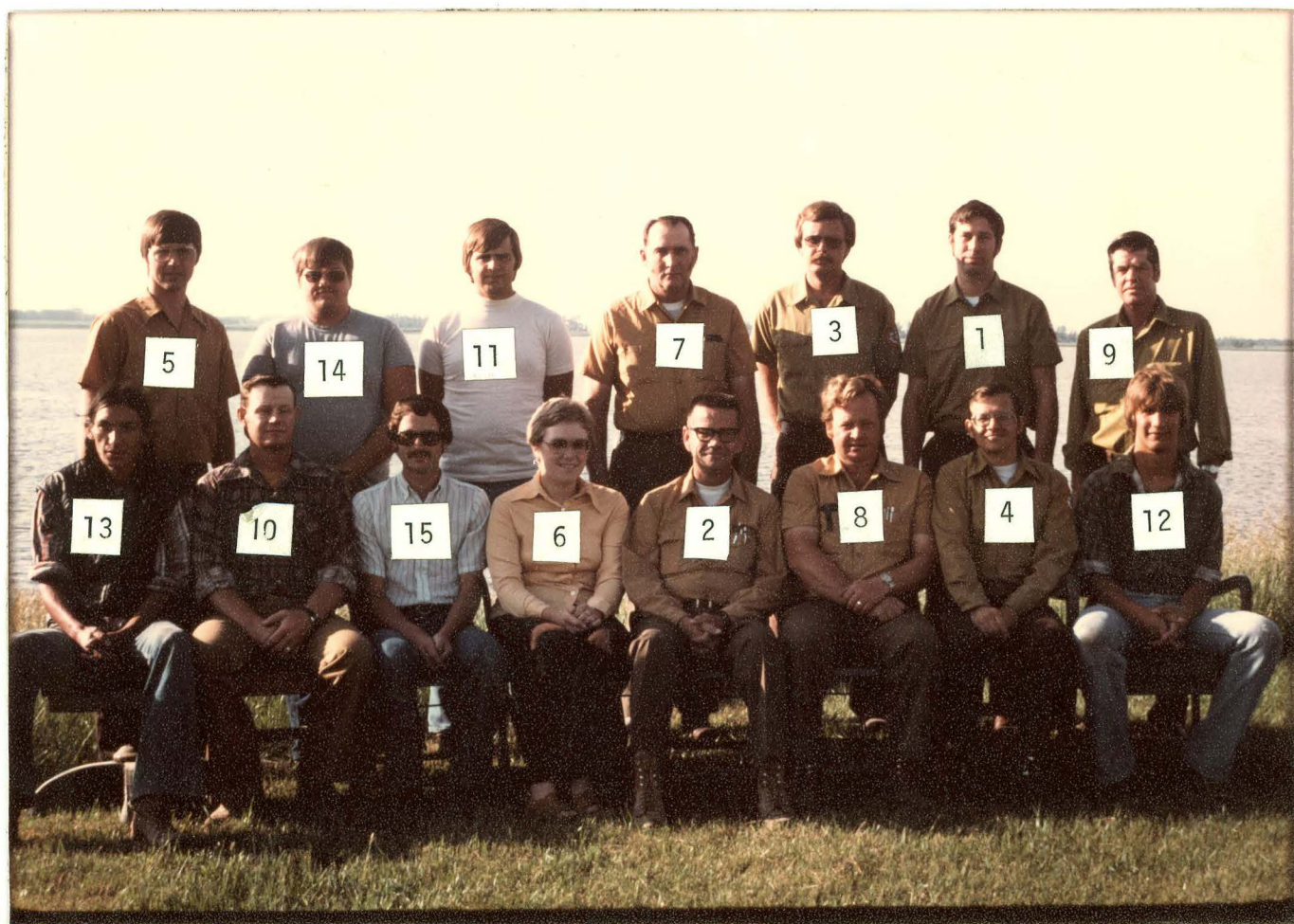


SAND LAKE WETLAND MANAGEMENT DISTRICT
Columbia, South Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1978

NATIONAL WILDLIFE REFUGE SYSTEM
FISH AND WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR

SAND LAKE NATIONAL WILDLIFE REFUGE AND WETLAND MANAGEMENT DISTRICT



1. Sam Waldstein, Refuge Manager, GS-12, PFT.
2. Robert Wright, Assistant Manager, GS-11, PFT.
3. Tim Kessler, Refuge Manager (Trainee), GS-7, PFT.
4. Robert H. Edens, Jr., Outdoor Rec. Planner, GS-9, PFT.
5. William Schultze, Biological Technician, GS-5, PS.
6. Tonna C. West, Administrative Clerk, GS-5, PFT.
7. Marvin Elsen, Automotive Mechanic, WG-10, PFT.
8. Berle Meyers, Jr., Maintenceman, WG-7, PS.
9. Jack Cantwell, Maintenceman, WG-8, PS.
10. Ron Frohling, Maintenance Helper, WG-5, Int.
11. Dean Bisbee, Laborer, WG-3, Temporary, 5/07/78-11/04/78.
12. Terry Kruse, Laborer, WG-3, Temporary, 5/07/78-8/26/78.
13. Gayle Rencountre, Laborer, WG-3, Temporary, 5/07/78-8/23/78.
14. Tim Beck, Laborer, WG-3, Temporary, 5/07/78-7/29/78.
15. Paul Mammenga, Job Services Program, South Dakota Department of Wildlife Parks and Forestry.

