From: Song, Jing (ECY)
To: dylan@gallowayenvironmental.com
Subject: RE: NW3317 Suns Mini Mart & Gas: Ecology"s comments
Date: Tuesday, February 7, 2023 12:51:34 PM
Attachments: image001.png

Hi Dylan,

Thank you for responding to Ecology's comments quickly. Ecology appreciates your effort to move forward with the site characterization and cleanup.

Ecology concurs that the proposed monitoring well location will help characterizing the soil and groundwater conditions at the site, and evaluate the predominant groundwater plume. Please be prepare to adjust the proposed well screen interval as needed, based on the field observation, to ensure the screen is not submerged under the groundwater table. Also if field observation indicates presents of deep soil contamination in any well location, please drill deeper as needed, to delineate the vertical extent of the soil contamination at the well location.

Ecology appreciate that you will update the Cleanup Action Plan to include the newly collected data and other information listed in your email. Ecology is looking forward to continuously working with you during the additional site characterization and interim action work.

Please give me a heads-up once you schedule the well installation. I would like to make a site visit during the well installation if my schedule allows.

Thank you.

Jing Song, LG, LHG

Voluntary Cleanup Program Site Manager | Toxics Cleanup Program | WA Department of Ecology, Northwest Region
15700 Dayton Ave N, Shoreline, WA 98133
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From: dylan@gallowayenvironmental.com <dylan@gallowayenvironmental.com>
Sent: Tuesday, February 7, 2023 11:10 AM
To: Song, Jing (ECY) <JISO461@ECY.WA.GOV>
Cc: peter <peter@gallowayenvironmental.com>
Subject: Re: NW3317 Suns Mini Mart & Gas: Ecology's comments

Good Morning Jing,

Thanks again for all of your hard work on this. We are happy to be collaborating with you on this project. We agree that more investigative work will be very helpful for the planned

cleanup of the property. Therefore, as you recommended, we would like to conduct another investigation/well installation at the property. The primary goals of this are to:

- Better define the soil and groundwater contamination within the property boundaries.
- Obtain additional groundwater depths and flow direction to determine if the predominant groundwater is in fact flowing to the east/northeast as stated by G-Logics and as supported by the overall regional topography.
- Provide additional permanent groundwater sample locations for long-term monitoring.
- Use these data to refine the Cleanup Action Plan (CAP).

The scope that we would like to conduct includes:

- Installing one groundwater well (Proposed Well #MW-5) in the central (north/south) position of the eastern property boundary, collecting soil samples to 40 feet bgs and installing a groundwater well with a screen from 20 feet bgs to 30 feet bgs. We want to collect samples to at least 40 feet bgs because this is near the location where historic sample number GLB-11-30 (30 feet bgs) resulted in a detection of benzene in soil at 0.48 mg/kg. The well location was chosen to provide an additional/more suitable well along the eastern property boundary and to also increase the accuracy of the predominant groundwater flow direction.
- Installing one groundwater well (Proposed Well #MW-6) in the northern position of the northern property boundary, collecting soil samples to 50 feet bgs and installing a groundwater well with a screen from 10 feet bgs to 20 feet bgs. We want to collect samples to at least 50 feet bgs because this is north of the location where historic sample number GLB-9-40 (40 feet bgs) resulted in a detection of benzene in soil at 0.046 mg/kg. The well location was chosen to provide an additional well along the northern property boundary and to also increase the accuracy of the predominant groundwater flow direction.
- Installing one groundwater well (Proposed Well #MW-7) west and upgradient of all known contamination, collecting soil samples to 40 feet bgs and installing a groundwater well with a screen from 10 feet bgs to 20 feet bgs. We want to collect samples to at least 40 feet bgs because we want to ensure that we obtain upgradient data for comparison to other site data. The well location was chosen to greatly increase the accuracy of the predominant groundwater flow direction.
- Installing one groundwater well (Proposed Well #MW-8) in the former tank pit area, collecting soil samples to 50 feet bgs and installing a groundwater well with a screen from 10 feet bgs to 20 feet bgs. We want to collect samples to at least 50 feet bgs because this is near the location where historic sample number GLB-15-40 (40 feet bgs) resulted in a detection of benzene in soil at 0.03 mg/kg. The well location was chosen to provide a means to remove the petroleum plume/source of contamination and to also increase the accuracy of the predominant groundwater flow direction.
- Have a licensed land surveyor survey all wells so we can more accurately determine the groundwater flow direction.
- Throughout the drilling process, we will collect soil samples for analyses of TPH-Gas, BTEX, naphthalene to further define the extent of contamination and geochemical data to evaluate the current status of bioremediation at the property and to refine the planned injection of microorganisms.

