TEWAUKON NATIONAL WILDLIFE REFUGE

Cayuga, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1987

U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

9 8 10 5 2 1 6 7 4

Personnel

1.	Fred G. Giese, Refuge Manager..... (transferred from J. Clark Salyer 3/15/87)	GS-11/7, PFT
2.	Gary E. Erickson, Asst. Refuge Manager..... (transferred to J. Clark Salyer 8/1/87)	GS-09/3, PFT
3.	Jack J. Lalor, Jr., Asst. Refuge Manager..... (transferred from Crab Orchard 9/27/87)	GS-07/2, PFT
4.	Barbara E. Hoflen, Refuge Assistant.....	GS-05/8, PPT
5.	Robert W. Hoflen, Maintenance Worker.....	WG-08/3, PFT
6.	Donald J. Bozovsky, Laborer/Bio. Tech..... (TAPER 3/30/87 to 1/2/88)	GS-05/7, PPT
7.	Harris J. Hoistad, Laborer..... (TAPER 1/5-30/87 and 3/1/87 to 1/2/88)	WG-02/2, PPT
8.	Mike Stroeh, Volunteer/Bio. Aid..... (VOL 4/5 - 6/27; Bio. Aid. 7/5 - 10/3)	GS-02/1, TMP
9.	Sheldon Myerchin (5/11/87 to 7/31/87).....	Volunteer
10.	Paul T. Score, Bio. Aid. (7/5 to 10/3).....	GS-02/1, TMP
11.	Tim Bohnenstingle (6/8/87 to 7/14/87).....	ND St. SYETP
12.	Noel Wisnewski (6/8/87 to 7/14/87).....	ND St. SYETP

Review and Approvals

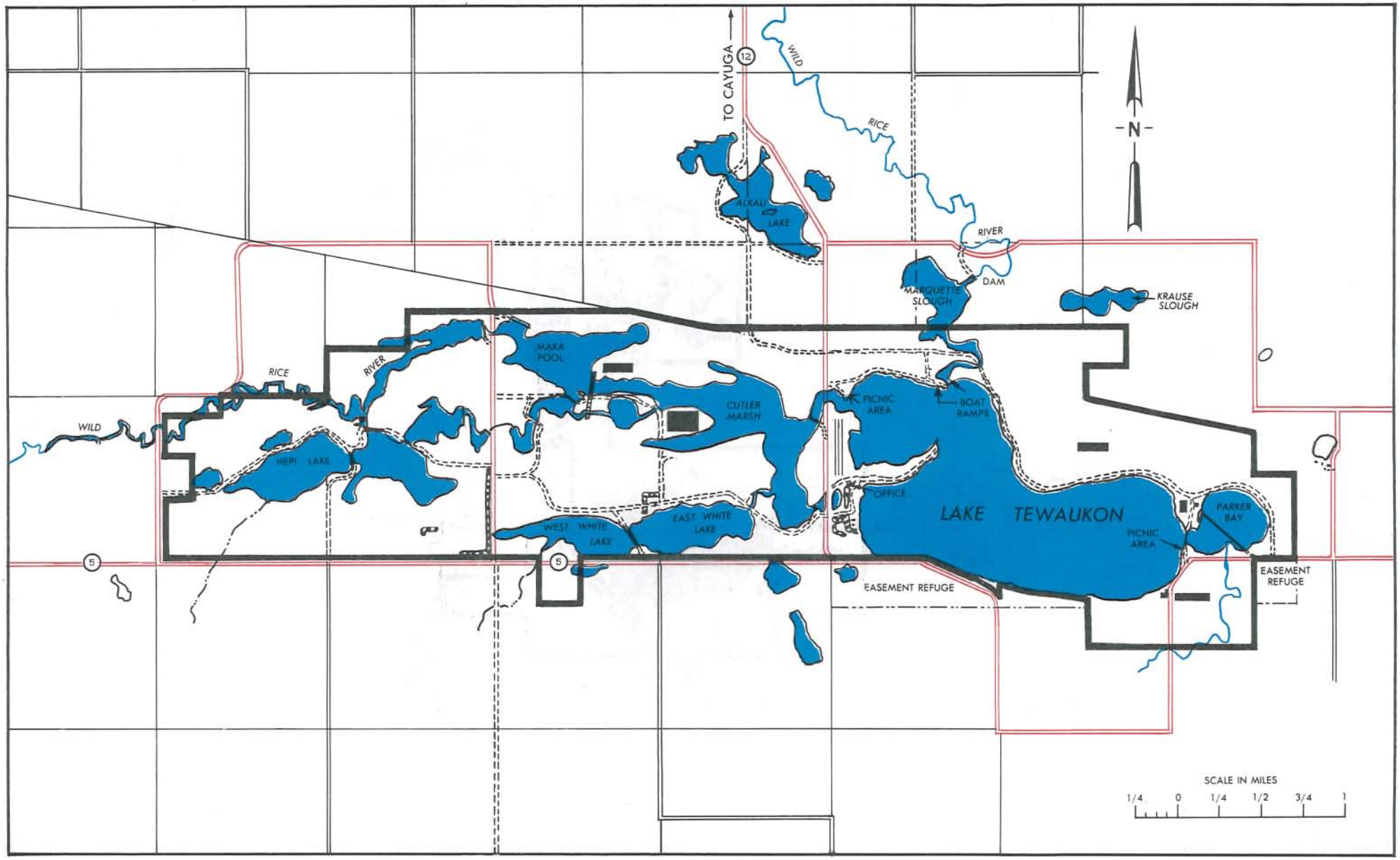
Fred G. Giese 5/13/88
Submitted by Date

ND Supervisor Date

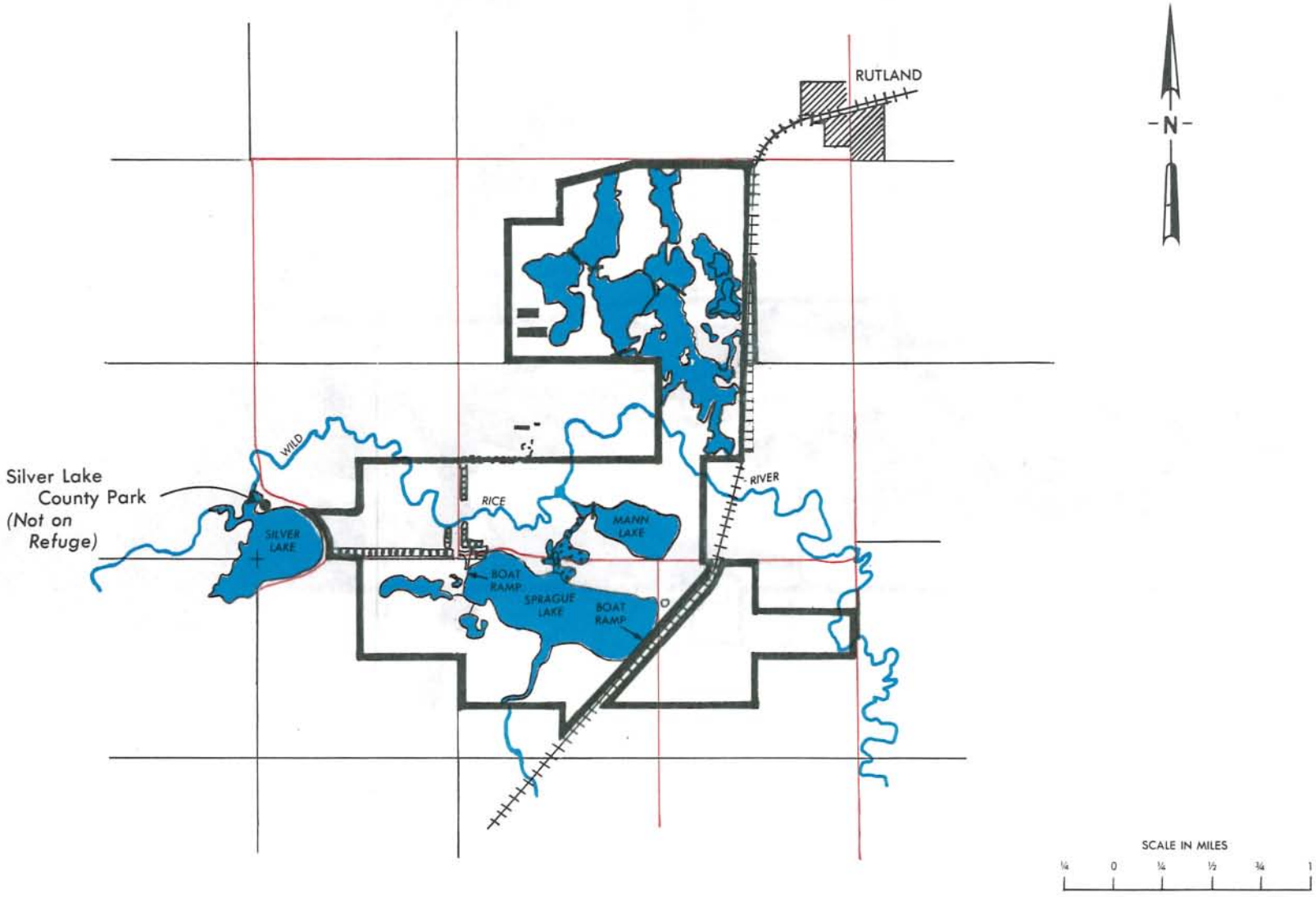
Tewaukon NWR
Refuge

Regional Director Date

TEWAUKON NWR



SPRAGUE LAKE UNIT



INTRODUCTION

Tewaukon Refuge is five miles south of Cayuga in the far southeastern corner of North Dakota. The refuge is 8,438 acres and serves as a major migration stop for waterfowl and a duck production area. There are 48 managed wetland pools and smaller sloughs totaling approximately 3,030 acres and 110 acres of natural wetlands within the refuge.

Three easement refuges to control hunting and trapping are also under Tewaukon's management. Wild Rice in Sargent County totals 778.8 acres; Lake Elsie in Richland County is 634.7 acres and Storm Lake in Sargent County totals 686.0 acres. All are closed to hunting to provide waterfowl rest areas, and trapping is by permit only. The Wild Rice Easement Refuge has been mothballed and the boundary signs removed since 1980 due to lack of any significant wildlife values.

The Tewaukon Wetland Management District is also managed from this office. It includes 11,893 acres in 55 Waterfowl Production Area clusters (98 tracts) and 31,576 acres of wetland easements in three counties. The WMD is covered in a separate narrative report. The two stations share common staffing, funding and equipment.

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Public meeting held to hear citizens concerns over refuge management (Section D.3).

Giese assumed duties of Project Leader and Lalor assumed duties of assistant manager (Section E.1).

Four Special Achievement Awards given (Section E.1).

Four-Square Mile waterfowl breeding pair count was done (has problems) (Section G.3).

First Annual Take Pride in America Lake Tewaukon Fishing Tournament held (Section H.9).

Archery deer hunter caught in a trap (Section H.17).

New boat, new computer and others (Section I.4, I.6).

B. CLIMATIC CONDITIONS

Weather records were obtained from Mr. Loy Justesen, an official weather observer living 8.5 miles west of Refuge headquarters. There was a lot of snow carried over from 1986 but not much was received in 1987. It was generally a dry winter with only a 6 inch snow accumulation which was reached on March 24. April-June was exceptionally dry with only a small amount of precipitation. 4.85" of badly needed rain was finally received in July which helped things green up a little. Wetlands that started out in good condition soon showed the effects of the dry summer. The remainder of the year received below average precipitation, a far cry from the amount that was received in 1986. At year's end there was very little snow, which made us wonder if 1988 would be a carbon copy of 1987.
Total precipitation was 14.74 inches, 6.03 inches below normal and 14.07" less than in 1986. Precipitation was as follows: January-March 2.41", April-June 2.95", July-September 8.81" and October-December 1.11".

Several months had contrasting temperatures. January had 16 days above 30° with a high of 56° January 13. The coldest temperature in January was -25° on the 23rd. February had 25 days with highs of 30° or more and the temperature didn't dip below 0° all month. The lowest temperature was 8° on the 4th and 18th. March was about average with a high of 66° on the 8th.

Spring and summer were a little warmer than normal. The high temperature for the summer was 104° on August 1. November shed it's first snow on the 16th with a 2" accumulation. Temperatures were generally nice with the highs ranging from 29° to 61°. December was dry and mild with temps most

days in the high 20's. The high temperature for the month was 39° on December 11 and 12.

C. LAND ACQUISITION

3. Other

The U.S. Bureau of Reclamation turned the 91 acre Nickeson Garrison Diversion Unit mitigation tract over to us for management.

The Nickeson Tract - great habitat for ducks. DJB - 7/87

D. PLANNING

2. Management Plans

Routine yearly plans such as for prescribed burning, water level management, large impoundment management, public hunting and fishing, trapping and DU work proposals were written.

3. Public Participation

A public meeting was held at the Cayuga Hall on March 17 with approximately 77 citizens representing various sportsmen groups attending. Also present were Deputy Commissioner Charles Schroeder, Dave Vollink and Greg Link for the North Dakota Game and Fish along with the entire Refuge staff.

Refuge Manager Giese addressing a portion of the crowd at our public meeting. DJB - 3/87

The purpose of the meeting was to discuss deer hunting, pheasant hunting, fishing, boat ramps, motor size, water level of Lake Tewaukon and prescribed burning on Tewaukon Refuge. The citizens were divided into 10 small groups, and each group picked a spokesperson to present four or five comments and/or questions on which all members of their small group could agree.

5. Research and Investigation

For several years large round bales of flax or cattails have been strapped tightly with nylon and set on the ice to fall through in the spring for nesting structures. This year these bales were checked twice and 32 of 57 (56%) were used by 18 Canada geese, 15 mallards and 1 ruddy duck. Two bales were used successfully by both geese and a mallard hen at the different times. Of these 34 nests, 29 hatched (85%). One Canada goose and one mallard nest was known to have been predated and three mallard nests were abandoned. Except in deeper water, bales seem like a cheap and reasonably easy way to provide "artificial rat houses". Also 13 nesting tubs were available, but no nesting occurred.

Tewaukon has about 175 acres in pure, thick alfalfa. Four fields were drug twice to see what kind of duck nesting use was occurring with the following results:

Field	Acres	Hayed in 1986	# Nests	% Mayfield
#1 Silseth	43	yes	7	35.9%
#2 Hoistad	21	yes	4	
#2a Hoistad	14	no	7	53.3%
#3 Kiefer	49	nest located in 2/3 which was hayed	1	0.0%
#4 Lee	50	5 nests located in 2/3 which was hayed	9	7.9%

E. ADMINISTRATION

1. Personnel

After 10 years at J. Clark Salyer NWR Fred Giese moved south to assume the duties of Project Leader at Tewaukon NWR Complex.

After three years at Tewaukon Assistant Manager Gary Erickson moved to Salyer to become the Wetland Manager there. We all miss working with Gary and the significant contribution he made to our program.

Gary and Denise with their going away gift. DJB - 7/87

John (Jack) Lalor reported for duty as Assistant Manager in September. Jack came from Crab Orchard NWR and is learning all about wetlands in record time.

Asst. Manager Erickson received a Special Achievement Award for an excellent job of filling in while our Project Leader position was vacant. DJB - 7/87

Harris and Rob received awards for converting two scrap weed sprayers into a fire fighting unit, at a cost savings of $4,000. DJB - 7/87

Barb received a Special Achievement Award for exceeding her performance standards. DJB - 12/87

2. Youth Programs

Again this year ND Job Services offered us 2 youth workers at no cost. (The youth's family just have to meet income guidelines.) Mr. Tim Bohnenstingle and Noel Wisnewski were selected for the two positions. Major projects were staining quarters #4, hoeing weeds in tree plantings, removing old fence, emptying litter barrels, lawn mowing, checking nesting bales and banding geese.

Our entire 1987 Job Service crew. GEE - 7/87

4. Volunteer Program

For the first time this year Tewaukon had student volunteers who worked for 12 weeks. A trailer was provided for them to stay in plus $9.00/day subsistence was given. Both Mike and Sheldon were excellent workers and participated in various projects. Hopefully, they gained the field experience necessary to secure permanent employment in the future.

Like last year, Don and Harris signed as volunteers during their winter layoff period. They donated 25 hours doing various jobs: shop work, school talks, predator trapping preparation, clerical work, moving nest bales and photography. Their dedication was much appreciated.

Tewaukon's first experience in the student volunteer program produced two excellent workers. DJB - 7/87

5. Funding

Tewaukon Refuge and Wetland Management District are funded as a single unit. The following is a schedule of funding for a five year period.

