

July Monthly Status Report

Prepared by Chevron Pipe Line

Monthly Status Report

The information presented below documents Chevron Pipe Line (CPL) remediation efforts occurring during the month of June 2017 for the Rangely C4 Incident.

Site Sampling and Remediation Activities

CPL completed the following weekly remediation activities during this reporting period:

Week of June 5th: Tilling in Divisions 1, 2, and 3.

125 soil samples were collected from May 31st to June 2 2017 for soil PAH, BTEX, and TPH analysis. 102 soil samples were collected in Divisions 4 and 5, and the remaining 23 samples were collected from previous sampling locations with TPH >5,000 mg/kg in Divisions 1, 2, and 3. One water sample was collected from within Siphon V dam on June 2nd 2017.

Week of June 12th: Site walk of the incident site. No observations of a sheen present on water in Division 4 or Division 5 (Siphon V Dam).

Week of June 19th: Tilling in Divisions 1, 2, and 3. Light excavation of surface soil at five sampling locations in Division 4, followed by tilling of these areas.

Week of July 3rd: Site walk of the incident site. No observation of a sheen present on water in Division 4. Division 5 (Siphon V Dam) had no surface water present. On July 5th, a light excavation of surface soil occurred at four sampling locations in Division 4, followed by tilling of these areas. These four locations were previously excavated on the week of June 19th and re-occurred to reduce TPH values below Table 910-1 limits. Tilling of Divisions 1, 2, and 3 is planned for July 7th assuming adequate weather conditions.

Water Monitoring

CPL site staff conducts weekly site inspections of all Divisions and no sheen or hydrocarbon residues were noted for any water collecting in these divisions for this reporting period.

Incident Crude Oil Mass Balance

CPL has estimated that of the 115 barrels (bbls) of crude oil released in the Rangely C-4 incident the following mass balance illustrates the recovered (returned to production and soil removed and managed at Chevron North America Exploration and Production [CNAEP] land farm), lost to evaporation, and remaining in soil volumes. Of note, the volume of crude remaining in soil is currently being re-estimated and will be reported out in the next monthly status report.

Volume of Oil Recovered	~77 bbls	Volume of crude directly recovered
Evaporative Loss (i.e. Adios Calculations)	~10 bbls	Volume lost to evaporation
Gathered in soil	~26 bbls	Volume entrained in the soil that was collected
Remaining in soil	<2 bbls	Volume dispersed along the length of the site
Total	115 bbls	

Sampling and Analysis

During the month of June, our remediation activities focused on further characterizing site soils for polyaromatic hydrocarbon (PAH), Benzene, Toluene, Ethylbenzene, and xylene (BTEX), and total petroleum hydrocarbon (TPH), semi-volatile and volatile organic analyses for a water sample from Siphon V Dam, and remediation of soils by enhanced biodegradation (tiling) and selective excavation to minimize excessive soil removal. Below is included a summary of the sampling events occurring in June 2017, along with a summary of the results. Of note, a detailed report (Remediation Baseline Sampling Report) on the June 2017 sampling event is in progress and will be submitted to COGCC by August 1st 2017. This Remediation Baseline Sampling Report will present all analytical results including supporting tables, graphs, and maps from this sampling event. It is also anticipated that this report will seek approval from COGCC for a “no further action” designation for Divisions 4 and 5 based on the results of the May 31st to June 2nd sampling event and follow-up sampling events occurring on June 26th and mid-July.

May 31st to June 2nd Sampling Event:

The objectives of this sampling event were to provide a sufficient soil analytical dataset to understand if: 1) additional remediation is warranted for Divisions 4 and 5, and 2) to re-sample areas containing soil TPH values greater than 5,000 mg/kg in Divisions 1, 2, and 3 to evaluate remediation progress since the last sampling event. Additional excavation and tilling to enhance bioremediation were completed in May in Divisions 1, 2, and 3. The June monthly status report presented the sampling locations selected for this event (Figures 2a through 2g).