REVIEW AND APPROVALS

Sam Waldstein 1/10/79
Submitted By Date

Area Office Date

Regional Office Date

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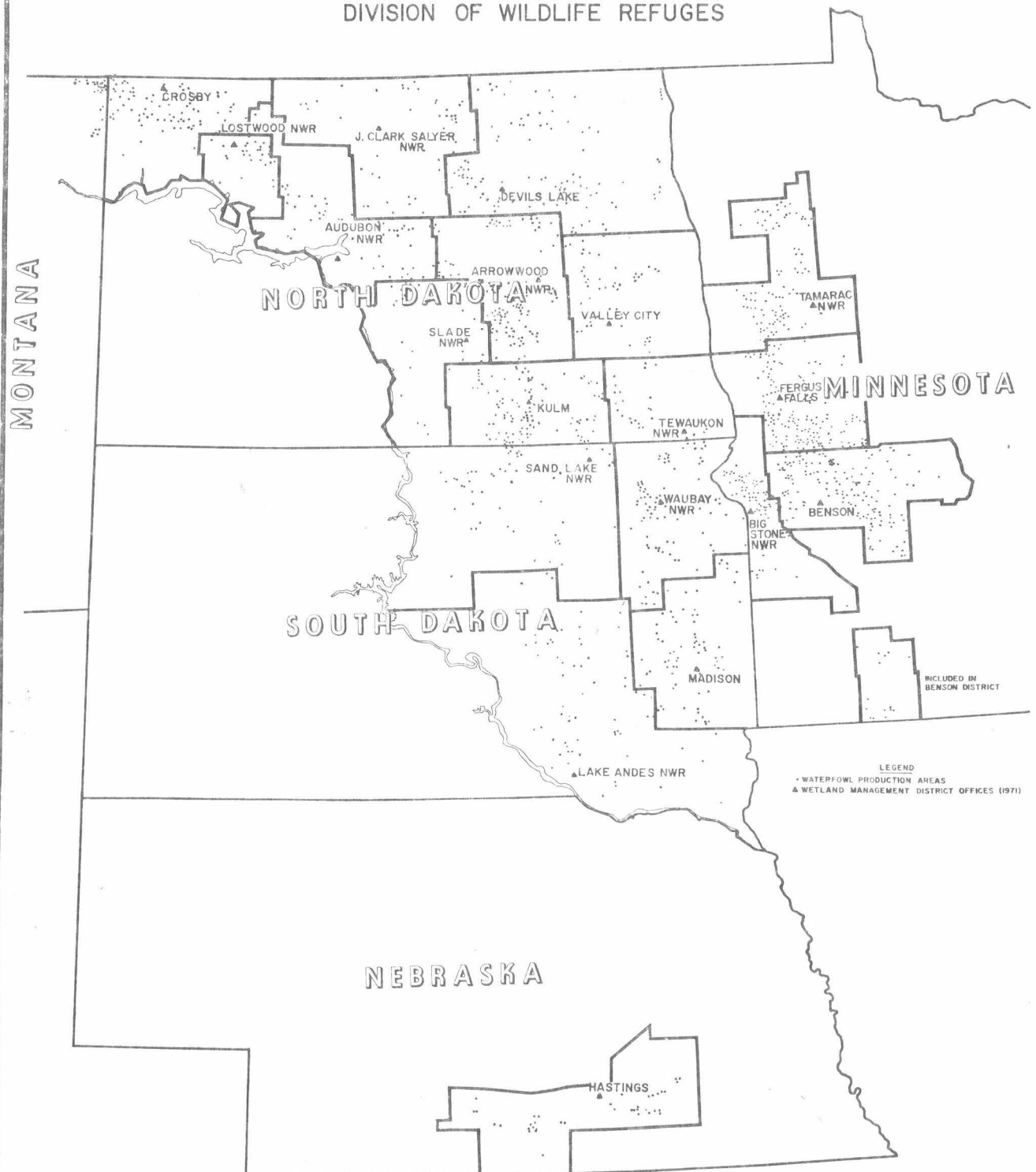
to be curtailed. When you know
how to harvest only ducks in
good supply, a longer season
is possible.

NORTH DAKOTA AND
WITH
BUREAU OF SPORT FISH
WELCOME
WATERFOWL PRODUCE

SAND LAKE WMD



WATERFOWL PRODUCTION AREAS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
DIVISION OF WILDLIFE REFUGES



I. GENERAL

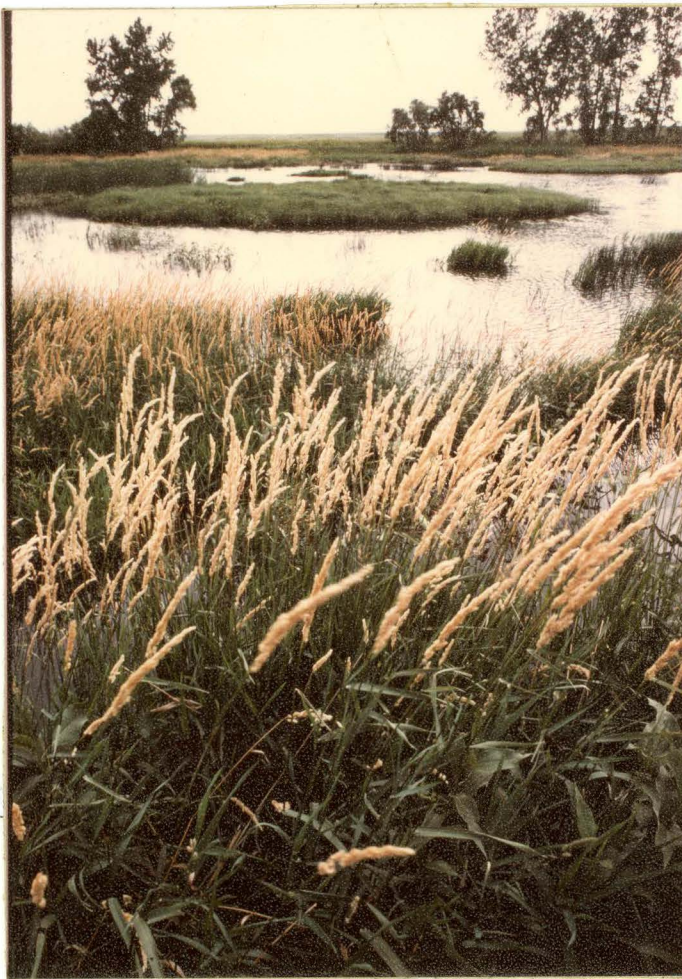
A. Introduction

The Sand Lake Wetland Management District consists of nine counties in north central South Dakota. The preceding two maps show the district and its relationship to other districts.

B. Climatic and Habitat Conditions

Things got better this year. The year started with a heavy snow pack that resulted in filled marshes in the spring.

Rainfall through the spring and summer was timely; over seven inches fell in June in the eastern part of the district. Marshes had good water through the summer months.



Berndt WPA Water conditions in July. TKK

In September and October precipitation was less than normal. The first snow fell in mid-November. At the close of the year, snow depth was about four inches.

C. Land Acquisition

1. Fee Title

Table 1 shows the progress of fee acquisition since 1961.

We received title to three tracts this year. The 80 acre Ryman tract in Edmunds County is part of a 237 acre purchase. The remaining land will be purchased in 1979 and 1980. The 147 acre Mardian tract in Brown County was purchased over the objections of the township board and some of the county commissioners. The Imberri purchase contains 454 acres in McPherson County. The McPherson County Board made a "No Recommendation" on a proposal to purchase an additional 340 acres.

2. Easements

Table 2 shows the progress of easement acquisition since 1962.

D. System Status

1. Objectives

The objectives which were written eight years ago need revision. The objectives were based on an acquisition goal of 30,000 acres by 1978. At the close of 1978, there were 17,206 acres owned in fee.

2. Funding

Funds for the District are included with those for Sand Lake and Pocasse NWR's.

