

Facility

Flying J Petroleums Inc. - Williston Refinery

State/EPA ID#

NDT390010049

Location

1 mile east of Williston, ND on Highway 1804

Lead Agency

North Dakota Department of Environmental Quality (NDDEQ), Division of Waste Management (DWM)

State Contact

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Setting And Operations History

The Flying J refinery was located north of the Missouri River, near the Little Muddy Creek. The refinery occupied about 42 acres and was built in the early 1950s. Refining activities have been shut down since 1984 and commercial product storage activities ceased in 1986. During refinery operation, the principal products were gasoline and various grades of fuel oil. The former refinery consisted of seven buildings, a series of storage tanks, loading facilities for trucks and rail, ten major process units, and four RCRA wastewater surface impoundments containing listed wastes. The four RCRA surface impoundments were closed in 1988 by removing the sludge and visually stained soils and constructing an impermeable cap from clay backfill over the excavated areas. Demolition of most of the structures, tanks, and process units was initiated in November 1992 and completed in July 1994. Two above ground storage (AST) tanks used for water storage, one remediation building, and the former administration building were not demolished and remain on the property.

Regulatory Instrument (Permit/Order)

Instrument: Corrective Action permit

Issued By: NDDEQ

Effective Dates: April 18, 2022 until April 18, 2027.

Regulated Units

There were four RCRA-regulated hazardous waste management units on-site. These were unlined surface impoundments, which were constructed in natural soil for the purpose of providing additional oil/water separation. Surface impoundments 1 and 2 (SWMUs 1 and 2) are on property now owned by Flying J Petroleums Inc. Surface impoundments 3 and 4 (SWMUs 3 and 4) were constructed on property owned by the United States, pursuant to an easement issued by the Omaha District USACE.

Flying J has since purchased this property from the USACE. The four surface impoundments were operated in series and received flow from three API separators.

The surface impoundments were closed in 1988 by removing all hydrocarbon wastes and visibly stained soils, disposing of them at an off-site HW disposal facility, and covering the impoundments with an engineered cap to reduce leachate generation from infiltration.

In 2015 Flying J conducted a Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) on the surface impoundments to determine the potential for exposure to contaminated media that may result in adverse effects on human health and ecological receptors. The risk assessment indicated that the potential for exposure to contaminated media that may result in adverse effects on human health and ecological receptors is low, and the risk levels are between the target criteria of 1×10^{-6} and 1×10^{-4} for carcinogens, and less than the target Hazard Index of 1.0 for investigated media. The NDDEQ's approval of risk-based closure of the RCRA-regulated Surface Impoundments (SIs) on December 9, 2015, allowed for discontinuation of the former RCRA Post-Closure Permit and associated requirements. In place of the RCRA Post Closure permit, a North Dakota Corrective Action Permit (NDCAP) was issued.

Waste Generation/Treatment/Disposal Practices

Wastes generated when the refinery was in operation included K049 Slop oil emulsion solids, K050 heat exchanger bundle cleaning sludge, K051 API separator sludge, and K052 leaded tank bottoms. Currently the only waste generated at the site is recovered LNAPL which is shipped offsite for disposal.

Potential For Releases

The RFA dated March 1989 identified sixty-four (64) SWMUs (four of which are RCRA-regulated HWMUs), and fifteen (15) AOCs. In 1990 two (2) additional SWMUs were identified; these were temporary waste management units (no longer in operation) consisting of hydrocarbon-contaminated soils and/or debris.

Over the past several years, Flying J has altered and removed some SWMUs. These actions included soil excavation, tank removal, disking, adding fertilizers, and "in situ" treatment. Flying J has also conducted "facility-wide" interim measures (pump and treat) for groundwater contamination from the SWMUs (see discussion below.) In addition, current information on several of the SWMUs and/or AOCs, as presented in the RFI submitted by Flying J, does not substantiate evidence of either a prior release or a need for corrective action for those SWMUs at this time.

Corrective Action Status and Stabilization Activities

Corrective Measures Implementation (CMI) activities that have been implemented at the former Refinery and deemed complete include:

- Soil Vapor Extraction and Bioventing

- Groundwater and Light Non-Aqueous Phase Liquid (LNAPL) Recovery of the Upper and Lower Sand Units
- South Drainage Ditch Landfarming
- Lead Contaminated Soil Excavation
- LNAPL only Recovery in Upper and Lower Sand Units
- In-situ Landfarming of Surface Soils in CAMU A and B.

The following CMI activities are currently being implemented:

- Monitored Natural Attenuation (MNA) of Dissolved Hydrocarbons in the Upper and Lower Sand
- Aquifers and Groundwater Sampling
- Institutional Controls (facility inspections, maintenance, documentation and reporting).

Community Involvement

A Public Repository for documents regarding all corrective action activities has been set up at the Williston Community Library.

Updated March 2023