reconditioned  Cable  Driven  
 Decommission  Rotary  Jetted

(5) DIMENSIONS: Diameter of well 6 inches.  
Drilled 100 feet Depth of completed well 96 ft.

(6) CONSTRUCTION DETAILS:  
Casing Installed:  
 Welded 6 " Diam. from +2 ft. to 92 ft.  
 Liner installed \_\_\_\_\_ " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Threaded \_\_\_\_\_ " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Perforations:  Yes  No  
Type of perforator used \_\_\_\_\_  
SIZE of perforations \_\_\_\_\_ in. by \_\_\_\_\_ in.  
\_\_\_\_\_ perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
\_\_\_\_\_ perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
\_\_\_\_\_ perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Screens:  Yes  No  K-Pac Location \_\_\_\_\_  
Manufacturer's Name johnson  
Type ss Model No. \_\_\_\_\_  
Diam. 6 Slot size 6 from 91 ft. to 96 ft.  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Gravel/Filter packed:  Yes  No  Size of gravel/sand \_\_\_\_\_  
Material placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Surface seal:  Yes  No To what depth? 18 ft.  
Material used in seal bentonite  
Did any strata contain unusable water?  Yes  No  
Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
Method of sealing strata off \_\_\_\_\_

(7) PUMP: Manufacturer's Name \_\_\_\_\_  
Type: \_\_\_\_\_ H.P. \_\_\_\_\_

(8) WATER LEVELS: Land-surface elevation \_\_\_\_\_ ft.  
above mean sea level \_\_\_\_\_ ft.  
Static level 55 ft. below top of well Date 10/31/2005  
Artesian pressure \_\_\_\_\_ lbs. per square inch Date \_\_\_\_\_  
Artesian water is controlled by \_\_\_\_\_  
(Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level  
Was a pump test made?  Yes  No If yes, by whom? \_\_\_\_\_  
Yield: \_\_\_\_\_ gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.  
Yield: \_\_\_\_\_ gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.  
Yield: \_\_\_\_\_ gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test \_\_\_\_\_  
Bailer test 5 gal./min. with 20 ft. drawdown after 1 hrs.  
Airtest \_\_\_\_\_ gal./min. with stem set at \_\_\_\_\_ ft. for \_\_\_\_\_ hrs.  
Artesian flow \_\_\_\_\_ g.p.m. Date \_\_\_\_\_  
Temperature of water \_\_\_\_\_ Was a chemical analyses made?  Yes  No

### (10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
topsoil	0	1
brown clay scattered gravel	1	16
gray sandy clay	16	55
tan sand gravel silt seepage	55	59
gray clay	59	70
gray fine sand clay layered	70	79
gray clay	79	92
gray fine sand water	92	96
gray clay fine sand layered	96	

Located in compliance with sec 12-48 based on information supplied by owner.

05240

RECEIVED  
NOV 29 2005  
DEPT OF ECOLOGY

Work Started 10/28/2005, 19. Completed 10/31/2005, 19

### 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 above are true to my best knowledge and belief.

Type or Print Name Wayne Logsdon License No. 2146  
(Licensed Driller/Engineer)

Trainee Name \_\_\_\_\_ License No. \_\_\_\_\_

Drilling Company Aquatech Well Drilling & Pumps Inc

(Signed) Wayne Logsdon License No. 2146  
(Licensed Driller/Engineer)

Address 2722 Butler Crk Rd SedroWoolley Wa 98284

Contractor's Registration No. AQUATWD040K4 Date 11/1/2005, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

374869 P19106 ✓ 3644

34-1E-11C

# WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) 145171  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number \_\_\_\_\_

CURRENT Notice of Intent No. W-175637  
 Unique Ecology Well ID Tag No. AER 581  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name Thomas C WILL  
 Well Street Address 13060 S. Wildwood Ln

PROPOSED USE:  Domestic  Industrial  Municipal  
 DeWater  Irrigation  Test Well  Other

City Anacortes County: Skaagit  
 Location NE 1/4- 1/4 NW 1/4 Sec. 11 Twn. 34N R. 1 EWM circle of one WWM

TYPE OF WORK: Owner's number of well (if more than one) \_\_\_\_\_  
 New Well  Reconditioned Method  Dug  Bored  Driven  
 Deepened  Cable  Rotary  Jetted

Lat/Long: Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 (s,t,r still REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_

DIMENSIONS: Diameter of well 6 inches, drilled 77 ft  
 Depth of completed well 77 ft

Tax Parcel No. \_\_\_\_\_

CONSTRUCTION DETAILS  
 Casing  Welded 6 " Diam from +1.3 ft to 67 ft  
 Installed:  Liner installed \_\_\_\_\_ " Diam from \_\_\_\_\_ ft to \_\_\_\_\_ ft  
 Threaded \_\_\_\_\_ " Diam from \_\_\_\_\_ ft to \_\_\_\_\_ ft