TABLE 3 - FUNDS AND STAFF 1973-1979

<u>YEAR</u>	<u>FUNDS</u>	<u>PFT</u>	<u>PT</u>	<u>TEMP</u>	<u>REMARKS</u>
1973	\$157,600	7	3	2	
1974	159,950	6	3	3	\$10,000 DNC
1975	154,938	4	4	2	\$5,000 Elec. Rehab.
1976	153,585	4	4	2	\$10,000 Water Rehab.
1976T	40,500	5	3	0	\$59,000 Bank Stab.
1977	185,881	4	3	3	\$40,000 Control Struc.
1978	224,200	6	4	4	\$429,000 BLHP Rehab.
1979	253,000	6	4	4	\$787,000 BLHP

TABLE 1 - TREND IN FEE ACQUISITION, 1961-1978, SAND LAKE WMD

NUMBER OF NEW FEE TRACTS AND ACREAGE

Year	Brown	Campbell	Edmunds	Faulk	McPherson	Potter	Spink	Sully	Walworth	Totals
1961	2-143.4	0	3-338.3	0	2- 149.2	0	0	0	0	7- 630.9
1962	0	0	1- 50.0	0	5- 384.01	0	0	0	0	6- 434.01
1963	1- 34.62	0	2-248.29	0	1- 30.31	0	0	0	0	4- 313.22
1964	0	0	0	0	1- 80.00	0	0	0	0	1- 80.0
1965	0	0	0	0	2- 211.94	0	1- 95.0	0	0	3- 306.94
1966	0	7-361.35	4-290.4	5-321.92	5- 179.13	0	3-120.53	2-160.0	0	26-1433.33
1967	0	2-123.64	4-324.34	0	7- 372.68	0	3-252.72	2-106.48	0	18-1179.86
1968	0	0	4-177.82	0	8- 496.15	0	2-190.04	0	0	14- 864.01
1969	1-318.66	1-344.54	0	1-200.0	4- 605.72	2-360.0	2-297.4	0	0	11-2116.32
1970	5-1383.85	1- 49.93	0	2- 76.92	12-1892.31	1- 48.71	0	0	1- 80.0	22-3531.72
1971	2-115.5	0	0	0	4- 515.0	0	1- 43.8	0	0	7- 674.3
1972	2-136.5	3-204.1	5-424.2	1- 80.0	3- 250.2	0	1- 2.5	0	1-148.94	16-1246.44
1973	0	3-214.0	0	0	1- 30.0	0	0	0	0	4- 244.0
1974	0	0	0	0	1- 42.0	0	2-200.0	0	0	3- 242.0
1975	2-240.9	0	0	2-207.8	0	0	0	0	0	4- 447.8
1976	0	0	0	1-179.6	2- 973.98	0	0	0	0	3-1153.58
1977	0	0	0	0	1- 320.0	1- 40.0	1- 11.0	0	0	3- 371.0
1978	1- 147.0	0	1- 80.0	0	1- 454.0	0	0	0	0	3- 681.0
1979	1- 313.	1- 20	1- 80		3- 700				1- 80	7-1198
# Fee Tracts	17-16	18-17	25-24	12	63-60	4	16	4	3-2	162-155
# Mgmt. Units	13-12	12	13	6	34-31	2	8	1	3-2	92-87
Acres	2837.53	1307.56	2013.35		7686.63				308.94	17148.43
BLM	2519.53	1287.56	1933.35	1066.24	6986.63	448.71	1212.99	266.48	228.94	15,950.43
Total	2519.53	240.0	1933.35	1066.24	160.0		520.0		335.71	1,255.71
	2519.53	1527.56	1933.35	1066.24	7146.63	448.71	1732.99	266.78	564.65	17,206.14
		1547.56	2013.35		7846.63				644.65	18404.14

TABLE 2 - TREND IN EASEMENT ACQUISITION, 1962-1978, SAND LAKE WMD

NUMBER OF NEW EASEMENTS

Year	Brown	Campbell	Edmunds	Faulk	McPherson	Potter	Spink	Sully	Walworth	Total	Total Wet Acres
1962	0	0	0	0	1	0	0	0	0	1	(1)
1963	1	0	17	13	0	0	0	0	0	31	(1)
1964	8	2	93	32	8	0	6	0	8	157	(1)
1965	7	3	81	54	31	1	2	0	13	192	(1)
1966	2	1	68	76	47	2	4	0	2	202	49,286.80
1967	0	1	30	6	51	1	1	0	0	90	56,428.80
1968	11	0	9	27	52	9	1	0	0	109	65,680.50
1969	25	7	16	17	80	7	2	0	0	154	77,083.50
1970	12	2	4	5	37	1	0	2	0	63	80,805.34
1971	12	0	18	19	32	3	25	0	2	111	87,804.34
1972	8	0	11	3	7	11	14	0	0	54	91,581.34
1973	0	0	11	0	1	0	19	0	1	32	94,622.50
1974	1	14	27	11	4	4	4	0	0	65	98,616.50
1975	0	33	1	37	0	0	0	1	1	73	102,081.50
1976	0	7	19	41	19	2	2	0	6	96	107,412.00
1977	1	7	5	50	24	14	1	0	0	102	112,720.00
1978	2	49	49	20	35	11	12	0	12	190	123,917.00
1979	4	48	33	12	47	3	22		4	173	
Total	90	126	459	411	429	66	93	3	45	1722	

(1) Data not available.

Non-migratory birds and mammals is severely underfunded with only \$1200.

II. CONSTRUCTION AND MAINTENANCE

A. Construction

No major construction was done this year.

Force account labor was used to fence 130 rods on the Maunu WPA and 54 rods on the Kirschenmann WPA.

A tower and windmill obtained under the Drought Relief Program of 1977 was erected on the Fisher WPA in McPherson County.

On the Bergerson (Perch Lake) WPA, the trail to the main lake was improved. This involved installing culverts, shaping the roading, and graveling along 1.9 miles.

B. Maintenance

A TD15C dozer was used to bury the old buildings on the Baird tract. The dozer was also used to clean up the Mehlhaff WPA.

We spend two weeks at the Madison WMD cleaning up old building sites with the dozer.

C. Wildfires

On May 11th, about 1½ acres on the H. Boekelheide tract were burned. The fire was caused by a neighbor burning weeds.

III. HABITAT MANAGEMENT

A. Croplands

Three tracts having permanent food plots were in corn this year. Sixty-two acres were planted; twenty acres were left standing. Six tracts are in the middle of a two-year program to reseed DNC.

B. Grasslands

One 80-acre unit in the northeast part of the Adam-Gienger WPA was grazed during May to stimulate the growth of native grass.



Adam-Gienger WPA, April 1978. This area was grazed at the rate of 1AUM/Acre during May. Previous grazing was prior to 1969. View is from the NE corner to the south. RLW.

With good moisture and a year's rest, cover on the Bergerson WPA showed good growth.



Bergerson WPA. Spring, 1978. The previous tenant overgrazed the land during his last year of use. RHE.



Bergerson WPA, September, 1978. Five months later with rest and good moisture. RLW.

Two-hundred twenty-two acres were seeded to DNC on six tracts this year. Three tracts totalling ninety acres were hayed this year in preparation for DNC reseeding in 1980.

Table 4 lists the cropping by tract.

We have weed problems in eight of the nine counties we manage. This year 39 tracts were treated. The problem plants we treated were Canada thistle, leafy spurge, sow thistle, wormwood, and creeping jenny.

Last spring notices of where we planned to spray were sent to each county weed inspector. We received only one comment requesting that we spray an additional tract. In the fall, we sent notices to the inspectors stating what we had sprayed.

C. Wetlands

All marshes were in good to excellent condition in the spring. Most were in good condition throughout the summer.

The Perch Lake Dam on the Bergerson WPA which was repaired last year filled to capacity this spring.

D. Forestlands

Permission was given to a neighbor to plant a shelterbelt on the edge of the Berndt WPA. The purpose was to give added protection to the neighbor's buildings.

