

FLINT HILLS NATIONAL WILDLIFE REFUGE

Hartford, Kansas

ANNUAL NARRATIVE REPORT

Calendar Year 2003



U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

FLINT HILLS NATIONAL WILDLIFE REFUGE

Hartford, Kansas

ANNUAL NARRATIVE REPORT

Calendar Year 2003

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INTRODUCTION

The Flint Hills National Wildlife Refuge lies in the broad, flat Neosho River Valley, a native tallgrass prairie region of natural scenic beauty. The Refuge is named for the gently rolling Flint Hills just to the west. These fossil studded limestone hills were laid down when seas washed across the region 250 million years ago.

The Refuge, established in 1966, consists of 18,463 acres located at the upstream end of the John Redmond Reservoir flood control project. The land is owned by the U.S. Army Corps of Engineers (COE) and is managed under a cooperative agreement. Habitats consist of 5,846 acres of wetlands; 1,400 acres of open water; 600 acres on the Neosho River and associated creeks; 3,600 acres of cropland; 2,107 acres of grassland; 4,660 acres of woodlands and brushlands; and 250 administrative, recreation and roadway acres.

The Refuge is managed primarily to benefit migrating and wintering waterfowl in the central flyway. Thousands of ducks and geese flock to the area during the spring and fall migrations and many often choose to spend the winters here. A variety of management practices are utilized on to meet the needs of wildlife. Feeding and resting areas for migratory birds are provided through aggressive moist soil and cropland management programs. In addition, mowing and prescribed burning are used to provide food and cover for waterfowl and resident species. Along with large numbers of migrating birds, the Refuge provides habitat for white-tailed deer, turkey, bobwhite quail, greater prairie chicken and an assortment of other mammals, birds, reptiles and insects.

Flint Hills NWR is readily accessible by turnpike and interstate highways, lying just eight miles south of I-35 in eastern Kansas. Large cities such as Wichita, Kansas City and Topeka are within 100 miles of the Refuge. Nearly 1.5 million people live within a 100-mile radius.

In addition to the lands managed by Flint Hills NWR, the Corps of Engineers has licensed the Kansas Department of Wildlife and Parks to manage 1,472 acres adjacent to the Refuge. This land is known as the Otter Creek Game Management Area and is managed primarily for bobwhite quail, mourning dove, greater prairie chicken, cottontail rabbit, squirrel, and white-tailed deer.

The 3.05 billion dollar Wolf Creek Nuclear Power Plant, located eight miles east of the Refuge, was put into commercial operation on September 3, 1985. The "nuke," which sends most of its electricity to Kansas Gas and Electric and Kansas City Power & Light, has a cooling reservoir of 5,500 acres, which has open water year-round. Wolf Creek has contracted with the Kansas Water Office for the majority of the storage capacity of John Redmond Reservoir. To transfer this water from John Redmond to Wolf Creek, two 36" pumps and pipelines are located below the base of the John Redmond Dam. Wolf Creek Lake is open to fishing but closed to hunting and is used extensively by waterfowl.

A. HIGHLIGHTS

The Refuge Celebrated the National Wildlife Refuge System Centennial throughout the year. An Open House and Birthday Party was hosted on March 14.

The Refuge Office/Visitor Center expansion construction project began in earnest in October.

We had a record setting Wingbee with 27,131 parts received and processed.

B. CLIMATIC CONDITIONS

This year we received 30.63 inches of precipitation, which is 5.38 inches below the yearly average of 36.01 inches. January started off fairly mild, but a cold snap near the end of the month gave us our coldest temperature (-4°) for the year. Several cold fronts kept the temperatures chilly in late Feb. and early March. April started out extremely warm with temperatures into the 80's. Luckily things cooled down and were fairly seasonable into July when the real heat began. In August we had 12 days in a row with temperatures more than 100°. We also had a lot of rain at the end of August with was much needed relief from the heat. The fall was mild with a few decent rains. December brought mild temperatures and 6 inches of snow. The table on the next page shows the temperature data for the entire year.

Weather and pool elevation information is obtained from the official U.S. weather station operated by the Army Corps of Engineers at the John Redmond Reservoir, eight miles southeast of Refuge headquarters. The rainfall amounts reported are measured at the Refuge Office.

The U.S. Army Corps of Engineers (COE) records daily pool elevation and has records from 1964 to the present. This pool elevation data is helpful in analyzing both the extent and the frequency of flooding. All planning decisions must be made within the context of past records on the extent of flooding, the duration of flooding, the time of year flooding occurs, and the frequency of floods for all portions of the Refuge.

Monthly Precipitation, Temperatures and
Pool Elevations CY 2003

Month	Precip. Inches		Snow	Temp °F		Pool Elevations	
	Total	Norm		Max	Min	Max	Min
Jan	.23	0.90	2	70	-4	1038.98	1038.68
Feb	2.36	1.04	5	66	-1	1039.40	1038.96
March	1.68	2.30	0	76	12	1040.35	1039.01
April	5.52	3.02	0	84	22	1048.16	1039.06
May	2.73	4.31	0	92	44	1044.51	1038.98
June	2.88	5.71	0	91	53	1039.34	1037.25
July	.19	4.31	0	105	59	1037.36	1036.85
Aug	8.07	3.93	0	104	61	1036.85	1036.39
Sep	3.09	4.39	0	84	39	1044.57	1038.06
Oct	1.36	3.20	0	88	29	1041.26	1038.73
Nov	.28	1.77	0	76	16	1041.30	1040.88
Dec	2.24	1.13	6	56	13	1041.41	1040.94
Totals				Extremes		Extremes	
	30.63	36.01	10	105	-4	1048.16	1036.39

D. PLANNING

2. Management Plans

Biologist Menard spent a lot of time working on the Refuge Habitat Management Plan this year. We hope to have this plan completed in 2004 and implemented in 2005.

5. Research and Investigations

In June, the Refuge staff and YCC crew assisted with the FWS Malformed Amphibian Monitoring Program. Biologist Michelle McNulty (Manhattan, KS Ecological Services Office) coordinated the effort. Several hundred leopard frogs were captured in Refuge moist soil units (Bench,

Maxwell, and Maxwell South) No malformations were noted in 2003 or in 2002.

Two Biology students from Emporia State University will conduct their M.S. research on refuge grasslands and forests. Both students intend to address habitat fragmentation issues, one in relation to small mammals, the other concerning amphibians and reptiles. Each student is developing a research program with field research beginning in 2004.

E. ADMINISTRATION

1. Personnel



Back row, left to right: Thuma, Cooper, Pankratz, Laws and Hancock. Front row, left to right: Burton, Menard, Hanley, and Gamble.

1. Jerre L. Gamble, Project Leader, GS-0485-14, PFT
2. Alice M. Hanley, Supervisory Refuge Operations Specialist, GS-0485-12, PFT
3. Tim Menard, Wildlife Biologist, GS-0486-GS-11, PFT
4. District Fire Management Officer, GS-401-9/11 Vacant
5. Evelyn M. Burton, Administrative Officer, GS-0303-09, PFT
6. Lyle L. Hancock, Biological Science Technician, GS-0404-08, PFT
7. Gerald K. Laws, Engineering Equipment Operator, WG-5716-10, PFT
8. Ron E. Thuma, Maintenance Mechanic, WG-4749-09, PFT
9. Timothy J. Cooper, Engineering Equipment Operator, WG-5716-8, PFT
10. Jason C. Pankratz, Range Technician (firefighter), GS-0455-04, PPT
11. James Minnerath, Wildlife Biologist (Private lands), GS-0401-11 PFT, (not pictured)

12. Aaron Ball, Biological Science Technician, GS-0404-04, (not pictured)
13. Travis Hancock, Range Technician, GS-0455-03, (not pictured)
14. Tim Fondriest, Range Technician, GS-0455-05, (not pictured)
15. Jacob Gross, Biological Science Technician, GS-0404-3, (not pictured)

We went into 2003 with the District FMO position still vacant after Rich Sterry left in January 2002. At the end of the year the job was still vacant but it had been advertised for the third time.

We hired back Aaron Ball and Travis Hancock each for the third time this year. They both have done excellent jobs and we enjoyed having them work with us. In 2004 Aaron accepted a permanent job with an environmental consulting firm and Travis enlisted in the Navy's Nuclear Program.

New to the staff in 2003 were Range Technician (firefighter) Tim Fondriest and Biological Science Technician Jake Gross. They both were great employees and helped us accomplish many projects.

The Refuge also provides office space for Private Lands biologist Jim Minnerath. Although not technically a member of the Refuge staff, Jim provides biological and technical expertise when needed.

2. Youth Programs

Flint Hills NWR has hosted a nonresidential Youth Conservation Corps program every summer since 1976. This year we hired 6 enrollees and one youth leader who worked June 3 through July 25. Ron Thuma, Maintenance Mechanic, was in charge of the daily operations of the program with seasonal Bio. Tech Jake Gross' assistance. YCC enrollees were Elizabeth Hull, Adam Kastler, Beth Krueger, Chris Meza, Marten Peterson, and Annamarie Sell. Maddie Keys, an enrollee in 2001, was hired as the youth leader for the second year.



YCC crew, (left to right) Thuma, Hull, Petersen, Kastler, Sell, Keys, Krueger, Gross, and Meza.

Our crew works a 30-hour week from Tuesday through Friday. This provides staff preparation time and time to keep up with other responsibilities.

Heat and humidity always make for a difficult summer, but the list of accomplishments is always impressive. The crew received CPR and First Aid training in late June. The crew placed new gravel on portions of the three nature trails and also did general trail maintenance. They also built bluebird and wren houses that were given away at the annual Hartford Harvest Day in September. They also completed general maintenance and painting at the headquarters. This year we didn't have the huge need for the YCC crew as in past years. So, to keep them busy working on valuable projects, they spent several weeks working at the COE property at John Redmond Reservoir. They cleaned restrooms at the campgrounds and painted picnic shelters and gates. They also spent several days doing environmental education activities and assisted in the malformed frog survey. At the end of their 8-week program, Refuge and COE staffs hosted a pizza party for the crew.

4. Volunteer Programs

Emporia State University graduate student Alisa Rapp continued her work on an environmental education teachers guide for the Refuge. Alisa's project ended in October and she defended her thesis in November. She and SROS Hanley presented the teacher's guide at the annual Kansas Association for Conservation and Environmental Education Conference in November in Manhattan, KS.



Volunteer Alisa Rapp, second from right, instructing students using the new Flint Hills Environmental Education curriculum.

5. Funding

In addition to the regular Operations, MMS, YCC, RONS, and fire funding, this station has an additional funding source. A cooperative agreement with the COE allows surplus crops to be sold with the monies reverting back to this station. The funds are processed through the "Bills for Collection" procedure and are placed in Sub-Activity 8260, Proceeds from Sales. For many years 8260 funds had been used to supplement base funding as salaries alone have usually been higher than regular Operations & Management funding. This situation was remedied in 1991 when the Refuge received base funding adequate to carry out Refuge functions. This left 8260 dollars available for their intended use, the development and enhancement of Refuge natural resources.

This was the first year that the Private Lands Program was not administered out of our office. Damien Miller took over as State Coordinator in 2002 and is stationed out of the Manhattan ES Office. Therefore our funding level went from the entire program budget down to \$15,000 given for support of the Private Lands biologist stationed at the Refuge.

Five Year Station Funding Level (Amount \$K)

FY	Oper 1261	MMS 1262	8260	9100 9251	1120	8556 ERFO	Total Budget
2003	559.00	167.70	157.54	70.89	15.0	7.63	977.76
2002	526.35	344.76	26.61	104.22	367.6	97.38	1466.92
2001	448.39	188.78	303.6	211.8	289.3	40.96	1,482.83
2000	487.65	97.75	96.51	73.1	280.0	—	1,035.0
1999	320.61	86.0	86.69	104.0	230.0	—	827.30

6. Safety

The Spill Prevention, Control and Countermeasure Plan was reviewed and commented on early in the year. We finally received the revised document in August.

Jim Behrmann and Terry Black from the Regional Safety Office conducted a Safety and Occupational Health Review as well as a Refuge Environmental Compliance Review in August. The Refuge passed both reviews with flying colors and only had 3 minor problems to rectify.

