

June 3, 2020

Mr. Colin Polk  
Prosper Portland  
222 NW 5th Avenue  
Portland, Oregon 97209

**Re: Proposed Change to Phase I Groundwater Extraction  
Centennial Mills – Tanner Creek Sewer Remedial Action  
1362 NW Naito Parkway, Portland, Oregon  
ECSI No. 5136  
150-012-004**

Dear Mr. Polk:

This letter describes a proposed change to the method of implementation of the Tanner Creek Sewer (TCS) Phase I Remedial Action (RA) at the Centennial Mills site in Portland, Oregon. In summary, the proposed change involves manually extracting heavily contaminated groundwater and/or liquid-phase hydrocarbons (LPH) instead of using an automated groundwater extraction system. The proposed scope adapts to the shorter project schedule, while offering a more sustainable option that meets the objective of the Phase I RA to remove mobile LPH to the extent practicable near the Willamette River through groundwater extraction wells installed within the TCS backfill.

## **TCS Remedial Action**

The Phase I RA is described in our Phase I Remedial Action Plan (RAP), dated January 29, 2020. The extraction system described in the RAP was proposed for 6 to 12 months of operation and included trenching groundwater conveyance to a single above-ground pump with groundwater discharged to a water storage tank. The water would periodically be transferred to an oil recycling facility. The system would be operated intermittently to allow LPH to migrate and/or accumulate on the water table, with pumping occurring for a few days up to 1 week at a time until diminishing contamination was observed. One or two weeks of inoperable time was anticipated between pumping cycles.

Phase II of the RA is scheduled for fall 2020 and will involve installing a grout plug along the TCS to prevent ongoing migration of LPH through the sewer backfill. The schedule for implementing Phase I well installation was impacted by permitting, revisions to scope details of the RAP, and Oregon state “stay at home” orders due to COVID-19 pandemic. To meet the Phase II installation schedule, Phase I will be operational for approximately four months. This is a reduced duration than originally anticipated in the RAP. At this shorter timeframe, it does not make fiscal, operational, or environmental sense to



install the Phase I extraction system as described in the RAP. Upon evaluation, Hart Crowser identified an alternative “hands-on” and value-engineered approach for the 4-month timeframe that still achieves the Phase I objective.

## **Adapted Phase I Scope**

In December 2019 (after two months of permitting), Hart Crowser had two potholes completed to identify the sides of the TCS for extraction well installations. The RAP was finalized in January 2019, and plans for well installation were initiated; however, permitting negotiations and COVID-19 concerns delayed installation of the wells until early May 2019. The two extraction wells have been successfully installed within the backfill along the TCS as proposed in the RAP. Vendor costs for the remainder of the Phase I extraction system installation were substantially higher than anticipated and do not make fiscal sense, warranting value engineering to adapt the Phase I scope to a shorter timeframe.

The proposed Phase I scope will utilize manual extraction of heavily contaminated groundwater and/or LPH from the TCS backfill. Hart Crowser pump groundwater and LPH from the extraction wells using a Mini-Typhoon® pump (or similar). This method of pumping will require an operator to be on site. By being present, the intake to pump can be kept at the top of the water table and moved down with any drawdown; observations would be made as to odor, sheen, and LPH. If there’s diminishing sheen, we can stop for a while or until next site visit. While present on the site, extraction activities would also be conducted on monitoring well MW-2 at the top of the riverbank to conduct recovery nearer the river (LPH had previously been detected in this well). Initially, we will have an operator on the site for four hours per day for three days a week (Monday, Wednesday, Friday). Based on field observations, the operation time may be modified (lengthened/shortened per day, more or less days per week) to maximize the recovery of heavily contaminated groundwater and LPH.

Extracted groundwater would be pumped into a drum or container, then transferred to a larger on-site storage tank. United Rentals has various BakerCorp storage tanks (Baker Tanks) available for rental. Depending on availability, we would prefer to use a double-walled Baker Tank capable of containing 18,000 gallons. If the double-walled baker tank is not available, numerous single-walled tanks can be procured along with containment boom to prevent a release of petroleum-impacted groundwater. Disposal of petroleum-impacted groundwater from the Baker Tank would still be conducted by having an oil-recycling facility transfer water from the tank for delivery to their facility as described in the RAP.

## **Benefits**

The proposed change to the Phase I scope would meet the Phase I objective to remove mobile LPH to the extent practicable. Benefits of this adapted approach include the following.

- The pumping rate and pump inlet depth can be adjusted in real time ensuring more accurate extraction of only the most contaminated groundwater, presumably at top of the groundwater table.



- Similarly, the depth of pumping could be varied through the water column in each well to observe whether there are better depth intervals for LPH recovery (field observations would be made regarding the relative strength of sheen or LPH).
- Overall, less water is likely to be generated resulting in less water to be transported and recycled (the original design would have operated for longer periods per cycle, but after pumping for a while, the effectiveness of LPH and hydrocarbon recovery would diminish as desorption from the soil matrix would take time, particularly for heavier hydrocarbons present in the TCS backfill).
- The risk of overflowing the water storage tank is nearly zero if groundwater is added to the storage tank with personnel on the site. Our Phase I RAP design included two methods to prevent overflowing, but this was still a concern as no personnel were likely to be on the site when the maximum water level was reached.
- Extraction can be completed a week after approval by Prosper Portland and the Oregon Department of Environmental Quality (DEQ), compared with to 3 to 4 weeks for system installation.
- Significant cost savings will be realized by not installing an extraction system infrastructure.
- A reduced carbon footprint for installation will be realized. Construction of the extraction system was estimated to take up to two weeks. Less materials (e.g., PVC piping, vaults) would also be used and disposed of upon implementing Phase II of the RAP

## **Drawbacks**

Our evaluation of the proposed approach identified one potential drawback: groundwater will not be extracted overnight or for extended periods of time. Extended pumping periods and the resulting cone of depression can sometimes aid in the recovery of petroleum from soil matrix. However, as indicated above, this is less likely to occur with heavy-range petroleum hydrocarbons as seen at the site. If desorption and LPH recovery is observed from extend periods of pumping, we can adjust our pumping duration to better capture LPH recovery. The system was also to be operated intermittently; the proposed manual approach mimics this operation but on a shorter cycle (starts with every other day).

## **Closing**

Hart Crowser proposes changing the approach to groundwater extraction from the automated system proposed in the RAP to a manual approach due to fiscal and schedule impacts. The proposed approach achieves the Phase I objective and has numerous benefits, with implementation sooner, more field observations with staff being on the site, real-time adjustments to target heavily contaminated groundwater and LPH recovery, and offering a more sustainable option.



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We realize that DEQ will need to approve this change in approach. If there are any questions or concerns, please feel free to call us or arrange a virtual meeting to further discuss this proposed change.

Sincerely,

**HART CROWSER, INC.**



RENEWAL DATE: 12/31/2020

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