L. Berndt planted trees on Thullner WPA. Trees not planted until 1979

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

We have no items in this category.

G. Easements for Waterfowl Management

There are about 124,000 wet acres under easement in this District, an increase of 11,000 wet acres this year.

The one remaining violation from 1976 was closed.

A year ago 48 possible cases were detected in the first flight. Only one was an actual violation. The land owner plugged the ditch and forfeited collateral of \$100.00.

TABLE 4 - CROPPING AND SEEDING

<u>Tract</u>	<u>Crop</u>	<u>Total Acres</u>	<u>Coop. Share</u>	<u>Govt. Share</u>	<u>Purpose</u>
Horn	Wheat	15	10	5	Food Plot (1)
	Wheat & DNC	18	14	4	DNC Seeding (2)
Kruse	Wheat	20	13	7	Food Plot (1)
	Wheat & DNC	10	8	2	DNC Seeding (2)
Heis	Wheat & DNC	6	0	6	DNC Seeding (3)
Hayes	Corn	28	19	9	Food Plot (4)
Thorpe	Corn	10	7	3	Food Plot (4)
Fisher/ Metzger	Wheat & DNC	12	10	2	DNC Seeding (2)
	Hay	28	28	0	Breakout (5)
Helm	Wheat & DNC	20	18	2	DNC Seeding (2)
Mehlhoff	Wheat & DNC	56	44	12	DNC Seeding (2)
	Oats & DNC	100	80	20	DNC Seeding (2)
Long Lake	Hay	31	31	0	Breakout (5)
	Small Grain	84	76	8	Food Plot (1)
Berndt	Small Grain	10	9	1	Food Plot (1)
Lassle/ Biffert	Hay	31	31	0	Breakout (5)
Hecla	Wheat	36	32	4	Food Plot (1)
	Corn	24	16	8	Food Plot (4)
Hottman	Oats	55	49	6	Food Plot (1)
		<u>594</u>	<u>495</u>	<u>99</u>	

- (1) In the second year of the three-year reseeding program, small grain is grown. The government's share is usually left standing.
- (2) In the third year of the reseeding program, a mixture of alfalfa (1½ lb), sweet clover (½ lb), tall wheatgrass (6 lb), and intermediate wheatgrass (2 lb) are seeded with small grain. The government's share of small grain is left standing.
- (3) The seeding on the Heis WPA was done by force account.
- (4) The food plots on these three tracts are permanent.
- (5) In the first year of the reseeding program, the cooperator is allowed to hay the ground after August 1st and then plow the land.



Faulk Co., 70X, Summer, 1978. This ditch RLW



Faulk Co., 70X, Summer, 1978. ... drained this 70 acre marsh.
The landowner thought only "potholes", not marshes, were covered.
RLW.

On the initial flight this fall, 44 possible violations were detected. Most of these probably will not be violations; e.g., excluded areas, non-functional ditches. Snow cover delayed the follow-up flight.

IV. WILDLIFE

A. Endangered and/or Threatened Species

No prairie falcons or whooping cranes were seen this year. Bald eagles were seen on Pocasse NWR and the Long Lake WPA.

B. Migratory Birds

1. Waterfowl

a. Ducks

Two pair counts are made in Spink, McPherson, Edmunds, and Campbell counties.

Pair counts for the last twelve years are shown in Table 5.

TABLE 5 - PAIR COUNTS, WPA'S 1967-1978

1967	503
1968	586
1969	720
1970	779
1971	581
1972	1067
1973	754
1974	666
1975	936
1976	601
1977	591
1978	876

The species composition of the 1978 counts compared to the 1977 counts is shown in Table 6.

TABLE 6 - SPECIES COMPOSITION OF PAIR COUNTS

<u>Dabblers</u>			<u>Divers</u>		
<u>Species</u>	<u>1978%</u>	<u>1977%</u>	<u>Species</u>	<u>1978%</u>	<u>1977%</u>
Mallard	7.9	8.3	Redhead	7.4	6.1
Gadwall	8.0	17.6	Canvasback	0.8	1.7
Wigeon	3.7	1.0	Scaup	5.5	5.6
GW Teal	2.5	2.5	Ruddy	3.3	11.2
BW Teal	27.6	26.2		17.0	24.6
Shoveler	13.9	10.2			
Pintail	19.4	9.6			
	83.0	75.4			

Water conditions improved for the second year in a row as did the production of most diving ducks; only canvasbacks and ruddy ducks production decreased.

The dramatic increase in South Dakota waterfowl production and water conditions was summed up in an article published June 25th by the Argus Leader of Sioux Falls, SD:

"Fish and Wildlife surveys indicated there are 56 percent more ponds in South Dakota compared to 1977.

Increases in duck numbers ranged from a 101 percent increase in the mallard population to a 2,000 percent increase in the population of redheads, according to the Service.

The blue wing teal was the most numerous duck in the state, according to the survey. There are an estimated 1.3 million teal, four times the number last year."

Estimated production on the WPA's was computed as follows:

876 Pairs counted on 509.6 wetland acres = 1.72 pairs per wetland acre.

8135 wetland acres X 1.72 pairs per wetland acre = 13974 pairs.

13974 pairs X 35% (est. production rate) = 4891 broods.

4891 broods X 6.0 ducks/brood = 29347 ducks produced on WPA's.

1978 production compared to that of 1977 is shown in Table 7.

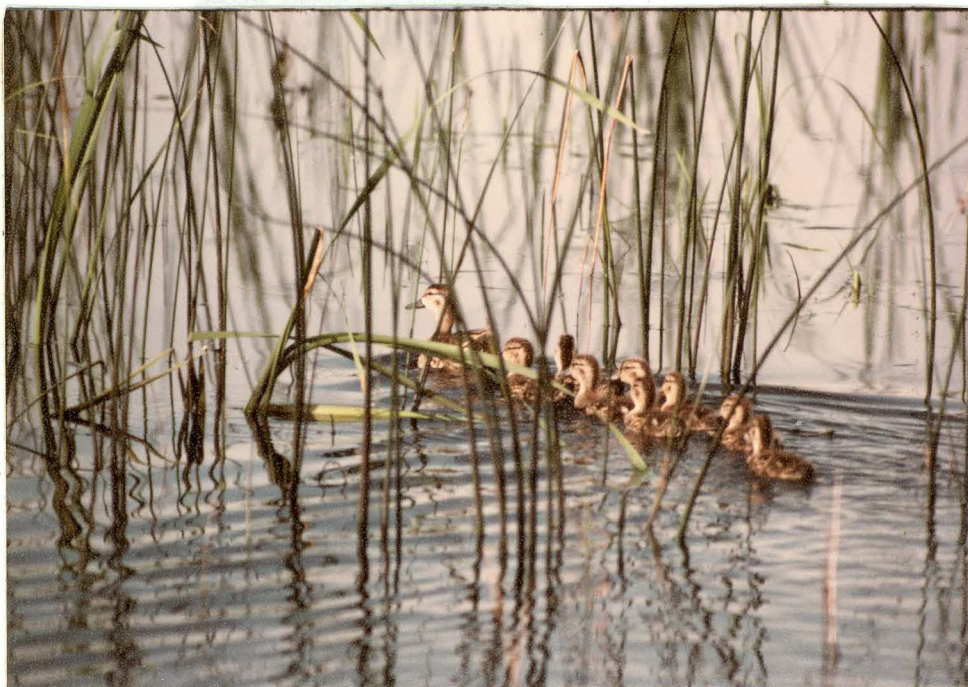
TABLE 6 - DUCK PRODUCTION ON WPA'S

Species	Dabblers		Species	Divers	
	1978	1977		1978	1977
Mallard	2443	1201	Redhead	2288	916
Gadwall	2473	2643	Canvasback	247	255
Wigeon	1144	150	Scaup	130	100
GW Teal	733	375	Ruddy	1020	1682
BW Teal	8533	3934		<u>3685</u>	<u>2953</u>
Shoveler	4298	1532			
Pintail	5998	1441			
	<u>25662</u>	<u>11276</u>			