Quarterly safety meetings are held during regular staff meetings. In addition, safety issues, tips, and new ideas are discussed at the beginning of each new project.

Fire extinguishers are checked monthly, and professionally inspected each April. Nearly forty extinguishers are required to properly cover our buildings and equipment.

Staff members receive CPR/First Aid training refresher courses each year. First Aid kits in buildings and equipment are checked quarterly and items with expiration dates are replaced.

Annual audiograms are given to those employees that meet the Service safety policy requirements. Several versions of ear plugs are available for all to use. Bilsom Viking hearing protection muffs, assigned to every employee, have replaceable foam ear cushions which are changed yearly.

F. HABITAT MANAGEMENT

2. Wetlands (Moist Soil Units)

Refuge wetlands include numerous type I and III natural wetlands along with 32 manageable man-made marsh/moist soil units and John Redmond Reservoir. Wetland management consists of timing the filling and drawdown of our moist soil units to encourage plant communities and invertebrates most beneficial to migratory birds. Moist soil units, in some cases, are filled by natural runoff, however, several of our marshes are designed to facilitate pumping should the weather not cooperate with our plans.

Moist soil units received good shorebird use in the spring. As with 2002, marshes filled up with mid-April rains. Rummel Marsh was burned during the first week of April. When the river overflowed its banks and filled the marsh in mid April, birds flocked to the site including, blue-winged teal, shovelers, pintails, pectoral sandpipers, lesser yellowlegs, and five white-faced ibis.

Lower Hammerton and Pintail moist soil units also received good shorebird use. Strawn Flats did not provide much habitat in the spring, so Biologist Menard conducted no surveys there. During spring, shorebirds use moist soil units with short (6-12 inch) vegetation. The vegetation offers excellent cover from spring winds, yet makes surveys challenging. Due to the difficulty of seeing shorebirds among the vegetation, surveys underestimate the number of shorebirds using the Refuge wetlands.

A late drawdown, followed by cool wet June weather, promoted abundant growth of *Eliocharis* within several moist soil units (Hartford Units, Upper Hammerton, Intermediate). The dense vegetation and root mass precludes the growth of desirable moist soil vegetation. Therefore, Refuge staff prioritized these sites for disking. They were mowed and then disked three times with the new heavy disk. A very dry July and August followed. The heat dried and killed the overturned *Eliocharis*. Although vegetation response was minimal prior to migration, waterfowl used these sites heavily during the fall. The marshes disked in 2003 for *Eliocharis* problems will be drawn down early in the spring of 2004. They should provide excellent spring shorebird habitat.

Other sites were disked for woody vegetation control and to reset succession to annuals. The western half of the Hartford marshes is easily forgotten about because it's separated by a tree row. However, the shallower western side of this unit provides some of the best habitat. In 2003, it was mowed and disked. Furthermore, the south half of Upper Burgess was disked to set back the

invading cattails. Sayre Marsh, also with a cattail problem, received disking. Finally, five north-south strips were disked in Bench Marsh as has been done for several years.

Cockleburs offered incentive for mowing and disking at West Bench marsh. Two areas were treated, along the western levee and immediately east of the tree row. The remaining moist soil vegetation looked healthy and was allowed to produce seed. Indian Hill Marsh did not require disking, but rather mowing prior to cocklebur setting seed.

The Refuge places greater emphasis on treating only those areas that require attention. We don't disk an entire unit because 1/3 has invading cottonwoods or cockleburs. Bio.Techs and Equipment Operators should have the knowledge and the freedom to make good decisions from the seat of the tractor, while they're in the field.

Rains were timely during the growing season to produce average moist soil vegetation. Moist soil units dried during July and August, with some units showing 4-inch wide, 2-foot deep cracks in the ground. Those all filled with the 8 inches of rain that fell in late August. Some boards were in place before the rain. We installed other stoplogs immediately after the rain, and caught runoff to fill half of the units. Had we not received the rain, we would have never been able to pump enough water to fill the marshes before the freezes shut down pumping operations. Pumping began in October and continued through early November. Because of its shallow basin, and its tendency to evaporate, Rummel was the last unit pumped. Evapotranspiration rates were low enough in November that the unit held water throughout the winter.

We continued constructing small ephemeral wetlands in adjacent to existing marshes this year. These wetlands occur in the following locations: east of Maxwell Marsh, western 1/3 of Rummel marsh, north of Katy marsh to the north of the trees, north of Half Mile marsh, south of Katy Marsh, north of Yellowlegs marsh. These seasonal wetlands provide more micro habitats in the marshes, making them more productive and attractive to spring shorebirds and teal. They vary in depth from 4-12 inches, and fill with water in late winter and spring. In addition to waterbird habitat, the ephemeral wetlands provide excellent breeding sites for amphibians, particularly leopard and chorus frogs.

A concrete water control structure was completed on the Yellowlegs Moist Soil Unit (see I.1). Levees were allowed to settle. The unit will hold its first water in 2004.

PL Gamble reached an agreement with the Corps of Engineers and the Kansas Water Office for a two foot summer drawdown (to 1037 feet) on the John Redmond Reservoir, followed by a two foot fall/winter pool rise. The drawdown exposed hundreds of acres for shorebird habitat and moist soil vegetation and created our best shorebird habitat. For the third successive year, we received enough inflows to trigger the summer drawdown. Millet grew in abundance, but the site flooded in early September before the seeds matured. We will try to renew the agreement again next year. However, conditions may change with the John Redmond conservation pool rising to 1041 feet.

3. Forests

There are 4,200 acres of forests on the Refuge. The dominant tree species include hackberry, bur oak, green ash, American elm, slippery elm, cottonwood, willow, pecan, red oak, mulberry, walnut, and sycamore. These areas range from mature stands of hardwoods to retired croplands being invaded by woody species. Over the years, three hundred acres of retired cropland have been planted to bur oaks, pecan, red oak, etc.

Bur oaks historically dominated the riparian corridor along the Neosho River and its tributaries. The Refuge is making an effort to restore bur oaks to sites retired from agricultural production. We searched for acorns and pecans in summer 2003, however, mast production fell way below average. We'll rely on nursery seedlings for 2004 plantings. In future restorations, we'll try to collect our own bur oak acorns and have them grown to bare root seedlings by a nursery.

Bur oaks are under represented in the existing riparian forests. Fire-intolerant species dominate those sites. With the intent of opening the canopy and reducing competition, we've written several burn plans for riparian hardwood burns. The cool season Virginia wild rye sometimes precludes fire spread. In 2003, we received a \$2,500 grant from the National Wild Turkey Federation for hardwood restoration along the Neosho River. This was matched with \$2,500 from the FWS challenge cost share program. Retired croplands will be planted with bur oak seedlings in 2004.

Each year wood cutting permits are issued to local citizens who are interested in cutting firewood. In 2003, permits were issued for the Fitch Hill prairie, where trees had been sheared by the contractor. Wood cutting is restricted to those areas where trees need to be removed from roadsides or in areas with a lot of downed trees.

4. Croplands

Farming operations at Flint Hills NWR were conducted by 14 farmers under cooperative agreements this year. A cooperative agreement between the Corps of Engineers and the Service allows the government share of crops in excess of wildlife needs to be sold. These monies are to be used at the station within five years of receipt. The Refuge share of corn and milo crops is left standing in the field while the wheat and soybeans are usually harvested and sold. Legume crops like clover and alfalfa generally go to the cooperators.

In 2002 and 2003, field borders (66-feet wide) were established along croplands, particularly adjacent to gravel roads. The field borders were established as a conservation practice for the purpose of reducing soil erosion and chemical and fertilizer runoff. Seeded to Canada wild rye and switchgrass, they responded vigorously during the second growing season. Some areas were flooded with spring rains and will require reseeding in 2004.

2003 Cooperative Farming Agreements

Standing Crop	Acres Planted	Govt Share	
		harvested	unharvested
Corn	731	0	177
Legumes	0	0	0
Soybeans	1132	223	
Wheat	1379	340	0
Milo	154	0	51
TOTAL ACRES	3396	563	228
*No post-wheat soybeans were harvested. Therefore, these numbers reflect only full-season soybeans.			

Following the 2003 growing season, 689 acres of cropland were removed from production. Plans for the acreage include moist soil units, tallgrass restoration, and riparian hardwood (bur oak) restoration. In November, NRCS engineers surveyed some of the fields for moist soil development. The remaining fields will be surveyed in early 2004.

A meeting was held November 19 with all the cooperative farmers to discuss our future plans regarding cropland reduction, new crops, and reducing the number of approved herbicides. Most of the farmers were represented and we had a good discussion. Although they have concerns about our future management plans, most understand that we have to manage the Refuge to meet the needs of the wildlife and the FWS mission.

5. Grasslands

There are approximately 2,107 acres of grasslands on the Flint Hills NWR. These areas were once tallgrass prairie dominated by big bluestem, Indiangrass, switchgrass and prairie cordgrass. However, major flooding since 1993 has caused a significant invasion of annual weeds, such as Johnsongrass, which have proven difficult to control. Since Johnsongrass is a State and County listed noxious weed, many hours of staff time are spent mowing to prevent seed maturity. This activity is recognized as more of an appeasement measure than one of control. Wholesale chemical application within a floodplain has not been a viable option.

Sericea lespedeza continues as a problem for the Refuge. It is now a State listed noxious weed and we are controlling it several ways. Most of our control efforts involve spraying with Remedy. We tested Remedy and Garlon 3A for sericea control. Garlon 3A, although safer to use near water, proved only 50% effective. Sericea spraying expanded this year with the treatment of the more

remote native prairie sites.

Retired farm fields above 1055' of elevation are generally targeted for native grass restoration efforts. Several restoration sites were destroyed due to flood events since 1993. Only a few areas located on higher elevated sites will now be considered for forb restoration.

We received funding to shear trees that have invaded and encroached upon our native prairies. A skid steer with a hydraulic shearer proved an effective tool. The 26-acre Kennedy Creek Prairie was treated. Additional work remains for next year. We will apply for the grant again in 2004.

In July, Bio. tech. Ball, and Range tech. Fondriest sawed out large trees from the Dove Roost Prairie. They left scattered bur oaks which in time will create a savannah-like habitat.

6. Other Habitats

Between 1996 and 2000, one hundred acres of cropland were retired from farming and reestablished as riparian buffer zones along the Neosho River and the larger drainages throughout the Refuge. These zones are a minimum of 200' feet wide along both sides of the Neosho River and 150 feet along both sides of the major tributaries. This will not only improve the wildlife habitat but stabilize the river channel and improve water quality for downstream users.

Although there was an initial opposition to the riparian buffers, our cooperators and neighbors are starting to understand the importance of this conservation practice.

Work continues on the Refuge GIS. The system is used to document burning history, sericea spraying, habitat potential, etc. New layers are continually created. A useful addition this year was a mosaiced image of 2000 color infrared flight, 1966 land cover, and 1856 land cover.

9. Fire Management

Prescribed fire is utilized at Flint Hills NWR for: a) restoration of native grass species; b) reduction/control of nonnative species; c) control of woody invasions into grasslands and moist soil management units; d) assisting the farming program by removing wheat stubble; e) maintaining/rejuvenating nesting cover for waterfowl and other native birds; and f) preservation and/or stimulation of endangered species habitat.

Flint Hills NWR has two cooperative agreements for wildfire suppression with local fire protection districts Lyon County Fire Five and Coffey County. The Refuge has initial attack authority within two miles of refuge boundary. This year we lost 255 acres to nine wildfires on the Refuge including a 203-acre Type-3 incident at the Fitch Hill area. This fire burned the native prairies on Fitch Hill which were very difficult to get burned in the past. Also, occurring at Fitch Hill was a mechanical hazardous fuel reduction project. A contractor with a skid-steer loader and tree saw was hired to remove the timber fuel from the native prairies after the wildfire. A total of 14 acres was treated by the contractor. This will help in the future burning and restoration of the prairie.

We had a fairly good year for burning. Refuge staff completed 25 prescribed burns for a total of 1427 acres. The wheat stubble burning accounted for 16 of the burns and 627 acres. Many of the burns are now being allowed to burn in the timber fuels. This is a change from the past procedure of holding the fire at the timber edge. Allowing the timber to burn decreases the effort of holding and is a great benefit to the resource. It does, however, require more patrols of the units on following days as the timber fuels can smolder longer than grass.

