BNSF Railway Company
Former Tie Treating Plant
Paradise, Montana

Fact Sheet, June 2021

Facility Location and Operation

The BNSF Railway Company's former Tie Treating Plant is located on the northern bank of the Clark Fork River, 2.7 miles downstream of the confluence with the Flathead River and 0.75 miles downstream of the town of Paradise, Montana. The site is referred to as the BNSF Paradise Site.

The BNSF Paradise Site was used for creosote treatment of railroad ties from 1908 until 1982, when the plant was destroyed by fire. During operation of the plant, railroad ties were treated with creosote at elevated pressures and temperatures. Freshly treated ties were transported to a drip track area where they were allowed to drip onto the underlying track and soils.

Currently, activity on the site consists of site maintenance and creosote remediation activities. The buildings on site are an office and maintenance building, and a storage shed.

Hazardous Waste Permit

The Montana Hazardous Waste Act (MHWA), the state equivalent of the Federal law Resource Conservation and Recovery Act (RCRA), regulates the management, treatment, storage, and disposal of hazardous waste. Facilities that are or have managed hazardous waste in specific ways must obtain a hazardous waste permit, as required by MHWA. The BNSF Paradise Site has had a hazardous waste permit in 1988. DEQ issued the current permit (MTHWP-14-01) on October 17, 2014.

Current Permitted Hazardous Waste Units

Hazardous Waste Management Unit	General Description	Current Status
Surface Impoundment	A depression in the ground used to accumulate liquid waste, allowing water to evaporate and concentrate the sludge.	Certified closed and currently in post-closure care.
Land Treatment Unit	Used to degrade hazardous and non-hazardous waste by tilling into soil and fertilizing. Microorganisms in the soil degrade the waste over time.	Certified closed and currently in post-closure care.
Corrective Action Management Unit (CAMU)	An area within a facility that is used for managing waste during corrective action or cleanup at the site.	Consists of the Surface Impoundment, Land Treatment Unit, and subsurface creosote recovery operations.

Wastewater containing creosote was discharged through a buried pipe into a surface impoundment. The impoundment was a former channel of the Clark Fork River and was used during plant operations as a sedimentation basin for recovery and reuse of creosote.

Surface Impoundment containing creosote sludge

Surface impoundment after sludge removal

Land treatment has been successfully employed to degrade creosote waste for many years at the BNSF Paradise Site. The Land Treatment Unit is currently in post-closure care and maintained with a vegetative cover.

SITE CONTAMINATION AND REMEDIATION

Contaminated Soil:

Through studies in a baseline risk assessment, it was determined that the limit for acceptable human health exposure for soils in an industrial setting was 40 ppm of carcinogenic PAHs. In 2002, areas where surface soil exceeded the determined 40ppm standard was excavated to 2 feet below ground surface. The excavated areas were then backfilled with clean soil and seeded. Approximately 4,870 cubic yards of soil was excavated and placed on the land treatment unit.

Contaminated Groundwater:

Groundwater has been impacted by creosote constituents in free-phase, residual phase, and dissolved phase.

Free Phase (DNAPL):

Creosote is a dense non-aqueous phase liquid (DNAPL). When creosote is released to subsurface soils it migrates downward and slightly outward. After reaching the water table, creosote will sink because it has a density slightly greater than water. Since most of the constituents in creosote are essentially insoluble, creosote usually remains as a separate liquid phase (free phase) when it is in contact with groundwater.

Creosote has pooled at the bottom of the aquifer beneath the surface impoundment and former drip track area. Free phase creosote is estimated at 94,000 gallons. Recovery of free phase creosote has been ongoing since 1996.

Dissolved-phase:

Although creosote tends to stay in free phase and pool at the bottom of the aquifer, some of the contamination does dissolve and migrate in the aquifer. The dissolved plume generally has not increased in size since the initiation of monitoring in 1986. Monitoring wells continue to be sampled to ensure the dissolved phase plume is not increasing in concentrations or migrating off-site.

Residual Creosote:

As creosote migrates downward in the subsurface, some of it becomes trapped in the soil pore spaces as “residual saturation”. Creosote at residual saturation will not flow through the pore spaces and cannot be removed from the soil pores by groundwater pumping. Residual creosote at the Site is estimated at 1,050,000 gallons.

IMPACTS TO THE CLARK FORK RIVER

Groundwater monitoring and sediment sampling near the Clark Fork River have demonstrated that subsurface contamination does not appear to impact the river.

LAND USE CONTROLS

DEQ requires that BNSF establish land use controls to further ensure prevention of potential future exposure to contamination. Required land use controls include compliance with a DNRC Controlled Groundwater Use Area designation, deed restrictions, and restrictive covenants.

Public Involvement

Throughout the permitting and cleanup process, DEQ will keep the public informed through notices of public meetings and public comment periods. Notices are published in local newspapers and are also sent to anyone on DEQ's interested parties list. If you would like to be included on the interested parties list, please contact the project manager provided below.

DEQ Contact/Project Manager

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About Us

The Montana Department of Environmental Quality is charged with protecting a clean and healthy environment as guaranteed to our citizens by our State Constitution. Our ultimate goal is to protect public health and to maintain Montana's high quality of life for current and future generations.