Boeing Field Chevron Meeting
March 2, 2020
Ecology NWRO Conference Room 2B DRAFT

Attendees:
Dale Myers, Ecology
Rory Galloway, G-Logics
Zak Wall, G-Logics
Russ Shropshire, Leidos
James Kiernan, CEMC
Rajbir Sandhu, RPNP
Julia Schwarz, Kennedy Jenks

The meeting agenda (attached) included presentation of the preceding project schedule by Dale Myers, followed by a presentation by G-Logics summarizing the current updates to the conceptual site model (CSM) as noted in draft figures. A series of draft figures and tables, including presumed LNAPL and dissolved-phase extent maps, cross sections, and feasibility study information, were introduced and copies were provided to the group.

Dale Myers began the meeting by providing a brief history of the timeline of previous actions at the site (attached), and setting expectations for the RI timeline, including the items noted below and in Attachment A (provided to all meeting attendees):

- The site kickoff meeting occurred in 2015, and there have been many changes since then, including new PMs, new consultants, and new attorneys.
- Ecology does not need the full RI document to review the RI, Ecology can review sections.
- A preliminary draft RI report was originally due in November 2016, but the date was extended to May 2018.
- The RI field activities are now complete, but G-Logics needs to ensure that all data is uploaded into EIM. Ecology will not review the RI until the data is uploaded.
    - G-Logics notes that all data should already be in EIM or is under review by Ecology in EIM, but Zak Wall will follow up to make sure.
- The RI/FS is past due. This is partially due to the need to rewrite the FS, but Ecology needs all EIM data to be validated and submitted, and the parties need to ask for an extension to Ecology for the RI/FS, document why the extension is needed, and include a timeline for submittal of the report.
- Ecology management suggests 60 days from today (2 March 2020) as a timeline for submittal of the RI/FS.

Following discussion of the agency's timeline for the RI/FS, Zak Wall and Rory Galloway of G-Logics discussed updates to the site CSM and presented relevant figures and tables. Key points included:

- The site has complex lithology and hydrogeology, including two layers with limited interconnection. Looking at just the historical record of where soil has exceeded in borings, the impacted soil covers a big area; however, when this is separated into three layers, it gives a different picture. The three areas are the vadose zone (approx. 0-9 feet bgs), the upper saturated zone (approx. 9-18 feet bgs) and the lower saturated zone (approx. 18-30 feet bgs).

- Figures for the site present areas of soil impacts. The area of former excavations is excluded from the area of soil impacts in the upper zones (to 15 feet bgs) as this soil was previously excavated and removed.
- Soil: In the upper saturated zone (USZ), higher concentrations of petroleum hydrocarbons are present in soil near IP-4, with free product (FP) in the upper zone, or concentrations approaching NAPL (based on groundwater concentrations).
- Soil: The bulk of the petroleum hydrocarbon mass is in the lower saturated zone (LSZ) from 18 to 30 feet bgs. IP-7 contains persistent NAPL, and IP-5 contains concentrations that may suggest potential NAPL. Most of the petroleum hydrocarbon mass is below the confining layer.
- Tidal influence in the LSZ varies across the site from approximately 5-7 feet of variability nearer to the river and less than a foot upgradient. Onsite, the variability in the LSZ is generally 2-3 feet. There is no evidence of tidal influence in the USZ.
- Discussion regarding the utility corridor along the west side of the site: is it a preferential pathway for contaminant migration? G-Logics noted that wells have been installed in the corridor, and there does does not appear to be contaminant movement in the corridor, though there was poor soil recovery in those wells.
- Figures 6-1 through 6-5: shows historical data and understanding of soil extent based on understanding at the time.
    - 6-1: data as existed at the time with wells screened across two zones.
    - 6-2: highest concentrations in soil not under the existing pumps.
        - Question from James Kiernan regarding the older excavation area. Dale noted that it's unclear from the older drawing where the excavations were.
        - In 2008, likely extension of groundwater impacts into the ROW
        - Significant LNAPL present in 2008, but after enhanced fluid recovery, application of Fenton's reagent, extent decreased by 2015.
    - 6-3: FP decreased by 2015.
    - 6-4: USZ in 2018-2019: NAPL present in IP-4. Extent in USZ smaller than LSZ.
    - 6-5: LSZ in 2018-2019: NAPL present in IP-7. Dissolved phase area does extend below current pump islands and into roadway.
- Figures 7-1 through 7-4 show groundwater concentrations during several time periods in the USZ and LSZ.
    - Footprint of dissolved phase extent is not changing.
    - No detections in downgradient wells MW-18 through MW-20.
    - Footprint of dissolved phase extent in USZ is generally onsite.
    - Footprint of dissolved phase extent in LSZ extends into the ROW.
        - One detection in MW-21 above remediation level. Several detections in MW-24 above the remediation level.
- Dale Myers noted that while the maps show the site cleanup level (CUL), the site CULs are not yet set since that is part of the RI. At this point, it's OK to discuss remediation levels, but the CULs should be set in the RI.
- Dale Myers also noted that MW-19, 20, and 21 should be identified as points of compliance. These wells shall not exceed MTCA Method A CULs regardless of the site CULs. This is for protection of surface water in the Duwamish River.