Funding Chart - NWR and WMD Combined
Operational and Maintenance Funds

	FY-84	FY-85	FY-86	FY-87	FY-88
1230	--	--	--	$ 6,000	--
1261	$177,000	$179,000	$159,400	$159,000	$143,000
1262	--	--	--	--	109,000
1520	3,000	3,000	3,000	--	3,000
8610	2,500	3,000	2,500	2,000	3,200
6860	3,000	5,000	5,000	5,000	5,000
TOTAL	$185,500	$190,000	$169,900	$172,000	$263,200
ARMM	$ 39,000	$ 94,000	$ 63,000	$ 53,000	
CAF	$ 74,000	$325,000	--	--	

6. Safety

Monthly safety meetings were held most months and the minutes mailed to the RO. The following safety films were viewed: Options to Live, Winter Driving Tactics, By Nature's Rules and Safety Depends on You.

Only one accident occurred. While bow hunting on the refuge, Mr. Rod Romereim stepped into an illegal (330 size) conibear trap that was set along a game trail by a refuge trapper. The authorized refuge trapper's permit was revoked, and he was issued a violation notice for $100.00.

Radon testing was conducted for the office and the residence. The canister was placed in the basement of both buildings and the following results were obtained (office 6.8 $\pm$ 0.3; residence 9.8 $\pm$ 0.3). Both will be retested in the spring.

The annual test of the drinking water was conducted. The water is borderline, and obtaining rural water will be considered.

Al Ludden, Bismarck FWE Office collecting water samples. DJB - 9/87

The Lake Tewaukon aeration system produced an area of open water. The area south of the Point was posted closed to public entry with signs set in the ice. Also press releases alerted the public to this hazard and ice fishermen were warned to stay clear.

A group of shovelers enjoying the water above our aerator lines. DJB - 10/87

Les Busch, Denver Dam Safety, inspected Dam #1 continuing the Dam Safety work. Work should begin during FY-88.

7. Technical Assistance

Technical assistance activities accomplished were: (1) National Audubon Society Christmas Bird Count; (2) Cornell Laboratory nest record cards; (3) Dove counts; (4) North Dakota Game & Fish Department Upland Bird and Pheasant Crow counts; (5) Conservation Reserve Program (a cooperative agreement was reached with the Wild Rice SCD District where native grass for CRP acres would be harvested on the refuge on a 1/3 refuge 2/3 District split); (6) Piggyback lease program; (7) Truax drill loan to BR for seeding of grass on GDU tract.

8. Other Items

In July the Regional Hydrologist visited the refuge for an inspection of Sargent County Drain #11. Also Denver Engineer Al Green inspected the Headquarters as part of the preliminary work needed to rehabilitate the office. ARD Nels Kverno visited the refuge 4/1. Dave Soker visited in August to conduct refuge appraisals and Don Fitzgerald visited in August to show Barb how to record new landowners with the District regarding easements.

Training received is outlined below:

Jan: Rob and Gary attended Pinch Hitter Flight Training at Jamestown 1/7; Gary attended CRP/Piggyback meeting in Bismarck 1/15

Feb: Fred and Gary completed Conflict Resolution Training 2/9-11.

Apr: Fred, Gary and Rob attended LE refresher in Bismarck 3/30-4/3.

Jun: Rob and Gary completed Pinch Hitter training 6/16; Fred, Don and Gary attended the Wetland Classification Workshop 6/16-18 in Jamestown; Mike and Sheldon attended prescribed burning training 6/16-17 at Upper Souris NWR.

Aug: Fred, Rob, Don, Harris and Mike completed Heavy Equipment Training.

The Tewaukon Staff being instructed in safe equipment use procedures by Equipment Operator Trainer Berle Meyers of Sand Lake NWR. DJB - 8/87

Sep: Fred and Rob attended LE refresher 9/24 at Valley City; Rob, Barb and Harris attended Computer class (Fall Quarter) at NDSU; Fred attended the WPA planning and Holistic Mgmt. Workshop in Bismarck 9/29-10/2.

Oct: Fred attended Administrative Workshop in Denver 10/26-10/29.

Dec: Jack attended the 4-square mile count evaluation meeting in Jamestown. Entire staff attended NDG&F Advisory Board Meeting in Cayuga.

Sargent County received $17,184, Ransom County received $6,302 and Richland County received $6,615 in Revenue Sharing Payments for fiscal year 1986. The payments represented approximately 60 percent of full entitlement and were $1,231.00, $452.00 and $873.00, respectively, less than last year's payments of $18,415, $6,754 and $7,488.

F. HABITAT MANAGEMENT

1. General

The year started with all refuge pools and wetlands at management level. However, dry conditions during June through September resulted in extremely dry conditions by year end.

2. Wetlands

The four watersheds, Wild Rice River, Frenier Dam outlet, Sprague Lake Creek, and LaBelle Creek, flowed below average this year; however, all wetlands were filled to 1987 operating levels. The Wild Rice River flowed all year which was very unusual. It was believed that clean-out work on Sargent County Drain #11 may have been partly responsible for the increased flow.

Natural wetlands received virtually no inflows and were only about 30% full after spring runoff. Even Type IV wetlands were dry by late summer.

Pool 1 (Lake Tewaukon): The lake was frozen at 1147.26 (1148.0 is full pool and virtually never is attained in the fall after a summer of evaporation loss). Inflows began March 2 and it was taken up over-full to push water to several collateral wetlands. On March 31 it peaked at 1149.06 and boards were pulled to bring it down to "full" pool.

Anticipating the Ducks Unlimited Project, water was released from Dam 2 into Lake Tewaukon during June, July and August. On August 21 Pool #1 reached an elevation of 1147.76 and was controlling the water level in Pool #2. Lake Tewaukon froze over completely on December 13 (except for two holes kept open by waterfowl and one kept open by the aerator) at 1147.26 MSL.

Parker Bay (east end of Lake Tewaukon): Approximately fifteen acre-feet of water was added to reach a maximum depth of four feet for waterfowl production. Every effort was made to exclude carp during this operation.

Pool 2 (Cutler Marsh): This Pool started below the gauge but filled rapidly and peaked at 1152.68 on March 26. To prepare for dike work in

late September all boards were pulled, and this pool leveled out with Pool 1. At freeze-up the elevation was 1147.21 MSL.

Pool 2A: Pool 2A was filled to maximum depth to flood cattails.

Pool 3 (Maka Pool): Pool 3 remained at or near operating level of 1156.2 all year after reaching a peak of 1156.48 on March 23.

Pool 3A: This pool was dry.

Pool 4 (River Pool): Pool 4 was held high to retard cattail invasion and to maintain muskrat population. Prolonged inflow during March through July held the pool at 1160.0 plus. It reached its peak of 1161.52 on March 24. During July a 4" perforated pipe was placed in a beaver dam to stop backing water onto a refuge neighbor's land.

Pools 5, 5A, 6, 7A: These pools were dry.

Pool 7: Pool 7 was filled to maximum depth.

Pool 8 (Hepi Lake): This pool was at about 3 feet deep for optimum waterfowl production.

Pool 10: This pool was dry.

Pool 11 (West White Lake): A depth of 4-4.5 feet was maintained to slow cattail invasion.

Pool 12 (East White Lake): Pool 12 was allowed to dry up gradually to reestablish cattails.

Pool 13: Pool 13 was kept in drawdown condition to establish cattails and/or bulrush stands.

Pool 14 (Sprague Lake): The lake was filled to a depth of 8.5 feet and then slowly evaporated to about 4 feet deep at freeze up.

Pool 16: No water was added to this unit to encourage Type III vegetation growth. Most wetlands in this unit were dry by the end of August.

In addition to the above listed major wetlands, Tewaukon has about 25-30 small prairie wetlands which can be supplied with water via ditches, small drop-log structures or culverts with flap gates. Many of these sloughs were dry in 1987.

For the second year in a row an inspector from the ND State Water Commission toured Tewaukon to see all the water control structures and dikes. The reason for this inspection was unknown; however, the final inspection and approvals for the Horseshoe Slough development water right were in process, so possibly that was the reason for it. Anyway, the gentleman was shown the operation, took many pictures and nothing more was heard.

3. Forests

Dutch elm disease continued on the Peninsula. The "do nothing" alternative was continued on Tewaukon.

Continuing the effort started in 1985 to replace tree rows which deer browsing continually have suppressed, two shelterbelt plantings received 5,162 feet of replacement plantings. The local SCS crew did the planting. Species planted were selected for their deer "resistance" and were: redosier dogwood, chokecherry, silver buffaloberry, black walnut and lilac.

As a second tactic to address the deer browsing problem, junk wire was made into cages and put over selected shrub rows in 1984 and 1986. The results were excellent.

Like last year, extra effort was put into shelterbelt cultivation. The tractor and digger was run through all the plantings 3-4 times. Again this year no herbicide was used.

4. Croplands

The details of the farming program are shown in the below chart. Six cooperators farmed on a 2/3-1/3 share basis. Two of the cooperators were no-till farmers which was very good for soil conservation but caused increased use of herbicides.

Cooperative Farming Summary

	Corn	Millet	Barley	Winter Wheat	Durum	Rye	Alfalfa	Soybeans	TOTAL
O.Silseth	0- 0	0- 0	0-17	0- 0	0- 0	0- 0	42-28	8- 0	95
T.Lee	0-19	75-19	0- 9	49- 0	0- 0	0- 0	33-17	0- 0	221
D.Kiefer	0-10	0- 0	103-26	0- 0	0- 0	0-17	33-16	0- 0	205
Q.Hoistad	39-19	0-12	0- 0	0- 0	25- 0	0- 0	21-12	0- 0	128
L.Freeman	25-42	22- 0	64-14	0- 0	0- 0	0- 0	0- 0	0- 0	167
J.Breker	79-55	0- 0	0-15	63- 0	0- 0	0- 0	0- 0	0- 0	212
TOTAL	288	128	248	112	25	17	202	8	1028

Permittee share is the left column of each crop.

Also, an additional 58 acres was summer fallowed.

Cropland acreage has been steadily reduced in favor of grassland with Tewaukon's farming going from about 1600 acres in 1979 to about 900 acres in 1987 (excluding alfalfa fields). More crop than was needed by wildlife had been produced. It was not an objective to hold geese and ducks inside the refuge getting fat (literally) on standing grain, especially when producing the grain conflicted with the primary objective of duck production. This year 39 acres of cropland in two fields were seeded into DNC. Plans were set with cooperative farmers to retire more land in 1987.

Under the Alfalfa Plan started in 1983, Tewaukon has 175 acres in alfalfa in which the farmer gets 66% share in one late cutting, usually after July 5-10. This program has worked very well and one cooperator asked to add a third field (27 acres) for the weed control value. Since the program was no longer experimental, this and future alfalfa fields will go to 50-50% shares once experimental period is completed.

Tewaukon strived to reduce herbicide and fertilizer use. (This was tough to do under no-till farming.) It is felt that seeding cropland back to grass or long-term alfalfa stands is about the best practical and long-term way to achieve this goal.

Millet is an excellent crop due to the waste seed for birds, no fall tillage required and its late planting so weeds can be mechanically cultivated. This year three wildlife-share fields of millet were baled and the big round bales moved off the farm fields to sheltered locations as winter wildlife feed.

5. Grasslands

Refuge grasslands ranged from native prairie to seeded natives of 1-3 species to dense nesting cover (alfalfa, sweet clover, wheatgrass) to smooth brome or crested wheatgrass monotypes. Each species responded to manipulation differently. In this area, Tewaukon tried to spring burn natives and late hay (after July 20) the other grasses - often followed by one or two passes with a digger or disc to open the root-bound thatch layer. With fewer cattle in this area, spring crowd grazing was a lesser used treatment.

The short-term goal was to rejuvenate all grass stands to the greatest degree possible to benefit duck nesting.

The long-term goal is to maintain vigorous stands of DNC or natives and convert the exotic grass stands to them. This goal will benefit duck nesting as well as all other native prairie wildlife. A significant consideration is that noxious weeds, such as leafy spurge, can be sprayed in native grasses without significantly damaging them. Another consideration is that native grasses can be maintained virtually forever by using only a prescribed burn every 4-5 years. In contrast, the legumes in DNC are easily wiped out by weed spraying.

Seeding: Two crop fields were retired into DNC this year. One 15-acre field was seeded this spring and the other 25-acre field was a dormant

seeding in the fall. Also two 10 acre fields inside the electric enclosure were seeded to alfalfa and sweetclover and alfalfa-switchgrass mix, respectively.

One 19 acre field was seeded to a mixture of Big bluestem, Indian, sideoats, switchgrass and western wheatgrass.

The Refuge entered into a cooperative agreement with the Wild Rice Soil Conservation District for the harvesting of native grass seed on the refuge. The agreement allowed the district to harvest on the refuge complex and keep 2/3 of the seed. The other 1/3 was cleaned, bagged and delivered to the refuge headquarters. The refuge share was 1,760 pounds of big bluestem and Indiangrass mix and 2,220 pounds of switchgrass.

8. Haying

Haying is a good method of rejuvenating decadent, thatch bound, nonnative grasslands especially when some type of scarification is required afterwards. Based on information from Northern Prairie Wildlife Research Center on duck hatching dates, the starting date was again kept at July 20 for paid haying or August 1 for free, roadside mowing. In general, the response of last year's hayed areas was good.

A haying summary is shown below. Again this year the cost was $5-12 per ton depending upon quality.

1987 HAYING

Cooperator	Location	Grass Type	Acres
D.Anderson	Tewaukon	brome/alfalfa*	29
L.Brash	Tewaukon	brome/alfalfa*	12
M.Saunders	Tewaukon	roadsides	18
D.Bladow	Tewaukon	brome/alfalfa*	17
O.Silseth	Sprague	old DNC*	23
A.Hoflen	Sprague	old DNC*	19
Q.Hoistad	Sprague	old DNC*	26
L.Erickson	Sprague	DNC*	18
L.Erickson	Sprague	Brome/K.Blue*	11
D.Marquette	Sprague	DNC/alfalfa*	23

*also spiked the old thatch with straight points two times

9. Fire Management

One wildfire occurred when a refuge neighbor was burning some tires in a dump and the fire escaped from him burning approximately 1.5 acres on the refuge. The refuge fire-suppression crew responded to the fire, but the fire had been extinguished by the local fire department by the time the refuge pumper arrived since they had been called first and were only about 1-1/2 miles from the location.

The prescribed burning season went very well as shown in the table below. Having well-experienced personnel and plenty of modern equipment surely made it easier. Also, Tewaukon is criss-crossed by roads, wetlands and farm fields, so there were many good fire breaks to facilitate burning.

1987 Prescribed Burns

Date	Field	Acres	Target	Response
4/15	N. Pool 9	65	stim. natives	good
4/15	E. Pool 5	80	stim. natives	good
4/17	N. Pool 2	10	stim. natives	good
4/17	Parker Bay	7	stim. natives	good
4/21	E. Pool 7A	151	stim. natives	excellent seed harvested
4/23	N. Entrance	32	stim. natives	good
4/24	Breker River	21	stim. natives	excellent
4/27	N. Sprague	153	stim. natives	good
4/28	Racetrack	14	stim. natives	excellent seed harvested
4/30	S. Sprague	130	stim. natives	good
5/06	LTL Prairie	79	stim. natives	good
5/06	NW Parkers	44	rejuvenate	good
5/07	LaBelle	40	natives	excellent harvest
5/11	Banish	61	stim. natives	good
5/11	N. Pool 3	18	rejuv. brome	good
5/14	N. Pool 4	32	stim. natives	excellent

The Annual Burning Plan was written and approved. A State burning permit was requested and received. The step test or 1-1/2 mile physical fitness test was passed by all burners.

10. Pest Control

Predator and problem beaver trapping is covered under "Game Mammals", Section G.8.

Noxious weed control is required by State law and concentrated, as usual, on leafy spurge. This weed control cost the Refuge "big bucks" and much scarce manpower. Happily, no problems developed with any other weed species.

In previous years efforts to control spurge utilized 2,4-D but were ineffective, so Tordon 22-K was used as the primary means of control. Tordon is effective if applied at the right time, rate and under proper weather conditions. A tank mix of 2,4-D and Tordon 22-K was used which gave approximately 88 percent control (NDSU study) for about $25.00 per acre.

The cost of chemical control for leafy spurge is horrendous. During 1987 approximately $8,812.29 (chemical - $3,192.09, labor - $4,349.40, operation cost - $1,270.80) was expended to control spurge on the refuge. Despite this great cost, chemicals used on the refuge were reduced by 50%.

