

WOLF CREEK

NUCLEAR OPERATING CORPORATION

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Manager Regulatory Affairs

April 17, 2007

RA 07-0044

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

Subject: Docket No. 50-482: 2006 Annual Environmental Operating Report

Gentlemen:

Enclosed is the Annual Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Facility Operating License NPF-42, Appendix B. This report covers the operation of WCGS for the period of January 1, 2006, through December 31, 2006.

No commitments are identified in this correspondence. If you have any questions concerning this matter, please contact me at (620) 364-4126, or Ms. Diane Hooper (620) 364-4041.

Sincerely,



Kevin J. Moles

KJM/rt

Enclosure

cc: J. N. Donohew (NRC), w/e
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**WOLF CREEK GENERATING STATION
ANNUAL ENVIRONMENTAL OPERATING REPORT 2006**

**ENVIRONMENTAL MANAGEMENT ORGANIZATION
WOLF CREEK NUCLEAR OPERATING CORPORATION**

**P.O. BOX 411
BURLINGTON, KANSAS 66839**

April 2007

TABLE OF CONTENTS

1.0 INTRODUCTION	3
2.0 ENVIRONMENTAL MONITORING	3
2.1 AQUATIC [Environmental Protection Plan (EPP) Section 2.1]	3
2.1.1 Impacts of Water Withdrawal on the Neosho River.....	3
2.1.2 Oxidizing Biocide Discharges to Coffey County Lake.....	3
2.1.3 Cold Shock	4
2.1.4 Impingement and Entrainment.....	4
2.1.5 Impacts of Coffey County Lake Discharges	5
2.2 TERRESTRIAL [EPP Section 2.2]	5
2.2.1 Control of Vegetation in the Exclusion Zone	5
2.2.2 Vegetation Buffer Zone Surrounding Coffey County Lake	5
2.2.3 Herbicide Use for Maintenance of WCGS Structures.....	5
2.2.4 Waterfowl Disease Contingency Plan and Monitoring.....	6
2.2.5 Fog Monitoring Program [EPP Subsection 4.2.1].....	6
2.2.6 Wildlife Monitoring Program [EPP Subsection 4.2.2]	6
2.2.7 Land Management Program [EPP Subsection 4.2.3].....	7
3.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS	7
3.1 PLANT DESIGN OR OPERATION CHANGES [EPP Section 3.1]	7
3.2 NON-ROUTINE ENVIRONMENTAL REPORTS	7
3.2.1 Submitted Non-routine Reports.....	7
3.2.2 Unusual or Important Environmental Event Evaluations.....	7
3.3 ENVIRONMENTAL NONCOMPLIANCES [EPP Subsection 5.4.1]	7
4.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AT WOLF CREEK GENERATING STATION.....	8
4.1 2006 LAND MANAGEMENT ACTIVITIES.....	8
4.2 2006 ZEBRA MUSSEL MONITORING ACTIVITIES.....	9
4.3 2006 FISHERY MONITORING ACTIVITIES.....	9

1.0 INTRODUCTION

The 2006 Annual Environmental Operating Report is being submitted in accordance with the objectives of the Environmental Protection Plan (EPP), Appendix B to the Facility Operating License NPF-42. The purpose of this report is to demonstrate that the Wolf Creek Generating Station (WCGS) operated during 2006 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

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.

Neosho River flows at Burlington were maintained, and during some periods enhanced, during makeup withdrawal activities. Therefore, there were no adverse impacts to the Neosho River or Neosho madtom habitats attributable to WCGS water withdrawal during 2006. The owners of WCGS have contracted with the Kansas Water Resources Board to pump up to 9.672 billion gallons (41 cfs) of water per calendar year to Coffey County Lake (CCL) from conservation storage within JRR. Makeup pumping activities occurred from September 1 through December 20, 2006. A total of 3.665 billion gallons, or 38 percent of the contracted allotment, was released from JRR to the makeup pumps. Of this amount, 3.561 billion gallons were pumped to CCL. The difference (0.104 billion gallons), though purchased for makeup purposes, flowed downstream in the Neosho River. Slightly higher flows were released from JRR than pumped to ensure contract conditions are met and downstream river flows are maintained during makeup pumping activities. Consequently, WCGS makeup pumping provided a positive influence on Neosho River flows, which can be beneficial for aquatic species, including the threatened Neosho madtom.

