General Information
Lake Catherine Plant is located in Hot Spring County, Arkansas on a peninsula on the east shore of Lake Catherine, approximately three-quarters of a mile upstream from Remmel Dam. The station currently operates under NPDES Permit Number AR0001147 and consists of four gas-fired units. Units 1 and 2 have a capacity of 47 megawatts (MW) each. Unit 3 has a capacity of 100 MW while Unit 4 is approximately 547 MW. Unit 4 is currently classified as peaking annual dispatch (PAD) which means it can be called on to operate at any time. Units 1, 2 & 3 have been placed in extended reserve shutdown (ERS) status. Entergy Lake Catherine plant is subject to the Phase II final regulations 316(b) of the Clean Water Act, 40 CFR 125.94(a)(1), for cooling water intake structures. Since the facility is located on a lake, it is subject to only the impingement mortality goals under the rule. The Department granted Entergy’s request for a compliance schedule (letter dated February 14, 2006) that extends the deadline for submittal of the required Compliance Demonstration Study and associated cooling water intake design information, as described in 40 CFR 122.21 (r) to no later than January 7, 2008, 40 CFR 125.95 (a)(2)(ii).

Wastewater Production and Treatment
Point source effluent at Entergy’s Lake Catherine Plant consists of once through cooling water (Outfalls 001 & 002), low-volume wastewater Outfall (01A), oil/water separator wastewater (Outfall 003) and metal cleaning wastewater (Outfall 004). The NPDES outfall locations are depicted in Attachment B and a schematic of the wastewater flow (process flow diagram) is shown in Attachment C. The following information describes wastewater contributing to each outfall.

Outfall 001 – Once Through Cooling Water
Once through cooling water removes waste heat produced during the generation of electricity from the condenser and returns to Lake Catherine by way of the discharge canal. The maximum circulating cooling water discharged from Unit 4 is 425 million gallons per day (MGD). Once through cooling water for Unit 4 is treated with a microbiocide at the condenser for up to two hours per day to control biofouling. See attached Material Safety Data Sheets.

The Lake Catherine Plant has traveling screens installed at Outfalls 001 and 002, which are used to remove leaves, sticks, fish, mussels, mussel shells and other objects carried into the cooling water from Lake Catherine. The screened material is returned to the surface water source by a screen backwashing process.
Unit 4 is currently not in operation, however, the recirculating water pumps for Unit 4 are turned on periodically for maintenance and biomonitoring sampling. Recent discharges from Outfall 001 were not representative of normal process wastewaters. Therefore, no samples of these discharges were collected for the renewal application. Once Unit 4 returns to service, a representative sample of process wastewaters will be collected and analyzed for the required parameters.

**Outfall 01A – Low Volume Wastewater**
Low-volume wastewater is made up of boiler blowdown from Units 1, 2, 3, and 4, filter backwash from Unit 4, and regeneration wastewater. Continuous boiler blowdown from Unit 4, which cannot be reprocessed by the make-up demineralizer, and all blowdown from Units 1, 2, and 3 is captured in a flash tank or pipe and discharged through Outfall 01A. The average boiler blowdown for Outfall 01A is 0.145 MGD when Unit 4 is running. The Unit 4 pre-treatment filters are backwashed once per 12 hour shift. The filter backwash is directed to the water treatment plant sump, which discharges to the lake through Outfall 01A. The average filter backwash flow is 0.086 MGD. The cation/anion trains of the Unit 4 make-up demineralizer are each regenerated every 18-24 hours. All regeneration wastewater is collected in a neutralization tank. Acid or caustic is added to the tank to compensate for the excess acidity or alkalinity in the regeneration waste. An air mixing system is used to mix the neutralizing tank contents and to blend in the acid and caustic. Once the contents have been neutralized, it is discharged to the lake via the neutralizing tank sump pumps. The average wastewater flow is 0.02 MGD.

**Outfall 002 – Once Through Cooling Water**
Once through cooling water for Units 1, 2, and 3 has a maximum discharge flow of 229.95 MGD. H-901G is used for algae and biofouling control. Once through cooling water returns to Lake Catherine by way of a discharge canal.

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Units 1, 2, and 3 have been placed in Extended Reserve Shutdown (ERS) status. Outfall 002 has not discharged since June 2005. Therefore, no sample was analyzed for the renewal application. If any of these units returns to service, a representative sample of process wastewaters will be collected and analyzed for the required parameters.

**Outfall 003 – Oil Water Separator**
The Oil/Water Separator receives wastewater from floor drains, building sumps and equipment drains within the turbine areas for Units 1, 2, 3, and 4. As process waters enter this system, any trapped oil is stripped from the wastewater and allowed to float to the upper portion of the vessel, while the oil free water is allowed to re-enter the environment through Outfall 003. Outfall 003 has an average discharge flow of 0.317
MGD. H-300 (microbiocide) is used as needed to treat bacterial growth in the oil water separator. Please refer to the Material Safety Data Sheet for additional information.

Outfall 003 routinely discharges even when all units are not operating. However, since none of the units are currently operating, any samples collected of Outfall 003 discharges would not be representative of normal operating conditions. Therefore, no samples were analyzed for the renewal application. If any of the units return to service, a representative sample of process wastewaters will be collected and analyzed for the required parameters.

Outfall 004 – Metal Cleaning Waste
It is not uncommon for a boiler to be operated for 12 – 15 years (or longer) without it being scheduled for cleaning. The last chemical cleaning that was conducted at Entergy’s Lake Catherine Plant was performed on Unit 4 in 1999. Prior to the 1999 cleaning, Unit 4 was chemically cleaned in 1970 as part of the original unit startup. As a result of these infrequent cleanings, no sampling or analytical data is available for Outfall 004. However, the facility would like to retain Outfall 004 as a viable point source in the permit.