Soil samples were collected at 30 locations uniformly spaced along Division 4. At each location, three soil samples were collected; one soil sample from the middle of the dry drainage feature and two soil samples from the sidewalls (i.e. to the left and right of the middle sample). Therefore, a total of ninety soil samples were collected in Division 4 during this event and each soil sample location was analyzed for TPH, PAHs, and BTEX compounds listed in Table 910-1. For the Siphon V Dam, CPL re-sampled the previously collected locations used for the April 11, 2017 TPH sampling event and analyzed the samples for TPH, PAHs, and BTEX compounds listed in Table 910-1. On June 1st 2017, one water sample was collected from within the Siphon V Dam and was analyzed for semi-volatile and volatile organics by EPA Methods 8270 and 8260, respectively.

For Divisions 1, 2, and 3, CPL re-sampled soils previously with TPH values greater than 5,000 mg/kg which included nine, seven, and seven samples respectively for these divisions. These samples were also analyzed for TPH, PAHs, and BTEX compounds listed in COGCC Table 910-1.

Sampling Results

- 125 soil samples were collected from May 31st to June 2 2017 for PAH, BTEX, and TPH analysis. One water sample from Siphon V Dam was collected on June 1st 2017 for semi-volatile and volatile organics by EPA Methods 8270 and 8260, respectively.
- **Only 1 of 125** soil samples (RC4-PS-7C) had a soil PAH concentration greater than the Table 910-1 limit. This same sample was reanalyzed and the result was a non-detectable result for this PAH constituent (dibenz(a,h)anthracene). A minor (< 1 ft³) removal of soil occurred at this location to ensure complete remediation on June 23rd 2017.
- **None of the 125** soil samples had a BTEX concentration greater than the Table 910-1 limits.
- **Only 5 of the 90** soil samples collected in Division 4 had a soil TPH result greater than the 500 mg/kg. No samples from the left or right channel banks exceeded a

TPH value > 500 mg/kg. Selective soil excavation occurred at these locations on June 23rd and July 5th and sample results will be presented in the Remediation Baseline Sampling Report due on August 1st 2017. CPL anticipates that all sampling locations in Division 4 will meet the constituent limits listed in Table 910-1 after the July 5th selective soil excavation event and if so, will request no further action for Division 4. **Of note, Divisions 4 and 5 are approximately 82% (~7,800 of 9,500 feet) of the linearly impacted site.**

- **Only 1 of 12** soil samples in Division 5 had a soil TPH value greater than the 500 mg/kg limit. This sample was the pre-selected laboratory duplicate and the duplicate soil sample result was 178 mg/kg as TPH versus the 1,080 mg/kg as the non-duplicate sample concentration. The mean soil TPH value of all 24 soil samples collected within Division 5 is 163 mg/kg which includes 12 soil samples collected on May 2nd 2017. Additionally, all soil samples collected within Division 5 had PAH or BTEX concentrations less than the Table 910-1 limits. Further, all hydrocarbon associated constituents were non-detectable from the June 1st water sample taken from within Siphon V dam. This analysis is consistent to the water sampling results from the May 2nd 2017 Siphon V Dam sampling event. Based on the analytical results from Division 5, CPL will be requesting “no further action” for this segmented zone and would like to proceed with backfilling this area to restore grade and commence restoration per BLM requirements over the proceeding months.
- **5 of 9** soil sampling locations in Division 1, with TPH results >5,000 mg/kg, that were re-sampled had lower TPH results. 2 of 9 samples had the same concentrations between May 3rd and June 2nd 2017.
- **6 of 7** sampling site in Division 2 with TPH concentrations >5,000 mg/kg had a soil TPH concentration less than 5,000 mg/kg during this re-sampling event. 3 of the 7 sampling sites when from a TPH result >5,000 mg/kg to less than the COGCC Table 910-1 limit of 500 mg/kg.
- **5 of 7** sampling site in Division 3 with TPH concentrations >5,000 mg/kg had a soil TPH concentration less than 5,000 mg/kg during this re-sampling event.

Remediation Phase Progress and Deliverables

For monthly reports, CPL will provide a status on Remediation Phase Progress, and deliverables, shown below in Tables 1A and 1B, respectively. These deliverables will be provided to COGCC and where warranted BLM. The percent remediation complete table will be calculated as a function of area within each Division receiving closure approval from COGCC and BLM. This column will likely receive data starting in the August monthly status report(s).

Table 1A. Remediation Progress as of July 5, 2017.