There were an estimated 119,080 acres under easement that were wet this year. Using the standard of 0.5 ducks produced per wetland acre, we estimate there were 59,540 ducks produced on land under easement.

In 1971, duck production for 1978 was projected to be 91,000, 27,000 on fee land and 64,000 on easement land. This projection was based on owning 30,000 acres in fee (50% of which would be wet) and having 128,000 acres under easement. The estimated production in 1978 of 88,887 included 29,347 on 17,206 acres of fee land which was about 47% wet.

The spring migration peak was ^{130,000 +} 78,000 ducks occurring in mid-April. In 1977, the peak was 88,000.



Engle Dam WPA, Summer 1978. Several of the 88,800 ducks produced in the Sand Lake WMD. SJW.

b. Geese

The spring goose flight peaked at 25,000 the first part of April; 20,000 of these were snows.

The South Dakota Department of Wildlife, Parks, and Forestry released 240 giant Canada geese into portions of McPherson County. The release is part of a cooperative program between the State of South Dakota and the U.S. Fish and Wildlife Service to reestablish nesting Giant Canadas into the state. The birds were incubated and hatched at Sand Lake. A large portion of the county was closed to Canada goose hunting to let the birds get established.

c. Swans

We saw no swans in the District during the spring. In October, there was an average population of 50. A few remained into November.

d. Coot

There were lots of coot in the District from late March until November. Estimated production was 25,565 compared to 6,000 in 1977.

2. Marsh and Water Birds

Total use days for this group were 354,790 compared to 283,650 a year ago. The objective for this group is 2,052,000 use days.

Sandhill Crane use at Pocasse NWR this fall was very low. The high water within the refuge forced the birds onto the Oahe Reservoir. A year ago there were over 10,000 present in October.

One yellow-crowned night heron was sighted on the Christianson WPA on August 3.

3. Shorebirds, Gulls and Terns

The objective for this group is 5,037,030 use days. Use days this year were 1,686,700.

4. Raptors

Marsh hawks and short-eared owls are the most commonly sighted raptors on our WPA's. Total raptor use was 77,610 use days compared to an objective of 112,500 use days.

On May 10th, one ferruginous hawk was seen over the Highland WPA. On May 12, 1977, two ferruginous hawks were seen over the same tract. Burrowing owls were seen twice; once on June 28th on the Imberri WPA and once, on July 6th, near the Engle Dam WPA.

5. Other Migratory Birds

Nothing significant to report.

C. Mammals, Non-Migratory Birds and Other Animal Life

1. Game Mammals

White-tailed deer are present throughout the District and use the larger WPA's extensively. During the first part of the year, deer were feeding on hay stacks near Pocasse Refuge. We transferred a load of grain to the State to help alleviate the problem.

No mule deer were seen this year.

The seven antelope seen in December of 1977 on the Hayes WPA remained in the area during part of the winter.

2. Other Mammals

Fur prices continue to climb with resultant heavy trapping and hunting pressure. Fox are selling for \$80-\$90, badger for \$60, raccoon for \$45 and mink for \$30.

3. Non-Migratory Birds

The winter of 1977-1978 was hard on pheasants, yet production was good enough so that the South Dakota Department of Wildlife, Parks, and Forestry recommended a three bird daily limit. The State Game Commission approved a two bird daily limit. The highest populations in the District were in Faulk County.

South Dakota continued their Pheasant Restoration Program which involves renting and establishing habitat on private land. Funds for this program come from a five dollar stamp which is required to hunt pheasants and other game.

Sharp-tailed grouse and gray partridge were seen on several WPA's and appear to be on the increase throughout the District. Greater prairie chickens were seen on the Hayes and near the Heis WPA in Brown County.

4. Other Animal Life

On April 24th, 1,000,000 northern pike fry were released into Lake Pocasse. The fry were furnished by the Valley City National Fish Hatchery. Earlier in the month, the South Dakota Department of Wildlife, Parks and Forestry trapped adult northern pike from the Missouri River and released them into the refuge.



Tim Kessler assisted in releasing northern fry. RHE.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

We attended several county commissioners meetings in regard to proposed land acquisition.

Sportsmen's club meetings were attended.

Two recognition signs were obtained. One was installed on the Bergerson WPA. The other will be placed on the Ryman WPA.

We attended public meetings which provided information about the small wetland program. The meetings were intended to improve public relations in the four wetland management districts. Problems were aired, values discussed, and floor discussions were encouraged.

B. Recreation

Recreational visits to the Waterfowl Production Areas totaled 25,298 in 1978. About 94% of the visits were made by consumptive users of wildlife. Three Waterfowl Production Areas and Pocasse National Wildlife Refuge provided ample fishing opportunities which accounted for 37% (9,380 visits) of the use. Waterfowl hunting also accounted for a large percentage of the visits. Excellent water conditions and prolific local waterfowl furnished hunters with several productive days of hunting and generated 32% (8,100 visits) of the total use. This is one activity in which actual use has exceeded projected use (20,700 Activity Hours vs 18,535 Activity Hours). The remaining visits were divided between trapping (15%), upland game hunting (8%), deer hunting (2%), and non-consumptive wildlife users (6%).

C. Enforcement

A cattle trespass case on the Hecla WPA was settled with the issuance of an FOC for \$100.

VI. OTHER ITEMS

A. Field Investigations

There are no formal studies in progress in the district.

B. Cooperative Programs

The agreement between the Service and the Nature Conservancy continues. We routinely checked some of their land which lies near Sand Lake for trespass and they check some of our land.

C. Items of Interest

Revenue sharing for each county in the district for the last three years is shown in Table 7. Note the trend in payments.

This narrative was written by Bob Wright and typed by Tonna West.

TABLE 7 - REVENUE SHARING

<u>County</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Brown	\$29,867.80	\$24,371.59	\$17,298.78 (Inc. Sand Lake NWR)
Campbell	945.61	762.67	534.90
Edmunds	1,131.25	918.93	691.14
Faulk	798.99	748.23	575.34
McPherson	3,938.68	4,367.14	3,458.83
Potter	482.43	391.88	315.03
Spink	1,193.46	940.11	680.45
Sully	152.30	123.72	86.78
Walworth	166.05	134.88	94.61
	<u>\$38,676.57</u>	<u>\$32,825.15</u>	<u>\$23,735.87</u>

D. Safety

There were no accidents involving Sand Lake Refuge Personnel this year.

