



October 14, 2016

Mike Rhubright
Tacoma Public Utilities
3628 South 35th Street
Tacoma, WA 98409

Subject: Draft work plan for additional soil and groundwater investigation near Port of Tacoma Pier 7, Tacoma, Washington (Facility Site ID Number 15369)

Dear Mr. Rhubright,

Robinson Noble is pleased to present this proposed (draft) work plan to conduct an additional investigation of soil and groundwater conditions near Tacoma Public Utilities' transformer at Port of Tacoma's Pier 7. This additional investigation is being conducted to evaluate potential impacts to soil and groundwater near the subject transformer associated with a previous release of mineral oil (dielectric fluid) that was remediated in July 2015 (see Robinson Noble, July 2015; *Tacoma Public Utilities, Soil Remediation Near Port of Tacoma, Pier 7, Tacoma, Washington*).

This additional investigation is intended to provide data required to support a no-further-action (NFA) determination from the Washington State Department of Ecology (Ecology) under the auspices of their voluntary cleanup program (VCP). This draft work plan is being submitted concurrently with an application to enter the site into the VCP. On April 5, 2016, personnel from Robinson Noble, Tacoma Public Utilities, and Port of Tacoma meet with members of Ecology's Toxics Cleanup Program (Southwest Regional Office) to solicit direction from Ecology regarding the most effective approach for obtaining an NFA for the site. The investigation/approach described in this draft work plan is specifically based on the direction provided by Ecology during our April 5th meeting.

Site Location

The subject transformer is located on property owned by the Port of Tacoma and identified by the Pierce County Assessor as tax parcel 2275200633. The address of the site is 2201 Sitcum Way, Tacoma, Washington, 98401. The transformer is located on the northeast side of the Sitcum Waterway along the Kaiser Access Road in an area of the Port of Tacoma property referred to as Pier 7 or alternatively T-7. The site is specifically located within Section 34 of Township 21 North, Range 3 East, relative to the Willamette Meridian. A location map and detailed site diagram are included as Figures 1 and 2 respectively in our attached remediation report (Robinson Noble, July 2015).

Background

In July 2014, Tacoma Public Utilities found that the soils below the subject transformer were impacted by a release of dielectric fluid (non-PCB-containing mineral oil). In May 2015, in preparation for the remediation of the release, Robinson Noble completed a preliminary investigation to delineate the extent of the soil impacts and determine if groundwater was affected. The re-

sults of this investigation are documented in our May 28, 2015 letter report which is included in Appendix B of our attached remediation report (Robinson Noble, July 2015). During this preliminary investigation, Robinson Noble directed the installation of seven direct-push borings in the area immediately around the transformer and collected representative soil and groundwater samples from each for analysis of mineral oil. Laboratory analyses did not detect mineral oil in any of the soil or groundwater samples from any of the borings, indicating that the mineral oil release was constrained to the area directly below the transformer and that groundwater in the area was not impacted by the release.

Subsequent remediation of the impacted soil was conducted in July 2015 and is documented in our attached remediation report (Robinson Noble, July 2015). During soil remediation, impacted soils below the subject transformer were excavated and removed from the site, using field screening to direct the excavation and a mobile laboratory to confirm that the limits of the impacted soil had been reached. As predicted by our preliminary investigation, it was found during remedial excavation that the soils impacted by the mineral release were constrained to a narrow column of soil directly below the transformer.

As documented in our remediation report (Robinson Noble, July 2015), impacted soils were initially "chased" to the groundwater interface at a depth of approximately seven feet, but soils were still found to be impacted by mineral oil at this depth. Groundwater in this area is tidally influenced; and during the remedial excavation, tides were receding (falling). As such, the remedial excavation continued deeper, chasing the falling tide until the lowest tide (of that day) was reached. Deepest groundwater (at lowest tide) was encountered at a depth of approximately 8½ feet (which was also found to be one of the lowest tides for the year). The final remedial excavation extended approximately ½ foot below the deepest groundwater interface to a depth of approximately 9 feet.

The final confirmation sample collected at a depth of 8½ feet showed that soils were still impacted with mineral oil. Deeper confirmation samples (at nine feet) were not collected because the soils were below the groundwater interface and because excessive caving was threatening to undermine adjacent electrical equipment. At this point, Robinson Noble terminated the remedial excavation and concluded that, because mineral oil has a specific gravity of less than one (lower than water), and because the remedial excavation extended to a depth below the lowest tide for the year, that most if not all of the soil impacted by the mineral oil release had been removed. We also concluded, based on the results of the groundwater analyses conducted during our initial investigation, that groundwater in the area of the transformer was not impacted by the release.

Following review of our remediation report (Robinson Noble, July 2015), Ecology concluded that all of the soil impacted by the release of mineral oil had not been removed during remediation, and that groundwater in this area may also be impacted. Ecology subsequently listed the site on the Confirmed or Suspected Contaminated Sites (CSCS) database as a State Cleanup Site with confirmed soil impacts and suspected groundwater impacts (see attached Ecology letter dated December 17, 2015). Ecology has assigned the site Facility Site ID Number 15369.

