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River Bend Station
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Tel 225-381-4374

William F. Maguire
Site Vice President
River Bend Station

RBG-47802

December 5, 2017

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: Response to License Renewal Application (LRA) NRC Request for Additional Information (RAI) Environmental
River Bend Station, Unit 1
Docket No. 50-458
License No. NPF-47

References: 1) Entergy Letter: License Renewal Application (RBG-47735 dated May 25, 2017)
2) NRC email: River Bend Station, Unit 1, Request for Additional Information, Environmental – RBS License Renewal Application – dated November 7, 2017. (ADAMS Accession No. ML17311A422).

Dear Sir or Madam:

In Reference 1, Entergy Operations, Inc (Entergy) submitted an application for renewal of the Operating License for River Bend Station (RBS) for an additional 20 years beyond the current expiration date. In an email dated November 7, 2017, (Reference 2) the NRC staff made a Request for Additional Information (RAI), needed to complete the License Renewal application review. Enclosure 1 provides the responses to the Environmental RAIs.

There are no regulatory commitments contained in this submittal. If you require additional information, please contact Mr. Tim Schenk at (225)-381-4177 or tschenk@entergy.com.

In accordance with 10 CFR 50.91(b)(1), Entergy is notifying the State of Louisiana and the State of Texas by transmitting a copy of this letter and attachment to the designated State Official.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 5, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Maguire", with a large loop at the bottom.

WFM/RMC/alc

A035
NRR

Enclosure 1: Set 1 RAI Responses – River Bend Station

cc: (with Enclosure)

U. S. Nuclear Regulatory Commission
Attn: Emmanuel Sayoc
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cc: (w/o Enclosure)

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NRC Resident Inspector
PO Box 1050
St. Francisville, LA 70775

Central Records Clerk
Public Utility Commission of Texas
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Austin, TX 78711-3326

Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
Ji Young Wiley
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Baton Rouge, LA 70821-4312

RB1-17-0146

Enclosure 1

Responses to Request for Additional Information

Environmental

**REQUEST FOR ADDITIONAL INFORMATION
LICENSE RENEWAL APPLICATION
RIVER BEND STATION, UNIT 1
ENVIRONMENTAL**

1. AIR QUALITY, METEOROLOGY and NOISE (AQ)

Air Quality and Meteorology (AQ)

RAI-AQ-1

Question:

Section 3.2, "Meteorology and Air Quality," of Regulatory Guide 4.2, Supplement 1, Rev. 1. (RG 4.3, S1, R1), states that the applicant should "provide information that includes a description of the local and regional meteorology and climatology from nearby representative sites...". Provide the following meteorological information from the data recorded at RBS's meteorological facility for the most recent 5 years:

- a) mean monthly and annual temperatures
- b) monthly total precipitation and total annual precipitation
- c) annual prevailing wind direction and mean wind speed (include wind data from both 30-foot and 150-foot sensors)

Response:

Mean Monthly and Annual Temperature

Although only the most recent five years was requested, Entergy is providing three 5-year mean monthly and annual temperature data sets covering the period of 2002 – 2016 in Table AQ-1.

Mean Monthly and Annual Precipitation

Although only the most recent five years was requested, Entergy is providing three 5-year mean monthly and annual precipitation data sets covering the period of 2002 – 2016 in Table AQ-2. As a note and as discussed in Section 3.2.3 of the River Bend Station (RBS) environmental report (ER), the rain gauge at the meteorological tower is no longer operational. However as part of RBS's storm water monitoring program, monthly rainfall is recorded via an onsite rain gauge. Therefore, the data provided in Table AQ-2 is associated with the stormwater monitoring program.

Wind Direction

Based on review of joint frequency distribution tables provided in RBS's previous Annual Radioactive Effluent Release Reports from 2012 – 2016 submittals to the NRC, the

prevailing wind direction at the 30-foot elevation is from the southeast and at the 150-foot level is from the east-southeast.

Wind Speed

The mean annual wind speed for the 30-foot and 150-foot levels at RBS was 3.4 mph and 6.9 mph, respectively based on a period from 2012 – 2016. These wind speeds are consistent with data reported in Part 3, Section 2.7.4.2 of the RBS Unit 3 combined license application, where the mean annual wind speed for the 30-foot and 150-foot levels at RBS was 3.85 mph and 7.26 mph, respectively based on a period from December 2004 – November 2006.

RAI-AQ-2

Question:

Section 3.2, "Meteorology and Air Quality," of RG 4.2, S1, R1, states that the applicant should "describe the onsite meteorological monitoring program and meteorological data monitoring system...". During the RBS environmental audit, the NRC staff toured the RBS meteorological tower and held discussions pertaining to on-going assessment of wind direction. Summarize the discussion, including:

- a.) when (year) the trees to the east of the meteorological tower were trimmed back
- b.) describe action(s) taken in the assessment of on-site wind direction

Response:

Based on a 2015 assessment of the RBS meteorological program, the average wind direction from the latest 10-years of RBS onsite data (2005-2014) demonstrated a shift in peak direction frequencies from historically out of the east to the southeast. It was speculated that trees east of the tower could potentially be blocking winds from the east getting to the tower, since for this same 10-year period, the peak wind directions at the Ryan Airport were still out of the east. RBS trimmed back the large grove of trees to the east of the meteorological tower in 2015.

However, RBS is still in the process of assessing the prevailing wind direction for other potential issues. Once the 2017 joint frequency distribution is complete in early 2018, a final determination on prevailing wind direction and D/Q impacts as a result of tree removal from actions taken in CR-RBS-2015-4965 will be completed. If necessary, needed changes will be made in accordance with station processes.

RAI-AQ-3

Question:

Pursuant 10 CFR 51.45(d) the ER shall include a discussion status of compliance with applicable environmental quality standards and requirements. In addition to the statement provided in Section 9.3 of the ER, has RBS received any Notices of Violation (NOVs) from

the Louisiana Department of Environmental Quality (LDEQ) regarding RBS's air permit since 2015?

Response:

RBS has not received any NOV's from the LDEQ since 2015 as it relates to the RBS air permit.

