FACT SHEET FOR MARATHON PETROLEUM CORP'S - MANDAN REFINERY
North Dakota Department of Environmental Quality
Division of Waste Management

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1. **REFINERY NAME** – Marathon Petroleum Corp's - Mandan Refinery

2. **State/EPA ID#** - NDD006175467

3. **ADDRESS AND LOCATION**
900 Old Red Trail NE
Mandan, ND 58554

4. **LEAD AGENCY** North Dakota Department of Environmental Quality
Division of Waste Management

5. **STATE AGENCY CONTACT** Christine Roob
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6. **SETTING AND OPERATIONS HISTORY**

Marathon Petroleum Corp.'s (MPC) Mandan Refinery began operations in 1954. The refinery occupies roughly 960 acres, on a terrace above the Missouri River. It has a crude oil refining capacity of 71,000 barrels per calendar day (bpcd), and manufactures gasoline, distillates, propane and heavy fuel oil.

The facility has a wildlife refuge north of the refinery. There is a cascade pond system in the refuge, with an outfall under NPDES permit. Nearly all surface water from the refinery, as well as the wastewater outlet from the bioponds, flows to these cascade ponds.

7. **REGULATORY INSTRUMENT (PERMIT/ORDER)**
INSTRUMENT: Operating and corrective action permit
ISSUED BY: NDDEQ
DATE: Permit renewed on October 31, 2018 and is in effect until October 31, 2023.

8. **REGULATED UNITS**

There are two hazardous waste management units currently operated on-site: two permitted surface impoundments (bio-oxidation ponds) which treat (aerobically biodegrade) the effluent from the API separator (this effluent is classified as hazardous due to benzene concentration per TC rule).

9. **WASTE GENERATION**

Wastes generated in the past and/or currently include:

Slop Oil Emulsion Solids (K049) - toxic
Heat Exchanger Bundle Cleaning sludge (K050) - toxic
API separator sludge (K051) - toxic
Leaded tank bottoms (K052) - toxic

Crude oil storage tank sediment (K169) - toxic
Clarified slurry oil tank sediment and/or in-line filter/separation solids (K170) – toxic
Hydrotreating Catalyst (K171) – toxic – ignitable
Primary Sludge (F037) - toxic
Oily Sludges (D001) - ignitable
Spent caustic and spent Doctor solution (D002) - corrosive, (D003) - reactive, and (D008) -TC for lead

10. RCRA COMPLIANCE STATUS

No current issues with noncompliance.

11. POTENTIAL FOR RELEASES

The RFA of July 1989 identified 44 solid waste management units (SWMUs.) Since then, two additional SWMUs and four areas of concerns (AOCs) have been identified.

Environmental monitoring and groundwater investigations were initiated at the refinery in 1976. Currently, there are approximately 200 groundwater monitoring wells on the refinery property. Through past investigations, it was determined that there was facility-wide contamination. The 1989 RFA documented releases from 15 SWMUs. A RCRA Comprehensive Ground Water Monitoring Evaluation (CME) was conducted in 1991 (Phase I) and 1992 (Phase II). The CME indicates that a total of 11 hydrocarbon plumes have been identified on the refinery property. These plumes are roughly located in the following areas: along the eastern boundary of the refinery, below the storage tank farm, east of the storage tank farm, west of the aerobic lagoon, and north of the north landfill area.

The refinery site is bordered by the Montana-Dakota utilities power plant to the north, agricultural and residential lands on the north and west, and residential and light industrial areas on the south. To the east is the Mandan City water treatment plant, the Burlington Northern Railroad, and permanent and summer residences built on the terraces of the Missouri River.

The Missouri River has created two terrace features east of the refinery. The lower terrace tread is the location of the Hidden Acres residential area, along the river. The refinery sits upon the upper terrace. These terrace features are separated by an erosional escarpment, modified somewhat by construction of the Burlington Northern Railroad. Seepage of ground oil was discovered near the railroad tracks on the escarpment in the 1980s, resulting in the implementation of the interim measures discussed later in this fact sheet.

Groundwater flows from the refinery's eastern perimeter in an east-northeasterly direction, toward the Missouri River on the east side and toward the wildlife refuge to the north. Potential groundwater receptors to the east include private well users in the Hidden Acres summer residential area, and receptors in the Missouri River. Current data do not show organic constituents in the Hidden Acres wells, and ground oil has not been detected east of the escarpment (east of the railroad tracks.)

The ground oil plume north of the north landfill area flows toward the wildlife refuge. The refinery has installed monitoring wells to track the extent of this free-product plume; it does not appear to have reached the surface water bodies (cascade ponds) in the refuge.

12. CORRECTIVE ACTION STATUS AND STABILIZATION ACTIVITIES

A. Stabilization measures needed? Yes

B. Stabilization measures implemented? Yes

Cleanup has been implemented at several SWMUs; for many of the closed SWMUs the refinery has excavated contaminated soil, and regraded and revegetated the areas. As interim measures, the refinery has installed four free phase hydrocarbon plume recovery trenches near the east property boundary. These were constructed between 1983 and 1985. In May 1993 two temporary groundwater/free product recovery wells were put into service. In the fall of 2000 one of the recovery trenches was replaced to enhance hydrocarbon recovery from product plumes and prevents off-site migration of free-phase hydrocarbon.

Water and oil were collected in sumps in trenches and the wells, then pumped to the API separator and the wastewater treatment system. Operation of these trenches has captured most of the free phase hydrocarbon plume and groundwater moving off site. Wells installed in the Hidden Acres area (downgradient of the recovery trenches, in the lower terrace area) do not show refinery impact (no BTEX.) The trenches and wells are currently in operation at the facility.

C. Have all necessary stabilization measures been completed (for all areas/units)? Yes
D. Current human exposures under control? Yes
E. Current ground water releases under control? Yes
F. RFI imposed for all areas/units? Yes - for all areas needing investigation
G. RFI workplan approved? Yes
H. RFI final report approved? Yes
I. CMS Workplan approved? Yes
J. CMS final report approved? Yes
K. Was a human health risk assessment done (or is it being done)? Yes
L. Was an ecological risk assessment done (or is it being done)? Yes
M. Final Remedy selected? Yes
N. Describe final remedy selected:

Several corrective measures areas have been identified and implemented at the site. Installation of a clay soil/high density polyethylene cover on six SWMUs was completed to prevent contact with the waste material and the infiltration of surface water through the waste materials. Two SWMUs had the waste delisted, excavated and shipped off-site for land disposal. A clay soil/high density polyethylene cover was then installed.

The selected corrective measure for the free-phase hydrocarbon plumes on the refinery is periodic well evacuation and monitored natural attenuation. These measures are still in operation at the facility.

O. Has a TI waiver been requested? No
P. CMI initiated? Yes
Q. CMI completed? Yes
R. Other relevant corrective action status information: The facility is currently in operation and maintenance mode.

13. **COMMUNITY INVOLVEMENT**

The refinery conducts informational meetings for the surrounding landowners. Surveys of well usage in Hidden Acres and other areas downgradient from refinery have also been conducted.

14. **MAJOR UP-COMING ACTIVITIES**

None.

15. **PROBLEMS/ISSUES**

None.