



## Introduction

During the public scoping process for the proposed project, many concerns were raised about the potential for spills, fires, and explosions that could occur during crude-by-rail transport from the mid-continent area to the Shell Puget Sound Refinery (PSR). The environmental health and risk analysis investigated the likelihood and potential consequences related to a release of oil into the environment. This fact sheet summarizes the environmental health and risk analysis.

## What was studied?

The environmental health and risk analysis evaluated four questions:

- What is the probability of an accident and release of oil from a proposed project train?
- What are the potential consequences following an oil spill?
- What is the probability and what are the consequences of a release that results in a fire or explosion?
- What are the potential economic consequences of an oil release, fire, or explosion?

The analysis also considers the cumulative probability and consequences of an accident and release when proposed project trains are grouped with current and reasonably foreseeable future crude-by-rail train traffic.

## What was the study area?

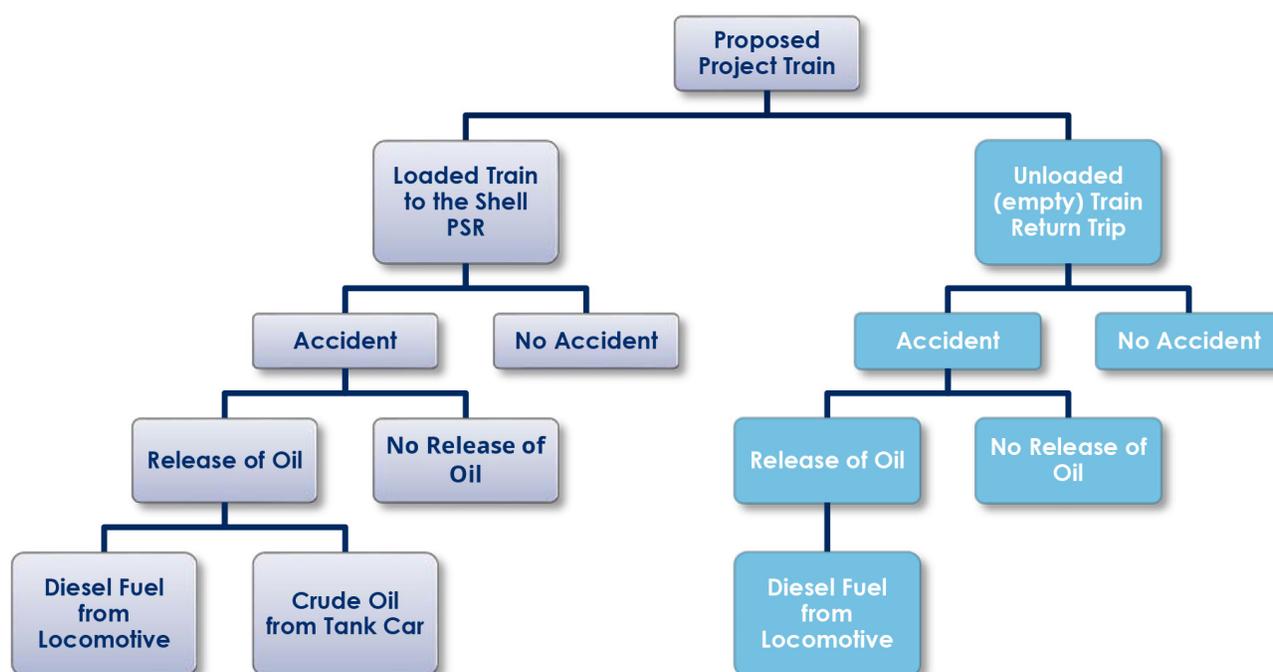
The study area for the probability analysis was limited to Washington State, based on two primary considerations:

- The transfer of track responsibility between BNSF Railway and Montana Rail Link occurs just east of the state border at Sandpoint Junction, Idaho
- The regulatory authority of Washington State

The analyses of the consequences of a spill, fire, or explosion focused on three locations in the Puget Sound region that were selected to provide a range of scenarios that could occur elsewhere along the rail corridor.

## How was the environmental health and risk analysis conducted?

The probability of an accident and release of oil from a proposed project train was evaluated by determining the likelihood and frequency of a release in Washington State associated with the transport of crude oil by rail for the proposed project, as well as the likelihood of different volumes of oil being released. The probability of a release was calculated for unit trains traveling to and from the Shell PSR considering three possibilities: a release of crude oil from tank cars, a release of diesel fuel from locomotives on a loaded train, and a release of diesel fuel from locomotives transporting unloaded (empty) tank cars.