As burn plans are expiring, they are being combined as they are rewritten to reduce the amount of paper work and increase efficiency. This, coupled with the new complexity analysis, has caused the plans to rank as Moderate complexity, which requires a type II burn boss.

During the last week of April and the first week of May, Range Tech's Pankratz and Fondriest went to Boyer Chute and Crescent Lake NWR's to assist with prescribed burning. Later in August, Pankratz, Fondriest, and T. Hancock assisted with wildfires in southwest Montana on a Type-2 IA hand crew.

Biologist Menard taught the S-212 Wildfire Power Saw class to several employees in early July. Pankratz, Ball, Fondriest, and T. Hancock, along with Marais des Cygnes employees Heiser and Erickson, completed the class.

2003 Prescribed Burns

Fire	Acres
Palin 4	80
Palin 2	149
3 Corners	18
Palin 6	13
Rummel 1	46
Rummel 2	150
Darbyshire	84
McKinney	30
Goose Bend NE	230
Wheat stubble	627

10. Pest Control

The majority of the pest control on the Refuge is limited to weeds in crop fields and along roadsides. The most prevalent problems are the State listed noxious weed Johnsongrass and *Sericea lespedeza*. Areas infested with Johnsongrass were mowed this year to keep the plants from going to seed.

Spraying for *Sericea lespedeza* has become a bigger priority in prairie remnants throughout the Refuge. Small patches were spot sprayed with Remedy while larger fields were broadcast sprayed. In 2003, 200 acres were spot sprayed and 150 acres were broadcast sprayed. Prairies should be visited multiple times in a season for several years in a row. Remedy continues to effectively treat *sericea*. We burned the McKinney cordgrass site in April and sprayed the *sericea* in early summer. This treatment killed nearly 70% of the *sericea* on the site. The area will be treated similarly in 2004.

Biologist Menard obtained a Commercial Pesticide Applicator's Certificate for Noxious Weed Treatment. Engineering Equipment Operator Laws maintains a Commercial Pesticide Applicators license for Agricultural Plants. There have been no insecticides used on the Refuge in the past twelve years.

The 13 cooperators farming the Refuge are aware of our attempt at reducing/eliminating pesticide use in our farming program. Roundup UltraMax accounted for 92% of the herbicide used on the Refuge in 2003. The following herbicides were approved for use on the Refuge in 2003: Roundup UltraMax; 2-4,D Amine 4; Aim; Peak; Select 2 EC; Touchdown; Valor; Remedy; Garlon 3A. Because Aim, Select, Touchdown, and Valor were not used in 2003, the herbicide list will be further reduced in 2004.

The Refuge Integrated Pest Management Plan was re-revised in August 2003 and resubmitted to the RO and WO for approval.

11. Water Rights

The Neosho-Cottonwood drainage basin provides the water supply for Flint Hills NWR and John Redmond Reservoir. When the reservoir is at normal conservation pool, very little refuge land is inundated. During extreme flooding, however, up to 95% of the area can be covered. Floods of this severity are not all that uncommon (1973, 1985, 1986, 1993, 1995 and 1998).

Two types of water rights are currently in effect at Flint Hills NWR. Twenty permits are approved for the diversion of water from the natural flows of tributaries by low profile dikes. Eleven additional permits cover pumping of water from the Neosho River or Eagle Creek into constructed and natural wetlands. Approved water rights applications, their type and acre feet authorized, are listed in the table on the next page.

In 2000, we began operating under a commingled water permit. This allows us to use the total

amount of water rights anywhere on the Refuge, instead of being limited to individual marshes.

Certificates of Appropriation have been received from the Kansas Department of Water Resources for the following Areas: Palin, Coon Hamman, Indian Hill, Goose Bend, Rummel, Burgess, Beschka, Strawn Flats, Hartford, Hammerton, Bench and Maxwell marsh units.

The West Bench permit was perfected in December. This permit allows us to divert a maximum of 781 acre-feet into the Bench, Lower Bench and West Bench marsh complex in any calendar year.

Water Rights Permits and Types - Flint Hills NWR

WATER UNIT	NO.	TYPE	DIVERSION TYPE	AC/FT
Commingle	43589	Recreational	Pump	1472
Hartford	39581	Recreational	Pump	500
Troublesome East	39582	Recreational	Pump	110
Pintail	39583	Recreational	Natural Flow	110
Lower Bench	39579	Recreational	Natural Flow	125
Boes	39580	Recreational	Natural Flow	60
Bench	38287	Recreational	Natural Flow	500
Hammerton	38286	Recreational	Pump	90
Hammerton	38285	Recreational	Natural Flow	180
Hartford	38283	Recreational	Natural Flow	300
Beschka	38280	Recreational	Pump	150
Beschka	38282	Recreational	Natural Flow	150
Burgess	38279	Recreational	Natural Flow	300
Burgess	38278	Recreational	Pump	206
Rummel	38284	Recreational	Pump	100
Rummel	38277	Recreational	Natural Flow	100
Strawn Flats	38281	Recreational	Natural Flow	110
Palin Slough	38273	Recreational	Pump	25
Palin Slough	38271	Recreational	Natural Flow	25

WATER UNIT	NO.	TYPE	DIVERSION TYPE	AC/FT
Laird's Pond	17608	Recreational	Natural Flow	70
Coon-Hamman	38274	Recreational	Natural Flow	80
Coon-Hamman	17606	Recreational	Pump	19
Money Penny Pond	17606	Recreational	Natural Flow	6
Troublesome	17597	Recreational	Natural Flow	30
Indian Hill	17601	Recreational	Natural Flow	330
Indian Hill	38275	Recreational	Pump	330
Goose Bend	38276	Recreational	Natural Flow	200
Goose Bend	17609	Recreational	Pump	200
Maxwell	39115	Recreational	Natural Flow	270
West Bench*	42848	Recreational	Natural Flow	156
Yellowlegs	45024	Recreational	Natural Flow	188.15

* Permit is combined with Bench and Lower Bench so the complex of three cannot exceed 781 acre-feet for any calendar year.

G. WILDLIFE

2. Endangered and/or Threatened Species

Two federally listed birds are known to occur on the Refuge; the bald eagle and the least tern. Bald eagles generally arrive along with the waterfowl and spend the winter around the John Redmond Reservoir and surrounding areas. Eagle use is monitored as part of our weekly waterfowl surveys and the staff participates in the annual mid-winter eagle survey each January.

There was no eagle nesting activity observed this year. The eagle nest near Lebo Creek blew down during the winter of 2002-03. No attempts at reconstruction were noticed during 2003. Eagles continue to use Refuge moist soil units and the Neosho River, with a maximum of 32 seen during January 2003.

In addition to the above-mentioned species the Neosho Madtom and the flat floater mussel are both listed as threatened and known to occur within the Neosho River drainage.

Biologist Menard located four least tern nests on the John Redmond Reservoir in July. The birds nested on spoil islands at the western, southwestern side of the dam. Three nests held two eggs and the last nest had a single egg. None hatched. All were destroyed by predators, presumably by the gulls which roosted nearby.

This was the first documented nesting attempt on the Reservoir/Refuge. We'll check for nesting attempts in 2004. The Refuge is considering the creation of a nesting island on the old house foundations immediately east of the Strawn Flats parking lot.

3. Waterfowl

The primary objective of the Flint Hills NWR is to provide a quality feeding and resting area for migrating and wintering waterfowl. The main methods of achieving this goal are through moist soil management and agriculture.

Waterfowl counts are conducted biweekly throughout the use season. The surveys are coordinated with the State waterfowl surveys to reduce cost, increase coverage and maintain our working relationship with the Kansas Department of Wildlife and Parks. We also participate in the statewide midwinter duck and goose surveys. Fall waterfowl migration peaked in mid-November. As with the previous year, snow goose migration began on October 31. In contrast to 2002, very few snow geese wintered on the Refuge in 2003. Duck migration also proved very slow.

Peak Waterfowl Populations

Year	Canada Geese	Snow Geese	White-fronted Geese	Ducks
2003	500	9,430	200	7,138
2002	1,440	26,000	1,200	20,740
2001	1,112	33,900	250	15,128
2000	2,718	81,300	1,525	14,728
1999	2,200	27,600	500	9,898

Canada geese utilized the new nesting islands on Troublesome and Lower Hammerton marsh units. The islands were built when the marsh units were drawn down for dike/water control structure rehabilitation in 1996.

4. Marsh and Water Birds

Moist soil water level management was tailored to accommodate the growing populations of egrets and herons. Snowy and great egrets and great blue, little blue and green herons responded to the low water and high concentrations of invertebrates. White pelicans, double-crested cormorants and pied-billed grebes are also common and took advantage of the moist soil units.

Twelve great blue herons used the rookery along Lebo Creek, south of 19th lane. Seventeen herons nested in the rookery on the south side of the Neosho River to the northwest of Hartford.

5. Shorebirds, Gulls, Terns and Allies

The Refuge enjoys good numbers of yellowlegs, dowitchers, killdeer and assorted peeps. These birds can generally be found whenever conditions are right. The two-foot drawdown provided excellent shorebird habitat during the summer and allowed for a good moist soil plant response around the perimeter of the reservoir. Biologist Menard conducted shorebird surveys from March-June and August-October. The Refuge receives greater shorebird use during the fall migration, with numbers reaching 2,000 pectoral sandpipers, least sandpipers, and lesser yellowlegs. The highlight of shorebird migration occurred on August 26, with 75 buff-breasted sandpipers on the Strawn Flats moist soil unit. This flock remained for five days on the site. On September 10, five buff-breasted sandpipers were seen at the Hartford moist soil units. An additional eight used the Hartford unit on September 22.

Numbers of gulls using the area continue to rise with peak populations of Franklin's gulls easily eclipsing 100,000 individuals. Several hundred black terns used John Redmond Reservoir in late July.

6. Raptors

Red-tailed hawks, common nesters on the Refuge, are present year-round. Kestrels, turkey vultures and barred and great horned owls are also known to nest on the refuge. Other species observed during the year include merlin, prairie falcon, Cooper's and sharp-shinned hawks, Swainson's hawk and rough-legged hawk. Osprey are also sighted on the refuge several times a year. Biologist Menard saw an adult golden eagle flying over Burgess Marsh in October. Golden eagles are much rarer on the Refuge than Bald Eagles.

One Krider's red-tailed hawk spent the winter at West Bench Marsh.

7. Other Migratory Birds

Throughout the 1990's, the construction of nest boxes has been a rainy day activity for YCC youths. Typically 100-150 bluebird nest boxes are made and given away to interested parties each year. The Refuge maintains a bluebird trail of 70 boxes, which are checked in early winter to clean out and to determine use. Typically, 95 percent of the boxes are used by bluebirds and tree

swallows each year.

8. Game Mammals

Game mammals on the Refuge include cottontail rabbit, fox squirrel and white-tailed deer. All of the above animals are plentiful and easily found in suitable habitat. The most popular and visible game mammal is the white-tailed deer.

10. Other Resident Wildlife

Otters were released in the early 90's on the Cottonwood River upstream from the Neosho River and the Refuge. Reports of river otter sightings on the Refuge occur about twice a year. Annual road kills on the highway just north of Hartford confirm the general consensus that the population is continuing to grow.

Beaver, always present in the river, moved into several marsh areas with the high water during the year. They continue to cause some problems with our dikes and water control structures.

Populations of northern bobwhite quail, Eastern and Rio-Grande cross turkeys, greater prairie chicken and ring-necked pheasant are all present on the Refuge, although pheasants and prairie chicken populations are extremely low. Other residents include coyote, raccoon, beaver, bobcat and opossum. Several sightings and road kills in the area have confirmed the presence of armadillos in this part of Kansas.

11. Fisheries Resources

Responsibility for fisheries management in the Neosho River and John Redmond Reservoir belongs to Kansas Department of Wildlife and Parks. Assistance is provided as needed for management of refuge landlocked fisheries.

Gamefish found in the area includes channel catfish, white bass, crappie and flathead catfish.

White bass, which normally run in large numbers in the spring, made a half-hearted attempt this year. Fishing action was below the legendary runs of past years.

