Personnel

1. Lloyd A. Jones, Wetland Manager, GS-11 PFT
2. Ronald P. Manson, Biological Technician, GS-7 PFT
3. Bradley A. Knudsen, Biological Technician, GS-6 PFT
4. Gregory E. Siekaniec, Biological Aid, GS-4 Temporary, 4/4/83 - 9/30/83
5. Renee D. Stangeland, Fish Hatchery Assistant, GS-5 PPT

Review and Approvals

Submitted by: Lloyd A. Jones, Wetland Manager
Valley City WMD

Date

John R. Foster, Project Leader
Arrowwood Complex

Regional Office Review

Date

6/11/84
INTRODUCTION

The Valley City Wetland Management District (WMD) is located in east-central North Dakota. The district is made up of Cass, Traill, Barnes, Griggs, and Steele Counties and operated as a substation of the Arrowwood National Wildlife Refuge Complex at Pingree. There are 72 Waterfowl Production Area management units comprising 16,198 acres and 39,089 acres of wetlands protected by FWS easements. The Waterfowl Production Area's acreage breaks down to roughly one-third wetland and two-thirds upland, with the bulk of the upland comprised of DNC, native prairie, or seeded native grass stands.

The eastern one-third of the district is located in the Red River Valley. This area, characterized by flat, intensively farmed land was once the lake bed of Glacial Lake Agassiz. The remaining two-thirds of the district is in the glaciated prairie pothole region known as the drift prairie. The area is characterized by gently rolling topography with numerous wetlands ranging from one-tenth acre to several hundred acres. Land use is primarily agriculture with small grains such as wheat, barley, and sunflowers the main crops. The Sheyenne River Valley bisects the western half of the district. The meandering wooded valley and adjacent pastures and draws offer a welcomed relief to the intensively farmed surrounding landscape. The few remaining areas of native prairie are being turned under and along with fall plowing and summer fallowing, erosion is a major concern.

The headquarters of the WMD is located at the Valley City National Fish Hatchery facilities, two miles north of Valley City adjacent to the Sheyenne River. Equipment, shop, and personnel are shared between both offices. The National Fish Hatchery clerk works 14 hours each week for the WMD. This set up has worked extremely well and provides the WMD with excellent facilities.
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<td>8. Game Mammals</td>
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<td>10. Other Resident Wildlife</td>
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<td>15. Animal Control</td>
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<table>
<thead>
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<tbody>
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</tr>
<tr>
<td>3. Outdoor Classrooms - Teachers</td>
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</tr>
<tr>
<td>4. Interpretive Foot Trails</td>
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<td>5. Interpretive Tour Routes</td>
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<td>6. Interpretive Exhibits/Demonstrations</td>
<td>28</td>
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<tr>
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<td>28</td>
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<tr>
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<td>Nothing to Report</td>
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<td>28</td>
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<tr>
<td>11. Wildlife Observation</td>
<td>29</td>
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<tr>
<td>12. Other Wildlife Oriented Recreation</td>
<td>Nothing to Report</td>
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<td>13. Camping</td>
<td>Nothing to Report</td>
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<td>14. Picnicking</td>
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<td>15. Off-Road Vehicling</td>
<td>29</td>
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<tr>
<td>16. Other Non-Wildlife Oriented Recreation</td>
<td>Nothing to Report</td>
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<td>17. Law Enforcement</td>
<td>29</td>
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<td>18. Youth Programs</td>
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<td>19. Cooperating Associations</td>
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<td>20. Concessions</td>
<td>Nothing to Report</td>
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<td>29</td>
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### I. EQUIPMENT AND FACILITIES

<table>
<thead>
<tr>
<th>1. New Construction</th>
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<tr>
<td>2. Rehabilitation</td>
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<td>3. Major Maintenance</td>
<td>Nothing to Report</td>
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<td>4. Equipment Utilization and Replacement</td>
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A. HIGHLIGHTS

The North Dakota Supreme Court upheld a lower court ruling which revoked a drainage permit for a large wetland in Barnes County. The Supreme Court noted inadequate investigation of downstream impacts and negative impacts on wildlife resources. The FWS had two Waterfowl Production Areas (WPA's) in the path of the drain and had testified in opposition. See Section J-2.

On March 7, 1983 the U.S. Supreme Court issued a ruling which stated that the FWS's Small Wetlands Acquisition Program was free to operate. In upholding the U.S. District Court ruling, the state imposed restrictions on purchasing wetlands was ruled unconstitutional and in part the court ruling stated, "The specific federal governmental interest in acquiring rights to property for waterfowl production areas is stronger than any possible aberrant or hostile North Dakota law that could preclude the conveyance granted in this case." See Section C.

Habitat management by the use of prescribed burning was completed on approximately 1,600 acres in 1983. Weather and the short desirable burning period make treating a sizable acreage difficult. See Section F-9.

Native grass seedings were accomplished on 216 acres on ten separate tracts. These seedings included two ten-acre seedings of two different varieties of sideoats grama and one twenty-acre seeding of a North Dakota variety big bluestem. These fields will be used for future seed harvest. See Section F-4.

The Valley City WMD was involved in the harvest of approximately 11,000 pounds of pure live seed of various native grasses. This amounts to roughly $110,000 if this seed were bought commercially. The seed will be distributed for seeding on various refuges and wetland management districts throughout the state. See Section F-5.

A metal storage building (44' x 92') was constructed at the headquarters by force account. This provided badly needed storage space for WMD equipment. It also served as a native grass seed drying/cleaning building for much of the fall and winter. See Section I-1.

B. CLIMATIC CONDITIONS

The mild weather of November-December 1982 continued into 1983 with temperatures averaging 12° above normal for January and 8° above normal for February. This, coupled with negligible snow amounts through the winter months (it wasn't until February 20 that there was a significant snow cover on the ground; five inches and this disappeared in five days), made it an extremely easy winter for resident species of wildlife.

Precipitation was 1.3 inches below normal for March-May, but the previous wet fall still allowed wetlands to be in fairly good condition during spring migration and into the nesting season.
Massive thunderheads such as these were common sights during the hot, humid summer of 1983. BAK-1983
Above average temperatures and several blustery days in July and August caused many Type IV wetlands to dry up by summer's end. Precipitation was two inches below normal through August and September and thus many wetlands (WPA's included) were dry during the peak of the fall migration.

A record cold spell topped off 1983 with daytime high temperatures not getting above -5° from December 16 - December 25. Wind chills of -50° to -60° F were commonplace during this streak. The cold weather did not deter the snow from falling as 12 inches had accumulated on the ground during December.

C. LAND ACQUISITION

On March 7, 1983 the U.S. Supreme Court ruled on the future operation of the FWS Small Wetlands Acquisition Program (SWAP). The court basically upheld the District Court and 8th Circuit Court of Appeals which had already ruled unconstitutional the restrictions placed on the program by North Dakota state legislation. The program is now free and able to operate if the FWS so desires. See attached news articles.

The court made several noteworthy statements in rendering its decision. The court stated that, "The protection of migratory birds has long been recognized as 'a national interest of very nearly the first magnitude.'" Specifically in regards to the operation of the program in North Dakota the court stated, "The District Court and the Court of Appeals held that gubernatorial consent was not required prior to federal acquisition of wetlands easements, and that North Dakota's 1977 legislation could not be applied to any easements acquired under the Stamp Act. We conclude that although gubernatorial consent is required, it has been given here and cannot be revoked. We also conclude that North Dakota's 1977 legislation cannot restrict the United States' ability to acquire easements pursuant to consent previously given. To this extent, we affirm the judgment below."

The court went on, "The specific federal governmental interest in acquiring rights to property for waterfowl production areas is stronger than any possible aberrant or hostile North Dakota law that could preclude the conveyance granted in this case."

This issue began on April 21, 1977 when then North Dakota Governor Link signed two bills which placed several inoperable restrictions on the FWS acquisition program. Although there was a consistent attitude among U.S. Solicitors, U.S. Attorneys, and others including North Dakota state officials that the state laws were unconstitutional, it took six years to free the program. Ironically since the Supreme Court decision, an additional year has passed without any FWS action to resume wetland protection in North Dakota. No directive, discussion, or organized planning has occurred as of this date.
1. Fee Title

As has been the case each year since 1977 when the state passed legislation curtailing the FWS Small Wetlands Acquisition Program, this office received several inquiries from landowners wishing to sell some or all of their land to the FWS. Due to the current stalemate imposed on land acquisition, no action was taken other than to forward their requests to the Realty Division in Bismarck. Here they are kept on file where, hopefully, in the near future when the state/federal impasse is resolved, they can receive purchase consideration.

2. Easements

As with fee tracts, no activity has taken place in purchasing easement agreements since the state imposed restrictions in 1977. Nevertheless, several landowners expressed an interest in participating in such a program. Again, records of these requests are kept on file for future consideration.

Valley City Acquisition Status

<table>
<thead>
<tr>
<th></th>
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<td><strong>Fee Title (1)</strong></td>
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<td></td>
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<tr>
<td>Barnes</td>
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<td>234.98</td>
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<tr>
<td>Griggs</td>
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<tr>
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<tr>
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<td><strong>Total</strong></td>
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<td>16,198.10</td>
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</thead>
<tbody>
<tr>
<td><strong>Easements (2)</strong></td>
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<td></td>
</tr>
<tr>
<td>Barnes</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17,443</td>
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<tr>
<td>Cass</td>
<td>96</td>
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<td>Griggs</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>239</td>
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<tr>
<td><strong>Total</strong></td>
<td>920</td>
<td>584</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>39,809</td>
</tr>
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</table>

(1) Total Acres of WPA Tract
(2) Wetland Acres Only
E. ADMINISTRATION

1. Personnel

A comparison of staffing at the district is as follows.

