

## **Red Butte Creek Oil Spill - NOV I10-1**

### **Decision Document/NOV Closeout**

#### **Purpose**

This Decision Document provides supporting information and rationale for the Department of Environmental Quality (DEQ) Division of Water Quality's (DWQ) determination to formally close out NOV I10-1 issued to Chevron Pipe Line (CPL) Company on July 13, 2010, in response to the June 10, 2010 oil release into Red Butte Creek subject to the post closure requirements identified herein. A second oil release occurred on December 1, 2010 when a block valve associated with the same Chevron pipeline in close proximity to the first release failed. Fortunately, this crude oil did not enter Red Butte Creek. DWQ issued NOV I10-05 to CPL for this second incident on January 19, 2011. Clean-up efforts were completed for this release and DWQ subsequently issued a close out letter dated March 22, 2012 formally closing out NOV I10-05.

#### **Background**

On June 10, 2010, approximately 800 barrels (36,600 gallons) of crude oil from a Chevron pipeline that crosses Red Butte Creek near the mouth of Red Butte Canyon was released with a large portion of the oil entering Red Butte Creek. Clean-up actions primarily by CPL, over the next months removed approximately 778 barrels (32,676 gallons) from the creek.

Monitoring efforts conducted jointly by the DEQ DWQ and Chevron's contractor EarthFax, have been ongoing since the spill occurred and have evaluated water, sediment and bank soils, and macro-invertebrates in Red Butte Creek, and associated risks. Personnel from Salt Lake City Corporation and Salt Lake Valley Health Department also participated in evaluating potential impacts to human health and environment from the spill. Up until July 29, 2010, personnel from EPA Region 8 and federal contractors also actively participated in evaluation of and response to the spill. All of the analytical results from the monitoring program are available on the Red Butte website hosted by DWQ.

DWQ and CPL executed a Settlement Agreement on November 10, 2011, to address the penalty assessment for both notices of violation. This agreement established a \$3.5 million settlement for both NOV I10-01 and NOV I10-05, and identified CPL's ongoing responsibilities with regard to clean-up and monitoring.

## Risk Assessments

In order to help determine if clean-up efforts on Red Butte Creek in response to the June 2010 release were adequate to protect human and ecological health, DWQ conducted formal risk assessments carried out by consultant contractors under the direct supervision of DWQ. Draft Human Health and Ecological Risk Assessments were compiled and made available for public review and comment for a 30 day comment period ending August 13, 2012. DWQ responded to all public comments received. Modifications to both risk assessments were made in response to comments received. Both comments received and DWQ responses are included in appendices to the final versions of the risk assessment reports.

## Risk Assessment Findings

**Human Health.** DWQ established maximum media (water, soil, sediment) concentrations<sup>1</sup> for hydrocarbons, below which the potential health risks are considered *de minimus*, that is, no further actions to protect or assess human health are necessary. Hydrocarbon concentrations that require further action were also established. If suspected spill related hydrocarbon concentrations are discovered in the future that exceed the “no further action” concentration, DWQ may require actions such as notifications, additional monitoring, investigations, remediation, or no further action depending on the specific circumstances.

The risk assessment concluded that creek water concentrations were less than “no further action” concentrations because hydrocarbons were not present at measurable concentrations. For sediment and banks soils, the risk assessment concluded that hydrocarbon concentrations exceed the no further action screening levels in some locations. While the hydrocarbon concentrations exceeded the no further action screening levels, they were lower than concentrations that typically require remediation. The hydrocarbon concentrations were also similar to the background concentrations in Salt Lake creeks that were not impacted by the CPL spills.

Specifically, potential health risks from exposures to hydrocarbons in City, Emigration, Mill, and Parley’s Creeks were similar to Red Butte Creek. The health risks calculated using the same methodology as used for Red Butte Creek resulted in similar potential risks above the “no further action” screening levels. The hydrocarbons in these un-impacted creeks are attributed to anthropogenic and natural sources such as wildland fires and urban runoff from roads and parking lots. CPL’s responsibility is limited to contaminants from the spills.

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<sup>1</sup>[Risk-based Health Screening Levels in Support of Sampling Activities at Red Butte Creek, Salt Lake City, Utah](#) December 2011.

Attempts to conclusively identify the source of the hydrocarbons in Red Butte Creek, i.e., CPL spill or urban runoff and natural sources, were unsuccessful. These efforts were complicated by several factors. Pre-spill concentrations of hydrocarbons in Red Butte Creek are unknown. The fingerprinting analyses performed on a sample of the spilled oil were inadequate for comparisons to weathered hydrocarbon mixtures detected in Red Butte sediment. In addition, the hydrocarbon concentrations in Red Butte Creek are very low and do not display a consistent pattern that allows for comparisons with a pure product (crude oil).