H. PUBLIC USE

1. General

Approximately 54,850 visitors came to Flint Hills NWR in 2003. The entire Refuge is open to permitted public use activities throughout most of the year. The portion north of the Neosho River, except for the Burgess Marsh and Dove Roost areas, is closed to all public access from November 1 to March 1 to provide sanctuary for migrating birds.

The Refuge's southern boundary extends from one shore of John Redmond Reservoir to the other, with the north half of this line closed to hunting and the south half open. Each year we place a buoy line on the lake to define these areas in the fall, and attempt to retrieve them in the spring.

The Refuge hosted the annual Eagle Day on January 26. Approximately 45 people attended. Hanley, Laws, Menard, and Burton worked the event providing a presentation on eagles and the National Wildlife Refuge System, and gave a tour to view eagles, ducks, and geese.

The staff hosted an Open House and Centennial Birthday Party on March 14. Approximately 50 people attended the event and joined us in celebrating the big day. "Honker" the blue goose greeted guests and posed for photos.



Honker and a new friend celebrate the Centennial.

Approximately 3000 visitors at Hartford's annual Harvest Day Festival in September viewed refuge displays and visited with Refuge staff in our large tent. Information regarding the Centennial Celebration and National Wildlife Refuge Week was provided. Approximately 100 bluebird and wren nesting boxes built by YCC enrollees were given to successful participants in a short wildlife quiz. The staff entered a float in the parade and won First Place in the division.

As in the past, refuge staff joined staff from Kirwin and Quivira NWR's in operating a booth at the Kansas State Fair at Hutchinson in early September.

Jerre Gamble, along with Ron Shupe and other Kansas Refuge Managers, presented Governor Kathleen Sebelius with the Pendleton Centennial blanket on October 14 as part of National Wildlife Refuge Week. The managers were able to introduce the Governor to the Kansas Refuges and answer questions she had about the entire system.



Left to right, Jerre Gamble, Dave Hilley, Ron Shupe, Bruce Freske, Erich Gilbert, and Governor Sebelius.

The Refuge Public Use Regulations brochure was completed and printed in July. The brochure replaces a very outdated brochure we had been using for years. We are currently developing a general Refuge brochure.

2. Outdoor Classrooms - Students

The Refuge staff is asked to conduct presentations to school groups and youth organizations year-round. This year we gave tours and presentations centered around the Centennial celebration. The elementary schools in Olpe and Neosho Rapids visited the Refuge the last 2 weeks of March to celebrate our 100th anniversary. We also had the entire Neosho Rapids elementary school visit the Refuge, in several shifts, the week of November 5.

We also had visits from the Hartford Library summer reading group and several scouting troops.



Mrs. Vilander's class exploring the waters of Lyle's marsh.

3. Outdoor Classroom - Teachers

After hosting teacher workshops in 2001 and 2003, we decided not to have one this year. We were worried that the interest would not be there for another workshop. However, we worked with several area teachers on environmental education materials and activities. The Tallgrass Prairie Discovery Trunk was checked out by the Lebo Elementary School for several weeks. We also received funding from the Regional Office to help purchase EE materials to be used by teachers when they visit the Refuge with their classes.

4. Interpretive Foot Trails

Dove Roost Nature Trail.

This trail was originally developed in 1976 as a YCC project and continues to draw a steady flow of visitors despite its isolated location, approximately 8 miles east of the office. The 1.1 mile walking trail circles Dove Roost Pond, passing through native tallgrass prairie and heavily wooded habitats. An observation tower near the parking area provides a good view of migratory waterfowl resting on John Redmond Reservoir. Eagle Point, a rocky outcropping, provides a good observation area for eagle watchers in the winter. A boat ramp is also provided at the popular fishing pond.

Townsite Trail (formally known as Headquarters Trail)

This trail was developed as a YCC project in 1981 and is located ½ mile northeast of the office. This area was once part of Hartford, but when the John Redmond Reservoir was developed a

protective levee cut this area off from the rest of the town. Originally developed to interpret the secession of Hartford's original townsite and State highway back to nature, interpretive panels developed by YCC in the early 80's were later removed since they were nonstandard panels. The trail receives considerable foot traffic from town via a turnstile on Mill Street and a walkway across the dike. Vehicular traffic arrives at either of two parking areas on Townsite Road (formerly Kansas 57 highway). A two-acre frog pond is a feature along the two-mile trail.

Burgess Marsh Trail

This is the newest trail and was completed in 1997. The one-eighth mile trail leads to a 100-foot boardwalk jutting out into the marsh. It was a dirt/gravel trail until 2002 when we had it re-done using concrete. The entire trail and boardwalk are now accessible.

This year we contracted with APAC Shears to pave the Upper and Lower Burgess Marsh parking lots and the road between them with a bituminous chip and seal coat. This is a project that had been in the works since the trail was developed. We finally had the funding and were able to complete this worthwhile project.



Ms. Hoelting's class from Olpe enjoying lunch overlooking the marsh at the end of the boardwalk.

6. Interpretive Exhibits/Demonstrations

The Office kiosk had to be moved due to the construction of the Office/Visitor Center expansion. So, the staff picked it up, completed a few repairs, and moved it up to the Burgess Marsh Overlook along Hwy 130. The kiosk was then painted and the old interpretive panels were installed. We will leave the old panels up until we feel the public is used to seeing the new kiosk.

New interpretive panels and brochure holders will be installed in the spring of 2004.

A lot of time was spent throughout the year working on new interpretive panels for the Office and Burgess Marsh kiosks and the Dove Roost area. The contract was originally awarded to Exhibit Design Group in 2001. A few months later the owner, Jean Harrison, accepted a job in the Portland FWS Regional Office and terminated the contract. The project was rebid and Interpretive Graphics was awarded the contract in October 2001. Although, at times, we had trouble working with this contractor, we did get a quality product, it just took a long time. We finally received the film positives in July this year. We then sent them to the Service Sign shop for fabrication in August. We received the finished signs in October. However, the maps on the Orientation panels were incorrect so we had to ship them back. We received the corrected panels back in January 2004. All the panels will be installed later in 2004.

We had several mounts done this year for the new exhibit area. We now have a bald eagle, pelican, a Ross' goose and two snow geese.

8. Hunting

Approximately 7,900 acres of the Refuge are open to public hunting year-round in conjunction with state seasons. An additional 2,100 acres are open for all hunting, except waterfowl, from March 1 through October 31. This area is closed to all public access during the remainder of the year. Permanent sanctuary status exists on 8,220 acres. In 1990, the Refuge became a non-toxic shot zone for all shotgun hunting except for turkey and deer. In the fall of 2001 we changed the turkey hunting requirement to allow for only non-toxic shot.

Waterfowl hunting is normally the highest hunting use on the Refuge. The 2002-2003 waterfowl season closed on January 13. The last two weeks of the season were probably the most productive for hunters, especially at the Hartford Marsh units. Lots of mallards were using the area and gave hunters plenty of opportunity for a full bag.

The 2003-2004 season began with the September 13-28 Teal season. The rains we received the end of August and in September put some water into the marshes. The season overall was fair due to a lack of birds. The main waterfowl season was open Oct. 25-Nov. 2 and then Nov. 8 through the rest of the year. Like last year, there was a restricted season on pintails and canvasbacks. Their season ran Oct. 25-Nov. 2 and Nov. 8-Dec. 7. We had a lot of pintails using the refuge marshes the first few weeks of the season. Several overbags were encountered and violators ticketed. The Refuge has become a very popular hunting spot and therefore we experience overcrowding in many of our areas, particularly the Hartford marshes. We can get up to 20 vehicles parked in each of the two parking lots at this spot. The disturbance to the birds and to other hunters can limit hunter success. Hunters that branched out to other areas had better success at times, and higher quality hunts.

The hunting units were open for the special Youth Duck Hunt on October 11-12, two weeks before the general waterfowl season opener.

Pintail and Hartford Marsh roads were closed to through traffic at the beginning of the waterfowl season in an effort to curtail traffic disturbance and improve waterfowl use in those areas.

Turkey hunting is becoming more popular on the Refuge due to a large population of turkeys and good hunting conditions.

Deer hunting is allowed according to State regulations except that centerfire rifles are prohibited. The required shotgun hunting keeps the number of hunters during the firearm season fairly low. A few years ago we noticed a decline in our deer population. Therefore we decided to limit the harvest by not allowing game tags to be filled on the Refuge and not being open during the extended white-tailed deer season in January. These new regulations took effect in 2001 and also seem to have lowered the number of hunters we see on the Refuge.

Archery deer hunting, however, is becoming more popular. We get quite a few out-of-state hunters coming to the Refuge, hoping to find the Kansas trophy deer.

The Refuge is also open to small game, upland bird, and crow hunting. These hunting activities constitute a very small portion of our consumptive users.

9. Fishing

Fishing usually accounts for the majority of the consumptive use visits, just slightly above hunters. Anglers tried their luck at catching white bass, catfish, crappie, and saugeye.

11. Wildlife Observation

The Refuge offers visitors good wildlife viewing opportunities throughout the year, however, the spring and fall offer the best viewing for migratory birds. Bird watchers from all over the United States visit us each year looking for such species as the greater prairie chicken, scissor-tailed flycatchers and many of the warblers.

12. Other Wildlife Oriented Recreation

Photography is becoming more popular each year and many visitors capture the Refuge and its wildlife on film.

13. Camping

Although the Refuge does not have any permanent camping facilities, primitive camping is allowed on the Refuge. Campers are expected to pack out everything they pack in. Due to the summer heat, the insects, and poison ivy, we do not have a lot of camping taking place most years.

14. Picnicking

Picnicking visits usually occur in conjunction with other Refuge activities, but visitors occasionally come just to picnic.

16. Other Non-Wildlife Oriented Recreation

Wild food gathering is permitted on the Refuge. Mushrooming for morels and pecan gathering are activities that are very much a part of local custom and culture.

17. Law Enforcement

PL Gamble and SROS Hanley are the only two staff who currently have law enforcement authority. Gamble also serves as a Region 6 Firearms Instructor. For the majority of the year, individuals and groups are contacted incidental to other duties. Patrols and coverage of the Refuge are increased during the hunting season due to increased use and potential for violations. Local residents assist in the LE effort by keeping an eye on the Refuge and reporting violations or suspicious activities to Refuge Officers. Additional coverage of the Refuge is accomplished with the aid of two State game wardens assigned to the counties within which the Refuge is located.

Gamble was informed that due to the approval of the Report: "Interim and Long-Term Deployment of Law Enforcement Resources of the National Wildlife Refuge System," he would be relinquishing his law enforcement authority in October 2003. He requested a waiver to maintain his commission through December 31 so he could help out during the most active portion of the hunting season. This waiver was granted.

The body of a missing Emporia woman was found near the Refuge on March 4. She had been missing several days after being abducted by her husband. He died of an apparent suicide near El Paso, TX. After that, authorities began looking for her. Unfortunately, the Lyon County Sheriff's Office failed to notify the Refuge staff that the family suspected she could be on the Refuge. Although the Lyon County Sheriff's Office stopped searching, her family did not, and they found her several days later about 1/4 mile from the Refuge boundary.

I. EQUIPMENT AND FACILITIES

1. New Construction

A lot of time was spent on the Yellowlegs Marsh water control structure project this year. The staff worked with Engineering to design the three bay concrete structure. The project was awarded to Metzger's Concrete and work began in August. Of course, after months of hot, dry weather, as soon as the contractor started work, it began to rain. We received approximately 12" in August and September which slowed down the project. Luckily the contractor was very patient and creative, and completed the project in October. Gerald Laws served as on-site inspector.

The Troublesome Creek water diversion structure also involved a lot of Refuge staff time this year. The project involved a 100-foot long sheet pile structure with a screw gate. It was funded in 2001 as a MMS project but we couldn't get a contractor to bid on the project. We then revamped the entire project to do all the dirt work force account. Wilson Brothers Construction finally bid on the project this year and Lyle Hancock served as on-site inspector. Gerald Laws, TJ Cooper and Lyle Hancock spent a lot of time preparing the site for the sheet piling work. They built the earthen dam on the downstream side of the structure before the sheet piling was installed to offer stability to the sheet piling.

