

No. 5707-3 Hydrologic Unit 10170203
Map No. _____ Basin Big Sioux River
Newspaper Argus Leader, PO Box 5034, 57117-5034

Application For Permit To Appropriate Water Within The State Of South Dakota

- Check use of water: Industrial Commercial Municipal Other Common Distribution System
 Rural Water System Suburban Housing Geothermal Heat Institutional Recreational
 Domestic (above 18gpm) Other

Type of Application: Check one or more of the following

- New Vested Right Future Use Change Use
 Amend Permit No. _____ with old priority date retained
 Change diversion point(s) Add diversion point(s) Other _____
 Application to: Change diversion point(s) Add diversion point(s) on Permit No. _____
 Construction to use water reserved by Future Use Permit No. _____

1. Name of Applicant Fish and Wildlife Service Phone No. 303/236-5321
 Post Office Address P.O. Box 25486, Denver Federal Center, Denver State Colorado 80225
(Street, RR or Box) (City) (Zip Code)
 2. Amount of water claimed (c.f.s.) 901 ~~211~~ Acre-Feet (251 ~~211~~ AF Storage plus 260 AF Seasonal Use)
(641 Add'l)
 3. Source of water supply Buffalo Lake outlet near upper end of Buffalo Creek Watershed
 4. Location of point of diversion SE1/4 NE1/4 SW1/4 Section 2, T104N R52W

County Minnehaha

5. Counties where water will be used Minnehaha
 6. Annual period during which water is to be used January 1 - December 31
 7. Give a brief description of proposed project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

SEE ATTACHED: (1) ET Computation (2) Engineering Drawings and Design Report
Impound water to outlet elevation 1650.0 feet msl
Vested Right Claim No. 856-3 appropriates to an existing
outlet elevation of 1648.0 msl (310 acre-feet)



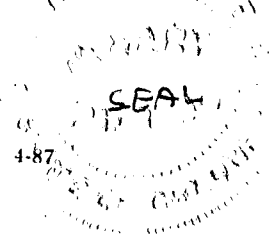
Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed (see instruction)
 STATE OF ~~XXXXXX~~ COLORADO
 County of Jefferson

I, Wilbur N. Ladd, Acting Regional Director, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed ACTING REGIONAL DIRECTOR

Subscribed and sworn to before me this 27th day of August, 1992

Juris J. Eglite
 Notary Public
 My Commission expires: 11-25-92



**SOUTH DAKOTA
WATER PERMIT NO. 5707-3**

Date of first receipt of application September 2, 1992.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 5707-3 to U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5707-3 appropriates an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre feet seasonal use) by increasing the outlet elevation of Buffalo Lake. Existing Vested Water Right No. 856-3 authorizes sufficient runoff water annually to fill Buffalo Lake to an outlet elevation of 1648.0 feet means sea level (msl) [310 acre feet storage capacity]. The outlet is located in the NE 1/4 SW 1/4 Section 2 with water being impounded in portions of the SW 1/4 Section 2, E 1/2 Section 10, NW 1/4, NW 1/4 SW 1/4 Section 11; all in T104N-R52W. This permit proposes to increase the outlet elevation for Buffalo Lake to 1650.0 feet msl. Vested Water Right No. 856-3 and this permit, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 feet msl.
2. The water appropriated shall be used for the purpose of providing habitat for fish and wildlife production and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date of approval of Permit No. 5707-3 is June 1, 1993.
5. The dates from which applicant may claim right are:


310 acre-feet storage - November 2, 1889 (established by Vested Water Right No. 856-3)
641 acre-feet storage plus 260 acre-feet seasonal use - September 2, 1992
6. One-fifth of the construction is to be completed on or before December 1, 1995.
7. All construction is to be completed on or before June 1, 1998.
8. Water is to be put to beneficial use on or before June 1, 2002.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

(continued)

QUALIFICATION

Approval of Water Permit No. 5707-3 authorizes additional storage of 641 acre-feet plus 260 acre-feet seasonal use to offset evaporation losses in Buffalo Lake. Vested Water Right No. 856-3 and this Permit, combined, authorize a total storage capacity of 951 acre-feet of water to an outlet elevation of 1650.0 feet msl.

WATER MANAGEMENT BOARD

By: 
John Hatch, Chief Engineer
Water Rights Division
Department of Environment and
Natural Resources

JUN 1 1993
date

Supplemental Information

(type or print in ink)



1. Well Information - Proposed construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack Thickness _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
 On applicants property _____ On property owned by others _____

2. Dugout Information Estimates

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

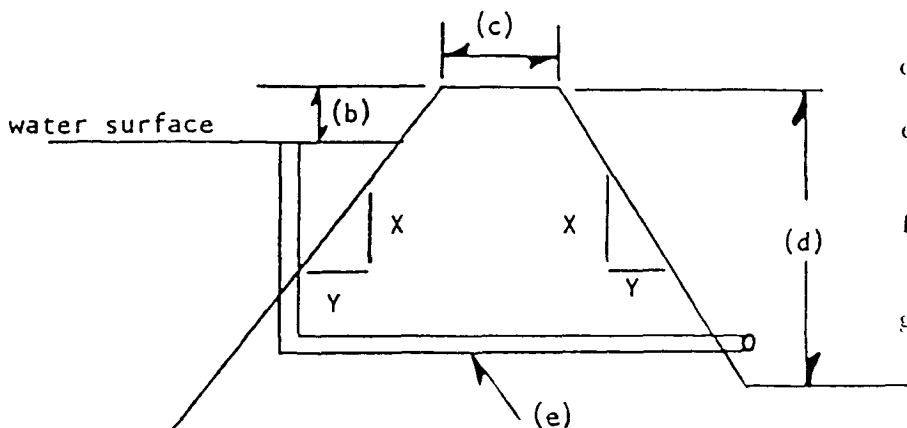
3. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam please give their name and address

DUCKS UNLIMITED, INC.
6115 E. Main, Bismarck, ND 58501

- b) Freeboard 3.0 feet
- c) Crest Width 10.0 inches
 Crest Length 34.0 feet
- d) Height 5.5 feet
- e) Primary Outlet Capacity 84 cfs
 If Pipe, diameter _____
- f) Secondary Spillway Capacity NA
 Spillway width _____
- g) X & Y Slope
 Upstream 2:1
 Downstream 2:1



Surface Area of Impoundment 352 acres
 Storage 951 acre feet fs1
 Drainage area above dam 19.6 sq. miles

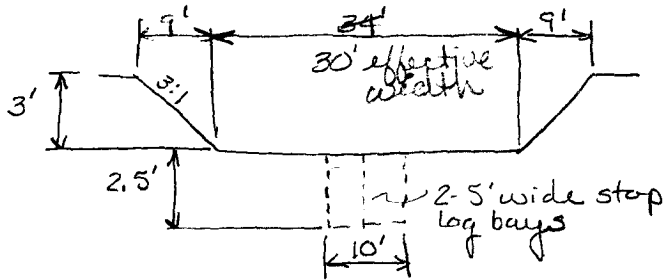
Wilbur N. Ladd
 Signature of Applicant
ACTING REGIONAL DIRECTOR
 /s/ WILBUR N. LADD JR.

BUFFALO LAKE WPA
MADISON WMD

The Mean Annual Precipitation of 24.2 inches and the Mean Annual Evaporation of 33.03 inches results in a loss of 8.83 inches or .74 feet annually. Over the 352 surface area, this results in a net loss of 260.48 annual seasonal use.

$$\begin{aligned} & 33.03" \text{ Evaporation} \\ - & \underline{24.2"} \text{ Precipitation} \\ = & 8.83" / 12 \text{ (conversion to feet)} = .74 \text{ feet} \times 352 \\ & \text{surface area} = 260.48 \text{ Annual Seasonal Use} \end{aligned}$$

Closer look at flow through the Weir:



Trapezoidal Weir $Q = CLH^{1.5}$

Stop log Section $Q = C_a \sqrt{2gh}$

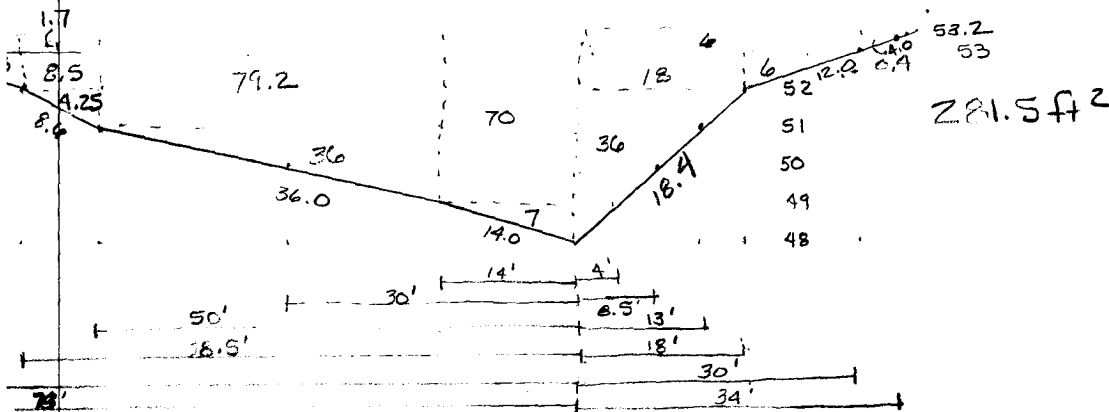
$C = .615 + .007 \times 2^{5-h}$
 $C = .615 + .007 \times 2^{5-3} = .6430$

$Q = 2.6 \times 30' \times 3^{1.5} = 405$
 ~~$Q = 2.6 \times 34' \times 3^{1.5} = 459$~~ cfs

$Q = .6430 \times 25 \text{ ft}^2 \sqrt{2 \times 32.3 \times 3} = 223 \text{ cfs}$

~~682 cfs~~
628

Closer look at Outlet Channel:



