



April 30, 2019  
NRC-19-0033

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

Fermi 2 Power Plant  
NRC Docket No. 50-341  
NRC License No. NPF-43

Subject: Annual Non-Radiological Environmental Operating Report

Pursuant to the Fermi 2 Operating License, Appendix B, "Environmental Protection Plan," Section 5.4.1, DTE Electric Company hereby submits the 2018 Annual Non-Radiological Environmental Operating Report for Fermi 2.

The Michigan Department of Environmental Quality (MDEQ) is the Michigan Department of Environment, Great Lakes and Energy (EGLE) as of April 22, 2019. The report references MDEQ for the 2018 reporting period.

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact me at (734) 586-1769.

Sincerely,

A handwritten signature in black ink, appearing to be "J. Haas", written over a horizontal line.

Jason R. Haas  
Manager – Nuclear Licensing

Enclosure: 2018 Annual Non-Radiological Environmental Operating Report

cc: NRC Project Manager  
NRC Resident Office  
Reactor Projects Chief, Branch 5, Region III  
Regional Administrator, Region III  
Michigan Public Service Commission  
Regulated Energy Division (kindschl@michigan.gov)



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# **2018 Annual Non-Radiological Environmental Operating Report**

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**DTE Electric Company - Fermi 2**  
6400 North Dixie Highway  
Newport, MI 48166

Reporting Period:

January 1, 2018 to December 31, 2018

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## **2018 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

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## **2018 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **1.0 EXECUTIVE SUMMARY**

The following is a summary of the 2018 Annual Non-Radiological Environmental Operating Report for the DTE Electric Company - Enrico Fermi Unit 2 Power Plant (Fermi 2):

- No terrestrial monitoring activities were conducted, or required to comply with the Fermi 2 Operating License. Based on the findings of the terrestrial monitoring program, which was concluded in 1994, no further aerial-photographic evaluations are planned.
- ITC Transmission currently owns and operates the transmission infrastructure, including the corridor rights-of-way where herbicides are applied. ITC vegetation managers confirmed that in 2018 58 acres of the Brownstown-Fermi corridor and 267 acres of the Wayne-Monroe corridor were sprayed between July and September.
- During the period covered by this report, there were no changes to station design that created an unreviewed environmental question, per the requirements and definitions of the Environmental Protection Plan (EPP).
- No unusual or important environmental events, as defined by the EPP, occurred. Accordingly, no nonroutine reports were submitted.
- Two incidents of noncompliance with the Fermi 2 National Pollutant Discharge Elimination System (NPDES) Permit occurred in 2018.

## **2018 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **2.0 INTRODUCTION**

#### **2.1 Purpose**

The purpose of this report is to provide the Nuclear Regulatory Commission (NRC), site personnel, and the public with information regarding the implementation of the Non-Radiological Environmental Protection Plan (EPP) at the DTE Electric Company - Enrico Fermi Unit 2 Power Plant (Fermi 2). This report is due prior to May 1 of each year and meets the requirements specified in Section 5.4.1 of the Fermi 2 Non-Radiological EPP, which is included in Appendix B of Facility Operating License No. NPF-43.

#### **2.2 Environmental Protection Plan Overview**

As part of the application for the nuclear power plant construction permit and operating license, extensive environmental studies were conducted to evaluate potential non-radiological environmental risks that could result from the construction and operation of Fermi 2. In August 1981, the NRC published the Final Environmental Statement (FES) for the operation of Fermi 2. The FES was developed pursuant to the guidelines of the National Environmental Policy Act of 1969 (NEPA) and Title 10 of the Code of Federal Regulations (CFR), Part 51.

The EPP was prepared, based on the potential environmental risks and monitoring requirements identified in the FES. The purpose of the EPP is to provide for the protection of the environment during any additional construction and the continued operation of Fermi 2. The principle objectives of the EPP are as follows:

1. Verify that Fermi 2 is operated in an environmentally acceptable manner, as established by the FES and Environmental Impact assessments.
2. Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
3. Keep the NRC informed of the environmental effects of facility construction and operation, and of actions taken to control those effects.