Location	Planned Activities	Complaint to COGCC Table 910-1	Percent Remediation Complete	Comments
Division I	Excavation/Enhanced Bioremediation	No		Continued enhanced biodegradation. In progress to submit a nutrient amendment to assess further enhancement of biodegradation.
Division II	Enhanced Bioremediation	No		Continued enhanced biodegradation. In progress to submit a nutrient amendment to assess further enhancement of biodegradation.
Division III	Enhanced Bioremediation	Likely for most areas within this division		Continued enhanced biodegradation and selective excavation.
Division IV	Enhanced Bioremediation	No further action pending minor excavation		Selective excavation at four small areas in Division 4. Activity completed on July 5 th 2017.
Division V	Water Sampling and Analysis, followed by Soil Confirmation Sampling	No further action will be requested in July/August 2017		Request will likely be included in the June detailed sampling report.

Table 1B. Remediation Phase deliverables.

Date	Deliverable	Content	Status
-------------	--------------------	----------------	---------------

5/12/2017	Amended Table 910-1 analytes list.	CPL will request an amended Table 910-1 analyte list based on impacted and background soil analytical data.	Completed. Submitted June 5, 2017, to COGCC.
5/17/2017	Response Sampling and Analysis Report	Documents all samples collected during the response phase and discusses actions selected based on results.	Completed. Submitted May 17, 2017, to COGCC.
8/1/2017	Water Analyses from Siphon V Dam	CPL will prepare a summary of water sampling results as part of the June detailed sampling report (i.e. Remediation Baseline Sampling Report).	In progress. Report will be submitted to COGCC on August 1 st 2017. No detectable hydrocarbon constituents have been measured in either water sample from Siphon V Dam.
8/1/2017	Remediation Baseline Sampling Report	Documents samples collected to characterize soil TPH and targeted PAH/BTEX concentrations after all response phase activities. The full Table 910-1 analyses will be conducted on approximately 5 to 10 samples.	In progress. A summary of the sampling results is presented in text above.
9/1/2017	Remediation Phase Status Report	Documents remediation activities conducted during this phase and available soil monitoring data for TPH and other Table 910-1 analytes as warranted.	Will commence in August 2017.

12/29/2017	Remediation Phase Status Report	Documents remediation activities conducted during this phase and available soil monitoring data for TPH and other Table 910-1 analytes as warranted.	Will commence in November 2017.
4/9/2018	Remediation Phase Status Report	Documents remediation activities conducted during this phase and available soil monitoring data for TPH and other Table 910-1 analytes as warranted. Document will include next report deliverable date.	Will commence in March 2018.
TBD	Confirmation Sampling Report(s)	Documents confirmation sampling events and will include recommendations as to future actions (No further action or specified remedial work) per delineated segment or division.	Likely a request will be prepared in June-July 2017.
7/14/2017	Microbial Stimulant Request	Document may be prepared and submitted for COGCC approval of any requested microbial stimulant as part of the "enhanced biodegradation process".	In progress. CPL is preparing a request to COGCC and BLM to obtain samples for nutrient analysis and based on results may request nutrient addition approval to site soils using treatments and control plots.

Restoration Phase Progress and Deliverables

For Restoration reporting, CPL will provide a status on Restoration and Close Out deliverables identified in Tables 2A and 2B below. These deliverables will be provided to BLM.

Table 2A Restoration Progress

Location	Planned Activities	Complaint to BLM Requirements	Percent Restoration Complete	Comments
Division I	TBD with BLM following remediation			
Division II	TBD with BLM following remediation			
Division III	TBD with BLM following remediation			
Division IV	TBD with BLM following remediation			
Division V	TBD with BLM following remediation			

Table 2B. Site Restoration Phase deliverables.

Date	Deliverable	Content	Status
4/19/2017	Response disturbance shape files	Documents Rangely C4 incident disturbances by type categories.	Completed. Submitted to BLM on April 14, 2017.
8/1/2017	Detailed Site Restoration Plan	Documents specific actions that will be conducted to restore biological disturbance caused by the response and remediation phases including required	In progress. Initial restoration plan has been developed and will be provided to BLM as a pre-read for a site meeting on July

		resources, and estimated schedule.	13 th 2017. This meeting will be used to discuss and update the plan accordingly and assisting in finalizing the plan by 8/1/2017.
TBD	Supplemental Site Restoration Plan	Example: may include an updated or additional plan for impacted areas remediated after the "Detailed Site Restoration Plan."	Not warranted as of 5/1/2017.