CONSTRUCTION OR DECOMMISSION PROCEDURE  
 Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY )

Perforations:  Yes  No  
 Type of perforator used \_\_\_\_\_  
 SIZE of perfs \_\_\_\_\_ in by \_\_\_\_\_ in and no of perfs \_\_\_\_\_ from \_\_\_\_\_ ft to \_\_\_\_\_ ft

MATERIAL	FROM	TO
sandy		5
Hardpan	5	23
silty sand	23	59
Fine sand w water	59	64
clay	64	67
Fine sand w. water	67	77
clay	77	

Screens:  Yes  No  K-Pac Location 66 FT  
 Manufacturer's Name \_\_\_\_\_  
 Type Stainless Wire Model No \_\_\_\_\_  
 Diam 6 Slot Size 8 from 67 ft to 77 ft  
 Diam \_\_\_\_\_ Slot Size \_\_\_\_\_ from \_\_\_\_\_ ft to \_\_\_\_\_ ft

Gravel/Filter packed:  Yes  No  Size of gravel/sand \_\_\_\_\_  
 Materials placed from \_\_\_\_\_ ft to \_\_\_\_\_ ft

Surface Seal:  Yes  No To what depth? 18 ft  
 Materials used in seal \_\_\_\_\_  
 Did any strata contain unusable water?  Yes  No  
 Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
 Method of sealing strata off \_\_\_\_\_

PUMP: Manufacturer's Name \_\_\_\_\_  
 Type \_\_\_\_\_ HP \_\_\_\_\_

WATER LEVELS: Land-surface elevation above mean sea level 250 ft  
 Static level 55 ft below top of well Date 1/28/04  
 Artesian pressure \_\_\_\_\_ lbs per square inch Date \_\_\_\_\_  
 Artesian water is controlled by \_\_\_\_\_ (cap, valve, etc)

WELL TESTS: Drawdown is amount water level is lowered below static level  
 Was a pump test made?  Yes  No If yes, by whom? \_\_\_\_\_  
 Yield \_\_\_\_\_ gal/min with \_\_\_\_\_ ft drawdown after \_\_\_\_\_ hrs  
 Yield \_\_\_\_\_ gal/min with \_\_\_\_\_ ft drawdown after \_\_\_\_\_ hrs  
 Yield \_\_\_\_\_ gal/min with \_\_\_\_\_ ft drawdown after \_\_\_\_\_ hrs  
 Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)  
 Time Water Level Time Water Level Time Water Level  
 \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_  
 Date of test \_\_\_\_\_  
 Bailor test 5 gal/min with 8 ft drawdown after 1 hrs  
 Airtest \_\_\_\_\_ gal/min with stem set at \_\_\_\_\_ ft for \_\_\_\_\_ hrs  
 Artesian flow \_\_\_\_\_ g p m Date 1/28/04  
 Temperature of water \_\_\_\_\_ Was a chemical analysis made?  Yes  No

RECEIVED  
 FEB 11 2004  
 DEPT OF ECOLOGY

Well site meets all Set Backs under LCC 8 09

Based on info supplied by owner

Start Date Jan 26/04 Completed Date Jan 28/04

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 above are true to my best knowledge and belief.

Driller  Engineer  Trainee Name (Print) Eddy Boonstra  
 Driller/Engineer/Trainee Signature Eddy Boonstra  
 Driller or Trainee License No. 0038

Drilling Company WHIDBEY WELL DRILLERS  
 Address 716 Holbrook Rd  
 City, State, Zip Coupeville wa 98239  
 Contractor's Registration No. WHIDBWP 9114 Date 1/28/04  
 Ecology is an Equal Opportunity Employer ECY 050-1-20 (Rev 4/01)