Construction began in August, and like the Yellowlegs project, the site became very wet and muddy after 12" of rain. However, Wilson Brothers worked diligently in the mud and finished the structure in September. We ended up working on the project moving dirt and leveling out the emergency spillway until November.

This project required large riprap to be placed along the structure and emergency spillway. The local quarries did not have any and would not make any unless we had a large order. Fortunately our COE landlord came to the rescue and allowed us to have 150 tons from their stockpile. We paid a local contractor to haul the rock from the COE dam site to the work site.

Construction on the Office/Visitor Center expansion began in October. The expansion will add a new conference room, new exhibit area, a storage room, and an accessible rest room. The existing conference room will be re-modeled to add 4 new offices for staff. This project is being completed through the COE and Kingston Environmental Services of Wichita is the contractor.



Gerald Laws using the baby backhoe, appropriately nicknamed "oh fuey", to clean out trenches at the expansion building site.

The staff completed a lot of work before the actual construction started. We removed the kiosk, sidewalk, and several trees in front of the office, trenched footings, and provided rock for the foundation base. The entire staff pitched in and worked hard to get it all done. Ron Thuma is the on-site inspector for the project.

2. Rehabilitation

A project was submitted to Engineering and CGS to pave the upper and lower parking lots at Burgess Marsh and the gravel road in between them. Refuge staff prepared the site but the project was not completed in 2002 due to the weather turning too cold and wet. The contractor completed the project in September.

After not doing any work on the Goose Bend dikes since they were damaged in a 1993 flood, we decided to do rehabilitation work during the summer. The main thought was to repair the dikes and install small water control structures so the marshes would hold water. These are low level dikes and are inundated when the lake and river rise. A lot of work was done throughout the summer getting the dikes reshaped, but, without any vegetation on them, the dikes washed in several areas when we received the heavy rains in late August.

Several portions of interior and boundary fence was removed this year. These fences were dilapidated and only served as traps for unsuspecting animals.

Annual road maintenance included trimming of over hanging limbs, clearing and cleaning of road ditches and replacing several culverts. Road shoulders were then graded and shaped before crushed limestone was spread.

4. Equipment Utilization and Replacement

Laws, Hancock, Thuma, Cooper, and Pankratz attended the new mandatory Load Securement Training in Kearney, NE in April.

MMS funding was received for the purchase of a heavy duty 18' flex wing tandem harrow Krause disk this year. This piece of equipment was needed to complete heavy disking of our marshes.

In 2002 we heard that the Kulm WMD had a 1987 4WD 160-90TPS Hesston tractor that they didn't need. We jumped at the chance to get it. Sand Lake NWR agreed to transport it down to Kansas for us. In December 2002, Berle Meyers delivered the tractor. This year the tractor was put to use pulling the new Krause disk. The pair is a wonderful addition to our moist soil management.

5. Communications Systems

Flint Hills NWR received a 2002 MMS package to replace the entire radio system at the Refuge. We waited most of 2003 waiting for a MOU to be signed by the COE to allow us to use their

antenna at New Strawn for our repeater. We received the signed MOU in June, over a year after it was sent to the Tulsa COE office. With that MOU in place the National Communications Center in Denver was able to program our radios. We then had C&C Communications in Emporia install the equipment. Most of the installation was completed by October, however, small glitches arose and we were still working out a few kinks at the end of the year.

6. Computer Systems

We received funding through the SAMMS program to purchase three new Dell desktops and one IBM laptop. Now the entire staff is hooked up to e-mail and the internet.

8. Other

An inordinate amount of time was spent on Real Property Inventory audits this year.

We were chosen to attend the Service Asset Maintenance Management System (SAMMS) training this year. Alice Hanley attended the training at NCTC in October. Due to family medical issues, TJ Cooper could not attend the same session and will go to training in 2004.

The Refuge has a fairly extensive recycling program. We recycle aluminum, scrap metals, waste oil, antifreeze, cardboard, magazines, catalogs, junk mail and other office generated paper. Employees are allowed to bring sorted recyclables from home to add to our collection since the volume of this material doesn't seem to result in additional trips or sorting.

J. OTHER ITEMS

1. Cooperative Programs

Partner for Fish and Wildlife Program

Private lands staff for the state includes three permanent biologists, one stationed at Flint Hills NWR, one stationed at Manhattan, Ecological Services office, and one at the Kirwin NWR in north central Kansas. Damien Miller, PFW Coordinator for Kansas, also stationed out of the Manhattan ES Office. Activities and accomplishments are reported through the HABITS program.

Central Flyway Wingbee

Flint Hills NWR has been the home for the Central Flyway Wingbee since 1992. The wing processing for the Central Flyway Wingbee program got started in September and was in full swing by October 2002. Lyle Hancock serves as the lead on processing all the envelopes and data that comes in. Several other staff members offered some assistance in the speciation process. This year proved to be a record setting year with 27,131 parts processed from the 2002-2003 hunting season. Approximately 40 people from 10 states participated in another successful Wingbee program held February 18-21.



Wingbee participants hard at work.

4. Credits

SROS Hanley, Biologist Menard and Range Technician Pankratz wrote the report and PL Gamble edited it.

**DEPARTMENT OF THE INTERIOR
U. S. FISH AND WILDLIFE SERVICE**

**MARAIS DES CYGNES NATIONAL WILDLIFE REFUGE
PLEASANTON, KANSAS**

2003 ANNUAL NARRATIVE



Bruce Frieshe
Refuge Manager

3/23/04
Date

James J. Hamby
Project Leader

4/01/04
Date

Richard A. Coleman
Chief of Refuge Operations, Region 6

4/21/04
Date

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3. Refuge Staff and Dozer Photo
4. Stateline Pond Dam and Wildland Urban Interface Projects
5. Plain Pocketbook and Rock Pocket Mussel Photos
6. Barn Owl and Turkey Hunter Photos

2003 Annual Narrative

Marais des Cygnes National Wildlife Refuge

INTRODUCTION

Marais des Cygnes National Wildlife Refuge (Refuge) is a 7,500 acre area located 45 minutes south of Overland Park, Kansas, and is complexed with the Flint Hills National Wildlife Refuge which is located 100 miles to the west near Hartford, Kansas. The Refuge is named after the Marais des Cygnes River which runs through the middle of the Refuge and is the dominant natural feature of the region. The name, "Marais des Cygnes", comes from the French language and means "Marsh of Swans". This name is actually a translation of an Osage Indian name for the region, "Mixa-ckau-tse", which means "where white swans are plentiful". The name is said to have been in reference to Tundra and Trumpeter Swans, which were once common in the Midwest, and are believed to have used wetlands adjacent to the Marais des Cygnes River during spring and fall migration.

The Refuge was established in 1992 for the protection and restoration of bottomland hardwood forest. In combination with forest on the adjacent State Wildlife Area, one of the northwestern-most examples of bottomland hardwood forest in the United States as well as the largest and highest quality tract of bottomland hardwood forest in Kansas is now preserved. Much of the Refuge which lies above the floodplain is comprised of forest, grassland, and abandoned cropland. Tallgrass prairie, bottomland hardwood forest, and upland oak-hickory forest sites are found throughout the Refuge, though high quality sites are limited in size and number.

A. HIGHLIGHTS

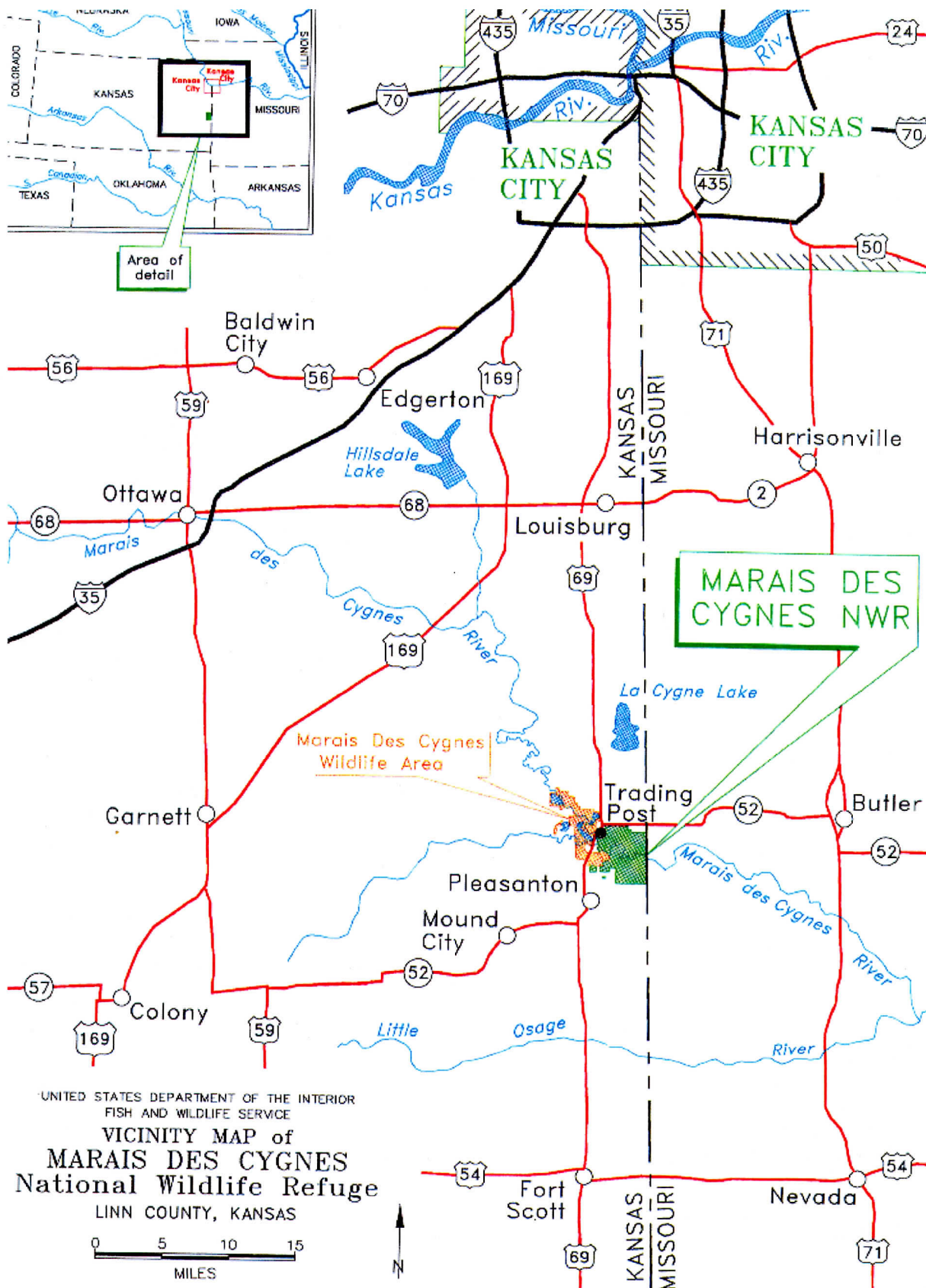
A new John Deere 750C Crawler Dozer was purchased with MMS funds for \$168,794.91 to replace a 1967 D7 Caterpillar Dozer.

The draft Environmental Assessment's for the proposed 11,000 acre addition were received from the printing office and mailed to interested individuals. An Open House was later conducted in Butler, MO to give the public an opportunity to discuss the draft EA. Comments regarding the proposal were forwarded to the Regional Office in Minneapolis, where they were incorporated into the final Environmental Assessment.

A contractor completed work on the State Line Pond Dam in October. The entire face of the dam, which had a 90 degree slope, was rebuilt to an 8:1 slope and trees were removed from the back of the dam and piled. Funds for the project came from a \$25,000 RO Equipment Rental grant. A water control structure is still needed to complete the project.

