

# memorandum

DATE: March 3, 1999

REPLY TO

ATTN OF: Wildlife Management Biologist, Memphis, TN

SUBJECT: 1999 Water Management Plan

TO: Refuge Manager, Wheeler NWR


As you requested, I have reviewed the subject plan and offer a few comments and thoughts for your consideration. For the past couple years I have noticed that you frequently utilize mowing as a management activity but often indicate that little to no moist soil plant production occurred. As you know mowing is normally used to reduce or set back woody or other undesirable plant growth; reduce seed production of undesirable plants, such as sesbania, by mowing prior to seed development; or, to release good quality moist soil plants that are germinating underneath plants such as cocklebur. When conducting a release mowing, I would check to make sure desirable plants were germinating underneath the vegetation being mowed. When discing fields I think that generally the earlier you disk the better the moist soil plant response.

You make mention of the amount of waterfowl use that occurred in each impoundment. An interesting exercise might be to estimate seasonal (early and late) and quantity of waterfowl use on: 1) manipulated moist soil areas, 2) unmanipulated moist soil areas, 3) harvested agriculture crops and, 4) unharvested agriculture crops.

I noticed that most of your planned drawdowns don't really begin until March and they are slow drawdowns which should provide habitat for those birds staying until March, as well as for the spring migration.

Thanks for the opportunity to review your plan. Since I was not advised otherwise, I am returning the plan to you for further action.

Don Orr



**ANNUAL WATER MANAGEMENT PLAN**  
**Wheeler National Wildlife Refuge**  
**1999**

Recommended: C. Dwight Cooley Date: 02/18/99  
*Acting* Project Leader

Prepared by: Ann V. Speck Date: 18 FEB 99  
Wildlife Biologist

Reviewed by: Don Du Date: 3/3/99  
WHM Biologist

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
District Manager, Area II

**ANNUAL WATER MANAGEMENT PLAN**  
**Wheeler National Wildlife Refuge**  
**1999**

**I. WATER MANAGEMENT UNITS**

Extremely dry conditions from June to November caused poor food production refuge-wide. Rainfall for this period was 6.51 inches below average and preceded by a dry spring.

**WHITE SPRINGS UNIT (WS)**

In 1998, White Springs was dry enough to finish cleaning most all of the primary sub-impoundment ditches. Ditch lines were cleared of woody vegetation by an excavator with a mowing head attachment, giving the unit a more open appearance. Slash was piled by dozer and will be burned as soon as Wheeler has an approved burn plan. Old beaverdams and high spots in the ditch were removed. Hopefully, this will attract more waterfowl and simplify water management procedures.

WS #1A - This is the main artery in the western section of WS. WS #1A is used to dewater WS #1B, WS #2, WS #3, WS #4, WS #5 and possibly WS #6 late in the season. Water is released through WS #1 water control structure and goes under Highway 31 to the Whiteside Pump Station. Whiteside also dewateres portions of Swan Creek State Management Area.

WS #2 - This is a small area and cannot be dewatered until WS #1A is lowered. Beaver problems/vegetation clogging the water control structure causes intensive management. For example, structures must be opened in the morning and closed in the afternoon to prevent beavers from damming the structure. WS #2 also has an alligator weed problem at lower levels. The west side (WS #2a) is a semi-upland area and can be farmed. The east side is lower and more conducive to moist soil management.

WS #3 - This unit cannot be dewatered until WS #1A is lowered. It is a good, flat unit with good moist soil potential. The unit was cleared of woody vegetation but is still inundated by alligator weed. WS #3 will be a test area on Wheeler this year for alligator weed control. Accordingly, the unit drawdown schedule will be modified.

WS #4 - This unit is a potentially excellent food producer. It has beaver problems much like WS #2. The dike needs to be raised about two feet along with improved access onto the refuge from Lonesome Pine Road. Willows have been removed along the south side of the ditch including lower areas in the unit. Slash has been dozed and windrowed for burning.

WS #5 - This is a small area near the north end of I-65 Bridge on the west side. It is almost a mirror image of WS #4. The water control structure still needs replacing.

WS #1B - This is a large unit west of I-65 and north of the river. This is the origin of the main ditch flowing through White Springs. This unit is large with excessive elevation changes of  $\pm 4$  feet. This gives the opportunity to plant corn, beans, milo, or millet in the higher elevations. Lower areas are used to produce moist soil food plants. As the unit is gradually flooded, it provides a great diversity of food for wintering waterfowl.