2.1.2 Oxidizing Biocide Discharges to Coffey County Lake

Circulating Water System (CWS) Discharge:

Biocide use at WCGS was predicted to cause periodic, appreciable mortality in a conservatively estimated 40 acres of the discharge area to 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). Three 30-minute doses per day of 411 pounds of chlorine per dose were projected to produce these concentrations.

Impacts from actual biocide use during 2006 were considered to be less than postulated in the FES/OLS. A sodium hypochlorite and sodium bromide formulation was used to control biological fouling in WCGS cooling water systems during 2006. Evaluations completed at WCGS demonstrated that the sodium hypochlorite and sodium bromide formulation would not have greater impacts to the cooling lake environment than those expected from the level of chlorine use identified in the FES/OLS. All changes were reviewed and approved by the Kansas Department of Health and Environment (KDHE) prior to implementation.

The WCGS National Pollutant Discharge Elimination System (NPDES, Number I-NE07-PO02) 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 2006 was 100 percent. Actual oxidizing biocide dosages averaged approximately 27.6 pounds per day and the daily average TRO was 0.06 mg/l.

Essential Service Water System (ESWS) Discharge:

During 2006, a continuous diversion of approximately 17,000 gallons per minute of WCGS Service Water System (SWS) flow to the ESWS was completed to provide microbiologically induced corrosion protection and sedimentation control. The KDHE established a 1.0 mg/l TRO limit for the SWS flow diversion through the ESWS. Actual measurements of TRO averaged <0.10 mg/l, and compliance with the NPDES limit in 2006 was 100 percent. No fish mortality or water quality changes attributable to ESWS biocide discharges were observed. Based on this information, permitted biocide discharge during 2006 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."

No adverse impacts due to cold shock mortality events occurred during 2006. The WCGS was shutdown only once on October 7, 2006 for a refueling outage. No fish mortality attributable to cold-shock effects was observed following this planned shutdown.

2.1.4 Impingement and Entrainment

Impacts of entrainment and impingement of fish and aquatic organisms due 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 has requested WCGS to monitor impingement impacts for the Clean Water Act 316 (b), Phase II regulations with a report to be submitted to the KDHE in 2008. Entrainment monitoring has not

been required. Periodic observations during 2006 indicated that fish impingement at the WCGS circulating water intake was negligible.

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 have occurred at the Blowdown Spillway and Service Spillway. During 2006, no discharges occurred at the Blowdown Spillway. There were no NPDES violations from two discharges from the Service Spillway, and no detrimental effects have been identified to the Neosho River water quality in 2006.

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 2006.

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

The transmission line corridors were not treated with herbicides during 2006. Herbicides were used on, 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.

In areas where bare-ground control was desired, a herbicide mix 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) was used. Roundup Ultra (EPA Reg. No 524-475), or comparable substitutes, was 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.

Nuisance tree and brush growth was 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.

Four plants listed as noxious weeds by the Kansas Department of Agriculture were controlled on WCGS lands. These were serecia lespedeza, musk thistle, Johnson grass, and field bindweed. Serecia lespedeza was treated with Pasturegard (EPA Reg. No. 62719-477), Remedy, and Weed Pro 2, 4-D. Musk thistle was controlled with mechanical means. Johnson grass was controlled with Roundup Ultra while field bindweed was controlled through normal farming practices by the tenants of the agricultural leases.

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]

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. The fog monitoring study concluded that operation of WCGS did not appreciably increase fogging incidents from that measured before operation.

During 2006, 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 caused by the cooling lake did occur during the winter months of 2006, but was restricted to the plant site. 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 it is determined to be warranted. Any such additional monitoring may include collision mortality monitoring.

Review of waterfowl and bald eagle monitoring data from the KDWP indicate that no significant usage increases occurred during the 2006 monitoring period. No disease outbreaks or widespread crop depredation attributable to waterfowl use of CCL were observed during the 2006 monitoring period. 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. A summary of the land management activities appears in Section 4.1 of this report. 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]

Proposed plant design and operational changes which have the potential to affect the environment must receive an environmental evaluation prior to implementation. There were no changes in station design or operation nor were there tests or experiments that required an evaluation for the presence of an un-reviewed environmental question during 2006.

3.2 NON-ROUTINE ENVIRONMENTAL REPORTS

3.2.1 Submitted Non-routine Reports

There were no environmental reports involving significant non-routine impacts submitted to the NRC during 2006.

3.2.2 Unusual or Important Environmental Event Evaluations

No unusual or important environmental events reportable according to specifications in the EPP were identified during 2006.

