Le Sueur County, MN

Tuesday, October 23, 2018

Board Meeting

Item 2

9:05 a.m. Tim Koppelman, DNR (5 min)

RE: Sanborn Lake JPA

Staff Contact:

STATE OF MINNESOTA
JOINT POWERS AGREEMENT
Le Sueur County / Sanborn Lake – Water Control Structure

This agreement is between the State of Minnesota, acting through its Commissioner of Natural Resources ("State") and Le Sueur County ("County"), in its capacity as Drainage Authority under statutes chapter 103E for Le Sueur County Ditch (CD) 54.

Recitals

Under Minnesota Statute §§ 15.061 and 471.59, subdivision 10, the State is empowered to engage such assistance as deemed necessary. The State has petitioned the County under statutes section 103E.227 to modify CD 54 to allow water level management, improve water quality and aquatic habitat, and improve public recreational opportunities on Sanborn Lake in Le Sueur County. The modification includes a new water control structure and associated infrastructure at the outlet of Sanborn Lake ("Project"). The existing outlet of Sanborn Lake was established and constructed as part of CD 54. The State and County desire to establish the authority and responsibility for long-term operation and maintenance of the Project and implementation of the Sanborn Lake Management Plan. Sanborn Lake was designated as a Wildlife Lake through a Department of Natural Resources Commissioner's Order in 1982. The State is the fee title owner of the land where the Project will be constructed, subject to the interest of CD 54, including the existing structure which is currently administered and maintained by the County. The County, having granted the State's petition, finds this Agreement necessary to clarify the obligations of the parties related to the Project.

Agreement

1 Term of Agreement for Operations and Management of Structure

1.1 ***Effective date*:** Upon execution, or the date the State obtains all required signatures under Minnesota Statutes Section 16C.05, subdivision 2, whichever is later.

1.2 ***Expiration date*: November 1, 2068**, or upon mutual agreement by both parties, this agreement may be extended by a written amendment.

1.3 ***Reversion*:** Upon expiration of this agreement, or upon termination of this agreement by the State, the Project shall revert to the County to be administered and maintained as part of CD 54. The parties agree that upon reversion, the county will maintain the structure and the runout as an authorized modification of the drainage system, but will not perform drawdowns or manipulations of the structure to any elevation other than 1017.6' (NAVD 88).

2 Agreement between the Parties

2.1 ***State's Responsibilities:*** The State shall:

a. Complete the engineering and construction of the new water control structure, inlet channel, outlet pipe and ditch crossing ("Project") at the approximate location shown on the map, which is attached to and incorporated into this agreement as **Exhibit A**. Project bidding, management, and supervision of construction will be carried out by Ducks Unlimited under a separate contract.

b. Ensure safety features that meet OSHA standards are included in all design and construction plans.

c. Prior to commencing with construction of the water control structure, obtain all necessary permits and approvals for construction and operation of the structure.

d. Own, construct, operate, maintain, and repair the Project through the end date of this agreement.

e. Provide as-builts to the County's Authorized Representative within one year of project completion.

f. Operate the Project in accordance with the most current approved Sanborn Lake Management Plan and have full jurisdiction over the public water basin subject to the authorized function of CD 54 as modified. The current, approved version of the Sanborn Lake Management Plan is attached and incorporated into this agreement as **Exhibit B.**

g. Review the Sanborn Lake Management Plan in coordination with the County periodically to determine its effectiveness, and revise the plan if necessary.

h. Provide the County with 5 days' written notice prior to any drawdown activities. Email notice to the County Ditch Inspector is acceptable.

2.2 ***County's Responsibilities:*** The County shall:

a. Allow the State and/or its agent to modify CD 54 in a manner consistent with the State's petition under statutes section 103E.227, including the right to remove the existing water control structure and associated culverts and replace them with the Project.
b. Grant the State or its agent the right to own, construct, operate, maintain and repair the Project.
c. Maintain CD 54 immediately downstream of the water control structure, including areas upgraded as part of the project.

2.3 ***Joint Responsibilities:***

a. Both the State and County shall have the right of free access to inspect the structure at any time.
b. Both the State and County shall inspect the water control structure at least annually and after major storms or unusual occurrences or conditions. The inspections are to ensure proper functioning and check for possible damage or deterioration. Inspections may be performed separately or jointly.
c. Both the State and County shall cooperate on news releases and other methods of public information to inform the public of the Project.
d. Only an authorized agent or employee of the State or an authorized agent or employees of the County may make any alterations to the Project at Sanborn Lake. Both the State and the County must agree to any such alterations.

3 Payment

4.1 No funds are included in this agreement.
4.2 The total obligation of the State under this agreement will not exceed $0.00.

4 Authorized Representatives

The State's Authorized Representative is Jesse Roberts, jesse.roberts@state.mn.us, Wildlife Operations & Development Consultant, 500 Lafayette Road, St Paul, MN 55155, 651-259-5175, or his successor.

The State's Authorized Project Manager is Tim Koppelman, DNR Area Wildlife Manager, 501 9th St., Nicollet, MN 56074, 507-225-3572, tim.kopppelman@state.mn.us, or his successor.

The County's Authorized Representative is Darrell Pettis, County Administrator/Engineer, 88 South Park Avenue, Le Center, MN 56057, 507-357-2251, dpettis@co.le-sueur.mn.us or his successor.

If the Authorized Representative changes at any time during this agreement, the party shall notify the other party.

5 Assignment, Amendments, Waiver, and Contract Complete

5.1 ***Assignment.*** Neither the County nor the State may assign or transfer any rights or obligations under this agreement without the prior consent of the other party and a fully executed Assignment Agreement, executed and approved by the same parties who executed and approved this agreement, or their successors in office.
5.2 ***Amendments.*** Any amendment to this agreement must be in writing and will not be effective until it has been executed and approved by the same parties who executed and approved the original agreement, or their successors in office.
5.3 ***Waiver.*** If the State fails to enforce any provision of this agreement, that failure does not waive the provision or its right to enforce it.
5.4 ***Contract Complete.*** This agreement contains all negotiations and agreements between the State and the County. No other understanding regarding this agreement, whether written or oral, may be used to bind either party.

6 Liability

Each party agrees that it will be responsible for its own actions and the results thereof and shall not be responsible for the actions of the other party and the results thereof. Each party therefore agrees that it will assume all risk and liability for itself, its agents or employees for any injury to persons or property resulting in any manner form the conduct of its own operations and operators of its agents or employees under this agreement, and for any loss, cost, damage, or expense resulting at any time from failure to exercise proper precautions, of or by itself or its own agents

or its own employees. The State's liability shall be governed by the provisions of the Minnesota Tort Claims Act, Minn. Stat. § 3.736, and other applicable law. The County's liability shall be governed by the provisions of the Municipal Tort Liability Act, Minn. Stat. Ch. 466.

7 State Audits

Under Minnesota Statute § 16C.05, subdivision 5, the County's books, records, documents, and accounting procedures and practices relevant to this agreement are subject to examination by the State and either the State Auditor or Legislative Auditor, as appropriate, for a minimum of six years from the end of this agreement.

8 Government Data Practices

The County and State must comply with the Minnesota Government Data Practices Act, Minnesota Statute Ch. 13, as it applies to all data provided by the State under this agreement, and as it applies to all data created, collected, received, stored, used, maintained, or disseminated by the County under this agreement. The civil remedies of Minnesota Statute § 13.08 apply to the release of the data referred to in this clause by either the County or the State.

If the County receives a request to release the data referred to in this Clause, the County must immediately notify the State. The State will give the County instructions concerning the release of the data to the requesting party before the data is released.

9 Venue

Venue for all legal proceedings out of this agreement, or its breach, must be in the appropriate state or federal court with competent jurisdiction in Ramsey County, Minnesota.

10 Termination

10.1 ***Termination.*** The State or the County may terminate this agreement at any time, with or without cause, upon 30 days' written notice to the other party.