WS #6 - This unit is primarily used for agricultural production. A small portion of this unit is at a lower elevation. This lower area is a good producer of moist soil foods, but needs discing every three years. WS #6 is dewatered by gravity flow into Limestone Bay in February and March. After March, a Gator pump (portable high capacity/high volume pump) is used to dewater. Wheeler is in the process of installing a permanent pumping station.

### PENNEY BOTTOMS

We are managing this primarily as a farm unit with a 50 acre moist soil component. This area is drained gravity flow in mid-March. A Gator pump is then used to maintain the low water level. Ideally, we plant corn on the field portions of the unit and produce natural foods in the dewatered slough-bed.

### ROCKHOUSE #1 and #2

This is a farmed unit where the lowest portions of the fields can be planted later in the year to millet or left alone if natural foods are good. We do not want to plant these areas to harvestable crops because they will flood or be too wet to harvest in the fall. Rockhouse #2 is managed in conjunction with Rockhouse #1. The difference being that Rockhouse #2 is at a higher elevation than Rockhouse #1.

### BUCKEYE

Two springs in the north end of the unit can be used to keep it wet. Keeping the unit dry is a challenge. Rockhouse 1 has to be lower than Buckeye to dewater this area. Open areas can be planted to beans or milo, but not corn. The unit has dense mats of alligator weed and knot grass (Paspalum). It needs either spraying with arsenal or disking and planting in milo, millet or buckwheat.

### THORSON ARM

This is a long, narrow impoundment east of Buckeye separated by a shallow canal. The north side was used for several years as alligator weed/Arsenal test plots. The south side has also been treated with Arsenal, but mowing late in the year seems to be the most efficient way to manage.

### **BLACKWELL SWAMP**

Basically, we will continue to manage at full pool until after the spring rush of fishermen. Then we will slowly draw down approximately two feet to expose the gently sloping banks producing moist soil food plants. Then in early fall, bring water levels back up to the full pool level.

### **CRABTREE SLOUGH**

This unit provides excellent waterfowl habitat with an abundance milfoil. We attempt to maintain a constant water level.

### **DINSMORE SLOUGH**

Dinsmore is the newest addition to the Wheeler water management units. Construction began in October of 1998 and was completed in December of 1998. Dinsmore contains 130 acres of manageable water. Wheeler has complete control of the water from June through January. February through May water flow is regulated by a TVA/U.S.F.W.S. agreed schedule.

## **2. PUMP STATIONS**

### **Whiteside Pump Station**

We have to share the pumping capacity with Swan Creek State Management Area. Pumps normally run from May 1 through September 1.

State Contacts: Steve Bryant & Dudley White 353-2634  
TVA Contact : Randy McCann 582-3416

Shared cost: May 1-September 1 (State-20%, TVA-50%, FWS-30%)  
September 1-May 1 (State-40%, FWS-60%)

### **Rockhouse Pump Station**

We get full benefit of this pump. Pumps normally run from May 1 through Sept 1. Randy McCann is the contact.

Shared cost: May 1-September 1 (TVA-50%, FWS-50%)  
September 1-May 1 (FWS-100%)

Total annual cost for us to run both pumps is \$12-\$15,000. The good news is, we pay TVA annually for the pumping, but through Randy, we can spend the same amount of TVA money and put it back into our management and maintenance of the dike and impoundments. We have bought gravel, rip-rap, rented trucks, contracted for a mowing crew to remove hardwood growth, bought tubing for gator pumps, repaired tractors, and dozers, etc. Unfortunately, approval for this type of reimbursement is getting more difficult.

### **NOTE:**

This year White Springs will be returned to the standard dewatering schedule. Except White Springs #3 which will not be dewatered until late April. Rockhouse #1 will be opened 01 February to allow for impoundment reconditioning. Wet springs and summers coupled with beaver problems have hindered maintenance efforts within the units. After impoundments are reconditioned we will be able to manage for moist soil plant production more effectively.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #1A