3.3 ENVIRONMENTAL NONCOMPLIANCES [EPP Subsection 5.4.1]

Potential environmental noncompliances or noteworthy events were documented and evaluated in accordance with WCNOG's Corrective Action Program. Events evaluated

during 2006 included improvements to the refrigerant, ozone depleting substances, and chemical control programs. A regulatory gap analysis and water treatment procedure enhancements were evaluated. All the documented enhancements and reviews were determined not to be reportable pursuant to EPP criteria.

4.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AT WOLF CREEK GENERATING STATION

4.1 2006 LAND MANAGEMENT ACTIVITIES

The EPP requires a land management program that will implement conservation and wildlife management techniques to attempt to balance production and conservation values (EPP Section 4.2.3). The land management program at WCGS satisfied this requirement. Specific program objectives were to:

- a. conserve or improve both agricultural and natural resources,
- b. foster good relations with local agricultural and natural resource communities,
- c. satisfy licensing requirements,
- d. improve the appearance of the company's lands, and
- e. enhance, for educational purposes, the natural resources of the Environmental Education Area (EEA).

These objectives were attained as explained below.

Grasslands at WCGS consisted of areas leased for grazing and hay production and other areas maintained for regulatory compliance, soil conservation, and wildlife. Areas adjacent to CCL, approximately 1440 acres, exceeded the 500 acre buffer zone of "naturally occurring biotic communities" referenced in the EPP. Approximately 1,982 acres of native rangeland were leased for grazing and haying in 2006. Leases specified rotation programs, season lengths, maximum grazing rates, and hay cutting dates.

Fire has always been an integral part of the prairie and was used to control woody brush invasion, control less desirable cool-season grasses or weeds, increase wildlife value, and to increase prairie vigor and production. Prescribed burning was completed on approximately 1600 acres during 2006.

Management of cropland reduced soil erosion, maintained rent income, and increased wildlife benefits. Conservation farming, terracing, and wildlife strip management continued to help achieve the objectives. A total of 1282 acres of cropland was leased in 2006. Consistent with past years, the cropland lease contracts specified that common conservation practices be followed. On fields with appropriate terraces to follow, contour farming was required. Double-cropping, i.e., producing two crops on the same acreage during the same season, was generally prohibited because this practice usually increases soil loss. Fall tillage of crop residues was prohibited except for certain instances, such as tillage necessary for fall planting of wheat, plowing of terraces and deep tillage practices to improve productivity.

Activities at the EEA were designed to improve wildlife habitat and increase the public's chances to view a greater variety of wildlife. Tree and shrub planting, wildlife food plots, controlled burning, and trail improvements were a few of the techniques employed. The EEA has drawn a large amount of attention and continues to be well suited for educational purposes.

4.2. 2006 ZEBRA MUSSEL MONITORING ACTIVITIES

Zebra mussels were not observed during 2006 monitoring of the Neosho River and CCL. Monitoring was completed to provide early detection of zebra mussel in the vicinity of WCGS. Efforts included substrate and shoreline searches of the Neosho River upstream of JRR and immediately downstream of JRR in the vicinity of the Makeup-water Screen House (MUSH), where water is pumped from the Neosho River to CCL. Settlement monitors were placed and substrate scrapes were conducted at plant structures on the Neosho River and CCL. Inspections of fishing boats were also continued through 2006.

Zebra mussels were discovered at El Dorado Lake on August 25, 2003, approximately 80 miles southwest of WCGS in the Walnut River drainage, which is immediately west of the Cottonwood/Neosho watershed. During 2006, the mussels were found in Winfield City Lake and in Lake-of-the Ozarks, in Missouri. None have been observed in the Neosho watershed in Kansas.

The Neosho River and CCL would be conducive for zebra mussel survival and growth based on water quality conditions present. Introduction to CCL will most likely be caused by WCGS pumping activities from the Neosho River. Boat inspections will likely prevent mussel introduction via recreational boats. Monitoring was designed to help ensure that zebra mussels would be detected as early as practical in the WCGS area.

4.3 2006 FISHERY MONITORING ACTIVITIES

Monitoring during 2006 demonstrated that the fishery in Coffey County Lake remained in good condition with no adverse trends identified. Fish predation pressure on the gizzard shad population continued to prevent excessive shad impingement problems at the circulating water intake. Fishery monitoring activities as outlined in this report were designed to continue to measure long-term trends and help WCGS prepare for any short term changes, particularly for any changes in the potential for shad impingement events.

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. There were no changes to fish regulations recommended to the Kansas Department of Wildlife Parks (KDWP) for 2007.