Again this year, no formal weed complaints were received. It seemed accepted in the community that the Refuge spurge was being controlled, and most neighbors had an equal or greater spurge problem. A spraying cost sheet was compiled for a newspaper article and mailing to the County Commissioners and Weed Boards.

All herbicides used on the Refuge by Service or cooperative farmers were approved in advance and actual usage was reported in the Pesticide Use Report. Most commonly used herbicides were Roundup, Tordon, and 2,4-D.

11. Water Rights

Water use under the three water rights permits (#1261, 1262, 1263) was documented and reported in the Annual Water Management Report and ND State Water Commission's Annual Report of Water Use.

In the spring an inspector from the ND State Water Commission again checked water control structures including the one associated with Permit 1263, the Horseshoe Slough inlet. Possibly his visit involved finalizing that permit. Nothing has been heard since the gentleman's visit.

Sargent County replaced an unsafe bridge with these two new culverts in 1987. DJB - 7/87

12. Wilderness and Special Areas

Three easement refuges are managed from Tewaukon. As in the 1980 report, the Wild Rice Easement Refuge (778 acres) continued in "mothballed" status due to extreme habitat degradation. The other two easement refuges, Lake Elsie (634.7 acres) and Storm Lake (686.0 plus 1.7 acres fee title), continued to function as good waterfowl resting areas. We were approached by the Milnor Park Board and Milnor Golf Association to allow them to irrigate the golf course from Storm Lake. During 1987 they dug seven test wells and could not find water. Management efforts on Storm Lake Easement Refuge were an occasional visit, law enforcement checks, trapping permits and posting maintenance.

The Refuge benefited from two additional tracts of private land under hunting and trapping easements immediately adjacent to the boundary south of headquarters and southeast of Parker Bay (see Refuge map following personnel page). The Kiefer easement land (25.25 acres) was opened for trapping at Mr. Don Kiefer's request in order to apply additional pressure on predators. The Paczkowski easement is 40 acres.

13. WPA Easements

This section is covered in the Tewaukon WMD Narrative.

G. WILDLIFE

1. Wildlife Diversity

The major factor in increasing wildlife diversity in the prairies appears to be the planting of tree and shrub shelterbelts, see Section F.3.

2. Endangered and/or Threatened Species

Bald eagles migrate through this area, especially in fall. They nest about 125 miles northeast of here at Tamarac NWR, Minnesota. Random observations were as shown in the chart blow. Spring observations occurred between March 11-31 with largest number being an adult and 2 immatures present March 29. Fall observations occurred from September 14 to December 2 and peaked October 25 with 3 immatures.

Bald Eagle Sightings

	1983		1984		1985		1986		1987	
Spring	Adult	Imm	Adult	Imm	Adult	Imm	Adult	Imm	Adult	Imm
ident	6	5	0	0	5	10	4	6	5	2
unident					(3)					
Fall										
identi	4	3	7	8	2	1	3	10	2	0
unident			(1)				(1)			

In contrast to the three sightings in 1985, no peregrine falcons were seen this year.

3. Waterfowl

Spring began with the arrival of Canada geese on February 11 and mallard ducks on February 26. The peak spring migration occurred the third week in March. Fall migration started about the end of August and peaked at the end of October. First arrivals are indicated on the table in Section G.7.

Spring Peak Waterfowl Numbers

Species	1987	1986	1985	1984	1983	1982	1981
C. geese	4,000	1,000	800	800	3,200	2,700	350
snow geese	2,000	600	400	300	75	9,500	3,000
mallard	1,500	1,100	1,000	1,200	944	36,500	1,500
pintail	800	600	750	800	130	2,300	360
BW teal	1,800	2,100	2,500	2,500	522	1,526	1,400
redhead	400	500	700	760	350	1,250	600
canvasback	200	200	300	1,600	40	200	2,600
l. scaup	2,000	2,000	2,000	7,000	4,000	2,500	3,500

No breeding pair counts were conducted this year; instead a four-square mile waterfowl breeding pair count was done in conjunction with Northern Prairie Wildlife Research Center (NPWRC). This new census method design by NPWRC is to standardize waterfowl production estimates procedures.

The "Four-Square Mile" technique does not accurately depict waterfowl production on the Tewaukon Complex. It may be because the federal land is such a small portion of the sample (about 1%). Also the federal land chosen for the sample is not representative of the Tewaukon Refuge and WPA's; for example over 70% of the wet acres chosen in the sample occurred in one large 600 acre lake which would not hold pair numbers compared to smaller wetlands.

The production comparison for the "Four-Square-Mile" vs Quarter Section Count on the Tewaukon WMD shows a great disparity. For example, production of the five duck species on the Refuge and WPA's was 697 ducks using the "Four-Square-Mile" count. In contrast, production using the Quarter Section Count on the WMD only (using a five year average) was 6,654 for the same five species of ducks. If Quarter Section Count figures were available for the refuge, our comparison would be even higher.

Estimated Refuge Waterfowl Production

	1987	1986	1985	1984	1983*	1982*	1981*	1980
coot	1200	900	500	1000	257	343	312	624
C. geese	150	66	65	42	19	21	10	3
mallard	650	500	660	794	1253	435	2538	1200
gadwall	350	125	200	356	404	419	523	427
pintail	170	160	330	321	82	151	146	401
GW teal	45	35	65	11	29	74	3	48
BW teal	1200	1400	2920	2339	693	2026	544	2137
wigeon	30	35	65	56	21	84	45	24
shoveler	200	185	530	470	106	265	37	215
wood duck	10	15	80	109	88	24	56	21
redhead	350	160	800	759	255	226	207	141
ring-neck	0	0	0	0	0	0	0	0
canvasback	45	50	160	53	37	18	5	5
l. scaup	6	0	65	96	29	104	32	8
ruddy	225	145	200	390	50	358	77	69
bufflehead	0	0	0	3	0	5	3	0
TOTAL DUCKS	3281	2810	6075	5757	3047	4189	4216	4696

*very dry years-few wetlands around county so ducks concentrated on refuge

Refuge Canada Goose Production

Year	Broods Observed	Goslings Observed	Estimated Production
1980	1	3	3
1981	2	3	10
1982	4	18	21
1983	3	16	19
1984	8	38	42
1985	13	56	65
1986	12	33	66*
1987	-	126	150*

*hatched nests found on bales indicated this production figure

The 1979 transplant flock continued to grow as geese made heavy use of the nesting bales. Nests on 18 bales, 2 artificial islands and muskrat houses

brought off broods. During 1987, 13 nesting tubs were erected on pipes in the deeper water areas to accommodate geese (or mallards); however, no nesting took place.

NDG&F Department personnel assisted Tewaukon in our first banding attempt on our resident Canada goose flock.
FGG - 6/87

A total of 25 new nesting bales were set out on the ice in March. No snow had to be plowed this year as the ground was bare. There were a total of 57 usable bales. Of these, 32 (56%) were used.

Use of artificial and natural nesting islands is outlined below:

Small Artificial Nesting Island Summary

Year	Number of Islands Checked	Total Nests	Details
1984	30 (Pools 2&3)	5	1 ea-goose,mal,coot,gad;1 unk
1985	30 (Pools 2&3)	5	2-mal;3-gad;(1-mal,2-gad hatched)
1985	9 new islands (Horseshoe Slough)	3	2-mal;1-BWT;(all hatched)
1985	16 (Pool 3)	5	1-gad;1-mal(aband);1-mal;2gad(hatched)

Year	Number of Islands Checked	Total Nests	Details
1986*	14 (Pools 2&3)	8	2-mal;1-gad;1-goose(htch);3-mal(dest); 1-mal(aband)
1986	10-Horseshoe Sl.	8	3-mal;1-BWT(htch);1mal(dest);2-mal;1-gad
1987	36 (Pools 2,2A,3)	13	4 C.geese & 8 mal(htched);1 mal(aband)
1987	10-Horseshoe Sl.	8	1 C.goose;4 mal;2-gad(all htched);1BWT(des)

*Pool 3 in drawdown, only 3 islands surrounded by water

Natural Nesting Island Summary

Year	Acres	Location	Total Nests	Hatch	Details
1985	1.5	Horseshoe Slough	3	100%	1-mal;1-BWT;1-gad
1985	.3	Fangsrud Lake	0		lake was dry
1985	.6	Fangsrud Lake	0		lake was dry
1985	1.0	Tewaukon WMA	6	100%	1-mal;2-BWT;2-gad
1986	1.5	Horseshoe Slough	0		
1986	.3	Fangsrud Lake	1	100%	1-gad
1986	.6	Fangsrud Lake	6	100%	2-mal;2-gad;1-pin;1-BWT
1986	1.0	Tewaukon WMA	10	100%	3-mal;3-gad;3-BWT;1-C.goose
1986	6.0	Gainor WPA	2	0%	2-BWT
1987	1.5	Horseshoe Slough	0		
1987	1.0	Tewaukon WMA	15	100%	1-C.goose;2-mal;9-gad;3-BWT

Fall migration was less than spectacular with the peak populations of 21,300 geese and 17,400 ducks recorded. This was far below the average peak population for this station. Selected waterfowl species are listed below.

On December 1, Don Bozovsky observed a male Harlequin duck on Lake Tewaukon. So far as we know, this species has never been seen on Tewaukon before.

Fall Refuge Waterfowl Peaks

Species	1987	1986	1985	1984	1983	1982
tundra swan	710	325	615	375	800	5,200
snow geese	17,000	48,000	64,000	54,000	58,000	42,000
C. geese	4,300	2,800	4,900	4,300	3,500	5,400
mallard	12,600	40,000	16,000	23,500	9,700	6,000
redhead	375	300	100	1,050	800	1,650
canvasback	200	350	40	700	600	90
L. scaup	1,500	2,700	3,500	1,200	300	3,000

Since 1983, Tewaukon has done a snow goose age ratio survey for the Office of Migratory Birds. On October 30, Jack did the survey.

Refuge Snow Goose Age Ratio Data (in fall)

Year	Total Adults	Total Immature	Total Birds	% Imm. Birds	Avg. Young Per Family	Flock Size
1987	525	368	893	41.2	1.97	4,000
1986	242	165	407	40.5	1.97	8,000
1985	548	533	1081	49.3	2.09	10,000
1984	303	275	578	47.6	1.88	30,000
1983	876	377	1253	30.0	2.46	4,000

4. Marsh and Water Birds

Observations of these species were made incidental to other work, so they represent "best guess" data. Disappointingly, double-crested cormorants didn't nest here this year as they did in 1985. Common loons usually visit Tewaukon in spring and fall and did so again in 1987.

White Pelican and Cormorant Peak Numbers

	1987	1986	1985	1984	1983
white pelican	700	100	325	300	1550
cormorant	150	150	650	250	1500

6. Raptors

People in this area still commonly shoot hawks, owls and even eagles. Mainly they say they're protecting their chickens or game birds. Raptors are regularly seen dead in road ditches. Three bald eagles were transported to the NDSU rehabilitation center in Fargo, ND. One had a severe case of pox and the other two had been shot.

There was an unusual raptor sighted this year when a barred owl was sighted by three refuge employees. Osprey, bald and golden eagles, kestrels, rough-legged hawks and short-eared owls pass through spring and/or fall. Sharp-shinned, cooper and goshawks usually show-up during fall migration and one or two stay for most of the winter feeding on small birds in the shelterbelts around headquarters. Snowy owls usually visit each winter and the first was seen in November this year.

The NDSU Raptor Rehab staff named this bald eagle "Lefty". A NWR staff member delivered the eagle to them in March. Another example of improper firearm use. DJB - 3/87

7. Other Migratory Birds

A five year listing of first arrivals is on page 28.

Quarterly bird observation reports were compiled and mailed to Mr. David Lambeth, Grand Forks, ND who compiled them into an Eastern North Dakota Report for the Northern Great Plains Regional Report to the Audubon Society. Don again volunteered to compile the Eastern North Dakota Report for the winter quarter (eight reporting stations).

Again this year Refuge personnel recorded data for the Cornell University Nest Record Card Program. A total of 131 cards were mailed in compared to 162 in 1985, 224 in 1984 and 112 in 1983.

For the sixth year the Christmas Bird Count centered on the Refuge was run December 18. Unusual observations were four rusty blackbirds on LaBelle Creek. The count is a good impetus to get 2-3 Refuge employees or retirees (no private individuals) out for a day of data collecting every year during the "dead" of winter.

Five Year First Arrival Observations

Species	1987	1986	1985	1984	1983
short-eared owl	--	3-28	1-08	--	4-08
northern harrier	2-25	3-09	1-10	3-26	3-12
Canada geese	2-11	3-04	2-25	2-22	2-18
mallard	3-04	3-09	2-25	3-14	3-03
golden eagle	--	2-23	3-05	1-21	--
red-winged blackbird	3-10	3-24	3-12	2-25	3-12
western meadowlark	3-09	3-22	3-13	2-14	3-17
kestrel	--	3-10	3-13	3-24	3-26
bald eagle	3-13	3-11	3-13	3-26	3-13
common merganser	3-04	3-22	3-15	3-26	3-03
common goldeneye	3-04	3-22	3-16	2-23	3-03
snow goose	3-19	3-21	3-16	3-25	3-12
killdeer	3-06	3-24	3-17	3-24	3-03
pintail	3-04	3-22	3-18	3-26	3-03
tundra swan	3-16	3-02	3-20	3-29	3-29
coot	3-06	3-22	3-22	4-03	3-31
pied-billed grebe	3-24	4-01	3-24	4-16	3-31
kingfisher	--	3-29	3-26	4-07	4-08
great blue heron	3-21	3-25	3-26	4-08	4-11
great egret	4-28	5-20	4-10	4-07	5-08
white pelican	4-15	4-01	4-10	4-18	4-15
Harris sparrow	--	5-10	4-10	5-10	5-12
green-wing teal	3-14	3-27	4-12	4-08	4-04
western grebe	4-29	4-03	4-12	4-18	4-23
marbled godwit	4-14	4-20	4-13	5-02	4-15
upland sandpiper	--	5-02	5-02	5-12	5-06
American avocet	--	--	5-05	5-02	4-26
house wren	5-10	4-25	5-05	5-04	5-14
western kingbird	5-12	5-09	5-08	5-11	5-05
golden plover	5-18	5-14	5-08	--	5-16
bobolink	5-08	5-11	5-10	5-17	5-16
common loon	--	4-07	5-13	5-24	5-23
northern oriole	--	5-09	5-14	5-18	5-14
eastern kingbird	--	5-10	5-14	5-18	5-17

8. Game Mammals

Mild winter allowed the white-tailed deer to survive in good shape. Since there was a lack of snow cover, no deer census was flown.

Trapping to reduce egg-eating predators and problem beaver was again conducted on the bid-and-credit system. Three trappers took the five Refuge units for $1,219.00 in bids (compared to $1,090.50 in 1986). They were credited $7.00 for each skunk and problem beaver (designated colonies). Trapping was opened about two weeks early this year (half days until the geese left) to increase the skunk and raccoon take. Weather conditions cooperated nicely, and no special problems arose.

Fall Trapping Harvest

Species	1987	1986	1985	1984	1983
fox	92	59	35	45	54
mink	41	55	18	26	20
skunk	39	130	40	47	62
raccoon	22	31	16	22	22
weasel	4	-	1	-	-
beaver	17	10	5	2	7
muskrat	160*	57*	-	-	-
badger	4	1	-	-	1

*stop road damage

Reported Accidents:

1983 - 1 beaver, 1 badger, 1 coyote, 10 muskrats, 1 cat
1984 - 1 beaver, 1 pheasant, 5 rabbits, 2 cats, 4 muskrats
1985 - 1 pheasant, 2 rabbits, 2 muskrats
1986 - none
1987 - 1 pheasant, 1 rabbit, 8 cats, 4 muskrats

Mink and muskrat populations increased greatly thanks to wet wetlands. Skunk and raccoon populations seem stable and "average". Fox numbers continue high despite years of heavy trapping.

One trapper does a little "skunk work" in the spring while farming - just to increase his credit figure. But primarily the spring predator trapping work was done by the Refuge crew. Traps were set near roads, so they were often checked while in the course of other business. Boxes with chunks of carp inside and a Conibear trap on one end were set out for skunk, coon and Franklin ground squirrels. Carp proved to be excellent bait, so the freezer was filled (thanks to walleye trapping in 1986).

Refuge personnel installed this tube through a beaver dam to lower the water level and eliminate flooding on a neighbor's farm field. DJB - 7/87

Below is listed the spring take. The Refuge acreage being trapped was increased about 40%.