- Conduct another round of groundwater sampling of all wells to evaluate the extent of contamination.

A depiction of the well locations is attached to this email. Data gathered during and from the proposed action will be used to better understand the site conditions and to refine the remedial approach. We will then update the Cleanup Action Plan (CAP) to include:

- A Rose Diagram (or similar) to show the groundwater flow direction.
- Refined injection calculations and locations based on the new data.
- A refined geological depiction of the site.
- An updated TEE Form.
- All common components of a FS (including a DCA) within the CAP.

Our clients would like to move as quickly as possible on this for the sake of the environmental quality at the site. Depending on the data gathered and the planned remedial action, they understand that we may need to conduct additional sampling downgradient (east/northeast) of the property as well as other areas outside the property boundaries as well as a vapor intrusion assessment. But for now, they would like to at least initiate control over the plume that was left by the previous landowner.

Thank you very much for your review. Please let us know your thoughts on this once you get a chance.

Best,

Dylan

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On January 12, 2023 11:35 AM Song, Jing (ECY) <jiso461@ecy.wa.gov> wrote:

> Dylan,
>
> Thank you for submitting a Response to Opinion Letter (Response Letter) to Ecology's opinion letter dated March 15, 2022.
>
> Ecology has reviewed the response letter, and has the following comments:
>
> 1. Ecology understands your intention to address the residual site

contamination as quickly as possible. The Site is under independent cleanup for which Ecology provides technical assistance and opinions. You are welcome to conduct interim actions to partially clean up the Site during any stage of the cleanup process. However, at this point, Ecology does not have sufficient data to determine the effectiveness of the selected interim action.

If you want to conduct the proposed interim action (LNAPL extraction and chemical injection), please consider the following:

- It appears that subsurface soil on eastern half of the Site consists of glacial till. Ecology suggests evaluating the effectiveness of injection in dense glacial till before conducting the interim action. The Radius of Influence (ROI) of each injection points should be estimated based on the soil type and injection method.
- Ecology recommends collecting geochemical data before, during, and after the injection to determine if bioremediation occurs at the Site, and if the injection of microorganism enhances the bioremediation.
- The proposed injection points and injection wells appear to be targeted at depths no more than 23 feet bgs. However, deeper soil and groundwater contamination is present at the Site. Additional remedial actions may be needed to address deep contamination.
- Compliance monitoring is needed to evaluate the short-term and long-term effectiveness of the interim action. Additional monitoring wells are still needed on evaluating the interim action and characterize the Site.

2. Ecology concurs with the installing one monitoring well within the former underground storage tank (UST) area. As stated before, additional monitoring wells west, south, and east of the groundwater plume (and injection area) should be installed to evaluate the effectiveness of the interim action. Ecology recommends submitting a map showing the proposed new well locations.

3. A remedial investigation and feasibility study (RI-FS) is not necessary for conducting an interim action. However, when selecting the final cleanup action for the Site to reach the final cleanup goal, a FS and a Disproportionate Cost Analysis (DCA) are needed to determine if the selected cleanup action is sufficient to meet the substantive MTCA requirements.

4. Ecology's request for a Site hydrogeology review is based on the following facts:

- Groundwater elevation along eastern property boundary (in well GMW-3 and temporary well GLB-10) are at least 10 feet deeper than those in other monitoring wells.
- Groundwater appears to be perched in the glacial till on the eastern half of the Site (where all four groundwater monitoring wells are located).
- Wood Creek is located immediately west of the Site. A glacial outwash layer (a more permeable layer) is likely present at depths of approximately 20 to

30 feet below ground surface (bgs) at the western half of the Site. Based on the likely presence of the outwash layer and the proximity of the creek, it is possible that a water-bearing zone is present in the outwash layer in the western half of the Site.