Open Channel Flow $Q = \frac{1.486 a^{5/3} S^{1/2}}{n P^{2/3}}$

$a = 281.5 \text{ ft}^2$
 $S = .000672' / 1'$
 $P = 102.8'$

$Q = \frac{1.486 (281.5)^{5/3} (.000672)^{1/2}}{.045 \times 102.8^{2/3}}$
 $= 473.24 \text{ cfs}$

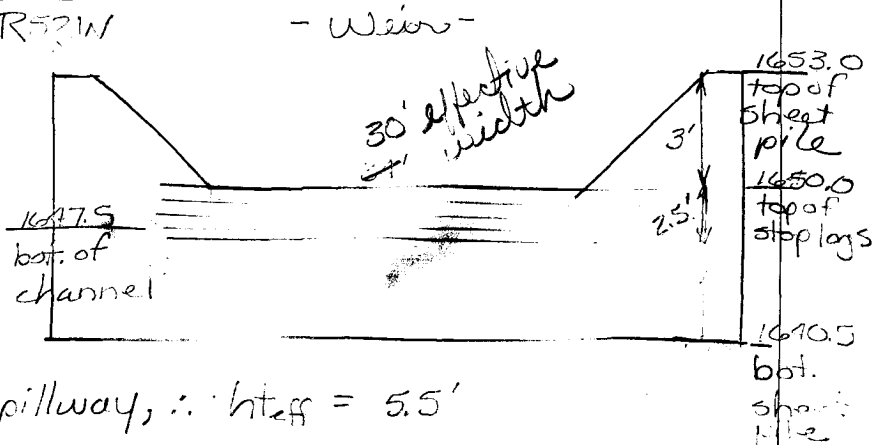
Culverts

$Q = 28.27 \sqrt{\frac{2 \times 32.2 \times 3.8}{1 + 0.5 + .0135 \times 75}}$
 $= 558 \text{ cfs}$

$a = \frac{\pi \times 6^2}{4} = 28.27 \text{ ft}^2$
 $g = 32.2 \text{ f/s}^2$
 $H = 3.8'$
 $K_m = 0.5$ sharp cornered entrance
 $K_p = .0135$

Application No. 5707-3
 U.S. Fish and Wildlife Service
 NE¹ SW⁹ Sec. 2, T104N, R52W
 Minnehaha Co., SD

Effective Ht. = 5.5'
 Drainage Area₁ = 4.1 mi²
 Drainage Area₂ = 15.5 mi²
 max storage = 2290 ac-ft
 normal storage = 95 ac-ft



Consider no emergency spillway, ∴ ht_{eff} = 5.5'

max. storage x ht. eff. = 2290 x 5.5 = 12,595 > 3,000
 ∴ Category 3, intermediate. 100yr. frequency SPMF

$$Q_{100} = 132.1 A^{0.65} S^{0.46} S_i^{-0.67} \quad \text{pg. 4 U.S.G.S.}$$

$$S_i = 3.33 \quad \text{pg. 23 U.S.G.S.}$$

Q₁₀₀ for drainage area₁:

A = 4.1 mi²
 S = 30 ft/mi (1720 - 1650) / 2 mi
 S_i = 3.33

$$Q_{100} = 132.1 (4.1)^{0.65} (30)^{0.46} (3.33)^{-0.67} = 705.22 \text{ cfs}$$

Q₁₀₀ for drainage area₂:

A = 15.5 mi²
 S = 25.0 (1750 - 1650) / 4 mi
 S_i = 3.33

$$Q_{100} = 132.1 (15.5)^{0.65} (25.0)^{0.46} (3.33)^{-0.67} = 1539.23 \text{ cfs}$$

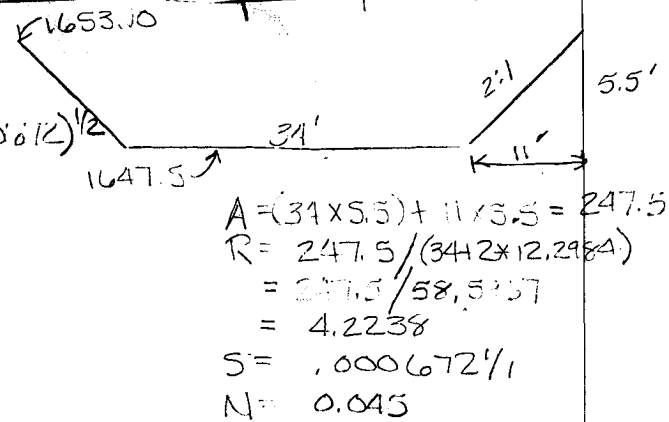
Q_{100 total} = 2,244 cfs 970 ac-ft runoff

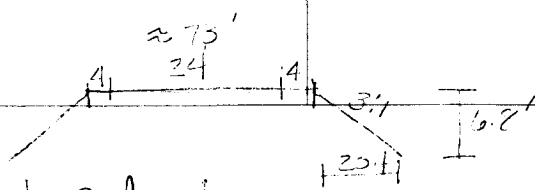
Channel is the limiting factor in discharge capacity.

Open channel flow

$$Q = \frac{1.49}{0.045} (247.5 \text{ ft}^2) (4.2238)^{2/3} (0.033012)^{1/2}$$

$$= 555 \text{ cfs}$$





2/2

2/2

Check Culverts:

$$Q = a \sqrt{1 + K_p \frac{V^2}{gH}}$$

$$Q = 23.21 \sqrt{1 + 0.0135 \times 0.135 \times 75'} \\ = 279 \text{ cfs} \times 2 = 558$$

$$a = \frac{\pi L^2}{4} =$$

$$g = 32.2 \text{ ft/s}^2$$

$$H = 3.3'$$

$$K_p = 0.5 \text{ Sharp cornered entrance}$$

$$K_p = 0.135$$

Check Weir:

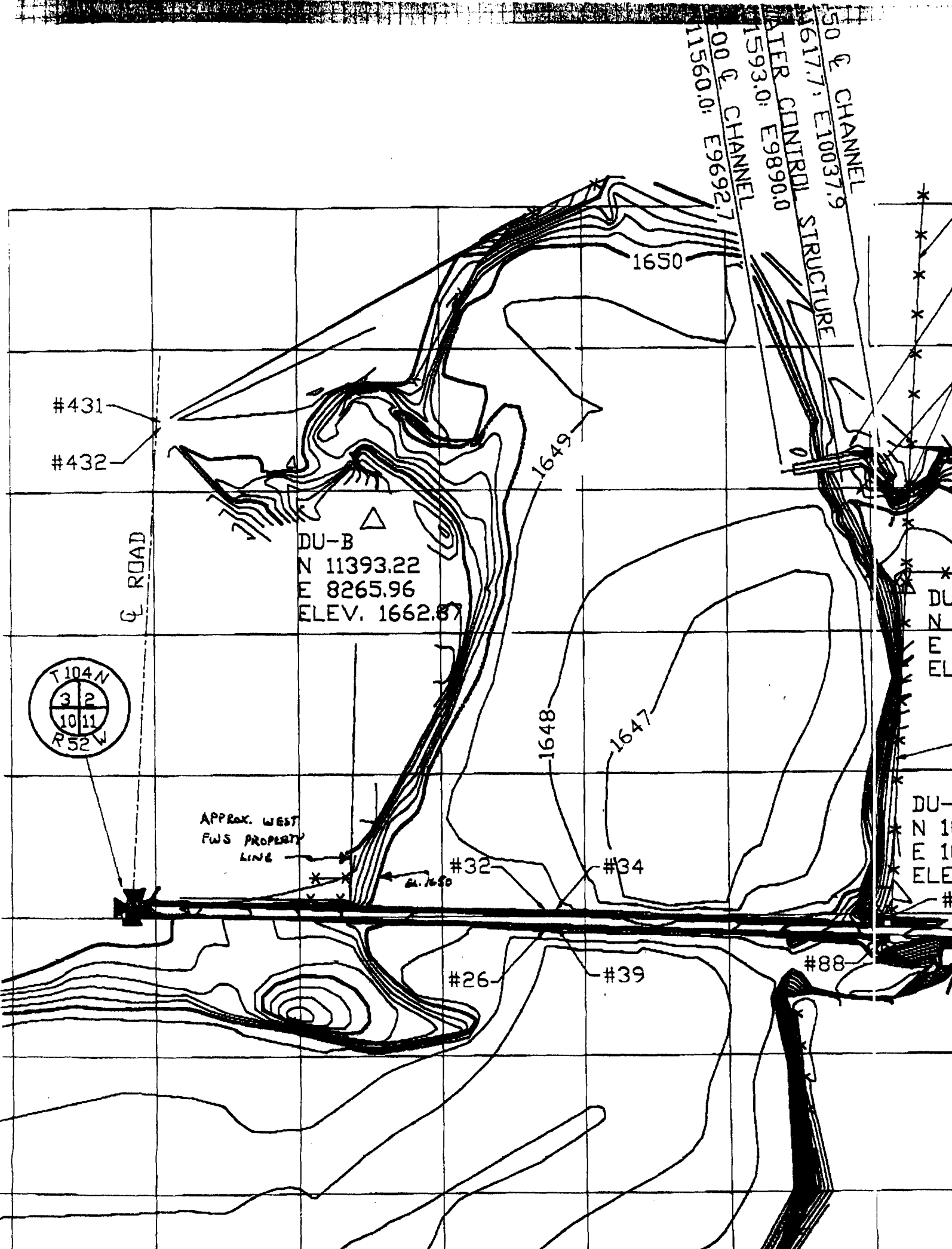
$$Q = CLH^{3/2} \quad C = 2.6 \\ L = 34' \\ H = 3'$$

$$Q = 2.6 \left(\frac{30}{34}\right) (3')^{3/2} = 465.3$$

for open

$$Q = 2.6 \times 34 (5.5)^{3/2} = 1140.24$$

This structure is not designed down for the purposes of design. The structure is less than 6' in height. The numbers here show the outlet channel to be the controlling factor. Flood waters will overtop the banks of the outlet channel by the 25yr. event.