On August 24th, Harvey K. Ryckman drove his vehicle into Lake Pocasse. His body was recovered a few days later.

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

ACT HRS BY MONTH

Sand Lake NWR
RECEIVED

DEC 12 1978

SAND LAKE W.M.D.
6-4572--SDW

Columbia, SD 57433

12 MONTH
TOTAL

ACTIVITY NAME

OCT-77 NOV-77 DEC-77 JAN-78 FEB-78 MAR-78 APR-78 MAY-78 JUN-78 JUL-78 AUG-78 SEP-78

INTERPRETATION

RECREATION-WILDLIFE CONSUMPTIVE

HUNTING MIGRATORY BIRDS													
DUCKS	500	500	0	0	0	0	0	0	0	0	0	0	1000
GEESE	50	0	0	0	0	0	0	0	0	0	0	0	50
GENERAL WATERFOWL	0	0	0	0	0	0	0	0	0	0	0	4800	4800
HUNTING RESIDENT GAME													
UPLAND GAME BIRDS	750	2800	0	0	0	0	0	0	0	0	0	0	3550
BIG GAME, DEER-GUN													
WHITE-TAILED DEER	0	300	200	0	0	0	0	0	0	0	0	0	500
BIG GAME, DEER-BOW													
WHITE-TAILED DEER	10	50	30	0	0	0	0	0	0	0	0	0	90
OTHER GAME	0	0	0	25	0	0	0	0	0	0	0	0	25
TRAPPING	0	350	400	200	0	0	0	0	0	0	0	0	950
FISHING													
WARMWATER	900	600	100	100	75	60	500	10100	10000	11000	4500	1000	38935

RECREATION-WILDLIFE NON-CONSUMP

WILDL/WILDLANDS OBSERV													
FOOT	0	0	0	0	0	0	0	10	20	30	28	25	113
LAND VEHICLE	0	0	0	0	0	0	100	0	0	0	0	0	100
OTHER	0	0	0	0	0	0	0	200	150	300	320	250	1220
PHOTOGRAPHY	0	0	0	0	0	0	0	100	60	70	40	40	310

TOTAL INTERPRETATION	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EDUCATION	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HUNTING	1310	4000	630	225	0	0	0	0	0	0	0	4800	10965
TOTAL FISHING	900	600	100	100	75	60	500	10100	10000	11000	4500	1000	38935
TOTAL OTHER CONS WILDL. REC	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL NON-CONSUMPTIVE REC	0	0	0	0	0	0	100	310	230	400	388	315	1743
TOTAL NON-WILDLIFE REC	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PUBLIC USE	2210	4600	730	325	75	60	600	10410	10230	11400	4888	6115	51643
TOTAL WILDLIFE ORIENTED	2210	4600	730	325	75	60	600	10410	10230	11400	4888	6115	51643
TOTAL NON-WILDLIFE ORIENTED	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. VISITS TO REFUGE	1755	2575	630	175	50	30	350	2220	2125	2415	900	1620	14845

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

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VISITS BY MONTH

SAND LAKE W.M.D.
6-4572-SDW

ACTIVITY NAME	OCT-77	NOV-77	DEC-77	JAN-78	FEB-78	MAR-78	APR-78	MAY-78	JUN-78	JUL-78	AUG-78	SEP-78	12 MONTH TOTAL
INTERPRETATION													
RECREATION-WILDLIFE CONSUMPTIVE													
HUNTING MIGRATORY BIRDS													
DUCKS	500	250	0	0	0	0	0	0	0	0	0	0	750
GEESE	50	0	0	0	0	0	0	0	0	0	0	0	50
GENERAL WATERFOWL	0	0	0	0	0	0	0	0	0	0	0	1200	1200
HUNTING RESIDENT GAME													
UPLAND GAME BIRDS	750	1400	0	0	0	0	0	0	0	0	0	0	2150
BIG GAME, DEER-GUN													
WHITE-TAILED DEER	0	150	100	0	0	0	0	0	0	0	0	0	250
BIG GAME, DEER-BOW													
WHITE-TAILED DEER	5	25	30	0	0	0	0	0	0	0	0	0	60
OTHER GAME	0	0	0	25	0	0	0	0	0	0	0	0	25
TRAPPING	0	350	400	100	0	0	0	0	0	0	0	0	850
FISHING													
WARMWATER	450	400	100	50	50	30	250	2050	2000	2200	900	250	8730
RECREATION-WILDLIFE NON-CONSUMP													
WILDL/WILDLANDS OBSERV													
FOOT	0	0	0	0	0	0	0	10	20	30	28	25	113
LAND VEHICLE	0	0	0	0	0	0	100	0	0	0	0	0	100
OTHER	0	0	0	0	0	0	0	100	75	150	160	125	610
PHOTOGRAPHY	0	0	0	0	0	0	0	50	30	35	20	20	155
TOTAL INTERPRETATION	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EDUCATION	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HUNTING	1305	2175	530	125	0	0	0	0	0	0	0	1200	5335
TOTAL FISHING	450	400	100	50	50	30	250	2050	2000	2200	900	250	8730
TOTAL OTHER CONS WILDL. REC	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL NON-CONSUMPTIVE REC	0	0	0	0	0	0	100	160	125	215	208	170	978
TOTAL NON-WILDLIFE REC	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PUBLIC USE	1755	2575	630	175	50	30	350	2210	2125	2415	1108	1620	15043
TOTAL WILDLIFE ORIENTED	1755	2575	630	175	50	30	350	2210	2125	2415	1108	1620	15043
TOTAL NON-WILDLIFE ORIENTED	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. VISITS TO REFUGE	1755	2575	630	175	50	30	350	2220	2125	2415	900	1620	14845

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
PEAK MONTHLY WATERFOWL POPULATIONS