The components of the EPP are as follows:

1. A terrestrial monitoring program to detect long-term or sudden changes in vegetation that may be attributable to the dispersion of Fermi 2 cooling tower vapor. The terrestrial monitoring program was completed in 1994, after 4 successive monitoring cycles were completed, as required.
2. A program to establish the controlled use of herbicides within transmission rights-of-way.
3. A program to ensure that changes to Fermi 2 design or operation and potential tests or experiments are adequately reviewed prior to implementation to avoid adverse environmental impacts not previously evaluated. Changes in plant design, operation, tests or experiments which do not affect the environment or which are required to achieve compliance with other Federal, State or local environmental regulations, are not subject to the requirements of this EPP.
4. Routine monitoring for evidence of unusual or important environmental events.
5. Any changes, renewals or stayed appeals to the Fermi 2 National Pollution Discharge Elimination System (NPDES) Permit, or the State certification, must be reported to the NRC within 30 days.

### **2.3 Annual Report Objectives**

According to Section 5.4.1 of the EPP, the required objectives of the Annual Report are as follows:

- Provide summaries and analyses of the results of environmental protection activities conducted in the following areas: unusual or important environmental events and terrestrial monitoring (includes aerial remote sensing and herbicide application). Where applicable, the report should compare these activities to pre-operational studies, operational controls, observed environmental impacts, and previous non-radiological environmental monitoring reports. Provide detailed data analysis and a proposed course of action if harmful effects or evidence of trends towards irreversible damage to the environment are identified.
- Describe any changes to the Fermi 2 design, operation, testing or experimentation that were implemented without adequate review that adversely impacted, or could have adversely impacted, the environment, in accordance with Section 3.1 of the EPP.
- Describe any non-compliance with the EPP and the corrective actions taken to correct the non-compliances.
- Describe any non-routine reports submitted to the NRC as the result of an unusual or important environmental event, in accordance with Section 5.4.2 of the EPP.

## **2.4 Site Description**

DTE Electric Company operates Fermi 2, which is a 3,486 megawatt (gross) thermal General Electric Boiling Water Reactor 4 Nuclear Power Plant. The Fermi 2 power block is situated in the northeast quarter of a 1,260-acre site that is located approximately 6 miles east-northeast of Monroe, Michigan and 30 miles southwest of Detroit, Michigan. The site is fenced with locked gates or gates that are guarded at the discretion of Fermi 2 Security.

The Enrico Fermi 1 Power Plant (Fermi 1) is on the site as well. Fermi 1 was an experimental fast breeder reactor that is presently in a SAFSTOR condition. Subsequent to shut down in 1972, an oil-fired boiler was constructed. Operation of this boiler ceased in 1980 and it was removed from site in 1999.

Contiguous to the site are four oil-fired combustion turbine generators (CTGs), which are periodically operated during periods of high electricity demand as well as during required testing.

The site is bounded on the north by Swan Creek, on the east by Lake Erie, on the south by Pointe Aux Peaux Road, and on the west by a private road owned by DTE Energy. The northern and southern areas of the site are dominated by large lagoons. The western side of the site is predominately covered by several wood lots and a series of small quarry lakes. Site elevation ranges from approximately 25 feet above lake level on the western edge of the site to lake level on the eastern edge.

Per a Cooperative Agreement between DTE Electric Company and the U.S. Fish and Wildlife Service (FWS), the Lagoon Beach Unit of the Detroit River International Wildlife Refuge has been located on site since September 2003.

## **3.0 TERRESTRIAL MONITORING**

### **Overview**

Section 4.2.1 of the Fermi 2 EPP required that a special surveillance program be conducted to evaluate changes to vegetative communities within a 1 kilometer radius of the cooling towers. This program involved analysis of low altitude over flights prior to harvest utilizing color infrared photography, backed up by field reconnaissance inspections to verify areas of vegetative stress and non-stress along with soil sampling and analysis. The first flights and report were required after one year of plant operation and then every alternate year for 3 successive periods.

It should be noted that the above-described studies were not conducted to assess radiological impacts to the terrestrial environment, because discharge from the cooling towers is not radiologically active.

## **Activities and Controls**

The final required aerial photographic events were performed in 1994 and a final terrestrial monitoring report summarizing all collected data was completed in April 1995.

The report concluded the following:

- No long-term accumulation of dissolved solid deposition was detected in any of the soil samples collected within the survey area.
- No vegetative stress associated with cooling tower emission was observed in any of the survey reports.
- No correlation was observed between the distribution of stressed vegetation areas and the calculated deposition of dissolved solids and other materials contained within the vaporous cooling tower discharge.
- The absence of observed impacts attributable to the cooling towers is consistent with findings in the scientific literature.