Spring Trapping Harvest

Species	1987	1986	1985*	1984	1983
skunk	52	51 (48 FA)	16 (14 FA)	17 (13 FA)	7 (5 FA)
raccoon	8	28 (10 FA)	14	1	8
beaver	-	- (2 FA)	-	-	2
F. ground squirrel	15	6	-	-	-

*includes 1 beaver (and 1 skunk accidental) taken in August to stop damage; "FA" means Force Account

1987 accidentals: 2 rabbits, 9 woodchuck, 1 muskrat, 8 13-lined ground squirrel, and 6 cats

Tewaukon's location on the eastern edge of the prairie makes it a real mixing ground both for large mammals as well as waterfowl from the Mississippi and Central Flyways. In addition to large numbers of white-tails, moose were commonly present in the area and a bull was on the Tewaukon unit in August. Pronghorn antelope regularly roam north from South Dakota and were routinely observed on or near the Olson WPAs, about 4 miles west of the Refuge.

Coyotes are rapidly increasing in the Coteau just south of Tewaukon. Several individuals reported seeing single coyotes on the Refuge during the winter, though trappers took several coyotes from the Coteau earlier.
The three pheasant crow counts were run during the spring over the established route around the refuge. Thanks to the mild fall and winter plus a dry spring, pheasant numbers were up this year. Crow count results were the above the ten year average. This fall's number of pheasants seen during hunting confirmed the spring counts.

11. Fisheries Resources

The Valley City National Fish Hatchery stocked 60,000 northern pike and 60,000 walleyes in Lake Tewaukon and 20,000 northern pike in Sprague Lake. Lake Tewaukon was test netted, and the results were excellent with walleyes, northerns, perch and crappies showing up in the trap.

Valley City National Fish Hatchery delivering another load of "little fishes" into Lake Tewaukon. FGG - 6/87

Geneseo Sportsmen Club members continued this year attempting to help the fishery by trapping and removing spawner carp from Lake Tewaukon. Their results are listed below. A large heavy trap was placed over the big culvert under County Road 12 to catch carp as they run up to Dam 2. They wanted to help; we tried to channel their enthusiasm into areas which might have positive results.

Carp Control Efforts by Geneseo Sportsmen Club

Carp	Bullheads	Crappie Sunfish	Northern	Walleye
703	45	26	9	15

Rob assisting the local Sportsmen in the installation of their carp trap. GEE - 4/87

In order to prevent winter kill the refuge aeration system was operated for the second year. The graphite vanes in the 220 volt electric motor vibrated to dust and had to be replaced at a cost of about $250.00. Air pumping capacity was lost for four days until replacement vanes arrived. Also the 750 foot long perforated lines were parted twice; once in the summer when a fishing boat caught the small buoy and once in the fall when the aerator was fired up for the season. FAO Biologist Frank Pfeifer and crew came down and repaired the break. Frank and crew have been very helpful with the fisheries on Tewaukon.

15. Animal Control

Depredation complaints were forwarded to DFA Larry Tangen.

17. Disease Prevention and Control

Luckily, Tewaukon has never experienced disease outbreaks so far as we can find out.

H. PUBLIC USE

1. General

This rural area is sparsely populated. The nearest "large" town, Wahpeton, is 60 miles away and has a population of 9,065. The great majority of the public interest in the refuge is in consumptive uses such as fishing, hunting and trapping. While the refuge is doing much in these areas, non-consumptive public uses are being stimulated.

During the first three weeks on the job, manager Giese and other refuge personnel attended two meetings to discuss prior controversy over refuge management on Tewaukon. A total of 23 issues of concern were discussed ranging from no hunting on the refuge or more hunting on the refuge to more farming on the refuge and be allowed to use more chemicals. Approximately 80 citizens attended the meetings.

6. Interpretive Exhibits/Demonstrations

Each year since 1984, Tewaukon and Valley City WMD have teamed to erect and "man" a wildlife display during Conservation Week at the regional shopping mall in Fargo. The display was up February 22-27, 1987. Again this year, we received a choice location at the center of the mall. Many thousands of people viewed the information panels, stuffed waterfowl and bald eagle or played the flyway computer game. Many good positive contacts were made.

Also an information booth using the "Duck Stops Here" display was in the main exhibit building at the Sargent County Fair. Many positive comments were made regarding the fact that we were making ourselves more accessible to the local public.

Maurice Wright, from the Regional Office, toured Tewaukon Refuge and reviewed the public use activities during July. The visit resulted in a new refuge display being purchased, several changes in sign placements and new hunting and fishing pamphlets for FY-89 or 90.

A shot of our booth at the Sargent County Fair; we are planning to expand our display in 1988. HJH - 9/87

7. Other Interpretive Programs

The eighth annual 4-H Youth Day was held at Tewaukon in June with 55 kids and leaders participating. Don, Harris and Fred each taught one of the five sessions, and personnel from ND Game and Fish taught the other two sessions. Five 20-minute sessions on conservation topics were given throughout the day. The kids also participated in a rod and reel casting contest and watched a wildlife film. The day was sponsored by the ND Extension Service.

To keep the public informed, the weekly press release program was continued with 15 columns or interviews printed or aired. Local newspapers in Wahpeton, Hankinson, Lidgerwood, Milnor, Lisbon, the ND Wildlife Federation newspaper and radio KBMW in Wahpeton were known to run them regularly. The large Fargo daily paper often used the material from these columns also. Fargo TV stations WDAY filmed and aired a program about pheasant hunting on the refuge. WDAY radio also did an interview about eagles. Lisbon radio KQLX not only supported the 1st Annual Take Pride in America Lake Tewaukon Fishing Tournament by airing free advertisements for a week prior to the date, but they also provided on-site interviews and hourly updates on the day of the tournament.

There are seven sportsmen clubs directly associated with the refuge. Refuge personnel attended 22 club meetings. This included working at fish frys, installing a carp trap, helping to put out nesting bales on private land and putting out 28 goose nesting tubs. The following are other meetings or functions attended during the year:

a) ND Chapter of The Wildlife Society Annual meeting
b) NDCTWS Executive Council meeting
c) Hosted the annual Fargo Area Sportsmen's Pheasant fund meeting ($7,000 to be divided between 5 area sportsmen clubs for use in pheasant restoration)
d) Three county commission meetings
e) DU and Pheasant Fund Banquet
f) Hosted Project WILD workshop for 26 local educators
g) 5 fishing tournament meetings (see Section H.9)
h) taught hunter safety classes
i) 3 Southeast North Dakota Crime Conference
j) 3 Ransom County FAC meetings
k) 2 Waterfowl I.D. Workshops
l) 3 Swampbuster Commencement determinations
m) Knights of Columbus (present refuge program)
n) ND Game & Fish Southeastern Advisory Board meetings
o) Township meetings held at refuge
p) Waterfowl raptor & mammal I.D. workshop to 64 4-H kids at Sheyenne Valley 4-H camp

Refuge tours were given to the Lisbon Veteran's Home, Cub Scout Troop, 68 5th and 6th graders from Enderlin School and the Richland County SCS Conservation tour. Also the Milnor Boy Scouts hiked 20 miles to the refuge to camp overnight and were presented a slide talk the next morning.

Asst. Manager Erickson explaining our predator exclosure, the power is off, to the Enderlin 5th & 6th graders. FGG - 5/87

8. Hunting

A. Deer (Firearm)

In 1987 several changes were made in order to attract the desired number of hunters, correspond more closely with State regulation, and ease administrative workloads. Rather than hold a refuge drawing on opening day the State agreed to issue 45 refuge specific permits available through their regular permit application process. Only those persons possessing a refuge permit were allowed to hunt the refuge during the first two and one-half days. In addition, those holders of the special permit were restricted to the refuge for that period. Thereafter, any hunter possessing a permit within State unit 2G2 was allowed to hunt the refuge and special permit holders could hunt in that unit outside the refuge. Acceptable weapons on the refuge corresponded with those accepted by the State during the deer gun season. The season ran for 23-1/2 days which also corresponded with the State.

The season worked well; herd management goals were achieved and public response was favorable. In the first 2-1/2 days, 30 deer hunters harvested 22 does and 3 bucks. Big crowds, which had been anticipated by some local people once the refuge opened to other hunters with a valid State permit, never materialized.

B. Deer (Archery)

Comments from archery enthusiasts indicated some support for an early season on the refuge. Little positive commentary was received about the late season, long the standard on the refuge, but quite a bit of criticism was heard regarding it. As could be expected, lack of success was attributed to the gun season which, "drove all the deer out". While this argument may have had some merit, the perceived absence of deer was also related to the lack of snow cover which concentrated them in greater numbers on the refuge in the past years with greater snow depths.

Archery Deer Season

	1987	1986	1985	1984	1983
hunting days	32	53	29	36	1-1/2
visits	50	160	165	320	395
activity hours	200	550	735	1460	1880
estimated kill	4	6	21	18	42
largest buck (all points)	1	11	10	none	10

C. Pheasant

The 1987 late pheasant hunt was the most popular refuge hunt of the year. Large crowds developed on a Monday opener, and successive weekends drew people from outside a 50-mile radius. Television and newspaper coverage effectively publicized the event assuring a steady stream of people.

A very happy group of pheasant hunters on the opening day of the refuge season. BEH - 10/87

Crow count data, spring brood observations and spring weather have been used to determine whether or not a hunting season will be held on the refuge. Stock piling birds has been determined to be a misconception and research indicates bird availability is most influenced by spring weather conditions. All refuge land west of Sargent County Road 12 were open including the Sprague Lake unit south of Rutland.

9. Fishing

Lake Tewaukon ice fishing was quite good for small to medium size northerns. On January 18, there were 75 cars out on the ice. The walleyes never did hit for some reason.

The spring and early summer fishing was spotty but good at times, especially during May and again in later August. One 15# 6 oz northern was taken near a culvert between Pool 2 and Lake Tewaukon. Several anglers took walleyes over 7 lbs - which is a good-sized fish in this area. The fall fishing was good with several large walleye and northerns taken.

Quite a catch! One of the largest ever taken from Lake Tewaukon. 5/87

The 1st Annual Take Pride in America Lake Tewaukon Fishing Tournament was held on June 27. Twenty-six teams (2 person plus you also could have a kid under 12 on your team) entered the tourney. Don Bozovsky and his wife Wanda finished in first place. The tournament was sponsored by the Cogswell Gun Club, and all proceeds will be used to help fishing on the refuge.

Our first annual fishing tourney was considered very successful and well attended. RWH - 6/87

"Tourney Winners", Bio Tech Bozovsky and his wife Wanda were declared the winners after the official weigh-in. We don't know why Don is smiling; Wanda caught all of the fish. RWH - 6/87

10. Trapping

There was no recreational trapping. This topic is discussed under "Wildlife" Section G.8.

11. Wildlife Observation

Approximately 3,000 visitors were recorded at the refuge during 1987. The greatest wildlife observation use occured in early spring and fall when large concentrations of snow geese and other waterfowl were found on the refuge.

14. Picnicking

As agreed when the Refuge was established, a small picnic area with tables, garbage barrels, grills and toilets was maintained among the oak trees on the east end of Lake Tewaukon. Most use was associated with the adjacent fishing beach.

A good crowd gathered for the first annual ND, SD and MN refuge picnic held at Tewaukon in July. DJB - 7/87

15. Off-Road Vehicling

Again this year there was no signs of any illegal use.

17. Law Enforcement

Gary, Rob and Fred received 40 hours of refresher law enforcement training in Bismarck this spring - including pistol requalifications. In September, they attended the pre-season coordination meeting at Valley City, requalified with their pistols and also qualified with the police shotgun.

A heavy law enforcement workload is involved with wetland easements. This is discussed in the Tewaukon WMD narrative report.

Hunting and fishing patrols were increased this year. The refuge law enforcement staff worked closely with the new NDGF Warden Tim Phalen and maintained radio communications with him and the Sheriff's Office. Warden Phalen ran all juvenile violations through the State juvenile system - a real good deal.

This year 21 tickets were written compared to 11 in 1986. As usual, many warnings were given. Two unusual cases were written. One concerning a refuge trapper setting an illegal trap and catching an archery deer hunter. The trapper was fined $100 and also lost his trapping privileges on the refuge. The other was an individual that was boating without a life preserver. An FOC for $35 was issued; however, this person chose not to appear before the Magistrate (3 times). The defendant was arrested and brought before the Magistrate on February 5, 1988. He was convicted of the crime and the judgment of the court was $100 fine, $30.30 cost and special assessment of $25.

1987 Violation Summary

Violation		Number	Disposition	Officer
Entering a closed area		1	$35	Giese
Attempting to take over-bag C. geese		1	$50	Hoflen
No resident general game license:	deer	2	$50	Hoflen
	pheasant	1	$50	Hoflen
	waterfowl	1	$50	Hoflen
Using a motorized vehicle off trail		1	$50	Giese
Violation of State Law - Illegal trap		1	$100	Giese
Fishing during closed season		5	$50 ea	Giese Hoflen Erickson

Violation	Number	Disposition	Officer
Violation of State Law - No P.F.D.	1	$155.30	Giese
Non-resident fish with resident license	3	$50 ea	Giese, Hoflen
Swimming on NWR	1	$25	Giese
Hunting in an area closed to hunting	3	$50 ea	Giese

I. EQUIPMENT AND FACILITIES

1. New Construction

A 15-foot Boston Whaler Utility Boat, trailer and 50 HP mercury motor was purchased to provide a work, patrol and rescue boat for our 1200 acre and 600 acre lakes.

Fred christens the new Boston Whaler boat. DJB - 7/87

This year the crew built a second electric predator enclosure. This electric fence will exclude ground predators from 40 acres of grass. This

and inside trapping should produce a high density, high success rate duck nesting operation in a few years. Costs were $4,924 for supplies and $2,500 for salaries.

Several four-foot water control structures and 24" culverts were installed to create new wetlands. Also a 500 foot dike was constructed, new to allow for more control of water from Sprague Lake.

Rob and Harris installing a new control structure at Sprague Lake. FGG - 7/87

The second Duck's Unlimited Project at Tewaukon was completed during 1987. This 705 foot dike divides pool 2 at a cost to D.U. of $41,295. The water level will be lowered by evaporation during 1988. This will allow emergent and submergent vegetation to become established. Once established, a mixture of vegetation and open water preferred by waterfowl will be maintained by manipulating water levels in the pool.

A portion of our fall migration take advantage of our new D.U. Dike. DJB - 10/87

2. Rehabilitation

The FY-87 Dam Safety project to rehabilitate the Four main Refuge dams began moving this spring. It looks like there is money to rehabilitate Dam 1: raise it 3-4 feet and construct a spillway. (The spillway and additional main spillway capacity will pass enough water so the river channel will back-up enough to create nearly slack water on both sides of the dam.)

3. Major Maintenance

The refuge had about $53,000 in ARMM's money for FY-87. The following is a list of ARMM's Projects and other major maintenance projects for 1987.

a) Graveled headquarters and portions of public use roads and stockpiled gravel for future needs.
b) Sprayed noxious weeds
c) Mowed refuge trails, roads and dikes
d) Repaired and replaced nesting material in goose nesting structures, duck and bluebird boxes.
e) Rip-rap at Sprague Lake

A rip-rap project at Sprague Lake was made possible only because Sand Lake NWR, Waubay NWR and Valley City WMD loaned us their trucks and pay-loader. JJL - 11/87

Maintenance of a recurring nature included: winter snow removal, general vehicle and building maintenance, sign maintenance, lawn care and trash pickup at public use areas.