Noise (NOI)

RAI-NOI-1

Question:

Section 3.3, "Noise," of RG 4.2 S1 R1 states that the applicant "should provide information about noise complaints...". Section 3.3 of the ER identifies that Entergy received a complaint from a local resident regarding activities associated with the firing range and then conducted meetings with local law enforcement regarding this complaint. From these meetings, Entergy determined that nighttime activities at the RBS firing range were not occurring during the time period cited by the local resident. Provide:

- a.) The year Entergy received the complaint
- b.) Additional details (e.g., discussions, reports, action items) on the meetings that were conducted by local enforcement and Entergy.
- c.) Location and distance of the resident relative to the firing range.

Response:

Based on interviews with Entergy's Communication Department, the noise complaint was received in either late 2013 or early 2014. However, Entergy was unable to locate records regarding additional details on the meetings that were conducted or the location and distance of the resident relative to the firing range as RBS personnel familiar with the complaint are no longer employed at RBS. Therefore, no additional information is available to address items b and c of this RAI request.

RAI-NOI-2

Question:

Section 3.3, "Noise," of RG 4.2 S1 R1 states that the applicant "should provide information about noise complaints..." The ER identifies that over a 5-year period (2011-2015), there have been no noise complaints related to actual plant operations. Has Entergy received any noise complaints since 2015 pertaining to RBS plant operations?

Response:

RBS has not received any noise complaints since 2015.

Request:

Provide the following ER references for docketing:

1. Entergy. 2016h. River Bend Station Air Emissions Calculations—Criteria Pollutants, Hazardous Air Pollutants, and Greenhouse Gases. May 3, 2016.
2. RBS. 2009. River Bend Station Air Permit Number 3160-00009-04. July 28, 2009.
3. Gulf States Utilities Company, "River Bend Station Environmental Report, Operating License Stage," Volumes 1-4, Supplements 1-9, November 1984 (specifically, Noise Sections 2.9, 5.8.1.2, 6.7.1 and associated figures and tables).

Response:

The requested documents below are provided on the enclosed DVD.

1. File name for the Entergy 2016h reference is "Entergy 2016h_RBS Air Emissions Calculations_FINAL."
2. File name for the RBS 2009 reference is "RBS 2009_RBS AirPermit 3160-00009-04_permitted emissions."
3. File name for the requested noise sections from the Gulf States Utilities Company, River Bend Station Environmental Report, Operating License Stage, is "GSU ER-OL Noise."

Table AQ-1
RBS Temperature Data, 30-Foot Elevation (2002 – 2016)

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|--------------------|-------------|------------------|-------------|------------------|------------------|------------------|-------------|-------------|-------------|-------------|------------------|------------------|-------------|
| 2002 | 52.8 | 50.1 | 59.8 | (¹) | (¹) | 78.6 | 80.0 | 79.6 | 77.8 | 69.9 | (¹) | (¹) | 68.6 |
| 2003 | 46.1 | (¹) | 61.0 | (¹) | 76.2 | 78.1 | 79.6 | 80.7 | 75.2 | 67.5 | 62.1 | 50.4 | 67.7 |
| 2004 | 51.6 | 50.6 | 64.3 | 66.2 | 73.3 | 77.3 | 80.4 | 78.8 | 78.1 | 73.8 | 61.7 | 50.9 | 67.3 |
| 2005 | 54.5 | 56.7 | 58.8 | 66.5 | 73.3 | (¹) | 81.2 | 81.5 | 80.7 | 67.8 | 60.8 | 49.8 | 66.5 |
| 2006 | 57.6 | 53.1 | 63.8 | 71.4 | 74.5 | 80.8 | 80.9 | 82.2 | 77.2 | 68.8 | 58.7 | 53.2 | 68.5 |
| 2002 - 2006 | 52.5 | 52.6 | 61.5 | 68.0 | 74.3 | 78.7 | 80.4 | 80.6 | 77.8 | 69.6 | 60.8 | 51.1 | 67.7 |
| 2007 | 40.5 | 42.9 | 61.6 | 58.9 | 72.0 | 79.0 | 80.1 | 87.2 | 75.9 | 67.2 | 55.3 | 44.0 | 63.7 |
| 2008 | 40.9 | 44.2 | 52.4 | 59.1 | 68.9 | 77.7 | 80.9 | 78.3 | 71.7 | 61.3 | 50.2 | 41.1 | 60.6 |
| 2009 | 38.5 | 47.7 | 53.8 | 59.9 | 67.3 | 79.2 | 78.6 | 77.3 | 70.5 | 57.7 | 54.3 | 38.7 | 60.3 |
| 2010 | 42.1 | 38.2 | 51.7 | 64.6 | 71.0 | 81.4 | 81.9 | 85.6 | 74.7 | 63.3 | 54.1 | 42.1 | 62.6 |
| 2011 | 47.8 | 48.1 | 63.3 | 70.9 | 73.6 | 82.0 | 81.2 | 84.5 | 74.1 | 64.4 | 59.5 | 53.3 | 66.9 |
| 2007 - 2011 | 42.0 | 44.2 | 56.6 | 62.7 | 70.6 | 79.9 | 80.5 | 82.6 | 73.4 | 62.8 | 54.7 | 43.8 | 62.8 |
| 2012 | 57.3 | 57.6 | 67.9 | 69.6 | 75.9 | 80.4 | 80.5 | 80.5 | 76.0 | 65.6 | 57.2 | 56.4 | 68.7 |
| 2013 | 54.1 | 55.3 | 56.8 | 65.7 | 71.2 | 79.9 | 79.1 | 80.1 | 78.7 | 68.7 | 55.9 | 51.2 | 66.4 |
| 2014 | 45.1 | 51.8 | 57.1 | 66.6 | 72.2 | 78.8 | 79.6 | 80.2 | 77.4 | 68.6 | 54.4 | 55.6 | 65.6 |
| 2015 | 49.1 | 49.4 | 63.1 | 70.3 | 75.1 | 79.8 | 83.1 | 82.2 | 78.0 | 70.6 | (¹) | 61.6 | 69.3 |
| 2016 | 49.9 | 57.8 | 65.6 | 69.0 | 73.9 | 80.3 | 82.0 | 81.4 | 79.6 | 70.3 | 61.3 | 55.2 | 68.9 |
| 2012 - 2016 | 51.1 | 54.4 | 62.1 | 68.2 | 73.6 | 79.8 | 80.9 | 80.9 | 77.9 | 68.8 | 57.2 | 56.0 | 67.8 |

1. Data not shown since there was <75% of valid temperature data available. There is no strict guidance on the percent available needed for a valid average, but the EPA uses 75%. RBS has 90% on an annual basis as specified in NRC Regulatory Guidance 1.23.