Oil spill trajectory, fate, and effects modeling and analyses were performed to evaluate risks and impacts from potential releases of crude oil into aquatic environments from proposed project trains. The analysis predicted where oil released into those environments could move and how it could impact resources at three representative locations along the proposed rail transportation route to the Shell PSR.

If an accident occurred resulting in the release of oil, it could result in a fire or explosion; therefore, modeling of the potential consequences of a fire or explosion at the three representative locations was conducted. The goal of the modeling was to present potential areas that could be affected by a fire or explosion.

The cumulative probability and consequences of an accident and release of oil were evaluated using the same methodology that was used to evaluate the probability and consequences associated with a release of oil from a proposed project train, but with the higher level of train traffic associated with future projects.

Finally, the potential economic consequences of a release of oil from a unit train were evaluated. The analysis focused on the potential indirect economic consequences of a release. The indirect consequences are the damages that are imposed upon third parties, such as the public or natural resources.

## What are the potential impacts?

If an oil release were to occur from a train traveling to or from the Shell PSR, many environmental resources and sensitive areas could be affected. Biological resources potentially impacted by surface and shoreline oiling include waterfowl, aerial and diving birds, wetland and terrestrial wildlife, fur-bearing marine mammals, pinnipeds (seals and sea lions), and cetaceans (whales and dolphins). Organisms potentially impacted by water column toxicity include mobile and stationary bottom-dwelling fish and invertebrates, small fish, bottom-dwelling organisms, and plankton that drift with the currents.

There is also the risk of fire or explosion associated with an accident involving a crude-by-rail train. The probability of a fire or explosion in the event of a release is low, but could have significant impacts on many human, built, and environmental resources were such an event to take place.

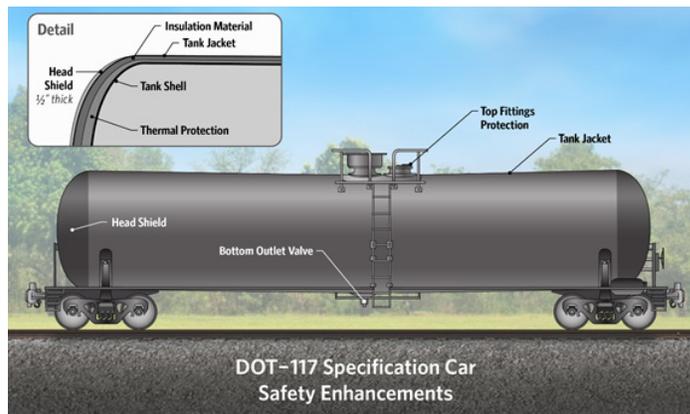
### WHERE CAN I FIND MORE INFORMATION ABOUT THIS TOPIC?

Chapter 4 - Environmental health and risk of the draft EIS

The information in this fact sheet summarizes content from the draft Environmental Impact Statement; please review the full document for more detailed and complete information.

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DOT-117 Specification Tank Car Safety Enhancements.

## What mitigation measures are proposed?

### Avoidance and Minimization

If a release of oil were to occur, response measures governed by regulatory agencies and provided by first responders, regulatory agencies, Shell, and BNSF Railway would offer a targeted intervention to minimize the potential impacts. The National Contingency Plan, the Northwest Area Contingency Plan, local response plans, facility plans, and transportation regulations provide additional coordinated preparation for an oil or hazardous substance release. These contingency plans establish roles and responsibilities, and identify resources and response procedures to protect life. They reduce and mitigate the impacts of a pollutant discharge on the environment and property.

### Mitigation

The risk of a spill occurring during an accident would be minimized by using DOT-117 Specification tank cars that meet enhanced safety standards issued by the Pipeline and Hazardous Materials Safety Administration and the Federal Railroad Administration. The Shell PSR would accept delivery of crude oil and petroleum products only in tank cars meeting or exceeding DOT-117 specifications.

Shell would fund the purchase of hand-held volatile organic compound monitors for local responders. The co-lead agencies would determine the number and location of monitors to be provided. Shell would provide training to ensure that local responders know how to use and maintain air monitors.

## Are there unavoidable significant adverse impacts?

An accidental release of oil resulting in a spill, fire, or explosion, could have unavoidable significant adverse impacts.