If trainee, licensed driller's Signature and License no. \_\_\_\_\_

SC Well ID: 2934		DOE Well ID:		Unique Well ID:		NOI		Water Right Permit #		
<b>Owner</b>										
Last Name	First Name	Organization Road				City	State	Zip		
Gates	Charles	1/2 mi.W of Lake Erie				Anacortes	WA	98221		
<b>Location</b>										
Parcel	Road	City	Zip	Q2	Q1	S	T	R	Elevation	
19127	1/2 mi. W of Lake Erie	Anacortes	98221	SE	NE	11	34	1		
<b>Dimensions</b>					<b>Water Levels</b>					
Diameter	Depth	CompletedDepth			Flow	Measured By		Depth	Measured Date	
6	89	68				35			19680801	
<b>Work</b>										
Proposed Use	Work Type	Method		Owners Well Number		Started		Completed		
Domestic	New Well	Cable				19680801		19680801		
<b>Casing</b>					<b>Perforation</b>					
Connection Method	Diameter	Top	Bottom		Type	Size	Quantity	Top	Bottom	
	6	+2	68							
<b>Screens</b>										
Manufacturer	Type	Model		Diameter	Slotsize	Top		Bottom		
Cook	stainless steel	KO		6	10	64		68		
<b>Pump</b>					<b>Gravel Pack</b>					
Manufacturer	Type	Horsepower			Size	Top		Bottom		
<b>Surface Seal</b>					<b>Unusable Water</b>					
Depth	Seal	Method			Water Type	Depth		Method		
<b>Temperature Reading</b>					<b>Artesian Pressure</b>					
Temperature	Date Measured	Measured By			Pressure	Measured Date		Controlled By		
<b>Well Tests</b>										
Type	Yield (gpm)	Drawdown/Stemset		Hours	Measured By		Measured Date			
Bailer	4	25		1						
<b>Well Log</b>					<b>Driller</b>					
Material	Top	Bottom			Contractor	Last Name	First Name	License		
brown clay. sand, & gravel	0	8			Hayes	Hayes	Hilton			
brown sand, clay & gravel	8	18								
tan sand	18	41								
gray silt, sand, & clay	41	55								
silt & sand	55	62								
sand & water	62	71								
silt, sand, & water	71									

Skagit County Well Report



ATTACHMENT C

Laboratory Analytical Reports



Burlington, WA *Corporate Laboratory (a)*  
1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 • 360.757.1400  
Bellingham, WA *Microbiology (b)*  
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR *Microbiology/Chemistry (c)*  
9725 SW Commerce Cr Ste A2 - Wilsonville, OR 97070 - 503.682.7802  
Corvallis, OR *Microbiology/Chemistry (d)*  
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946  
Bend, OR *Microbiology (e)*  
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

January 31, 2024

Page 1 of 1

Ryan Mullen  
Aspect Consulting LLC  
350 Madison Avenue North  
Bainbridge Island, WA 98110  
RE: 24-00340 - Lake Erie GW Testing

Dear Ryan Mullen,

Your project: Lake Erie GW Testing, was received on Thursday January 04, 2024.

All samples were analyzed within the accepted holding times and were appropriately preserved and analyzed according to approved analytical protocols, unless noted in the data or QC reports. The quality control data was within laboratory acceptance limits, unless specified in the data or QC reports.

If you have questions phone us at 800 755-9295.

Respectfully

A handwritten signature in blue ink that reads "Lawrence J Henderson". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Lawrence J Henderson, PhD  
Director of Laboratories, Vice President

Enclosures: Data Report  
QC Reports  
Chain of Custody



Burlington, WA Corporate Laboratory (a)  
 1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 • 360.757.1400  
 Bellingham, WA Microbiology (b)  
 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR Microbiology/Chemistry (c)  
 9725 SW Commerce Cr Ste A2 - Wilsonville, OR 97070 - 503.682.7802  
 Corvallis, OR Microbiology/Chemistry (d)  
 1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946  
 Bend, OR Microbiology (e)  
 20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

# Data Report

Client Name: Aspect Consulting LLC  
 350 Madison Avenue North  
 Bainbridge Island, WA 98110

Reference Number: **24-00340**  
 Project: Lake Erie GW Testing

Report Date: 1/31/24

Date Received: 1/4/24

Approved by: anp,bj,jwn,tjb

Authorized by:

Lawrence J Henderson, PhD  
 Director of Laboratories, Vice President

Sample Description: S08 Spring 1		Matrix W		Sample Date: 1/4/24 11:30 am								
Lab Number: 609		Sample Comment:		Collected By: Ryan Mullen								
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7439-96-5	MANGANESE	0.114	0.001	0.0002	mg/L	1.0	200.7	a	1/26/24	BJ	200.7_240126A5	
7439-89-6	IRON	0.74	0.050	0.003	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-70-2	CALCIUM	22.0	0.5	0.008	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7439-95-4	MAGNESIUM	17.9	0.5	0.01	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-09-7	POTASSIUM	3.4	0.5	0.1	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-23-5	SODIUM	23.0	0.5	0.1	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
16887-00-6	CHLORIDE	26.6	0.1	0.0239	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
16984-48-8	FLUORIDE	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14808-79-8	SULFATE	19.7	0.2	0.0359	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14797-55-8	NITRATE-N	1.43	0.100	0.0077	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
7664-41-7	AMMONIA-N	0.027	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	127	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	127	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	218	10		mg/L	1.0	SM2540 C	a	1/18/24	JER	TDS_240110	
7723-14-0	TOTAL PHOSPHORUS-P	0.088	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.  
 PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.  
 D.F. - Dilution Factor

If you have any questions concerning this report contact us at the above phone number.