The Port of Tacoma (the current property owner) desires to obtain a NFA determination for the site from Ecology, and Tacoma Public Utilities (the operator of the subject transformer) desires to assist the Port of Tacoma with this task. In our April 5, 2016 meeting with Ecology, Ecology personnel with the Toxics Cleanup Program (Southwest Regional Office) indicated that the primary reason that the site was listed as a State Cleanup Site is because of insufficient documentation. Specifically, a final confirmation sample was not obtained from the base of the ex-

cavation showing that mineral oil concentrations are below applicable cleanup levels, and that groundwater samples were not obtained from a permanent and properly developed monitoring well.

In our April 5th meeting, Ecology recommended that we install a single monitoring well as close as practical to the subject transformer on the down-gradient side of the unit in order to evaluate current soil and groundwater conditions. During the drilling of this monitoring well, soil samples should be collected and submitted for analysis of mineral oil to assess potential soil impacts. Subsequently, groundwater samples should be collected from the completed monitoring well for two consecutive quarters to evaluate potential groundwater impacts. All parties agreed with these recommendations as an adequate means of determining whether or not soil and/or groundwater impacts are present as a result of the release, and if present, additional measures (yet to be determined) will need to be implemented to remediate the site.

Work Plan Tasks

For the purpose of organization, this draft work plan is divided into five separate tasks, which include the following:

- Task 1: Completion of the final work plan following Ecology review
- Task 2: Monitoring well installation and soil sampling
- Task 3: Quarterly groundwater sampling
- Task 4: EIM preparation and upload
- Task 5: Report preparation

The following sections provide a description of each of the tasks to be completed under the proposed work plan.

Task 1: Completion of the final work plan following Ecology review

As discussed in our April 5 meeting, this draft work plan is being submitted to Ecology concurrently with the VCP application for review and comment. Once we receive comments back from Ecology, we will incorporate any recommended changes into a final work plan. This final work plan will then be used as the guiding document for subsequent work to be completed at the site.

Task 2: Monitoring well installation and soil sampling

Robinson Noble will oversee the installation of one standard 2-inch diameter resource protection (monitoring) well at the site and will collect soil samples for analyses of mineral oil during the drilling of this well. The monitoring well will be positioned as close as practical to the southwest side of the subject transformer (down-gradient side between the transformer and the Sitcum Waterway). Drilling will proceed to a depth of 15 feet so that the final screen can be set across the water table (water levels in this area are expected to be approximately nine feet below ground surface (bgs) at lowest tide). Drilling will be accomplished using hollow-stem-auger drilling-methods.

During drilling, a Robinson Noble geologist will conduct field screening for signs of soil impact using visual and olfactory cues, and a hand-held photo ionization detector (PID). Our geologist will collect representative soil samples based on field screening results to be submitted for laboratory analysis. All soil samples will be submitted to a State accredited laboratory for analysis of mineral oil using Ecology method NWTPH-Dx. All analytical results will be compared to Model Toxic Control Act (MTCA) Method A cleanup levels to evaluate compliance.

Following drilling, our geologist will direct the installation of a standard 2-inch PVC monitoring well in the boring. It is anticipated at this point that the well will be screened from 5 to 15 feet bgs to appropriately bracket the water table. The well will be completed with a standard monitoring well sand pack and screen (10 x 20 Colorado Silica™ with a 20-slot screen) and a secure flush-mounted well monument. Following construction, our geologist will fully develop the well in preparation for quarterly groundwater sampling.

Task 3: Quarterly groundwater sampling

Once the well is constructed and developed, Robinson Noble will sample the well over two consecutive quarters to evaluate potential impacts to groundwater. During each quarterly sampling event, our geologist will purge the well prior to sampling, while monitoring various parameters to determine when stabilization has occurred. Our geologist will then collect groundwater samples to be submitted for laboratory analysis. All groundwater samples will be submitted to a State-accredited laboratory for analysis of mineral oil using Ecology method NWTPH-Dx. As with the soil samples, all analytical results for groundwater will be compared to MTCA Method A cleanup levels to evaluate compliance.

Task 4: Input data into Ecology's EIM database

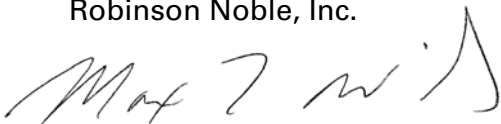
In order to qualify for final NFA status under the VCP, all analytical and appropriate geographical data collected during the course of this investigation will need to be uploaded to Ecology's Environmental Information Management (EIM) database system. EIM data has been generated for all the previously collected analytical results associated with this project, and this will be uploaded together with the newly obtained data from this upcoming phase of work to Ecology's EIM system.

Task 5: Reporting

Upon completion of Tasks 1 through 4 described above, Robinson Noble will compile a final remedial investigation (RI) report summarizing our previous work and documenting the new work described in the final work plan. The final RI will also provide recommendations for additional investigative work or remediation if appropriate. If applicable, the final RI report will also provide a discussion of possible remediation options and a cost analysis for each recommended approach.

It is our pleasure to provide continued service to Tacoma Public Utilities on this project. If you have questions or need additional information, please contact us at your convenience.

Respectfully submitted,
Robinson Noble, Inc.



Max Wills, LHG
Senior Hydrogeologist