Following discussion of the updated RI figures, G-Logics presented draft findings for the feasibility study (FS) and disproportionate cost analysis (DCA).

- Several screening rounds were conducted for the FS, as shown on Table 9 and Table 10. Four alternatives were retained:

    - Alternative 1: surfactant, LNAPL extraction, engineering and institutional controls, and MNA
    - Alternative 2: surfactant, LNAPL extraction, ISCO, institutional controls, and MNA
    - Alternative 3: surfactant, LNAPL extraction, ISCO (LSZ) and DPE (USZ), institutional controls, and MNA
    - Alternative 4: Focused excavation with offsite disposal, ISCO (LSZ), institutional controls, and MNA
- The difference in Alt. 2 and 3 is in the USZ, Alt. 2 involves DPE, which may require more infrastructure.
- Raj is not planning to redo the site, so full excavation is not an option.

Dale Myers noted that G-Logics needs to include removal to the maximum extent practicable as a remedial scenario, and to include the several screening rounds in the FS in order to show that a variety of remedial options were considered. Dale also noted that since the initial release, the site has been in compliance with UST inspections.

Additional discussion regarding the feasibility discussion:

- Dale Myers noted that with any remedial option, FP must be removed.
- There was discussion amongst the group, and general agreement that free product needed to be removed. Beyond removal of free product, the mass does not appear to be migrating down the utility corridor, and low risk for VI, so overall a low risk to receptors.
- G-Logics and Raj Sandhu are leaning towards Alternative 1. Dale Myers said that Ecology would likely lean towards Alternative 2.
    - The source must be addressed. There should be no more free product at the site. MNA is not appropriate unless free product is no longer present.
- Russ Shropshire noted that the issue with ISCO would be defining at what point to say that the amount of ISCO was enough; the cost for ISCO could potentially expand based on how much was needed.
    - Dale noted that this should be defined in the design phase; define what the goals of ISCO are and when to stop.
- Discussion about the restoration timescales, and active timescale vs. realistic timeframe to closure:
    - Dale Myers noted that the restoration timescales for Alt. 1 and 2 should be revisited to reflect the active time to the goal of no FP on the site. The timeframe should be the time until the source (FP) is removed.
- G-Logics suggested that in order to get a handle on how many injections would be needed, a pilot study would be in order.
    - In order to grant an extension for the FS for a pilot study, Dale would need a copy of the RI submitted to Ecology. EIM data would need to be uploaded and approved. The RI should mention that the alternatives had been narrowed down to the selected alternative, and a request should be made to Ecology to conduct a pilot study on that alternative. Would also need a work plan for the pilot study, a request for extension of the FS timeline, and a timeline for completing the work and submitting the FS.
- Discussion regarding whether once the DCA is completed, can one make a case later (after pursuing that remedial option) that the cost outweighs the benefit?
    - If the CAP needs to change, it has to go to public comment because it is an Ecology document.