11 Invasive Species Requirements

The State requires active steps to prevent or limit the introduction, establishment, and spread of invasive species when working on or entering into land under the control of the State, or during State-funded work. All parties involved in the Project shall prevent invasive species from entering into or spreading within the Project site by cleaning equipment vehicles, gear, and/or clothing prior to arriving at the Project site and after completion of the Project.

If the equipment, vehicles, gear, or clothing arrives at the Project site with soil, aggregate material, mulch, vegetation (including seeds) or animals, it shall be cleaned by operator- furnished tools or equipment (brush/broom, compressed air or pressure washer) at the staging area. The operator shall dispose of material cleaned from equipment and clothing at a location determined by the DNR Wildlife Area Manager. If the material cannot be disposed of onsite, secure material prior to transport (sealed container, covered truck, or wrap with tarp) and legally dispose of offsite.

The operator shall ensure that all equipment and clothing used for work in infested waters has been adequately decontaminated for invasive species (e.g., zebra mussels) prior to being used in non-infested waters. All equipment and clothing including but not limited to waders, tracked vehicles, barges, boats, turbidity curtain, sheet pile, and pumps that comes in contact with any infested waters must be thoroughly decontaminated.

Signature page for: Joint Powers Agreement between Minnesota Department of Natural Resources and Le Sueur County – Sanborn Lake Water Control Structure.

1. STATE ENCUMBRANCE VERIFICATION
Individual certifies that funds have been encumbered as required by Minn. Stat. '§ 16A.15 and 16C.05.

By: _____

Date: _____

SWIFT PO # _____

Contr # _____

2. LE SUEUR COUNTY

By: _____

Name: _____

Title: _____

Date: _____

By: _____

Name: _____

Title: _____

Date: _____

3. DEPARTMENT OF NATURAL RESOURCES
Individual with delegated authority

By: _____

Name: James T. Leach

Title: Director, Division of Fish and Wildlife

Date: _____

4. COMMISSIONER OF ADMINISTRATION

As delegated to Materials Management Division

By: _____

Name: _____

Date: _____

Distribution:
Agency – Original
County- Original
Dept. of Admin. - Original
Wildlife Ops Consultant - Scan
Asst. Regional Wildlife Manager- Scan
Area Wildlife Manager - Scan
FAW Contracts – Scan, paper
FAW Grants Spec - Scan

DEPARTMENT OF NATURAL RESOURCES

Le Sueur County - Sanborn Lake Project JPA

T112N R23W Section 26

Exhibit A

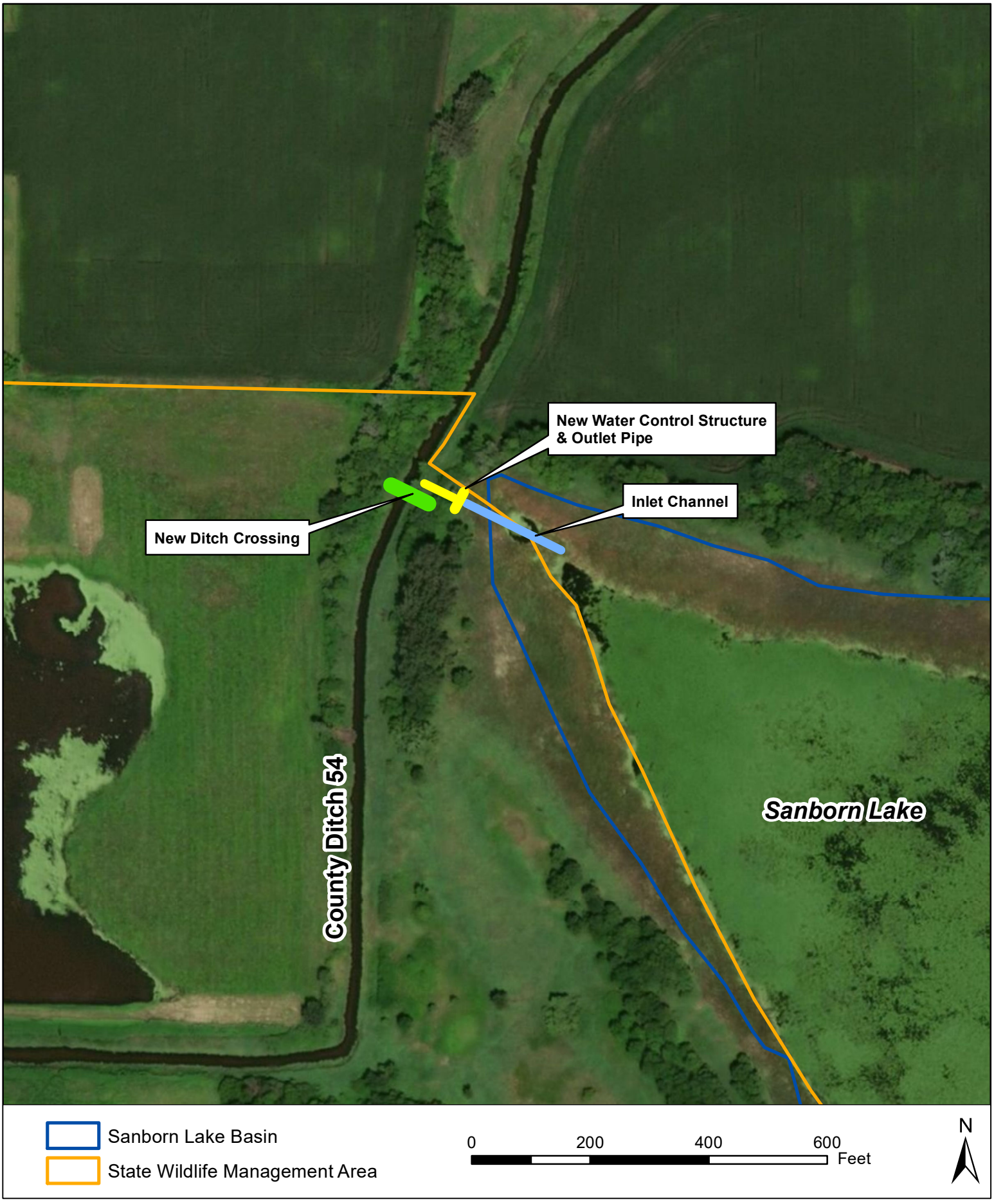

Exhibit B

Management Plan

Sanborn Lake

Le Sueur County, MN

DOW# 40002700

January 2018

DEPARTMENT OF NATURAL RESOURCES

Sanborn Lake, Le Sueur County

DOW# 40002700
T112N, R23W, Sec 25/26/35/36

Summary and Background Information

Sanborn Lake is located in northeast Le Sueur County, approximately 1.5 miles northeast of Montgomery in Sections 25, 26, 35, and 36 of Lanesburgh Township. Sanborn Lake was designated as a Wildlife Lake in 1982, giving the Minnesota Department of Natural Resources (MN DNR) the ability to actively manage the lake for wildlife, however active water level management has never occurred. Historically, public use has been primarily for hunting and trapping opportunities. However, fewer opportunities exist in its current state due to deteriorated water quality and habitat conditions. Landscape changes in the watershed from increased agricultural land use and prolonged periods of high water levels have negatively affected lake productivity; with the loss of important food sources and habitat the primary factor for declining wildlife use. The existing water control structure and outlets do not have the capability for variable water level management and will need to be replaced to improve management capabilities on the lake. In recent years a new Wildlife Management Area has been added around much of the lake further justifying the need for active water level management to improve in-lake conditions.

General Information

- Size: Meandered 361 acres
- Shoreline: 3.6 mile perimeter shoreline. The majority of the shoreline is undeveloped. Sanborn Lake Wildlife Management Area (WMA) borders the south and west shorelines totaling approximately 1.6 miles (44%) and is managed for wildlife habitat and public use, and also provides shoreline access (Fig. 1). Land ownership around the basin includes 7 private landowners in addition to the MN DNR.
- Depth: Average depth is 2.5' and maximum depth found is 3.5' (2015 Shallow Lakes Survey, Fig. 2).
    - Bottom Elevation of Basin: ±1014.0' msl (NAVD88[1])
- Public Access: A DNR-maintained public water access is located on the north side of the lake adjacent to County Road 146/141st Ave, accessible via County Road 28 (Fig. 1). The location includes a turnaround, parking area and boat trailer access to the lake.