DWQ's conservative assumption is that hydrocarbons in Red Butte Creek are from the CPL spill. However, DWQ acknowledges that Red Butte Creek is subjected to urban influences that are likely ongoing sources of hydrocarbon contamination. With these likely ongoing sources, additional physical removal of the suspected remaining pockets of hydrocarbon contamination from the spill would not be likely to result in a long term reduction in hydrocarbon concentrations in Red Butte Creek. Physical removal would also adversely affect recovery of the Creek from the spill. Physical removal methods (e.g., dig up the creek and replace the creek bed with clean materials) would severely injure the biota, disrupt residents, would not be cost effective and, as explained below, would not provide additional protection to human health or the environment.

Physical removal of oil from Red Butte Creek has occurred but additional physical removal may cause more harm than good. While CPL removed as much of the oil as practical, small volumes of residues and unremediated pockets of oil that are trapped subsurface may remain. These areas with possible remaining contaminants are not easily identifiable and cannot be located without extensive surface and subsurface disturbance such as digging up the entire creek corridor. Therefore, DWQ concludes that based on the currently available information, additional physical removal is not warranted. Natural attenuation through physical and biological processes will probably degrade suspected remaining spill residues over time.

While additional remediation is not warranted, monitoring should continue. Remaining pockets of oil residues presumed to remain may be ongoing sources of spilled oil to Red Butte Creek. The probability of ongoing contamination to the creek is assumed to decrease with time due to attenuation and other natural processes. Regardless, the Creek should continue to be monitored in the interim; although based on the low variation in concentrations observed between past sampling events, beginning in April 2013, the frequency will be reduced to twice per year in April and August through 2015. These months focus on when residents are likely to be outdoors and potentially in contact with the creek banks. This monitoring will ensure that appropriate actions can be taken if any remaining spill contamination is identified in areas where people could be exposed.

As previously discussed, the definitive source of the minimal hydrocarbons remaining in Red Butte Creek cannot be determined and un-impacted Salt Lake City creeks have similar levels of contamination. However, this assumption is based on a single sampling event of the un-impacted creeks in August 2011. DWQ requires an additional sampling of these un-impacted creeks in August 2014 to verify the assumption that Red Butte Creek is similar to un-impacted creeks with respect to hydrocarbon contamination.

**Ecological Health.** The Ecological Risk Assessment concluded that Creek water concentrations are not a threat to ecological receptors because hydrocarbon contaminants are consistently not detected in the water. The Ecological Risk Assessment concluded that hydrocarbons in Red Butte Creek sediments and bank soils are unlikely to pose a risk to macro-invertebrates but pose a potential health risk to mammals and birds. However, similar to the conclusions of the Human Health Risk Assessment, the risk to these same receptors from hydrocarbons was similar in un-impacted creeks.

The monitoring of macro-invertebrates living in Red Butte Creek supports that the creek is recovering. Pre-spill data regarding the macro-invertebrate populations in Red Butte Creek are unavailable which precludes definitive conclusions. Macro-invertebrates are sampled at an above spill location in Red Butte Creek but the representativeness of this site for the impacted portion of Red Butte is uncertain because of habitat differences. Macro-invertebrate populations, including population increases in taxa sensitive to contaminants, have increased markedly in the impacted reaches of the Creek since the spill. In addition to the potential toxicity of the spilled oil, the physical cleanup of the oil in the creek is presumed to have contributed to the reduced macro-invertebrate numbers initially observed. The risk assessment concluded that sediment concentrations are below concentrations that are expected to adversely affect macro-invertebrates. Based on this information, DWQ anticipates that no further remediation is needed for ecological receptors. However, creek macro-invertebrates do not appear to have completely recovered and continued yearly monitoring in August through 2015, beyond what is detailed in the Final Sampling Plan (Version 17), will be required in Red Butte Creek as a post closeout requirement.

### **Determination and Decision**

After careful consideration of the available information, and in particular the following items:

1. Past response and clean-up efforts.
2. Monitoring results and analysis of water, sediment and macro-invertebrate data collected since the June 2010 spill.

3. Results and recommendations from the Human Health and Ecological Risk Assessments, including the conservative assumptions on exposure potential.
4. Feasibility of further active clean-up actions, in particular any longer term impacts such clean-up would cause.
5. Ongoing responsibilities that CPL will undertake, including selected site remediation work, monitoring, and the responsibility to address future spill related clean-ups.
6. Chevron has settled the financial penalty requirements emanating from both NOV's issued in 2010 and 2011.

