WOLF CREEK
NUCLEAR OPERATING CORPORATION

Clay C. Warren
Chief Operating Officer

April 23, 1998
WO 98-0033

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

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

Gentlemen:

Attached is the Annual Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Facility Operating License NPR-42, Appendix B. This report covers the operation of WCGS for the period of January 1, 1997, to December 31, 1997.

If you should have any questions regarding this submittal, please contact me at (316) 364-8831, extension 4485, or Mr. Michael J. Angus at extension 4077.

Very truly yours,

Clay C. Warren

Clay C. Warren

CCW/rlr

Attachment

cc: W. D. Johnson (NRC), w/a
E. W. Mershcoff (NRC), w/a
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WOLF CREEK GENERATING STATION

ANNUAL ENVIRONMENTAL OPERATING REPORT

1997

ENVIRONMENTAL MANAGEMENT SECTION

WOLF CREEK NUCLEAR OPERATING CORPORATION

P.O. BOX 411

BURLINGTON, KANSAS 66839

APRIL 1998

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1.0 INTRODUCTION

Wolf Creek Nuclear Operating Corporation (WCNOC) has committed to minimizing the impact on the environment from operating Wolf Creek Generating Station (WCGS). The 1997 Annual Environmental Operating Report is being submitted in accordance with the objectives of the Environmental Protection Plan (EPP) as required by Facility Operating License NPF-42. The purpose of this report is to demonstrate that the plant operated during 1997 in an environmentally acceptable manner.

2.0 ENVIRONMENTAL MONITORING

2.1 AQUATIC [EPP Section 2.1]

2.1.1 Impacts of Water Withdrawal on the Neosho River

The owners of WCGS have contracted with the Kansas Water Resources Board to pump 9.672 billion gallons per calendar year to Wolf Creek Lake (WCL) from the tailwaters of the John Redmond Reservoir (JRR). A total of 4.019 billion gallons, or 42 percent of the contracted allotment, was pumped during 1997. Of that total, 0.349 billion gallons (nine percent) were used for auxiliary raw water. The remainder was transferred via the make-up pumps operated from September 13 through December 8, 1997. Measurements taken during 1997 by the United States Geological Survey indicate that downstream flows in the Neosho River at Burlington were maintained at rates independent of makeup pumping activities. Consequently, there were no adverse impacts to the Neosho River attributable to 1997 WCGS pumping activities.

The Final Environmental Statement/Operating License Stage (FES/OLS) postulated that make-up water withdrawal of 41 cfs during drought conditions would extend the duration and severity of low-flow conditions below JRR. This, in turn, was expected to reduce riffle habitat which would adversely affect the Neosho Madtom, which is federally listed as a threatened species. No make-up water withdrawal during very low river flows occurred during 1997.

2.1.2 Oxidizing Biocide Discharges to Wolf Creek Lake

Circulating Water System Discharge:

Biocide use at WCGS was expected to cause periodic, appreciable mortality in a conservatively estimated 40 acres of the discharge area to WCL; 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 and 1.08 mg/l of total residual chlorine at the Circulating Water System (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.

The WCGS National Pollutant Discharge Elimination System (NPDES, Number I-NE07-P002) permit limits biocide discharges to levels lower than considered acceptable in the FES/OLS. This permit is administered by the Kansas Department of Health and

Environment (KDHE). The biocide levels are limited to a maximum of 0.2 mg/L, total residual oxidant (TRO). Biocide dose duration is limited to two hours per day. Gaseous chlorine was used to control biological fouling in WCGS cooling water systems before 1995. Betz Bio-Trol 88P Microbiocide has been used since that date. The Betz product is a halogenated oxidizing biocide with similar biocide benefits as gaseous chlorine. An evaluation completed by WCNOC demonstrated that the Bio-Trol 88P impact to the cooling lake environment would not be greater than that expected from the level of chlorine use identified in the FES/OLS. The NPDES permit was changed to allow for Bio-Trol 88P use, and this change was transmitted to the NRC per EPP Section 3.2 on August 8, 1994.