Table AQ-2
RBS Precipitation Data (2002 – 2016)

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| 2002 | 5.89 | 4.79 | 6.66 | 4.56 | 0.63 | 8.82 | 2.64 | 3.26 | 9.67 | 10.93 | 6.72 | 9.03 | 73.60 |
| 2003 | 1.25 | 12.84 | 2.92 | 6.22 | 0.71 | 5.10 | 6.23 | 2.79 | 3.21 | 1.08 | 3.76 | 3.16 | 49.27 |
| 2004 | 5.18 | 12.59 | 1.88 | 2.95 | 18.60 | 14.33 | 3.63 | 2.10 | 0.24 | 7.98 | 6.86 | 2.67 | 79.01 |
| 2005 | 8.84 | 5.76 | 4.00 | 2.97 | 2.80 | 4.18 | 4.86 | 4.34 | 8.60 | 0.15 | 2.082 | 7.14 | 55.72 |
| 2006 | 2.31 | 5.76 | 1.78 | 3.14 | 0.80 | 0.80 | 6.54 | 2.94 | 1.72 | 15.86 | 2.80 | 6.45 | 50.90 |
| 2002 - 2006 | 4.69 | 8.35 | 3.45 | 3.97 | 4.71 | 6.65 | 4.78 | 3.09 | 4.69 | 7.20 | 4.44 | 5.69 | 61.70 |
| | | | | | | | | | | | | | |
| 2007 | 8.40 | 2.02 | 2.64 | 4.51 | 6.64 | 3.32 | 5.16 | 1.68 | 4.56 | 2.79 | 4.26 | 4.34 | 50.32 |
| 2008 | 12.01 | 5.79 | 3.93 | 2.60 | 5.75 | 4.27 | 3.52 | 7.43 | 12.64 | 1.30 | 2.65 | 6.41 | 68.30 |
| 2009 | 5.38 | 2.16 | 5.75 | 5.84 | 4.16 | 0.85 | 4.68 | 2.60 | 5.38 | 11.39 | 1.41 | 14.26 | 63.86 |
| 2010 | 3.49 | 7.04 | 3.48 | 0.57 | 2.49 | 4.49 | 7.03 | 13.03 | 2.13 | 1.30 | 5.92 | 4.855 | 55.83 |
| 2011 | 5.59 | 2.55 | 7.81 | 1.74 | 0.96 | 3.44 | 8.31 | 1.29 | 13.65 | 1.15 | 5.88 | 4.46 | 56.83 |
| 2007 - 2011 | 6.97 | 3.91 | 4.72 | 3.05 | 4.00 | 3.27 | 5.74 | 5.21 | 7.67 | 3.59 | 4.02 | 6.87 | 59.03 |
| | | | | | | | | | | | | | |
| 2012 | 9.62 | 7.33 | 7.84 | 4.32 | 2.74 | 3.96 | 12.87 | 7.91 | 4.39 | 3.42 | 1.74 | 10.51 | 76.65 |
| 2013 | 12.79 | 9.55 | 2.68 | 10.10 | 7.67 | 3.03 | 6.25 | 4.85 | 5.14 | 2.47 | 4.53 | 4.41 | 73.47 |
| 2014 | 1.34 | 9.47 | 3.32 | 2.49 | 15.41 | 8.43 | 5.97 | 2.71 | 5.46 | 2.21 | 2.34 | 6.96 | 66.11 |
| 2015 | 5.85 | 3.20 | 9.00 | 8.86 | 6.64 | 2.91 | 2.71 | 5.03 | 1.63 | 13.47 | 7.27 | 3.49 | 70.06 |
| 2016 | 3.36 | 7.56 | 7.83 | 7.49 | 3.44 | 3.26 | 5.71 | 25.75 | 1.69 | 1.63 | 1.67 | 9.70 | 79.09 |
| 2012 - 2016 | 6.59 | 7.42 | 6.13 | 6.65 | 7.18 | 4.32 | 6.70 | 9.25 | 3.66 | 4.64 | 3.51 | 7.01 | 73.08 |

2. ALTERNATIVES (AL)

RAI-AL-1

Question:

Identify the available acreage and location(s) on the Entergy Louisiana, LLC property that would be suitable for siting replacement power generation. Identify whether these areas would require excavation, backfilling, or removal of existing structures.

Response:

Figure 2.5-16 of the RBS Unit 3 (RBS3) Combined License, Part 3: ER shows previously disturbed areas at the RBS site. Entergy was unable to quantify the available acreage for siting replacement power generation. However during the preparation of the RBS3 Combined License, Part 3: ER (now suspended), it was determined that the former Unit 2 excavation area would be suitable for placement of the RBS3 plant. The former Unit 2 excavation area is shown in Figure 3.0-1 of the RBS ER. Therefore, Entergy assumes that the former Unit 2 excavation area would be suitable for replacement power generation alternatives.

As discussed in Section 4.1 of the RBS3 Combined License, Part 3: ER to accommodate the RBS3 unit, a man-made drainage ditch (West Creek) would be straightened and the main portion of the ditch relocated west of its current location to allow space for construction of the Unit 3 buildings. The three abandoned Unit 1 standby service water chemical cleaning waste storage tanks currently in the former Unit 2 excavation area would be drained and removed, and several buildings in the immediate area of the Unit 3 reactor would be rearranged to allow space for the new unit construction. Entergy assumes that these same activities would occur to accommodate the replacement power generation. In addition as discussed in the RAI CU-2 response, several buildings west of the Unit 2 excavation area are already being demolished or there are future plans to demolish.