- Due to the lack of monitoring wells on the western half of the Site, it is unclear that if the perched groundwater (on the eastern half of the Site within the glacial till) is continuous across the Site, or if it is hydraulically connected with the potential groundwater in the outwash layer.
- The inferred the groundwater flow direction (to the northeast) is based on a couple of time of measurements from three out of four wells, all located on the eastern half of the Site.

Based on these observations, it is Ecology's opinion that more monitoring wells and more groundwater monitoring are needed to determine the groundwater elevation across the Site, and predominant groundwater flow direction. Additional monitoring wells on the western half of the Site will be helpful. Once additional groundwater monitoring data is collected, a Rose Diagram is needed to show the variance of groundwater flow directions.

5. The Response Letter indicates that a TEE form is attached. However, Ecology does not see a TEE form.

For the proposed interim action (injection), Ecology's current biggest concern is the insufficient characterization of the groundwater plume, and effectiveness of injection in glacial till. Although the proposed interim action may partially address the contamination in the source area (former USTs, dispensers), but the long term benefit to the final Site cleanup is uncertain. Ecology is happy to discuss with you more about cleanup approaches and alternatives. Please let me know if you want to set up a conference call or a site visit.

Thank you.

Jing Song, LG, LHG

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From: dylan@gallowayenvironmental.com <dylan@gallowayenvironmental.com>
Sent: Friday, December 16, 2022 10:36 AM
To: Song, Jing (ECY) <JISO461@ECY.WA.GOV>
Subject: Re: NW3317 Suns Mini Mart & Gas: Outstanding invoice

Hi Jing,

Attached are our responses to your comments on the CAP. Please take a look and let me know your thoughts.

Thanks and happy holidays,

Dylan

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On August 23, 2022 10:19 AM Song, Jing (ECY) <jiso461@ecy.wa.gov> wrote:

Good morning Hank,

There is an invoice of $483.40 for the Suns Mini Mart & Gas site (VCP NW3317) that is past due for 60 days. Please pay the invoice as soon as you can. Before the invoice is paid, I cannot work on this site any more.