Terrestrial monitoring was conducted in 2008 to support the licensing of a new unit at the site and is detailed in the Combined Operating License Application (COLA) for Fermi 3 which was submitted to the NRC on September, 18, 2008. No terrestrial monitoring activities were conducted, or required, under the Fermi 2 Operating License in 2018. Based on the findings and conclusions presented in the 1995 report, no further aerial photographic evaluations are planned.

## **4.0 HERBICIDE MONITORING**

### **Overview**

Section 4.2.2 of the Fermi 2 EPP requires that herbicide use meet the following conditions:

1. Herbicides used must be registered by the United States Environmental Protection Agency (EPA) and utilized in accordance with EPA approved use instructions.
2. Herbicides used must be approved by State authorities and applied in accordance with state instructions.

Records of herbicide use within the corridor rights-of-way must be maintained for a period of 5 years and contain the following information: commercial and chemical names of herbicide used; concentration of active material in formulations diluted for field use; diluting substances other than water; rates of application; total pounds used; method and frequency of application; location; and, date of application.

### **Activities and Controls**

The herbicide application program, detailed in a conduct manual, is designed to maintain records for herbicide application on-site but does not impose requirements on the application of herbicides within the transmission corridor rights-of-way outside of the Owner Controlled Area. The transmission infrastructure is currently owned and operated by ITC Transmission.

Records pertaining to the application of herbicides within the rights-of-way are obtained annually from ITC Transmission. These records include extensive mapping of the Wayne-Monroe and Brownstown-Fermi transmission corridors showing location and method for herbicide application. Data regarding commercial and chemical names of herbicide used, concentration of active material in formulations diluted for field use, diluting substances other than water, rates of application, method and frequency of application, location and surface area treated, and location and date of application are provided. The total pounds used of each herbicide are then calculated based upon the information provided.

Nine herbicides were approved and utilized within the Wayne-Monroe transmission corridor and Brownstown-Fermi transmission corridor rights-of-way in 2018. All herbicides within the rights-of-way were applied within the parameters of the site and ITC procedures, and the applications complied with State and Federal requirements.

## **5.0 AQUATIC MONITORING**

### **Overview**

According to Section 2.1 of the EPP, the NRC will rely on the Michigan Department of Environmental Quality (MDEQ) for the protection of the aquatic environment from non-radiological operational impacts via the National Pollution Discharge Elimination System (NPDES) Permit. NPDES permits are issued in accordance with provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq.), Michigan Act 451, P.A. of 1994, as amended, Part 31, and Michigan Executive Orders 1991-31, 1995-4 and 1995-18.

### **Activities and Controls**

Fermi 2 Chemistry Department closely monitors effluent characteristics per the NPDES requirements. Effluent discharge data are summarized in monthly Discharge Monitoring Reports, which are then submitted to the MDEQ.

### **NPDES Permit Changes**

The Fermi 2 NPDES Permit was renewed on September 27, 2018 and became effective on November 1, 2018. As required by Section 3.2 of the EPP, the NRC was notified of this renewal within 30 days following the date of the renewal (See NRC-18-0053, National

Pollutant Discharge Elimination System (NPDES) Permit Renewal, dated October 25, 2018).

### **NPDES Non-compliances in 2018**

Two incidents of non-compliance with the Fermi 2 NPDES permit No. MI0037028 occurred at Fermi 2 during 2018. These incidents were immediately reportable to the MDEQ per permit requirements. The following is a summary of the submitted reports:

1. At approximately 1115 on January 22, 2018 Fermi chemistry techs noticed oil sheen inside the oil boom containment set up in the Fermi Overflow Canal at Outfall 002. Upon further investigation, the environmental engineer noticed that the oil inside the oil boom containment had leaked outside of the containment and into the Fermi Overflow Canal, which is waters of the state that are hydraulically connected to Swan Creek. The spill response contractor, was called at 1230 to assist with the cleanup.

The source of the oil was identified as the hydrogen seal oil exhaust on top of the turbine building roof. The oil was carried by rainwater and wind down the storm water drains and out the outfall. The existing oil on the roof was cleaned up. Projects and engineering worked to resolve the exhaust issue so this problem does not reoccur. Resolution included modifying the drains from the hydrogen seal oil system and revising a routine inspection of that system. Also, modification of the Outfall 002 structure was completed to prevent oil from entering the canal.