# Data Report

Sample Description: S09 Spring 2								Matrix W	Sample Date: 1/4/24 11:45 am			
Lab Number: 610		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7439-96-5	MANGANESE	0.0554	0.001	0.0002	mg/L	1.0	200.7	a	1/26/24	BJ	200.7_240126A5	
7439-89-6	IRON	0.31	0.050	0.003	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-70-2	CALCIUM	28.7	0.5	0.008	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7439-95-4	MAGNESIUM	25.8	0.5	0.01	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-09-7	POTASSIUM	2.3	0.5	0.1	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
7440-23-5	SODIUM	22.9	0.5	0.1	mg/L	1.0	200.7/TR	a	1/15/24	BJ	200.7_240115B5	
16887-00-6	CHLORIDE	30.5	0.1	0.0239	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
16984-48-8	FLUORIDE	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14808-79-8	SULFATE	18.4	0.2	0.0359	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14797-55-8	NITRATE-N	5.55	0.100	0.0077	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/4/24	SPM2	IC05_240104A	
7664-41-7	AMMONIA-N	0.012	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	166	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	166	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	263	10		mg/L	1.0	SM2540 C	a	1/18/24	JER	TDS_240110	
7723-14-0	TOTAL PHOSPHORUS-P	0.070	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

**Notes:**

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.  
 PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.  
 D.F. - Dilution Factor



## SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Reference Number: **24-00340**

Report Date: 01/31/24

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier Type	QC Comment
<b>Calibration Check</b>									
200.7_240115B5	2 IRON	1.01	1	mg/L	200.7	101	90-110	CAL	
	2 CALCIUM	11.5	11	mg/L	200.7	105	90-110	CAL	
	2 MAGNESIUM	11.1	11	mg/L	200.7	101	90-110	CAL	
	2 POTASSIUM	10.1	10	mg/L	200.7	101	90-110	CAL	
	2 SODIUM	11.4	11	mg/L	200.7	104	90-110	CAL	
200.7_240126A5	2 MANGANESE	1.05	1	mg/L	200.7	105	90-110	CAL	
350.1_240115	0 AMMONIA-N	2.36	2.50	mg/L	350.1	94	90-110	CAL	
IC05_240104A	0 CHLORIDE	0.9	1	mg/L	300.0	90	90-110	CAL	
	0 SULFATE	1.8	2	mg/L	300.0	90	90-110	CAL	
	0 NITRATE-N	1.00	1	mg/L	300.0	100	90-110	CAL	
	0 NITRITE-N	0.92	1	mg/L	300.0	92	90-110	CAL	
	0 FLUORIDE	0.95	1	mg/L	300.0	95	90-110	CAL	
TPHOS_240110	0 TOTAL PHOSPHORUS-P	0.098	0.100	mg/L	SM4500-P F	98	85-115	CAL	
<b>Laboratory Fortified Blank</b>									
200.7_240115B5	2 IRON	0.258	0.25	mg/L	200.7	103	85-115	LFB	
	2 CALCIUM	7.1	6.5	mg/L	200.7	109	85-115	LFB	
	2 MAGNESIUM	6.5	6.5	mg/L	200.7	100	85-115	LFB	
	2 POTASSIUM	8.8	8.75	mg/L	200.7	101	85-115	LFB	
	2 SODIUM	6.6	6.5	mg/L	200.7	102	85-115	LFB	
200.7_240126A5	1 MANGANESE	0.492	0.5	mg/L	200.7	98	85-115	LFB	
ALK_240105	0 ALKALINITY	99.2	100	mg CaCO3/ISM2320 B		99	90-110	LFB	
<b>Laboratory Reagent Blank</b>									
200.7_240115B5	0 IRON	ND		mg/L	200.7		0-0	LRB	
	0 CALCIUM	ND		mg/L	200.7		0-0	LRB	
	0 MAGNESIUM	ND		mg/L	200.7		0-0	LRB	
	0 POTASSIUM	ND		mg/L	200.7		0-0	LRB	
	0 SODIUM	ND		mg/L	200.7		0-0	LRB	
200.7_240126A5	0 MANGANESE	ND		mg/L	200.7		0-0	LRB	
ALK_240105	0 ALKALINITY	ND		mg CaCO3/ISM2320 B			0-1	LRB	
	1 ALKALINITY	ND		mg CaCO3/ISM2320 B			0-1	LRB	
IC05_240104A	0 CHLORIDE	ND		mg/L	300.0		0-0	LRB	
	0 SULFATE	ND		mg/L	300.0		0-0	LRB	
	0 NITRATE-N	ND		mg/L	300.0		0-0	LRB	
	0 NITRITE-N	ND		mg/L	300.0		0-0	LRB	
	0 FLUORIDE	ND		mg/L	300.0		0-0	LRB	
TPHOS_240110	0 TOTAL PHOSPHORUS-P	ND		mg/L	SM4500-P F		0-0	LRB	

