



Lois

From:

Sent:

To:

Cc:

James, Lois

Friday, October 28, 2016 10:38 AM

'mchisum@entergy.com'

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Subject:

REQUESTS FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL REVIEW OF WATERFORD STEAM ELECTRIC STATION, UNIT 3 (CAC NO. MF7493)

Attachments:

Environmental RAI - RAIs.pdf

**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

Mr. Michael R. Chisum
Site Vice President
Entergy Operations, Inc.
Waterford 3

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL REVIEW OF WATERFORD STEAM ELECTRIC STATION, UNIT 3 (CAC NO. MF7493)

Dear Mr. Chisum:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing Entergy Operations, Inc. (Entergy) application for renewal of the operating license for Waterford Steam Electric Station, Unit 3 (WF3). As part of the environmental review, an environmental site audit was conducted at WF3, by NRC staff, during the week of July 18, 2016. As a result of the audit and the NRC staff's review of the WF3 environmental report, staff has identified areas where additional information is needed to complete the review. The enclosure lists the environmental requests for information.

The NRC staff transmitted this information to Leia Milster, of your staff, by e-mail on August 29, 2016, and a conference call was held on September 6, 2016 to clarify the requests for information. Please provide the responses 30 days from the date of this e-mail.

If you have any questions, please contact me by telephone at 301-415-8517 or by e-mail at Elaine.Keegan@nrc.gov.

Sincerely,

Lois James for

Elaine M. Keegan, Sr. Project Manager

Environmental Review and Projects Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
As stated

cc: Listserv

ADAMS Accession no.: ML16295A369 *concurrence by email

OFFICE	LA:DLR	PM:RERP:DLR	BC:RERP:DLR	PM:RERP:DLR
NAME	IBetts*	EKeegan*	KFolk*	EKeegan* LMJ for
DATE	10/27/2016	10/21/2016	10/24/2016	10/28/2016

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WATERFORD STEAM ELECTRIC STATION, UNIT 3
REQUESTS FOR ADDITIONAL INFORMATION

1. Air Quality (AQ)

- AQ-1. Table 3.2-3 of the environmental report (ER), shows that the annual air emissions inventory summary is based on fuel usage (which is also presented in ER Table 3.2-3). Clarify if particulate matter (PM₁₀) emissions provided in Table 3.2-3 include particulate emissions from the two auxiliary component cooling water wet mechanical draft cooling towers. If PM₁₀ emissions in Table 3.2-3 do not include particulate emissions from the wet mechanical draft cooling towers, provide a justification.
- AQ-2. In support of NRC's greenhouse gas, climate change, and cumulative impacts analysis provide the following:
- a) Long-term meteorological information from the data recorded at Waterford Steam Electric Station, Unit 3's (WF3's) meteorological facility. If the data from WF3's meteorological facility is not available, provide an explanation for this. The meteorological data should include the most recent 30 years for which the data are available:
 - 1. mean monthly and annual temperatures
 - 2. mean monthly precipitation and annual precipitation
 - b) Has a river warming trend been observed in the Mississippi River during the period of plant operations? Please provide any study(s), relevant information, or historical and current data that covers the last 20 years that support the conclusions reached (e.g., mean annual, seasonal, and/or or monthly water temperature trend for the period of record).
- AQ-3. Has WF3 received notices of violation associated with *Air Permit 2520-00091-00*? If so, provide copies of relevant correspondence to and from the responsible regulatory agencies.
- AQ-4. As observed and discussed with Entergy Operations, Inc. (Entergy) personnel during the environmental site audit, identify FLEX equipment at WF3 and discuss how often this equipment is used and if an air permit will be required from the Louisiana Department of Environmental Quality (LDEQ) for these air emission sources.
- AQ-5. Provide a copy of the following references cited in the ER:
- a) Entergy. 2015i. WF3 Air Emissions Calculations—Criteria Pollutants, Hazardous Air Pollutants, and Greenhouse Gases. Correspondence CEO 2015-00017. April 6, 2015.
 - b) WF3. 2004a. Waterford 3 Air Permit 2520-00091-00. April 19, 2004.