3. CUMULATIVE (CU)

RAI-CU-1

Question:

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.

Response:

Entergy identified the following projects that have either been completed or proposed since the ER was prepared.

- The West Feliciana Parish Hospital was completed in St. Francisville, Louisiana in August 2017 to replace the old hospital. The 53,000-square-foot facility sits on 12 acres behind the

existing hospital. The new facility offers 12 in-patient rooms compared to 22 in the old hospital, and Emergency Department and Outpatient Services. This facility is located approximately three miles west-northwest of RBS.

- West Feliciana Parish has requested Federal Emergency Management Agency (FEMA) funding from the 404 Hazard Mitigation Grant Program to stabilize two sections of streambank along Bayou Sara near its confluence with the Mississippi River. FEMA sent this request seeking public comment on April 18, 2017. Severe erosion of the streambank threatens the Town of St. Francisville's Wastewater Treatment facility; pond levees; and St. Ferdinand Street, the Parish's only access road to the Mississippi River. The proposed project is located approximately 3.6 miles west-northwest of RBS.

RAI-CU-2

Question:

Please provide a brief description and estimated schedule for the onsite demolition projects that were discussed with Entergy personnel during the environmental site audit (e.g., Old Maintenance Shop, ANCO Building, Pipe Shop, Field Administration Building). Please clarify the revised construction start and completion dates that were discussed in regard to the proposed ISFSI expansion.

Response:

Demolition Activities

Demolition of the old Maintenance Shop and ANCO building were completed in October 2017. Demolition of the Field Administration Building is estimated for the 4th quarter of 2018. The Pipe Shop will require further evaluation prior to demolition so there is presently no set schedule.

ISFSI Expansion

The RBS ISFSI pad has 44 spaces, but only 40 spaces are for permanent storage of HI-STORMS. The four extra spaces are utilized for shuffling movement of HI-STORMS in the event access is needed to move a loaded HI-STORM.

RBS currently has 23 HI-STORMs loaded and stored on the ISFSI pad. In 2018, RBS is scheduled to load eight casks which will bring the total to 31 casks on the ISFSI pad. RBS would then have two scenarios after 2018: (1) either RBS returns to loading four casks every other year (four casks every two years) or, (2) possibly wait and load eight casks four years later.

Therefore, if four more casks are loaded in 2020, there would be 35 casks on the ISFSI pad. If more casks are loaded again in 2022, a minimum of four more casks would put the total at 39 casks on the ISFSI pad. RBS's current forecast is to begin constructing a second ISFSI pad identical to the one that exists now around 2020 and completed in December 2020 to provide 40 additional spaces.

4. GROUNDWATER (GW)

RAI-GW-1

Question:

The ER (Section 3.5.4.2.1) contains a description of liquid radioactive releases from 2008 through 2016. Have any radioactive releases occurred since the ER was written?

Response:

Based on review of condition reports that would document radiological spills at the site and associated corrective actions, there have been no recorded radiological spills in 2017 since submittal of the ER.

RAI-GW-2

Question:

Data from the quarterly sampling of radionuclides (including tritium) in groundwater is reported annually to the NRC. Staff has access to quarterly sampling data through the end of 2016. Please provide an update of quarterly radionuclide groundwater sample data that has been collected and finalized for 2017. In addition to radionuclide concentrations, include the well sampled and the date of the samples.

Response:

Tritium results for the first three quarters of 2017 are provided in Table GW-1. No other radionuclides have been detected.

RAI-GW-3

Question:

Provide an estimate of average groundwater flow time from the power block area to the Mississippi River (i.e. how long it takes for the groundwater to reach the river).

Response:

Average groundwater travel time from the power block area of RBS to the Mississippi River was estimated using two methods: flow model calculations and observed tritium plume concentration correlations. For both methods estimated average travel times from the power block to the river are a combination of travel times through sections of excavation backfill sand (approximately 421 feet) and the Upland Terrace Aquifer (UTA) (approximately 12,000 feet) along a single flow path. Both methods have been used previously to report estimated groundwater travel times at the site; however, results from this analysis are slightly different from earlier results because this analysis utilizes average input values rather than data specific to a particular moment in time used in earlier estimates.

Using a standard equation to calculate groundwater flow velocity ($V = K / ne * dh/dl$), where aquifer hydraulic conductivity (K) and effective porosity (ne) properties were obtained from the site Updated Safety Analysis Report (page 2.4-19) and hydraulic gradients (dh/dl) were determined from field observations between October 2012 and September 2017, flow model calculations were used to estimate average groundwater flow velocities within backfill (0.72 feet/day) and the UTA (3.03 feet/day). Resulting average travel times through backfill sand (585 days or 1.60 years) and the UTA (3,960 days or 10.85 years) were combined for a total estimated average travel time of 12.45 years from the power block area to the Mississippi River. The tritium plume concentration correlation method was used to match patterns of tritium concentration fluctuations among monitoring wells in order to track movement of tritium from well to well and directly observe travel times for tritiated groundwater. Observed groundwater flow velocities through backfill (0.90 feet/day) and the UTA (4.31 feet/day) were used to estimate average travel times of 469 days or 1.28 years through backfill and 2,784 days or 7.63 years through the UTA. Together, they combined for a total average travel time of 8.91 years from the power block to the Mississippi River.