\*Notation:

% Recovery = (Result of Analysis)/(True Value) \* 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QCIndependent4.rpt



## SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Reference Number: **24-00340**

Report Date: 01/31/24

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier Type	QC Comment
<b>Method Blank</b>									
200.7_240115B5	0 IRON	ND		mg/L	200.7		0-0		MB
	0 CALCIUM	ND		mg/L	200.7		0-0		MB
	0 MAGNESIUM	ND		mg/L	200.7		0-0		MB
	0 POTASSIUM	ND		mg/L	200.7		0-0		MB
	0 SODIUM	ND		mg/L	200.7		0-0		MB
200.7_240126A5	0 MANGANESE	ND		mg/L	200.7		0-0		MB
350.1_240115	0 AMMONIA-N	ND		mg/L	350.1		0-0		MB
TDS_240110	0 TOTAL DISSOLVED SOLIDS (TDS)	ND		mg/L	SM2540 C		0-3		MB
	1 TOTAL DISSOLVED SOLIDS (TDS)	ND		mg/L	SM2540 C		0-3		MB
TPHOS_240110	0 TOTAL PHOSPHORUS-P	ND		mg/L	SM4500-P F		0-0		MB
<b>Quality Control Sample</b>									
200.7_240115B5	0 IRON	1.98	2	mg/L	200.7	99	95-105		QCS
	1 CALCIUM	20.6	20	mg/L	200.7	103	95-105		QCS
	1 MAGNESIUM	19.3	20	mg/L	200.7	97	95-105		QCS
	1 POTASSIUM	19.8	20	mg/L	200.7	99	95-105		QCS
	1 SODIUM	20.5	20	mg/L	200.7	103	95-105		QCS
200.7_240126A5	0 MANGANESE	2.02	2	mg/L	200.7	101	95-105		QCS
350.1_240115	0 AMMONIA-N	2.25	2.15	mg/L	350.1	105	85-115		QCS
ALK_240105	0 ALKALINITY	99.8	100	mg CaCO3/ISM2320 B		100	90-110		QCS
IC05_240104A	0 CHLORIDE	6.6	6	mg/L	300.0	110	90-110		QCS
	0 SULFATE	33.0	30	mg/L	300.0	110	90-110		QCS
	0 NITRATE-N	6.44	6	mg/L	300.0	107	90-110		QCS
	0 NITRITE-N	6.15	6	mg/L	300.0	103	90-110		QCS
	0 FLUORIDE	4.07	4	mg/L	300.0	102	90-110		QCS
TDS_240110	0 TOTAL DISSOLVED SOLIDS (TDS)	498	500	mg/L	SM2540 C	100	80-120		QCS
	0 TOTAL DISSOLVED SOLIDS (TDS)	502	500	mg/L	SM2540 C	100	80-120		QCS
TPHOS_240110	0 TOTAL PHOSPHORUS-P	0.199	0.217	mg/L	SM4500-P F	92	90-110		QCS

\*Notation:

% Recovery = (Result of Analysis)/(True Value) \* 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QCIndependent4.rpt



ANALYTICAL



SAMPLE DEPENDENT  
QUALITY CONTROL REPORT

Duplicate, Matrix Spike/Matrix Spike Duplicate  
and Confirmation Result Report

Reference Number: **24-00340**

Report Date: 1/31/2024

**Duplicate**

Batch/CAS	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Comments
<b>200.7_240115B5</b>									
7439-89-6	569	IRON	0.15	0.15	mg/L	0.0	0-20		
<b>200.7_240126A5</b>									
7439-96-5	3161	MANGANESE	0.218	0.215	mg/L	1.4	0-20		
7439-96-5	3249	MANGANESE	0.0948	0.0954	mg/L	0.6	0-20		
<b>350.1_240115</b>									
7664-41-7	283	AMMONIA-N	31.8	29.3	mg/L	8.2	0-20		
7664-41-7	374	AMMONIA-N	0.59	0.54	mg/L	8.8	0-20		
7664-41-7	1770	AMMONIA-N	13.1	11.6	mg/L	12.1	0-20		
<b>ALK_240105</b>									
E-14506	78826	ALKALINITY	127	127	mg CaCO3/L	0.0	0-20		
<b>IC05_240104A</b>									
14797-55-8	461	NITRATE-N	8.04	8.05	mg/L	0.1	0-20		
14797-65-0	588	NITRITE-N	ND	ND	mg/L	NA	0-20		
16984-48-8	588	FLUORIDE	ND	ND	mg/L	NA	0-20		
14797-55-8	588	NITRATE-N	ND	ND	mg/L	NA	0-20		
<b>TDS_240110</b>									
E-10173	610	TOTAL DISSOLVED SOLIDS (TDS)	263	260	mg/L	1.1	0-5		
E-10173	951	TOTAL DISSOLVED SOLIDS (TDS)	376	448	mg/L	17.5	0-5		
E-10173	1018	TOTAL DISSOLVED SOLIDS (TDS)	97	98	mg/L	1.0	0-5		
E-10173	71451	TOTAL DISSOLVED SOLIDS (TDS)	88	92	mg/L	4.4	0-5		
<b>TPHOS_240110</b>									
7723-14-0	368	TOTAL PHOSPHORUS-P	0.076	0.079	mg/L	3.9	0-20		
7723-14-0	369	TOTAL PHOSPHORUS-P	0.157	0.157	mg/L	0.0	0-20		
7723-14-0	371	TOTAL PHOSPHORUS-P	0.020	0.020	mg/L	0.0	0-20		