- However, if the CAP notes something like, “if the chosen alternative does not produce results in an appropriate timeframe, then… “, able to leave room for reevaluation of the alternative without redoing the CAP.
- Dale Myers noted that Ecology needs electronic copies of all GIS files that go into the CAP, as the CAP is an Ecology document.

From:	Zackary Wall
To:	"Myers, Dale - TCP (ECY)"; Julia Schwarz; Kiernan, James; "Shropshire, Russ S."
Cc:	Rory Galloway; Ty Schreiner
Subject:	RE: Status of delivery of draft RI/FS Report
Date:	Friday, February 28, 2020 5:27:50 PM
Attachments:	image001.png image002.png

Hi All,

Looking forward to seeing everyone Monday at Ecology's office (2B Mt Baker Conference Room). In preparation for our meeting, please see our agenda below.

Boeing Field Chevron Meeting
March 2, 2020
Ecology NWRO

Proposed Attendees:

Dale Myers, Ecology
Ty Schreiner, Kennedy Jenks
Julia Schwarz, Kennedy Jenks
James Kiernan, CEMC
Russel Shropshire, Leidos
Rory Galloway, G-Logics
Zak Wall, G-Logics
Rajbir Sandhu, RPNP

Meeting Agenda:

1) **Updated CSM**
   Updated Figures
   Soil-Contaminant Vertical and Lateral Extent
   Groundwater-Contaminant Distribution over Time

2) **Discussion of FS Alternatives**
   Preliminary Screening
   Secondary Screening
   Retained Alternatives

3) **Schedule of Deliverables**

Regards,

Zak Wall, LG | Project Geologist
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Boeing Field Chevron
Ecology talking points

Agreed Order DE10947 fully executed July 13, 2015
At table today, Only Mr. Sandhu present at kick-off meeting
Partial Report submittal for review was discussed in kick off meeting

RIWP approved May 24, 2016

30- Day RI Field Activities extension November 21, 2016

Draft RI Report submitted to Ecology May 24, 2017

EIM submittal December 8, 2017 (nothing since)

According to the revised schedule of deliverables attached to Ecology's Chevron Boeing Field Extension letter dated June 25, 2018, the following schedule was revised to:

- RI Field Investigations completed January 2019
- Data Validation and EIM Entry March 31, 2019

You completed the Feasibility Pilot Study in August 2019, which set the 90 day clock for submittal of the Agency Review RI/FS

- Submit combined Agency review RI/FS 90 days after Ecology's letter & comments to proposed remedial alternatives dated November 12, 2019 (~ February 2020)

6-Month Extension RI Field Activities June 25, 2018 (extend to Jan 31, 2019)
Includes extension for data compilation to March 31, 2019

Pilot Test Study
Pilot Study Work Plan February 6, 2019
Pilot Study Report August 14, 2019

RI/FS is past due
I was under the understanding that the draft RI/FS was written, and was currently under review between Chevron and Mr. Sandhu.

- Chevron Boeing Field Sept 2019 Progress Memo 10-08-2019

I was also under the understanding that Ecology would be receiving the draft RI/FS by the end of this year.

- Phone conversations with Dan Hatch

You will need to submit to Ecology for review and potential approval a request for Extension for submittal of the Agency Review draft RI/FS Report
This request must include:

- Reason for delay in data validation & EIM Entry
- Reason for request for extension of submittal of the RI/FS
- Current status of the RI/FS

- Reasonable time table for data validation, EIM entry, and delivery of Agency review RI/FS

From today
45-days for complete EIM upload
60-days for submittal of Agency review RI/FS