1655

1647

1646

1645.42



E 5000

E 5500

E 6000

E 6500

E 7000

E 7500

APPROX. FARM SITE PROPERTY LINE →

SITE TOPOG

SCALE: 1" = 400'

RECEIPT

413403

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, _____, September 2, 19 92

RECEIVED OF U.S. Fish & Wildlife Service, PO Box 25486, Denver, CO 80225

the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>5707-3</u> to Appropriate Water, to construct and to put water to beneficial use _____	450	00
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	450 00

By John Hatch
Chief Engineer

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Madison Wetland Management District
P. O. Box 48
On Hwy. 19, 3/4 Mile South of Hwy. 34 Junction
Madison, South Dakota 57042
Telephone:(605)256-2974

March 23, 1992

Bobby L. Meister
Minnehaha County Highway Dept.
P.O. Box 1364
Sioux Falls, So. Dak. 57101

Dear Mr. Meister:

This letter will confirm the conversation we had between yourself, Dave Quittem, Francis Rand, and myself during our meeting at Buffalo Lake on March 22, 1992. I explained the importance of maintaining stable and more permanent water levels in the lake for waterfowl production. The U. S. Fish & Wildlife Service owns 1020 acres and the SD Game, Fish, and Parks owns 28 acres so the entire Buffalo Lake area is in public ownership and the upland acres have been seeded to grass to provide waterfowl nesting habitat.

I gave you a copy of the Preliminary Design Report that was completed by Ducks Unlimited engineer Doug Lipetzky. In this report we propose to construct a steel sheet pile weir at elevation 1650.0. The invert elevations of the twin 6 foot diameter corrugated pipes are at about 1646.8. The water level going through the pipes now, measured at a little more than 3 feet. So the current water surface elevation is 1650.0 which is what we are proposing to manage when it is full. The existing outlet channel allows the marsh to drain down to 1648.0. However, I explained that the lake has a bottleneck outlet so the water levels build up in the lake and then over a matter of weeks drains down to the 1648.0 elevation.

After, reviewing the topo maps and discussion on the design of the steel structure with two 5 foot wide stop-log bays, you agreed that the project would have a minimal effect to the road, as it is already experiencing the water level we are proposing to maintain.

This Buffalo Lake Project coincides with the intent of the North American Waterfowl Management Plan and will be a designated project in the Prairie Pothole Joint Venture. Ducks Unlimited, Inc. is the key partner willing to fund the construction, so that the U. S. Fish and Wildlife Service can manage optimum water levels for the production of waterfowl. This project is tentatively to be completed in 1993, and will be a showcase area to view waterfowl in its spectacular as we witnessed during our

meeting. We have support from adjacent landowners and from the many sportsmen and wildlife enthusiasts in Minnehaha County.

Again, I would like to thank you for your review of the design report and your support that the project could proceed as planned. If you have any more questions regarding the project please contact this office. A return letter of approval to the proposed project is requested so that we can proceed with the necessary environmental assessment and permitting process.

Sincerely,

Thomas R. Tornow

Thomas R. Tornow
Assistant Refuge Manager

✓ cc: Ducks Unlimited, Inc.
6115 East Main Avenue
Bismarck, No. Dak. 58501
(701) 258-5599

Buffalo Lake WPA file

MINNEHAHA COUNTY, SOUTH DAKOTA

HIGHWAY DEPARTMENT

WETLAND MANAGEMENT OFFICE

BOX 1364

RECEIVED

SIOUX FALLS, S. D. 57101

APR 29 1992

April 27, 1992

MADISON, SD 57042

Mr. Thomas R. Tornow
Assistant Refuge Manager
U.S. Fish & Wildlife Service
P.O. Box 48
Madison, South Dakota 57042

RE: Project - Buffalo Lake WPA - SD-120-01
Minnehaha County, South Dakota

Dear Mr. Tornow:

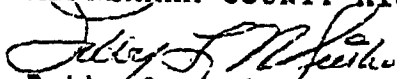
I am writing pursuant to our meeting of March 22, 1992 and your request dated March 23, 1992, regarding the above stated project.

After reviewing the Preliminary Design Report as submitted by your office, I am by this letter, granting approval to the proposed project, on behalf of the County of Minnehaha, South Dakota. In the event of a major design change, I would respectfully request notification of the proposed changes.

However, if during the environmental assessment and permitting process, substantial local opposition would be presented, Minnehaha County reserves the right to withdraw it's support and approval of the proposed project.

Sincerely,

MINNEHAHA COUNTY HIGHWAY DEPARTMENT


Bobby L. Heister
Highway Engineer



DUCKS
UNLIMITED
INC.



DUCKS UNLIMITED, INC.
GREAT PLAINS REGIONAL OFFICE
6115 East Main Avenue
Bismarck, North Dakota, 58501
(701) 258-5599

August 14, 1992

William Godby, Chief Engineer
U.S. Fish & Wildlife Service
PO Box 25486-DFC
Denver, CO 80225

RE: Buffalo Lake WPA (SD-120-001)

Dear Mr. Godby:

Enclosed are two revised copies of the preliminary design plans for the Buffalo Lake WPA project located south of Madison in Minnehaha County, South Dakota. Plans for this same project were sent to you under cover letter July 28, 1992, however, recent conversations with Tom Tornow of the Madison Wetland Management District have prompted me to revise the plans and the Design Report slightly. Please discard the initial set of plans sent to you as well as the July 28, 1992 Design Report.

Revisions to the initial plans and Design Report are as follows:

1. The initial plans included construction of six 1/10 acre nesting islands in the basin. Recent rainfall has increased water levels in the lake to the point where we do not believe site conditions will allow construction of the islands, even next year. Therefore, we have **deleted** the island construction from the plans. No islands will be included as part of this project.
2. On pages 1 and 2 of the Design Report under the Preliminary Risk Assessment section, Buffalo Creek was reported to discharge into Long Lake/Lake Madison. That information is incorrect. Buffalo Creek discharges into Buffalo Slough which discharges into Skunk Creek. The enclosed Design Report dated August 14, 1992 has been corrected to reflect such information.

Again, please review the revised plans and let us know if you have any questions or need additional information for permitting purposes. Also, please provide your written approval of the design at your convenience.

Copies of these revised plans are being provided to Tom Tornow at Madison WMD so that you can discuss them with him. If I can be of any assistance, please let me know.

Sincerely,

Doug Lipetzky, P.E.
Regional Engineer

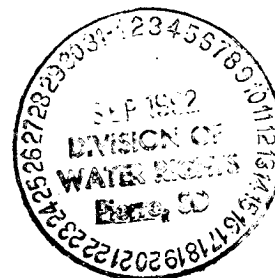
Enclosures

cc: Tom Tornow, Madison WMD



DESIGN REPORT

August 14, 1992



PROJECT: BUFFALO LAKE WPA
SD-120-01

LOCATION: Sections 2, 10 & 11, T 104 N, R 52 W
12 Miles SSE of Madison
Minnehaha County, South Dakota

MARSH DATA: Full Service Level (FSL) @ 1650.0
352 Surface Acres @ FSL
951 Acre-Feet Capacity @ FSL

CLASSIFICATION OF PROPOSED DAM:

Based on the definitions outlined in Chapter 74:02:08 "Safety of Dams," it would appear the artificial barrier would not be considered a "dam" for the purposes of Chapter 74:02:08. The "height" as determined by definition is less than 6 feet (top of the barrier to low point in channel). If for some reason the barrier is considered a "dam," it appears the proposed dam would be classified as an intermediate, Category 3 dam. No loss of life and minimal economic loss potential is expected should failure occur. The maximum storage capacity at the crest of the dam is approximately 2290 acre-feet, although at FSL the capacity is less than 1000 acre-feet. The effective height of the dam is 5.5 feet. In accordance with the intermediate, Category 3 dam criteria, the spillway system must pass the 100-year frequency design flood without overtopping the barrier, unless information can be provided showing the flow can be stored, passed through or passed over the dam without failure, or if a variance is granted pursuant to SDCL 46-7-5.3.

PRELIMINARY RISK ASSESSMENT

The proposed project is located on the Buffalo Lake outlet near the upper end of the Buffalo Creek watershed in rural Minnehaha County. Buffalo Creek eventually discharges into Buffalo Slough\Skunk Creek. Buffalo Lake is dissected by a County highway with two 6 foot diameter culverts allowing water to pass through the highway. Since the outlet is on the north side of the highway and 80% of the lake is located on the south side, the culverts control the flow from the south to the outlet. Therefore, in the unlikely event of a structure failure, the culverts would control the majority of flow exiting the lake.

No residences or other buildings are located immediately downstream adjacent to the channel. A graveled section line road with an open bridge exists approximately 1/2 mile downstream from the structure location. The bridge has an open area of about 20 feet long by 4-5 feet high. With the area being rural and agricultural in nature, Buffalo Creek continues to cross section lines as it makes its way to Buffalo Slough\Skunk Creek.

Based on information obtained in the field, data present on the U.S.G.S. quadrangular maps, the configuration of the structure (steel sheet pile weir completely across the channel and securely anchored into the existing channel banks) and the outlet channel characteristics (low velocity), the downstream crossings should be in little danger in the unlikely event of a failure. Therefore, the risk to the general public would appear minimal.

DESIGN:

The watershed consists of approximately 19.6 square miles with the runoff from about 4.1 square miles entering via a "west-northwest" drainage and runoff from the remaining 15.5 square miles entering Buffalo Lake from a "southern" drainage. As previously explained, a highway crosses the lake and separates the two watersheds. Land use consists of primarily row crops with some small grain and pasture.