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of an analytical method in a given sample matrix.

Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QC Dependent\_Port.rpt



SAMPLE DEPENDENT  
QUALITY CONTROL REPORT

Duplicate, Matrix Spike/Matrix Spike Duplicate  
and Confirmation Result Report

Reference Number: **24-00340**

Report Date: 1/31/2024

**Laboratory Fortified Matrix (MS)**

Batch/CAS	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Conc	Units	Percent Recovery			%RPD	Limits*	Qualifier	Comments
								MS	MSD	Limits*				
<b>200.7_240115B5</b>														
7439-89-6	569	IRON	0.15	0.40		0.25	mg/L	<b>100</b>		70-130	<b>NA</b>	0-20		
<b>200.7_240126A5</b>														
7439-96-5	3161	MANGANESE	0.218	0.704	0.688	0.50	mg/L	<b>97</b>	<b>94</b>	70-130	<b>3.3</b>	0-20		
7439-96-5	3249	MANGANESE	0.0948	0.596	0.623	0.50	mg/L	<b>100</b>	<b>106</b>	70-130	<b>5.2</b>	0-20		
<b>350.1_240115</b>														
7664-41-7	283	AMMONIA-N	31.8	84.5	86.8	50.0	mg/L	<b>105</b>	<b>110</b>	70-130	<b>4.3</b>	0-20		
7664-41-7	374	AMMONIA-N	0.59	1.67	1.66	1.00	mg/L	<b>108</b>	<b>107</b>	70-130	<b>0.9</b>	0-20		
7664-41-7	1770	AMMONIA-N	13.1	61.7	68.5	50.0	mg/L	<b>97</b>	<b>111</b>	70-130	<b>13.1</b>	0-20		
<b>IC05_240104A</b>														
14797-55-8	461	NITRATE-N	8.04	8.84		1	mg/L	<b>80</b>		90-110	<b>NA</b>	0-20	IS	
14797-65-0	588	NITRITE-N	ND	0.92		1	mg/L	<b>92</b>		90-110	<b>NA</b>	0-20		
16984-48-8	588	FLUORIDE	ND	0.98		1	mg/L	<b>98</b>		90-110	<b>NA</b>	0-20		
14797-55-8	588	NITRATE-N	ND	1.03		1	mg/L	<b>103</b>		90-110	<b>NA</b>	0-20		
<b>TPHOS_240110</b>														
7723-14-0	368	TOTAL PHOSPHORUS-P	0.076	0.126	0.131	0.050	mg/L	<b>100</b>	<b>110</b>	70-130	<b>9.5</b>	0-20		
7723-14-0	369	TOTAL PHOSPHORUS-P	0.157	0.192	0.200	0.050	mg/L	<b>70</b>	<b>86</b>	70-130	<b>20.5</b>	0-20		
7723-14-0	371	TOTAL PHOSPHORUS-P	0.020	0.071	0.074	0.050	mg/L	<b>102</b>	<b>108</b>	70-130	<b>5.7</b>	0-20		

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of an analytical method in a given sample matrix.

Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QC Dependent\_Port.rpt



## Qualifier Definitions

Reference Number: 24-00340

Report Date: 01/31/24

Qualifier	Definition
IS	The ratio of the spike concentration to sample background was too low to meet performance criteria

Note: Some qualifier definitions found on this page may pertain to results or QC data which are not printed with this report.