Hydrologic Information

- Watershed:
    - Watershed Area: 3.6 square miles/2,304 acres; a watershed/lake ratio of 6:1 (Fig. 3). The average normal precipitation in this area of Le Sueur County is 27 inches of moisture with an evaporation rate of 22 inches of moisture per year. The resulting runoff rate is adequate to maintain lake levels during normal years of precipitation.
    - Watershed name and HUC: Historically part of Sand Creek Watershed, 07020012 (Fig. 3); existing conditions include Sanborn Lake Watershed only (see "Inlets" below).

[1] All elevations referenced in management plan are in datum NAVD88

- Inlets: Historically Sand Creek entered the lake at the SW side (Fig. 4), but now circumvents the lake entirely into Spur Ditch 2 and thereafter directly into County Ditch 54 (Fig. 1). This change occurred around 1979 as indicated in old aerial photos following a number of high runoff events, causing Spur Ditch 2 to head-cut back and connect with Sand Creek, capturing all flow. The bottom elevation of Sand Creek where it joins Spur Ditch 2 is now significantly lower than Sanborn Lake and its historic inlet, and now functions as the primary outlet; with the exception of high runoff events when water can back into the lake from Sand Creek or when Sand Creek is affected by beaver dams. A secondary inlet enters the lake on the east side and originates from agricultural drainage.
- Land Use: Majority of surrounding land use is agricultural. Beginning in 2011 through 2016, 5 parcels of land have been acquired through cooperative partnerships with Pheasants Forever (PF) and Ducks Unlimited (DU) as part of the new Sanborn Lake WMA. These acquisitions total 570 acres; the majority of which has been converted from cropland into restored grassland, wetland, and oak savanna.

- Outlet: The natural outlet was located at the NW side of the lake at the historical outlet of Sand Creek; presently consists of two fixed-crest, 96-inch wide CMP risers with 48-inch outlet barrels (Fig. 5). The outlet flows northerly into CD 54, a tributary to Sand Creek, followed by the Minnesota River. Le Sueur County installed the current drop inlet structures. Replacement by the DNR will require a Joint Powers Agreement with Le Sueur County. The historic inlet of Sand Creek at the SW side of Sanborn now functions as the outlet as it has a lower runout elevation of 1017.55' msl (Ducks Unlimited survey, January 28, 2009).
  - Runout elevation (Full Service Level) of the as-built NW outlet: top-risers approximately 1018.96' msl. Existing runout is a modified notch cut into the northern riser at approx. 1017.6' msl which occurred sometime in the mid-2000's (Fig. 5). This change was not permitted. This is also the approximate elevation when water will begin flowing out of Sanborn Lake and into Spur Ditch 2 to the SW; it is presumed the riser notch was cut to match this elevation in an attempt to restore the original outlet on the NW side of the lake. This attempt was mostly unsuccessful; the SW outlet at Spur Ditch 2 continues to now function as the primary outlet; primarily due to the increased capacity over the riser notch.
- Ordinary High Water Level (OHW): 1018.96' msl.

History of the Outlet

County Ditch 30 was constructed in 1907 to improve drainage for agricultural purposes in the area of Sanborn Lake. This ditch originated near Lake Pepin 1.5 miles to the west, and drained water into Sanborn Lake. Over the years, water levels in Sanborn Lake have varied considerably from periods of extreme drought in the 1930's to periods of extreme high water in years with above average precipitation. There was an attempt made by local residents in 1935 to construct a dam at the outlet of Sanborn so that the lake would be protected for wildlife in years of extremely low water levels.

In 1966, a plan to replace CD 30 was developed and involved construction of CD 54 with the intent of improving drainage capabilities. Design plans for CD 54 show the filling in of a section of the old CD 30 waterway where it entered Sand Creek, construction of Spur Ditch 2, and an outlet control for Sanborn Lake. A fixed-crest drop inlet water control structure was built in 1967 by the County to protect the lake from drainage as a result of the construction of CD 54, and consisted of three 72-inch wide metal half-risers. Design modifications were first pursued in 1968, and in 1970 the structure was modified to the existing primary outlet. During this time period, CD 30 was informally abandoned into what became CD

54. Presently, all that remains of CD 30 (informally) is near the NW outlet of Sanborn (the former Sand Creek outlet).

Sand Creek bypassing Sanborn Lake via CD 54 was a major change of watershed and inflows that has dramatically altered how Sanborn Lake now functions. Even with the reduced watershed size, lake levels appear to remain relatively high as evidenced by observed water levels. Perhaps the most dramatic change over time is that water can now flow out of what had previously been the inlet channel. If left unaddressed, this new outlet can eventually head-cut its way back to the lake and potentially drain the lake.

Water Quality

Minnesota Pollution Control Agency (MPCA) water quality standards for shallow lakes in this part of the state (North Central Hardwood Forest Ecoregion) are thresholds of 60 ppb total phosphorus (TP), 20 ppb chlorophyll-a (Chl-a) and a 3.3' Secchi depth.

Water pollution was an evident concern dating back to the 1947 Game Lake survey due to the high phosphorous and nitrogen effluent received from the Montgomery Canning Factory. The increased nutrient load was documented through extensive algal blooms and Secchi readings of only 1.0'. The 1958 survey showed even poorer water clarity with a Secchi depth of only 0.25'.

Poor water quality persists in Sanborn Lake, with water sampling results available from four modern efforts (Table 1). A Shallow Lake Survey in 1999 found TP to be 296 ppb and a mean Secchi depth of 1.4'. A Shallow Lake Survey in 2003 found TP to be 278 ppb and a mean Secchi depth of 0.8'. In 2008, a Shallow Lake Survey found TP to be 272 ppb and a mean Secchi depth of 0.6'. During the most recent Shallow Lake Survey in 2015, the results were TP of 299 ppb and mean Secchi depths of 1.8'.

Managing Sanborn Lake following the guidelines of this management plan will result in improvements in water quality (lower TP and Chl-a along with increased water clarity). Monitoring of similar projects has shown that these improvements will not exacerbate any existing impairment and may result in additional water quality improvements downstream.

Fish and Wildlife Habitat

Sanborn Lake lies within the North Central Hardwood Forest Ecoregion. Although the surrounding landscape is largely agricultural, there are also many lakes and wetlands in close proximity to Sanborn Lake.

In addition to being a Designated Wildlife Lake, Sanborn Lake is also a designated Migratory Waterfowl Feeding and Resting Area (MWFRA). This designation restricts motor-propelled watercraft during the open waterfowl season, with the exception of trolling motors with batter power of 12 volts or less allowed on Sanborn Lake. MWFRA's were first authorized by the state legislature in 1969 (M.S. 97A.095 subd. 2) to protect waterfowl from disturbance during the fall migration period, with lakes being nominated by a petition process through local conservation groups.

The 570-acre Sanborn Lake WMA wetland/grassland/woodland complex borders the lake and there are 355 additional acres in WMA's, 232 acres in Waterfowl Production Areas, 3,174 acres enrolled in the Conservation Reserve Program (CRP), and 510 acres of Reinvest in Minnesota (RIM) easements within

five miles of Sanborn Lake (Fig. 3). There are four records of rare terrestrial or aquatic species within a five mile radius of Sanborn Lake based on a Natural Heritage Database review of the project and surrounding area, none of which would be negatively impacted by the project.

The management of Sanborn Lake aligns with the goals of the MN DNR Shallow Lakes Program Plan. Also, the MN DNR Long Range Duck Recovery Plan (LRDRP) has a stated goal of recovering historical breeding and migrating populations of ducks in Minnesota. Further, the LRDRP identifies the need to manage an additional 29 lakes per year for a total of 1,800 lakes managed by 2056. The Sanborn Lake Management Plan is consistent with these goals and plans.