DWQ makes these findings:

- A) There is no further ongoing active clean-up action warranted to address NOV I10-01 unless additional information discloses a significant problem associated with the CPL release of crude oil.
- B) CPL has adequately responded to the requirements included in NOV I10-01.
- C) NOV I10-01 is hereby formally closed out subject to CPL's compliance with the ongoing post closure requirements identified below:

**Ongoing Post Closure Compliance Requirements**

1. CPL must complete all clean-up related work included in work plans and required for the following sites:
  - a. CPL has completed a foundation restoration in and adjacent to Red Butte Creek at 1365 E. Harvard Ave. During excavation in the Creek for the new foundation, CPL reported that a substance that was likely oil was encountered on two occasions. Additional samples were taken to give boundary to the areas of contamination. CPL's contractor removed the contaminated material and confirmation samples were collected. The identified areas were small (estimated to be about 15 cubic feet combined) and may have been associated with old concrete walls that were removed.

After completion of all excavation activities, CPL will submit a report to the DWQ Director for approval. The report will document any contamination encountered potentially related to the CPL spills and the ultimate disposition of these soil/sediment/debris. The analytical results and locations for of all confirmation samples representing any soil/sediment/debris remaining will also be documented. Anticipated end date for this project is November 1, 2012, and a final report will be due by December 15, 2012.

- b. CPL has completed the removal of railroad ties adjacent to Red Butte Creek at 1109 E. Harvard Ave. The bank has been replaced with a hardened concrete channel with embedded rock to the satisfaction of Salt Lake City. The project was completed in August 2012. A final report will be due by December 15, 2012.
  - c. CPL will meet the obligations in “Riparian Corridor Action Items” in “Attachment 1-Action Measure Implementation Schedule” in “Response of Chevron Pipe Line Company to Review Comments; Notice of Violation and Order Issued by the Utah Water Quality Board Docket No. I10-01” to the satisfaction of Salt Lake City. Anticipated end date for construction completion of all projects is October 1, 2013, and a final construction completion report will be due by December 15, 2013. Chevron will monitor the success of the restoration measures for one year following construction completion, and will repair, replace or restore areas that warrant further action.
  - d. CPL will meet the obligations regarding the installation of a block valve near the University of Utah (U of U) Natural History Museum. The easement is on the U of U’s property and shared with the Bonneville Shoreline Trail. The block valve site has been commissioned and is fully operational. Several ancillary aspects of the project including landscaping, are scheduled for completion next year. A final completion report is due by August 15, 2013.
2. CPL will continue to monitor Red Butte Creek in accordance with the finalized Sampling and Analysis Plan. Monitoring frequency is reduced to twice per year and shall occur in April and August, with results reported to the DWQ Director. The August 2014 sampling event will be identical to the August 2011 sampling event conducted in support of the Human Health and Ecological Risk Assessments. CPL may implement modifications to these requirements after written approval from the DWQ Director. If the monitoring confirms that spill residues are not adversely affecting the water quality beneficial uses, CPL may petition the Director for cessation of monitoring after the August 2015 sampling event.
  3. CPL will work with Salt Lake City Department of Parks and Public Lands to remove warning signs placed at Red Butte Creek. The results of DWQ’s Human Health Risk Assessment, the Utah Department of Health’s Health Consultation on the Red Butte Creek site, and the absence of complaints or observations from creek users supports removal of these signs.
  4. DWQ will retain jurisdiction and CPL will continue to respond at DWQ’s direction to new observations or complaints regarding potential remaining spill contamination in

Red Butte Creek when additional information discloses a significant problem associated with the CPL release of crude oil. CPL will not address any potential remaining spill contamination without approval by DWQ. Comprehensive reporting for each of these will be required as requested by DWQ.

5. CPL will continue to work with Utah Division of Wildlife Resources (UDWR) in restocking and ongoing monitoring of Bonneville Cutthroat Trout fish recovery per their agreement. A copy of the completion report to the satisfaction of UDWR will be required to be submitted to DWQ at the end of this project.

Signed this \_\_\_\_ Day of \_\_\_\_\_, 2012

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Walter L. Baker, P.E. Director

Utah Division of Water Quality

*References*

1. Human Health Risk Assessment
2. Ecological Risk Assessment
3. Red Butte Creek analytical results
4. “Riparian Corridor Action Items” in “Attachment 1-Action Measure Implementation Schedule”
5. Utah Department of Health’s (UDOH) Health Consultation (HC) on the Red Butte Creek site