<table>
<thead>
<tr>
<th></th>
<th>Full-Time</th>
<th>Part-Time</th>
<th>Temporary</th>
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<tr>
<td>FY83</td>
<td>3</td>
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<td>1</td>
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<tr>
<td>FY82</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>FY81</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>FY80</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FY79</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Biological Technician Manson attended the 40-hour Law Enforcement Refresher in Billings, Montana, from March 21 to March 25. Biological Technician Knudsen attended the 40-hour Basic Firefighter (5-130) and Introduction to Fire Behavior (5-190) training course at Flint Hills NWR in Hartford, Kansas from April 4 to April 8. Wetland Manager Jones and Biological Technician Manson and Knudsen attended an 8-hour first aid refresher workshop in Jamestown, ND on March 9.

2. Funding

Funding for the WMD is not a separate figure, but is included in the Arrowwood Complex budget. The complex is made up of Valley City WMD, Long Lake NWR and WMD, and Arrowwood NWR and WMD. The operation and maintenance complex budget over the past five years follows.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>FY83</td>
<td>$530,000</td>
</tr>
<tr>
<td>FY82</td>
<td>$368,000</td>
</tr>
<tr>
<td>FY81</td>
<td>$346,000</td>
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<tr>
<td>FY80</td>
<td>$322,000</td>
</tr>
<tr>
<td>FY79</td>
<td>$315,000</td>
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</table>

For a further breakdown of funding, refer to Arrowwood narrative report.

3. Safety

Safety meetings are held on a monthly basis with the staff of the National Fish Hatchery as well as in conjunction with Arrowwood Complex staff meetings. Biological Technician Knudsen served as Arrowwood Complex Safety Committee chairman for FY83. Valley City's station safety plan was rewritten and submitted to the Regional Office for approval.

No lost mandays of work occurred during 1983, however, Biological Technician Knudsen received a cut on his right forearm while handling sheet metal during construction of the new pole shed which required nine stitches. To alleviate this safety hazard, it was decided no more sheet metal buildings will be constructed by WMD personnel in the future.
4. Technical Assistance

The WMD provided assistance to the Cass County Soil Conservation District in preparing a field trip agenda on soils, watershed management, and wildlife. All high schools in Cass County participated in the two-day field project. This has become an annual event and appears to be a very well received program.

Assistance was also provided to the Traill County SCS office on three drainage referrals involving nine different wetlands. Basically this involves the landowner contacting the SCS for technical assistance for wetland drainage. The SCS in turn contacts the FWS for a determination as to whether Type III wetlands are involved. If so, assistance cannot be provided through the SCS. Each of the above drainage referrals involved Type III wetlands and so the drainage requests were denied.

The wetland manager served as a board director for the Red River Valley International Citizens Flood Control Coalition. The organization is made up of members from Minnesota, North Dakota, and Manitoba. The purpose in serving is to provide technical information and resource input relating to water issues, wetlands, and wildlife. The group has been instrumental in bringing forth discussions and information relating drainage to flooding.

F. HABITAT MANAGEMENT

1. General

The objective of all habitat management practices is to provide a vigorous and diverse habitat for maximum production of migratory birds. As the resource base of wetlands and upland cover continues to dwindle statewide due to intensive land use practices on private lands, effective habitat management on Service lands becomes increasingly important.

2. Wetlands

All wetlands in the district except for Fuller's Lake WPA and Stoney Slough NWR have no artificial water control structures. Boards were pulled at Fuller's Lake in November and December to initiate a total drawdown of the 385 acre Type IV marsh to ready it for a $20,000 nesting island construction project in the summer of 1984. Plans are to burn off the extremely dense cattail marsh in early spring, hopefully allowing the soil to dry out enough to let bulldozers operate in the marsh without getting stuck. The water level had dropped approximately three feet by the end of December.

A similar project was started on Alice WPA in Cass County in late September. Blumer Construction of Valley City completed $1600 worth of bulldozer work and NFH personnel provided two mandays of work on our bulldozer. Fifteen islands were constructed on the southwest edge of an 800 acre cattail choked marsh. While the creation of secure nesting sites for waterfowl is the primary objective of these projects, an important side benefit is the break-up of the extremely dense monotypic cattail stands choking out these marshes. The interspersion of the open water areas created by the island construction should greatly enhance the attractiveness of these marshes to waterfowl.
Seasonal wetlands maintained by water control structures on Stoney Slough NWR, Barnes County, April 1983. The area received heavy use by migrating waterfowl and held water into late summer providing brood habitat as well.

Four prescribed cattail burns, comprising 500 acres, were conducted in April 1983 where this species has choked out open water areas and other species of wetland vegetation. It was hoped there would be sufficient runoff from spring rains to drown the burnt-off stems and thin out the existing cattails, however, the weather did not cooperate. Still, accumulated litter build-up from previous years was reduced and the marshes made somewhat more accessible to a variety of wildlife, migratory and resident alike.

4. Croplands

There are approximately 6,000 acres of cropland in the WMD. Keeping these cropland acres in a diverse and healthy vegetative cover is a major portion of the WMD habitat management practices. Prescribed burning, chemical applications, grass seedings, and haying are all a part of increasing the quality and quantity of upland vegetation.

Cooperative farming agreements play an important role in attaining this end result. In 1983, cooperative farming agreements were in effect on 816 acres on 23 separate tracts. Most farming agreements are for a three-year period, but may be longer if weed problems persist. The WMD receives 10-30 percent of the crop each year, either in standing rows, unharvested bales or as harvested crop to be distributed to resident wildlife feeders located on WPA's throughout the district.

All cooperative farming agreements are designed to prepare a seedbed for either native grass or DNC seedings. Emphasis has been placed on establishment of native grass stands since 1980 in the district. No DNC was planted
in 1983. While DNC does provide good nesting cover, there are problems with degeneration and weed invasion. Most stands after five years lose their vitality and have to be broken out, cropped for two to three years and reseeded. Thus, the land is in a cropped, nonproductive state a greater percentage of the time than a similar piece of land in native grass cover.

Seeded big bluestem (NDG-4) in flowering stage on Alice WPA, Cass County. Approximately 30 days later this field was ready for harvest.

Areas seeded to native grasses in 1983 are shown in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Grass Type</th>
<th>Source</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>Sideoats grama</td>
<td>Stoney Slough</td>
<td>Very successful, seed heads produced by late summer.</td>
</tr>
<tr>
<td></td>
<td>Killdeer</td>
<td>WMD</td>
<td>Successful catch, several plants produced seed heads</td>
</tr>
<tr>
<td></td>
<td>Pierre</td>
<td>Bismarck, ND</td>
<td>Successful catch, several plants produced seed heads</td>
</tr>
<tr>
<td></td>
<td>Green needlegrass</td>
<td>Hagglund WPA</td>
<td>Less successful, overran by weeds</td>
</tr>
</tbody>
</table>

Nineteen eighty-three marked the first year the WMD planted sideoats grama for seed increase purposes. Killdeer, a North Dakota variety, and Pierre, a South Dakota variety, were provided to the WMD by the Soil Conservation Service Plants Material Center in Bismarck, ND. Both plantings were at Stoney Slough NWR and appeared to have an extremely successful catch, with several plants even producing seed heads by late summer. These two fields will serve as a seed source for sideoats grama which will provide an intermediate vegetative substrate in future native grass plantings. Sideoats seems to be more of a mid-season native growing and producing seed, earlier than the common warm-season native grasses.

The green needlegrass plantings appeared to be somewhat less successful. Weeds, mainly pigengrass, mustard and kochia, overran the fields. Hagglund WPA required two mowings in late summer to set back the weeds and give the green needlegrass seedlings a chance to grow. There was still very little apparent response by the natives. One explanation may be the
### 1983 NATIVE GRASS PLANTINGS

<table>
<thead>
<tr>
<th>WPA</th>
<th>Acres</th>
<th>Species Seeded</th>
<th>Seeding Rate (LBS Pure Live Seed/Acre)</th>
<th>Establishment Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hagglund</td>
<td>20</td>
<td>Green needlegrass (Lodorm)</td>
<td>8</td>
<td>1980-82 - Cropped&lt;br&gt;Fall 1982 - Plowed&lt;br&gt;Spring 1983 - Disced, dragged &amp; packed prior to seeding</td>
</tr>
<tr>
<td>Key</td>
<td>31</td>
<td>Green needlegrass (Lodorm)&lt;br&gt;Prairie sandreed</td>
<td>8&lt;br&gt;3.5 lbs. bulk (no PLS available)</td>
<td>1980-82 - Cropped&lt;br&gt;Fall 1982 - Chisel plowed&lt;br&gt;sprayed with Roundup, disced &amp; dragged twice &amp; packed prior to seeding</td>
</tr>
<tr>
<td>Fuller's Lake</td>
<td>11</td>
<td>ND Switchgrass (NDG-965-98)&lt;br&gt;SD Switchgrass (SD-149)&lt;br&gt;ND Big Bluestem (Native)&lt;br&gt;SD Big Bluestem (SD-27)</td>
<td>3/4&lt;br&gt;3/4&lt;br&gt;6&lt;br&gt;2</td>
<td>1978-80 - Cropped&lt;br&gt;Summer 1981 &amp; Spring 1982 - Roundup applied&lt;br&gt;Summer 1982 - Disced &amp; dragged prior to seeding, then roller-packed&lt;br&gt;June 1983 - Seeded into existing seedbed</td>
</tr>
<tr>
<td>Fuller's Lake</td>
<td>20</td>
<td>Killdeer sideoats grama</td>
<td>10</td>
<td>1980-82 - Cropped&lt;br&gt;June 1983 - Roundup applied, disced, dragged &amp; packed twice prior to seeding</td>
</tr>
</tbody>
</table>
## 1983 NATIVE GRASS PLANTINGS (Continued)