Although an outlet channel currently exists, the channel bottom and highway culvert inverts are too high to allow complete drawdown of Buffalo Lake. The existing runout elevation of the outlet channel is approximately 1648.0. The invert elevations of the twin 6 foot diameter corrugated metal pipes (CMP) are at about 1646.8. The deepest area in the southern and northern parts of the lake are at elevation 1645.4 and 1646.4, respectively. Hence, approximately 2.5 feet of water exists in the lake south of the highway at the existing channel runout elevation of 1648.0. However, to bring more permanency to the marsh and enhance the production potential, water levels need to be elevated slightly and maintained. To accomplish this objective, a steel sheet weir with a 30 foot long crest at elevation 1650.0 is proposed. The weir will be constructed completely across the outlet channel and tied into the existing channel banks. No fill material will be required as the weir structure and inlet channel will be wider than the existing channel. A transition will be made from the new structure channel width to the existing channel.

The weir was sized to accommodate the outlet channel capacity. The outlet channel is relatively small as compared to the watershed, and has a very flat gradient (0.000672 ft\ft). Its capacity is limited making it the controlling factor in the design as will be shown later in this report. The channel capacity is included on

the "Discharge Curve" attached to this report. The outlet channel as it currently exists will not pass the larger events without overtopping its banks. With the steel weir in place, the channel will continue to function as it currently does, overflowing its banks for the larger events. A comparison of the existing situation versus the proposed design is included in this report.

The Soil Conservation Service (SCS) TR-20 Hydrology program was used to determine the discharge at various reservoir stages with respect to time. The program uses accepted procedures to develop inflow and outflow hydrographs. The spillway and culvert capacities were calculated using discharges developed by the weir flow formula and formulas for calculating head loss through corrugated metal pipe. Manning's equation for open channel flow was used to estimate the outlet channel capacity. A discharge curve for the proposed structure is attached.

My hydrologic analysis would appear somewhat conservative as some storage exists in the watershed that is not accounted for in the analysis. Also, the inlet channels intersect several road crossings upstream of Buffalo Lake that could reduce peak flows for certain events.

The following is a relationship between peak inflows, corresponding outflows, and reservoir elevations for both the existing and the proposed conditions:

EVENT	<u>EXISTING SITUATION</u>		<u>WITH 30' WEIR @ 1650.00</u>		
	<u>SOUTH MARSH PEAK ELEV.#</u>	<u>NORTH MARSH PEAK ELEV.*</u>	<u>SOUTH MARSH PEAK ELEV.#</u>	<u>NORTH MARSH PEAK ELEV.</u>	<u>OUTLET CHANNEL*</u>
1 YR	1649.38	1649.72	1651.12	1650.82	1650.68
2 YR	1650.16	1650.48	1651.78	1651.17	1651.61
5 YR	1651.50	1651.73	1652.94	1651.69	1652.71
10 YR	1652.42	1652.52	>1653.20	1652.06	1653.35
25 YR	>1653.20	1653.24	>1653.20	1652.50	>1653.50
50 YR	>1653.20	>1653.50	>1653.20	1652.92	>1653.50
100 YR	>1653.20	>1653.50	>1653.20	1653.21	>1653.50

- Top of the highway that runs between the north and south portions of the marsh (lake) is considered to be at elevation 1653.20.

* - Top of the channel banks on the outlet channel is considered to be at elevation 1653.50.

As can be seen in the table above, the project as proposed and designed will cause a slight increase over the existing situation for predicted peak water elevations during various 24 hour rainfall events. The slight increase in predicted water surface elevations

is primarily due to the loss of storage due to the additional 2 feet of water being held in the marsh. The outlet channel is the main bottleneck in the system for both the existing situation as well as the proposed. As shown, with a 30' weir in place, the outlet channel is still the controlling point with the exception of the 1 year event. Therefore, it would do little good to install a larger weir because the outlet channel couldn't handle the flows anyway. The outlet channel will become completely inundated for the larger events under the proposed situation as it does under the existing scenario. Damage to or the potential for failure of the structure should be minimal under those large events because the steel structure will be completely tied into the existing channel banks. Also, no compacted fill will be required. The velocities in the outlet channel will be very low due to its gradient.

Another factor to be considered in the design is the potential for inundating the highway upstream that dissects the marsh\lake. As shown in the table, the highway is predicted to be overtopped for various events, even under the existing scenario. With the project in place, the highway could theoretically be overtopped for an event with a higher frequency, i.e., the 10 year event versus the 25 year event. Of course, one must remember the conservative nature of the hydrology used here and the fact that these predictions are based on the event (rainfall) occurring over the entire 19.6 square mile watershed. Also, a safety valve of sorts is built into the design - that being complete drawdown capability via two 5 foot wide stoplog bays. The 10 foot wide bay exceeds the bottom width of the existing channel. Therefore, if an immediate drawdown is necessary due to a large upstream event or some other circumstance, the logs can be pulled and outlet flows will be the same as under the existing situation.

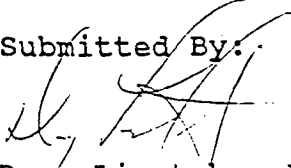
In summary, any artificial increase in water levels to restore and maintain Buffalo Lake will cause a slight increase in predicted water surface elevations as compared to the existing situation. With the outlet channel being the primary restriction, alternatives in structure design are somewhat limited when trying to minimize upstream bounce. It is my opinion that the project will have minimal impacts upstream and downstream. As a matter of note, the Minnehaha County Highway Department was consulted regarding impacts on the highway upstream of the structure.

In reference to the Classification of the Proposed Dam and subsequent design requirements and if for some reason the barrier is considered a "dam," it appears a variance from the 100 year spillway design requirement may be in order since the outlet channel cannot pass 100 year flows under the existing situation without overtopping channel banks. The barrier would be expected to pass the 100 year flows with little or no damage, and little chance of failure.

PLANS AND SPECIFICATIONS:

A preliminary set of plans is submitted with the Design Report. A set of standard construction specifications has previously been submitted to the Division of Water Rights for the purpose of permit review.

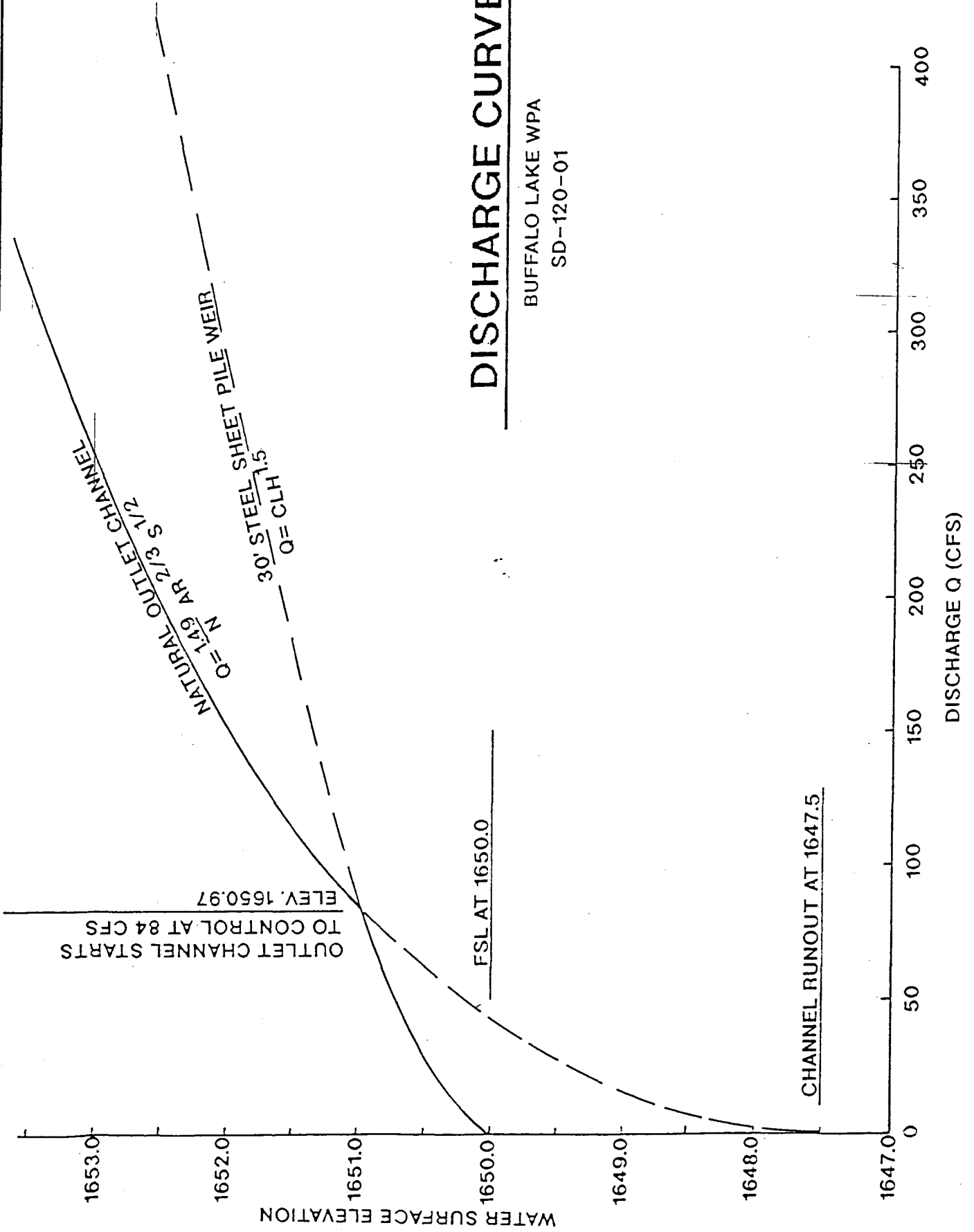
Submitted By:



Doug Lipetzky, P.E
PE-4499

DISCHARGE CURVE

BUFFALO LAKE WPA
SD-120-01



OUTLET CHANNEL STARTS
TO CONTROL AT 84 CFS
ELEV. 1650.97

NATURAL OUTLET CHANNEL
O = 1.49 AR 2/3 S 1/2

30' STEEL SHEET PILE WEIR
O = CLH 1.5

FSL AT 1650.0

CHANNEL RUNOUT AT 1647.5

WATER SURFACE ELEVATION

DISCHARGE Q (CFS)



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

IN REPLY REFER TO:

BA/EN
WR SD
Mail Stop 60190

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

AUG 27 1992



South Dakota Department of
Water and Natural Resources
Foss Building, 523 East Capitol
Pierre, South Dakota 57501-3181

Dear Sir or Madam:

The Fish and Wildlife Service, in conjunction with Ducks Unlimited, Inc., (DU) propose construction of a dam to bring more permanency and enhance production potential at the Buffalo Lake Waterfowl Production Area, Minnehaha County, South Dakota.