In practice, WCGS has kept TRO well below the NPDES allowable limits. Actual oxidizing biocide dosages to the CWS averaged approximately 22 pounds per day during 1997. The daily average TRO concentration was <0.1 mg/l. Compliance with the permit for daily maximum TRO and dose duration was 100 percent. Because the actual values during CWS biocide treatments were well below the evaluated levels and no fish mortality attributable to oxidizing biocides was observed, permitted biocide discharges during 1997 were not considered to have had appreciable effects on the cooling lake environment.

Essential Service Water System Discharge:

During 1997, a continuous diversion of approximately 17,000 gpm of Service Water System (SWS) flow to the Essential Service Water System (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. Measurements of TRO averaged <0.2 mg/l, and compliance with the NPDES limit in 1997 was 100 percent. No fish mortality or water quality changes attributable to ESWS biocide discharges were observed.

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." There were no cold shock fish kill events during 1997.

2.1.4 Impingement and Entrainment

Impacts of entrainment and impingement were projected to be significant in the WCGS EPP. Additionally, condenser mortality for entrained organisms was expected to approach 100 percent. Because of this, sampling efforts to monitor entrainment impacts were not required by the NRC and have not been implemented at WCGS. Through casual observations, fish impingement at the WCL circulating water intake was

considered minimal during 1997, thus no sampling efforts to monitor impingement impacts have been initiated.

2.1.5 Impacts of Wolf Creek Lake Discharges to the Neosho River

There were no adverse impacts to the Neosho River from WCL discharges identified during 1997. Discharges from WCL are regulated by NPDES permit limitations. NPDES permit sampling was completed on the first day of each discharge and weekly thereafter until the end of each respective discharge. Lake discharges typically come from periodic testing of the blowdown spillway and from stormwater runoff at the service spillway. Discharge limits were set for sulfates, chlorides, and pH (NPDES Outfall 004). In 1997, no NPDES violations at the lake's discharge were observed. There have been no detrimental effects identified to the Neosho River water quality due to lake discharges since construction of WCL.

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 ha (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.

2.2.2 Vegetation Buffer Zone Surrounding Wolf Creek Lake

To create a 500 acre buffer zone around WCL, agricultural production activities were curtailed in 1980 below an approximate elevation of 1095' MSL, eight feet above WCL normal operating surface water elevation (1087' MSL). This border ranges from approximately 200 to 400 feet adjacent to the lake shoreline. Previously grazed or hayed native tallgrass areas were left undisturbed. Previously cultivated lands were allowed to advance through natural successional stages, or native grasses were reestablished in these areas. Land management activities specified in an annual land management plan included controlled burning to enhance and/or maintain the designated buffer zone with a naturally occurring biotic community. Limited mowing was also completed to enhance native vegetation diversity. There were no changes in the area of this zone in 1997.

2.2.3 Herbicide Use for Maintenance of WCGS Structures

A soil sterilant was applied on selected gravel areas of WCGS. These included the protected area boundary, various lay-down storage yards, meteorological tower, support building borders, storage tank berms, switchyard, hazardous waste and waste oil storage areas, and on-site railroad beds. The herbicides applied consisted of a Karmex (EPA Reg. No. 352-247) and Oust (EPA Reg. No. 352-401) mix. Application rates followed label instructions. These herbicides were registered by the Kansas Department of

Agriculture. No environmental impacts from herbicide treatment of WCGS facilities were identified.

Tree control with herbicides was completed during 1997 within the right-of-way for the 345 Kv transmission line from Wolf Creek substation to the LaCygne Generating Station. The herbicide mix, in 100 gallons of water, consisted of 1.5 gallons of Crenite (EPA Reg. No. 352-395) and either 1/4 gallon of Tordon K (EPA Reg. No. 464-421), or eight ounces of Arsenal (EPA Reg. No 241-273). In sensitive areas, such as water crossings, a herbicide mix, of 1.5 gallons of Crenite and two ounces of Escort (EPA Reg. No. 352-439) in 100 gallons of water, was used. Wetting and drift control agents were also added. All herbicides were foliar applied. No adverse impacts were identified with these applications.