<table>
<thead>
<tr>
<th>WPA</th>
<th>Acres</th>
<th>Species Seeded</th>
<th>Seeding Rate (LBS Pure Live Seed/Acre)</th>
<th>Establishment Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stoney Slough NWR</td>
<td>20</td>
<td>SD Switchgrass (SD-149)</td>
<td>8</td>
<td>March 1983 - Burn&lt;br&gt;Overseeded into existing stand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1981-82 - Cropped&lt;br&gt;1982 - Disced&lt;br&gt;May 1983 - Roundup applied, dragged &amp; packed twice prior to seeding</td>
</tr>
<tr>
<td>Stoney Slough NWR</td>
<td>20</td>
<td>Big Bluestem (NDG-4)</td>
<td>8</td>
<td>1980-82 - Cropped&lt;br&gt;1982 - Disced&lt;br&gt;June 1983 - Roundup applied, dragged &amp; packed twice prior to seeding</td>
</tr>
<tr>
<td>Stoney Slough NWR</td>
<td>14</td>
<td>Pierre sideoats grama</td>
<td>14.3</td>
<td>April 1983 - Burn&lt;br&gt;Overseeded into existing seedbed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1980-82 - Cropped&lt;br&gt;May 1983 - Atrazine applied&lt;br&gt;June 1983 - Disced &amp; dragged twice, packed once prior to seeding</td>
</tr>
<tr>
<td>Lettenmeier</td>
<td>16</td>
<td>Green needlegrass (Lodorm)</td>
<td>8.5</td>
<td></td>
</tr>
<tr>
<td>Kraus</td>
<td>45</td>
<td>ND Big Bluestem (Native)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD Big Bluestem (SD-27)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ND Switchgrass (NDG-965-98)</td>
<td>3/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD Switchgrass (SD-149)</td>
<td>3/4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>216</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Excellent wildlife cover provided by seeded natives on Bowen WPA, Barnes County. Seeding date - 6/30/80. Varieties in mixture include Pawnee, Big Bluestem, Oto Indiangrass and Pathfinder Switchgrass.

Wetland Manager Jones combining NDG965-98 Switchgrass on Alice WPA, Cass County, 8/24/83. This ten acre field, seeded in 1982, yielded approximately 400 pounds (pure live seed). BAK-1983
An unusual invader of a native seeding on Lettenmaier WPA; white prickly poppy (Argemone alba). Note sideoats grama in the foreground.

LAJ-1983

high dormancy rate (36 percent) of the seeds. A commercial seed dealer who grows green needlegrass locally claims the seeds may lay dormant for up to five years before germinating, therefore, it could be several years before either stand fills in evenly. Overseeding may be an option to decrease the time needed to establish a uniform stand of this species of cool-season native grass. Four hundred pounds (pure live seed) of green needlegrass were purchased commercially for $2,000 with this in mind.

Four hundred ninety-three acres of previous years native grass seedings on six WPA's were sprayed with Atrazine (2-4 lbs./acre), 50 acres of previous years native grass seedings on two WPA's were sprayed with Roundup (1 qt./acre), and 26 acres of previous years native grass seedings were sprayed with 2,4-D (1 pt./acre) for purposes of weed control. Roundup applications were in early spring while warm-season natives were dormant,
but the cool-season invaders such as quackgrass and bromegrass were in an early growth stage. This procedure worked extremely well by rejuvenating a warm-season native planting and killing most cool-season invaders. This particular field (see photo on page 11) showed excellent plant growth.

One hundred ten acres of seeded natives on six WPA's were mowed in 1983 to control such weeds as thistle, pigeongrass, pigweed, kochia, and sowthistle.

5. Grasslands

For the third year in a row, the WMD harvested native grass seed to be used for future plantings. The following table shows approximate yields of the areas harvested and the results of the purity and germination tests as conducted by the State Seed Lab in Fargo.

The used Allis-Chalmers Model A Gleaner combine purchased in 1981 for $1,000 has held up well. Only minor repairs have been necessary on the belt drive, shakers, roller-chain, broken slats, etc. In the three years since the WMD bought the combine, over $300,000 worth (commercial value) of native grass seed has been harvested. This not only is a substantial dollar savings to the FWS, it also allows for the use of northerly adapted seed sources rather than the southerly varieties available commercially which have shown a tendency to winterkill.

The native grass seed harvested in 1982 was distributed to various refuges and WMD's throughout North Dakota. This included 2500 lbs. of green needlegrass, 1100 lbs. of NDG-4 big bluestem, 475 lbs. of native big bluestem harvested at Kulm WMD, 900 lbs. of SD-149 switchgrass, and 1850 lbs. of NDG-965-98 switchgrass (all pound figures refer to pure live seed).

All three lots of switchgrass were cleaned at Valley City using the seed scalper built in 1982. Plans are to clean the big bluestem varieties in Bismarck at the Plant Materials Center (PMC) early in 1984. The PMC seed cleaner more effectively removes noxious weed seeds present in the lot (i.e. pigeongrass, thistle, etc.).

Leafy spurge continues to spread throughout North Dakota and unfortunately it plays no favorites with FWS lands. Approximately 200 acres on twenty WPA's were sprayed with 2,4-D (1 qt./acre) to control leafy spurge. This keeps the plant from going to seed, but does little to kill those plants already established. Persistence of leafy spurge on some cooperative farming agreement tracts have resulted in postponed grass seedings until a more satisfactory level of control is realized.

8. Haying

Haying FWS lands is limited to purposes of weed control and/or breakout of degenerated grass stands. In 1983, 250 acres on nine WPA's were hayed. This included 145 acres for weed control (mainly thistle) and 95 acres for breakout of DNC stands in poor condition. An additional ten acres of an old DNC stand was hayed by the Finley Wildlife Club in Steele County where they will be establishing a shelterbelt consisting of 17,000 trees.
<table>
<thead>
<tr>
<th>Species</th>
<th>Variety</th>
<th>Location</th>
<th>Acreage Harvested</th>
<th>Estimated Bulk Yield</th>
<th>Purity</th>
<th>Germination</th>
<th>Estimated Pounds Pure Live Seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Switchgrass</td>
<td>NDG-965-98</td>
<td>Lake Alice NWR</td>
<td>29</td>
<td>9,000 LBS</td>
<td>79%</td>
<td>72%</td>
<td>5,100</td>
</tr>
<tr>
<td>2. Switchgrass</td>
<td>NDG-965-98</td>
<td>Alice WPA¹</td>
<td>10</td>
<td>1,800 LBS</td>
<td>82%</td>
<td>27%</td>
<td>400</td>
</tr>
<tr>
<td>3. Switchgrass</td>
<td>SD-149</td>
<td>Alice WPA¹</td>
<td>10</td>
<td>4,500 LBS</td>
<td>81%</td>
<td>81%</td>
<td>2,900</td>
</tr>
<tr>
<td>4. Big Bluestem</td>
<td>NDG-4</td>
<td>Alice WPA¹</td>
<td>10</td>
<td>2,000 LBS</td>
<td>85%</td>
<td>69%</td>
<td>1,100</td>
</tr>
<tr>
<td>5. Big Bluestem</td>
<td>NDG-4</td>
<td>NPWRC, Jamestown</td>
<td>12</td>
<td>2,000 LBS</td>
<td>67%</td>
<td>81%</td>
<td>1,100</td>
</tr>
<tr>
<td>6. Big Bluestem</td>
<td>SD-27</td>
<td>NPWRC, Jamestown</td>
<td>3</td>
<td>500 LBS</td>
<td>68%</td>
<td>69%</td>
<td>230</td>
</tr>
<tr>
<td>7. Intermediate Wheatgrass</td>
<td></td>
<td>Arrowwood NWR</td>
<td>5</td>
<td>600 LBS</td>
<td>87%</td>
<td>87%</td>
<td>480</td>
</tr>
</tbody>
</table>

Total: 20,400 LBS  
Estimated Commercial Value - $110,000

¹Single species stand seeded by WMD in 1981.
9. Fire Management

Prescribed burning remains the most cost efficient and effective management tool available to the WMD in its grassland management. Burns were conducted by WMD personnel on over 1600 acres in 1983. Objectives of these burns included native grassland and DNC rejuvenation, preparation of seedbeds for chemical application and/or native grass seedings and to thin out cattail stands where this species has crowded out other wetland vegetation and open water areas.

