



Gautam Sen  
Manager Regulatory Affairs

April 11, 2011

RA 11-0127

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Subject: Docket No. 50-482: 2010 Annual Environmental Operating Report

Gentlemen:

Enclosed is the Annual Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Renewed Facility Operating License NPF-42, Appendix B, "Environmental Protection Plan." This report covers the operation of WCGS for the period of January 1, 2010, through December 31, 2010.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4175, or Ms. Diane Hooper at (620) 364-4041.

Sincerely,

A handwritten signature in black ink that reads "Gautam Sen". The signature is fluid and cursive.

Gautam Sen

GS/rlt

Enclosure: 2010 Annual Environmental Operating Report (11 pages)

cc: E. E. Collins (NRC), w/e  
J. R. Hall (NRC), w/e  
G. B. Miller (NRC), w/e  
Senior Resident Inspector (NRC), w/e

IE25  
NRR

WOLF CREEK GENERATING STATION  
ANNUAL ENVIRONMENTAL OPERATING REPORT 2010

ENVIRONMENTAL MANAGEMENT ORGANIZATION  
WOLF CREEK NUCLEAR OPERATING CORPORATION  
P.O. BOX 411  
BURLINGTON, KANSAS 66839  
April 2011

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## **1.0 INTRODUCTION**

The 2010 Annual Environmental Operating Report is being submitted in accordance with the objectives of the Environmental Protection Plan (EPP), Appendix B to the Renewed Facility Operating License NPF-42. The purpose of this report is to demonstrate that the Wolf Creek Generating Station (WCGS) operated during 2010 in a manner protective of the environment.

## **2.0 ENVIRONMENTAL MONITORING**

### **2.1 AQUATIC [EPP Section 2.1]**

#### **2.1.1 Impacts of Water Withdrawal on the Neosho River**

There were no adverse impacts to the Neosho River due to water-use conflicts because drought conditions were not present during 2010. The WCGS Final Environmental Statement/Operating License Stage (FES/OLS, Section 5.6), NUREG-0878, postulated that makeup water withdrawal of 41 cubic feet per second (cfs) during drought conditions would extend the duration and severity of low-flow conditions below John Redmond Reservoir (JRR). This, in turn, was expected to reduce riffle habitat that would adversely affect the Neosho madtom, a federally listed threatened species.

Actual makeup water withdrawals during 2010 are summarized as follows:

<b>Source</b>	<b>Period</b>	<b>Duration (days)</b>	<b>Average Pump Rate (cfs)</b>	<b>Average River Flow at Pump (cfs)</b>
<b>Neosho River</b>	None in 2010	0	n/a	n/a
<b>JRR Storage</b>	11/1/10–12/11/10	41	117	377

For comparison purposes, the 41 cfs assessed above refers to a continuous annual average from JRR storage. The actual 2010 pumping from JRR storage of 117 cfs for 41 days was equivalent to 13 cfs, when calculated on a similar, annual basis. This was lower than the 41 cfs evaluated as impacting the Neosho River during drought conditions. Consequently, no adverse impacts due to water-use conflicts occurred during 2010.

#### **2.1.2 Oxidizing Biocide Discharges to Coffey County Lake**

Circulating Water System (CWS) Discharge:

There were no adverse impacts observed due to biocides during 2010. Biocide use at WCGS was predicted to cause periodic, appreciable mortality in a conservatively estimated 40 acres of the discharge area to Coffey County Lake (CCL). However, these impacts were not expected to meaningfully affect the overall biological productivity of the lake (FES/OLS, Section 5.5.2.2). The postulated biocide levels expected to cause the impacts were from 0.68 to 1.08 mg/l of total residual chlorine at the CWS discharge (FES/OLS, Section 4.2.6.1).

Actual biocide use during 2010 averaged 0.05 mg/l total residual oxidant (TRO). This level was much lower than those evaluated in the FES/OLS, thus impacts were considered to be correspondingly less. The Kansas Department of Health and Environment (KDHE) also requires, through the WCGS National Pollutant Discharge Elimination System (NPDES) permit, that biocide discharges for the CWS be less than 0.2 mg/l TRO, for a maximum of two hours per day. These requirements were not exceeded during 2010. Consequently, biocide impacts to CCL have been less than initially evaluated in the FES/OLS, and NPDES compliance assures that this will continue.

The WCGS NPDES permit limits biocide discharges to levels lower than postulated in the FES/OLS. This permit was administered by the KDHE. The biocide level for the CWS was limited to a maximum of 0.2 mg/l, total residual oxidant (TRO), for a maximum of two hours per day. Compliance during 2010 was 100 percent. The oxidizing biocide daily average for 2010 was TRO was 0.05 mg/l.