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SAND LAKE W.M.D.
6-4572-SDW

SPECIES NAME	OCT 77	NOV 77	DEC 77	JAN 78	FEB 78	MAR 78	APR 78	MAY 78	JUN 78	JUL 78	AUG 78	SEP 78
WATERFOWL MAINTENANCE												
SWANS												
WHISTLING SWAN	165	50	0	0	0	0	0	0	0	0	0	30
GEESE												
SNOW GOOSE	0	200	0	0	0	4000	20000	0	0	0	0	0
WHITE-FRONTED GOOSE	0	0	0	0	0	900	2000	0	0	0	0	0
CANADA GOOSE	0	0	0	0	0	0	3000	0	0	0	0	0
SMALL CANADA GOOSE	350	4250	0	0	0	500	0	0	0	0	0	0
DUCKS												
COMMON MERGANSER	0	0	0	0	0	300	6000	0	0	0	0	0
MALLARD	15000	9500	0	0	0	30000	35000	12000	8500	10000	13000	25000
GADWALL	6000	500	0	0	0	500	15000	16000	6300	8400	9000	16000
AMERICAN WIGEON	400	200	0	0	0	0	5000	1200	550	600	850	1000
GREEN-WINGED (COMM.) TEAL	300	1000	0	0	0	200	5000	2000	650	700	900	1100
BLUE-WINGED (CINN.) TEAL	6500	0	0	0	0	0	12000	20000	13000	17800	21000	29000
NORTHERN SHOVELER	1400	300	0	0	0	300	20000	8000	5800	6100	9100	14000
PINTAIL	2000	500	0	0	0	25000	30000	10000	7200	7500	9000	10000
WOOD DUCK	0	0	0	0	0	0	0	0	0	0	0	100
REDHEAD	500	300	0	0	0	400	6000	4500	1800	2200	2500	3000
CANVASBACK	200	250	0	0	0	100	1500	1000	350	400	450	500
LESSER SCAUP	400	900	0	0	0	1000	18000	6500	850	900	950	800
RING-NECKED DUCK	100	0	0	0	0	250	2500	1500	40	45	50	60
COMMON GOLDENEYE	0	75	0	0	0	0	700	0	0	0	0	0
BUFFLEHEAD	0	150	0	0	0	0	500	150	0	0	0	0
RUDDY DUCK	300	0	0	0	0	0	1000	1300	500	800	1100	1900
OTHER MIG. BIRD MAINT.												
MARSH & WATER BIRDS												
AMERICAN COOT	7000	100	0	0	0	100	15000	25000	16000	17000	18500	21000
TOTAL SWANS												
TOTAL SWANS	165	50	0	0	0	0	0	0	0	0	0	30
TOTAL GEESE												
TOTAL GEESE	350	4450	0	0	0	5400	25000	0	0	0	0	0
TOTAL DUCKS												
TOTAL DUCKS	33100	13675	0	0	0	58050	158200	84150	45540	55445	67900	102460
TOTAL WATERFOWL												
TOTAL WATERFOWL	33615	18175	0	0	0	63450	183200	84150	45540	55445	67900	102490

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM

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AVERAGE MONTHLY WATERFOWL POPULATIONS

SAND LAKE W.M.D.
6-4572-SDW

SPECIES NAME	OCT 77	NOV 77	DEC 77	JAN 78	FEB 78	MAR 78	APR 78	MAY 78	JUN 78	JUL 78	AUG 78	SEP 78
WATERFOWL MAINTENANCE												
SWANS												
WHISTLING SWAN	70	20	0	0	0	0	0	0	0	0	0	5
GEESE												
SNOW GOOSE	0	10	0	0	0	400	8000	0	0	0	0	0
WHITE-FRONTED GOOSE	0	0	0	0	0	100	900	0	0	0	0	0
CANADA GOOSE	0	0	0	0	0	0	1000	0	0	0	0	0
SMALL CANADA GOOSE	150	1075	0	0	0	40	0	0	0	0	0	0
DUCKS												
COMMON MERGANSER	0	0	0	0	0	40	2000	0	0	0	0	0
MALLARD	7500	3000	0	0	0	5000	19000	7500	6000	9500	12500	22000
GADWALL	4500	75	0	0	0	50	6000	5500	4500	7350	8700	14400
AMERICAN WIGEON	300	20	0	0	0	0	1500	500	450	550	750	900
GREEN-WINGED (COMM.) TEAL	250	200	0	0	0	20	2000	350	400	650	800	1000
BLUE-WINGED (CINN.) TEAL	3000	0	0	0	0	0	4000	12000	9000	14300	19500	26000
NORTHERN SHOVELER	1200	30	0	0	0	20	10000	4500	4000	5850	8800	12600
PINTAIL	1500	100	0	0	0	4000	18000	3000	5000	7300	8800	9500
WOOD DUCK	0	0	0	0	0	0	0	0	0	0	0	50
REDHEAD	300	35	0	0	0	40	2000	1800	1500	1650	2350	2800
CANVASBACK	100	25	0	0	0	5	500	300	250	350	425	450
LESSER SCAUP	300	150	0	0	0	50	9000	1200	700	850	900	650
RING-NECKED DUCK	20	0	0	0	0	8	600	100	30	40	45	50
COMMON GOLDENEYE	0	20	0	0	0	0	200	0	0	0	0	0
BUFFLEHEAD	0	30	0	0	0	0	200	30	0	0	0	0
RUDDY DUCK	250	0	0	0	0	0	300	350	350	550	1000	1600
OTHER MIG. BIRD MAINT.												
MARSH & WATER BIRDS												
AMERICAN COOT	5000	10	0	0	0	10	700	19000	13000	16500	18000	20000
TOTAL SWANS												
	70	20	0	0	0	0	0	0	0	0	0	5
TOTAL GEESE												
	150	1085	0	0	0	540	9900	0	0	0	0	0
TOTAL DUCKS												
	19220	3685	0	0	0	9233	75300	37130	32180	48940	64570	92000
TOTAL WATERFOWL												
	19440	4790	0	0	0	9773	85200	37130	32180	48940	64570	92005

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
WILDLIFE USE REPORT
WILDLIFE USE REPORT - WATERFOWL
(USE DAYS, HARVEST, & PRODUCTION)
FY-78

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SAND LAKE W.M.D.
6-4572-SDW

SPECIES NAME	LINE CODE	*****-----USE DAYS-----*****					FY-NO. FY TOTAL	FY-NO. PRODUCED	FY-NO. HARVESTED	FY-PEAK POPULATION	DATE
		OCT-DEC 77	JAN-MAR 78	APR-JUN 78	JUL-SEP 78						
WATERFOWL PRODUCTION											
NON-OUTPUT SPECIES											
AMERICAN COOT	080 2210	0	0	0	0	0	25565	0	0		
TOTAL NON-OUTPUT SPECIES		0	0	0	0	0	25565	0			
TOTAL WATERFOWL PRODUCTION		0	0	0	0	0	25565	0			
WATERFOWL MAINTENANCE											
SWANS											
WHISTLING SWAN	711 1800	2700	0	0	150	2850	0	0	165	10/15	
TOTAL SWANS		2700	0	0	150	2850	0	0			
GEESE											
SNOW GOOSE	712 1690	300	12000	240000	0	252300	0	0	20000	04/08	
WHITE-FRONTED GOOSE	712 1710	0	3000	27000	0	30000	0	0	2000	04/08	
CANADA GOOSE	712 1720	0	0	30000	0	30000	0	0	3000	04/08	
SMALL CANADA GOOSE	712 1729	36750	1200	0	0	37950	0	0	4250	11/01	
TOTAL GEESE		37050	16200	297000	0	350250	0	0			
DUCKS											
COMMON MERGANSER	713 1290	0	1200	60000	0	61200	0	0	6000	04/05	
MALLARD	713 1320	315000	150000	975000	1320000	2760000	0	0	35000	04/15	
GADWALL	713 1350	137250	1500	480000	913500	1532250	0	0	16000	05/05	
AMERICAN WIGEON	713 1370	9600	0	73500	66000	149100	0	0	5000	04/15	
GREEN-WINGED (COMM.) TEAL	713 1390	13500	600	82500	73500	170100	0	0	5000	04/30	
BLUE-WINGED (CINN.) TEAL	713 1400	90000	0	750000	1794000	2634000	0	0	29000	09/20	
NORTHERN SHOVELER	713 1420	36900	600	555000	817500	1410000	0	0	20000	04/30	
PINTAIL	713 1430	48000	120000	780000	768000	1716000	0	0	30000	04/15	
WOOD DUCK	713 1440	0	0	0	1500	1500	0	0	100	09/30	
REDHEAD	713 1460	10050	1200	159000	204000	374250	0	0	6000	04/30	
CANVASBACK	713 1470	3750	150	31500	36750	72150	0	0	1500	04/30	
LESSER SCAUP	713 1490	13500	1500	327000	72000	414000	0	0	18000	04/25	
RING-NECKED DUCK	713 1500	600	240	21900	4050	26790	0	0	2500	04/30	
COMMON GOLDENEYE	713 1510	600	0	6000	0	6600	0	0	700	04/10	
BUFFLEHEAD	713 1530	900	0	6900	0	7800	0	0	500	04/30	
RUDDY DUCK	713 1670	7500	0	30000	94500	132000	0	0	1900	09/30	
TOTAL DUCKS		687150	276990	4338300	6165300	11467740	0	0			