One landowner granted permission to allow a 140 acre cattail burn to continue onto his land resulting in the cleanup of another 75 acres of cattail-choked marsh. The objectives of the burn were explained to him and he was 100 percent in favor of it, also noting that perhaps use of the marsh by migrating blackbirds might be reduced. The adjacent landowner in this situation and several others have agreed to obtain permission from any other affected landowners as well as supply any needed assistance with equipment or manpower. This cooperative attitude is noteworthy in light of the fact that a high percentage of the public has a negative attitude towards fire. Several other burns of a similar nature (portion of them being off of FWS lands) are planned for 1984. It is encouraging to receive this cooperation from the public. The result is an improvement of habitat and the wildlife resource is the main benefactor.

Biological Technician Knudsen lighting firebreak on Peterson WPA, Barnes County, 4/15/83. A degenerated stand of DNC was burned, with alfalfa showing an excellent response during the summer. The burn also served to eliminate competition from weeds, such as brome, which was already beginning to green up under the litter layer. GES-1983
Creating firebreak on Lettenmaier WPA, Barnes County, for spring cattail burn, 4/22/83. GES-1983

10. Pest Control

Control of noxious weeds on FWS lands remains the most time consuming and expensive form of pest control the WMD is involved in. Each year a list of areas where weeds have been chemically controlled is provided to each county commissioner. This has helped make county officials aware that the FWS is making a legitimate (and expensive) effort to minimize weed problems on Service owned lands.

Blackbird depredation on sunflower crops remains a sensitive issue in North Dakota. The problem is brought up by the public throughout the year, but complaints always reach a peak in the fall when depredations are occurring. More often than not, the landowner will refer to them as "your blackbirds." Crackershells and pest control bombs are kept on hand at the WMD office and are used for demonstration purposes. Further technical assistance is provided by ADC District Field Assistant Larry Tangen. Approximately 10 depredation complaints were received during the fall of 1983. One particularly upset landowner threatened to cease signing up nearly 600 acres of his land with the ND Game and Fish Department's Waterfowl Rest Area program unless the FWS made some "major efforts" to reduce the blackbird population.

11. Water Rights

The main concern is the water rights obtained on easement agreements which are endangered with subsurface water withdrawals and land contouring diverting water away from wetlands. Land contouring, however, is an extremely expensive endeavor and will no doubt be limited because of this.
Irrigation wells on the other hand are of major concern as lowering of water tables has a direct effect on many surface wetlands which are technically protected by the easement agreement. In many cases soil type indicates that water levels in wetlands will go down as water table levels recede. The North Dakota State Water Commission has a rubber stamp process in issuing well permits and popularity of irrigation is increasing. Scientific data on ground water capabilities and the effect of withdrawals on surface water is limited to nonexistent. Ironically the FWS has devised methods to allow irrigation equipment to operate through easement wetlands by elevated trestles, wire, mesh, etc., when little to no data is available to determine what effect the well may have on draining wetlands.

13. WPA Easement Monitoring

Easement flights conducted in December 1982 resulted in the discovery of 14 easement violations. This broke down to three draining, two filling and nine burning violations.

Ground checks of the draining and filling violations were conducted in March 1983. Special Agent Bob Gelvin again assisted the WMD on initial contacts. Only one was a repeat offender and this was a relatively minor ditch cleanout. Compliance on all violations was obtained with little difficulty, although two of the compliance deadlines were extended due to wet conditions.

In the fall of 1983 a ditching violation was observed on 301X Barnes. Plow furrows were running from a Type I and a Type III wetland to an adjacent road ditch. Both wetlands have been the object of previous ditching violations (one as recently as 1982) by the same current easement operator who also originally signed the easement agreement. There is evidence he has ties with the Posse Comitatus (Gordon Kahl and Company) and previous dealings with him have shown him to be somewhat irrational and extremely anti-government. Needless to say, extreme caution will be exercised in resolving the latest violations on this easement agreement.

Fall easement flights were not conducted prior to winter's snowfall. Plans are to fly easements in early spring 1984 as soon as the snowcover disappears. This is extremely beneficial every few years as spring runoff makes old and somewhat hidden ditches easier to detect.

One easement case in Traill County, 16X, has been pending U.S. Solicitor's approval in order to proceed with civil proceedings to get the twenty acre marsh restored. Official word has been received that civil action can proceed although as of this date none has occurred. The easement covered marsh was drained in the fall of 1978.

G. WILDLIFE

1. Wildlife Diversity

Generally the development of standing food plots as part of the DNC rotation combined with the availability of unharvested grain bales or stacks on WPA's
has dramatically increased wildlife diversity. Prior to these techniques most WPA's had limited winter resident wildlife habitat mainly because of the lack of any food source. White-tailed deer, pheasants, and gray partridge have all responded and heavily utilize areas that now have both cover and food. Although these methods and the subsequent responses are not directed through management objectives, they are obtained without deviation from migratory bird management techniques and are important in public receptiveness of FWS programs. The bottom line is that wildlife diversity is greatly enhanced on Service lands.

The diversity of wetlands in the WMD allow for a wide range of uses by a wide range of wildlife species. Here, tundra swans and mallards utilize a Type III in Cass County during spring migration.

2. Endangered and/or Threatened Species

Bald and golden eagles are frequently observed in the district during spring and fall migrations. The Sheyenne and Red Rivers serve as migration corridors for many species of birds and eagle sightings (both species) are common in these areas. An immature bald eagle frequented the NFH grounds for a week in late December.
Immature bald eagle feeding on Hatchery Manager Millard's pet Muscovy duck in late December 1983. It was feared the eagle might choose one of the pond's Canada geese for its next meal, but once it cleaned up the plump Muscovy, it left the premises. Photo courtesy of Archie Moore, biology instructor, Valley City State College.

3. Waterfowl

a. Ducks

Temporary and semipermanent wetlands entered the spring with good water levels due largely to the previous wet fall. Thus, there was good habitat conditions for waterfowl pair formation and breeding activities to occur. While the North Dakota brood index was down 28 percent from the previous year, it was still 40 percent higher than the ten year average.

Nineteen eighty-three marked the initiation of a new system of pair counting for estimating waterfowl production figures. Waterfowl pairs were counted on six 4-square mile blocks the first week in May and again the last week of May (two counts are preferred to allow for equal representation of early nesting and late nesting species). Three of the blocks were selected from random blocks included in Northern Prairie Wildlife Research Center Mallard Management Model. Three additional blocks were picked to allow for a representative sample of FWS lands to be included in the survey. FWS fee title land, FWS wetland easement land and private land are included in the samples. Eventually it is hoped this system will allow for production estimates on all three categories of land. Some interests feel this is an advantage over the WPA quarter section pair counts which only allowed for a production estimate (the degree of accuracy which has been questioned) on
FWS fee title land. Because three of the six blocks were not present in the Mallard Model computer's original data base for 1983, no production estimates were available for the WMD last year. Hopefully, this will be remedied in 1984.

Much of the time invested in 1983 will not have to be repeated in future years (i.e. mapping of 4-square mile blocks, preparation of field data sheets, cover typing, etc.). The most significant accomplishment of the first year effort was the assurance that the blocks selected were representative of the WMD's basic habitat types. For example, one block in northeastern Traill County had no waterfowl pairs observed on it at all, however, it is felt that this is typical of the intensively farmed and extensively drained Red River Valley which includes roughly one-third of the WMD and, therefore, is representative. Pair totals observed on the 4-square mile blocks are shown in the following table.

<table>
<thead>
<tr>
<th>Block</th>
<th>1st Count</th>
<th>2nd Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block #135 (Stoney Slough)</td>
<td>145</td>
<td>155</td>
</tr>
<tr>
<td>Block #110 (West of Walum)</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>Johnson WPA</td>
<td>249</td>
<td>246</td>
</tr>
<tr>
<td>Block #342 (West of Finley)</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Block #469 (Lucca)</td>
<td>23</td>
<td>34</td>
</tr>
</tbody>
</table>

No pairs seen on Block #97 (Hatton) on 5/5/83. This block was not recounted.

The old WPA quarter section pair counts were conducted in addition to the new system. Should the new system be abandoned in the future, it was felt to be important to have a continuous set of data, reflecting population/production trends. Because the accuracy of production figures derived from pair numbers has been questioned (due to a lack of data to substantiate nest success, brood survival, etc.), no production estimates are made. Pair data, however, provides an index to breeding population trends, potential production, etc., and so is of value. Pair count data over the last five years is shown in the following table.

Production Data 1979-1983*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% Water on Pair Count Wetland Areas</td>
<td>100%</td>
<td>75%</td>
<td>46%</td>
<td>95%</td>
<td>84%</td>
</tr>
<tr>
<td>Total Pairs Counted on Pair Count Areas</td>
<td>1180</td>
<td>583</td>
<td>478</td>
<td>574</td>
<td>505</td>
</tr>
<tr>
<td>Expanded Pairs for Entire District •</td>
<td>5723</td>
<td>2828</td>
<td>2318</td>
<td>2784</td>
<td>2449</td>
</tr>
<tr>
<td>Percent Change from Previous Year</td>
<td>+180%</td>
<td>-102%</td>
<td>-22%</td>
<td>+20%</td>
<td>-12%</td>
</tr>
</tbody>
</table>

No actual production estimates are given due to the lack of field verification of nest success and brood size. Estimates made in past years have shown the district duck production since 1976 to average 25,340 waterfowl produced.
Blue-winged teal, as usual, were the most abundant breeders in the WMD followed by the gadwall, shoveler and mallard.

