

MEMORANDUM



Date: January 18, 2023
To: Kevin Cricchio, Skagit County Planning
From: Alan Wald, LHG. The Watershed Company
Project Name: Skagit County Lake Erie Pit Review
Project Number: 210231.9

**Subject: Response to Evergreen Island communication of 11/18/2022 re:
Lake Erie Pit**

As per your request of 12/20/22, I have reviewed the comment letters from Loring Advising and the Stratum Group concerning potential groundwater issues and proposed expansion of the Lake Erie Pit. I have included (below) the 11/25/2022 report we provided Skagit County regarding the proposed project.

The main concerns raised in the Evergreen Island communication appear to be the adequacy of the groundwater flow assessment and potential impacts to bluff stability west and northwest of the proposed pit expansion.

The methods and results of the groundwater flow assessment are presented in several reports:

Maul, Foster, Alongi (MFA). Hydrogeologic Site Assessment Report. Lake Erie Pit Expansion. Bellingham, WA. December 2, 2016.

Maul, Foster, Alongi (MFA). Observation Well Installation. Lake Erie Pit Expansion. Bellingham, WA. September 28, 2017.

Northwest Groundwater Consultants (NGC). Lake Erie Pit Well Recommendations. Coeur d'Alene, Idaho. March 11, 2019. And

WA Dept of Ecology (WDOE). Water Well Report. Resource Protection Well BJF103. <https://ecology.wa.gov/wellconstruction>. September 25, 2017.

The Wood Environment & Infrastructure Solutions, Inc (Wood). Geologic Hazard Site Assessment. Lake Erie Pit 1 Expansion. Kirkland, WA. August 11, 2022, uses the aquifer properties and groundwater flow characterization from these reports.

I revisited the methods and results of the aquifer characterization and groundwater flow analysis in the groundwater flow assessment and found no significant discrepancies or

inaccuracies in the data collection, hydrogeologic analysis, or discussion that would question the study results. The lithology is reasonably consistent with the well logs, the groundwater levels were developed from a comprehensive mass well measurement, and the flow paths were plotted perpendicular to the groundwater surface contours. The aquifer is well characterized at recorded depths and static water levels. The prevailing groundwater flow path is to the north and northeast of the proposed project.

Bluff areas to the west and southwest of the proposed project, including the Dodoson Canyon Springs, are 800 to 1,000 feet from the project with base elevations (below the scarps) of about 200 ft. msl. Based on documented groundwater surface elevations and local stratigraphy, it is likely that groundwater seepage is from the regional aquifer. I found no apparent reason to conclude the proposed project would change the rate or volume of groundwater discharge from seepage on the bluffs.

Attachment.

P#: **19164** Site Address: **13500 Rosario Road (Fidalgo Island)**

Property Owner(s): **Lake Erie Trucking, LLC**

Project Description: **Lake Erie Gravel Pit (Surface Mine)**

Notes:

Reviewed the hydrogeologic reports provided (see references), NRCS local soils descriptions, and water well logs of record for the general vicinity.

Project is a proposed expansion of gravel pit excavation (surface mine) and hauling in the vicinity of Lake Erie on Fidalgo Island, Skagit County. The project proposes to manage stormwater by capturing site runoff for infiltration. Proposed excavation is planned to be above the inferred ground water elevation of a local aquifer and no dewatering is anticipated. There are approximately 70 wells of record within a one-mile radius of the proposed surface mine, approximately 16 wells appear to be downgradient of the site (MFA, 2016). There is no record of existing contamination at the site.

A resource protection well (BJF103) was drilled for the project in 2017. The ground surface elevation for the well is 445.6 ft msl (MFA, 2017). The top of casing elevation for the well is 448.4 ft msl (NGC, 2019). The well log documents the approximately 20-foot-thick layer of semi-consolidated brown to gray clay, at depths of 189 to 209 ft. (259.4 to 239.4 msl) overlying water bearing strata at various depths (WDOE, 2017). This clay layer, or aquitard, serves as a protective element for the underlying aquifer and reduces the risk of groundwater contamination from surface sources. Static water level in the well was 255.4 ft btc (193 ft msl) on 9/19/2017 (MFA, 2017). The observed water level reflects commingled hydraulic heads in a resource protection well without screening (open hole at a depth of 277 ft) and undeveloped hydraulic continuity with the aquifer.

The inferred groundwater surface elevation in the aquifer, based on comparisons of static water levels in surrounding wells, is about 190 feet msl (MFA, 2016). The proposed project includes excavation to a bottom elevation of 250 ft. msl (Wood, 2022). The general direction of groundwater discharge in the local aquifer is north/northeast.

Surface soils in the project area include the Catla, Keystone, and LaConner soil series and topsoil depths generally range from 16 to 24 inches, grading into granular subsoils (NRCS, 2007)

SCC 14.24.340: Aquifer recharge areas impact mitigation

Based on project information available to date, the risk of impacts to aquifer recharge and groundwater quality due to the proposed surface mine appears to be generally low. Given some uncertainties in using inferred water level observations of commingled hydraulic heads, variability in land elevations, and different surface mine operations, several mitigations measures should be considered to further reduce potential impacts to aquifer recharge and groundwater quality. These proposed mitigation measures are as follows:

1. Surface soils, particularly topsoil, excavated at depths of 24 inches or more from mined areas should be stockpiled and replaced on exposed areas as excavation is completed. Topsoil and subsoils should be stockpiled and applied separately to avoid mixing different soil fertilities. Stockpiled soils should not be sold, or given away, or otherwise removed, or used for screening

berms. These soils provide important functions for protecting water quality of surface infiltration and promoting revegetation of the site.

2. The elevation of subsurface strata may vary across the site and excavation to elevations of 250 ft. msl may encounter the brown/gray clay aquitard overlying the deeper aquifer. This layer should not be excavated or disturbed in order to maintain protection of aquifer storage and existing wells from potential disturbance or contamination.
3. It is recommended that resource protection well BJF103 be monitored over the life of the project by measuring water level and submitting a water quality sample (drinking water standards) at least once a year. This information provides an essential baseline for evaluating future changes in groundwater conditions.
4. It is recommended that the project area, particularly haul roads, have secure site access controls, including fencing and gates as needed, to prevent unauthorized or illegal dumping on the property. Given relatively shallow groundwater levels in the project area, disposal of demolition materials, wood waste, solid waste, or contaminated soils in the project area should be prohibited.

References:

- Maul, Foster, Alongi (MFA). Hydrogeologic Site Assessment Report. Lake Erie Pit Expansion. Bellingham, WA. December 2, 2016.
- Maul, Foster, Alongi (MFA). Observation Well Installation. Lake Erie Pit Expansion. Bellingham, WA. September 28, 2017.
- Northwest Groundwater Consultants (NGC). Lake Erie Pit Well Recommendations. Coeur d'Alene, Idaho. March 11, 2019
- WA Dept of Ecology (WDOE). Water Well Report. Resource Protection Well BJF103. <https://ecology.wa.gov/wellconstruction>. September 25, 2017.
- Wood Environment & Infrastructure Solutions, Inc (Wood). Geologic Hazard Site Assessment. Lake Erie Pit 1 Expansion. Kirkland, WA. August 11, 2022.

Date: 11/22/22

Reviewer: Alan Wald, LHg