2. Alternatives (AL)

- AL-1. Identify the available acreage and location(s) on the Entergy Louisiana, LLC property that would be suitable for siting replacement power generation.
- AL-2. Provide the basis for estimated cooling water withdrawal and consumption requirements associated with the replacement power alternatives to support the statement that water withdrawals “would be a fraction of that required by WF3’s once-through cooling system, and water consumption as a result of cooling tower evaporative losses would be insignificant compared to the volume of water flowing in the Mississippi River.”
- AL-3. Provide a copy of the following ER references for docketing:
 - a) ENERCON 2015b
 - b) Entergy 2015g
 - c) Lanning 2014

3. Aquatic Resources (AR)

- AR-1. In Section 3.6.6.2, on page 3-119 of the ER, Entergy states that, “no comprehensive ichthyofaunal surveys have been conducted on the LMR [Lower Mississippi River] in at least the past 30 years (Schramm 2004, page 307).” Clarify whether Entergy is aware of any ichthyofaunal or entrainment surveys that have been conducted on the liquid metal reactor (LMR) since 2004.
- AR-2. Describe the cleaning and maintenance procedures at the intake and discharge structures on the Mississippi River, including the frequency of dredging, physical cleaning, and other maintenance procedures.
- AR-3. Several references characterize the thermal plume at WF3, including Louisiana Light and Power’s 316(a) demonstration study in 1979, Louisiana Pollutant Discharge Elimination System (LPDES) Fact Sheet and Rational for the WF3 Draft LPDES Permit in 1998, and the analyses associated with the Construction Permit and Operating License Environmental Reports and Final Environmental Statements for WF3.
 - a) Clarify whether any additional thermal plume modeling or field studies have been conducted to characterize the size and temperature of the WF3 thermal plume in the Mississippi River.
 - b) Describe any changes to operational conditions or engineering features since 1998 that would have increased the size or temperature of the WF3’s thermal plume.
 - c) Describe any thermal modeling or field studies that have occurred to characterize the thermal plume at Waterford Steam Electric Station, Units 1 and 2 (WF 1&2).

- AR-4. In Section 2.2.2.1 of the ER, Entergy states that “the traveling screens associated with the intake structure are being replaced with MultiDisc screens in an effort to minimize condenser biofouling.”
- a) Describe the timeline for replacing the screens, including an estimate for when the replacement project will be complete.
 - b) Describe whether Entergy expects any differences in impingement and entrainment rates based on the use of the MultiDisc screens during the period of extended operations, as compared to the historically used traveling screens. For example, describe any differences in mesh size, through screen flow, or any other operational or engineered design features that would differ between the traveling screens and the MultiDisc screens.
 - c) Describe any additional changes to the intake system Entergy considered or implemented to reduce impingement and entrainment rates at WF3. Provide any related documentation or analyses, such as the expected efficiency rates in reducing impingement and entrainment.
 - d) Provide any responses or documented coordination with the U.S. Environmental Protection Agency or State agencies regarding operational changes or engineering features to reduce impingement and entrainment at WF3.
- AR-5. In Section 4.6.1.1.3 of the ER, Entergy estimates impingement rates at WF3 by extrapolating the impingement rates determined during field studies at WF 1&2.
- a) Describe any differences in the through screen flow, traveling screens, or any other operational or engineering differences between the units that could influence impingement rates.
 - b) Clarify why impingement rates at WF 1&2 is an appropriate proxy to extrapolate impingement rates at WF3. Provide any documentation from State or Federal agencies that concur with this approach.
- AR-6. In a letter dated August 17, 2006, LDEQ responded to Entergy’s Proposal for Information Collection (PIC) for WF3. LDEQ provided comments on Entergy’s PIC, including the following:
- a) “Entergy has not demonstrated that the data are representative of current conditions and has not demonstrated that the data were collected using appropriate QA/QC procedures.”
 - b) “We believe it would be beneficial to know current rates of impingement mortality and entrainment (where applicable), the current condition of the habitats in the relevant vicinities of the plants, and the current susceptibility to impingement and entrainment (where applicable) of the fish in the areas from which Entergy will base their baseline calculations. Having not seen the plants or been given a sufficient description of the plants and their surroundings, we cannot determine their sampling limitations (they did not state their sampling limitations sufficiently in their PICs) and, therefore, cannot determine if it is possible for Entergy to gather the information we suggested above. However, we suggest that Entergy consider these suggestions, and if it is not possible for Entergy to

gather the information suggested above, Entergy should give justification why it is not possible. But if it is possible and Entergy chooses to collect new data, Entergy would need to submit a sampling plan as required in the regulations.” Provide a copy of Entergy’s response provided to LDEQ and any additional correspondence with LDEQ regarding these requests.