Enclosed are the following documents pertaining to the project:

1. Form 2, Application for Permit to Appropriate Water (in duplicate);
2. Form 2A, Supplemental Information (in duplicate);
3. Design Report and Engineering drawings (five sheets);
4. Filing Map No. 6R-SD-742-WR-P-24.0; and
5. Money Order in the amount of \$450.

Please advise this office of the name and address of the newspaper selected to publish the Notice of Hearing so that we can forward the required Authorization of Advertisement prior to publication. We request that you allow at least 10 days for the Service to properly review and prepare the necessary documentation before notifying the newspaper of the need to publish.

For technical information, please contact Doug Lipetzky of DU, at 701/258-5599. If you have any other questions or require further information, please contact Cheryl Williss in our Engineering

South Dakota Department of
Water and Natural Resources

2

Division, Water Rights Branch, at (303) 236-5321. Also, please direct any correspondence concerning this project to the attention of the Division of Engineering.

Sincerely,



/s/ WILBUR N. LADD JR.
Acting Regional Director

Enclosures

cc: Ducks Unlimited, Inc.
6115 East Main Avenue
Bismarck, ND 58501

Water Rights Division - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: **USFWS Water Permit Application No. 5707-3**

ADDRESS: Box 25486, Denver Federal Building COUNTY: Minnehaha

DATE: 10/21/92 TELEPHONE: _____

RE: Meeting with Cheryl Williss, Bob Green and Tim Olson

COMMENTS:

We met regarding USFWS's Water Permit Application No. 5707-3 for Buffalo Lake and the existence Vested Right No. 5707-3 held by the SD Dept. of Game, Fish & Parks for the same lake. Briefly, discussion was that G, F & P would be willing to transfer this vested right to the USFWS if a memorandum of agreement could be worked out.

The USFWS requested that Application No. 5707-3 be put on hold until they can determine the existing outlet elevation and compare that to the proposed outlet elevation of the new structure. They will then amend this application for the increase water storage.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Eric Lundberg

QUITCLAIM

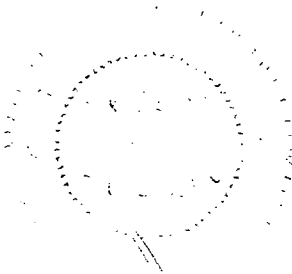
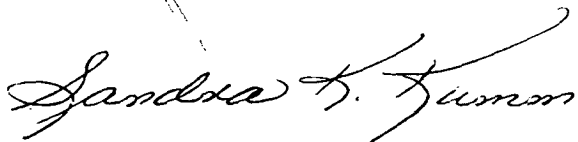
THIS INDENTURE, made this 13th day of January, 1993, between the South Dakota Department of Game, Fish and Parks, in the County of Hughes and State of South Dakota, grantors, and the UNITED STATES OF AMERICA and its assigns, grantee,

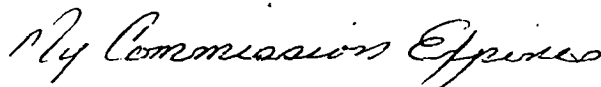
WITNESSETH, that the grantors, for and in consideration of the sum of one dollar (\$1) to them in hand paid by the grantee, the receipt whereof is hereby acknowledged, do by these presents, Convey and Quitclaim unto the grantee and its assigns, forever, pursuant to a MEMORANDUM OF UNDERSTANDING dated the 13th day of January, 1993, all right, title and interest in and to Water License No. 856-3, a vested water right to maintain the historic water level elevation of Buffalo Lake in Minnehaha County.

The above described water right is acquired for the use and benefit of the Fish and Wildlife Service, United States Department of the Interior.

IN WITNESS WHEREOF, the grantors hereunto set their hands the day and year first above written.




 1/14/93

 3/15/96

MEMORANDUM OF UNDERSTANDING

between the

U.S. FISH AND WILDLIFE SERVICE
and
SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS

I. PURPOSE

This agreement is entered into between the U.S. Fish and Wildlife Service, hereinafter referred to as the Service, and the South Dakota Department of Game, Fish and Parks, hereinafter referred to as the Department, for the purpose of facilitating a transfer of water right from the Department to the Service.

II. AUTHORITY

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j), as amended and Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718-718h) as amended.

III. BACKGROUND

Buffalo Lake is a meandered lake located in Minnehaha County, South Dakota. In 1961, the Department filed an application for vested water right for the purpose of public recreation, and was granted Water License No. 856-3. The Service acquired Buffalo Lake and adjacent lands between 1971 and 1991 and the area, designated as the Buffalo Lake Waterfowl Production Area, is a unit of the National Wildlife Refuge System.

IV. SCOPE OF WORK

A. The Department shall:

1. transfer, to the Service, by quit claim deed, all right, title and interest in and to Water License No. 856-3 with a priority date of 1889. Water License No. 856-3 is a vested right to maintain the historic water level of Buffalo Lake.

B. The Service shall:

1. in cooperation with Ducks Unlimited, raise the outlet elevation of Buffalo Lake to bring more permanency to the marsh and enhance the waterfowl production potential.

2. continue to manage Buffalo Lake Waterfowl Production Area under rules and regulations prescribed by the Secretary of Interior. Those rules and regulations provide access to the public for hunting, trapping and other forms of recreation unless resource needs require closure for short periods of time.

V. PERIOD OF PERFORMANCE

- A. This agreement remains in effect during the entire period of time that the Service has title to Water License No. 856-3.

VI. PROJECT OFFICERS

Assistant Regional Director
Refuges and Wildlife
U.S. Fish and Wildlife Service
P.O. Box 25486, Denver Federal Center
Denver, CO 80225

Secretary
Department of Game, Fish and Parks
Division of Wildlife
523 E. Capitol Avenue
Pierre, SD 57501

VII. SPECIAL PROVISIONS

- A. Any change to this agreement shall not be binding unless said change is mutually agreeable to both parties, issued in writing, and signed by an authorized official of each party.

Dept. of Game, Fish and Parks

U.S. Fish and Wildlife Service

Signature: 

Signature: 

Title: Department Secretary

Title: /s/ WILBUR N. LADD JR.
ASST. REGIONAL DIRECTOR

Date: January 13, 1993

Date: JAN - 8 1993



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Mountain-Prairie Region

IN REPLY REFER TO:

BA EN

WR SD

Mail Stop 60190

MAILING ADDRESS:

Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:

134 Union Blvd.
Lakewood, Colorado 80228

FEB 03 1993



Mr. Eric Gronlund
South Dakota Department of
Environment and Natural Resources
Foss Building, 523 East Capitol
Pierre, South Dakota 57501-3181

Dear Mr. Gronlund:

Enclosed is a copy of a quitclaim deed from the Department of Game, Fish and Parks, and a Notice of Transfer of Ownership for Water License No. 856-3. Please change your records to show that the Fish and Wildlife Service (Service) is the owner of this water right and add these documents to the official file.

According to a recent Ducks Unlimited survey of Buffalo Lake, the existing outlet elevation is 1648.0 feet msl. At this elevation, the lake has a surface area of 275 acres and a volume of 310 acre-feet. We would appreciate it if you could bring this information to the attention of the Water Management Board and request that they validate the current elevation for purposes of quantifying the volume of water covered by Water License No. 856-3.

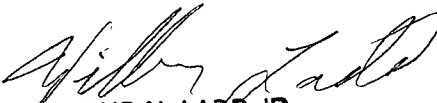
On August 27, 1992, the Service filed an application for permit to appropriate water in connection with a proposed project. Ducks Unlimited has designed a structure to raise the outlet elevation to 1650.0 feet msl. Please amend that application to reflect a storage volume of 641 acre-feet (the difference between the current volume of 310 acre-feet and the proposed capacity of 951 acre-feet). The seasonal use required to offset evaporation and maintain the management level remains at 260 acre-feet.

Mr. Eric Gronlund

2

I appreciate your assistance on this matter. Please contact Cheryl Williss of the Division of Engineering, at 303/236-5321 if you have any questions.

Sincerely,


Acting /s/ WILBUR N. LADD JR.
Regional Director

Enclosures

cc: SD Dept of Game, Fish and Parks
Attention: Tim Olson

Water Rights Division - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: U.S. Fish & Wildlife Service WP Appl.No. 5707-3

ADDRESS: _____ COUNTY: Minnehaha

DATE: February 10, 1993 TELEPHONE: 303 236-5321

RE: Call to Cheryl Williss regarding their Feb. 3, 1993 letter

COMMENTS:

I contacted Cheryl Williss of the USFWS regarding their letter on the transfer of Vested Water Right No. 856-3 for Buffalo Lake, validation of No. 856-3 and the application to increase the outlet elevation which increases the storage.

The USFWS submitted a transfer of ownership for WR No. 856-3 which is currently held by the Dept. of Game, Fish & Parks. I stated that a \$2.50 transfer fee is required prior to the transfer taking place. Mrs. Williss stated they must have inadvertently forgot the fee. I told her I would have an invoice sent to her for the transfer fee. Karen Schlaak sent invoice 2/10/93.

Regarding the validation, I told Mrs. Williss that we sent out a Notice for the validation of the recognized Vested Water Right No. 856-3. The validation will reflect the outlet elevation of 1648.0 feet msl with the corresponding storage of 310 acre feet. This will go before the Water Management Board at their upcoming March 3, 1993 meeting. A representative of the USFWS should not need to attend this hearing.