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 WCNOC in the event of such problems. During routine wildlife 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 WCL 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, it was determined that sufficient information was available to evaluate cooling lake fogging and that 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. In 1997, there were no reports of such incidents from individuals or local agencies responsible for traffic safety. Implementation of mitigative actions or further monitoring was not warranted.

2.2.6 Wildlife Monitoring Program [EPP Subsection 4.2.2]

A wildlife monitoring program was initiated to monitor and assess waterfowl, waterbird, and bald eagle usage of WCL. 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 during September, 1985. Upon completion of 1996 monitoring, sufficient data had been collected to determine waterfowl, waterbird, and bald eagle usage of WCL. Consequently, the wildlife monitoring program was reduced. The program changes were transmitted to the NRC on April 29, 1997 (Letter No. WO 97-0048). The current program consists of reviewing WCL waterfowl and bald

eagle survey data collected by the Kansas Department of Wildlife and Parks (KDWP). If the KDWP data indicate usage has changed from that previously documented, then additional monitoring will be initiated, if warranted. This may include collision mortality monitoring.

Waterfowl and bald eagle monitoring data from the KDWP indicate that no usage changes occurred during 1997. Survey data indicate similar usage typically observed during mild winter conditions when the larger concentrations of waterfowl and bald eagles used IRR, rather than WCL. No disease outbreaks or substantial crop depredation attributable to waterfowl use of WCL occurred in 1997. Further transmission line collision monitoring was not warranted.

2.2.7 Land Management Program [EPP Subsection 4.2.3]

Land management activities on all company-owned lands except within the 453 ha (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 construction or establishment of fences, 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 1997 land management activities appears in the attachment to this report.

3.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS

3.1 PLANT DESIGN OR OPERATIONAL 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. A summary of each modification or operating change which required an environmental evaluation in 1997 is presented. There were no changes in station design or operation nor were there tests or experiments that involved an unreviewed environmental question during 1997. There were no events identified that required changes to the EPP.

Evaluation: New Steam Vent Line Installation (97-01)

This evaluation identified that no adverse environmental impacts would occur as a result of installing a new steam vent line from the turbine-driven auxiliary feedwater pump to the south wall of the auxiliary boiler room. The volume and chemical composition of the steam emitted from the auxiliary feedwater pump turbine were not to be changed by this modification. The change only diverted a small portion of the steam to a different emission point.

Evaluation: Temporary Procedure for Unit Vent Fan Reduction (97-02)

This evaluation demonstrated that no adverse environmental impacts would occur from the temporary reduction in volume of, and change in venting point for building air during replacement of the unit vent boot. Air that normally would be vented through the unit vent was to be vented through the Radwaste Building vent, which is a filtered and monitored vent. Air from the Auxiliary Building, Fuel Building, Aux Area 5, part of the Control Building, and Hot Machine Shop was to be included. Supplemental monitoring of any air released from the unit vent while the boot replacement work was ongoing was to be provided, per the controlling procedure. Because of vent filtering, monitoring, and no change in vented air volume, nonradiological environmental impacts would not result from this change.

Evaluation: Dredging Sediment from Ultimate Heat Sink (UHS) (97-03)

This evaluation covered potential environmental concerns with dredging sediment from the UHS and redepositing the sediment in another portion of the lake. The potential impacts from this dredging were benchmarked against similar dredging completed in 1991. No adverse impacts from the 1991 dredging were observed. Similarly, none were expected from the 1997 dredging because the silt volume would be less, pumping rates would be similar, and the sediment deposition area was the same. Disruption of fish spawning activities was not expected to be significant due to the effected substrate areas being sediment and clay, which are not preferred spawning sites for most WCL species. Initiation of dredging activities during mid-summer of 1997 would also be after most species had spawned. Necessary regulatory permits from the U.S. Corp of Engineers, Kansas Division of Water Resources, and the KDHE were obtained. No adverse environmental impacts from UHS dredging were observed.

Evaluation: Auxiliary Boiler Modification (97-04)

This evaluation identified that no adverse environmental impacts would result from installing components that increased the maximum steam flow rate and reliability of the Auxiliary Boiler. The modifications would allow the Auxiliary Boiler to operate more effectively, thus decreasing the maximum design fuel consumption rate from 16 gallons/minute to 12 gallons/minute. Maximum potential air emissions, originally evaluated by the KDHE, were decreased. Consequently, this modification resulted in a net environmental benefit.