Aquatic Vegetation

Conditions have been relatively stable in Sanborn Lake in recent years according to the latest Shallow Lake Survey in 2015 (Table 1). Species richness was higher in 2015 than previous years, with 7 aquatic plant species recorded. Frequency of individual species varies between surveys, however, with the percent vegetated plots increasing to 100% in 2015; coontail (*Ceratophyllum demersum*) being the dominant species observed. The Shallow Lake Survey in 2008 found a species richness of 4 species with vegetation at over 97.8% of the sample points; sago pondweed (*Stuckenia pectinata*) being the most dominant. These species however are species tolerant of poor water clarity and not indicative of ideal habitat conditions.

Lack of plants and low water clarity indicates a shallow lake has poor habitat for wildlife and waterfowl. Abundant aquatic vegetation is important in shallow lakes for several reasons:

1. Plants help maintain clear water by stabilizing lake sediments preventing wind and waves from stirring them up which causes turbid water.
2. Aquatic plants use nutrients from the water column reducing what would otherwise be available to algae.
3. Waterfowl and other wildlife eat submersed aquatic plants. For example, ducks eat the seeds, tubers and rhizomes of sago pondweed. In addition, this vegetation provides habitat for aquatic invertebrates (small insects and shrimp-like animals) that are an important protein source for waterfowl.
4. These aquatic bugs and shrimp eat algae, which aids in improving water clarity;
   Emergent vegetation, such as bulrush, provides breeding and nesting cover for waterfowl and other wildlife. Many non-game species of birds (grebes, rails, terns) also nest in stands of emergent vegetation and are dependent on them for food and cover.

Table 1. Survey History and Information - Game Lake Survey or Shallow Lake Survey Summary:

Year	Plant Species (Species Richness)	Average Secchi Depth (ft.)	Average Lake Depth (ft.)	Maximum Secchi Depth (ft.)	Maximum Lake Depth (ft.)	Total Phosphorus (ppb)
1947	5 sp.	n/a	n/a	1.0	n/a	n/a
1958	12 sp.	n/a	n/a	0.25	n/a	n/a
1977	7 sp.	n/a	n/a	n/a	n/a	n/a
1980	11 sp.	n/a	n/a	1.0	n/a	n/a
1999	7 sp.	1.4	1.4	2.0	2.0	296

2003	4 sp.	0.8	2.1	1.0	3.0	278
2008	5 sp.	0.6	2.3	1.0	3.5	272
2015	7 sp.	1.8	2.5	2.5	3.5	299

Wildlife Use

Wildlife use is directly related to the types and amounts of aquatic vegetation present. Furbearer (muskrat, mink, beaver, and otter) and waterfowl use, in particular, are good indicators of a healthy shallow lake. The 1947 lake survey indicated little muskrat activity with 4 houses observed. The 1958 survey reported favorable food and cover conditions, but no muskrat houses were counted. The 1980 survey reported 50 muskrat houses counted, while the 2008 & 2015 surveys noted a beaver lodge located on the shoreline.

Sanborn Lake is a historically important lake for waterfowl hunting; however, waterfowl use has only been slight to fair. The 1947 survey showed poor food conditions and only 70 birds were counted. Conditions had improved at the time of the 1958 survey when 231 birds were counted, while the 1980 survey counted 107 birds. The 1999 survey noted an exceptionally high number of waterfowl, including 1,300 blue-winged teal, 400 mallards, 50 wood ducks, 10 widgeon, 30 green-winged teal, 20 northern shovelers, 10 pintails, 10 ruddy ducks, 10 Canada geese, and 2,000 coots. In comparison, the 2003 survey noted 13 adult wood ducks and 30 American coots. In 2008, 2 trumpeter swans were observed along with 11 Canada geese and 10 wood ducks. The 2015 survey observed a total of 16 adult ducks and geese comprising 5 species (Canada goose, mallard, wood duck, blue-winged teal, and northern shoveler).

Habitat conditions have been generally poor over time without adequate nesting and brood cover for diving ducks or puddle ducks. Until the recent acquisition of Sanborn WMA and subsequent grassland restorations, there was minimal upland nesting cover available due to intensive agriculture; while prolonged high water and lack of drought/drawdown has limited growth of emergent vegetation in the basin itself. Data in Table 1 shows a loss of emergent species and a shift to submersed aquatic plants. Sanborn Lake still serves as a migration stopover site and provides waterfowl and other wildlife with adequate habitat conditions during portions of the year when the lake is less turbid, but the capacity of this habitat has been greatly reduced and degraded.

Shallow lakes are also important for non-game wildlife, including several rare and threatened species. According to the DNR, at least 20 species of greatest conservation need (SGCN) use shallow lake habitats. Non-game species that have been observed during surveys at Sanborn Lake include: great-blue heron, green heron, great egret, black tern, Forster's tern, black-crowned night heron, western grebe, pied-billed grebe, American white pelican, and double-crested cormorant.

Fish Use

Several surveys at Sanborn Lake have verified the presence of common carp, bullheads, and fathead minnows over the years; with complete or partial winter fish kills occurring occasionally. Abundant populations of carp, bullheads, and fathead minnows damage the health of shallow lakes. They have negative impacts on invertebrate populations, water clarity and the abundance of aquatic plants. The presence of these fish also increases the internal nutrient cycling in a basin contributing to low water quality. A variety of fish barrier designs have been incorporated into water control structures and used to block fish passage on designated wildlife lakes. Physical barriers of vertical or horizontal rods placed

in the outlet structure have been somewhat effective, and require cleaning and maintenance to insure they function as intended.

Based on a feasibility study conducted by DU, it was determined that a fish barrier for Sanborn Lake would be almost impossible given the number of ways fish could get back into the lake during periods of high water. There is a high likelihood of fish being introduced from Spur Ditch 2/Sand Creek directly into Sanborn during high flows and subsequent overland flooding (due to the relatively low elevations found there). During low flows however, the vertical height barrier between the primary outlet and CD 54 will be sufficient. Replacement of the existing water control structure to allow water-level management will enable managers to promote more frequent winter kills in the event of fish being introduced (see *Management Actions* below).

Management Goals and Objectives

Goal: Improve and maintain waterfowl and wildlife habitat, as well as water quality conditions by encouraging the growth of emergent and submersed aquatic vegetation, and reducing populations of fish.

Objective 1: Improve the ability to manage water levels, water quality, and wildlife habitat.

Objective 2: Implement initial temporary water level drawdown.

Objective 3: Improve and maintain high quality wildlife habitat and water quality through periodic water level management.

Objective 4: Promote healthy watershed conservation practices and habitat complexes of wetlands and grasslands around Sanborn Lake.

Proposed Management Actions to Achieve Above Objectives

Immediate Actions

Action 1: Cooperate with Ducks Unlimited (DU) to replace the existing fixed-crest risers with a variable-crest weir.

Pursued in partnership with MN DNR and with an Outdoor Heritage Fund grant, DU did a feasibility survey and completed a design report (see DU Design Plans and Report for more detail). This report recommended replacing the existing fixed-crest risers with a new weir capable of variable water level management; and to prevent water from flowing south out of the lake into Sand Creek and Spur Ditch 2 thus restoring the historic outlet. The proposed sheet pile structure will consist of a 3-sided sheet pile box weir with a 48" diameter steel outlet barrel to match the existing discharge rates. A 4' wide stoplog bay with removable aluminum stoplogs will allow the water level to be lowered 3.6' to an elevation of 1014.0' msl. The runout elevation will be set at 1017.6' msl. The water control structure with all the stoplogs in place creates a 7.0' vertical drop which is a barrier to fish passage under most conditions. The new structure design is of similar hydraulic capacities of the replaced outlet. For access to the new water control structure and maintenance, a ditch crossing will be installed on CD 54 just upstream of the structure outlet, providing access through Sanborn Lake WMA from 151st Ave.