Table GW-1
RBS Tritium Results, 2007 (pCi/l)

| Well Identification | 1 ST Quarter | 2 ND Quarter | 3 RD Quarter |
|---------------------|-------------------------|-------------------------|-------------------------|
| MW-04 | | <689 | |
| MW-05 | <580 | <707 | <583 |
| MW-06 | | <661 | |
| MW-08 | <571 | <714 | <511 |
| MW-14 | <586 | <712 | <513 |
| MW-18 | | <686 | |
| MW-100 | <520 | <732 | <574 |
| MW-103 | <604 | <669 | <589 |
| MW-103 (Duplicate) | | <670 | |
| MW-104 | <580 | <705 | <517 |
| MW-104 (Duplicate) | | <703 | |
| MW-106 | <570 | <703 | <584 |
| MW-106 (Duplicate) | | | <574 |
| MW-108 | <524 | <696 | <566 |
| MW-110 | 57,000 | 52,200 | 54,900 |
| MW-111 | | <671 | |
| MW-112 | 10,800 | 8,090 | 6,560 |
| MW-114 | 2,850 | 2,770 | 2,550 |
| MW-116 | 7,815 | 2,780 | 7,690 |
| MW-116 (Duplicate) | | | 7,960 |
| MW-118 | 2,850 | 3,240 | 3,610 |
| MW-120 | <520 | <674 | <516 |
| MW-120 (Duplicate) | <521 | <678 | |
| MW-122R | <579 | <678 | <598 |
| MW-126 | <517 | <691 | <581 |
| MW-128 | <530 | <704 | <575 |
| MW-130 | <531 | <719 | <581 |
| MW-131 | <530 | <715 | <593 |

Table GW-1
RBS Tritium Results, 2007 (pCi/l)

| Well Identification | 1ST Quarter | 2ND Quarter | 3RD Quarter |
|----------------------------|-------------------------------|-------------------------------|-------------------------------|
| MW-132 | <719 | <717 | <591 |
| MW-134 | <520 | <703 | <586 |
| MW-137 | 21,200 | 13,600 | 26,100 |
| MW-137 (Duplicate) | 19,200 | | |
| MW-139 | 1,290 | 1,100 | 921 |
| MW-141 | 2,010 | 2,160 | 1,800 |
| MW-142 | <599 | <688 | <582 |
| MW-144 | 945 | <662 | <633 |
| MW-146 | 137,000 | 130,000 | 159,000 |
| MW-147 | 208,000 | 135,000 | 194,000 |
| MW-147 (Duplicate) | | 147,000 | |
| MW-148 | <579 | <709 | <564 |
| MW-148 (Duplicate) | <576 | <713 | |
| MW-151 | <525 | <703 | <604 |
| MW-153 | 1,070 | 1,490 | 859 |
| MW-155 | 133,000 | 160,000 | 223,000 |
| MW-155 (Duplicate) | | | 180,000 |
| MW-156 | 1,970 | 1,930 | 1,770 |
| MW-157 | 130,000 | 123,000 | 120,000 |
| MW-157 (Duplicate) | | 119,000 | |
| MW-158 | 947,000 | 897,000 | 740,000 |
| MW-158 (Duplicate) | 976,000 | | |
| MW-159 | 5,850 | 5,400 | 8,610 |
| MW-159 (Duplicate) | | | 8,050 |
| MW-161 | 1,210 | 2,430 | 2,920 |
| MW-162 | <521 | <704 | <596 |
| MW-164 | <513 | <696 | <516 |
| MW-164 (Duplicate) | | <701 | <511 |

Table GW-1
RBS Tritium Results, 2007 (pCi/l)

| Well Identification | 1ST Quarter | 2ND Quarter | 3RD Quarter |
|----------------------------|-------------------------------|-------------------------------|-------------------------------|
| MW-165 | <522 | <696 | <572 |
| MW-167 | <524 | <742 | <582 |
| MW-169 | <598 | <657 | <622 |
| MW-170 | <707 | <658 | <571 |
| MW-172 | <570 | <694 | <583 |
| MW-174 | <519 | <714 | <577 |
| MW-174 (Duplicate) | <531 | | |
| MW-178 | 37,600 | 29,400 | 14,800 |
| MW-179 | 280,000 | 238,000 | 276,000 |
| MW-180 | <569 | <697 | <583 |
| MW-182 | <574 | <705 | <616 |
| MW-185 | <517 | <709 | <584 |
| MW-185 (Duplicate) | <520 | | <589 |
| MW-186 | <585 | <703 | <520 |
| MW-187 | <569 | <712 | <587 |
| MW-188 | <525 | <712 | <519 |
| PZ-01 | 29,400 | 32,300 | 55,500 |
| PZ-02 | | <701 | |
| PZ-03 | <518 | <694 | <573 |
| SW-101 | <575 | <674 | <580 |
| SW-102 | <583 | <657 | <607 |
| SW-103 | <517 | <714 | <598 |
| SW-104 | <531 | <675 | <583 |
| T-14 | | <675 | |

5. HISTORIC AND CULTURAL RESOURCES (HC)

Sensitive cultural resources information, such as archaeological site location information, should be withheld from public disclosure and guidance described in Section 304 of the National Historic Preservation Act should be followed.

Please submit responses to the following questions (as shown on the portal) for docketing:

RAI-HC-1

Question:

Provide copies of any archaeological surveys performed on the Entergy Louisiana, LLC property and referenced in the RBS ER, including a copy of the 2015 "Phase 1A Literature Review and Archaeological Sensitivity Assessment of the River Bend Station Unit 1, West Feliciana Parish, Louisiana," prepared by Coastal Environments, Inc., October 16, 2015.

Response:

Entergy does not have access to the archaeological surveys referenced in the RBS ER since Entergy does not have an archaeologist on staff. However, these surveys were summarized in Section 4.1 of the 2015 Phase 1A Literature Review and Archaeological Sensitivity Assessment of the River Bend Station report which was prepared by an archaeologist contracted by Entergy.

RAI-HC-2

Question:

Approximately what percentage of land within the boundaries of the Entergy Louisiana, LLC property is undisturbed? Provide a map detailing the level of previous and existing ground disturbance at the plant site, including documentation on how this level of disturbance was determined.

Response:

Previously disturbed areas were determined during the RBS 2015 Phase 1A Literature Review and Archaeological Sensitivity Assessment and can be viewed in Figure 2 of the 2015 Phase 1A Report. However, Entergy could not determine the percentage of land within the RBS property that is undisturbed based on this figure.

RAI-HC-3

Question:

Approximately what percentage of land within the boundaries of the Entergy Louisiana, LLC property has been formally surveyed? Provide a map of site locations

and previously surveyed areas within the entire Entergy Louisiana, LLC property (plant site and plant property) and along existing transmission lines, up to the first substation.