Finally, I stated I would amend Application No. 5707-3 to reflect the proposed structure to raise the outlet elevation to 1650.0 feet msl with the corresponding additional storage of 641 acre feet. The seasonal use of 260 acre feet annually will remain on the application.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Eric Stromlund



DUCKS
UNLIMITED
INC.

Great Plains Regional
Office
3502 Franklin Ave.
Bismarck, ND. 58501

Fax Number: (701) 258-8364

Facsimile Cover/Memo Page

Date: February 18, 1993

Please deliver to:

Name: Lynn Beck

Firm: SD Div. of Water Rights

Fax No. 605-773-6035

From: Doug Lipetzky, P.E. 

Re: Buffalo Lake Project

Message: Lynn - Per our conversation, I did some checking on the three items we discussed. First, in the SW of the SW of Section 2, attached is a map that shows the approximate Fish & Wildlife Service property line in that area. I checked with Tom Tornow of the Madison FWS office and he said they own up to about 2-3 feet west of the fence line corner we located during our survey. Therefore, the 1650 contour is well below the property line.

Regarding the farmstead in the SE of the SE of Section 10, I've sketched in the approximate property line around the farm. According to our survey and Tom Tornow's comments, the terrain rises very quickly from the basin up to the farm property. Thus, there should not be any problem in that area either.

Finally, Tom met with Minnehaha County Highway Engineer, Bobby Meister at Buffalo Lake on March 22, 1992. As seen in the attached correspondence, Mr. Meister reviewed the Preliminary Design Report (which is the same as the Final Report) and granted approval to proceed with the project. No design changes were made from when Mr. Meister reviewed the project.

If you have any additional questions, please feel free to give me a call. Thank you.

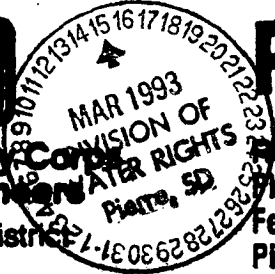
Number of pages following this cover sheet: 5

Please call the receptionist at Ducks Unlimited, Inc. (701) 258-5599 if you experience any problems in transmission.

Thank you.



US Army Corps
of Engineers
Omaha District



Public Notice

Reply to:
Pierre Regulatory Branch
Federal Building, Room 317
Pierre, South Dakota 57501

Application No: 199330062
Date: March 10, 1993
Expiration Date: March 31, 1993

CEMRO-OP-R
US Fish and Wildlife Service
Water Control Structure/Wetland Enhancement
Buffalo Lake

21-DAY NOTICE

NOTICE OF PERMIT PENDING

The application of the US Fish and Wildlife Service, PO Box 48, Madison, South Dakota, 57042, for approval of plans and issuance of a permit under authority of the Secretary of the Army is being considered by the District Engineer, US Army Engineer District, Omaha, Nebraska.

The applicant requests authorization to construct a water control structure on the overflow ditch (outlet channel) of the partially drained Buffalo Lake for water level management. The project is located at the Buffalo Lake Waterfowl Production Area in Section 2, Township 104 North, Range 52 West, Minnehaha County, South Dakota.

The proposed project will consist of the excavation/widening of the existing outlet channel and construction of a water control structure (steel sheet weir with stoplog bay). The weir structure, with a crest length of thirty (30) feet, will be constructed completely across the outlet channel and tied into the channel banks. A transition will be made from the new structure channel width to the existing channel. The downstream side of the structure will be riprapped with approximately one hundred thirty-one (131) cubic yards of rock. Any material removed from the wetland will be placed at an upland site.

The purpose of the project is to decrease water level fluctuations in the three hundred fifty-two (352) acre lake (classified as a semi-permanent wetland with emergent vegetation) for enhancement of the resource, thus, improving waterfowl nesting and brood rearing habitat and providing additional water for carry over into years with less than normal precipitation.

Certification that the proposed project will not violate applicable water quality standards has been requested from the Regional Administrator, US Environmental Protection Agency, Region VIII, One Denver Place, Suite 1300, 999 - 18th Street, Denver, Colorado.

Omaha District will comply with the National Historic Preservation Act of 1966 and 36 CFR § 800. We have checked the National Register of Historic Places and "its current supplements," and no property listed in the Register or proposed for listing is located in the permit area. This is the extent of our knowledge about historic properties in the permit area at this time. However, we will evaluate input by the State Historic Preservation Officer and the public in response to this public notice, and we may conduct or require a reconnaissance survey of the permit area or check for unknown historic properties, if warranted.

In compliance with the Endangered Species Act, our review indicates that the proposed activity will not affect species designated as threatened or endangered pursuant to the Endangered Species Act or their critical habitat.

The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposals must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the activity will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production, and, in general the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reason for holding a public hearing. The request must be submitted to the US Army Corps of Engineers, Pierre Regulatory Office, Federal Building, Room 317, Pierre, South Dakota 57501.

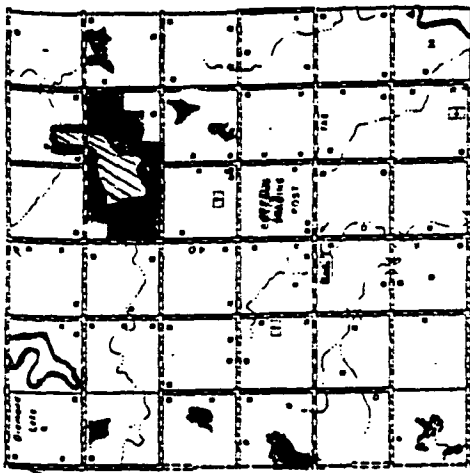
Any interested party (particularly officials of any town, city, county, state, Federal agency, or local association whose interests may be affected by the proposed work) is invited to submit to this office, written facts, arguments, or objections on or before March 31, 1993. Any agency or individual having an objection to the proposed work should specifically identify it as an objection with clear and specific reasons. Comments, both favorable and unfavorable, will be accepted, made a part of the record and will receive full consideration in subsequent actions on this permit application. All replies to the public notice should be addressed to the address listed in the previous paragraph. Mr. Thomas A. Lowin, telephone number (605) 224-8531, may be contacted for additional information.

Comments received after the close of the business day on the expiration date of this public notice will not be considered.

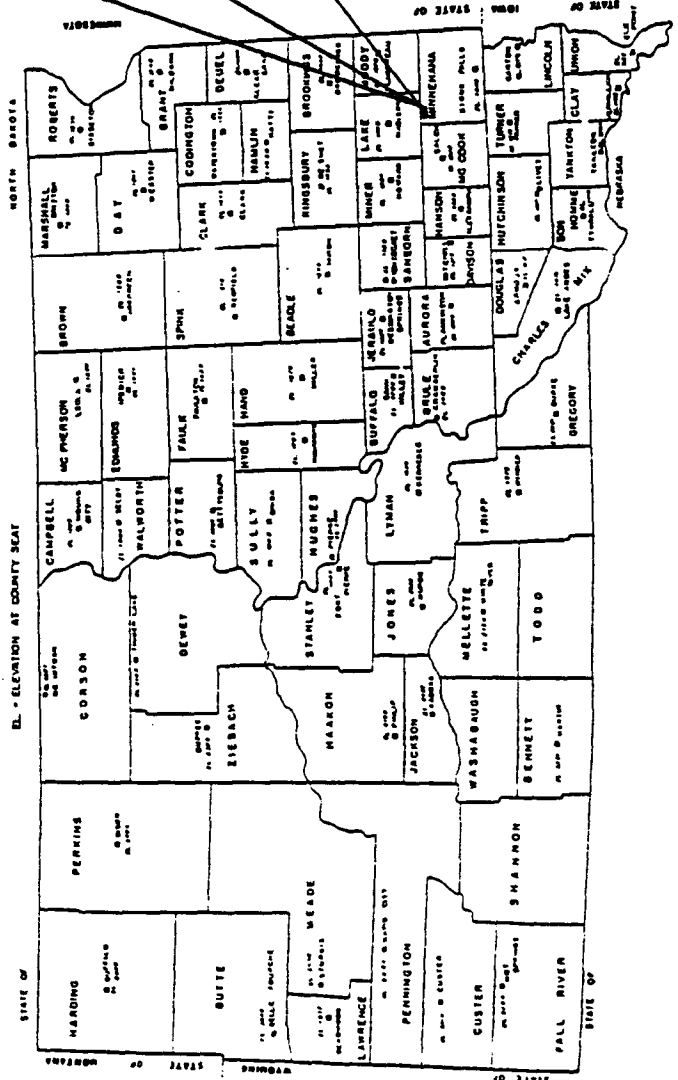
This project, if authorized, will be under the provisions of Section 404 of the Clean Water Act.

Drawings showing the location and extent of the work are attached to this notice.