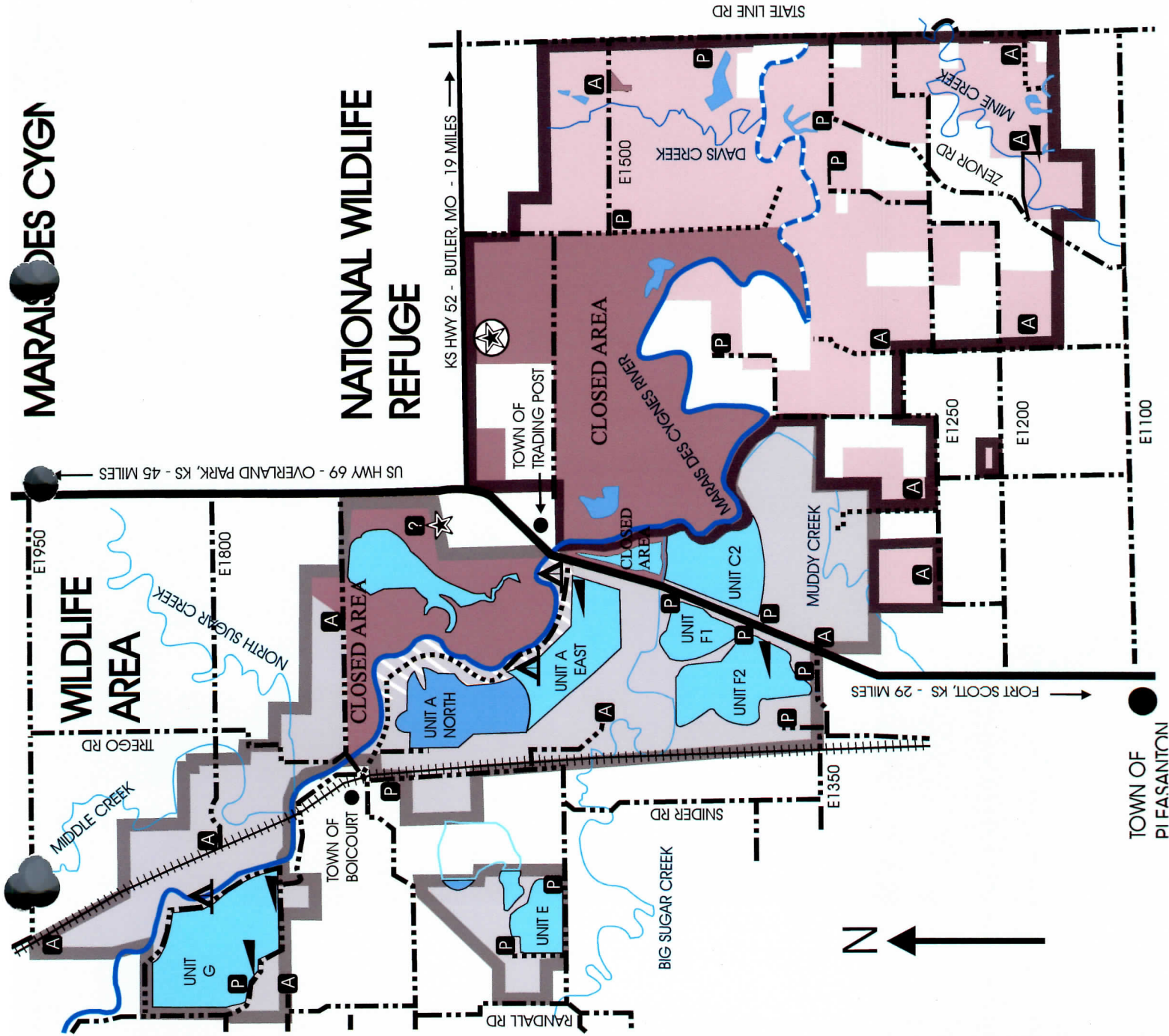
A \$50,000 USGS grant was awarded to study the mussel population on the Refuge. Tim

MARAIS DES CYGNES NATIONAL WILDLIFE REFUGE REFERENCE MAP



MARAIS DES CYGNES

NATIONAL WILDLIFE REFUGE



LEGEND

- REFUGE PUBLIC USE AREA
- WILDLIFE AREA PUBLIC USE AREA
- CLOSED AREAS
- PRIVATE PROPERTY
- NO SHOOTING DURING DARK GOOSE SEASON
- REFUGE BOUNDARY
- WILDLIFE AREA BOUNDARY
- PAVED ROADS
- GRAVEL ROADS
- WALK-IN TRAIL/ROADS
- RAILROAD
- MOTORIZED RIVER SECTIONS
- NON-MOTORIZED RIVER SECTION
- REFUGE OFFICE
- WILDLIFE AREA OFFICE
- INFORMATION KIOSK
- BOAT ACCESS
- PARKING AREA
- ACCESS POINT
- PRIMITIVE CAMPING



Maloney, a graduate student from the University of Missouri, Columbia, and an assistant, Terry Heiser, conducted a thorough inventory of the Refuge mussel population. As a result of this inventory two new mussels species were added to the Refuge list: plain pocketbook, *Lampsilis Cardium*, and rock pocketbook, *Arcidens confragosus*.

The filling in of approximately 40 abandoned wells and cisterns was completed during the year. Funding of \$35,000 for seasonal staff and materials was available through MMS.

A total of \$20,000 in WUI (Wildland Urban Interface) funds were received to remove approximately 40 acres of trees east of Yardley and north of 1500 Road for the purpose of reducing 100+ hour fuels near the Paul Hamilton residence and to restore the area to grassland.

B. CLIMATIC CONDITIONS

Temperatures at the Refuge range from highs around 104° F in July and August, to lows of -26° F in late December and January. Late May through September is the predominant period of heat and humidity. Temperatures during this period are usually in the mid 80's to upper 90's with humidity readings in the same range.

The average yearly rainfall for the Refuge is 40 inches. Most of this rain falls during mid to late spring and again in mid fall, however, it can rain heavily anytime of the year. Once the ground is saturated, even small rains of 1/4" can cause rivers and streams to flood.

The Marais des Cygnes River flood plain is generally one to two miles wide throughout the area. Flood events are most common in the spring and early summer and again in the fall, and generally last anywhere from a few days to as long as three weeks. Flood depths may be several feet deep for large expanses of the flood plain though depths of four feet are the average.

2003 WEATHER INFORMATION					
Month		Precipitation (inches)	Mean Precip	Mean Temp	1971-2000 Normal
January		.52	1.49	28.8	32.32
February		1.32	1.41	32.5	37.59
March		2.12	2.73	44.4	46.49
April		2.74	3.80	57.2	58.00
May		4.30	5.15	65.0	67.07

June	3.91	5.54	71.2	76.17
July	1.86	4.10	81.8	81.41
August	3.81	3.50	82.2	80.15
September	3.14	4.55	66.5	71.74
October	1.59	3.27	58.4	60.65
November	1.01	2.44	46.5	46.60
December	0*	1.58	0*	36.26
	Annual 26.32*	72 Yr Mean 39.71	Annual Mean 57.68*	72 Yr Mean 57.89

Weather data obtained from the National Climatic Data Center. Precipitation data recorded at La Cygne, KS and temperature data recorded at Fort Scott, KS. * Data for the month of December was not available at time of data request.

D. PLANNING

2. Management Plan

WB Menard submitted a revised Integrated Pest Management Plan for the Refuge in January and Pesticide Use Proposals (PUPS) in October.

6. Other

RM Freske reviewed and commented on a draft Oil Spill Contingency Plan and returned it to the Safety Office in the RO in January.

Draft Environmental Assessment's (100 complete and 150 summaries) for the proposed 11,000 acre addition were received from the printing office and mailed to area landowners, conservation groups, and other concerned citizens and organizations in February. Approximately 50 EA's and 75 summary EA's were sent out.

John Kauffeld, R3 Refuge Supervisor for Missouri, and Tom Bell, Manager of Big Muddy NWR, Missouri, visited the Refuge on February 13th to gain a better understanding of the Refuge and the proposed Missouri Addition

On March 25th, an open House was conducted at the Senior Center in Butler, MO to give the public an opportunity to discuss the draft Environmental Assessment regarding a proposed 11,000 acre addition to the Refuge. A total of 15 people attended the Open House. Most participants only wished to be reassured that their lands would not be condemned.

April 25th was the close of the comment period for the Draft Environmental Assessment for the Proposed MO Addition. Several agency letters and approximately 40 other letters, all in favor of the proposal, were received. The letters were forwarded to the Regional Office in Mpls. where the comments were incorporated into the final Environmental Assessment. RM Freske provided information to Region 3 Planning for responses to the public comment letters.

RM Freske hosted a KDOT meeting on May 8th regarding construction of a mitigation wetland which is to be built adjacent to the Wildlife Area for mitigation of planned wetland losses resulting from a proposed U.S. 69 Highway expansion project.

E. ADMINISTRATION

1. Personnel

May 5 - Terry Heiser EOD as a seasonal Biological Science Technician -GS-404-6
May 5 - Larry Erickson EOD as a seasonal Biological Science Technician -GS-404-3
May 19 - Kyle Ellis EOD as a seasonal Range Aid (Firefighter) -GS-0455-3
June 30 - Joe Claypool EOD as a seasonal Biological Science Technician -GS-404-4

August 9 - Kyle Ellis, Range Aid (Firefighter) -GS-0455-3 was terminated.
September 26 - Terry Heiser, Biological Science Technician -GS-404-6 was terminated.
September 26 - Larry Erickson, Biological Science Technician -GS-404-3 was terminated.
September 26 - Joe Claypool, Biological Science Technician -GS-404-4 was terminated.

October 6 - Lila Spurgeon EOD as a half time seasonal administrative clerk.

January 22-27 - RM Freske attended the annual LE Inservice Training at Marana, AZ.
Feb. 3-7 - FPT Steinle attended IQCS training in Phoenix, AZ to learn how to enter individual fire qualifications into a central database.
Feb. 26 - March 2 - MM Peterson attended the annual LE Inservice Training at Marana, AZ.
Feb. 24-28 - FPT Steinle attended the Fire Management Officers Meeting at Rapid City, SD.
March 17- FPT Steinle conducted a Fire Refresher. RM Freske, MM Peterson, BT Ellis, and AD's Heiser and Piane attended the training. FPT Steinle, BT Ellis, AD Heiser, and AD Piane also did the pack test.
April 22 - 23 - FPT Steinle and MM Peterson attended Load Securement Training at Kearney, NE.
June 10 - RA Ellis, BT Heiser, and FPS Steinle attended a LCES Workshop in Hutchinson, KS.
May 29 - Kyle Ellis and Robert Piane (a local fire AD) attended ATV training at FLH NWR.
June 10 - BT Erickson received certification on a tractor from Gerald Laws at FLH NWR.
June 11 - RA Ellis and BT Erickson received certification on a backhoe from Gerald Laws at FLH NWR.
June 23 - MM Peterson attended a 40 hr Maintenance Workshop at NCTC.
June - All staff completed IT Security Training, via the Internet, during the month.



Refuge Staff - Left to Right - RM Freske, FPT Steinle, MM Peterson, BT Ellis, BT Erickson, BT Heiser, and ASA Spurgeon



New John Deere 750C Dozer

July 9 - BT Claypool, BT Heiser, BT Erickson, and RA Ellis received Chainsaw training at FLH NWR.

Aug. 2 - Claypool received certification on a four-wheeler from Van Wall Polaris, Olathe, KS

Aug. 7 - BT Claypool received certification on a tractor from Gerald Laws at FLH NWR.

Aug 19 - RM Freske and MM Peterson participated in LE Requalifications at Quivera NWR.

October 6-10 - RM Freske and MM Peterson attended SAMMS Training at NCTC.

Nov. 17-21 - FPT Steinle attended NFDRS Training in Rapid City, SD.

December 3-5 - FPT Steinle attended "Dynamics of Supervision" Training at NCTC.

5. Funding

Office Fund Target (OFT) subactivity	FY 2004
64630 - 1261 Operations	\$168,600
64630 - 1262 Maintenance	\$336,423
64630 - 9251 Firefighting Prep	\$45,651
TOTAL Allocated Funding	\$550,674
Non Allocated Funds 64630 - 8610 Quarters Maint	\$2,700
64630 - 9261 Fire Suppression	\$6,999
64630 - 9263 Haz Fuel Reduction	\$14,200
64630 - 9262	\$16,663

6. Safety

Three flammable storage cabinets and petroleum spill clean-up products were received in April and stored in the equipment storage building.