Evaluation: Use of Alternate Oxygen Scavenger in Plant Systems.(97-05)

This evaluation addressed the use of carbohydrazide, in place of hydrazine, as an oxygen scavenger in the feedwater and steam generators and concluded that no adverse environmental impacts would result. Increased adverse impacts were not expected because the carbohydrazide decomposition and breakdown by-products were not significantly different from the hydrazine previously used. Discharge concentrations were also to be below the 48-hour, toxicological, no-effect level. In addition, oxygen scavenger use and subsequent discharge was reviewed and approved by the KDHE prior to use.

Evaluation: Use of Betz CT-2 in Fire Protection System (97-06)

This evaluation covered the operational and design changes necessary to use the Betz CT-2 product to control macrofouling in the Fire Protection System. Periodic use of the Fire Protection System would result in discharge of the chemical to the environment. Operational controls were established in an attempt to keep discharge of Betz CT-2 on land areas where it would readily degrade. The operational controls would also keep Betz CT-2 below harmful levels before any product runoff would reach the lake. Betz CT-2 use and discharge was reviewed and approved by the KDHE. No adverse environmental impacts were expected.

Evaluation: Change to Auxiliary Boiler Excess Steam Release Point (97-07)

This evaluation demonstrated that no environmental concerns would be created by temporarily diverting excess steam from the Auxiliary Boiler to the Radiological Waste Building. This temporary diversion was to occur during Auxiliary Boiler maintenance and upgrading. The volume and concentration of steam was not going to change, just the discharge point. Consequently, no adverse environmental impacts would result from this change.

Evaluation: Outlet Throttle Valve Post Maintenance Test (97-08)

This evaluation demonstrated that no adverse environmental impacts would occur due to post maintenance throttle valve testing. The testing procedure determined proper throttle position for ESWS flow. Similar testing was completed in 1996 with no impacts. Most of the flow was to be returned to the lake via the ESWS discharge (NPDES Outfall 006). The remainder, approximately 1200 gallons per minute, was to be directed to the storm drain system (NPDES Outfall 002). This by-pass represented a change in an effluent flow path, which the EPP (Section 2.1), defers to the state of Kansas to regulate such issues. The KDHE and WCNOC addressed the water quality issues involved. Since no biocide or chemical treatments were to take place during the by-pass, the evaluation concluded that no adverse impacts would result from the valve testing.

Evaluation: Deoxygenation Process Startup Discharges (97-09)

This evaluation concluded that no adverse environmental impacts would result from start-up procedures for a vendor-supplied, water production/deoxygenation trailer. The procedure required the discharge of approximately 5000 gallons of rinse water containing <2 mg/l of hydrazine. The water was to be discharged to the Turbine Building drains, which discharge to the Waste Water Treatment (WWT) facility. In EPP Section 2.1, the NRC relies on the State of Kansas to regulate such issues. Discharges of hydrazine solutions through the WWT facility (NPDES Outfall 003b) were previously reviewed and approved by the KDHE. The temporary start-up procedure would not cause adverse environmental impacts.

Evaluation: Use of Temporary Diesel Pump and Generator (97-10)

This evaluation addressed potential impacts from temporary use of a diesel powered pump and generator at the Circulating Water Screen House. Use of the temporary equipment would slightly increase the sources for air emissions at WCGS. Air emissions were evaluated in the FES/OLS

and determined to result in minor environmental impacts. The pump and generator were small and emissions from them was not expected to increase air pollutants over those previously evaluated. Approval to operate these air emission sources were obtained from the KDHE.

Evaluation: Betz CT-2 Discharge Change.(97-11)

This evaluation addressed environmental impacts associated with changing the KDHE approved discharge of Betz CT-2 in the Fire Protection System from land areas to the WWT facility. Environmental evaluation of applying to land areas was previously summarized in this report section. The change in discharge was to further ensure that harmful biocide concentrations would not reach the lake. The Betz CT-2 would be degraded in the WWT and further diluted when discharged to the Circulating Water System discharge (NPDES Outfall 003). This operational change was reviewed and approved by the KDHE. No adverse impacts would result.