#### Essential Service Water System (ESWS) Discharge:

From January through August 2010, a continuous diversion of approximately 38 cfs of WCGS Service Water System (SWS) flow to the ESWS was completed to provide microbiologically induced corrosion protection and sedimentation control. This flow was increased to approximately 54 cfs beginning during September through December 2010. The KDHE established a 1.0 mg/l TRO limit for the SWS diversion through the ESWS. Actual measurements of TRO averaged 0.12 mg/l, and compliance with the NPDES limit in 2010 was 100 percent. Based on this information, permitted biocide discharges did not have appreciable effects on the cooling lake environment.

#### 2.1.3 Cold Shock

In the event of a rapid decline in plant power level during winter, fishes attracted to the WCGS heated discharge could experience mortality due to a quick reduction in body temperature (cold shock). In reference to licensing document evaluations, the WCGS EPP Section 2.1 (c) states, "Cold shock effects on fish due to reactor shutdowns could cause significant mortality to aquatic species in the cooling lake."

Fish mortality due to cold shock was not observed in CCL following declines in plant power level. Five such plant shutdowns or power level decreases occurred. Following are the dates and durations of the power level changes:

<u>Date</u>	<u>Duration</u>
1/26/10 to 1/27/10	13 hours
3/2/10 to 3/7/10	5 days, 9 hours
3/8/10 to 3/10/10	1 day, 22 hours
10/5/10 to 10/20/10	14 days, 16 hours
12/6/10 to 12/9/10	2 days, 21 hours

Due to the absence of fish mortality following the plant power changes, significant impacts to the CCL from potential cold shock did not occur.

#### **2.1.4 Impingement and Entrainment**

Impacts of entrainment and impingement of fish and aquatic organisms due to WCGS cooling water pumping were projected to be significant, as indicated in the WCGS EPP, Section 2.1 (d). EPP Section 2.1 states that the NRC relies on the State of Kansas for determination of the need for monitoring entrainment and impingement impacts. The State of Kansas requested WCGS to monitor impingement impacts for the Clean Water Act (CWA) 316 (b), Phase II regulations. This monitoring has been completed, and results have been submitted to the KDHE. Entrainment monitoring has not been required. No significant adverse impacts to the CCL fishery were identified because of impingement. Fishery management at WCGS has succeeded in controlling impingement, and minimizes potential impacts of impingement to the fishery.

#### **2.1.5 Impacts of Coffey County Lake Discharges to the Neosho River**

The WCGS NPDES permit requires that CCL discharges be sampled on the first day of each discharge and weekly thereafter until the end of each respective discharge. A discharge limit was set for pH (NPDES Outfall 004). Lake discharges typically can occur at the Blowdown Spillway and Service Spillway. During 2010, no discharges occurred at the Blowdown Spillway. There were no NPDES violations from discharges from the Service Spillway, and no detrimental effects were expected to the Neosho River water quality.

### **2.2 TERRESTRIAL [EPP Section 2.2]**

#### **2.2.1 Control of Vegetation in the Exclusion Zone**

The composition and structure of vegetation in the 453 hectare (1120 acre) exclusion zone were selectively controlled to be compatible with the function and security of station facilities. Most areas in the immediate vicinity of the power block have been planted and maintained in a lawn-type condition. Other areas within the exclusion area have been mowed for security and aesthetic purposes. There were no significant changes in overall vegetation management of the exclusion zone during 2010.

#### **2.2.2 Vegetation Buffer Zone Surrounding Coffey County Lake**

To create a buffer zone of least 500 acres around CCL, as specified in EPP Section 2.2 (b), agricultural production activities were curtailed in 1980 within a border ranging from approximately 200-400 feet adjacent to the lake shoreline. This area is approximately 1440 acres. Previously grazed or hayed native grass areas were left undisturbed. Previously cultivated lands were allowed to advance through natural succession stages, or native grasses were established in these areas. Land management activities included controlled burning to enhance and/or maintain the designated buffer zone with a naturally occurring biotic community.

#### **2.2.3 Herbicide Use for Maintenance of WCGS Structures**

Herbicides were used on transmission corridors, gravel areas, railroad easements, and various land areas associated with WCGS. Application rates

followed label instructions. All herbicides used were registered by the Kansas Department of Agriculture when purchased. No environmental impacts from herbicide treatment of WCGS facilities were identified. A summary of herbicide application is provided below.