# Chain of Custody / Analysis Request (Please complete all applicable shaded sections)



Report to: ASPECT Consulting, LLC  
 Ship Address: 350 MADISON AVE NORTH  
 City: BAINBRIDGE IS St. WA Zip: 98110  
 Attn: RYAN Mullen  
 Phone: (425) 749-9429 FAX:  
 Email: ryan.mullen@aspectconsulting.com  
 Project: LAKE ERIE BW TESTING

Bill to: WILLIAM WOODING  
 Address: 13540 ROSARIO RD  
 City: Anacortes St: WA Zip: 98221  
 Phone: (360) 708-8557 FAX:  
 P.O.#:                      Attn:

**24-00340**  
609-610

**Check Regulatory Program**

Safe Drinking Water Act  
 Clean Water Act  
 RCRA / CERCLA  
 Other

**ANALYTICAL**  
**Main Lab (800-755-9295)**  
 1620 South Walnut St Burlington, WA 98233  
**Microbiology (888-725-1212)**  
 805 W. Orchard Dr. Suite 4 Bellingham, WA 98225  
**Wilsonville Lab (503-682-7802)**  
 9725 SW Commerce Cir. Ste A2 Wilsonville, OR 97070  
**Corvallis Lab (541-753-4946)**  
 1100 NE Circle Blvd, Ste 130, Corvallis, OR 97330  
**Bend Lab (541-639-8425)**  
 20332 Empire Ave Ste F4, Bend, OR 97703

1. Use one line per sample Location.
2. Be specific in analysis requests.
3. List each metal individually
4. Check off analyses to be performed for each sample Location.
5. Enter number of containers.
6. **(NEW)** Report to      MDL or      PQL **(NEW)**

**Turn Around Time Required**

Standard  
 Half-time (50% surcharge)  
 Quickest (100% surcharge) Phone Call Req.  
 Emergency (Phone Call Req.)

### Analyses Requested

Field ID	Location	Grab/Comp.	Sample Matrix*	Date	Time	CO <sub>3</sub> /HCO <sub>3</sub> /OH/ALKA	Fe, Mn, K, Mg, Na, Ca	NO <sub>2</sub> , NO <sub>3</sub> , F, CHLORIDE, SO <sub>4</sub> , TDS	Total Phos, Ammonia									Number of Containers	Special Instructions Conditions on Receipt
1	SO8	X		1-4-24	12:30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
2	SO9	X		1-4-24	11:45	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
3						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

**\*\*Are there known hazardous or dangerous wastes in these samples? YES / NO** If YES, indicate type on reverse of this form; samples may be returned to you.

Sampled by: RYAN Mullen Phone: (425) 749-9429 FAX:                      Email: RYAN.MULLEN@ASPECTCONSULTING.COM

Sample Receipt Request (Must include FAX or Email)       \* **W** - water      **SW** - surface water      **WW** - waste water      **SL** - salt water  
**DW** - drinking water      **ST** - storm water      **S** - soil      **OL** - oil      Other:                      **8** Total Containers

**\*\*Relinquished by**

Date	Time	Received by	Date	Time
		<u>DDSCWIRECO</u>	<u>1-4-24</u>	<u>12:43</u>

Custody seals intact      Yes  No  N/A

Sample temp 8.7 C satisfactory      Yes  No  N/A

Samples received intact      Yes  No  N/A

Chain of custody & labels agree      Yes  No  N/A



Burlington, WA Corporate Laboratory (a)  
 1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 • 360.757.1400  
 Bellingham, WA Microbiology (b)  
 805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR Microbiology/Chemistry (c)  
 9725 SW Commerce Cr Ste A2 - Wilsonville, OR 97070 - 503.682.7802  
 Corvallis, OR Microbiology/Chemistry (d)  
 1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946  
 Bend, OR Microbiology (e)  
 20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

# Data Report

Client Name: Aspect Consulting, LLC  
 350 Madison Avenue North  
 Bainbridge Isl, WA 98110

Reference Number: **24-00239**  
 Project: Ground Water Testing

Report Date: 1/16/24

Date Received: 1/3/24

Approved by: anp,bj,jwn,tjb

Authorized by:

Lawrence J Henderson, PhD  
 Director of Laboratories, Vice President

Sample Description: SO1 13507 Rossario Rd		Matrix W		Sample Date: 1/3/24 9:20 am								
Lab Number: 368		Sample Comment:		Collected By: Ryan Mullen								
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	27.8	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	16.9	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.0371	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	0.63	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	2.8	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	14.3	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	17.5	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	12.2	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	ND	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	0.010	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	154	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	154	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	205	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.076	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

Notes:

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 D.F. - Dilution Factor

If you have any questions concerning this report contact us at the above phone number.