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
WILDLIFE USE REPORT
WILDLIFE USE REPORT - WATERFOWL
(USE DAYS, HARVEST, & PRODUCTION)
FY-78

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SAND LAKE W.M.D.
6-4572-SDW

SPECIES NAME		*****-----USE DAYS-----*****					FY-NO.	FY-NO.	FY-PEAK	DATE
LINE	CODE	OCT-DEC 77	JAN-MAR 78	APR-JUN 78	JUL-SEP 78	FY TOTAL	PRODUCED	HARVESTED	POPULATION	
WATERFOWL MAINTENANCE										
TOTAL	WATERFOWL MAINTENANCE	726900	293190	4635300	6165450	11820840	0	0		
OTHER MIG. BIRD MAINT.										
MARSH & WATER BIRDS										
	AMERICAN COOT	721 2210	150300	300	981000	1635000	2766600	0	0	25000 05/01
	TOTAL MARSH & WATER BIRDS		150300	300	981000	1635000	2766600	0	0	
TOTAL	OTHER MIG. BIRD MAINT.	150300	300	981000	1635000	2766600	0	0		
WATERFOWL PRODUCTION										
DUCKS										
	MALLARD	803 1320	0	0	0	0	7183	0	0	
	GADWALL	803 1350	0	0	0	0	7273	0	0	
	AMERICAN WIGEON	803 1370	0	0	0	0	3364	0	0	
	GREEN-WINGED (COMM.) TEAL	803 1390	0	0	0	0	2273	0	0	
	BLUE-WINGED (CINN.) TEAL	803 1400	0	0	0	0	25093	0	0	
	NORTHERN SHOVELER	803 1420	0	0	0	0	12638	0	0	
	PINTAIL	803 1430	0	0	0	0	17638	0	0	
	REDHEAD	803 1460	0	0	0	0	6728	0	0	
	CANVASBACK	803 1470	0	0	0	0	727	0	0	
	LESSER SCAUP	803 1490	0	0	0	0	136	0	0	
	RUDDY DUCK	803 1670	0	0	0	0	5834	0	0	
	TOTAL DUCKS		0	0	0	0	88887	0	0	
TOTAL	WATERFOWL PRODUCTION		0	0	0	0	88887	0	0	
GRAND TOTAL		877200	293490	5616300	7800450	14587440	114452	0		

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
REPORT OF ECONOMIC OUTPUTS - FY 78
(IN DOLLARS)

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SAND LAKE W.M.D.

6-4572-SDW

TYPE OF BENEFIT	OCT-DEC 77	JAN-MAR 78	APR-JUN 78	JUL-SEP 78	FY TOTAL
REFUGE RECEIPTS					
GRAZING	0.00	0.00	0.00	0.00	406.80
TOTAL	0.00	0.00	0.00	0.00	406.80

DATE 12/06/78

NATIONAL WILDLIFE REFUGE SYSTEM
LAND USE INVENTORY REPORT
FY - 78

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SAND LAKE W.M.D.
6-4572-SDW

LAND CLASSIFICATION

ACREAGE

I. DETAILED CLASSIFICATIONS

WETLAND TYPES	
INLAND FRESH AREAS	
SEASONLY FLOOD BASIN/FLAT	419
FRESH MEADOWS	4,120
SHALLOW FRESH MARSHES	1,753
DEEP FRESH MARSHES	444
UPLAND TYPES	
CROPLANDS	
NONIRRIGATED - HOT FOODS	596
GRASSLANDS	
NATIVE GRASSLANDS	5,399
NATIVE GRASSLANDS-RESTORD	550
GRASSLANDS INTRODUCED	1,700
DENSE NESTING COVER	1,695
FORESTLANDS	
NON-COMMERCIAL FORESTS	128
OTHER LAND TYPES	
BRUSH	132
ADMINISTRATIVE LANDS	
BLDGS.,RDS.,PARKING LOTS,	30
TOTAL ACRES	16,966

II. SUMMARY CLASSIFICATIONS

INLAND FRESH AREAS	6,736
WETLAND TYPES	6,736
CROPLANDS	596
GRASSLANDS	9,344
FORESTLANDS	128
OTHER LAND TYPES	132
ADMINISTRATIVE LANDS	30
UPLAND TYPES	10,230

HUNT COST AND ACRE UTILIZATION REPORT

FY-78

ORGANIZATION	HUNT TYPE	WEAPONS PERMITTED	NO. HUNTS	HUNTER BAG	COST OF HUNTS	COST PER BAGGED ANIMAL	HUNTER HOURS	COST PER HUNTER HOUR	HUNTABLE HABITAT (ACRES)	D/C FLAG	OPEN TO ACRES	HUNTERS PERCENT
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06-3545-72-SDW

HUNTER EXPERIENCE REPORT

FY-78

SAND LAKE W.M.D.
06-3545-72-SDW

HUNT TYPE	WEAPONS PERMITTED	NO. HUNTS	AVERAGE SEASON LENGTH (DAYS)	NUMBER OF HUNTERS	---VISITS---		-----HUNTER BAG-----			-----HUNTER HOURS-----			
					NUMBER	PER DAY	GAME IN HUNT	NUMBER IN BAG	PER DAY	PER VISIT	NUMBER	PER VISIT	PER BAGGED ANIMAL
1,0,0	0,0,0,1,0	1		30	60				450				
	HUNT/WPN AV	1.		30	60						90	1.5	9.8
1,0,0	3,0,0,0,0	1		75	250				450				
	HUNT/WPN AV	1		75	250						500	2.0	9.8
4,0,0	0,0,3,0,0	1		750	2,250				450				
	HUNT/WPN AV	1		750	2,250						3,750	1.7	9.8
6,0,0	0,0,4,0,0	1		250	750				450				
	HUNT/WPN AV	1		250	750						1,000	1.3	9.8
	ORGANIZATION AV	4		1,105	3,310						5,340	1.6	147.8