Wood ducks frequent the Sheyenne River Valley. Twenty artificial wood duck houses maintained at the headquarters area had an estimated production of 75.

For the second year in a row, no notable concentrations of redheads and canvasbacks occurred during fall migration in the WMD. Peak populations for each species were estimated to be 6,000 with most of these concentrated on the large alkali lakes west of Valley City.

Peak populations of all duck species during fall migration were down considerably from last year (i.e. mallard - 10,000 vs. 30,000 in 1982, gadwall - 5,000 vs. 20,000 in 1982). The dry fall and extensive fall plowing reducing available grain forage both probably were factors in reduced use by migrants.

b. Geese

Spring migrations peaked in mid April with a rough estimate of 500,000 snow geese and 25,000 Canada geese. In the fall, peaks of 24,000 snows and 4,000 Canada's were reached in early November. Hobart Lake NWR, five miles west of Valley City, had 6,000-8,000 snow geese using it for close to a week in early November.

Snow and blue geese concentration on Kemmer WPA, Cass County, 4/6/83.
We are beginning to wonder if the Valley City area will ever again see the fall goose concentrations (50-75,000) it used to receive in the early 1970's. Forage continues to be eliminated through fall plowing. Geese appear to be shifting their migration westward into the coteau region where fall plowing is less prevalent. Those that do pass through Valley City in the fall generally overfly it to concentrate in the Oakes corn country of southeastern North Dakota. The temporary and seasonal wetlands of the district still provide attractive spring migration habitat as concentrations reach several hundred thousand each year.

c. Swans and Coots

Tundra swans are a common spring and fall migrant in the area, generally peaking at 5,000 birds. Last fall's migration was somewhat heavier than normal with an estimated 8,000 swans present in mid November. They generally are the last waterfowl to leave before the North Dakota winter sets in.

Statewide, the coot brood index was down 83 percent from 1982 levels and 31 percent below average. Even with this decline, it still made them the best represented waterfowl in the WMD.

d. Waterfowl Display Flock

At the headquarters site is a four-acre waterfowl display pond with a waterfowl flock consisting of snow and Canada geese and tundra swans. The flock originated from crippled birds turned in from throughout the state. Nesting Canada geese produced 33 goslings this year, a record for the pond. These were banded on 7/6/83 and 14 of the young transported to Arrowwood NWR in an effort to bolster their refuge population. Wild individuals sometimes join the flock generally during the fall migration. Several crippled snow geese, a Canada goose and one juvenile tundra swan were added to the pond population during the spring and fall of 1983. Unfortunately, none survived with lead poisoning being the likely culprit in each instance as the birds died in an emaciated state. The pond provides the public with an up-close look at waterfowl in an essentially natural habitat.

4. Marsh and Water Birds

Great blue herons and black-crowned night herons are commonly encountered on WPA's during summer field work, but no good population estimates exist. White pelicans are also fairly common in the western portion of the WMD, mainly nonbreeders from Chase Lake NWR (70 miles west of Valley City), the largest breeding colony in North America. Double-crested cormorants nest in several places throughout the district. One colony in Steele County was censused in 1983 with 81 active cormorant nests observed. This compares with 91 and 85 in 1981 and 1982 respectively.

5. Shorebirds, Gulls, Terns and Allied Species

Greater and lesser yellowlegs, avocets, willets, killdeer, and several species of sandpipers are the most common species in the district. These and other species nest here, but no surveys are currently conducted. It would be desirable to have a better handle on populations, production, trends, etc., but current funding and manpower limit the potential for this kind of work.
A pair of giant Canada's from the Valley City display flock nested adjacent to the pond this year on a fish hatchery pond dike. The nesting attempt was unsuccessful with a skunk being the likely culprit. Note leg bands on each goose. Photo courtesy of Jack Millard, hatchery manager. 1983

YCC crew releasing goslings hatched at Valley City at Arrowwood NWR on 7/6/83. Fourteen birds were released on Arrowwood Lake and all individuals were accounted for into early September. It is hoped they will add to Canada goose production in future years. BAK-1983
6. Raptors

Common nesting raptors include red-tailed hawks, marsh hawks, Swainson's hawks, kestrels, and great-horned owls. Shelterbelts serve as nesting sites while the wooded valley of the Sheyenne River also provides important habitat. Rough-legged hawks pass through in large numbers during annual migrations. Snowy owls are occasionally sighted during the winter months.

Several great-horned owls were turned into the office during the year, as is usually the case. Most had suffered a serious wing injury, probably from a powerline strike. Rehabilitation efforts proved unsuccessful and all were eventually destroyed. One was mounted and now handsomely occupies the front office.

7. Other Migratory Birds

Three mourning dove coo counts are conducted each May by WMD staff. Populations continue to show an upward trend. The month of September offered fine shooting to those hunters pursuing North Dakota's most abundant game bird. By early October, however, cool weather pushed the majority of doves out of the state.

North Dakota had its first crow season (no bag limit) in 1983 running from August 20 - October 30 (this to be accompanied by a spring season from March 17 - April 30, 1984). While crows are fairly common in this portion of the state, no crow hunting activity was observed by WMD personnel. It seems people are missing the chance to add one more element to the fine mixed bag North Dakota always offers to the sportsmen.

The horned lark, western meadowlark, brown thrasher, and several species of swallows are some of the more visible miscellaneous migratory birds found throughout the WMD.

8. Game Mammals

White-tailed deer populations remained high throughout the WMD. The mild winter of 1982-83 allowed does to enter the fawning season in excellent condition. Recognizing the increase in herd size, the ND Game and Fish Dept. increased the number of licenses for the deer rifle season in many units in eastern North Dakota. The season was also extended for an additional week in several units, including the three which encompass the WMD. The extended season, coupled with favorable weather and a completed harvest of most row crops, led to a very successful season. Nearly 40,000 deer were harvested with a statewide hunter success rate of 71 percent.

By late December, deer had concentrated in the larger marshes and along the Sheyenne River Valley. The coldest temperatures of the winter occurred while there was still plenty of forage available and it appears that most deer have wintered well. It is not uncommon to see herds of 30-50 deer along the Sheyenne River Valley at this time of year.

Based on the number of complaints received, beaver populations remain healthy throughout the district. They are concentrated along the Sheyenne River Valley and its small tributaries, but are also found in marshes, potholes and drainage ditches scattered throughout the prairie.
Muskrat populations appeared to be rebounding from the freezeout winter of 1981-82, however, low water levels and a frigid beginning to the current winter may cause another freezeout situation this year.

Red fox densities were again high throughout the district. ND Game and Fish aerial surveys in May showed up to 12 active dens per township. Annual harvest in North Dakota approaches 35,000 animals. Poor weather conditions and rumors of lower fur prices reduced the trapping take on fox this year, however, the market gained strength late in the year and pelt prices were averaging $40-$50 by the end of December.

Coyotes continue their expansion eastward. There was a dramatic increase in numbers this year, based on landowner and trapper reports, as well as sightings by WMD personnel. Game and Fish Furbearer Biologist Steve Allen explains this phenomenon this way; the individuals expanding the range over the last few years have been young coyotes dispersing to establish their own territories. These have now come of breeding age in the Sheyenne River Valley and are producing offspring of their own, accounting for the rapid increase in coyote numbers. Where they are locally abundant, coyotes tend to squeeze fox out of their territories. Recent research shows coyotes to be less of a predator on waterfowl and their nests than fox, so perhaps duck production will benefit in some local instances.

Other common furbearers in the district include raccoon, mink, and badger.

10. Other Resident Wildlife

The mild winter of 1982-83 was beneficial to the ring-necked pheasant population. ND Game and Fish surveys showed a 35 percent increase in breeding males and brood sightings were up 78 percent. Many landowners reported seeing pheasants and even broods where they had not seen pheasants for years. ND Game and Fish and local sportsman's clubs are involved in raising and releasing pheasants. When released in areas of good cover and ample food, these stockings can successfully add to the naturally occurring population.

Gray partridges enjoyed excellent reproduction in 1983 and coveys were commonly seen during the fall and winter. Coveys of 15-30 birds were observed late into December, indicating they were weathering the harsh winter quite well to that point.

Wild turkey populations continue to expand along the Sheyenne River Valley. They overwinter quite well, spending most of their time in cattle feedlots where forage and water is plentiful. The ranchers seem to enjoy having them around. The local population around Valley City, however, is heavily skewed towards tom turkeys. ND Game and Fish personnel have trapped males each of the last two winters and transplanted them to other areas, hoping to arrive at a more balanced sex ratio.

Moose sightings were up from the previous year. Moose were seen on or near five WPA's in 1983 with one group of 5 present on Goose Lake WPA for several weeks. There may soon be a season in this part of the state, should these wandering individuals continue to increase. Several landowners have indicated dislike for the animals, citing broken fences and trampled crops as problems associated with them. A season with limited permits has been established for the eastern portion of the district.
Wild turkeys displaying along the Sheyenne River Valley bottoms. Populations continue to increase, but the sex ratio appears to lean more heavily towards males each year as well. Here, five toms vie for the attention of one hen. One additional note, it would be interesting to know if the turkeys would have utilized this field for display had it been plowed the previous fall.

GES-1983

The WMD built two more wildlife feeders bringing the total to ten on nine different WPA's. These feeders are filled with sunflowers and/or corn obtained from cooperative farming agreements and maintained through the winter months. Each holds approximately 60 bushels of feed. They receive heavy use from deer, pheasants and partridge in some instances needing to be refilled in less than two weeks. This along with standing or baled grain on several other WPA's provides an important winter food source for resident wildlife in the WMD.