Buffalo Lake



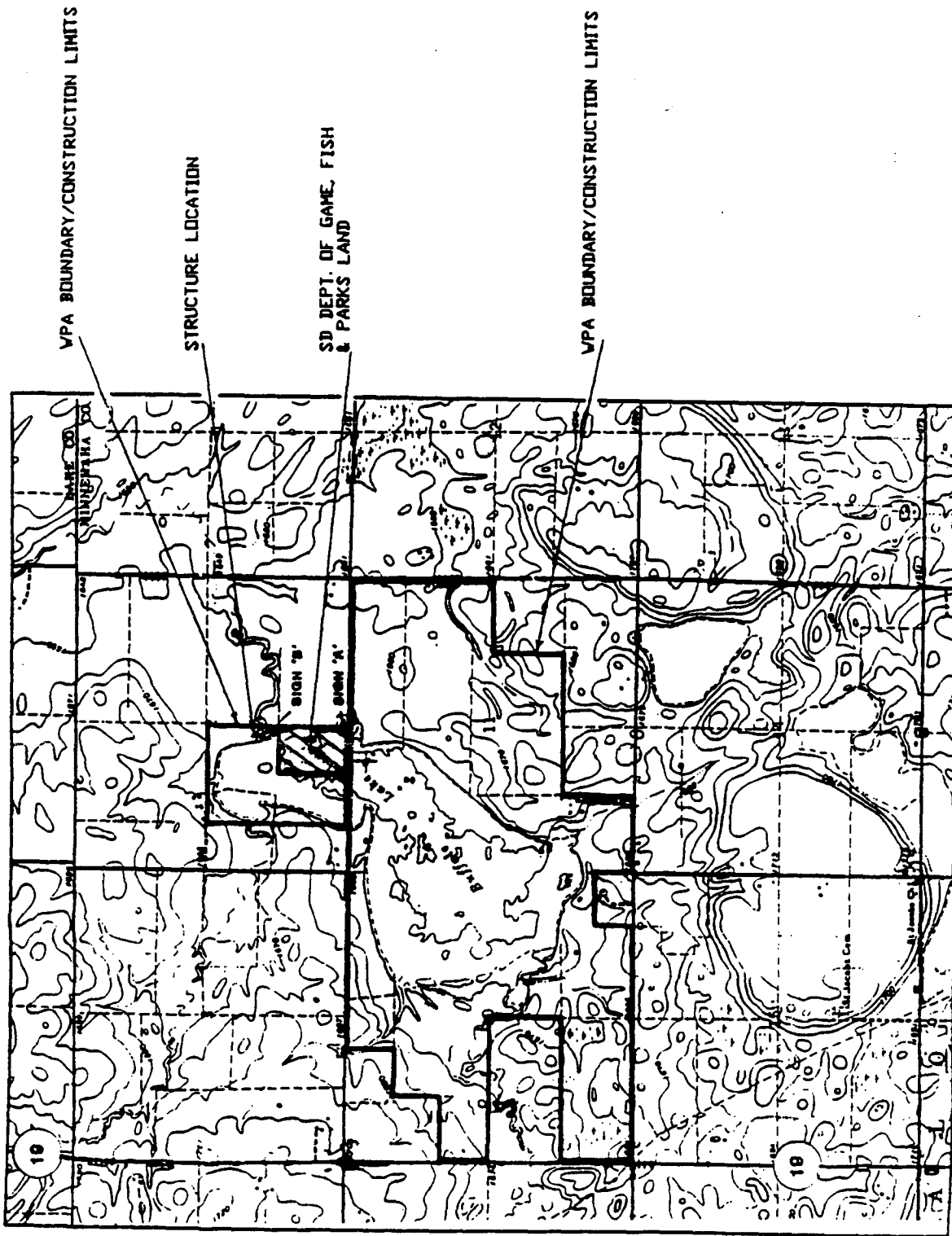
SOUTH DAKOTA



PURPOSE: Wetland Enhancement
 DATUM
 ADJACENT PROPERTY OWNERS:
 1
 2

IN Buffalo Lake
 AT Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 1 OF 7 DATE 5 March 1993

TO MADISON



LOCATION MAP

SCALE: 1"=2000'

PURPOSE: Wetland Enhancement

DATUM

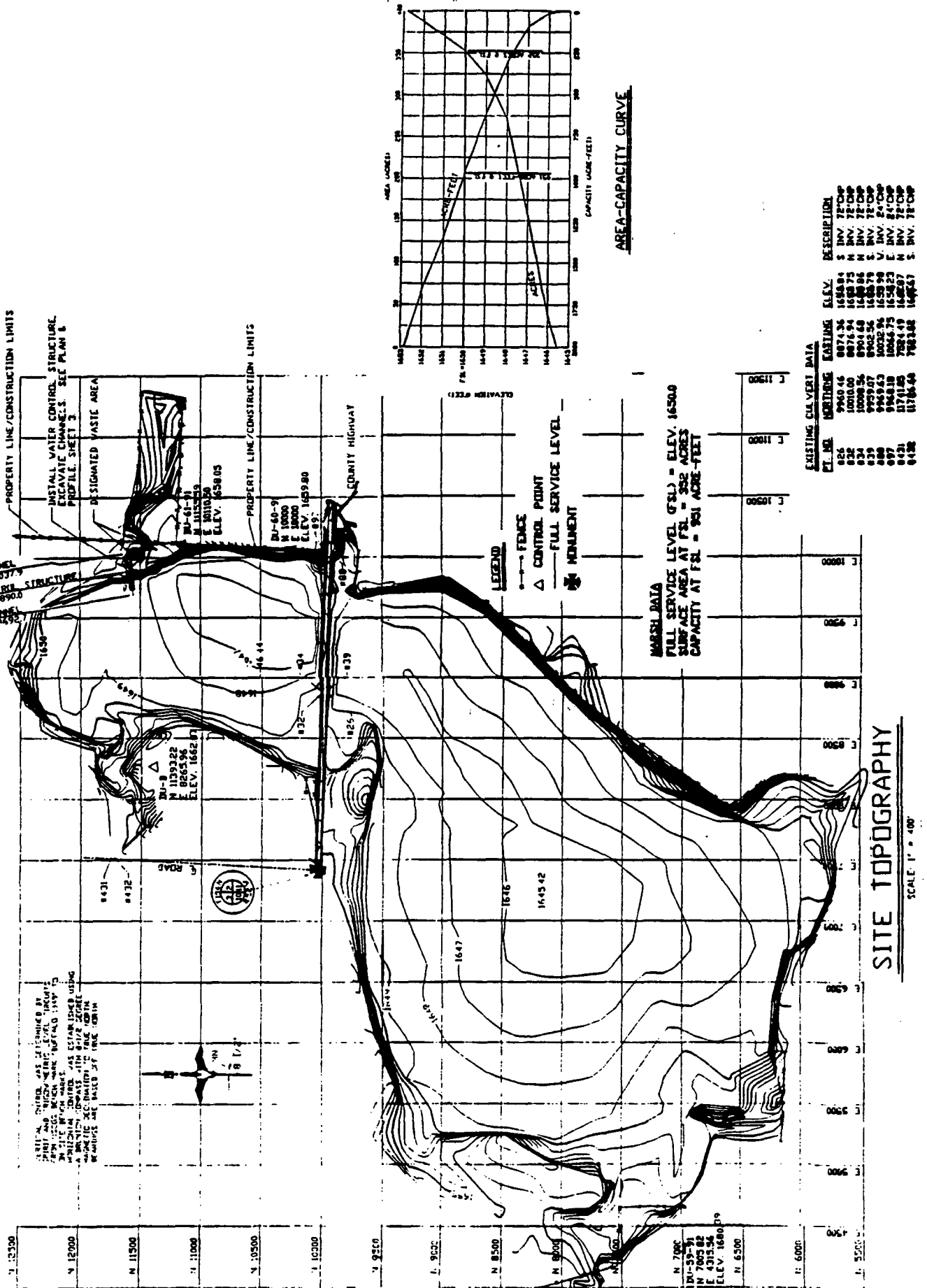
ADJACENT PROPERTY OWNERS:

- 1
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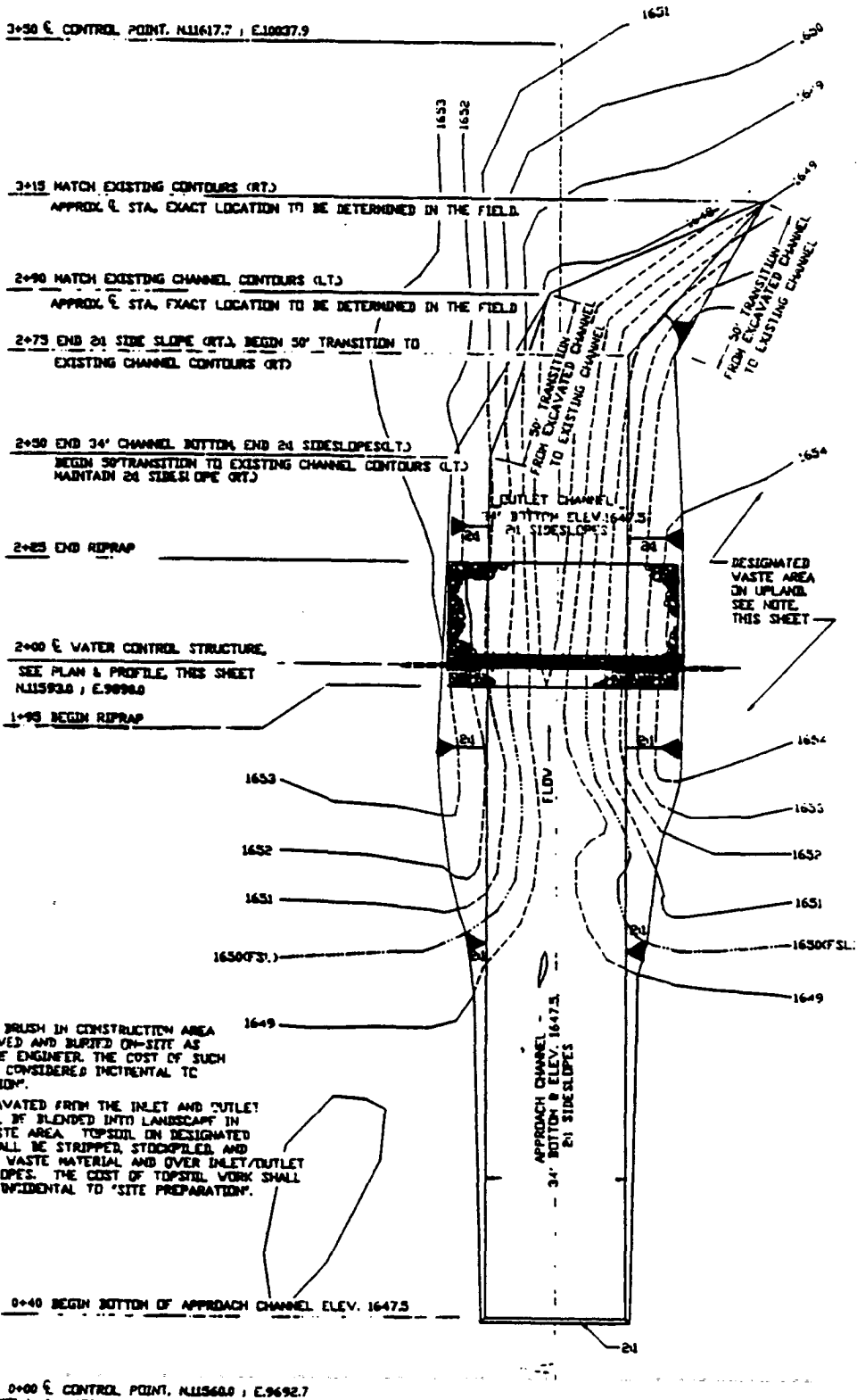
IN Buffalo Lake
 AT Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 2 OF 7 DATE 5 March 1993