AR-7. Provide a copy of the following documents:

- 1) Louisiana Power & Light, April, 1979. Demonstration under Section 316(a) of the Clean Water Act. Waterford Steam Electric Station Unit No. 3.
- 2) Louisiana Power & Light, April, 1979. Demonstration under Section 316(b) of the Clean Water Act. Waterford Steam Electric Station Unit No. 3.
- 3) Espey, Huston and Associates, Inc. 1977. 316(b) Demonstration Study at Waterford Unit 1 & 2.4. Annual Data Report—Waterford Power Plant Units 1 and 2, Screen Impingement Studies, February 1976 through January 1977.
- 4) Louisiana Pollutant Discharge Elimination System (LPDES) Fact Sheet and Rational for the Waterford 3 Draft LPDES Permit to Discharge to Waters of Louisiana, LPDES Permit Number LA0007374, July, 22 1998.
- 5) ENSR International. 2005. Proposal for Information Collection, Entergy Louisiana, Inc. Waterford 1 & 2 Plant. Document Number 10785-001. June 2005.
- 6) 316(b) Comprehensive Demonstration Study - Waterford 3

4. Cumulative Impacts (CU)

- CU-1. Please provide name, description, location, and status of any additional past, present, or reasonably foreseeable projects or actions that have been identified since the applicants’ ER was prepared. Please identify the distance and direction from WF3 to these projects.
- CU-2. Please provide a description and estimated schedule for the possible intake canal improvement/modification project that was discussed with Entergy personnel during the environmental site audit. In addition, please describe any potential modifications to the intake structure itself, including to the debris trough/fish return trough and chute. Please describe how the new fish return system may affect survival for fish that become entrapped within the intake structure.

5. Groundwater Resources (GW)

- GW-1. Provide the following document for docketing: “Waterford-3 Groundwater Monitoring Program Five-Year Review,” dated June 2014.
- GW-2. Section 3.5.3.2 of the ER states that no groundwater is withdrawn at WF3 but other portions of the ER (e.g., Section 7.1.3.4.5) indicate that groundwater dewatering could be necessary at the site, such as associated with new construction. Clarify whether any operational groundwater dewatering is conducted at WF3, either via wells or drain

sumps, at present. If so, identify the methods of dewatering, points of withdrawal, the average daily volumes, and the method of disposal of dewatering flows.

6. Land Use & Visual Resources (LU)

- LU-1. Section 3.1.1 of the ER describes an agricultural lease to Raceland Raw Sugar LLC for approximately 660 acres of land within the Entergy property. Does Entergy anticipate continuing to lease this land for agricultural purposes during the proposed 20-year license renewal period?

7. Microbial Hazards (MO)

- MO-1. Provide a copy of the following ER reference:

ENERCON. 2014. Record of Phone Conference between Dr. Ratard, Louisiana Department of Health and Hospitals, and D. Bean, Enercon Services, Inc. - Primary Amebic Meningoencephalitis.

8. Socioeconomics (SO)

- SO-1. Provide Entergy Louisiana, LLC property tax payment information for the year 2015, if available, similar to the data provided in Table 3.8-4 of the ER.

9. Special Status Species & Habitats (SS)

- SS-1. Provide a copy of the following ER reference:

Entergy. 2014e. Threatened and Endangered Species Survey, Waterford Steam Electric Station, Unit 3. December 30, 2014. Special Status Species & Habitats

10. Surface Water Resources (SW)

- SW-1. Provide a summary of the volume of surface water withdrawn from the Mississippi River over the last 5 years as well as return flows to the Mississippi River through outfall 001, including monthly volumes and annual totals. Please indicate how withdrawals and return flows are determined or measured for reporting purposes (e.g., pump operating hours, weir, etc.).
- SW-2. Provide a copy of the following for docketing: (1) March 2015 Louisiana Pollutant Discharge Elimination System (LPDES) permit renewal application for Permit No. LA0007374, which was due to expire in October 2015; and (2) a letter or other acknowledgement from the LDEQ that the renewal application was accepted as administratively complete.
- SW-3. Provide the WF3 Stormwater Pollution Prevention Plan (current version) for docketing.
- SW-4. Clarify and describe the nature of the “low-volume and chemical wastewaters,” referenced in ER Section 3.5.1.1.1, which are pumped to the aboveground concrete holding basin and transferred to Waterford 1, 2, and 4 for processing. Specifically, clarify whether this wastewater is limited to steam generator blowdown and also whether this discharge corresponds to LPDES internal outfall 401. If this waste stream

differs from the source attributed to outfall 401, describe the source of this wastewater, volume and frequency of the transfers, and whether chemical analysis is conducted.