The transmission lines associated with WCGS include the Wolf Creek-Rose Hill and a small portion of the Wolf Creek-Benton line. Mechanical tree removal was completed on the Wolf Creek-Rose Hill corridor, with limited herbicide use. Stump treatment herbicide included Pathway (EPA Reg. No. 62719-31).

In areas where bare-ground control was desired, herbicides mixed per label instruction of either Karmex DF (EPA Reg. No. 352-508), Oust (EPA Reg. No. 352-401), or Sahara DG (EPA Reg. No. 241-372) were used. Roundup Ultra (EPA Reg. No. 524-475), or comparable substitutes, were also used for problem weed areas. These herbicides were used on various gravel areas, including the switchyard, protected area boundary, meteorological tower, storage tank berms, railroad beds, and storage yards.

Noxious weed and nuisance tree/brush growth were controlled with, Tordon RTU (EPA Reg. No. 62719-31), Remedy (EPA Reg. No. 62719-70), Weed Pro 2,4-D (EPA Reg. No. 10107-31), and Roundup Ultra. Areas treated included the dam, railroad easements, and selected grassland areas around the cooling lake.

#### **2.2.4 Waterfowl Disease Contingency Plan and Monitoring**

A waterfowl disease contingency plan was maintained to provide guidance for station biologists in the event of suspected or actual disease outbreaks. The contingency plan lists appropriate federal and state wildlife agency contacts to be made by WCNOG in the event of such problems. During routine environmental monitoring and surveillance activities taking place over this reporting period, no waterfowl mortality attributable to disease pathogens was identified.

#### **2.2.5 Fog Monitoring Program [EPP Subsection 4.2.1]**

Fog monitoring concluded that operation of WCGS did not appreciably increase fogging incidents from that measured before operation. Visibility monitoring was initiated in December, 1983, and continued through 1987. The purpose of this study was to evaluate the impact of waste heat dissipation from CCL on fog occurrence along U. S. 75 near New Strawn, Kansas. The program was required through one year of commercial operation that started in September 1985. Upon conclusion of 1987 data collection, sufficient information was available to evaluate cooling lake fogging, and all commitments relevant to fog monitoring had been satisfied.

During 2010, there were no reports of fogging incidents in the vicinity of nearby U. S. 75 from individuals or local agencies responsible for traffic safety. Periodic fogging likely caused by the cooling lake did occur during the winter months of 2010, but was restricted to the plant site and immediate vicinity of the lake. No mitigation actions or further monitoring were warranted.

#### **2.2.6 Wildlife Monitoring Program [EPP Subsection 4.2.2]**

A wildlife monitoring program was initiated in 1982 to monitor and assess waterfowl, waterbird, and bald eagle usage of CCL. This program included

transmission line collision surveys to assess collision mortality and determine potential mitigation needs. This wildlife monitoring program was to continue for at least two years following WCGS start-up (FES-OLS Section 5.5.1.2), which occurred in September 1985. Transmission line surveys were conducted from 1983 through 1988. Monitoring of lake use by waterfowl, waterbirds, and bald eagles continued through 1996. By then, sufficient data had been collected to determine waterfowl, waterbird, and bald eagle usage of CCL. Consequently, the scope of the wildlife monitoring program was reduced. The current program consists of reviewing CCL waterfowl and bald eagle survey data collected by the Kansas Department of Wildlife and Parks (KDWP). If review of the KDWP's data indicates that usage has increased from that previously documented, then additional monitoring may be initiated if warranted. Any such additional monitoring may include collision mortality monitoring.

Review of waterfowl and bald eagle monitoring data from the KDWP indicate that only snow goose number increased appreciably during 2010. However, snow goose concentrations were in the southern portions of CCL remote from transmission lines, thus not increasing potential for significant collision impacts. No disease outbreaks or widespread crop depredation attributable to waterfowl use of CCL were observed. No changes to the wildlife monitoring program were warranted.

#### **2.2.7 Land Management Program [EPP Subsection 4.2.3]**

Land management activities on all company-owned lands except within the 453 hectare (1120 acre) WCGS exclusion area were designed to achieve balances between agricultural production and conservation values. An annual management plan addressed needs and accepted techniques for land maintenance, soil conservation, and wildlife management. These included the repair or construction of soil conservation structures, wetland areas, and permanent vegetative covers. An environmental education area was improved and maintained as part of the land management program. The land management program continued to balance agriculture production and conservation values.