To prevent water from flowing south out of Sanborn Lake and into Sand Creek, the existing outlet ditch will be plugged. By plugging the ditch, discharge will be controlled at the primary outlet structure and directly into CD 54. The ditch plug will be located at the south end of Sanborn Lake (Fig. 1) and tie into the existing ground at an elevation of 1019.0' msl. Conditions at Sand Creek below Sanborn Lake will remain mostly unchanged other than loss of some flow directly from the lake.

Note this south ditch plug will not entirely keep water from flowing into Sanborn Lake from Sand Creek (or vice versa); due to the flat topography in the area between the lake and creek, water will continue to overland flow during flood conditions and is un-avoidable. This overland flow would occur when water levels in Sand Creek reach approximately the 1019.0' elevation; hydraulic modeling by DU indicates this would occur somewhere between a 2-5 year rainfall event. Plugging the ditch will merely formalize conditions as they have existed for approximately 38 years, along with preventing future head-cutting of Sand Creek towards Sanborn Lake and potentially draining lake levels.

Action 2: Conduct an initial temporary water level drawdown to encourage the growth of aquatic plant species and create conditions favorable for a fish winterkill.

A lake drawdown is the temporary lowering of lake water levels often done by gradually removing stoplogs from a weir at the lake outlet. Drawdowns are used to mimic natural droughts, which occur less frequently than in the past. The ecological functions of shallow lakes and wetland basins have adapted to periods of low water or drought, and such systems often deteriorate during periods of high water or absence of drought. Drawdowns are an effective tool used to manage shallow lakes and wetlands for improved wildlife and waterfowl habitat and water quality.

Temporary drawdowns on shallow lakes encourage the growth of aquatic vegetation. Bottom sediments hold a large, viable seed bank from the aquatic plants the lake has supported in the past. The life history of most species of emergent aquatic vegetation requires a period of drying before seeds will germinate. Sediments are consolidated and organic material is broken down during a drawdown, which can provide a more suitable substrate for a greater diversity of aquatic plants. A temporary drawdown may also reduce or eliminate the existing fish community. Increased abundance of submersed aquatic plants and reduced fish populations should result in greater numbers of aquatic invertebrates. An abundant and diverse aquatic plant community and increased numbers of invertebrates would provide quality habitat for breeding and migrating waterfowl.

A drawdown would likely begin in early spring or in the fall after local crop harvest when surface runoff and downstream water levels are relatively low during normal precipitation patterns. A fall drawdown would continue through the winter to maximize the potential for winterkill of the fish community. The lake would remain in drawdown for the following growing season to allow for consolidation of bottom sediments and to establish emergent vegetation. Stoplogs would then be replaced to allow for a gradual refill. If conducted in the spring, the small basin size should allow for complete drawdown during the growing season under average conditions; achieving the same vegetation response and fish kill listed above. Stoplogs could then be replaced in the fall for a gradual refill the following spring. With average conditions, the length of time required to refill Sanborn Lake is approximately 1 year; however this time may be extended if a dry weather pattern occurs after the stoplogs are returned to the weir. The extended refill time may be exacerbated due to the relatively small watershed-to-lake size ratio of 6:1. Drawdowns cannot occur for longer than two years as limited in Minnesota Rule (6115.0271, part C, item 4).

Important Legal Considerations: ***A drawdown is a temporary lowering of lake water levels and the water level will be returned to the managed pool elevation following the drawdown. Drawdowns would not and could not, according to M.R. 6115, be done at times that would cause any downstream flooding damage to private property or roads. The maximum length of full drawdown allowed in M.R. 6115.0271 is 2 consecutive years.***

Any drawdown and installation of new outlet structures requires a permit from the MN DNR Division of Ecological and Water Resources (EWR). The Section of Wildlife will work with EWR to meet all legal permit requirements (in M.R. Chapter 6115). All drawdown techniques will be contingent on existing habitat conditions, precipitation patterns, and downstream flooding conditions. The lake would not, and could not, be drawn down during periods when the area is experiencing flooding or high water. EWR permits do not allow drawdowns to adversely affect downstream water levels (limitation in M.R. 6115.0221). The existing runout elevation is not being changed and flows through the proposed structure can be controlled by stoplogs; therefore, there would be no adverse impacts to upstream or downstream landowners as a result of this project. The initial drawdown to elevation 1014.0' msl will be implemented in conjunction with construction or the first autumn following that conditions permit.

Ongoing and Long Range Procedures and Management Thresholds

Shallow lake conditions are not static. Additional management will be needed to maintain good water quality and wildlife habitats. The following procedures are recommended to maintain improvements attained through initial actions. Thresholds are identified that would initiate additional actions.

Action 3: Regularly monitor water quality and aquatic vegetation and do water level management as needed. Maintain aquatic vegetation and water quality indices above the prescribed thresholds for full drawdown by conducting periodic partial drawdowns.

The MN DNR will sample aquatic vegetation, water quality and fish presence to track long-term trends. If the long-term trend shifts toward a degraded state, subsequent water level management may be necessary to restore quality conditions. Water level management would be initiated by the Area Wildlife Manager in response to lake habitat conditions (see Management Thresholds below).

Full Drawdown Management Thresholds – Action 3

Prior to and following all drawdowns, the MN DNR will monitor water clarity, plant abundance and selected water chemistry parameters. The frequency of drawdowns would be based on the existing conditions of the lake. Drawdown timing is based on best management practices and would be determined by the Area Wildlife Manager. Minnesota laws allow drawdowns of up to 2 years in length (M.R. 6115.0271); however on this lake a single growing season drawdown should be adequate to achieve the desired habitat objectives.

The frequency of drawdown will be adjusted as needed and conducted when at least one of the following criteria fall below the listed thresholds:

a.) Secchi disk readings: if the average summer Secchi disk reading is less than 60% of the average lake depth in May or June (2.5' x 0.6 = 1.5'),

b.) Submerged aquatic plant coverage: less than 60% open water coverage using present day systematic point sample stations,

c.) Submerged plant species richness decreases more than 40% from the most recent lake survey,
d.) Presence of fish is verified,
e.) Total phosphorous, as measured during the growing season, exceeds the water quality standard (60 ppb) for shallow lakes in the North Central Hardwood Forest ecoregion,
f.) Emergent vegetation coverage decreases to <50% of the basin.

Desired Outcomes – Action 3

Specific, measurable goals from which to measure management effectiveness include:
a.) Average summer Secchi disk reading >2.0',
b.) Submerged aquatic plants at 90% of established open water sample points,
c.) Aquatic plant diversity and lakewide species richness of 10 or more species,
d.) No fish species verified,
e.) Total phosphorous below the water quality standard (60 ppb),
f.) Emergent vegetation increases to ≥50% coverage of basin.

Partial Drawdown Management Thresholds - Action 3

Occasional partial drawdowns that maintain waterfowl habitat and water quality may reduce the need for more costly and time-consuming full drawdowns. This would be an intermediate management action and beneficial tool to sustain the effects of a full drawdown for a longer period of time. A partial drawdown could be employed during the fall/winter or during the growing season depending on management needs. Populations of undesirable fish should be nearly eliminated after a full drawdown but they will eventually re-establish in the following years. If conducted during the fall/winter, partial drawdowns increase the likelihood and severity of a natural winterkill event. Water levels are lowered to the point where winter ice would form to the bottom or very near the bottom of the shallow lake, eliminating refuge areas for fish. Additionally, lowering the lake (winter and/or growing season) would expose a portion of the bottom substrate stimulating the spring/summer germination of hardstem bulrush and other emergent plants. As stated previously under full drawdown thresholds, a single season of partial drawdown should be adequate to achieve the desired habitat objectives listed here.

Partial drawdowns will be considered when one of the following criteria is met relative to decreases from the best values recorded following the last full drawdown.
a.) Summer Secchi disk readings decrease by more than 25% average lake depth during mid-summer-June or July (2.5' x 0.25 = 0.63'),
b.) Submerged aquatic plant coverage: at less than 80% lake wide coverage using present day systematic point sample stations (established in 2010),
c.) Submerged plant species richness decreases more than 25%,
d.) Presence of fish species is verified.