4. Equipment Utilization and Replacement

Items Purchased

Item	Vendor	Cost
Tractor repairs (Ford 445)	Ford Tractor of Fargo	$1,483.30
Electric range (Qtrs. #4)	Roper Corp.	277.00
Microwave (office)	Golden West Equipment	229.00
W. Wheatgrass (360 lbs)	Hansmeier & Son	1,800.00
Traps - 6 dozen	Furs, Inc.	230.60
Honda Fourtrax	Johnson's Sport Center	3,440.00
TD-25 repairs	NDSSS-Diesel Mechanics	516.30
Electric fence exclosure	Mohr's Fencing	4,924.00
Cameras	Pentax	1,437.86
Tordon-35;Roundup-15	Ostlund	3,425.00
Radios-portables	Motorola	1,491.98
Pump	Pleasure Products	642.75

15' utility boat/trailer	Boston Whaler	6,969.00
Shotgun locks	Fire Supply, Inc.	144.00
Strapping,dispenser,puller	Packaging, Inc.	878.64
ATV Safety Guard	Arena Welding & Mfg.	87.50
nozzles,flappers,coveralls	Dakota Fire & Safety	764.87
50 HP Outboard	Mercury marine	2,650.62
tractor repairs (JD 1520)	Fargo Implement	1,045.87
tape recorders	Sony Corporation	285.00
NWR/WPA signs	Unicor	936.57
office chairs (3)	GSA	351.22
mallard baskets	Hanson Manufacturing	1,500.00
Sirens,speakers,lights	Federal Signal Corp.	1,460.29
Computer furniture	Grolen, Inc.	620.50
Recorder (slides)	Abby Sales, Inc.	284.13
Polaroid camera	Polaroid	133.28
Typewriter	IBM	1,077.00
Water control structures	Northwestern Sheet	604.23
28" shotgun barrels	Remington Arms	237.50
Mini-14	Strum, Ruger	316.26

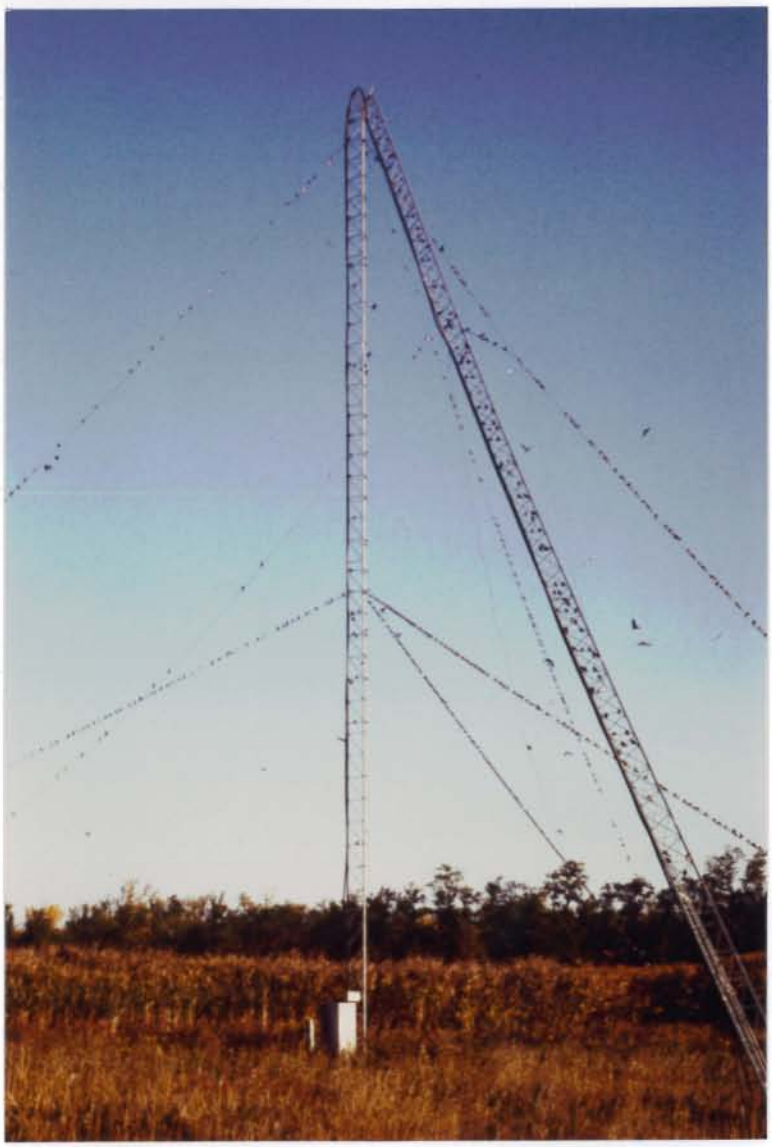
Barb's new IBM Wheelwriter 6 works like a charm! The best part is that it can be programmed to find the individual boxes on all those government forms we all have to fill out at one time or another. DJB - 12/87

Items Disposed of

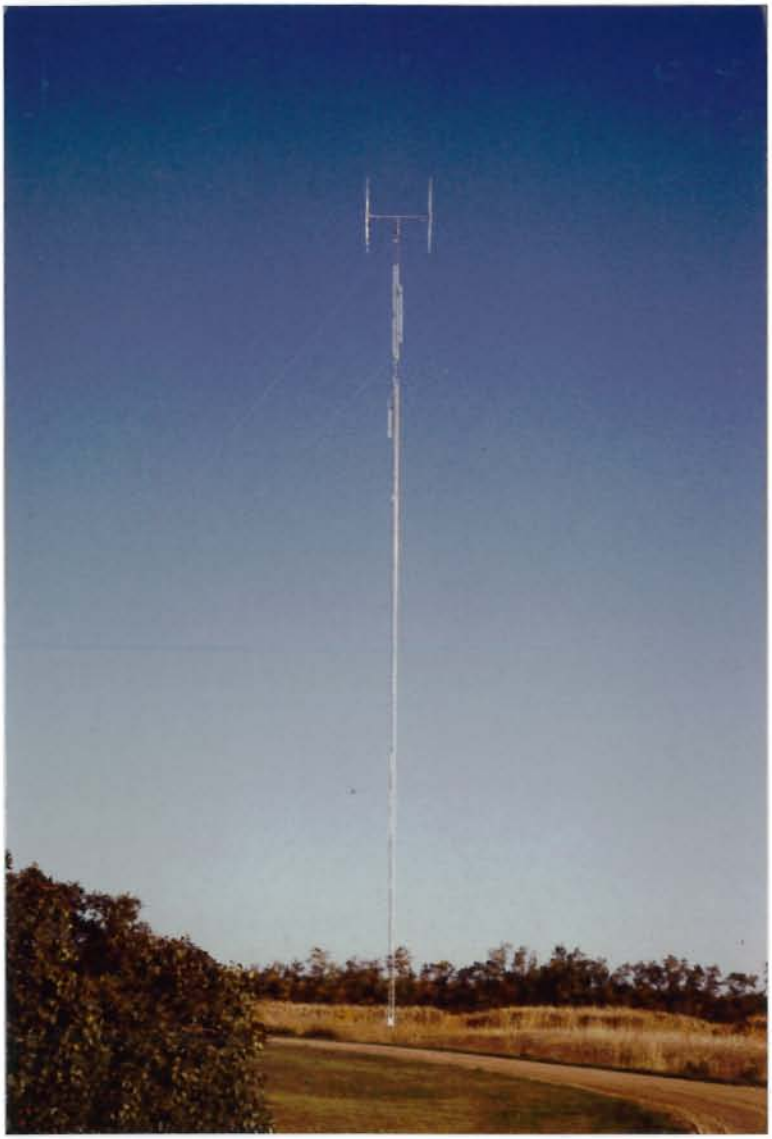
Sprayers	salvaged
Welder, arc	sold (GSA)
Pickup, S-10	transferred to Upper Souris
Radio, Motorola	transferred to Upper Souris
Radio, GE	transferred to Upper Souris

5. Communications System

A 180' radio tower was finely constructed on the old tower base. The only thing worse than the 90 mph plus winds that toppelled the old tower was dealing with CGS. Cost $6,197.



Our radio tower proved to be an attractive swallow roost after the winds died down. DJB - 7/87



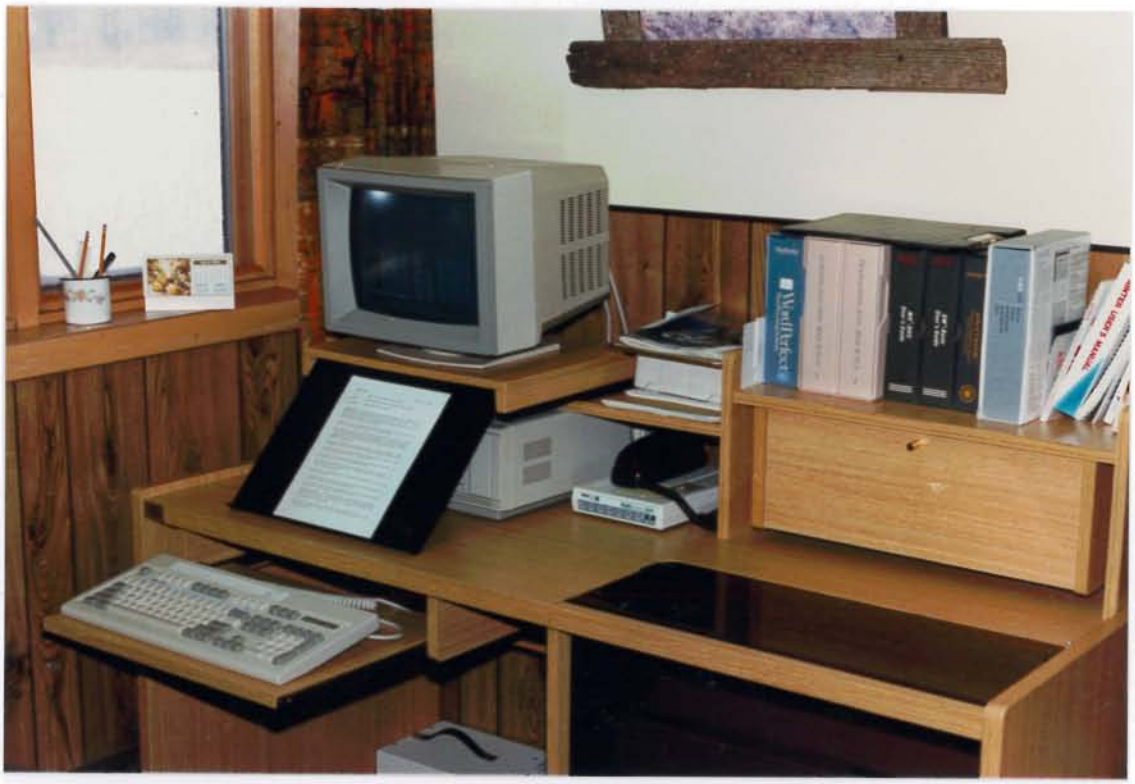
The finished product.
DJB - 7/87

Also two new portable radios were purchased.

6. Computer Systems

Our new NEC APC IV Powermate I microcomputer and Fujitsu DL2400 printer moved the Tewaukon Complex into the computer age. Other equipment included the following:

a) telephone modem
b) MD-DOS operating system
c) "WordPerfect" word processing software
d) "dBASE III PLUS" data processing software
e) "Poly-COM/220" Terminal emulation and file transfer software
f) "Lotus 1-2-3" spreadsheet software
g) "QDOS II" software



The computer with all the components. It makes a nice work station with everything so near. DJB - 12/87

Barb developed into not only the local computer expert, but also the R.O. called for advice. She put our budget and Document Control Register on Lotus 1-2-3 (worked great), WPA files on dBASE and is ready to place all refuge field data on dBASE and much, much more.

J. OTHER ITEMS

2. Items of Interest

As usual, Refuge Headquarters served our two local townships as the precinct voting place. Both the spring and fall elections were conducted here.

3. Credits

Fred Giese wrote this report except the weather section which was written by Don Bozovsky. Photo captions were done by Harris Hoistad. Barb Hoflen dug out the file information. Barb typed and assembled the report. Photo credits are noted below each picture.

K. FEEDBACK

First, I want to mention what an outstanding job the Tewaukon Staff has done during my first year as project leader. The entire staff takes exceptional pride in their work and pulls together to get a lot of worthwhile things accomplished. This is amazing considering they are asked time and time again to do more and more with less. I'm extremely proud to be associated with them.

Also I would like to thank the Regional Office for providing guidance during the year, and, at the same time, giving me the opportunity to handle any problems on a local level as much as possible while still working within the "big picture". They truly did do what was suggested at the project leaders meeting in Denver and let us "kill our own snakes".

Due to a small staff size and a vast amount of work to get accomplished, especially during the spring, summer and fall hunting seasons, all staff members devoted time and energy above and beyond the call of duty. Sometimes overtime pay was given for these duties, but because of the station's budget situation, they willingly took compensatory time off, or in some instances, no time off to get the job done. It is quite disheartening when you must adjust a maintenance man's work schedule because you cannot give him what he desires (comp. time).

Finally, we keep hearing the term "comparative worth". Yet we still have a great discrepancy between regions not only on the grade level of employees but also in staff size. If we look in the Refuge Manual under Staffing Models, we find Model II at the grade level of GS-12. The requirements for Model II are as follows:

- Areas within the refuge are intensively managed for multiple-use programs requiring long-range planning to integrate and coordinate conflicts in demands for the resource.

- Management actions impact the surrounding community and some related activities involve sensitive and conflicting issues.

- The refuge borders or adjoins several political jurisdictions with varying land use priorities.

- Refuge is subdivided into a few smaller areas with subordinate managers.

- A few activities on the refuge are potentially controversial within the local communities.

- Program planning and execution require continuous adjustments to accommodate project changes as well as the phasing in and out of various unrelated project measures.

- Deals with Federal, State, and private entities frequently and on special projects.

- Limited involvement with Native American or other cultural groups.

- Habitat management is complicated by conflicting demands on the resources.

Although Tewaukon Complex fits these requirements, it has neither the grade levels nor the required number of personnel.

Now let's look at another position that has been under graded, and everyone recognizes it, but nothing substantial has been done. The Refuge Assistants, generally women, who perform many duties in addition to normal secretary duties, are generally limited to the GS-5 pay level. The Refuge Assistants are not receiving or being paid a "comparative worth" for the duties they perform such as accountant, refuge historian, librarian, computer operator, procurement officer, property officer, timekeeper, personnel officer, public use expert, etc.

Hopefully, the inequities of the system will be corrected, thus providing compensation monetarily as well as saying - "a good job - well done!" to employees.

TEWAUKON WETLAND MANAGEMENT DISTRICT

Cayuga, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1987

U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

9 8 10 5 2 1 6 7 4

PERSONNEL

1. Fred G. Giese, Refuge Manager..... GS-11/6, PFT
   (transferred from J. Clark Salyer 3/15/87)
2. Gary E. Erickson, Asst. Refuge Manager..... GS-09/3, PFT
   (transferred to J. Clark Salyer 8/1/87)
3. John J. Lalor, Jr., Asst. Refuge Manager..... GS-07/2, PFT
   (transferred from Crab Orchard 9/27/87)
4. Barbara E. Hoflen, Refuge Assistant..... GS-05/8, PPT
5. Robert W. Hoflen, Maintenance Worker..... WG-08/3, PFT
6. Donald J. Bozovsky, Laborer/Bio. Tech..... GS-05/7, PPT
   (3/30/87 to 1/2/88)
7. Harris J. Hoistad, Laborer..... WG-02/2, PPT
   (TAPER 1/5-30/87 and 3/1/87 to 1/2/88)
8. Mike Stroeh, Volunteer/Bio. Aid..... GS-02/1, TMP
   (VOL 4/5 - 6/27; Bio. Aid. 7/5 - 10/10)
9. Sheldon Myerchin (5/11/87 - 7/31/87)..... Volunteer
10. Paul T. Score, Bio. Aid. (7/5 - 10/3)..... GS-02/1, TMP
11. Tim Bohnenstingle (6/8/87 to 7/14/87)..... ND St. SYETP
12. Noel Wisnewski (6/8/87 to 7/14/87)..... ND St. SYETP

Review and Approvals

Jack Lalor 5-13-88

Submitted by Date ND Supervisor Date

Tewaukon WMD

Refuge Regional Director Date

INTRODUCTION

The Tewaukon Wetland Management District includes the three counties in southeastern North Dakota: Sargent, Ransom, and Richland. There are 98 WPAs in 55 clusters totaling 11,893 acres and over 500 wetland easements protecting about 31,576 acres of wetlands. Waterfowl production is the primary management objective, but other migratory and resident wildlife also benefit from our management. All but the seven WPAs in the Englevale Slough Waterfowl Rest Area are open to hunting and trapping.

The topography map shows the varied topography of the WMD. The eastern portion is Glacial Lake Agassiz (1), now known as the Red River Valley. This flat area is some of the nation's best farmland. There are few wetlands left in this portion of the WMD. The Collapse Coteau Moraine (2) lies in the southern portion of the WMD. There are still many shallow wetlands in this area but many have been destroyed by drainage. The southwestern portion of the WMD is Glacial Dakota Lake (3), mainly sandy soils with little wetland habitat. The Drift Prairie (4) has good wetland habitat which is also in danger of being lost. Center pivot irrigation systems are quite common in this area. These not only lower ground water levels but do not travel well through wetlands. As a result, wetlands are drained or filled to facilitate the movement of the equipment.