12. Wildlife Propagation and Stocking

The WMD again received pheasants from the ND Game & Fish. A total of 260 hens and 39 roosters were released on 12 WPA's. These birds were released at the peak of the breeding season, hopefully allowing the hens to nest and enhance population recruitment. All roosters were banded by Game and Fish personnel.

15. Animal Control

Beaver complaints were numerous in 1983, peaking in September and October as they gather their winter food supply. Most complaints are handled by DFA Larry Tangen. WMD staff assist on occasions where it results in greater
efficiency of control efforts. Flooded cropland, plugged culverts, and loss of shade and/or fruit trees are the main problems associated with beavers in the district.

A unique complaint was received this summer when a rural Valley City resident accused a free-flying Canada goose from the WMD display pond flock of beating up his tame mallard ducks. He claimed one of his drakes had suffered a broken leg and now he had to "carry it wherever it goes." WMD personnel captured the guilty gander, clipped his wings, and returned him to the goose pond. No more complaints were received.

16. Marking and Banding

The only banding the WMD is involved in occurs at the headquarter's waterfowl display pond. In 1983, 33 Canada goslings and 1 flightless adult were captured and banded.

H. PUBLIC USE

1. General

The basic goal of the district has been to develop a better understanding of FWS functions, responsibilities, and goals. In conjunction with this an effort is continually made to offer and supply assistance in any resource matter. Speakers, films, press releases, appearances at public meetings such as county commission meetings, assistance to Sheriff's office and Game and Fish personnel are all in part used to accomplish this objective. The animosity or lack of understanding of FWS has noticeably decreased. Many individuals and groups who prior to this activity were either nonsupportive or outwardly in opposition to FWS programs are now publically willing to support or at a minimum willing to recognize the need and value for FWS programs. The support from the mayors of Fargo, Moorhead, and Grand Forks for the Small Wetland Program is evidence to this change. Also noteworthy is the willingness for some to publically defend the FWS as it gets wrongly blamed for things such as land grabber. Farm groups and individuals are also backing FWS position on various projects or are fully supportive and continually asking for continued assistance.

The activity has also no doubt aided in the public attitude change that we are experiencing in regards to wetlands. At most appearances and gatherings the importance and value of wetlands is discussed as is apparently successful in being a beneficial change.

2. Outdoor Classrooms - Students

WMD staff again participated in a Conservation Days sponsored by the SCS for all Cass County, junior high schools including the Fargo city area. The two-day event included field trips with various stops to discuss and illustrate different topics including soils mapping, watershed planning, contour farming, and wildlife. Approximately twenty schools with several advanced level classes participated in the program.
6. Interpretive Exhibits/Demonstrations

The scattered distribution of WPA's is not conducive to interpretative displays or exhibits. The only potential for this type of public use is at the headquarters itself. Material for an interpretative panel display to be erected near the waterfowl display pond was received during the year. River valley ecology, prairie wetlands, and history of the giant Canada goose in North Dakota are depicted on the display. Plans are to erect the display in 1984.

There is one historical marker located on a WPA (Storhoff WPA in Barnes County) which generates some local interest. It marks the campsite of Captain Sibley, an early Army explorer. The marker has been split-rail fenced and overlooks a large semipermanent wetland on the WPA.

7. Other Interpretive Programs

Several slide talks were presented by WMD staff during 1983. Audiences ranged from second graders to college students, wildlife clubs to women's groups. Themes included prairie ecology and preservation, FWS activities in North Dakota and flora and fauna of North Dakota.

8. Hunting

Waterfowl hunting was generally poor throughout the district. Local hotspots provided good action early in the season, but local birds quickly moved out. Less than 2,000 geese were in the WMD for the waterfowl opener. Hobart Lake NWR offered good goose hunting on adjacent private lands late in the season. Nineteen eighty-three marked the first year canvasbacks could be hunted east of Hwy No. 3, with a daily bag and possession limit of one. Because few cans were in the area, and those that were, concentrated on state waterfowl rest areas on WPA's closed to hunting. There was an insignificant harvest of this species within the WMD.

Pheasant hunting was very good, with WPA's in southern Barnes County receiving the most pressure, especially on opening weekend. Pressure sharply dropped after the first couple of weeks and those hunters who persisted enjoyed fine, noncrowded shooting.

The extended deer season resulted in increased activity hours on district WPA's. Several large bucks were harvested. One brought into the headquarters unofficially scored 157½ points and made the cover of Dakota Country magazine.

10. Trapping

WPA's are open to trapping unless otherwise posted. Of the 72 management units in the district, five are closed to hunting (two due to their proximity to I-94 and three to protect migrating canvasbacks) and are open to trapping only by permit. Six permits were issued in 1983, including two for Hobart NWR, one for Tomahawk NWR, and one for Stoney Slough NWR.

Most trapping activity is aimed at red fox, with raccoon, mink, muskrat, and skunk also sought after by several local trappers.
11. Wildlife Observation

The 15,000 visits annually to the waterfowl display constitutes the majority of wildlife observation. WPA's offer good birdwatching opportunities, especially each spring and fall when shorebird and waterfowl migrations are at a peak. Wildlife photography also occurs on WPA's throughout the district.

15. Off-Road Vehicling

Vehicle trespass on WPA's is a year-round problem, reaching a peak during the waterfowl and deer gun season. Destruction of seeded grasses and flattening of residual cover are the main concerns. Bright yellow "No Vehicle" signs are placed on WPA signs. These deter some folks but certain individuals apparently don't believe everything they read. A perfect example occurred opening day of waterfowl season when State Warden Del Tibke discovered a group of duck hunters who had driven their truck across 100 yards of seeded natives with duck boat trailing behind to the slough. There was a "No Vehicle" sign within twenty yards of the where the truck left the trail and entered the WPA.

Snowmobile trespass occurred on several WPA's and Hobart Lake NWR during December 1983. Adequate snow cover allowed the machines to go virtually wherever they wanted. Unfortunately, none were actually caught in the act and no citations were issued.

17. Law Enforcement

The majority of law enforcement work done by WMD personnel occurs during the waterfowl season. Because of the scarcity of waterfowl and associated scant hunting activity, very few cases were made. A total of four violations were cited, broken down to: cartridge in chamber of gun in violation of state law while hunting waterfowl - two, vehicle trespass on WPA - one, and hunting without federal duck stamp - one. Fines ranged from $25 to $50.

Assistance was also provided to the state warden during opening weekend of deer season by answering calls in the northern portion of his district.

21. Volunteers Program

The Hannaford Wildlife Club volunteered their services to the WMD for posting open a WPA in southern Griggs County prior to the deer gun season. The WPA is closed to waterfowl hunting because of canvasback build-up. This same club is establishing a shelterbelt and in the planning stages of creating a twenty acre standing food plot. The Finley Wildlife Club maintains a twenty acre food plot on the Shaw WPA in Steele County and is preparing ground to make a 17,000 tree shelterbelt planting. They also maintain a wildlife grain feeder on the WPA.
I. EQUIPMENT AND FACILITIES

1. New Construction

A metal machinery equipment storage building (44' x 92') was constructed during July and August, 1983 with WMD personnel constructing the building. Temporary Biological Technician Greg Siekaniec's previous experience in construction and as county building inspector proved to be a valuable asset in keeping the construction work going smoothly. It was fortunate and a great cost savings to have top quality people perform technical work at the GS-4 level. Greg was recommended for a $500 special achievement award.

The building provides the WMD with a much needed storage facility for equipment such as Allis Chalmer combine, two tractors, flatbed truck, etc. This saves much travel and expense in hauling this equipment back and forth to Arrowwood Refuge for storage. It also served as a drying room for several thousand pounds of harvested native grass seed this fall.

4. Equipment Utilization and Replacement

A major purchase was a used Massey Ferguson 140 H.P. diesel tractor for $17,000. The tractor had only 200 hours and sold new for $50,000. A 45 foot drag and 14 foot tandem disc (purchased used) were also bought in 1983. These three new pieces of equipment greatly reduced the time involved in preparing seedbeds for native grass seedings.

A 12 foot Brillion packer was loaned to the WMD by the Fergus Falls WMD in Minnesota. This proved to be invaluable in establishing a firm seedbed on areas to be seeded to native grasses.

A 1979 AMC Hornet station wagon was obtained from Tewaukon NWR to replace the 1982 Dodge Ram pickup returned to GSA due to costly rent expenditures. The Hornet is currently the most gas efficient vehicle on the WMD fleet.

5. Communication Systems

Only one vehicle is equipped with a radio unit, that being a 50-watt portable state frequency radio. Primary use is for law enforcement. It has come in handy on several occasions in coordinating enforcement activities.

7. Other

Two new Bushnell binoculars (9x36) and a new 15X-60X Baush & Lomb spotting scope were purchased by the WMD.

