

July 9, 2015

Attention: Michael Marchetti  
5603 N. Waterfront Drive  
Tacoma, Washington 98407

Re: Groundwater Sampling and Analysis Plan Addendum  
Breakwater Marina  
5306 North Waterfront Avenue  
Tacoma, Washington 98407

EcoCon Inc. (ECI) is submitting this Addendum to address the following questions raised by Tacoma Pierce County Environmental Health regarding the construction of the proposed groundwater monitoring wells.

1. Explain how your well construction, including exact placement of well screen was determined. What range of GW depth do you intend to accommodate by such construction/screening? How deep of well do you plan to install? Justify your GW depths by citing data.
2. Will you be able to accommodate for potentially different GW depths observed during well construction now that the project area is comprised of imported fill rather than large tanks and native materials as it was during prior investigations? Can you speak to the potential for a totally different hydrogeologic setting, post-remedial action? Any observed tidal influence during any portion of ECI's work on site? Is tidal influence addressed in the work plan?

Groundwater was found to be at approximately 5 to 6 feet below ground surface (bgs) during the focused subsurface assessment conducted on November 1, 2013. Six direct push borings were advanced at the property on December 23, 2013 and groundwater was contacted at a depth of approximately 8-9 feet bgs. During the UST removal activities in December 2014, groundwater was contacted at a depth of approximately 5 feet bgs, and during the site remedial excavation, groundwater was contacted at a depth of approximately 8-9 feet bgs. Per this data, proposed groundwater wells will be completed to depths of 12 feet bgs, with the wells constructed of perforated casing throughout the interval from 4-12 feet bgs (slight change from the original plan to ensure that groundwater levels do not exceed the depth of the perforate section), and with blank casing from the ground surface to 4 feet bgs. The monitoring wells, as proposed, should adequately accommodate the observed variance in groundwater levels seen throughout the investigations of the USTs at the property.

The area of the former tank locations has been backfilled with imported coarse quarry spalls and gravel after the removal of the tanks and remedial excavation of impacted soil. This change in the subsurface composition of the area could affect the hydrodynamics of the groundwater flow by providing a more transmissive pathway for groundwater movement and thus may cause this area to act as a sump for collection of the groundwater. However, the soils identified in this area were relatively coarse (sands and gravels) and groundwater levels should equilibrate throughout this portion of the site.

Tidal flux is known to be approximately 13 feet in the Tacoma area (measured relative to the mean lower low water datum). Groundwater levels in the UST area did not appear to be influenced greatly by tidal fluctuations

during the previous assessment and remediation activities completed by ECI, as the sea wall appears to negate tidal influence in this area. During the UST closure and site remediation activities when the excavation was open, groundwater levels were never observed to be outside the 4-12 feet bgs screened interval proposed for the groundwater monitoring wells at the Property. Groundwater appeared to be flowing into the excavations from the direction of the hillside to the south-southwest.

Should you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

ECI | Environmental Consulting



K. Craig Klein

Senior Environmental Geologist