Evaluation: Wolf Creek Wetland Construction (97-12)

This review covered the construction of the proposed Wolf Creek Wetland. No adverse environmental impacts were identified during this review. The primary purpose of the project was to enhance wildlife habitat diversity. This was in keeping with EPP Section 4.2.3, which states that a balance between land production and conservation values shall attempt to be achieved through the implementation of conservation and wildlife management techniques. Secondary benefits included soil conservation, water quality improvement, and environmental education enhancement. All necessary permits were applied for and obtained from the U.S. Corp. of Engineers, Kansas Division of Water Resources, and KDHE. Compliance with the permits will ensure that the actual construction of the wetland dikes will not cause significant impacts, primarily in relation to sediment runoff.

Evaluation: Procedure for Fire Protection System Maintenance (97-13)

This evaluation addressed potential impacts from draining water that was treated with Betz CT-2 biocide during maintenance of the Fire Protection System. The Betz CT-2 chemical biodegrades in four to seven days. Procedural controls were established to prevent draining the water to the environment, if Betz CT-2 treatment was completed within seven days prior to the maintenance activities. Water discharge from Fire Protection System maintenance within seven days of Betz CT-2 treatment was routed through the WWT. The procedural controls prevent adverse environmental impacts from occurring.

Evaluation: Securing Foam from Fuel Oil Storage Tank Fire Protection System (97-14)

This evaluation covered the potential impacts from emergency use of foam at the Fuel Oil Storage Tank. During emergencies, the foam is not regulated but is regulated when such an emergency is over. Procedural controls require that after the emergency, foam from rinsing hoses, etc., be contained, along with any waste diesel fuel, water and foam mixtures. Proper waste disposal methods are then completed. The procedural controls prevent environmental impacts from occurring.

3.2 NONROUTINE ENVIRONMENTAL REPORTS

3.2.1 Submitted Nonroutine Reports

There were no environmental reports involving significant nonroutine impacts submitted to the NRC during 1997.

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 1997.

3.3 ENVIRONMENTAL NONCOMPLIANCES [EPP Subsection 5.4.1]

At WCGS in 1997, nonradiological environmental noncompliances or noteworthy events were documented and evaluated in accordance with WCNOC's Performance Improvement Request (PIR) program. The PIR program is WCNOC's administrative vehicle for corrective action. Events evaluated included monitoring plan deviations, refrigerant leak regulation review discrepancies, discovery of fuel oil contaminated soil, qualified procedure reviewer discrepancies, and state laboratory certification omissions. The documented events were determined not to be reportable pursuant to EPP criteria.

ATTACHMENT

SUMMARY OF

ENVIRONMENTAL INVESTIGATIONS

AT WOLF CREEK GENERATING STATION, 1997

Wolf Creek Nuclear Operating Corporation

Environmental Management

P. O. Box 411

Burlington, Kansas 66839

Contents

1. 1997 LAND MANAGEMENT ACTIVITIES

This document presents the 1997 activities for the WCGS land management program. 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). Procedure AI 07D-001, "Resource Management Program," implements this requirement via a land management report and plan. The program objectives are:

a. to maximize rent income from agricultural lands,
b. to conserve or improve both agricultural and natural resources,
c. to foster good relations with local agricultural and natural resource communities,
d. to satisfy licensing requirements,
e. to improve the appearance of the company's lands,
f. to enhance the natural resources on the Environmental Education Area (EEA).

Grasslands at WCGS consist of areas leased for grazing and hay production and unleased areas maintained for regulatory compliance, soil conservation, and wildlife. Grass areas adjacent to WCL shorelines exceed the 500 acre buffer zone of "naturally occurring biotic communities" referenced in the EPP. Approximately 1,238 acres of native rangeland were leased for grazing in 1997. Leases specified rotation programs, season lengths, and maximum grazing rates. By controlling these variables, range quality was maintained at levels which provided optimum wildlife value and long term rent generation.