Desired Outcomes – Action 3

Partial drawdowns to keep fish populations low and plants healthy may reduce the need for the full drawdowns needed for intense vegetation management. Specific, measurable goals from

which to measure management effectiveness are similar to those for full drawdowns and include:

a.) Average summer Secchi disk reading >2.0'
b.) Submerged aquatic plant coverage at 90% of established open water sample points,
c.) Aquatic plant diversity and lakewide species richness of 10 or more species,
d.) No fish species verified.

Action 4: Continue to promote conservation efforts and collaborate on potential watershed projects.

Conservation work within the watershed is an important tool in shallow lake management. The protection of existing habitats and restoration of critical areas are vital to sustaining water quality and habitat. The MN DNR will continue to support efforts to target conservation programs and land stewardship improvements within the Sanborn Lake watershed. Opportunities should be utilized to educate citizens about aquatic invasive species and private land conservation practices.

Monitoring

When conditions fall below the outlined thresholds, the proposed management actions will be considered and implemented. Vegetation will be monitored when degradation is suspected by conducting shallow lake surveys, using systematic point sampling, calculating aquatic plant distribution and diversity. Water clarity and water quality parameters will be monitored periodically using an approved water quality sampling methods and fish population composition will be verified by periodic test netting. In addition to pre-drawdown sampling, these efforts will be duplicated and tracked following all drawdowns to determine management responses. MN DNR will install a water level gauge on Sanborn Lake to closely monitor water levels and measure downstream conditions during any drawdown (stipulated by M.R. 6115.0221). Water level measurements will be recorded regularly during active water level drawdown and refill periods (weekly water level monitoring is advised). Water level measurements will also be recorded during non-management periods as possible (at minimum annual inspection is recommended).

Agriculture row crops are part of the land use around Sanborn Lake. Runoff from row crop agricultural lands contributes to habitat degradation. However, additional data is needed to know to what extent that is impacting the quality of Sanborn Lake.

Management Plan Revisions

The management plan will be revisited every 10 years to assess effectiveness and determine if changes or updates need to be made. Modifications to this management plan would be made in cooperation with DU, MN DNR Wildlife/Shallow Lakes, MN DNR EWR/Dam Safety, Le Sueur County, and other stakeholders as the need arises. Landowners are included in the revision process through notification by letter.

Attachments/Appendices

Figure 1. Sanborn Lake Project Overview Map
Figure 2. Shallow Lake Survey Vegetation and Depth Map
Figure 3. Sanborn Lake Watershed Scale Map

Figure 4. 1955 Sanborn Lake Historic Photo
Figure 5. 2010 Photo of Existing Outlet Structure
Minnesota Statute 97A.101