Throughout June, MM Peterson prepared for an August Safety Inspection to be conducted by R6 Safety Office Personnel. New fire extinguishers were received, old fire extinguishers inspected, and the fuel pump barriers painted. Updating of the MSDS book was also undertaken.

The Safety Inspection was conducted on August 5th by Jim Behrmann and Terry Black. The following recommendations were made: use >30% post consumer paper, purchase larger volume eyewash station and locate near battery charger, create master list of hazardous materials and note storage location, put blanks in switch openings in Storage Bldg breaker box, and create 3' clearance in front of north breaker box in office.

8. Other Items

RM Freske submitted information for the "Refuge Threats" Internet database in February. Threats identified were: 1) Noxious Weeds (sericea), 2) Altered River Flows 3) Farming 4) Tree Invasion 5) Urbanization.

The 2002 Annual Narrative was completed in March and the '98 and '99 Narratives were split into separate narratives.

RM Freske attended the All Bird Workshop in Salina, KS on March 4-6th. The meeting was conducted by KS Wildlife and Parks and discussed ways to increase populations of bird species which are in decline.

RM Freske traveled with PL Gamble and DPL Hanley to the refuge project leaders meeting at Scottsbluff, NE the first week of April. The new National Refuge LE Plan, SAMMS Program, and RPI Audit were some of the subjects discussed.

RM Freske completed and submitted the FY 2004 Land Acquisition Planning System (LAPS) score sheet for the Refuge in April. The score sheet is used to rank the station for limited Land and Water Conservation Funds(LWCF).

RM Freske provided updates to the Real Property Inventory (RPI) database in April. Every item in the database required amendments due to recent changes prompted by a nationwide random audit.

RM Freske provided updates to the Maintenance Management System (MMS) in April. Three vehicles (two transferred from Flint Hills) and a lean-to for the storage building were added.

RM Freske presented a slide program highlighting Marais des Cygnes NWR and the proposed Missouri Addition at the Platte/Kansas Ecosystem meeting at Emporia, KS on April 15th.

RM Freske presented an update on the proposed Missouri Addition to the Lower Missouri River Ecosystem Team at Columbia, MO on April 18th.

Region 6 Archaeologist Galen Burgett visited the Refuge on June 6th. MM Peterson took Galen to a number of known archaeological sites on the Refuge, particularly those in farm fields as they were much easier to view.

Howard Cline, RO Surveyor, visited the Refuge in June. Howard will prepare a contract to get all unclear boundary lines surveyed.

WB Menard led a tour to mussel beds on the Refuge in June for Dr. Richard Neves, Dr. Charlie Rabini, and Tim Maloney to assist Tim with his mussel research project on the Refuge.

RM Freske delivered the annual Revenue Sharing Check to the Linn County Commissioners on July 14.

RM Freske and Karl Karrow (KDWP) met with KDOT personnel in Overland Park on July 18 regarding a KDOT proposal to submit a grant request for Scenic Byway Funds. A \$150,000 project was proposed to develop interpretive panels and displays for the viewing area of a rest area which is planned for construction near the Refuge and Wildlife Area in 2005.

RM Freske submitted paperwork in July to begin another Background Investigation conducted every 5 years for all Refuge personnel with LE credentials.

RM Freske, RA Ellis and Terry Heiser and Tim Maloney attended the Pearly Mussel Workshop in Pittsburgh on July 24th. They also attended a field trip the following day on the Spring River. The Workshop was very interesting, especially the restoration techniques being used in Kansas and Missouri to restore federally endangered species of mussels. The Spring River contained a number of mussels only rarely seen in the Marais des Cygnes River.

A KDOT meeting was conducted at the office on August 7th to discuss final details regarding landscaping, pond design, and general layout for the rest area which will be constructed adjacent to the Refuge beginning in 2005. Another KDOT meeting was conducted at the office on August 8th to discuss wetland design of a site near the Wildlife Area for mitigation of all the wetlands affected by the U.S. 69 Freeway Project.

RM Freske attended a Congressional Meeting at the Great Plains Nature Center in Wichita on August 12th. The purpose of the meeting was to allow Refuge Managers the opportunity to inform U.S. Senators and Congressman about activities on Kansas Refuges.

On October 14th, RM Freske attended a Linn County Zoning meeting regarding a request by Consolidated Coal Company to have zoning south of the Refuge changed from agricultural to industrial to allow for the development of a new mine. RM Freske requested that the zoning change not be requested until the potential for acid mine runoff into the Refuge is known.

Bi-monthly trash pickup service and weekly office cleaning contracts were initiated for the first time ever for the Refuge in November.

The Centennial Time Capsule was sealed and placed in the loft of the Refuge storage building in November.

RM Freske attended the Platte-Kansas Ecoteam Mtg. in Hays Kansas on November 5th and 6th. The purpose of the meeting was to help develop ArcView GIS layers which would identify important wildlife habitats in Kansas.

F. HABITAT MANAGEMENT

2. Wetlands

Work was initiated to repair the State Line Pond Dam in January. The hog-wire fence along the top of the dam, and trees in the vicinity of the water control structure/culvert, were removed. The backhoe was used to dig out the old structure/culvert. Plans are to replace the structure/culvert, rework the face of the dam which is badly eroded, and install an emergency spillway.

Rod Bolinger, Linn County NRCS, and Curtis Janssen, Emporia Office NRCS, visited State Line Pond on June 3rd to provide recommendations to rehabilitate the pond dam which is no longer holding water due to a failed water control structure. The front of the dam also has a 90 degree slope which needs to be redone.

A contractor completed work on the State Line Pond Dam in October. The entire face of the dam was rebuilt to an 8:1 slope and trees were removed from the back of the dam and piled. Funds for the project came from a \$25,000 RO Equipment Rental grant.

RM Freske contacted RO Engineering in December and requested completion of the site review for State Line Pond Dam which is necessary as it is considered a "Low Hazard Dam". A water control structure is needed to complete the project but cannot be purchased/constructed until engineering provides necessary design information.

MM Peterson smoothed out the surfaces of the new 40 acre (picture of wetland on front cover of narrative) and 60 acre wetland dams south of Trading Post in April. The dams were then planted with a Vicon broadcast seeder at 10 lbs. PLS per acre with Canada wild rye, Blackwell switch grass, and eastern gama grass. Additional boards were constructed and installed in the water control structures in June, in anticipation of rain, and the tops of the dikes were mowed in September.

MM Peterson completed construction of dams across shallow ditches south of the Main Murray levee in November to restore wetland hydrology to the area. The work should restore approximately 40 acres of wetlands.

Rod Bolinger, NRCS, placed flags in November to mark a proposed wetland dam site immediately south of the current Trading Post pond so that dam construction may begin in the spring. The dam is estimated to require 9,100 cubic yards of material, be approximately 1/4 mile long, and create 80 acres of wetland. Wooden stakes, painted with flourescent orange on the top, were placed adjacent to all the wire marking flags in December so surveyed points would not be lost as winter weather damaged the wire flags.

4. Cropland

RM Freske completed farming SUP's in February for 5 cooperators farming 1,346 acres.

5. Grasslands

MM Peterson felled and cut up the remaining trees along the fenceline behind the storage building in February and used the backhoe to push them into some nearby erosion headcuts.

Twelve acres of cropland 1/8 mile west of Island Prairie were planted to grass and forbs on April 29th to enlarge the buffer to the existing prairie. Seven species of grass (5 lb. PLS/acre) and eleven species of forbs (1.2 lb. PLS/acre) were planted on the site. The site was the first on the Refuge to be planted with a Vicon broadcast spreader.

Seventeen acres of former fescue hay meadow north of Wayne Ellis and south of Mine Creek was disced once in April to prepare for native grass seeding. The site had been disced the previous summer as well but became infested with cheat grass (annual or downy brome). The site was disced two more times in May and then planted to native grasses and forbs on the 15th. A 10 acre addition to the east and south of a large knob located along Gatlin Road (the southernmost high ground along the east side of the road) was likewise disced twice and planted to grass and forbs on the 15th. Seven species of grass (5 lb. PLS/acre) and eleven species of forbs (1.2 lb. PLS/acre) were planted on the sites. The sites were among the first on the Refuge to be planted with a Vicon broadcast spreader.

The species mix for the above sites was: 5 lbs PLS/acre of native grass: 1.5 lb - Big bluestem (Kaw), 1.0 lb - Indian grass (Osage), .5 lb - Eastern Gamagrass (Pete), .5 lb - Canada Wildrye, .5 lb - Little bluestem (Camper), .5 lb - Sideoats grama (Native), and .5 lb - Switch grass (Blackwell) and 1.1 lbs /acre of native forb mix, of each of the following in equal weights- Blazing Star, Compass Plant, Coneflower (Grayhead), Coneflower (Pale Purple), Lead Plant, Maximilian Sunflower, Pitcher Sage, White Prairie Clover, Illinois Bundleflower, Roundhead Lespedeza, and Purple Prairie Clover.

A portion of the funding for the native grass/forb seed mix came from Quail Unlimited (\$1,500) and the Challenge Cost share program (\$1,500).

A search for Mead's Milkweed was conducted on June 2nd at Castle and Hilltop Prairies. Plants could not be rediscovered at Castle Prairie but that is likely due to lack of flowering. The plants will likely flower the following year if the site is burned as anticipated. A single colony was discovered at Hilltop Prairie. This was the first time since 1989 that a plant had been confirmed at this site.

Spraying of *Sericea lespedeza* was undertaken at Schoolhouse Prairie and adjacent grasslands in June and on the grasslands east of Yardley Road and north of 1500 Road as well as all tracts of



State Line Pond Renovation



Hamilton Wildland Urban Interface Project

native prairie in July. Grasslands south of Trading Post and north of Gleason's were sprayed in August.

A total of \$16,700 in funding was received through an Emergency Stabilization and Rehabilitation grant for arson sites on the Refuge. Native grass and forbs were purchased from Sharp Brothers Seed Company in September for planting in the spring of 2004.

In October WB Menard spread seeds from *Eryngo leavenworthii*, collected at Flint Hills NWR, and scattered them at a dry rock prairie at Mine Creek to supplement a small population which had been established from an earlier planting.

In December contractor John Wunderly began shearing hedge and honey locust trees east of Yardley and north of 1500 road as part of a \$20,000 Wildland Urban Interface (WUI) Project. A total of 40 acres of trees is to be removed for the purpose of reducing 100+ hour fuels near the Paul Hamilton residence and to restore the area to grassland.

WB Menard collected seed from rattlesnake master on some prairies on the Refuge in December for planting in a production plot behind the office in the spring of 2004.

6. Other Habitats

Three fescue patches immediately southeast of the office were sprayed with Roundup in March and later planted with 50 plum, 25 smooth sumac, and 25 persimmon to create a brush thicket. The project was conducted for a number of reasons including improved visitor bird viewing and the elimination of fescue which will reduce mowing and remove fine fuels close to the office.

7. Grazing

RM Freske completed grazing SUP's for 3 cooperators in February totaling 310 grazing acres.

9. Fire Management

WB Menard established a fire effects monitoring plot at the Upland Hardwood burn unit in February and three other plots at the River South burn unit in November and December.

Several brush piles at Mine Creek and west of Ballou's house were burned in February. In July old brush piles at Schoolhouse Prairie were consolidated and burned. All of the brush piles were the result of prairie restoration efforts

Two prescribed fires were conducted in March: headquarters east - 45 acres - 3/29, headquarters middle - 15 acres - 3/30, and Murray Prairie Island - 20 acres - 3/26.

The following 11 prescribed fires were conducted in April:

Headquarters West-April 5-10 acres, Mine Creek Upland Hardwoods-April 5-40 acres, Murray Prairies West-April 9-26 acres, Mine Creek Rocky Prairie-April 9-2 acres, Mine Creek Meadow-April 11-58 acres, Mine Creek South-April 21-24 acres, Schoolhouse North-April 21-21 acres, Schoolhouse South-April 22-33 acres, Schoolhouse East-April 22-33 acres, Murray Prairies Center-April 22-40 acres, and Murray Prairies East-April 22-35 acres.

Spring 2003 prescribed fires totals were 14 burns for 402 acres.

