

## Executive Summary

**Chevron Pipeline Diesel Spill Willard Bay State Park, Utah  
Draft Human Health Risk Assessment, March 19, 2014  
Utah Department of Environmental Quality, Division of Water Quality  
April 7, 2014**

*The following Executive Summary was prepared to summarize the findings of the Human Health Risk Assessment prepared by TechLaw under direction of the Utah Division of Water Quality. The Human Health Risk Assessment is a highly technical document and this summary is specifically intended for the non-technical audience that is interested in the key findings of the human health risk assessment. The human health risk assessment is available for additional details at <http://www.deq.utah.gov/locations/willardbay/willardbay.htm>.*

On March 18, 2013, a diesel fuel leak from an 8-inch petroleum pipeline between Willard Bay State Park and Interstate 15 occurred. The spill affected areas within Willard Bay State Park on land owned by the U.S. Department of Interior, Bureau of Reclamation and managed by the State of Utah. Chevron Pipeline, the owners of the pipeline, immediately implemented actions to reduce the spread of the diesel contamination and eventually, remove soils and sediment contaminated by diesel. The Utah Division of Water Quality (DWQ) provided oversight for these remedial activities.

A sampling plan was prepared and implemented by TechLaw, a DWQ contractor, once the remediation was completed. The purpose of this sampling was twofold:

- Confirm that all of the contaminated areas were remediated.
- Provide data to perform risk assessments to assess any remaining health risks to either humans or the environment.

The results of these risk assessments inform DWQ decisions regarding the need for future actions for the impacted areas. Decisions range from “no further action” to “additional remediation.”

### **Human Health Risk Assessment (HHRA) Exposure Scenarios**

The HHRA evaluated three potential exposure scenarios:

1. Residents
2. Park workers
3. Park visitors

The HHRA evaluated a hypothetical residential adult and child exposure scenario even though future residential development of this wetland is unlikely on land that is owned by the Federal

government and managed by State Parks<sup>1</sup>. A residential exposure scenario was assessed to provide DWQ with an understanding of potential reasonable maximum exposures – akin to worst-case conditions. This assessment was necessary because contaminated sites that meet the health risk thresholds (discussed below) are eligible for clean closure and unrestricted future land use<sup>2</sup>. A hypothetical resident was assumed to occupy and be exposed to diesel residues for 350 days per year for 30 years. This scenario assumed that contaminant concentrations would remain at current levels for 30 years, which overestimates the potential exposures because diesel readily degrades in the presence of oxygen in the environment.

The second scenario evaluated exposure for adult and child park visitors. This evaluation could be used to guide the selection of site management options if the HHRA found that the health risks exceeded the risk thresholds for the hypothetical future residential scenario. For the same reasons, the third scenario evaluated exposure for an onsite worker such as a park ranger or maintenance worker.

All scenarios were evaluated in accordance with the U.S. Environmental Protection Agency (EPA) recommended procedures. These methods are intended to avoid underestimating the potential health risks for people, including sensitive subpopulations (e.g., children, the elderly). The combination of these conservative assumptions likely results in predicted risks which significantly overestimate any reasonable expectation of exposure, especially for this site.

Consistent with EPA risk assessment guidance, all contaminants detected in samples from the spill area were considered. The list was further refined based on the known composition of diesel fuel and a careful review of the laboratory quality control data.

## **Health Effects**

Two types of potential health impacts—cancer effects and noncancer effects (like liver damage)—were evaluated in the HHRA. Calculated risks less than one in one million ( $1 \times 10^{-6}$ )<sup>(3)</sup> for cancer effects and a hazard index of one or less for noncancer effects are considered *de minimus* (negligible). For the park workers and visitors, the potential spill-related cancer and noncancer effects were negligible.

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<sup>1</sup> Park personnel and their families are year round residents but don't reside in the areas directly impacted by the spill.

<sup>2</sup> For Utah DEQ programs, residential land use usually requires the most stringent cleanup levels. Sites that meet the residential cleanup levels are considered clean-closed which means that the health risks from the contaminant residues are not materially different than the health risks prior to the contamination. Therefore, no additional remediation or administrative restrictions such as deed restrictions or fencing are necessary.

<sup>3</sup> One in a million means that if one million people occupied the affected area and were actually exposed as assumed by the risk assessment that up to one additional case of cancer could occur. It is important to note that this probability is not a mortality figure, meaning that this potential increase in cancer incidence is not linked to an increased frequency of death due to cancer. Actual cancer rates for the United States over a lifetime are about 400,000 cases for every million people (<http://www.cancer.org/cancer/cancerbasics/lifetime-probability-of-developing-or-dying-from-cancer>).

For the child and adult future residents, the calculated cancer risks slightly exceeded  $1 \times 10^{-6}$  ( $2 \times 10^{-6}$ ) but the risk was attributable to a single contaminant, benzo(a)pyrene, detected in one sample out of 60. EPA risk assessment guidance recommends that the single detected concentration be used to estimate the risks under these circumstances. This approach assumes that the benzo(a)pyrene concentration measured at the single sample location is representative of concentrations at the whole site, which overestimates risk because benzo(a)pyrene was not detected at any other location (59 samples). Other potential local sources of benzo(a)pyrene unrelated to the diesel spill, such as air deposition from diesel engines or petroleum runoff from Interstate 15, have impacted the spill area. For these reasons, DWQ has concluded that the actual cancer risks attributable to the residues from the diesel spill are negligible and meet the  $1 \times 10^{-6}$  threshold.

### **Conclusion**

The results of the HHRA support a determination that the remediation of the spilled diesel is adequately protective of human health, and the affected areas can be open to the public with no restrictions. These results, along with the results of the ecological risk assessment and other data, will be used by DWQ to determine if any future actions are needed in response to spill. These decisions will be documented in a future Decision Document and Notice of Violation Closeout prepared by DWQ.