New law enforcement leather gear (holsters, belts, keepers, cuff case, etc.) were purchased from Nelson Leather Co. in Scio, Oregon. The new equipment is far superior to the old leather gear the WMD had operated with for years before, particularly the breakfront holsters. Second chance flak vests were also purchased during the year.
Rafters are set into place on new pole shed with aid of payloader and modified bucket from Arrowwood NWR. BAK-1984

Completed building minus the overhead doors constructed force account. BAK-1983
J. OTHER ITEMS

1. Cooperative Programs

Research is being conducted on several WPA's as a comparison of natural and artificial wetlands. The title of the project is "Evaluation of Constructed Wetlands as a Means of Replacing Natural Wetland Habitat by Highway Projects in North Dakota." The project, carried out by a University of North Dakota graduate student, evaluates wildlife use on natural wetlands compared to nearby artificial wetlands created in the highway rights-of-way. No conclusive data is available, although the waterfowl use on the small WPA adjacent to I-94 was surprisingly high including sightings of several diver broods.

In an effort to document the apparent changes in the large Alice WPA complex, a watershed mapping and status project was undertaken. This area of intensively farmed land has resulted in drainage of most wetlands into the Alice WPA. Vast expanses of solid cattail and even water levels expanding onto private land have developed and illustrated what the result of the drainage has been. Plans are when the project is complete to formally file complaints on the illegal drainage.

2. Items of Interest

The North Dakota Supreme Court ruled in favor of those opposed to draining a large marsh in Barnes County (Wimbledon Drain). The court upheld a lower court ruling which had revoked the drainage permit granted by the County Water Resource District. The project would have impacted two WPA's and Lake Ashtabula used for obtaining broodstock for FWS spawning operations. The court ruling established important precedent setting natural resource rulings which included wetlands as public trust resources and the requirement of determining impacts to downstream wildlife habitats. See attached news article.

The Supreme Court ruling ended a long battle which included in opposition to the drain, mayors, wildlife clubs, ND Game and Fish Department, FWS, downstream landowners, several political entities and many interested organizations. The wetland will hopefully be saved until proponents devise another plan of eliminating the marsh.

WMD personnel assisted ND Game and Fish Department in transporting 33 tons of seed corn, donated by a private seed company, from Moorhead, Minnesota, to the Game and Fish field office at Spiritwood, ND. This will be distributed free by Game and Fish to landowners to establish wildlife food plots. The WMD has contested several landowners adjacent to WPA's who are interested in this cost-shared program and forward their names to the ND Game and Fish district biologist.

On May 9, 1983 Biological Technicians Manson and Knudsen and temporary Siekaniec aided local fire departments in containing a barn fire in northern Barnes County. While working on the Hagglund WPA one-half mile to the east, they noticed smoke coming from the farm site. It rapidly increased in size and they made their way to the scene. They pulled into the yard right behind the Dazey Volunteer Fire Department, the first pumper on the scene. Thirty
mile per hour winds rapidly fanned the flames, completely engulfing the old wooden structure and several dozen haybales inside it. When the second fire-truck arrived, WMD staff assisted in unrolling the hose and began wetting down a flaming fence that led to an adjacent hogshed. Once this was under control, they aided in putting out the perimeter of the fire in the road ditch. The barn was a total loss, luckily no livestock or equipment was lost. The owner had been burning trash in the road ditch when strong winds whipped the fire out of control with the barn right in its path.

3. Credits

The narrative was written by Lloyd Jones and Brad Knudsen and typed and assembled by Renee Stangeland.

Erosion on idle cropland in Sheyenne River Valley south of Valley City. With meager cover requirements (700-1,000 lbs. of trash/acre) and lenient enforcement of those requirements, sights like the above were all too common on Payment-in-Kind acres throughout the district.

GES-1983
Don't let the sign fool you. Nearly 100 percent of the hunters who asked permission to push the plowed stubble for pheasants, sharptails, etc. were welcomed with open arms. Strangely, no game was taken....
K. FEEDBACK

The Small Wetlands Acquisition Program has been a very effective tool for the FWS to carry out preservation of migratory bird habitat. As mentioned earlier, however, the program has not been in effect in North Dakota since 1977 with no indications that it will begin. The FWS has a responsibility to preserve migratory birds and their habitat. This direction or mandate is included in several international treaties, the Congressional authorization for the SWAP, and assumed to be the situation by every hunter and waterfowl enthusiast who buys a duck stamp. Yet in the state which has the most endangered wetland resource, these FWS responsibilities are secondary to other concerns. There appears to be no future planning and no direction on how the FWS is addressing wetland losses in North Dakota. There are approximately one-half of the original wetlands remaining in North Dakota but unless something changes on FWS wetland preservation efforts, the remaining one-half will be gone.

The FWS has many very beneficial programs which benefit many people. Ironically, however, few people are exposed to the value of resource protection or the services and programs offered by the FWS. At one time in North Dakota an organized, concerted effort was made to inform people of FWS activities. That has ceased to exist to the point where field people now cannot even be interviewed on FWS programs in their area or issue news releases on anything "sensitive" without Regional Office approval. For whatever reasons, the FWS has withdrawn into this nonactive state and whatever gains were at one time made have faded. It would seem appropriate that FWS evaluate how we are informing the public of our programs and benefits of resource protection which in the long term may yield easier accomplishments of our objectives.
High court strikes down law limiting easements

WASHINGTON (AP) — Calling the protection of migratory birds "a national interest of very nearly the first magnitude," the Supreme Court ruled Monday that a state may not revoke permission for federal waterfowl easements simply because its governor wants to.

With that unanimous ruling, the court struck down North Dakota laws curtailing the government's ability to acquire land for the use of migratory birds. Two justices offered partial dissents on a procedural issue, but not the basic conclusion.

Under longstanding law, the federal government can acquire waterfowl breeding grounds with funds from the sale of duck stamps. But it cannot acquire any easements unless the governor or an appropriate state agency gives permission. The principal breeding grounds are in North and South Dakota, Minnesota and Montana.

Between 1961 and 1977, North Dakota Governors William Guy and Arthur Link agreed the federal government could have easements in their state covering 1.5 million acres of wetlands. By 1977, the U.S. Fish and Wildlife Service had obtained easements covering about half the total wetlands acreage authorized by the consents.

The Supreme Court, in the decision written by Justice Harry A. Blackmun, noted that by the mid-1970s cooperation between the state and the federal government began to break down. "The sources of the dispute are not altogether clear," the court said. "The state accuses the United States of misleading landowners from whom it purchased easements and of reneging on some unrelated agreements relating to flood control projects."

See EASEMENTS on page 5
The U. S. Supreme Court ruled Monday that the protection of migratory birds and their habitat in North Dakota is “a national interest of very nearly the first magnitude.”

It is curious that North Dakota officials have not come to recognize the same thing.

North Dakota’s governors since 1977 have violated the law — the federal law permitting the U. S. Fish and Wildlife Service to purchase easements on wetlands from willing sellers.

Most hunters support such purchases, both implicitly and explicitly. The hunter provides the money by buying the duck stamp required on his license. And the fact that he or she enjoys hunting is a statement: If North Dakotans are to continue having some of the best waterfowl hunting in the nation, wetlands must be protected, not demolished.

But Governors Link and Olson violated the law and said the state can prevent the federal government from protecting the resource. The governors were not getting everything they wanted on Garrison Diversion, so they held hostage an unrelated program.

The federal district court, the Circuit Court of Appeals in Saint Louis and now the Supreme Court have ruled in unusually strong language that the state’s position is illegal.

Monday’s ruling ends the legal obstacles to renewing the protection of wetlands in North Dakota. But does that mean Fish and Wildlife will resume its job?

No, it does not. The Interior Department has declared that it will not purchase easements unless state officials have no objection.

It appears to be a political decision. Reagan appointees are reluctant to rock the boat of state.

But what about the resource? If the federal government is not going to protect the wetlands, with the help of North Dakota landowners, who will?

Not the state, which can not pass a measure to give tax breaks to farmers who choose not to drain their wetlands. Not the farmers, who need incentive not to drain.

So North Dakota officials did not lose Monday. They have been winning since 1977 and apparently they will continue to win.

Only the wetlands are losing. Eventually, that means ducks, the hunters who hunt ducks and the rest of us non-ducks who value stewardship of a precious resource over pork-barrel politics.
Native grass seed
harvested in area

As has occurred for the past two years, the Valley City Wetland Management District has been harvesting native grass seed from area wildlife lands. The seed is used to establish wildlife cover on other service lands at a considerable cost savings to the Fish and Wildlife Service and ultimately the taxpayers. According to Lloyd Jones, wetland manager, this year's harvest was the best year yet with approximately 30,000 pounds of harvested seed.

The service purchased a small used combine three years ago in the hopes of obtaining a small amount of high quality native grass seed. But according to Jones, “Native seed production has been higher than expected and with the experience we've gained we have been more efficient in harvesting techniques.”

The only preparation for combining is that the grass areas are burned in early spring to stimulate seed production and an even growth. The seed is combined from standing grass with a straight cutting head which results in only minimal disturbance to the wildlife cover.

The 30,000 pounds of native seed would save the service approximately $200,000 if that same seed were purchased, however, Jones stated that, “The big advantage is the seed is local, climatically adapted to our area. We are more successful in establishing new native grass stands with this seed over the southern varieties which is the only available commercially.” The main varieties of harvested seed were big bluestem, switchgrass and green needlegrass.

Seed was harvested at Lake Alice and J. Clark Salyer National Wildlife Refuge, near Devils Lakes and Bottineau, the research stations at Jamestown and Woodworth, and on scattered Waterfowl Production Areas throughout the state. The seed is distributed to different Fish and Wildlife Service wetland districts and refuges around the state.