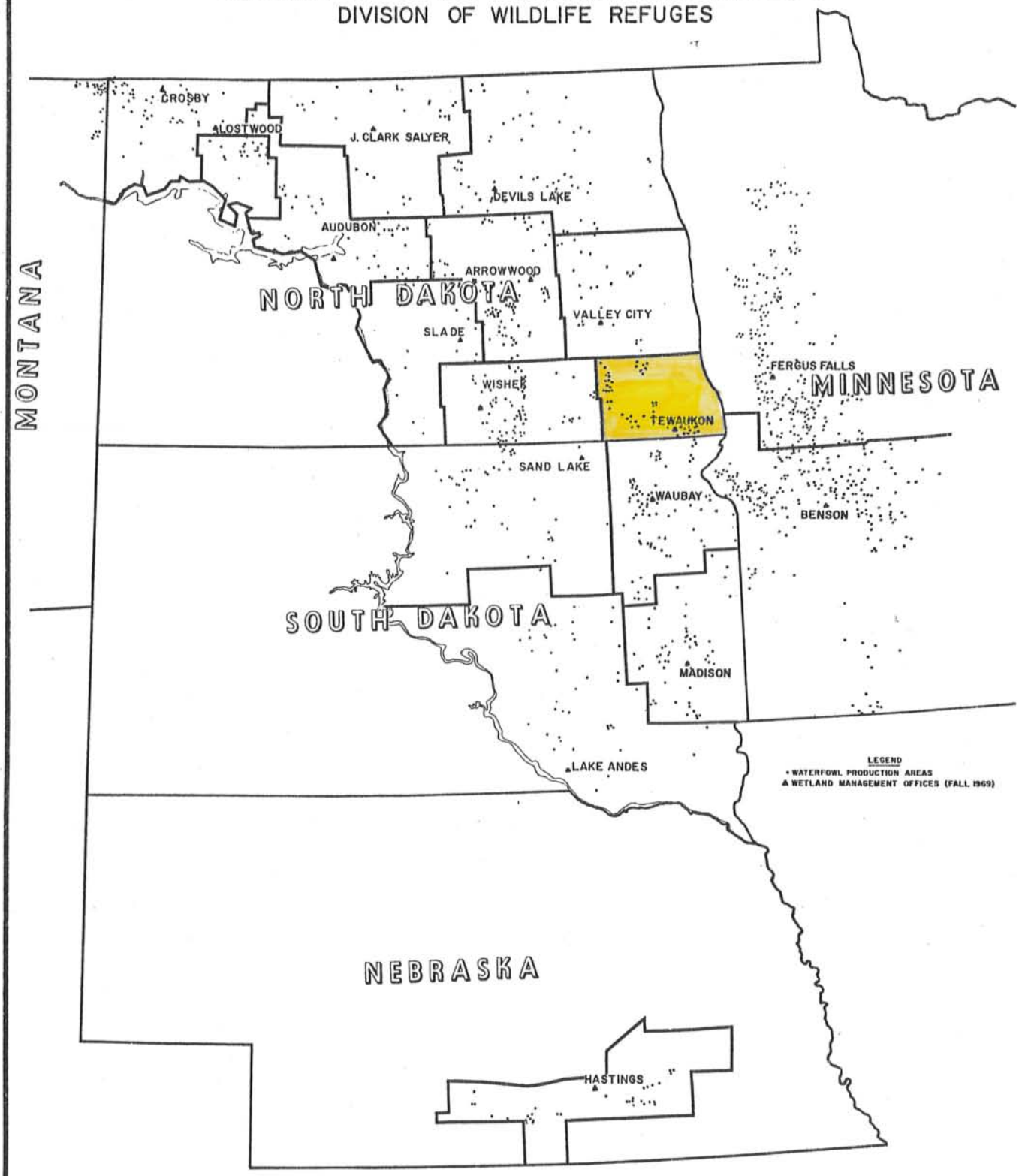
The WMD is managed from Tewaukon NWR. Budget, equipment and personnel are shared by the two units. Refuge headquarters is in Sargent County, about five miles south of Cayuga.

WATERFOWL PRODUCTION AREAS

UNITED STATES DEPARTMENT OF THE INTERIOR

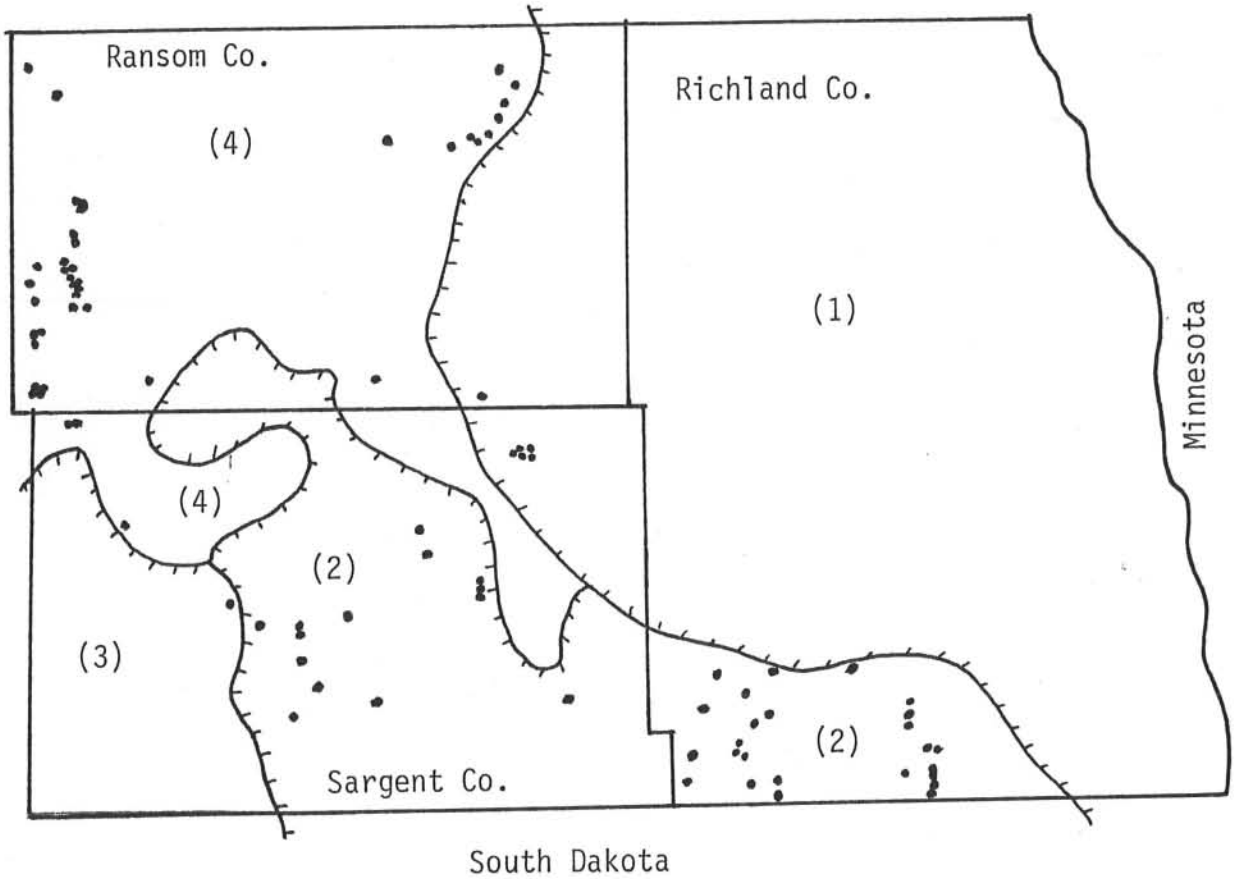
BUREAU OF SPORT FISHERIES AND WILDLIFE

DIVISION OF WILDLIFE REFUGES



TOPOGRAPHY
(Geological Zones)

TEWAUKON WETLAND MANAGEMENT DISTRICT



(1) Glacial Lake Agassiz

(2) Collapse Coteau Moraine

(3) Glacial Dakota Lake

(4) Drift Prairie

• Location of Waterfowl Production Areas

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G. WILDLIFE

H. PUBLIC USE

I. EQUIPMENT AND FACILITIES

J. OTHER ITEMS

K. FEEDBACK --

A. HIGHLIGHTS

Wetland and grassland habitat was fair, reflecting average rainfall. (Sections F.2,5)

Easement acquisition efforts slowed. Only 13 requests for offers were handled. (Section C.2)

Fred Giese started his tour of duty as the Refuge Manager in March. Jack Lalor assumed the duties of Assistant Manager in September. (Section E.1)

Fall easement flights were delayed, but three roadside violations were discovered by an alert staff. (Section F.13)

B. CLIMATIC CONDITIONS

Weather records were obtained from Mr. Loy Justesen, an official weather observer living 8.5 miles west of Refuge headquarters.

It was generally a dry winter with only a 6 inch snow accumulation which was reached on March 24. April-June was exceptionally dry with only a small amount of precipitation received. A 4.85" of badly needed rain was received in July which helped things green up a little. Wetlands that started out in good condition soon showed the effects of the dry summer. The remainder of the year produced below average precipitation, a far cry from the amount received in 1986. At year-end there was very little snow, which made us wonder if 1988 would be a carbon copy of 1987.

Total precipitation was 14.74 inches, 6.03 inches below normal and 14.07" less than in 1986. Precipitation was as follows: January-March - 1.87"; April-June 2.95"; July-September - 8.81" and October-December -1.11".

Several months had contrasting temperatures. January had 16 days above 30° with a high of 56° January 13. The coldest temperature in January was -25° on the 23rd. February had 25 days with highs of 30° or more, and the temperature didn't dip below 0° all month. The lowest temperature was 8° on the 4th and 18th. March was about average with a high of 66° on the 8th.

Spring and summer were a little warmer than normal. The high temperature for the summer was 104° on August 1st. November shed it's first snow on the 16th with a 2" accumulation. Temperatures were generally nice with the highs ranging from 29° to 61°. December was dry and mild with temps most days in the high 20's or 30's. The high temperature for the month was 39° on December 11 and 12.

C. LAND ACQUISITION

1. Fee Title

There was no fee title acquisition in the WMD this year. The small scale acquisition program has begun to gather momentum in North Dakota.

As part of a series of Memorandums of Understanding between the Governor of ND and the USFWS Director of Region 6, the Governor delegates County Commissioners the responsibility to deny or approve the sale of land to the Service. In December, Sargent County Commissioners recommended that Governor Sinner deny USFWS purchase of a 648 acre tract. The main objection of the Commissioners was the loss of tax revenue which would not be recoverable through the revenue sharing payment system. The Governor can still override, and he is working with the Service to solve the tax problem and break the stalemate. In the meantime, fee acquisition requests are still being processed.

2. Easements

Easement acquisition tapered off this year. Only 13 requests were handled, approximately one-third of the requests handled in 1986. Field review worksheets covering 557.4 wetland acres were sent to Realty. By year's end, 2 easements protecting 124 wetland acres had been purchased. Approximately 37 field reviews were still in the system. Wetland acquisition office personnel from Aberdeen, SD were reassigned to ND to work on the District backlog.

Since the program resumed in March, 1984, 106 field reviews covering 4,352.4 wetland acres have been completed. Easements on about 1072 wetland acres have been purchased.

Contacting potential easement sellers continued to be challenging. A late 1986 letter campaign probably produced the greatest response which can be expected. As this strategy generated 24 worksheets covering 825 wetland acres, it will be used again. A March news release informing folks about the CRP Piggyback Lease program also generated 3 easement inquiries, but personalized contact appeared to yield the best results.

D. PLANNING

2. Management Plans

The annual prescribed burning plan was written and approved.

5. Research and Investigation

The third year of a multi-year nesting/predator control study was completed. The staff hopes to determine if intensive predator control before and during the nesting season will significantly increase duck

nesting success. The study was not designed to determine how many ducks were nesting nor what cover types are preferred.

In 1985, the collection of nesting data was initiated on the Asche, Mahrer and Klefstad WPAs. No predator control work was done and nesting success was 17% Mayfield.

This year predator removal was continued on the same WPAs from March 4 until July 27. Removal was started early in order to get the critters as they were emerging from winter dens and easier to catch. Trapping in late June and July was aimed at catching predators moving into vacant territory. Trapping concentrated on the four main duck predators in this area: skunk, red fox, raccoon and Franklin's ground squirrel.

Trapping results are listed below:

	Mahrer - 119 ac		Asche - 159 ac		Klefstad - 230 ac	
	1986	1987	1986	1987	1986	1987
Skunk	28	11	15	8	9	12
Fox	1	2	2	5	3	5
Raccoon	9	4	5	7	11	3
F.G. Squirrel	12	13	13	0	12	8

Carp was the main bait used, and it was very effective early in the year when the animals were hungry. Carp becomes less effective when the weather warms and the animals have a wider variety of food to choose from. A switch to hard boiled eggs seems to draw better at this time of year. Our carp supply was obtained when Lake Tewaukon was test netted in the spring.

Cubby sets with 220 Conibear traps were the main trap sets used. This set worked well on skunks and raccoons. This year the use of 110 Conibears in cubby sets baited with hard boiled eggs was tried in order to trap Franklin's ground squirrels more effectively. Other competition for peanut butter baited live traps prodded us to look for alternatives. The new method was effective and more species specific.

Money for the study was from the $50K fund for waterfowl production projects. Force account trapping is expensive, even a small scale operation like ours. Expenses are summarized below:

	1986		1987
Mileage (2920 miles)	$ 730.00	(1847 miles)	$ 461.75
Fuel (259 gallons)	233.28	(149 gallons)	110.26
Traps & supplies	661.35		------
Labor (preparation)	503.50		189.60
Labor (trapping)	2,258.44		1,278.81
	$ 4,386.57		$ 2,040.42

Approximately $1100 of the difference in trapping expenditures between the two years reflects costs incurred to make cubby sets and purchase traps. Volunteer labor further reduced the costs in 1987.

The nest dragging part of the study was conducted during two periods, May 18-22 and June 19-22, on about 320 acres of grassland on the three WPAs. Mayfield success exceeded that of 1985 prior to the initiation of predator trapping in 2 of 3 areas. The Asche WPA Mayfield results plummeted to approximately 1/3 of the 1985 success rate. Many of the failed nests in 1987 were predated, prompting the hypothesis that niches were being filled as soon as they were emptied. On the average, Mayfield success rates for the entire study area were lower than the results obtained before predator trapping started. Statistically, comparisons may be worthless. Mayfield success rates (for the Study area) were calculated from information on 51 nests in 1986 and 49 nests in 1987. It is also possible that nest dragging activity has made remaining predators more efficient, providing wheel track trails and nest location flags. Results are summarized below:

Unconfined Predator Control
Mayfield Nest Success

WPA	1987	1986	1985 (Pre-predator control)
Asche	7.6	48.4	23.7
Mahrer	16.9	18.1	12.7
Klefstad	16.6	33.4	13.7
Average	13.7	33.3	16.7

E. ADMINISTRATION

1. Personnel

Fred Giese accepted the Refuge Manager position at Tewaukon arriving in March. He had previously served as the Assistant Manager at J. Clark Salyer NWR in Upham, ND. Fred's 10 years of USFWS experience in North Dakota made it a smooth transition.

There was also a changing of the guard at the Assistant Manager position as Gary Erickson transferred to Salyer NWR and Jack Lalor transferred in from Crab Orchard NWR in Illinois.

Gary and Denise were presented with a Canada goose print at their farewell party. DJB - 7/87

Asst. Manager Erickson was presented a Special Achievement Award for his excellent performance of filling two positions at once while the manager position was vacant. DJB - 7/87

Rob and Harris were given an award for their successful efforts at building a fire pumper out of pieces salvaged from two old crop sprayers. DJB - 7/87

Barb received a Special Achievement Award for exceeding her performance standards. DJB - 12/87

2. Youth Programs

Again this year ND Job Services offered us 2 youth workers at no cost. (The youth's family just had to meet income guidelines.) Mr. Tim Bohnenstingle and Mr. Noel Wisnewski were selected for the two positions. Major projects they worked on included staining quarters #4, hoeing weeds in tree plantings, removing old fence, emptying litter barrels, lawn mowing, checking nesting bales and banding geese.

Tim Bohnenstingle and Noel Wisnewski provided Tewaukon with extra help during the spring and summer "crunch". GEE - 7/87

4. Volunteer Program

For the first time this year Tewaukon had student volunteers who worked for 12 weeks. A trailer was provided for them to stay in plus $9.00/day subsistence was given. Both Mike and Sheldon were excellent workers and participated in various projects. Hopefully, they gained the field experience necessary to secure permanent employment in the future.