- SW-5. As referenced above in SW-4, provide a description of the concrete holding basin referenced in ER Sections 2.2.3.1.3 and 3.5.1.1.1, including dimensions of the basin, material of construction, and when constructed. Specify how often the basin is used and how long standing water is normally present.
- SW-6. Provide a summary of LPDES Discharge Monitoring Report (DMR) data, itemizing monitored parameters for each outfall, for the last 2 years (2014 and 2015), inclusive of 2016 year to date.
- SW-7. Identify and describe any Notices of Violation (NOVs); nonconformance notifications; or related infractions received from regulatory agencies associated with LPDES permitted discharges, sanitary sewage systems, groundwater or soil contamination, as well as any involving spills, leaks, and other inadvertent releases (e.g., petroleum products, chemicals, or radionuclides) received since 2014. Include self-reported violations. Provide copies of relevant correspondence to and from the responsible regulatory agencies.
- SW-8. Section 2.2.2.1 of the ER states that the circulating water intake structure is designed to provide 1,080,000 gallon per minute (gpm) of circulating cooling water to the plant. However, the ER also states that the intake structure houses four circulating water pumps, each with a capacity of 250,000 gpm, in addition to three service water/screen wash pumps, each with a capacity of 3,000 gpm. Together, these pump capacities equate to a total maximum withdrawal rate of 1,009,000 gpm. Please clarify the apparent discrepancy.
- SW-9. As discussed with Entergy personnel during the walkdown of the WF3 intake structure, please clarify how often all four circulating water pumps are operated and describe the general factors that govern four-pump operation.
- SW-10. As discussed with Entergy personnel during the environmental site audit, describe any chemical treatment, including use of biocides to control biofouling or other chemicals such as corrosion inhibitors, which is currently performed to manage the chemistry of the river water used in the circulating water system. Clarify whether Entergy maintains any circulating water chemical injection equipment for use (portable or permanent). If so, identify the general nature and location of the equipment, the chemicals used and volumes stored, and frequency with which the circulating cooling water is or may be treated.
- SW-11. As observed and discussed with Entergy personnel during the environmental site audit, describe the purpose and scope of the protective piling (i.e., dolphin) replacement/rehabilitation project underway along the WF3 shoreline. Discuss how many of the existing nine dolphins will be affected, including when the project was initiated and the projected completion date. Identify the permits/approvals obtained for the project and provide the associated documentation.
- SW-12. As referenced in ER Section 2.2.2.5 and as discussed with Entergy personnel during the environmental site audit, provide an expanded functional description of the contractor-maintained demineralized/treated water (i.e., pure) makeup system used at

WF3. Include a general description of the treatment processes used and the plant systems served/supplied with treated water. Further, indicate when the current system was installed, its general physical location, and the production capacity of the system.

11. Terrestrial Resources (TR)

- TR-1. Describe Entergy's landscape maintenance activities, including Entergy's procedures for maintaining in-scope transmission line rights-of-way as well as general grounds maintenance.
- TR-2. In Section 3.6.11.2.4, p. 3-159 of the ER, Entergy states that no known bald eagle nests occur on the Entergy property. However, in a June 18, 2015, letter from the Louisiana Department of Wildlife and Fisheries (LDWF) (reproduced beginning on p. B-16 of the ER), the LDWF states that "the proposed project may potentially impact a Bald Eagle (*Haliaeetus leucocephalus*) nesting site located within the project site." Please explain these seemingly contradictory statements and clarify if a bald eagle nest exists on the Entergy property. If such a nest exists, please describe any related coordination with State and Federal agencies, BMPs, or protection plans, as applicable.

12. Waste Management (WM)

- WM-1. Since WF3 is subject to the reporting provisions of 40 CFR Part 110 (as it relates to the discharge of oil in such quantities as may be harmful pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act), any discharges of oil in such quantities that may be harmful to the public health or welfare or the environment must be reported to the National Response Center. In Section 9.5.1.5 of the ER, the applicant discusses reportable spills, and states that for the 5 year period of 2010-2014 there were no reportable spills: Provide the most current records to see if there have been any reportable spills which would trigger this notification requirement since the ER was written.