According to Jones, the advantages of establishing native grasses is that they provide excellent wildlife cover and are easily managed. Only periodic burns are needed to rejuvenate these grass areas and wind control can be carried out without harm to the native grasses. Another important value Jones indicates is that marginal cropland areas on wildlife lands can be seeded to native grasses and protected from wind and water erosion. In the past some areas were in a tame grass then crop rotation subjecting these areas to erosion. A well established native grass stand will last indefinitely if properly managed. Most of the native prairie has been cultivated in eastern North Dakota and only scattered small tracts remain.
Grassland, marsh burns planned in VC district

The U.S. Fish and Wildlife Service will be conducting planned grassland and marsh burns on public lands in the Valley City Wetland Management District. Lloyd Jones, District Wetland Manager, indicated that planned or prescribed burning is a valuable and effective wildlife management tool if used properly.

Several cattail marshes are planned to be burned in the Alice area in Cass County and the Adams Slough area just north of Valley City. According to Jones, the marsh areas to be burned are dense cattail which can be opened up and made more valuable to wildlife. Intensive land use, runoff from adjacent lands carry fertilizer, and wetland drainage have changed certain wetlands to be more permanent water areas and less productive for wildlife. Many marsh areas managed by the Fish and Wildlife Service have been altered to where some contain solid cattails with little open water. This situation limits the use of the area wildlife such as deer, pheasants, partridge, and waterfowl. Nutrients are also tied up in the dead plant material and the wetland becomes less productive for all plants and animals that need marsh habitat. Spring burns are most effective for removing cattail as compared to fall burns and spring burns don’t remove the valuable winter cover that marshes provide to wildlife.

The Fish and Wildlife Service will also be conducting prescribed burns on upland areas. These burns are generally done to stimulate grasses which provide excellent long term wildlife habitat. The Valley City District has also been harvesting seed from various native grass areas and using this seed to reestablish native grasses on wildlife lands.

There has been some concern expressed over the impact of burning on wildlife and especially nesting birds. Jones indicated that burning is a very temporary disruption which only displaces wildlife for a short time. The burned areas green up very rapidly and often provide better habitat than what was available before. A more serious impact on wildlife is the permanent loss of habitat such as wetland drainage, loss of shelterbelts, fall plowing, and conversion of grassland to cropland. Nesting birds may be forced to find an alternate nesting site when areas are burned but this is common and nesting success is often higher on renesting. Other wildlife such as deer and fox are not stressed because in the spring ample food is available and cover is not as critical as in winter.
WIMBLEDON, N.D. — A
planned drainage canal which
was wound through the courts
senger than it would have taken
wind through two counties is
probably dead and gone, one of
the originators said Thursday.

Jack Rose, rural Wimbledon,
who with his neighbors have
bought approval of a drain since
1980, says a North Dakota Su-
reme Court decision has effec-
ively ended all hope for its con-
struction.

What is left is some bitter-
ness among neighbors and be-
tween two county boards,” Rose
says.

A unanimous opinion written
by Justice Vernon Pederson af-
irmed a decision by District
Judge M.C. Fredricks, Jame-
town, that the state Water Com-
mision and the Barnes County
Water Management District,
were wrong in authorizing the
drain in 1981.

The justices insisted that
Barnes County officials should
have conferred with their Griggs
County counterparts before ap-
proving what is in effect an
inter-county drain.

The project, known variously
as Pierce Township Drain, Legal
Drain 3 and Wimbledon Drain,
would have created a 3,000-acre
controlled drain. The channel
looped into Griggs County before
swinging back into Baldhill
Creek in Barnes County.

The plan envisioned a channel
with gates, culverts and
crossover areas along the
Barnes-Griggs line. The gates
would have set the discharge
generally at 60 cubic feet per
second.

Opponents at a 1980 hearing
here pointed out that the area
also would pull water from
Stutsman County. Within the
area was wetlands habitat
valuable to the U.S. Fish and
Wildlife Service.

Opponents also said Lake Ash-
tabula, the Valley City area fish
hatcheries and the lower
Sheyenne River would be threat-
ened by nutrients and other ef-
fluents.

In the decision, Pederson said
Fredricks was right in saying
Barnes officials had failed to
make an adequate investigation
of the impact of the drain on
downstream land, lakeshore
property and waterfowl and fish
production.

“Sure, I’m disappointed,” said
Rose. “Even if Griggs County
had been consulted, it wouldn’t
have changed the outcome.
There was a lot of confusion ear-
ly how costs would have been as-
signed, based on the amount of
water pulled.

“Afier it was installed, I think
everybody would have seen the
advantages.”

Duane R. Breitling, a West
Fargo attorney who represented
the Barnes County board before
the state Supreme Court, said
Barnes’ position was that the
water entered and left Barnes,
the assessment was within the
county and Barnes had no
obligation to involve Griggs.
The U.S. Fish and Wildlife Service has made its annual in lieu of tax or revenue sharing payment to local counties. According to Lloyd Jones, wetland manager of the Valley City district, the payments are made each year to counties where the Fish and Wildlife Service administers public wildlife lands. Jones stated that the payments in this area are based on the appraised land value and often exceed the payment counties would receive if the same land were in private ownership. According to Jones, most waterfowl production areas have a high percentage of marsh or wetland and limited upland.

The payments for the areas include $17,806 to Barnes County; $3,807 to Griggs County; $8,029 to Steele County; $2,266 to Traill County; and $11,309 to Cass County. According to a North Dakota law, 25 percent of the payment must go to townships earmarked for road work and 75 percent to the school district. The money is apportioned to the townships and school district according to the percent of wildlife lands in that area.

The concern over tax payments for wildlife lands has existed for some time. According to Jones, the Fish and Wildlife Service has always made revenue sharing or in lieu of tax payments and with the recent rise in appraised land value, payments have also increased substantially. At a time of financial difficulties, for most public entities the money provides some budget assistance.
Hobart Lake NWR is a 2,077 acre easement refuge located five miles west of Valley City. Of the total, 245.89 acres is owned in fee title by the FWS with the remaining acreage covered by easement rights. These easement rights give the FWS control over the taking of all wildlife and also implied water rights. Hobart Lake is actually divided in half by I-94 with the south end being somewhat fresh from the many springs and the north half being alkaline fed only by precipitation and local runoff.

The portion of Hobart Lake NWR north of I-94 was dry by mid August. The southern portion of the refuge received heavy use by migrating waterfowl late in the season. Six to 8,000 snow geese and 2,000 mallards utilized the refuge and adjacent wheat fields for a week in early November.

Two hundred thirty acres of fee title land, consisting of native prairie, were burned on May 27, 1983. Big and little bluestem, Indiangrass, and numerous prairie forbs responded well to the burn. This tract may be harvested in 1984, providing a valuable mixture of native seeds to the WMD's grassland plantings.

Boundary sign checks and weekend hunting enforcement were the only other management practices conducted on this easement refuge in 1983.
Sibley Lake NWR is a 1,077 acre easement refuge located 45 miles northwest of Valley City. The FWS does not own any land or make any improvements on the refuge but has easements granting perpetual flowage and refuge rights. Refuge rights are related to restrictions on hunting, trapping, and unauthorized entry. The area has one large 525 acre fresh water Type IV marsh that provides excellent migratory bird habitat.

Boundary posting was checked prior to the waterfowl season. This area usually has 2,000 to 3,000 snow geese present for the opening of waterfowl season. Very few were present this year, however, and the area received little hunting pressure.
Stoney Slough is a 1,908 acre refuge partially owned in fee title and the remaining area covered by refuge easement. The 1,260 acres managed by FWS has potential for both water and upland management.

The wetland areas on the refuge cover approximately 600 acres in four permanent pools and two temporary areas. Water management is capable by regulating water flow on a natural coulee by means of a slide gate. This diverts water through a temporary wetland and into the chain of four permanent pools. The water can then be trapped in one temporary wetland by a stoplog structure and held back in the second temporary wetland by the slide gate. In late June, a four inch rainfall brought the water level up to the road ditch and a complaint from an adjacent landowner that we were flooding his pasture. The slide gate was opened to accommodate his wishes and then closed as soon as his problem was alleviated, leaving water levels in the two temporary wetlands in good shape. Water levels remained high until early September and waterfowl use was exceptional.

The 1981 native grass planting (120 acres) was burned in late March. This caused an early green-up of cool-season weeds which were then sprayed with Atrazine (2 qts./acre) and effectively set back. A twenty acre tract of seeded switchgrass was also burned in preparation for overseeding to increase stand density.

Two single specie stands were seeded on Stoney Slough in 1983, a 14 acre sideoats field and a 20 acre big bluestem field. The sideoats seemed to have a particularly good catch. Both fields were mowed to control weeds later in the summer.

Goose use was spotty, with less than 1,000 snows and 300 Canada's present for most of the season. There was a build-up of 8-10,000 snows in early November, but their stay was limited to a couple of days.
Tomahawk NWR is an easement refuge covering 440 acres of which 300 acres is an impounded, permanent wetland. A fixed spillway controls the maximum elevation.

Runoff in 1983 filled the marsh to near capacity. Frequent thunderstorms in June and July kept the wetland at least half full through the summer.

Waterfowl use on the area is limited to production. The area is surrounded by overgrazed prairie but it does seem to provide adequate nesting habitat for blue-winged teal.

The boundary sign check is the only management involvement in the area.