Based on initial observations, it is estimated that approximately 5-10 gallons of oil was released. United States Coast Guard (USCG) personnel visited Outfall 002 at the plant to verify the nature of the event and the effectiveness of the company's response. All evidence of the oil sheen was cleaned by 1700 on January 23, 2018. Fermi was issued a Notice of Federal interest on 1/23/2018 at 1045.

The incident of non-compliance was entered into Fermi 2's Corrective Action Program (CARD 18-20564).

2. On 8/21/2018, the new aboveground storage tank (AST) was filled with approximately 300,000 gallons of potable water from a fire hydrant located on site to conduct a hydrostatic pressure test on the new AST.

Between 8/22/18 and 8/23/18, 200,000 gallons of water was pumped from the new AST through a fire hose to the secondary containment of the existing Fuel Oil Storage Tank in accordance with the Discharge Plan approved by the DEQ. The water was tested and found to have a Total

Residual Chlorine concentration that was ten times higher than the permitted discharge concentration because the potable water used for the test contains chlorine at a level much higher than allowed to be discharged to surface water under the general permit for discharge of hydrostatic test water.

It was discovered that the remaining 100,000 gallons could not be transferred to the secondary containment due to an electrical panel with anodes within the containment that would be submerged under water. To maintain the integrity of the new tank and prevent personal injury and property damage, it was determined that the best pathway to discharge the water was to the nearby dredge spoils settling basin. No water was needed to be discharged from the dredge basin, as there was plenty of room to accommodate 100,000 gallons without the need to discharge. A lesson learned is to evaluate all potential safety issues prior to implementing a plan. If the depth of the water in the existing Fuel Oil Storage Tank secondary containment had been calculated prior to commencing discharge of the hydrostatic test water, a plan could have been developed to avoid the bypass of the test water from the Fuel Oil Storage Tank secondary containment.

DTE proceeded to submit notice to the MDEQ of an unanticipated bypass under Part II.C.9 of the General Permit for hydrostatic pressure test water discharge certificate of coverage, MIG670369 by calling the MDEQ and following up with an email communication. At 1600 hours, the remaining 100,000 gallons of test water in the AST was pumped into the dredge basin.

All NPDES permits allow for bypass under specific conditions, including that a letter be submitted explaining the bypass. This bypass did not result in any harm to the environment or personnel on or off site; therefore, no corrective actions were required to correct the situation.

## **6.0 ENVIRONMENTAL PROTECTION PLAN NON-COMPLIANCES**

### **Overview**

In accordance with Section 5.4.1 of the EPP, all occurrences of non-compliance with the EPP must be reported along with a discussion of actions taken to correct the situation.

### **Activities and Controls**

No incidents of EPP noncompliance occurred at Fermi 2 in 2018.

## **7.0 DESIGN OR OPERATION CHANGES**

### **Overview**

In accordance with the Fermi 2 EPP, before engaging in additional construction or operational activities, which might affect the environment, Fermi 2 is required to prepare and record an environmental evaluation of such activity. If the evaluation should indicate that the proposed activity involves an un-reviewed environmental question, DTE Electric Company must provide a written evaluation of the activity and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. Activities are excluded from this requirement if all measurable, non-radiological effects are confined to the on-site areas previously disturbed during site preparation and plant construction.

### **Activities and Controls**

During the period covered by this report, there were no changes to station design or operational activities that created an un-reviewed environmental question per the requirements of the EPP.

## **8.0 UNUSUAL OR IMPORTANT ENVIRONMENTAL EVENTS**

### **Overview**

According to Section 4.1 of the EPP, any unusual occurrence or important event which indicates, or could result in, significant environmental impact causally related to plant operation must be reported to the NRC within 24 hours, followed by a written report within 30 days.

The following are considered examples of unusual or important environmental events:

- Excessive bird impacts
- On-site plant or animal disease outbreaks
- Mortality or unusual occurrence of any species protected by the Endangered Species Act
- Fish kills
- Increase in nuisance organisms or conditions

### **Activities and Controls**

No unusual or important environmental events occurred during 2018. Accordingly, no non-routine reports were submitted.

## **9.0 CONCLUSIONS**

In 2018, DTE Electric Company - Fermi 2 successfully maintained compliance with the EPP.