Acres: 355

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	555.20	554.50
Jan. 15	556.40	555.00
Feb. 1	554.45	554.50
Feb. 15	554.20	554.00
Mar. 1	553.50	553.50
Mar. 15	554.20	553.00
Apr. 1	554.20	552.50
Apr. 15	554.20	552.00
May 1	O.G.	552.00
May 15	556.35	551.00
Jun. 1	552.10	550.00
Jun. 15	550.00	550.00
Jul. 1		550.00
Jul. 15	\$\$\$.\$\$	550.00
Aug. 1	\$\$\$.\$\$	550.00
Aug. 15	550.10	550.00
Sep. 1	550.60	550.00
Sep. 15	549.40	551.00
Oct. 1	550.20	551.50
Oct. 15	550.62	552.00
Nov. 1	550.90	552.50
Nov. 15	551.30	553.00
Dec. 1	551.70	553.50
Dec. 15	552.04	554.00

O.G.= Over Gauge  
\$\$\$ = Below Gauge

1998

White Springs #1A is divided into three subsections (a, b, and c) due to orientation and elevation. White Springs (WS) #1Aa (a fast drying semi-upland area) was mowed in late July and produced no moist soil plant food. WS #1Ab, a lower sub-impoundment, was mowed and disced in August and yielded little or no moist soil food. WS #1Ac, a sloping area, was mowed and disced. Encroaching maple and ash on field edges and abundant cocklebur still make the field less than desirable. Waterfowl use was moderate throughout the season. Mallards, black ducks, wigeon, and gadwall were the most prevalent species.

disk in  
May-  
June

1999

"Good"

White Springs #1 will be farmed. The field edges will be cut back with the tree cutter and larger trees will be removed by a dozer.



ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #2

Acres: 85

<u>Survey Period</u>	1998 <u>Actual Level</u>	1999 <u>Proposed Level</u>
Jan. 8	555.20	554.50
Jan. 15	556.40	555.00
Feb. 1	554.50	554.50
Feb. 15	554.20	554.00
Mar. 1	553.50	553.50
Mar. 15	554.20	553.00
Apr. 1	554.20	552.50
Apr. 15	554.20	552.50
May 1	O.G.	552.00
May 15	556.35	551.50
Jun. 1	553.70	551.00
Jun. 15	552.30	550.50
Jul. 1		550.00
Jul. 15	\$\$\$.\$\$	550.00
Aug. 1	\$\$\$.\$\$	550.00
Aug. 15	550.20	550.00
Sep. 1	550.20	550.00
Sep. 15	549.30	551.00
Oct. 1	549.00	551.50
Oct. 15	549.40	552.00
Nov. 1	550.40	552.50
Nov. 15	550.60	553.00
Dec. 1	550.70	553.50
Dec. 15	551.50	554.00

O.G.= Over Guage  
\$\$\$ = Below Gauge

1998

White Springs #2 is divided into two sub-units (a & b). White Springs (WS) #2a was mowed and disced. In WS #2b was mowed, disced, and planted to millet by the refuge. Alligatorweed is a continuing problem in this unit. Mallards, black ducks, wigeons, and gadwall were found here in relatively heavy concentrations throughout the season. Canvasbacks seemed to favor this unit late in the season.

1999

White Springs (WS) #2(a & b) will be farmed.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #3

Acres: 75

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	554.65	554.50
Jan. 15	555.50	555.00
Feb. 1	554.80	554.50
Feb. 15	554.90	554.00 <i>start</i>
Mar. 1	554.60	553.50
Mar. 15	555.50	553.00
Apr. 1	555.50	553.00
Apr. 15	555.50	553.00
May 1	O.G.	553.00
May 15	556.35	552.50
Jun. 1	553.20	552.00
Jun. 15	551.30	551.50
Jul. 1		551.00
Jul. 15	550.43	550.50
Aug. 1	550.45	550.00 <i>end</i>
Aug. 15	550.50	550.00
Sep. 1	550.20	550.00
Sep. 15	549.50	550.50
Oct. 1	550.10	551.00
Oct. 15	550.50	551.50
Nov. 1	550.74	552.00
Nov. 15	551.10	553.50
Dec. 1	551.40	554.00
Dec. 15	552.16	554.50

O.G.= Over Guage

### 1998

White Springs #3 was supposed to be a moist soil unit on the west end and farmed on the east end. The cooperative farmer planted the southern half in violation of his farming agreement. The refuge planted German Millet on the northern half in hopes of suppressing alligator weed. None of the millet produced. Waterfowl used this unit sporadically throughout the season, but more intensely toward the end. White Springs #3 was used mainly by mallards, black ducks, wigeon, and gadwall. Pintail and shovelers were present late in the season. Slash piles were not burned.