Approximately 392 acres were leased for hay production in 1997. Hay meadows were managed for high quality production by requiring hay to be cut by July 31 and bales removed by August 31. Compliance with these specifications was good in 1997. No late cutting was observed.

Fire has always been an integral part of the prairie and controlled burning was used on Wolf Creek land to control woody brush invasion and less desirable cool-season grasses or weeds, increase wildlife value, and to increase prairie vigor and production. It is a relatively inexpensive and environmentally compatible method of achieving these objectives.

Management of Wolf Creek cropland has strived to reduce soil erosion, maintain rent income, and increase wildlife benefits. A total of 1,355 acres of cropland was leased in 1997. 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, 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. These instances include tillage necessary for fall planting of wheat, plowing of terraces and deep tillage practices to improve productivity.

Existing weed and grass strips, as well as the practice of leaving edge grain, all of which provide wildlife benefits, were continued. A two acre food plot was maintained in a predominately brome grass area. This area was not used for agricultural production and was lacking in habitat diversity.

Land management activities on the EEA were designed with natural resource education in mind. Improvement of wildlife habitat in the area to increase the public's chances of viewing a greater variety wildlife was an objective. Tree and shrub planting, native prairie grass planting, wildlife food plots, and

controlled burning were a few of the techniques employed. The EEA has drawn a large amount of attention and lends itself well to educational purposes. Continued modifications and habitat improvements are ongoing which will constantly change the area, keeping it attractive for wildlife and interesting for visitors.

2. 1997 ZEBRA MUSSEL MONITORING ACTIVITIES

No zebra mussels were detected in 1997 at three search locations on the Neosho River and 15 search locations in WCL. Searches were conducted in the Neosho River on October 3 and 30 and in WCL on June 25, July 10 and October 17. The immediate river bank or lake shore at each location was searched for zebra mussel shells and natural substrates were searched for the presence of attached adults. Zebra mussels have not been reported in Kansas or any closer to Kansas than navigation locks in the Verdigris River in northeastern Oklahoma (Benson, 1997). Because zebra mussels can be dispersed by overland transport of recreational boats, monitoring for the presence of zebra mussels near WCGS will continue in 1998.

Literature Cited

Benson, Amy J., Biological Resources Division, U.S. Geological Survey. "An overview of Non-Indigenous Aquatic Organisms," Presentation at Seventh International Zebra Mussel and Aquatic Nuisance Species Conference (January 28-31, 1997 New Orleans, Louisiana).

3. 1997 FISHERY MONITORING ACTIVITIES

This report summarized the results obtained from fishery monitoring of WCL during 1997. The fishery was monitored to assess gizzard shad densities and the status of the predator species that have kept shad numbers low. Operational problems that are routinely experienced at some power plants due to excessive shad impingement and clogging of cooling water intake screens have been avoided at WCGS. The dynamics of the fishery in the lake has kept shad numbers low enough to prevent this.

Fishery surveys in 1997 revealed that more shad produced during 1994 and 1995 survived than usual. This indicates a greater potential for increased shad reproduction in the next few years. The majority of 1996 and 1997 production of young shad appeared to have been consumed as during most years. Shad density was low enough so that no impingement problems occurred.

Most predator species had lower body conditions in 1997, likely due to lower young-of-the-year shad numbers. Sampling revealed that 1995 and 1996 year classes of wipers have been established, but not as numerically abundant as the previous 1989 and 1990 year classes. Fish from the 1997 wiper stocking were represented in the gill net catches. Another stocking to establish a 1998 wiper year class is planned due to the lower wiper numbers sampled, and the higher potential for shad production in the next few years.

Shad control should not be sacrificed in lieu of angler harvest, but with the catch-and-release philosophy being stressed at WCL, limited harvest has been compatible with continued shad control. Angler use and/or harvest during 1997 had no observable impact to the fishery. Catch rates and health statistics of the game fish remained similar to past years.

In summary, a potential exists for increased gizzard shad production in the next few years. Predator populations continued to maintain control of shad numbers. Wiper stocking was completed in 1997, and planned for 1998, to help maintain the predator numbers. Public fishing access during 1997 did not adversely impact the fishery.