Like last year, Don and Harris signed as volunteers during their winter layoff period. They donated 25 hours doing various tasks: shop work, school talks, predator trapping preparation, clerical work, moving nest bales and photography. Their dedication was much appreciated.

5. Funding

Tewaukon Refuge and Wetland Management District are funded as a single unit. The following is a schedule of funding for a five year period.

Funding Chart - NWR and WMD Combined
Operational and Maintenance Funds

	FY-84	FY-85	FY-86	FY-87	FY-88
1230	--	--	--	$ 6,000	--
1261	$177,000	$179,000	$159,400	$159,000	$143,000
1262	--	--	--	--	109,000
1520	3,000	3,000	3,000	--	3,000
8610	2,500	3,000	2,500	2,000	3,200
6860	3,000	5,000	5,000	5,000	5,000
TOTAL	$185,500	$190,000	$169,900	$172,000	$263,200
ARMM	$ 39,000	$ 94,000	$ 63,000	$ 53,000	
CAF	$ 74,000	$325,000	--	--	

6. Safety

Safety meetings were held most months, and the minutes mailed to the RO. The following safety films were viewed: Options to Live, Winter Driving Tactics, By Nature's Rules and Safety Depends on You.

Radon testing was conducted for the office and the residence. The canister was placed in the basement of both buildings and the following results were obtained (office 6.8 + 0.3; residence 9.8 + 0.3). Both will be retested in the spring.

The annual test of the drinking water was conducted. The water is borderline, and rural water will be considered.

7. Technical Assistance

Technical assistance activities accomplished were: (1) National Audubon Society Christmas Bird Count; (2) Cornell Laboratory nest record cards; (3) Dove counts; (4) North Dakota Game & Fish Department Upland Game and Pheasant Crow counts; (5) Conservation Reserve Program (a cooperative agreement was reached with the Wild Rice SCD District where native grass for CRP acres would be harvested on the refuge on a 1/3 refuge 2/3 District split); (6) Piggyback lease program; (7) Truax drill loan to BR for seeding of grass on GDU tract.

8. Other Items

In July the Regional Hydrologist visited the refuge for an inspection of Sargent County Drain #11. Also Denver Engineer Al Green inspected the Headquarters as part of the preliminary work needed to rehabilitate the office. ARD Nels Kverno visited the refuge 4/1. Dave Soker visited in August to conduct refuge appraisals and Don Fitzgerald visited in August to show Barb how to record new landowners with the District regarding easements.

Jan: Rob and Gary attended Pinch Hitter Flight Training at Jamestown 1/7; Gary attended CRP/Piggyback meeting in Bismarck 1/15.

Feb: Fred and Gary completed Conflict Resolution Training 2/9-11.

Apr: Fred, Gary and Rob attended LE refresher in Bismarck 3/30-4/3.

Jun: Rob and Gary completed Pinch Hitter training 6/16; Fred, Don and Gary attended the Wetland Classification Workshop 6/16-18 in Jamestown; Mike and Sheldon attended prescribed burning training 6/16-17 at Upper Souris NWR.

Aug: Fred, Rob, Don, Harris and Mike completed Heavy Equipment Training.

Sep: Fred and Rob attended LE refresher 9/24 at Valley City; Rob, Barb and Harris attended Computer class (Fall Quarter) at NDSU; Fred attended the WPA planning and Holistic Mgmt. Workshop in Bismarck.

Oct: Fred attended Administrative Workshop in Denver.

Dec: Jack attended the 4-square mile count evaluation meeting in Jamestown. Entire staff attended NDG&F Advisory Board Meeting in Cayuga.

Sargent County received $17,184, Ransom County received $6,302 and Richland County received $6,615 in Revenue Sharing Payments for fiscal year 1986. The payments represented approximately 60 percent of full entitlement and were $1,231.00, $452.00 and $873.00, respectively, less than last year's payments of $18,415, $6,754 and $7,488.

F. HABITAT MANAGEMENT

1. General

Even with below average rainfall from April-September, fair grass stands were produced and there was enough runoff to keep water in most of the larger wetlands.

October, November and December were dry, and wetlands began to dry up. If runoff is poor next spring and rainfall is average or worse, many wetlands will be dried up before mid-summer.

2. Wetlands

Below normal rainfall reversed the water resource gains which an above-average precipitation year in 1986 had provided. Many Type I's and III's dried up in mid-summer, and no substantial fall precipitation materialized. At freeze-up they were not holding water, and many were dry below ground as well.

The only water control structure in the WMD was a culvert and flapgate off a legal drain through the Gainor WPA. The wetland supplied by this structure does fill during a wet year. Unfortunately, once the water level in the drain drops below that of the wetland, it quickly drains. In October a control structure designed to retain the water was installed. This was one of those rare occasions where the WMD got something for nothing and wanted to keep it. If precipitation improves, the WMD should be rewarded with waterfowl broods in the spring.

Putting the finishing touches on Tewaukon WMD's first water control structure. JJL - 10/87

The battle over the Crete-Cogswell Drain No. 11 escalated to the litigation level during the summer of 1987. This drain was constructed in 1917 and

had several high spots and areas where the water flowed backwards, so the drain was never very functional. The North Dakota Game and Fish Department had purchased two wildlife management areas along the drain, and these areas have been valuable waterfowl habitat for many years.

In 1980 the Sargent County Water Resource District proposed maintenance clean-out of the drain. This clean-out began in 1984 despite nearly equal support and opposition to the project. The "maintenance" also included lowering road culverts and expanding the size of the drainage area from 90,000 to about 144,000 acres. This expansion would "legalize" illegally drained areas.

There are 7 WPAs and 2 State WMAs within the drainage area. The Drain empties into the Wild Rice River which flows through Tewaukon NWR. Because the Drain for the most part had previously been nonfunctional, Tewaukon can now expect to receive new drainage from 144,000 acres. The WPAs haven't been damaged by surface drainage, but subsurface drainage is very possible. One of the State WMAs was totally drained and the water level lowered in the other; in addition, many private wetlands have been drained into the newly functional Crete-Cogswell Drain No. 11. One must consider that Tewaukon NWR has not yet experienced flooding since this drain has been functional when one could expect damage and additional siltation.

The Corps of Engineers and the Environmental Protection Agency have become involved in the battle. The Drain "maintenance" deposited material in many wetlands along the Drain which, according to the Corps, was a violation of the 404 Clean Water Act. The Corps had previously issued a "Cease and Desist" order to the Water Resource District (WRD) to stop the clean-out and offered them the opportunity to obtain the proper permits. The order was ignored because the WRD believed the Corps had no authority in the matter. The EPA stated they are, "Prepared to go to war on this one". This case could go to court for what could be a precedent-setting decision.

3. Forests

No new tree plantings were made this year. Most of the trees on the WPAs are farmstead shelterbelts established before the FWS bought the land. Part of the shelterbelt on the Krause WPA was cultivated preparing for replacement trees.

4. Croplands

Croplands on the WPAs were either small wildlife food plots (planted by sportsmen clubs) or land farmed to prepare it for eventual grass seeding. This year some of the food plots were prepared for grass seeding in 1988. The land is quite poor and crops have been likewise the past few years. Feed bales, supplied by local sportsman's clubs and purchased with Fargo Area Sportsmen's Pheasant Fund monies, compliment refuge shares and helped meet the winter needs of resident wildlife.

The 5-acre food plot on the H. Olson was idle again in 1987. The Schiffner WPA was summer fallowed in 1987 and planted to DNC in June. The Englevale

Rod and Gun Club established another food plot on better land adjacent to the Schiffner WPA, so there was a good food source nearby.

The food plots on the Larson and Tanner WPAs had been too wet to farm in 1986; the Larson plot was seeded to crops in 1987, but the Tanner plot did not get done. However, the wildlife club responsible for the plots will be offered the opportunity again in 1988.

Leafy spurge continued to be a problem on the Boehning WPA. The food plot and portions of the alfalfa fields were farmed in 1986 and seeded to natives in 1987.

The L. Olson WPA food plot which had been summer fallowed in 1986 was seeded to natives in June.

The 20 acre field on the Kenyon WPA and the 15 acre field on the Grinstead WPA still needed work. These fields had been cultivated and summer fallowed in 1985. Plans were to farm them for two years and seed them to grass in 1987. In that period the best crops were pigeon grass and weeds. Rather than seed grass into a poor seedbed, the permit was extended a year. If conditions improve, these fields will be seeded to grass in 1989.

A 67-acre field on the South Evanson WPA, broken out in 1986, was seeded to millet. The cover on this field was very poor and scarification had been tried, but there had been no improvement. The field will be seeded back to grass in 1989.

1987 WMD Farming

WPA	Permittee	Crop	Shares Permittee	Shares WMD
Ransom County:				
Kenyon	L. Kenyon	sunflowers	20	0
Grinstead	L. Kenyon	wheat	15	0
Tanner	M. Maley	idle	0	3
Schiffner	Englevale Rod and Gun Club	idle	0	5
Richland County:				
Elsen	Richland	corn	0	5
Larson	County	corn	0	5
Biggs	Sportsmen	corn	0	3

Richland County cont'd:

Ford	H. Strege	seeded to natives	-	-
Wollitz	M. Skroch for Lake Region WC	millet (baled)	0	3
Kuehn	D. Haase	DNC 4/87	-	-
Boehning	A. Gaukler, Jr.	seeded to natives	-	-

Sargent County:

Olson, H.	vacant	idle	0	5
Olson, L.	O. Nelson	seeded to natives	-	-
Palensky	D. Marquette	seeded to natives	-	-
Evanson	A. Johnson	millet	67	0

Trespass farming on our WPAs is not as much of a problem as it used to be, but it still happens, Bueling WPA. RWH - 6/87

5. Grasslands

Grasslands in the WMD are native prairie, seeded native grass, go-back (cropland reverting back to natives), DNC, and smooth brome/alfalfa mixtures. Natives were burned in the spring to inhibit the growth of invading tame grasses like smooth brome and Kentucky bluegrass and to rejuvenate the native grasses. Some spring crowd grazing was also used on natives, but lack of cattle in this area made it tough to use grazing often.

Another very beneficial prescribed burn on the WMD.
RWH - 4/87

Tame grasses were usually hayed and then scarified either with a tandem disc or a digger. The disc works well when the ground is wet. This technique was used on 172 acres this year.

One field (18 acres) was dormant seeded to DNC in October, 1986 which produced good results this spring. Dense Nesting Cover (DNC) was planted on 53 acres in 4 locations on the district this year. A mixture of tall wheatgrass; intermediate wheatgrass, alfalfa and sweetclover at a rate of 15 lbs per acre was applied.

The native seedings were all targeted for prescribed burns as soon as possible. In 1987 263 acres of native seedings (Section F.9) were burned. This was followed by spraying, where needed, with a 2,4-D/atrazine tank mix

for broadleaf weeds and pigeon grass control. This treatment helped to eliminate early season broadleaf competition and provided excellent results. A little rain after these treatments always helps to accelerate the grass growth rate further improving results.

The acreage sprayed this year (65 acres) was much less than last year (143 acres) because once grass stands are established they are more competitive with weeds, and spraying isn't needed to control them. Weed control on native seedings is summarized below.

1987 Pre-Seeding Chemical Treatments

WPA	Acres	Chemical	Date
Wyum/Kaske	7	1 qt. Roundup	5/27
	18	1 qt. Roundup	6/09
Boehning	10	1 qt. Roundup 1 pt. 2,4-D	6/08
Ford	13	1 qt. Roundup 1 pt. 2,4-D	6/09

1987 Post-Seeding Chemical Treatment

WPA	Acres	Chemical	Date
Novetzke	17	2# atrazine 1 pt. 2,4-D	6/09

Since the 1960's, herbicides have been used to facilitate the establishment of grass stands on the district. It is obvious to us that this management method is incompatible with NWR goals. Alternatives such as inserting millet in crop rotations and repeated spring burning are actively being pursued.

7. Grazing

Spring crowd grazing was tried on native grasslands not suited for prescribed burning, but with the number of cattle in this area steadily declining, many of the WPAs did not have enough cattle nearby for an effective graze. Four permits were issued to area stock owners, but three eventually cancelled out.

A new permittee (1986) on the Gainor WPA did have enough cattle to do the job. This permittee produced good results in 1986 and again this year. The plan is to manage this unit by rotating the herd through the entire 840 acres in about 150 acre blocks. Such a large area in one location provided an opportunity for greater management flexibility. Several different techniques can be used on different fields, and there will still be enough acres to graze.

1987 Grazing Permit

Cooperator	WPA	Acres	AUMs
Roger Gibbon	Gainor	140	166.94

8. Haying

Haying was used to rejuvenate tame grass and remove excessive litter from native grasslands which were not suitable for burning. No haying was allowed until after July 20 in order to give most duck nests time to hatch. Cooperators were not charged in exchange for scarification, two passes with a tandem disc or digger. Scarification was required on all but the native grass fields.

1987 Haying

Ransom	Cooperator	Grass	Acres
Gjertson	L. Kenyon	old DNC	13
Holt	F. Martin	old DNC	19
Bachman	F. Martin	old DNC	10
Smith	D. Dick	matted natives	24
Sargent			
Olson/BN	O. Nelson	old DNC	7
Richland			
Berndt	P. Buckhaus	old DNC	30
Wollitz	M. Skroch	natives/brome	24
Leack	J. Duerr	old DNC	25
Kuehn	H. Strege	old DNC	20

9. Fire Management

Burning of 263 acres was accomplished on six WPAs this spring, concentrating on native seedings. Vegetative response was good on most areas.

The first burn was April 22 on the Saunders WPA. A report for each burn was written for the Boise Interagency Fire Center (BIFC). This year's prescribed burning is summarized below:

1987 Prescribed Burns

WPA	Date	Acres	Target	Comments
Saunders	4/22	66	stim. Native seeding	good
S. Evanson	4/28	35	stim. Native sod	good
Palensky	5/05	135	stim. native seeding	good
Ford	5/14	11	stim. native seeding	good
Novetzke	5/14	16	stim. native seeding	good

10. Pest Control

State law required control of noxious weeds. Leafy spurge was the most significant noxious weed problem in this area again, but wormwood absinthe appears to be gaining a foothold and required control in Richland County in 1987.

About $8,820 was spent spraying noxious weeds in the WMD. Traveling over three counties gets expensive, but since it must be done, the weed control should be effective and costs minimized. Tordon 22-K appeared to be the most effective chemical, cost-wise and control-wise. Rob has done the spraying for the past eight years, and he knew of many spurge patches that had been killed by timely spraying. The trick, as always, was finding the spurge at the proper time.

This year herbicide use was reduced by 50%. A tank mix of Tordon and 2,4-D was used on spurge as an alternative to straight Tordon. Studies have shown that the rate of control is only expected to decrease 5-10%, a good trade-off if field results agree with research. It would also be a boost to the budget as 2,4-D is only 1/10 the cost of Tordon.

The more the staff looked for leafy spurge the more they found. Approximately 207 acres of spurge were sprayed this year and when the spray was gone, there was still more spurge. It was hoped that all the effort effectively eliminated the plants and that extensive root systems lurking deep within the soil would not "rise again".

The hillside on the Strander WPA was burned in 1985 and 1986 to set-back the leafy spurge and stimulate it to grow more uniformly. After two year's spraying, the spurge appeared pretty well controlled in 1987.

The cost summary below was mailed to each county commission in the WMD and used in a news release. No formal weed complaints were received. County Commissioners, township officials and WPA neighbors appear to be satisfied with our weed control efforts.

1987 Spurge Spraying Cost Summary

Ransom County

Ground	2.50 gal Tordon 22-K @ $71.50/gal.....	$ 178.75
	20.69 gal 2,4-D @ $7.50/gal.....	155.18
Salary	RWH - 36 hours @ $11.52.....	414.72
	HJH - 56 hours @ $10.93.....	612.08
Truck	1321 miles @ $.45/mile.....	594.45
		$1,955.18

Richland County

Ground	20.50 gal 2,4-D @ $7.50/gal.....(spurge)	$ 153.75
	22.50 gal 2,4-D @ $7.50/gal.....(wormwood)	168.75
Salary	RWH - 40 hours @ $11.52.....	460.80
	HJH - 52 hours @ $10.93.....	568.36
Truck	725 miles @ $.45/mile.....	326.25
		$1,677.91

Sargent County

Ground	32.50 gal Tordon 22-K @ $71.50/gal.....	$2,323.75
	34.74 gal 2,4-D @ $6.10/gal.....	211.91
Salary	RWH - 108 hours @ $11.52.....	1,244.16
	HJH - 96 hours @ $10.93.....	1,049.28
Truck	778 miles @ $.45/mile.....	350.10
		$5,179.20

Acreages:	Ransom County	- 82.75 acres (WPA)	- spurge
	Richland County	- 82.00 acres (WPA)	- spurge
	Richland County	- 45.00 acres (WPA)	- wormwood
	Sargent County	- 42.75 acres (WPA)	- spurge
	Sargent County	- 96.25 acres (NWR)	- spurge

13. WPA Easement Monitoring

Easements flights were postponed until spring due to weather and competition for time with other WMD's. As a result,it was learned that an OAS approved South Dakota pilot was available to fly easements. A second option should improve flight schedule flexibility. Spring flights in 1988 were planned.