### 1999

White Springs #3 will be managed as a moist soil unit as discussed after the MSMA training with Murry and Don. A late slow drawdown will start in mid- to late April. Slash piles will be burned.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #4

Acres: 75

<u>Survey Period</u>	1998 <u>Actual Level</u>	1999 <u>Proposed Level</u>
Jan. 8	555.20	
Jan. 15	556.40	554.50
		555.00
Feb. 1	554.45	
Feb. 15	554.50	554.50
		554.00 <i>4 hrt</i>
Mar. 1	554.00	
Mar. 15	554.20	553.50
		553.50
Apr. 1	554.20	
Apr. 15	554.20	553.50
		553.50
May 1	O.G.	
May 15	556.35	553.50
		553.50
Jun. 1	553.60	
Jun. 15	553.60	553.50
		553.00
Jul. 1		
Jul. 15	551.80	552.50
		552.00
Aug. 1	\$\$\$.	
Aug. 15	550.20	551.50
		551.00
Sep. 1	550.20	
Sep. 15	550.00	550.50 <i>end</i>
		551.00
Oct. 1	549.90	
Oct. 15	550.40	551.50
		552.00
Nov. 1	550.60	
Nov. 15	551.40	552.50
		553.00
Dec. 1	551.70	
Dec. 15	552.50	553.50
		554.00

\$\$\$ = Below Gauge

1998

White Springs #4 was mowed. ✓ The zone of willow was cleared and large slash piles along the ditch bank still need to be burned. WS #4 was moderately used by waterfowl. Mallards, pintail, gadwall, and wigeon were the main users.

1999

White Springs #4 will be farmed. Slash piles will be burned.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #5

Acres: 45

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	555.20	554.50
Jan. 15	556.40	555.00
Feb. 1	554.50	554.50
Feb. 15	554.50	554.00 <i>start</i>
Mar. 1	554.10	553.50
Mar. 15	554.30	553.50
Apr. 1	554.30	553.50
Apr. 15	554.30	553.50
May 1	O.G.	553.50
May 15	556.35	553.50
Jun. 1	553.60	553.50
Jun. 15	553.60	553.00
Jul. 1		552.50
Jul. 15	551.74	552.00
Aug. 1	550.00	551.50
Aug. 15	550.20	551.00
Sep. 1	550.20	550.50 <i>ends</i>
Sep. 15	550.00	551.00
Oct. 1	550.00	551.50
Oct. 15	550.80	552.00
Nov. 1	550.80	552.50
Nov. 15	551.30	553.00
Dec. 1	551.60	553.50
Dec. 15	552.40	554.00

1998

White Springs #5 was dozed and mowed. Dry weather left little more than stems and clippings on the ground. Waterfowl usage was low throughout the season. White Springs #5 was used almost exclusively by mallards, but teal favored this unit early in the season.

1999

White Springs #5 will be managed as a moist soil/alligator weed control test unit. WS #5 will not be dewatered until late April. The structure will be replaced in early fall.

*Good*



ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #1B

Acres: 600

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	553.80	553.50
Jan. 15	555.40	554.00
Feb. 1	554.25	554.00
Feb. 15	554.40	554.00
Mar. 1	553.60	554.00
Mar. 15	554.20	553.50 <i>start</i>
Apr. 1	554.20	553.50
Apr. 15	554.20	553.50
May 1	O.G.	553.00
May 15	556.35	552.50
Jun. 1	553.20	552.00
Jun. 15	551.96	551.50
Jul. 1		551.00
Jul. 15	550.30	550.50
Aug. 1	\$\$\$.\$\$	550.00 <i>end</i>
Aug. 15	550.10	550.00
Sep. 1	550.60	550.50
Sep. 15	549.40	551.00
Oct. 1	551.90	551.50
Oct. 15	552.40	552.00
Nov. 1	552.40	552.50
Nov. 15	552.60	553.00
Dec. 1	552.70	553.00
Dec. 15	553.00	553.50

## 1998

White Springs (WS) #1B is divided into four sub-impoundments (a, b, c, & d). Divisions are determined by differing elevations within the impoundment. WS #1Ba was mowed and planted to millet which did not produce due to the drought conditions. WS #1Bb was planted to millet which did not produce due to the drought conditions. WS #1Bc was mowed, disced, and broadcast planted to millet by the refuge. WS #1Bd was mowed. This was a moderate high waterfowl use unit. Lower than target water levels made this area attractive to a variety of ducks and even geese. Mallards, black ducks, wigeon, and gadwall used this area throughout the season. Unusually, ring-necked ducks and pintails were present early in the season.