### **3.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS**

#### **3.1 PLANT DESIGN OR OPERATION CHANGES [EPP Section 3.1]**

Plant design or operational changes were evaluated for potential significant affects to the environment, the presence of which would constitute an unreviewed environmental question (UEQ) per the EPP. Evaluations completed during 2010 demonstrate that significant impacts to the environment would not occur, and that no changes constituted a UEQ. Below are brief descriptions of these evaluations completed in 2010.

##### **1. Heating, Ventilation and Air Conditioning (HVAC) Replacement**

An HVAC unit replacement was evaluated and determined not to involve a UEQ, or impact the EPP. The HVAC was for a battery room in the turbine building. The evaluation verified that the replacement system would use R-410A refrigerant compliant with EPA regulations. Consequently, a UEQ did not exist.



## 2. New Power Supply Building

Installation and operation of a new uninterruptible power supply building was evaluated and determined not to involve a UEQ, or impact the EPP. The building was placed onsite in an area previously disturbed during plant construction. The HVAC for the building would use R-410A, a refrigerant compliant with EPA regulations. Consequently, a UEQ did not exist.

## 3. Utility Core Drilling

Utility core drilling was evaluated and determined not to involve a UEQ, or impact the EPP. Minimal excavation and core drilling for underground utilities from the Security Building was evaluated. The project was confined to areas previously disturbed during plant construction. There were no environmental regulations found applicable. Consequently, a UEQ did not exist.

## 4. Turbine Rotor Replacement

Turbine rotor replacement was evaluated and determined not to involve a UEQ, or impact the EPP. Potential impacts to the environment were evaluated for replacement of the high and low pressure turbines scheduled for 2011. The modifications include new turbine rotors, inner casings and diaphragms. Potential environmental interfaces included changes to the heated CWS discharge and a potential change to a liquid effluent.

Turbine replacement was expected to slightly lower the temperature of the cooling water discharged from the main condenser to the CCL. Consequently, significant increases to impacts previously evaluated for thermal effluents would not result.

The new turbine rotors would require steam cleaning and waste waters were evaluated for impacts to NPDES permitted effluents. Triethanolamine was expected to be within the cleaning wastewater. The KDHE was consulted, and it was determined with protective measures to be acceptable to discharge the cleaning waste to an existing NPDES outfall.

In summary, evaluation of the turbine rotor replacement project found that thermal impacts to CCL would not be greater than previously evaluated, and that wastewater effluent changes were acceptable for NPDES permit discharge. Consequently, the project did not involve a UEQ.

## 5. Security Prescreening Building Construction

The construction of a new Security Prescreening Building was evaluated and found not to involve a UEQ or impact the EPP. Environmental interfaces evaluated included use of temporary emission sources, construction waste disposal, HVAC refrigerant management, and storm water runoff changes. Emissions from temporary equipment used to construct the building required emission tracking to comply the WCGS Air Operating permit administered by the KDHE. The project included assurances to track such emissions.

Asphalt, concrete and soil removed for the project was to be disposed of at the KDHE authorized construction spoil area at WCGS. Management of the HVAC

refrigerant was to be included in the WCGS refrigerant management system used to comply with EPA regulations. Finally, the new building would not increase the impervious surfaces at WCGS, change the path of existing storm water, or expose greater than one acre of soil to storm water, thus would not change the volume or makeup of storm water at WCGS. The building was to be built in an area previously disturbed by plant construction. Consequently, because construction was compliant with all environmental regulatory requirements, and would not disturb areas outside those previously disturbed during plant construction, a UEQ did not exist.

#### 6. ESW Security Upgrades

New construction involved with security upgrades at the Essential Service Water (ESW) Pumphouse was evaluated and determined not to involve a UEQ, or impact the EPP. Evaluated were roadways, land barriers, dike and water barrier systems. Roadways and land barrier construction would not expose greater than one acre thus would be compliant with KDHE storm water regulations. The dike into CCL necessary for the water barrier system was authorized by the U.S. Army Corp of Engineers. A Water Quality Protection Plan was completed as part of this evaluation. The area was also in an area previously disturbed during plant construction. Consequently, because all environmental permitting and conditions were met, and disturbance was confined to an on-site area, a UEQ was not present.

#### 7. Security Observation Post Construction

Construction of new security observation posts were evaluated and determined not to involve a UEQ, or impact the EPP. They were located in areas previously disturbed during plant construction, and construction would not expose greater than one acre to storm water. Compliance with refrigerant management and engine emission tracking during construction would meet regulatory requirements. Consequently, a UEQ would not be present.