Response:

Entergy cannot determine what percentage of land within the RBS property that has been formally surveyed. However, formally surveyed areas that meet current Louisiana Division of Archaeology standards were determined during the RBS 2015 Phase 1A Literature Review and Archaeological Sensitivity Assessment and can be viewed in Figure 2 of the Phase 1A Report.

RAI-HC-4

Question:

Provide a summary description of any administrative controls and environmental procedures in place for land-disturbing activities at RBS (e.g., trenching, clearing, and digging). Describe how inadvertent cultural resource discoveries are treated.

Response:

Administrative controls in place to protect cultural resources at RBS include Entergy procedures EN-EV-121 (Cultural Resources Protection Plan), EN-IS-112 (Trenching, Excavating and Ground Penetrating Activities) and EN-EV-115 (Environmental Reviews and Evaluations).

Prior to performing any excavating or trenching activities at the RBS site, Entergy procedure EN-IS-112 requires that EN-EV-121 be reviewed for additional requirements. In addition, Entergy procedure EN-EV-115 ensures that environmentally sensitive areas such as cultural resources at RBS are adequately protected during site operations and project planning. The controls in this procedure consist of the following:

- Reviewing operational changes or site projects to identify any potential effects on environmental resource areas such as cultural resource
- Consulting appropriate agencies on matters involving cultural resources
- Implementing best management practices to minimize impact to the resource

In the event of an inadvertent discovery, as required by Entergy procedure EN-EV-121, work must be stopped, the Chemistry Manager notified, and work not resumed until the Chemistry Manager has performed an evaluation.

RAI-HC-5

Question:

Provide copies of all letters and communications to and from the Louisiana SHPO specific to determining the National Register of Historic Places eligibility of all cultural

resources identified to date within the Entergy Louisiana, LLC property. Please include information related to the status of the onsite cultural resources with undetermined eligibility referenced in Section 3.7 of the ER.

Response:

There has been no changes to the NRHP-eligibility of cultural resources identified to date on the RBS property nor a change in the status of onsite cultural resources with an undetermined eligibility determination, since Entergy has not performed any additional assessments of these resources since the 2015 Phase 1A Literature Review and Archaeological Sensitivity Assessment of the River Bend Station was conducted.

Additional assessments of NRHP-eligibility resources or undetermined eligibility resources would only occur if land disturbing activities occurred in the area of the resource. Entergy's current plans are to avoid these areas.

RAI-HC-6

Question:

Provide consultation letters and other communication documents indicating correspondence to and from the Louisiana SHPO and to and from Federally recognized Indian tribes which have ancestral or historical ties to the project area and surrounding lands that you have received or sent since submittal of the ER or not included in the ER. Additionally, has any contact been made with local historical societies or other local organizations with an interest in historic preservation? If so, please describe.

Response:

There have been no additional consultation letters or communication documents sent or received since submittal of the ER. In addition, Entergy has not made contact with local historical societies or other local organizations with an interest in historic preservation.

6. MICROBIAL HAZARDS (MH)

RAI MH-1

Question:

Provide a copy of any correspondence, such as emails or phone summaries, with State health-related agencies regarding the potential for RBS's thermal effluent to promote the growth of thermophilic microorganisms in the Mississippi River.

Response:

Email correspondence with the Louisiana State Epidemiologist (Louisiana Department of Health and Hospitals) regarding the potential for RBS's thermal effluent to promote

the growth of thermophilic microorganisms in the Mississippi River is provided on the enclosed DVD. File name is "Entergy 2015p_Response RFI ENTG03_09_02_001_MicrobioHazards_28Sep15."

7. SOCIOECONOMICS (SOC)

RAI-SOC-1

Question:

Provide Entergy Louisiana, LLC property tax payment information for the year 2016, if available, similar to the data provided in Table 3.8-4 of the ER.

Response:

| Year | Entergy Louisiana, LLC Property Taxes | West Feliciana Parish Revenues | Percent of Parish Revenue |
|------|---------------------------------------|--------------------------------|---------------------------|
| 2016 | \$14,204,265 | \$22,540,862 | 63 |

Property taxes paid in 2016 by Entergy Louisiana, LLC were obtained from Entergy's Tax Department. West Feliciana Parish revenues were obtained from the Louisiana Tax Commission's 2016 Annual Report (page 36).

NOTE: As stated in Section 3.8.5 of the RBS ER, "Entergy Louisiana, LLC does not receive separate tax invoices from West Feliciana Parish for power plants." Therefore, tax payments shown in Table 3.8-5 is inclusive of RBS property and non-RBS property.

RAI-SOC-2

Question:

Besides West Feliciana Parish, describe any other sizeable annual support payments (e.g., emergency preparedness fees and payments or fees because of the independent spent fuel storage installation), one-time payments, or other forms of non-tax compensation (if any) provided to local organizations, communities, and jurisdictions (e.g., state, municipalities, townships, villages, incorporated places, and school districts) on behalf of RBS.

Response:

Other sizeable annual support payments made to agencies and parishes on behalf of RBS are listed below.

| Agency | Payment | Purpose |
|---|-----------|---|
| Federal Emergency Management Agency | \$524,814 | Federal Radiological Emergency Preparedness program fee |
| East Feliciana, West Feliciana, East Baton Rouge, West Baton Rouge and Pointe Coupee Emergency Management Offices | \$215,000 | Radiological emergency preparedness program support fees, with East Baton Rouge Parish receiving \$15,000 for maintaining the RBS reception centers |
| Louisiana Department of Environmental Quality | \$432,696 | Radiological emergency preparedness fees |
| Governor's Office of Homeland Security & Emergency Management | \$62,156 | Radiological emergency preparedness program support fee including radiological instrument calibration |
| Mississippi Emergency Management Agency | \$46,200 | Operation and support of 24 hour radiological emergency preparedness hotline fee, and some limited radiological emergency preparedness support |

RAI-SOC-3

Question:

Provide information about any anticipated changes in state and local tax laws, tax rates or tax payment adjustments that could result in notable future increases or decreases in property taxes or other tax payments on behalf of RBS.