FPT Steinle assembled a variety of resources to burn at Marais des Cygnes NWR. Resources were used from Flint Hills NWR, Quivira NWR, Balcones Canyonlands NWR, local AD hires, AD hire from the Quivira NWR area, Ft. Niobrara/Valentine NWR, and the Regional Office (Zone FMO, Ken Kerr).

FPT Steinle conducted a tour of the Refuge for Galen Green, RO Fire Ecologist, on the 8th.

FPT Steinle attended an FMO Meeting in Scottsbluff, NE on the 4th-6th.

10. Pest Control

BT Claypool placed termite spikes around Murray Storage Building on July 3rd to help control termites.

11. Water Rights

RM Freske and Karl Karrow, MDC Wildlife Area Manager, attended a Marais des Cygnes River Basin Advisory Board Meeting in Ottawa, KS on February 25th. The meeting was sponsored by the Kansas Water Office (KWO). RM Freske stated support for a KWO proposal to request the state legislature to draft a law allowing water rights applications for minimum stream flows on the river. Currently water rights are only allowed for diversions. Minimum stream flows are desired to protect a large mussel population

RM Freske submitted a letter to the Kansas Water Office (KWO) in March commenting on a KWO proposal to request the state legislature to draft a law allowing water rights applications for minimum stream flows on the Marais des Cygnes River. Currently water rights are only allowed for diversions. The letter stated a desire for minimum stream flows to protect a large mussel population on the Refuge.

G. WILDLIFE

6. Raptors

A pair of barn owls fledged 9 young in the nest box in the northeast corner of the Steele Barn in May. The young varied in size from approximately 6"-10" in height and appeared healthy.

11. Fisheries Resources

WB Menard received a \$50,000 USGS grant to study the mussel population on the Refuge. Throughout July and August, Tim Maloney, a graduate student from the University of Missouri, Columbia, under the direction of Dr. Charlie Rabini, began an inventory of the Refuge mussel population. On July 31st Tim Maloney and Terry Heiser discovered a live Plain pocketbook, *Lampsilis Cardium*, on the Refuge near the Sammy Boyd rocky riffle. On August 31st they discovered a live Rock pocketbook, *Arcidens confragosus*, on the Refuge in the Gleason's Bend Mussel Bed. These are the first live specimens of these mussels to be found on the Refuge

H. PUBLIC USE

1. General

WB Menard presented a slide show about the Refuge to visitors at the Great Plains Nature Center on February 3rd.

An informational mailing to over 550 Refuge visitors was sent out in early March. The mailing included information regarding deer and turkey hunt summaries for the past three years, the proposed 11,000 acre addition, the EA Open House and a Centennial Open House, and a number of recent habitat management accomplishments.

An Open House was conducted on March 14th to celebrate the Refuge System Centennial. A birthday cake and refreshments were provided and a time capsule with items to entomb were on display. Approximately 20 people attended.

RM Freske served as a judge for the Butler Highschool Science Fair in March. Two categories were judged: ecosystems and soil/water.

FPS Steinle led a group of 5 volunteers from River City Community Church, Kansas City, to the Mine Creek Savannah site on Saturday, June 14, where they removed an old fence which ran through the area and was a tripping hazard as well as unsightly.

RM Freske conducted a tour for the KS Chapter of the Wildlife Society at Carpenter Bottoms on September 27th. A total of 10 people participated in the tour.



Plain Pocketbook Mussel



Rock Pocketbook Mussel

All the Service roads throughout the Refuge were mowed in September to provide easier access for Refuge visitors.

Highway signs directing the public to the Refuge office were installed on KS Hwy 52 and US Hwy 69 by the KS Dept. of Transportation in September.

A volunteer work day was conducted on October 25th. A total of 9 volunteers assisted. The completed project consisted of piling of felled trees and brush at the Mine Creek Savannah restoration project.

RM Freske, along with Refuge Managers from the other KS Refuges, presented a Centennial Blanket to Governor Sebelius on October 14th.

RM Freske developed and submitted text to the WO in October for a Refuge Web Page which is required for each Refuge in the system.

On October 22nd RB Menard conducted a bus tour of the Refuge for a group of 28 elderly garden club members from Columbia, MO.

RM Freske contacted the MO Dept. of Transportation in November and requested signing on U.S. Hwy 71 at the Butler, MO interchange to direct visitors to the Refuge office. The request was later approved provided the Refuge pay \$18,000. No signing is anticipated on U.S. Hwy 71 in the foreseeable future.

RM Freske submitted information for a new formal birding brochure in December. Text and species information were sent to Melvie Uhland in the Denver RO who will complete an "in-house" draft which can be submitted to a printing contractor.

RM Freske also completed draft text for a trail brochure in December which will also be done in-house by Melvie. Two trails will be highlighted in the brochure: Chinkapin Ridge Trail - 1 1/4 mile long and Blazing Star Trail - 1/2 mile long. Chinkapin Ridge Trail is in the southeast portion of the Refuge a travels around a rocky knob. Blazing Star Trail is southeast of Root Cemetery.

8. Hunting

An Antlerless Deer Hunt was conducted on January 1st-12th on the Refuge. A total of 51 permits were issued of which 35 were used. A total of 137 hunter use days were recorded which averages out to 3.9 days per hunter. A total of 19 deer were taken (54% success rate) composed of 12 adult does, 5 immature does, and 2 immature bucks. Two deer were lost.

A drawing for Spring Turkey permits was conducted on the first week of March. Approximately 200 people applied for a total of 50 permits. A total of 30 permits were used (non responses to survey were recorded as not hunting). Total hunter use days was 106 with an average of 3.53 days



Fledged Barn Owls - Steele Tract Barn



A Young Refuge Hunter's First Gobbler

per hunter. A total of 13 gobblers with an average beard length of 10.36 inches and 5 jakes were harvested for a total harvest of 18 turkeys. A total of 24 hunters rated the hunting as "Good" and 6 rated hunting as "Average".

A drawing for the Refuge Archery Deer Hunt was conducted the first week of September. A total of 76 permits were mailed out from a list of 112 applicants. A total of 42 permits were used (non responses to survey were recorded as not hunting). Total hunter use days was 363 with an average of 8.64 days per hunter. A total of 8 bucks and 3 does were harvested with one buck lost. The largest buck harvested scored 147.

17. Law Enforcement

RM Freske cited a quail hunter on January 11th near Carpenter Road for not having a valid state hunting license.

The Zig-Zag Road wildfire was discovered on the north side of E1275 Road in the CRP grassland on January 26th. An estimated 3 acres burned.

Another wildfire was discovered on March 31st at north Schoolhouse Prairie. Two ignition points were observed, one along Yardley Road and another along 1550 Road. Less than one acre burned.

FPT Steinle and MW Peterson suppressed two wildfires on April 2. They were the 1550/Yardley wildfire - 1 acre and the 03 Eureka West wildfire - 1 acre. Both fires were Type 4 incidents which allowed FPT Steinle to work on his ICT4 task book. One other wildfire occurred on April 11. FPT Steinle, MW Peterson, and AD hire Pianne suppressed the fire which totaled 0.1 acre.

FPT Steinle responded to a log jam fire beneath State Line Bridge on June 16th. The local volunteer fire department put out the blaze. Minor damage occurred to a portion of the concrete bridge. The blaze likely started from an abandoned campfire.

The 2003 wildfire total was 5 fires for 5.1 acres. This acreage is below the 2002 totals probably due to an arsonist burning the same locations two years in a row yielding far less fuel to burn in 2003, especially after the drought of 2002.

I. EQUIPMENT AND FACILITIES

1. New Construction

A 1,400 gallon concrete cistern was installed at the Steele House in May for use as a household water supply.

A lumber rack made of angle iron was constructed in May in the east end of the Trading Post

"Murray" barn. Lumber was then removed from the barn floor and loaded on the rack to prevent further termite damage. A second, much larger, lumber rack was constructed in June in the west end of the Trading Post "Murray" barn. All remaining lumber in the barn floor was loaded on the new rack.

Two new parking lots were constructed in July. One was along State Line Road at the southeast corner of the Refuge at the entrance of East Mine Creek Road and the other was constructed east of Zenor Road and the Mine Creek bridge at the entrance of West Mine Creek Road. New gates were also installed at the entrance of each road.

In July new gates were installed at the entrance of nine roads on the Refuge: Root Cemetery, west side of Boyd 160, sw corner of Jesus Prairie, east side of Ballou 130, ne corner of Refuge on State Line Road, north side of field road east of Carpenter Road, north Carpenter Homesite, old Hamilton Homesite, and Davis Creek Homesite.

Two new sections of sidewalk were installed at the office in July. One section connects the back office deck to the staff parking lot and the other section runs along the side slope in front of the front office deck from the top of the ramp to the bottom of the ramp. Two more sections are planned in the future - one to connect the front and rear office sidewalks and another to connect to the storage building.

A new concrete base and flag pole were installed in July in front of the office.

Clearing of trees/brush and installation of a new fence was completed in September along a section of boundary between Wayne Ellis and the Refuge. The purpose of the fence is to prevent trespass cattle from entering the Refuge. The site is the last section of fence needing replacement along the Wayne Ellis-Refuge boundary and prevents unauthorized grazing on an isolated 6 acre area bordered on the west, east, and north by a mine pond and Wayne Ellis to the south.

A ½ mile barbed wire fence was constructed along the east side of the Steele Tract in September.

2. Rehabilitation

The diesel fuel pump was dismantled and gaskets replaced to stop a fuel leak in May.

The filling in of approximately 40 abandoned wells and cisterns was completed in June. A total of 1,295 tons of crushed rock and 3 tons of bentonite clay were purchased to augment existing supplies. Funding of \$35,000 for seasonal staff and materials was available through MMS.

The storage building parking lot was expanded in June, nearly doubling in size, to better accommodate refuge equipment and make it easier for large vehicles to maneuver in the area.

In June, the two exterior office AC/Heating units were removed from the office, filter holding

frames were constructed, and the units reattached. The purpose of the work was to enable the filtering system to function which will prevent infiltration of insects and dust.

In August, the metal fascia on the office building was removed, insulation correctly installed, sheets of 1/4" plywood placed over the insulation, and the metal fascia replaced. The purpose of the project was to seal up the hundreds of openings behind the metal fascia which were allowing a tremendous invasion of insects as well as reducing heating/cooling efficiency of the office building.

Rock was placed in muddy areas on service roads to two Trading Post wetland dikes in September.

MM Peterson and BT Erickson repainted the soffits and other exposed woodwork on the Hilltop House in October.

In December, the Murrays finished replacement of the fence on the north side of the "Hilltop 80", to help offset rent owed to the Refuge, and began replacement of the fence on the west side of the hill.

MM Peterson began work on a large opening in the south side of the Trading Post barn in December. The purpose of the opening is to allow utilization of the center of the building and also to store a new native grass drill which was ordered.

4. Equipment Utilization and Replacement

BT Ellis moved boundary signs along George Leff's north boundary and Sammy Boyd's Mine Creek Tract to the correct surveyed points in March.

A new John Deere 750C Crawler Dozer with forestry package and a winch, purchased with MMS funds for \$168,794.91 was received in June to replace a 1967 D7 Caterpillar Dozer.

A new drill press, storage cabinet for nuts & bolts, two new chain saws, and furniture for the Steele House were purchased in June.

5. Communications Systems

New digital radios and base system were received at the Refuge in June.

6. Computer Systems

A Computer received from Lacreek NWR in January was set up for MM Peterson to provide him with Internet and email access.

In September, two new Dell computers were received and set up for AC Spurgeon and MM Peterson.

Internet satellite service for the Refuge was installed in December.

J. OTHER ITEMS

1. Cooperative Programs

FPT Steinle, MW Peterson, and AD hire Piane traveled to Flint Hills NWR on April 17 to assist with two prescribed burns.

FPT Steinle was detailed as ENGB to Boyer Chute and Crescent Lake NWRs for prescribed burns near the end April. RT Pankratz and RT Fondriest from Flint Hills NWR traveled with him as an Engine Crew on Engine 6333 out of Flint Hills NWR. The crew was on assignment for a total of two weeks.

FPS Steinle and RA Ellis traveled to Quivira NWR on July 11th to assist with a prescribed burn.

FPS Steinle and RA Ellis traveled to Montana in August to assist with wildfires throughout the western and central parts of the state.