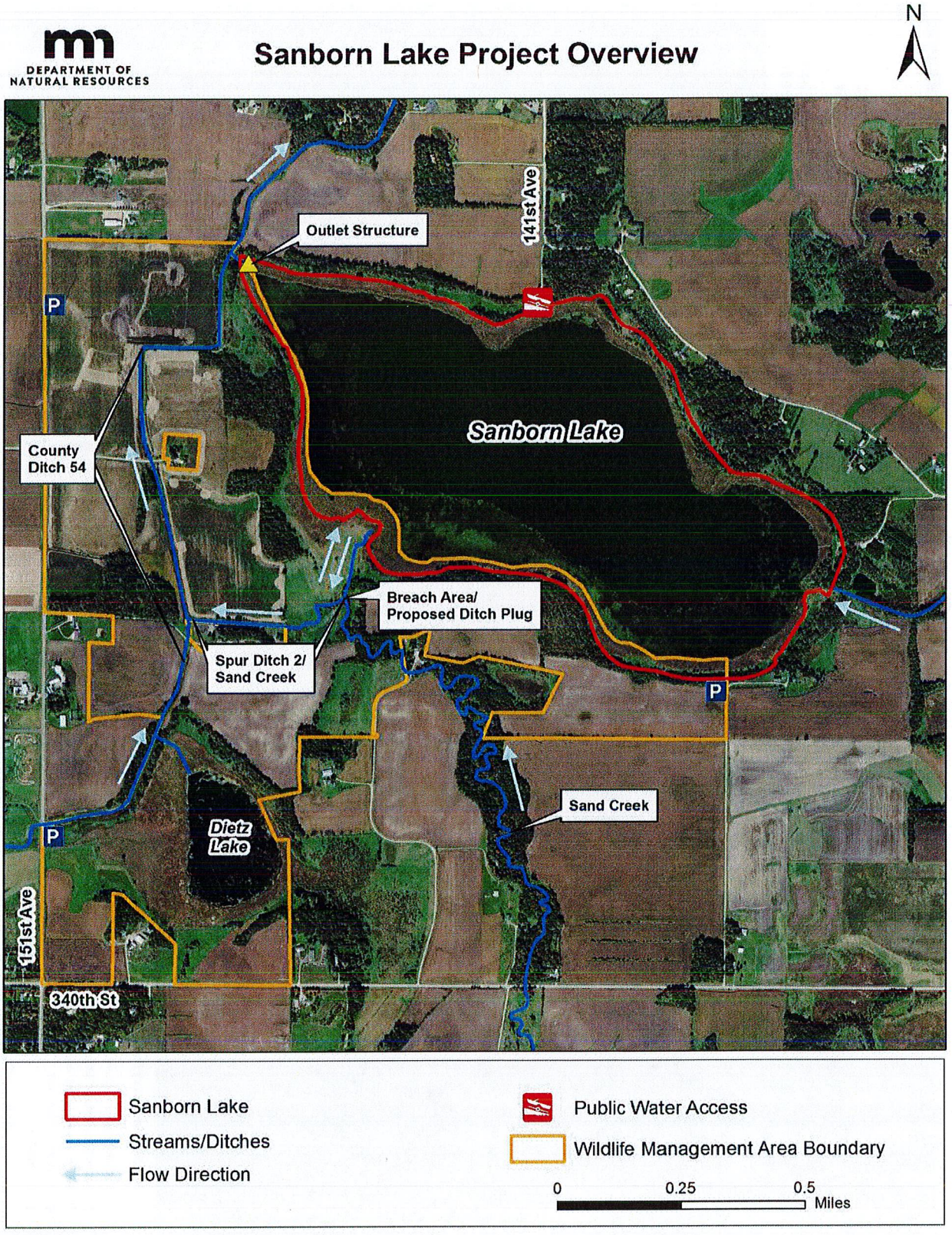

Figure 1: Sanborn Lake Project Overview Map

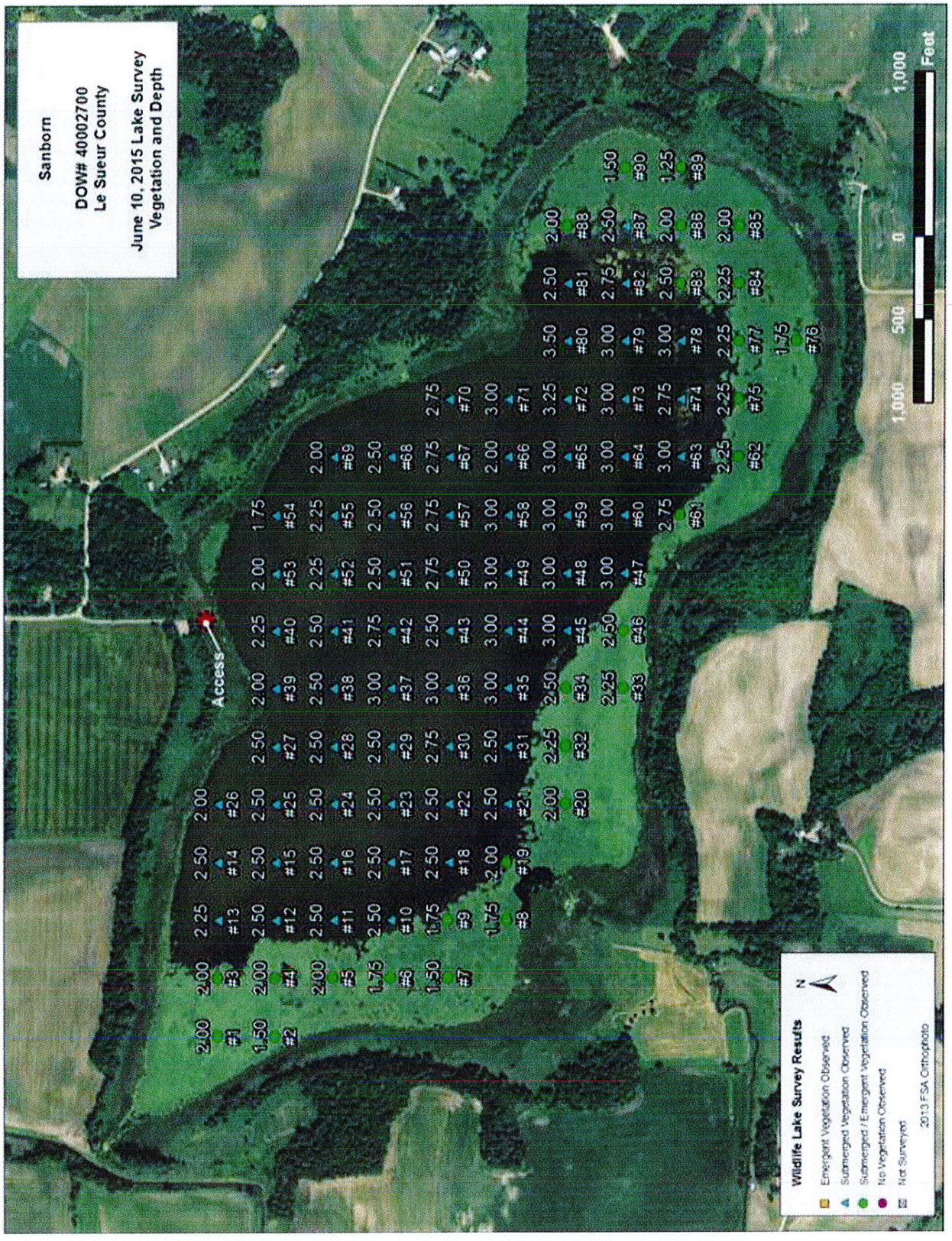

Figure 2: Shallow Lake Survey Vegetation and Depth Map

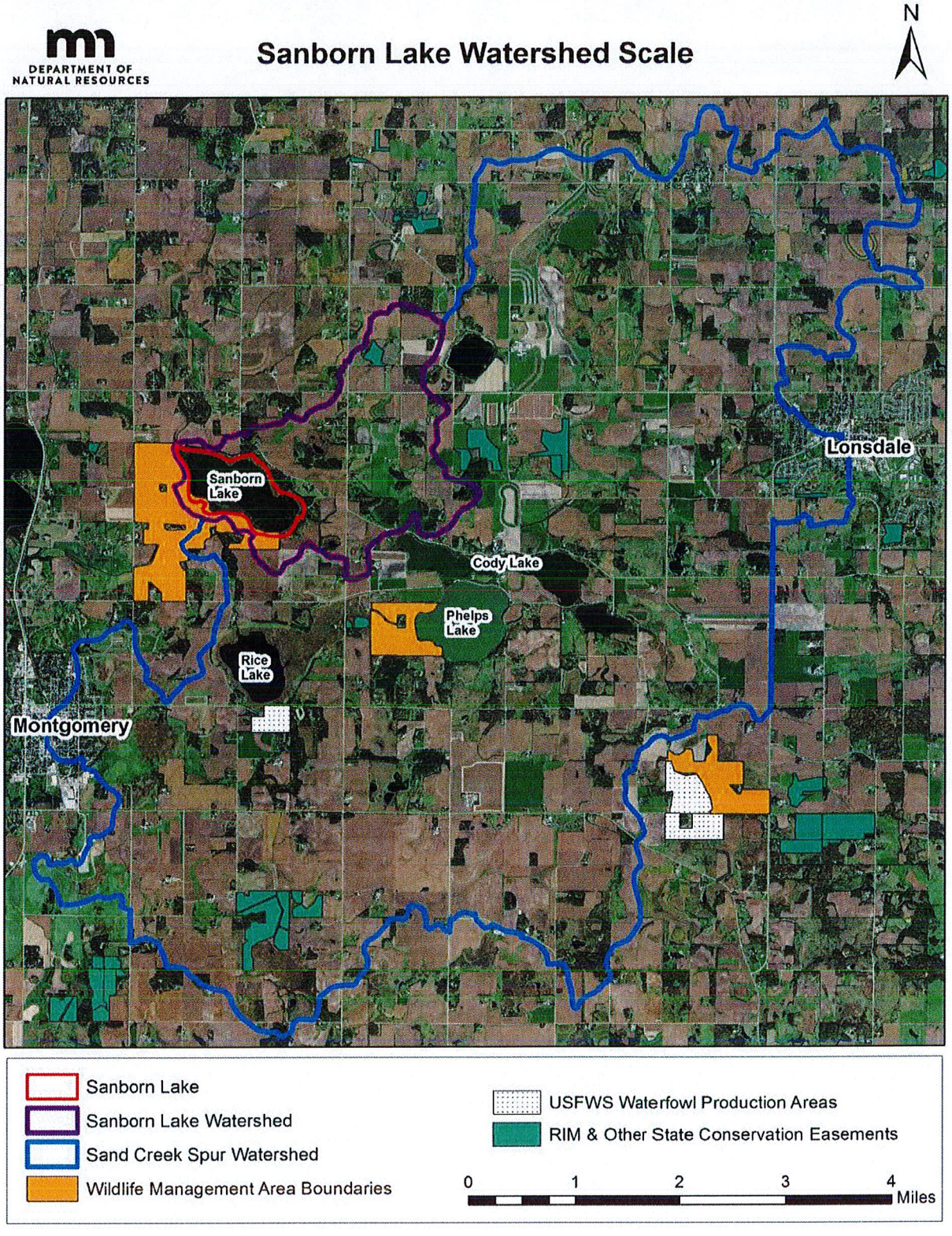

Figure 3: Sanborn Lake Watershed Scale Map

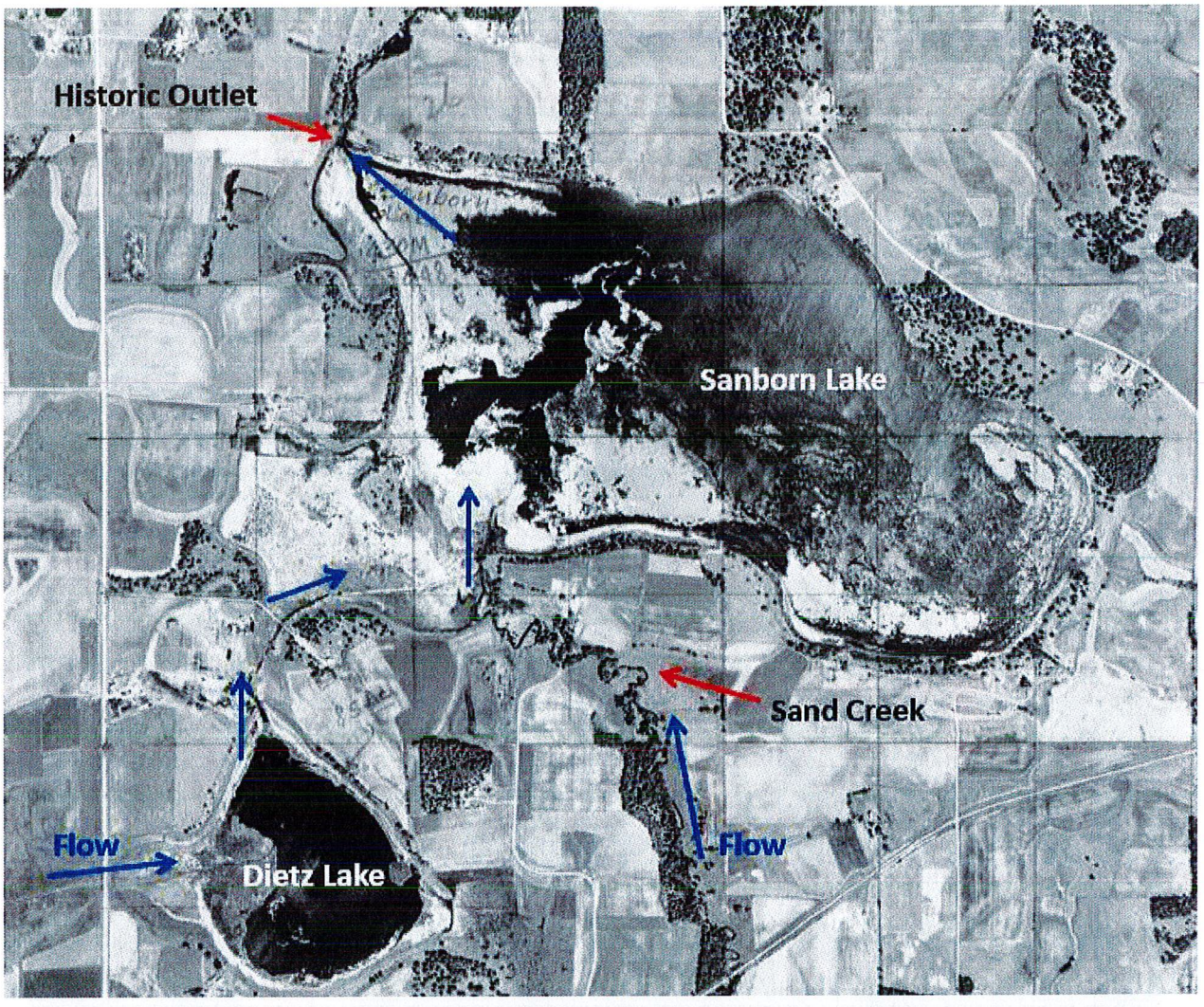

Figure 4: Sanborn Lake 1955, Historic Basin/Watershed Prior to County Ditch 54

Figure 5: Existing Water Control Structure with Modified North Riser (2010 photo).

Sanborn Lake, Le Sueur County

DOW# 40002700
T112N, R23W, Sec.25/26/35/36

MANAGEMENT PLAN SIGNATURE/APPROVAL SHEET

Date 3/21/18
Area Wildlife Manager, Joe M. Stangel

Date 3/21/18
Regional Wildlife Manager, Dave Trauba

Date 6/21/18
Section Chief, Paul Telander

Date 6-22-18
Division Director, Jim Leach

STATE OF MINNESOTA
LE SUEUR COUNTY BOARD OF COMMISSIONERS
SEATED AS DRAINAGE AUTHORITY UNDER STATUTES CHAPTER 103E
FOR LE SUEUR COUNTY DITCH 54

Regarding the Petition of the Minnesota Department of Natural Resources for the Modification of Le Sueur County Ditch 54 (Minnesota Statutes, Section 103E.227)	**FINDINGS AND ORDER GRANTING PETITIONED ACTION AND AUTHORIZING MODIFICATION OF DRAINAGE SYSTEM**

Commissioner Gliszinski offered the following Resolution and moved its adoption, seconded by Commissioner King:

FINDINGS

1. The Minnesota Department of Natural Resources ("DNR") has petitioned the Board of Commissioners of Le Sueur County (the "County"), Drainage Authority for Le Sueur County Ditch 54 ("CD 54"), to impound, reroute, and divert water on CD 54. The petitioned actions are for the purpose of managing water levels on Sanborn Lake for the benefit of wildlife.

2. The DNR desires to modify the current configuration, alignment and function of CD 54 in order to improve hydraulic inputs to Sanborn Lake and provide a dynamic outlet which will allow for active management of water levels in Sanborn Lake. The DNR would like to temporarily draw down lake levels in order to induce winterkill of rough fish and encourage or reestablish the growth of beneficial wetland vegetation. The DNR would like to alter the direct channel connection from Sanborn Lake with spur 2 of CD 54 which will create a secondary outlet. The DNR would like to modify the CD 54 outlet of Sanborn Lake to provide for lake level management and allow the Minnesota DNR Section of Wildlife the ability to operate the water control structure in accordance with an approved comprehensive management plan.

3. The County's action on the petition is governed by Minnesota Statutes Sections 103E.227. No bond or similar surety was required to be submitted by the DNR with its Petition because the DNR is a unit of government. The DNR's petition was accompanied by the required exhibits showing the location of the installation, and plans and specifications for the proposed actions.

4. By resolution, the County appointed ISG Engineers and Chuck Brandel, P.E., to evaluate the proposed action and to review engineering plans and specifications for the work.

[15741-0022/2674452/1]

The engineer reviewed the plans and worked with the design engineers from Ducks Unlimited to determine the scope of drainage system modifications and to determine the impact of the modifications on the function of the drainage system.