Response:

Entergy cannot currently predict how changes in state and local tax laws, tax rates or tax payment adjustments could impact future increases or decreases in property taxes or other tax payments on behalf of RBS.

8. SPECIAL STATUS SPECIES and HABITATS (SS)

RAI-SS-1

Question:

At what Mississippi River Mile (RM) does effluent from Outfall 001 discharge into the Mississippi River?

Response:

Outfall 001 effluent (Cooling Tower Blowdown) discharges into the Mississippi River at approximately RM 262.4.

RAI-SS-2

Question:

The ER provides an estimate of the combined thermal plume for RBS and the proposed River Bend Station, Unit 3. Has Entergy or its contractors estimated the thermal plume of RBS alone? If so, please provide a written description of the thermal plume or copies of studies or reports in which the thermal plume is characterized.

Response:

There have been no studies conducted associated with estimating only the RBS thermal plume. Therefore, there are no available studies or reports.

RAI-SS-3

Question:

Section 3.6.11.1.2 of the ER states that pallid sturgeon may occur in the action area, but the ER does not describe any occurrence records or positive identifications of pallid sturgeon in the vicinity of RBS. On what information did Entergy base its determination that pallid sturgeon may occur in the action area? Did Entergy identify any surveys, studies, or other reports that document the occurrence of pallid sturgeon in the vicinity of RBS? If so, please provide copies of such reports.

Response:

Entergy was unable to locate any surveys, studies or other reports that document the occurrence of pallid sturgeon in the vicinity of RBS during the preparation of the ER. The statement could occur stated in Section 3.6.11.1.2 of the RBS ER was based on the fact that the Louisiana Department of Wildlife and Fisheries list this species as potentially being present in Point Coupee and West Feliciana parishes. In addition, the USFWS species profile sheet for the pallid sturgeon shows that it could inhabit the Missouri and Mississippi rivers and some tributaries from Montana to Louisiana. Therefore, due to uncertainty if the species were present or not, Entergy elected to state "could occur" as a conservative measure.

RAI-SS-4

Question:

Sections 3.6.11.1.2 and 4.6.3.1.3.2 of the ER state that the pallid sturgeon may occur in the RBS action area. However, the ER does not evaluate specific effects on this species. Provide a written evaluation of the effects of the following on pallid sturgeon: (1) impingement and entrainment; (2) thermal effects; (3) exposure to radionuclides and other contaminants; and (4) reduction in available prey due to impingement and entrainment or thermal impacts to prey species. Please note that although the 2013 GEIS concludes that the effects of impingement, entrainment, thermal effluent, and other effects to aquatic resources would be SMALL for plants with cooling towers, effects on federally listed threatened and endangered species must be assessed site-specifically, and therefore, a species-specific analysis of these potential effects is appropriate.

Response:

The evaluation of the effects of (1) impingement and entrainment; (2) thermal effects; (3) exposure to radionuclides and other contaminants; and (4) reduction in available prey due to impingement and entrainment or thermal impacts to prey species on aquatic species are addressed in Section 4.3 of RBS's New and Significant Information Review Report. This report is provided on the enclosed DVD. File name is "Entergy 2016p_RBS LRA ER New & Significant Summary_23May16." In addition, Section XIII (Endangered Species) of the 2011 RBS LPDES Permit LA0042731 Fact Sheet states the following:

"The receiving waterbody, Sub segment 070201 of the Mississippi River Basin, has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which is listed as a threatened and/or endangered species. Therefore, this draft permit was submitted to the FWS for review in accordance with a letter dated 04/01/2011 from Rieck (FWS) to Nolan (LDEQ). The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. Therefore, the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat".

The 2017 RBS LPDES Permit LA0042731 Fact Sheet also made the same conclusions. Therefore, Entergy concludes that RBS's operation is not likely to have an adverse effect on the pallid sturgeon as it relates to (1) impingement and entrainment; (2) thermal effects; (3) exposure to radionuclides and other contaminants; and (4) reduction in available prey due to impingement and entrainment or thermal impacts to prey species on aquatic species.

The Fact Sheets associated with the 2011 and 2017 LPDES permits can be obtained from the Louisiana Department of Environmental Quality's (LDEQ) electronic data management system (EDMS).

Submit the following for docketing: Entergy. 2016p. New and Significant Information Review—River Bend Station License Renewal Environmental Report. May 2016.

Response:

Entergy 2016p reference is provided on the enclosed DVD. File name is "Entergy 2016p_RBS LRA ER New & Significant Summary_23May16."

9. SURFACE WATER RESOURCES (SW)

RAI-SW-1

Question:

Provide a summary of LPDES Discharge Monitoring Report (DMR) data (avg. max., and min. as applicable), itemizing monitored parameters for each outfall, for the last 3 years, and inclusive of 2017 year to date.

Response:

A tabular summary of RBS's LPDES Discharge Monitoring Report data reported in 2014, 2015, 2016, and 2017 year-to-date is provided on the enclosed DVD. File name is "RBS DMR Summary_2015_Sep17."

RAI-SW-2

Question:

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 2015 and through 2017 to date. Include self-reported violations and/or noncompliant conditions identified in Entergy's corrective action system. Provide copies of relevant correspondence to and from the responsible regulatory agencies.