#### 8. Installing Underground Utilities

Installing conduits, ductbanks, and hand holes to support control and power cables was evaluated and found not to pose a UEQ, or impact the EPP. This was based on all work being within areas previously disturbed during plant construction, and compliance with applicable environmental regulations. Evaluation demonstrated that temporary air emission sources would be accounted for, that construction debris would be disposed of properly, and that groundwater sampling contingencies were in place. Consequently, the project would not involve a UEQ.

#### 9. Roof Replacement

Replacing the roofs on the Emergency Diesel Building, Radwaste Building Circulating Water Screenhouse and Fuel Oil Pump House was evaluated and determined not to involve a UEQ, or impact the EPP. The evaluation addressed solid waste issues, including asbestos testing. Also addressed were temporary air emission source and site chemical control procedures. Consequently, a UEQ was not present.

#### 10. HVAC Unit Replacement

Evaluation of an HVAC unit in the Auxiliary Building determined that a UEQ did not exist, or impact the EPP. The unit was to use R-410A, thus was compliant with EPA regulation. Refrigerant management procedures were also indicated. Consequently, a UEQ per EPP criteria did not exist.

#### 11. Installing Underground Electric Utilities

Installation of underground conduits, and hand holes to support 480 volt power for ESW sump pumps was evaluated and determined not to involve a UEQ, or impact the EPP. The project would be within areas previously disturbed during plant construction. Included were temporary air emission source accounting, solid waste disposal criteria, and groundwater monitoring contingencies. Consequently, a UEQ did not exist.

#### 12. Protected Area Boundary Upgrades

Construction activities involved with modifying a portion of the Protected Area Boundary were evaluated, and found not to comprise a UEQ, or impact the EPP. All excavation was to be within areas previously disturbed during plant construction, and would be less than one acre. No changes to existing storm water effluents would result. Temporary air emission sources and solid waste disposal considerations were accounted for. Consequently, a UEQ did not exist.

### **3.2 NON-ROUTINE ENVIRONMENTAL REPORTS [EPP Section 5.4.2]**

#### **3.2.1 Submitted Non-routine Reports**

There were no environmental reports involving significant non-routine impacts submitted to the NRC during 2010.

#### **3.2.2 Unusual or Important Environmental Event Evaluations [EPP Section 4.1]**

No unusual or important environmental events that indicated or resulted in a significant environmental impact related to plant operations occurred during 2010.

### **4.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AT WOLF CREEK GENERATING STATION**

#### **4.1 2010 LAND MANAGEMENT ACTIVITIES**

The WCGS Land Management Program achieved a balance of production and conservation values as required in EPP, Section 4.2.3. Beyond regulatory compliance, the program reflected WCNO's dedication to proper stewardship of the natural resources.

The objectives of the Land Management Program were:

1. to conserve and/or improve both agricultural and natural resources;

2. to foster positive relationships with local agricultural and natural resource communities;
3. to enhance, for educational purposes, the natural resources in an Environmental Education Area;
4. to meet license requirements;
5. to maintain rent income at maximum levels while placing the higher priority on the above objectives.

Areas around the CCL shoreline were maintained in a naturally occurring biotic community to comply with Section 2.2(b) of the EPP. Some land areas have been maintained as wildlife habitat or reserved for educational purposes. The remainder of the land has been leased for grazing, hay, and crop production.

#### **4.2. 2010 ZEBRA MUSSEL MONITORING ACTIVITIES**

Zebra Mussels were found in the Neosho River adjacent to the makeup screen house (MUSH) during August, 2010. The mussel was not observed in CCL, however, presence at the MUSH means that it is highly likely that they will be transported to the lake during makeup pumping activities. The objective of the monitoring program was to determine the presence or absence of zebra mussels in the Neosho River and CCL so that appropriate control plans could be initiated to prevent adverse impacts to plant operations.

Anglers launching boats on CCL have reported being on several lakes known to have zebra mussels, thus represent potential transport vectors. Inspection and treatment of these boats before launching was completed in 2010, and have likely prevented introduction into CCL by this means.

Monitoring efforts included planktonic veliger sampling from the Neosho River at the MUSH, and the CCL at the CWSH. Substrate and shoreline searches of CCL were also completed. Settlement monitors were placed and substrate scrapes were conducted at plant structures on the Neosho River and CCL.

#### **4.3 2010 FISHERY MONITORING ACTIVITIES**

Fishery monitoring activities on CCL documented long-term trends and demonstrated that the fishery functioned as desired through 2010. Fish predation pressure on the gizzard shad population continued to prevent excessive shad impingement problems at the circulating water intake. Public angling on the lake did not impact the fishery's function of supporting plant operations. The catch and release philosophy promoted when the lake was opened for the public has been compatible with gizzard shad control objectives.