5. The engineer provided a report dated August 3, 2017, and three addenda dated October 13, 2017, January 10, 2018 and January 17, 2018.

6. The engineer has evaluated design plans provided by Ducks Unlimited – the most recent of which included revisions dated January 11, 2018. Based on the engineer's review and analysis, the engineer has determined that the proposed action provides both public and private benefit based on the environmental, recreational and drainage features of the project. The Engineer has further determined that the proposed action, as outlined in the design plans dated January 11, 2018, will not impair the utility of the drainage system or deprive affected landowners of its benefit.

7. The County duly noticed and held a public hearing pursuant to statutes section 103E.227 on January 23, 2018. At the hearing the County received its engineer's report, received the petitioner's engineer's report and took testimony from the petitioner and members of the public.

8. Based on the record before it, including the engineers' reports and the public comments made at the hearing, the County finds that the modification of CD 54 as indicated in the petition and the engineer's review will provide public and private benefit by creating wildlife habitat; improving water quality; and providing additional flood storage.

9. The County finds that the modification of CD 54 as indicated in the petition and the engineer's review is reasonable and that, as part of the overall project proposed by the petitioner will be of public utility and benefit and will not impair the utility of the drainage system or deprive affected landowners of its benefit.

Therefore, the Le Sueur County Board of Commissioners makes the following:

ORDER

A. The County grants the petition subject to the conditions set forth in the engineer's report and addenda.

[15741-0022/2674452/1]

B. To the extent the modifications authorized herein require permits or approvals of other regulatory authorities, receipt of such permits or approvals is a precondition to construction of said modifications.

C. Once all contingencies are satisfied and the actions completed, the engineer is directed to prepare a record of the drainage system modifications authorized herein to be in filed in the drainage system record.

D. Pursuant to statutes section 103E.227, the petitioner is responsible for construction, operation, and maintenance of the drainage system modification. However, by subsequent order, the County may enter into an agreement with the petitioner regarding future maintenance and operation of the modifications.

The question was on the adoption of the Resolution and there were 4 yeas and 0 nays as follows:

	Yea	Nay	Absent	Abstain
GLISZINSKI	X	☐	☐	☐
CONNOLLY	☐	☐	X	☐
KING	X	☐	☐	☐
WETZEL	X	☐	☐	☐
ROHLFING	X	☐	☐	☐

Upon vote, the Board Chairperson declared the Resolution adopted.

Dated this 23rd day of January, 2018.

LE SUEUR COUNTY BOARD OF COMMISSIONERS SEATED AS DRAINAGE AUTHORITY UNDER STATUTES CHAPTER 103E FOR LE SUEUR COUNTY DITCH 54

Attest:

County Administrator

By

Chairperson

[15741-0022/2674452/1]