## 1999

White Springs (WS) #1B(a, b, c,&d) will be farmed.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: White Springs #6

Acres: 300

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 1	555.70	555.00
Jan. 15	556.00	554.50
Feb. 1	553.20	554.00
Feb. 15	553.50	553.00
Mar. 1	553.80	552.00
Mar. 15	553.50	551.00
Apr. 1	553.50	550.00
Apr. 15	553.50	550.00
May 1	O.G.	550.00
May 15	556.35	550.00
Jun. 1	555.20	550.00
Jun. 15	554.00	550.00
Jul. 1		550.00
Jul. 15	554.50	550.00
Aug. 1	554.75	550.00
Aug. 15	554.80	550.00
Sep. 1	554.50	551.00
Sep. 15	553.40	551.50
Oct. 1	553.00	552.00
Oct. 15	553.20	552.50
Nov. 1	552.60	553.00
Nov. 15	552.70	553.50
Dec. 1	552.50	554.00
Dec. 15	553.50	554.50

1998

White Springs #6 was in agricultural production in 1998. Areas not in agricultural production were mowed to maintain "open" areas. This was a low waterfowl use unit.

1999

White Springs #6 will be in agricultural production in 1999.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: Penney Bottoms

Acres: 100

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	!!!!!!	555.50
Jan. 15	***.**	555.50
Feb. 1	***.**	554.50
Feb. 15	553.10	554.00
Mar. 1	553.00	553.50
Mar. 15	553.80	553.00
Apr. 1	553.80	553.00
Apr. 15	553.80	553.00
May 1	***.**	553.00
May 15	***.**	553.00
Jun. 1	***.**	553.00
Jun. 15	***.**	553.00
Jul. 1		553.00
Jul. 15	!!!.!!	553.00
Aug. 1	!!!.!!	553.00
Aug. 15	!!!.!!	553.00
Sep. 1	!!!.!!	554.00
Sep. 15	!!!.!!	554.00
Oct. 1	!!!.!!	554.00
Oct. 15	!!!.!!	554.50
Nov. 1	553.10	554.00
Nov. 15	553.40	554.50
Dec. 1	!!!.!!	554.50
Dec. 15	!!!.!!	555.00

\*\*\* = Over Gauge

!!! = Gauge Down

## 1998

Penney Bottoms Unit was a moderate producer of waterfowl food. Knotgrass was the most prevalent species. It covered the fringes of the impoundment and was spotty on the interior. Wild millet and smartweed were spotty throughout the unit with Asclepias moderately interspersed. Hydrolea was uniformly distributed throughout the unit. The Phragmites, that was thought to be a problem was correctly identified as Walterii Millet. Waterfowl use in 1998 was comparable with use in 1997, a moderate low. Penny Bottoms was historically the premier unit of Wheeler. In 1998, it was used by mallards, black ducks, shovlers, wigeon, and a variety of other ducks generally in low concentrations.

## 1999

Penney Bottoms will be dewatered early. Planned management is much like last year, the unit will be disced and farmed if possible. Spraying to control knotgrass would be a last resort type manipulation. Mowing late in the season (August-September) is an option if we have a wet spring. Other areas will be mown to control willow encroachment.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1998

Unit: Rockhouse #1

Acres: 325

<u>Survey Period</u>	1998 <u>Actual Level</u>	1999 <u>Proposed Level</u>
Jan. 8	556.28	554.50
Jan. 15	*	554.50
Feb. 1	554.05	554.00
Feb. 15	555.00	553.50
Mar. 1	554.00	553.00
Mar. 15	553.45	552.00
Apr. 1	553.45	551.50
Apr. 15	553.45	551.50
May 1	O.G	551.50
May 15	555.90	551.00
Jun. 1	557.40	550.00
Jun. 15	548.40	550.00
Jul. 1		550.00
Jul. 15	550.90	550.00
Aug. 1	548.60	550.00
Aug. 15	545.30	550.00
Sep. 1	551.80	550.00
Sep. 15	551.30	551.00
Oct. 1	551.90	551.50
Oct. 15	552.40	552.00
Nov. 1	552.40	552.50
Nov. 15	552.60	553.00
Dec. 1	552.70	553.50
Dec. 15	553.00	554.00

1998

Rockhouse #1 was in agricultural production in 1998. This was a moderate/high use unit for waterfowl. Mallards, wigeon, gadwall, and black ducks favored this unit.