Air time rescheduling did not hurt the roadside effort. Three fill violations and 13 burns were spotted from the road this fall. One of the fill violations was cleared up, but it will be spring before the other two can be attacked. Landowner compliance on two older violations ('85,'86) was also achieved. In one case wet conditions had held up progress; the other landowner wanted to have his "day in court".

1987
Easement Violation Summary - Open Cases

Date Detected	Easement	Violation	Disposition
spring 85	Ransom 172x	ditch, fill*	compliance
spring 86	Sargent 101x,1	ditch, fills	partial restoration new comp. date set
spring 86	Sargent 46x,1	ditch, fill	compliance
fall 86	Sargent 68x	fill*	compliance
fall 86	Sargent 208x	fill*	compliance
fall 86	Sargent 38x,1	fill	pending
fall 86	Sargent 130x	fill*	pending

*had prior knowledge of easement

The ditch dispute in Ransom County easement 172x was finally settled. This was the third violation in a three-violation series. He won the first one, the WMD won the second and third.

G. WILDLIFE

2. Endangered and/or Threatened Species

Bald eagles normally migrate through the district during both spring and fall. Numbers on the refuge were up, and birds were observed in all 3 counties, but no sightings on WPA's were recorded.

A cooperative effort between the Service and the Dakota Wildlife Trust to protect "Can" habitat was initiated in 1987. DJB - 9/87

3. Waterfowl

All waterfowl censusing, except the breeding pair count, was done while doing other work. Spring waterfowl use in the district appeared to be average, probably reflecting the water conditions. Another factor may have been the favorable weather conditions to the north which prompted earlier migration flights from the area.

Spring Estimates of Peak Waterfowl Populations

	1987	1986	1985	1984	1983
tundra swan	200	50	500	200	12
snow geese	4,000	600	20,000	30,000	450
Canada geese	500	400	4,000	4,000	700
mallard	600	1,800	2,200	2,600	1,700
lesser scaup	1,000	3,800	4,000	4,200	3,500

About 20% of the WPAs have been censused since 1978 during the waterfowl breeding pair counts. Production was calculated by using the standard

formula: pairs x .45 (productivity rate) x 5.9 (young per brood) x 4.85 (expansion to cover all WPAs). This method only gave us "paper ducks" and wasn't a reliable estimate.

No breeding pair counts were conducted this year; instead a four-square mile waterfowl breeding pair count was done in conjunction with Northern Prairie Wildlife Research Center (NPWRC). This new census method design by NPWRC is to standardize waterfowl production estimate procedures.

The "Four-Square Mile" technique does not accurately depict waterfowl production on the Tewaukon Complex. It may have been because the federal land was such a small portion of the sample (about 1%). Also the federal land chosen for the sample was not representative of the Tewaukon Refuge and WPA's; for example 70% of the wet acres chosen in the sample occurred in one large 600 acre lake which would not hold pair numbers compared to smaller wetlands.

The production comparison for the "Four-Square Mile" vs Quarter Section Count on the Tewaukon WMD showed a great disparity. For example, production of the five duck species on the Refuge and WPA's was 697 ducks using the "Four-Square Mile" count. In contrast, production using the Quarter Section Count on the WMD only (using a five-year average) was 6,654 for the same five species of ducks. If Quarter Section Count figures were available for the refuge, our comparison would have been even higher.

Estimated Waterfowl Production

Species	1987	1986	1985	1984	1983*
coot	88	500	1000	3500	1125
Canada goose	-	35	30	18	5
mallard	498	566	2292	966	2047
gadwall	231	154	747	296	953
wigeon	-	-	26	13	90
GW teal	-	52	52	64	90
BW teal	1389	3656	4429	3593	2434
shoveler	167	386	850	708	412
pintail	53	206	412	631	451
redhead	-	1416	747	1893	631
canvasback	-	309	155	206	13
lesser scaup	-	103	129	39	103
ruddy	-	1442	1030	1069	360
ringneck	-	52	-	26	26
wood duck	-	-	-	-	167
TOTAL DUCKS	2,338	8,342	10,869	9,504	7,777

*very dry wetland conditions in spring

- recruitment rates not computed for these species (1987) using the Four Square Mile Technique

Resident Canada goose numbers are increasing in the WMD. Five Canada goose pairs used nesting bales on WPAs. One nest hatched on Englevale Slough and also on the McCann, Asche and Krause WPAs. Two broods came off the Gainor WPA. It is believed that several more Canada geese were hatched on natural nesting sites in the district, with muskrat houses being the most likely choice.

Nesting bales also attracted mallards. Two mallards nested successfully on seven usable nesting bales in two WPA's.

In 1987 the refuge was allocated 35 goose nesting tubs purchased with ND Game and Fish extension monies for distribution on private land. The Rutland Sportsmen's Club enthusiastically embraced the idea and placed 20 tubs in 15 different wetlands. One of these was used in 1987 - a first for this area. Hopefully, a trend will develop in 1988.

Most waterfowl were chased off the WPAs during the hunting opener except for the larger more inaccessible marshes and the seven Englevale Slough WPAs. The Englevale Slough WPAs are part of a North Dakota Game and Fish Department waterfowl rest area which is closed to all entry during the waterfowl season except for a 150 yard retrieving zone. A major portion of WPA waterfowl use occurred on this area.

A new twist was added this year when Anna Peterson, peeved at government agencies because her waterbank land payments were not renewed, threatened to pull her land out of the rest area program and open it to hunting. As a result, the effectiveness of the rest area would be compromised and the entire area withdrawn from the program. The Englevale Sportsmen's Club recognized the value of the rest area to their hunting effort and presented Mrs. Peterson with a check for $2,500. Everyone seemed happy, and the rest area was preserved for another year.

There was an ample supply of irrigated corn in the surrounding fields which helped to hold birds longer in the fall. This year there was an average build up of geese that held over until they could no longer keep the water open, about the middle of December.

Estimated Fall Waterfowl Peaks

Species	1987	1986	1985	1984	1983
snow geese	4,000	4,000	20,000	75,000	25,000
Canada geese	2,000	2,000	1,500	3,000	3,500
mallard	2,100	20,000	6,500	3,000	8,000
BW teal	4,000	7,000	2,500	5,000	3,500
redhead	9,000	1,100	250	3,000	650
canvasback	390	400	100	380	55
lesser scaup	2,500	8,000	1,000	600	600

4. Marsh and Water Birds

This American Bittern nest was found during our nest dragging on the uplands of the Klefstad WPA. DJB - 6/87

5. Shorebirds, Gulls, Terns and Allied Species

This category has very little data except for Don's observation of a marbled godwit on the Gainor WPA on April 14.

6. Raptors

This category has minimal data. Personnel made the usual sightings of Northern harriers, red-tailed hawks, Swainson's hawks, American kestrels and great-horned owls. Bald eagles were commonly sighted throughout the three county area during late fall and early spring and were assumed to use the WPA's. Osprey have also been sighted at various locations on the District during late August and early September, but lack of suitable nest sites will likely keep them in a non-resident status.

In 1987 three bald eagles were brought to Refuge headquarters from the surrounding area. Two had been shot and one suffered from a severe case of pox. Sadly, educating people about the value of raptors is necessary and retrieval of these species will probably continue until such education is successful.

7. Other Migratory Birds

Don conducted the mourning dove coo count May 29. The five-year data is not strictly comparable because there were new listeners doing the survey.

	Dove Coo Count				
	1987	1986	1985	1984	1983
coos	252	210	294	219	218

8. Game Mammals

After another somewhat easy winter game mammals came through in good shape. Snow accumulation never amounted to more than 6 inches and mild temperatures and accessible food were contributing factors. In fact, the North Dakota Game and Fish Department estimated the white-tail deer population to be higher than the all time high in 1986. Random observations of deer numbers in the district backed up their findings. A record number of deer hunting permits were made available for the longest deer hunting season ever. Second permits were available for does only. No formal deer census was conducted, but most WPAs held deer. The first white-tailed deer fawn of the year was observed May 27 on the Mahrer WPA.

A small group of pronghorn antelope from an area in south central Sargent County, North Dakota and north central Marshall County, South Dakota frequented some WPAs. Twenty-six were observed on the Linda Olson WPA in April.

Our resident antelope herd, Olson WPA. DJB - 4/87

Red fox numbers remained high. Lower fur prices of about $25 per fox did not create the same kind of pressure that $75 prices of 10 years ago did.

Coyotes were increasing in number in Sargent and parts of Ransom and Richland Counties. Sightings were reported south of Tewaukon Refuge, in eastern and southwestern parts of Ransom County and northwest of Hankinson in Richland County.

10. Other Resident Wildlife

Ring-necked pheasants appeared to winter rather well. April-June was very dry, and the heavy rainfall in July was late enough to minimize damage to this year's recruitment. Hunting pressure was high early in the season and remained steady for about three weeks.

Millet feed bales were again distributed to sites on WPAs with good winter wildlife cover. Since bales were located near good cover and food sources on private land were minimal, white-tailed deer, ring-necked pheasants and several species of songbirds used these bales extensively for winter food. Thirty bales were set out on the following WPAs by WMD personnel: Wyum, Wollitz, Mahrer, Asche and Klefstad. Annually the Fargo Area Sportsmen's Group donates funds to five area sportsmen's clubs in order to cover the cost of purchasing and placing millet bales on lands within the three county wetland district. Since the WPA's were the major winter cover for resident wildlife, placing bales there was emphasized. This project was the best example of the public producing a wildlife benefit that the staff does not have time to accomplish.

12. Wildlife Propagation and Stocking

In 1985, 30 Canada geese (2 adults, 2 sub-adults, and 26 goslings) were released on Storm Lake Easement NWR but were not seen during visits to the area in 1987.

Local residents of Milnor also have not observed the geese. Hopefully, a few will come back to nest in 1988.

Five adult Canada geese and 30 goslings, courtesy of Audubon WMD and transported by Kulm WMD personnel, were released on Englevale Slough. Members of a local sportsmen's group also lended a hand. Hopefully, some will return to bolster the current population.

Canada geese trapped at Audubon NWR were released at the Englevale Slough WPAs in July. Kulm WMD personnel assisted us in this effort. Our thanks to all parties. GEE - 7/87

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H. PUBLIC USE

1. General

Hunting and trapping were the two main of public use activities on the District. All but the seven WPAs in the Englevale Slough Waterfowl Rest Area were open to hunting or trapping in accordance with State regulations. The Englevale Slough WPAs had a 150 yard retrieving zone but were otherwise closed to all entry during the waterfowl season. With the exception of the waterfowl hunting season these WPAs were open to all legal public use.

7. Other Interpretive Programs

Meetings of the Rutland, Cogswell, Richland and Tewaukon Sportsmens Clubs were attended routinely. Barb ordered the wildlife films for the Rutland Club, and Gary was secretary/treasurer until he moved to J. Clark Salyer. Rob and Gary worked at the Rutland Club's fish fry and at the trap shoot. Rob, Don, Harris and Jack attended Tewaukon DU Chapter's banquet.

The Fargo Area Sportsmen met with local sportsmen's clubs at Tewaukon NWR headquarters to organize their annual fund drive. Their Pheasant Fund Banquet raised $7,000 which was distributed to the area clubs to pay for feed bales, feeders and food plots. In three years about $28,000 has been raised for pheasant habitat work. Fred, Rob and Harris attended Fargo Area Sportsmen Pheasant Fund Banquet and observed first hand how all that money was raised.

Fifteen news releases about the WMD or Refuge were issued. Local newspapers in Milnor, Lidgerwood, Wahpeton, Hankinson, Lisbon and the ND Wildlife Federation newsletter "Flickertails" printed them regularly. The Forum in Fargo also used material from the releases.

8. Hunting

There was average water, and WPA wetlands attracted ducks. As a result, local birds kept hunters occupied until migrating birds began to build. Opening day was busy, but it died quickly. Exclusive of the opening weekend, hunting over decoys is rare in this corner of ND. Pass shooting and puddle jumping are the most popular methods of waterfowl hunting here.

Pheasant hunting was fair. The usual rush of hunters were out in force on opening day, and those that had dogs and covered the ground were largely successful. Opening day visits were estimated to be 1500 compared to 1400 in 1986.

10. Trapping

No snow during the trapping season made trapping quite easy. Fur prices improved from last year with fox pelts worth $25-30, male mink $25 and raccoon around $40. For the second year WMD personnel conducted spring trapping programs on three WPA's in order to determine if a program could improve waterfowl nesting success. Details of the program are discussed in Section D.5.

Don got this fox pup to pose for him. The fox pup is a little too early to find any waterfowl feeding in this corn field. DJB - 6/87

17. Law Enforcement

Part of the WMD was patrolled every weekend from the waterfowl opener into the first part of November. During the waterfowl season a point was made to get in among the hunters instead of the routine bag checks at their vehicles. Areas where canvasbacks and redheads normally congregate were also worked. Unfortunately, some hunters were still subscribing to the shoot first, identify later, theory.

Violations are summarized below. State law violations and juvenile offenders were referred to ND Game and Fish Department Warden Tim Phalen.

1987 Tewaukon Complex Violations

Violation	Number	Disposition	Officer
Entering a closed area	1	$35	Giese
Attempting to take over bag Canada geese	1	$50	Hoflen

No resident general game license: deer	2	$50	Hoflen
pheasant	1	$50	Hoflen
waterfowl	1	$50	Hoflen
Using a motorized vehicle off trail	1	$50	Giese
Violation of State Law Illegal trap	1	$100	Giese
Fishing during closed season	5	$50 ea	Giese Hoflen Erickson
Violation of State Law No P.F.D.	1	$155.30	Giese
Non-resident fish with resident license	3	$ 50 ea	Giese,Hoflen
Swimming on NWR	1	$ 25	Giese
Hunting in an area closed to hunting	3	$ 50 ea	Giese

I. EQUIPMENT AND FACILITIES

1. New Construction

The first water control structure on the Gainor WPA was completed in October (Section F.2).

Berle Meyers, Sand Lake NWR, worked four days with his bulldozer burying junk, foundations etc., (and building dams/ditch plugs on the refuge and 3 WPAs). Rob and Harris worked with Berle, helping him find the projects and checking each WPA for more work. Berle did excellent work as usual, and his help was greatly appreciated.

WPA	Job Description
Klefstad	Foundations buried, ditch plugged, junk piles buried
Wyum	Junk piles buried
Lunstad	Junk piles, foundations buried, well filled

2. Rehabilitation

Twenty junk piles were buried and 1 ditch plug was repaired on 3 WPAs (Section I.1).

4. Equipment Utilization and Replacement

Equipment is shared with Tewaukon NWR. An equipment summary is included in the Tewaukon NWR narrative report.

J. OTHER ITEMS

1. Cooperative Programs

Area sportsmen's clubs and the WMD worked together on several wildlife projects which are summarized below:

Rutland Sportsmens Club	28 feed bales; installed 20 Canada goose nesting structures
Tewaukon Rod & Gun Club	feed bales
Lakes Region Wildlife Improvement	1 WPA food plot; millet bales
Richland County Sportsmen	2 WPA food plots; feed bales on 11 WPAs; 10 flax nesting bales on 3 WPAs
Fargo Area Sportsmen	Raised $7,000 at Pheasant Fund Banquet to buy feed bales distributed by the area clubs
Cogswell Gun Club	feed bales
Englevale/Fort Ransom Rod & Gun Club	1 food plot adjacent to WPA

The Rutland, Cogswell, Tewaukon, Englevale and Richland County Clubs were planning to distribute nesting bales or install nesting structures after the first of the year. The staff will help them by supplying strapping and picking up structures from the ND Game and Fish Department.

3. Credits

Jack wrote this report. Fred edited it. Harris wrote the captions for the photographs. The entire staff searched the files for information, and Barb typed and assembled the report.