# Data Report

Sample Description: SO2 13495 Rosario Rd								Matrix W	Sample Date: 1/3/24 9:30 am			
Lab Number: 369		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	<b>CALCIUM</b>	28.1	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	<b>MAGNESIUM</b>	17.2	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	<b>MANGANESE</b>	0.0298	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	<b>IRON</b>	1.08	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	<b>POTASSIUM</b>	2.9	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	<b>SODIUM</b>	14.8	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	<b>CHLORIDE</b>	19.8	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	<b>FLUORIDE</b>	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	<b>SULFATE</b>	18.7	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	<b>NITRATE-N</b>	ND	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	<b>NITRITE-N</b>	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	<b>AMMONIA-N</b>	ND	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	<b>BICARBONATE</b>	148	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	<b>CARBONATE</b>	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	<b>HYDROXIDE</b>	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	<b>ALKALINITY</b>	148	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	<b>TOTAL DISSOLVED SOLIDS (TDS)</b>	213	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	<b>TOTAL PHOSPHORUS-P</b>	0.157	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

**Notes:**

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 D.F. - Dilution Factor

# Data Report

Sample Description: SO3 MW01 North Well								Matrix W	Sample Date: 1/3/24 10:20 am			
Lab Number: 370		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	41.0	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	18.1	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.0180	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	0.40	0.050	.0003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	2.6	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	14.6	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	20.9	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	10.5	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	ND	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	ND	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	187	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	187	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	236	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.081	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

**Notes:**

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 D.F. - Dilution Factor

# Data Report

Sample Description: SO4 13114 S. Wildwood Ln								Matrix W	Sample Date: 1/3/24 10:40 am			
Lab Number: 371		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	29.0	0.5	.0008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	19.3	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.0198	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	0.006 J	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	2.5	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	15.5	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	20.4	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	ND	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	20.7	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	ND	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	ND	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	150	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	150	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	222	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.020	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

Notes:

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 D.F. - Dilution Factor

# Data Report

Sample Description: SO5 Wooding Shop								Matrix W	Sample Date: 1/3/24 10:50 am			
Lab Number: 372		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	19.1	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	8.0	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.0344	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	1.62	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	2.1	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	13.8	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	27.4	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	ND	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	15.8	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	0.19	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	0.007 J	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	56.2	2.00		mg CaCO3/L	2.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	2.00		mgCaCO3/L	2.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	2.00		mg CaCO3/L	2.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	56.2	2.00		mg CaCO3/L	2.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	189	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.034	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

**Notes:**

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 D.F. - Dilution Factor

# Data Report

Sample Description: SO6 MW02 South Well								Matrix W	Sample Date: 1/3/24 12:30 pm			
Lab Number: 373		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	38.2	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	20.8	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.0622	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	3.20	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	1.9	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	18.1	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	25.4	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	0.10	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	14.8	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	3.34	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	0.016	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	178	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	ND	5.00		mgCaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	ND	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	178	5.00		mg CaCO3/L	5.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	257	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.053	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

Notes:

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 D.F. - Dilution Factor



# Data Report

Sample Description: SO7 MW03 East Well								Matrix W	Sample Date: 1/3/24 2:55 pm			
Lab Number: 374		Sample Comment:						Collected By: Ryan Mullen				
CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7440-70-2	CALCIUM	3.8	0.5	0.008	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-95-4	MAGNESIUM	0.9	0.5	0.01	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-96-5	MANGANESE	0.140	0.001	0.001	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7439-89-6	IRON	19.2	0.050	0.003	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-09-7	POTASSIUM	1.0	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
7440-23-5	SODIUM	11.3	0.5	0.1	mg/L	1.0	200.7/TR	a	1/10/24	BJ	200.7_240110B5	
16887-00-6	CHLORIDE	12.8	0.1	0.0239	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
16984-48-8	FLUORIDE	0.11	0.1	0.0291	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14808-79-8	SULFATE	0.5	0.2	0.0359	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-55-8	NITRATE-N	ND	0.100	0.0077	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
14797-65-0	NITRITE-N	ND	0.10	0.0316	mg/L	1.0	300.0	a	1/3/24	SPM2	IC05_240103A	
7664-41-7	AMMONIA-N	0.59	0.010	0.0045	mg/L	1.0	350.1	a	1/15/24	MSO	350.1_240115	
NA	BICARBONATE	ND	1.00		mg CaCO3/L	1.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	CARBONATE	17.6	1.00		mgCaCO3/L	1.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
NA	HYDROXIDE	5.16	1.00		mg CaCO3/L	1.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-14506	ALKALINITY	22.8	1.00		mg CaCO3/L	1.0	SM2320 B	a	1/5/24	EBVP	ALK_240105	
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	38	10		mg/L	1.0	SM2540 C	a	1/9/24	MSO	TDS_240104	
7723-14-0	TOTAL PHOSPHORUS-P	0.026	0.010	0.0019	mg/L	1.0	SM4500-P F/SM4500-P B(5)	a	1/10/24	TJL	TPHOS_240110	

Notes:

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 PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.  
 D.F. - Dilution Factor