Response:

Section 9.3 of the RBS ER already captures Notice of Violations through 2015 while Table 9.1-3 of the RBS ER captures LPDES permit nonconformances through 2016. Therefore based on review of condition reports from January 2016 through October 2017 that would document instances such as this, there have been no NOVs or spills, leaks, or other inadvertent releases (e.g., petroleum products, chemicals, or radionuclides) since 2015. Regarding nonconformance notifications to LDEQ since 2016 as it relates to the RBS LPDES permit, there were four reported notifications as shown below. These notifications are included on the enclosed DVD. File names are "Outfall 201 (January 2017)," "Outfall 101 (June 2017)," "Outfall 201 (June 2017)" and

"Outfall 101 (September 2017)." These notifications can also be viewed on LDEQ's EDMS.

| LPDES Outfall | Noncompliance | Date |
|---------------|--|----------------|
| 201 | Unauthorized discharge: Sanitary wastewater spill from a temporary tank at lift station. | January 2017 |
| 101 | Sample Hold Time: Allowed hold time for total suspended solids sample analysis exceeded. | June 2017 |
| 201 | Missed Sample: Quarterly sample was not taken prior to the end of the second quarter. | June 2017 |
| 101 | Oil & Grease Exceedance: Daily maximum limit exceeded. | September 2017 |

RAI-SW-3

Question:

Provide a brief description of the purpose and project scope to permanently replace the now abandoned liquid radwaste discharge lines to Outfall 101 (as referenced in Section 3.5.4.2.1 of the ER) as well as the current temporary aboveground line. Summarize the associated construction impacts and modifications and provide project start date and estimated completion date and identify when the original below-ground discharge lines were abandoned and when the temporary above-ground pipeline was first installed.

Response:

An exterior portion of the line associated with the now abandoned liquid radwaste discharge lines was believed to be susceptible to microbiologically induced corrosion (MIC), because the piping material was carbon steel. As a result, in 2012 RBS abandoned the liquid radwaste discharge lines and installed a temporary aboveground liquid radwaste discharge line.

A permanent plant modification replaces the existing and temporary lines with approximately 100 feet of 2-inch diameter piping and approximately 1,000 feet of 4-inch diameter piping. The new liquid waste system piping will utilize the existing liquid waste system/service water pipe routing and existing pipe supports, where possible, for the portion of piping inside the piping tunnels. A new engineered trench configuration will be installed for the exterior portion of piping in the site yard, from the Turbine Building to the circulating water system blowdown pit. Stainless steel pipe will be used for the in-plant piping and heat fusion joined High Density Polyethylene pipe will be used for the exterior piping that is routed inside the concrete trench for maintenance/inspection purposes.

The existing buried portion of the abandoned radwaste discharge line will be filled with a solid material to permanently seal it to prevent any future leakage. The project start

date to permanently replace the now abandoned liquid radwaste discharge and temporary aboveground liquid radwaste discharge lines was initially funded for the engineering review in 2015, and the anticipated project completion date is in December 2017.

Request:

Submit the following for docketing

1. RBS. 2013a. River Bend Station LPDES Permit LA0042731, Stormwater Pollution Prevention Plan, Revision 3. July 24, 2013
2. RBS. 2013d. River Bend Station Spill Prevention, Control and Countermeasure Plan (SPCC), Revision 15. July 24, 2013
3. USACE NOD-23 general permit, issued August 2017, including Entergy's permit renewal application.
4. Entergy. 2017. River Bend Station Discharge Monitoring Data Summary 2014 – August 2017. (Filename "RBS DMR Summary_2015_Aug17" in Surface Water CERTREC subfolder)

Response:

1. RBS 2013a reference is provided on the enclosed DVD. File name is "RBS 2013a_RBS StormwaterPollutionPrevention Plan_r3_2013."
2. The RBS Spill Prevention, Control and Countermeasure Plan is provided on the enclosed DVD. However, the revision status of this document has changed from Revision 15 to Revision 17. Therefore, the most current revision (Revision 17) is being provided. File name is "RBS Spill Prevention Control Countermeasure Plan_r17."
3. USACE NOD-23 general permit and permit renewal application is provided on the enclosed DVD. File names are "USACE NOD-23 General Permit_2017" and "USACE NOD-23 General Permit_Renewal Application", respectively."
4. River Bend Station Discharge Monitoring Data Summary 2014 – August 2017 is provided on the enclosed DVD. However, Entergy has also included September 2017 data. File name is "RBS DMR Summary_2015_Sep17."

10. TERRESTRIAL RESOURCES (TR)

RAI-TR-1

Question:

Section 1.2 of EPRI's 2002 Ecological Asset Value Development Report states that 3,000 acres of the RBS site were designated as a Natural Area in 1993. However, the ER states that 550 acres were designated as a Natural Area. Please explain this discrepancy and clarify which of the two acreages are correct and in what year the Natural Area was designated.

Response:

The RBS natural area was designated a preservation area within the Louisiana Natural Areas Registry in 2004. The designation of 3,000 acres in the EPRI 2002 report was based on the entire RBS property. However, this report was never finalized. Based on conversation with Entergy's Real Estate group, the Louisiana Natural Heritage and EPRI concluded that the only area of interest on the RBS property was a 550-acre plot that is shown in Figure 3.1-3 of the RBS ER. This final determination was published in a February 17, 2005 newsletter issued by the Louisiana Department of Wildlife and Fisheries (LDWF). Therefore, the 550-acre designation that is currently shown in the RBS ER is correct. The LDWF newsletter is provided on the enclosed DVD. File name is "RBS Natural Area."

11. WASTE MANAGEMENT (WM)

RAI-WM-1

Question:

Since RBS is subject to the reporting provisions of 40 CFR Part 110, 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 for the 5 year period from 2011 to 2015: Have there been any reportable spills which would trigger this notification requirement since the ER was written?

Response:

Based on review of condition reports from January 2016 through October 2017 that would document discharges of oil at the site and associated corrective actions, there have been no spills that has triggered the reporting provisions of 40 CFR Part 110 since submittal of the RBS ER.

RAI-WM-2

Question:

RBS is subject to the reporting provisions of Louisiana Environmental Regulatory Code, LAC 33.I Chapter 39, which requires that any release of oil in a quantity of 42 gallons (1 barrel) or greater to the environment be reported to the Louisiana Department of Public Safety and the LDEQ. In section 9.5.1.5 of the ER, the applicant discusses these spills for the 5 year period of 2012-2016: Have there been any reportable spills which would trigger this notification requirement since the ER was written?

Response:

Based on review of condition reports generated during 2017 that would document discharges of oil at the site and associated corrective actions, there have been no

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spills that has triggered the reporting provisions of Louisiana Environmental
Regulatory Code, LAC 33.I Chapter 39 since submittal of the RBS ER.