1999

Rockhouse #1 will be in agricultural production in 1999.



ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: Rockhouse #2

Acres: 150

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 8	556.28	554.50
Jan. 15	O.G.	554.50
Feb. 1	553.80	554.00
Feb. 15	554.00	553.50
Mar. 1	554.00	553.00
Mar. 15	553.80	552.50
Apr. 1	553.80	552.00
Apr. 15	553.80	552.00
May 1	O.G	552.00
May 15	555.90	551.50
Jun. 1	557.40	551.00
Jun. 15	548.40	550.00
Jul. 1		550.00
Jul. 15	550.65	550.00
Aug. 1	550.65	550.00
Aug. 15	550.65	550.00
Sep. 1	551.10	550.00
Sep. 15	551.40	551.00
Oct. 1	551.90	551.50
Oct. 15	552.38	552.00
Nov. 1	552.30	552.50
Nov. 15	552.50	553.00
Dec. 1	552.58	553.50
Dec. 15	552.60	554.00

1998

Rockhouse #2 was in agricultural production in 1998. It got moderate use by mallards, wigeons, hooded mergansers, shovelers, and black ducks.

1999

Rockhouse #2 will be in agricultural production in 1999.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: Buckeye

Acres: 160

<u>Survey Period</u>	1998 <u>Actual Level</u>	1999 <u>Proposed Level</u>
Jan. 8	556.28	554.50
Jan. 15	O.G.	554.50
Feb. 1	554.05	554.00
Feb. 15	555.00	553.50
Mar. 1	554.00	553.00
Mar. 15	553.45	552.50
Apr. 1	553.45	552.00
Apr. 15	553.45	551.50
May 1	O.G.	551.00
May 15	556.00	550.50
Jun. 1	550.20	550.00
Jun. 15	552.40	550.00
Jul. 1	550.40	550.00
Jul. 15		550.00
Aug. 1	550.30	550.00
Aug. 15	552.50	550.00
Sep. 1	551.80	550.00
Sep. 15	551.30	551.00
Oct. 1	552.00	551.50
Oct. 15	552.40	552.00
Nov. 1	552.40	552.50
Nov. 15	552.60	553.00
Dec. 1	552.70	553.50
Dec. 15	553.00	554.00

1998

The Buckeye Unit was dewatered at a slow and irregular pace. Knot grass, bermuda grass, and alligator weed formed a solid mat across the unit. Even with drought-like conditions, beaver dams and plugged culverts kept the soil too saturated to manipulate. Some late disking was done. Waterfowl use was poor.

1999

Buckeye will be farmed. The tentative agreement with the cooperative farmer is that the refuge will dewater early, remove beaverdams, and clean the ditches as we did in White Springs. The farmer will be responsible for preparing the soil, applying lime and fertilizer, and planting a crop. This unit will be rent free to the farmer for two years, after which he may be charged rent or we may manage for moist soil.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1999

Unit: Thorson Arm

Acres: 135

<u>Survey Period</u>	<u>1998 Actual Level</u>	<u>1999 Proposed Level</u>
Jan. 1	556.40	554.50
Jan. 15	O.G.	554.50
Feb. 1	554.80	554.00
Feb. 15	555.66	553.50
Mar. 1	554.35	553.00
Mar. 15	554.00	552.50
Apr. 1	554.00	552.00
Apr. 15	554.00	551.50
May 1	O.G.	551.00
May 15	555.90	550.50
Jun. 1	551.30	550.00
Jun. 15	551.20	550.00
Jul. 1		550.00
Jul. 15	550.60	550.00
Aug. 1	551.48	550.00
Aug. 15	551.50	550.00
Sep. 1	551.70	550.00
Sep. 15	550.84	551.00
Oct. 1	551.00	551.50
Oct. 15	552.30	552.00
Nov. 1	552.26	552.50
Nov. 15	552.56	553.00
Dec. 1	552.50	553.50
Dec. 15	552.80	554.00

1998

A drainage ditch divides the Thorson Arm Unit. Both sides were planted to millet in mid-August. Drought conditions caused little or no food production. Waterfowl use was low throughout the season. Mallards and black ducks and were the most common species found with occasional influxes of pintails.

1999

Thorsen Arm will be farmed by cooperative farmers.