Thanks,

Jing Song, LG, LHG

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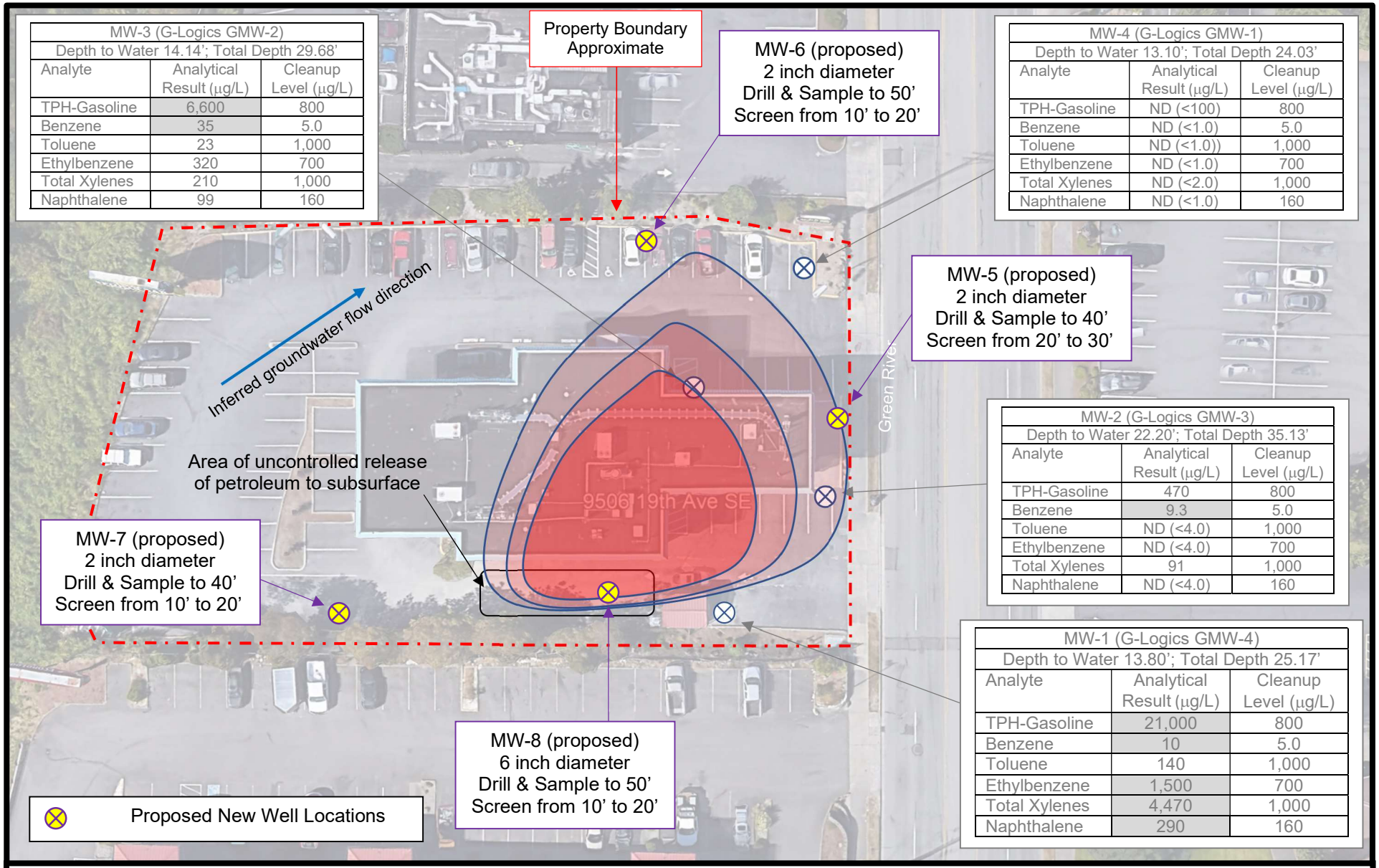

MW-3 (G-Logics GMW-2)		
Depth to Water 14.14'; Total Depth 29.68'		
Analyte	Analytical Result (µg/L)	Cleanup Level (µg/L)
TPH-Gasoline	6,600	800
Benzene	35	5.0
Toluene	23	1,000
Ethylbenzene	320	700
Total Xylenes	210	1,000
Naphthalene	99	160

MW-4 (G-Logics GMW-1)		
Depth to Water 13.10'; Total Depth 24.03'		
Analyte	Analytical Result (µg/L)	Cleanup Level (µg/L)
TPH-Gasoline	ND (<100)	800
Benzene	ND (<1.0)	5.0
Toluene	ND (<1.0))	1,000
Ethylbenzene	ND (<1.0)	700
Total Xylenes	ND (<2.0)	1,000
Naphthalene	ND (<1.0)	160

MW-2 (G-Logics GMW-3)		
Depth to Water 22.20'; Total Depth 35.13'		
Analyte	Analytical Result (µg/L)	Cleanup Level (µg/L)
TPH-Gasoline	470	800
Benzene	9.3	5.0
Toluene	ND (<4.0)	1,000
Ethylbenzene	ND (<4.0)	700
Total Xylenes	91	1,000
Naphthalene	ND (<4.0)	160

MW-1 (G-Logics GMW-4)		
Depth to Water 13.80'; Total Depth 25.17'		
Analyte	Analytical Result (µg/L)	Cleanup Level (µg/L)
TPH-Gasoline	21,000	800
Benzene	10	5.0
Toluene	140	1,000
Ethylbenzene	1,500	700
Total Xylenes	4,470	1,000
Naphthalene	290	160

FIGURE 9 — PROPOSED GROUNDWATER WELL LOCATIONS

Former Sun's Mini Mart and Gas

9506 19th Avenue SE, Everett, Washington

Source: GoogleEarth; September 2020; GEI Project #40026

0 50 ft 100 ft

Approximate Scale

Galloway Environmental, Inc.

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