PURPOSE: Wetland Enhancement
 DATUM
 ADJACENT PROPERTY OWNERS:
 1
 2

IN Buffalo Lake
 AT Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 3 OF 7 DATE 5 March 1993



SITE TOPOGRAPHY
 SCALE 1" = 400'



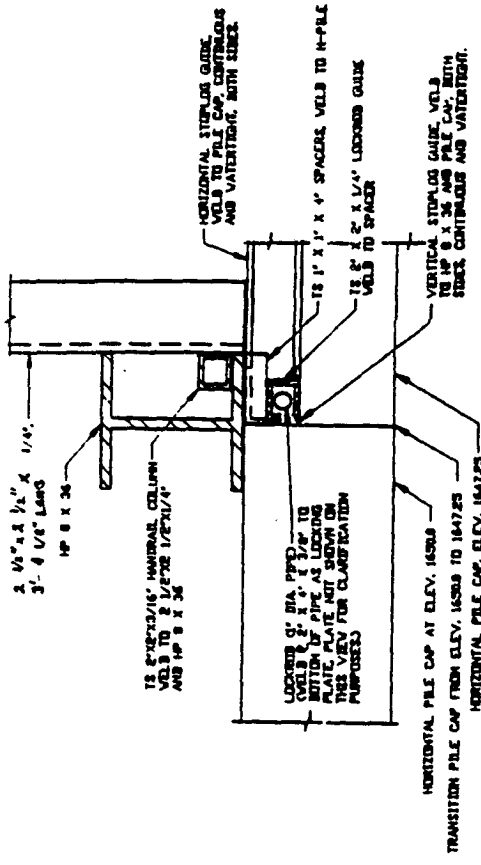
NOTE:
 ANY TREES OR BRUSH IN CONSTRUCTION AREA SHALL BE REMOVED AND BURIED ON-SITE AS DIRECTED BY THE ENGINEER. THE COST OF SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".
 MATERIAL EXCAVATED FROM THE INLET AND OUTLET CHANNELS SHALL BE BLENDED INTO LANDSCAPE IN DESIGNATED WASTE AREA. TOPSOIL ON DESIGNATED WASTE AREA SHALL BE STRIPPED, STOCKPILED, AND RESPREAD OVER WASTE MATERIAL AND OVER INLET/OUTLET CHANNEL SIDESLOPES. THE COST OF TOPSOIL WORK SHALL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".

SITE PLAN

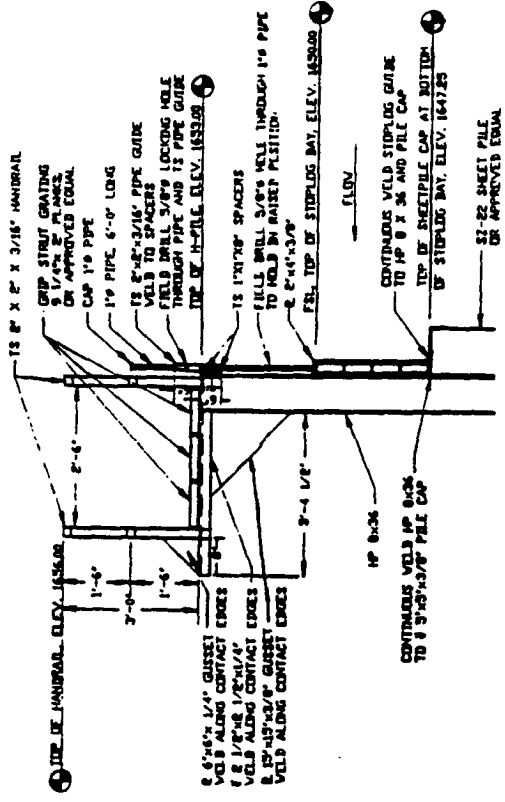
SCALE: 1" = 20'

PURPOSE: Wetland Enhancement
 DATUM
 ADJACENT PROPERTY OWNERS:
 1
 2

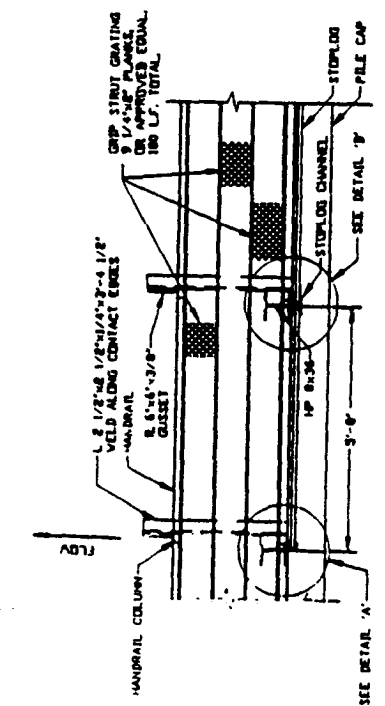
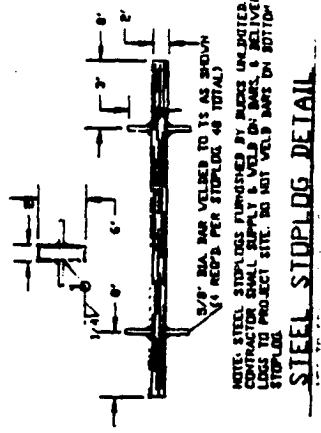
IN Buffalo Lake
 Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 4 OF 7 DATE 5 March 1993



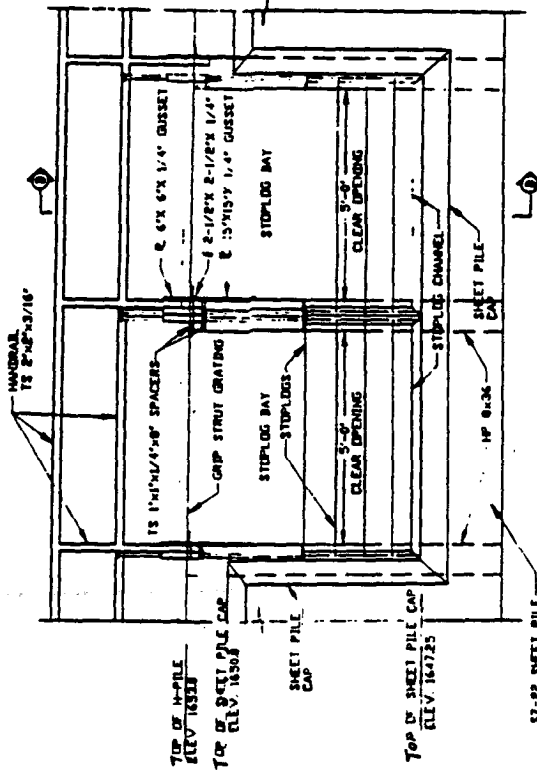
DETAIL 'A'
NOT TO SCALE



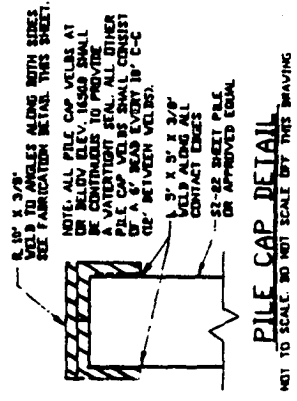
SECTION 'D-D'
NOT TO SCALE



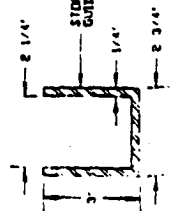
PARTIAL PLAN VIEW
NOT TO SCALE



PARTIAL UPSTREAM ELEVATION
NOT TO SCALE



PILE CAP DETAIL
NOT TO SCALE, DO NOT SCALE BY THIS DRAWING

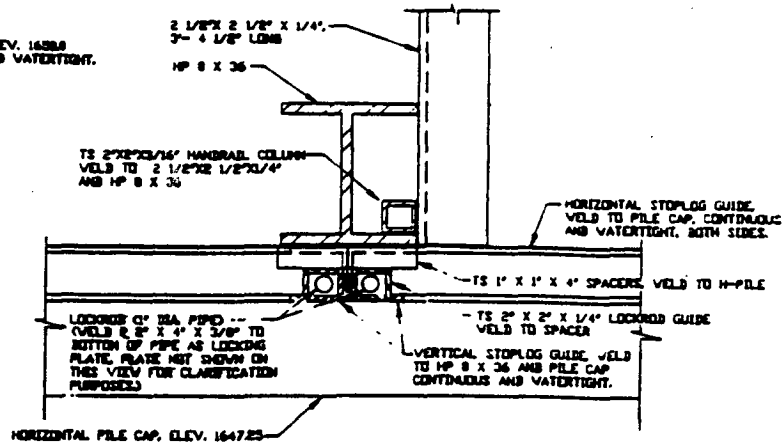


STOPLOG GUIDE DETAIL
NOT TO SCALE, DO NOT SCALE BY THIS DRAWING

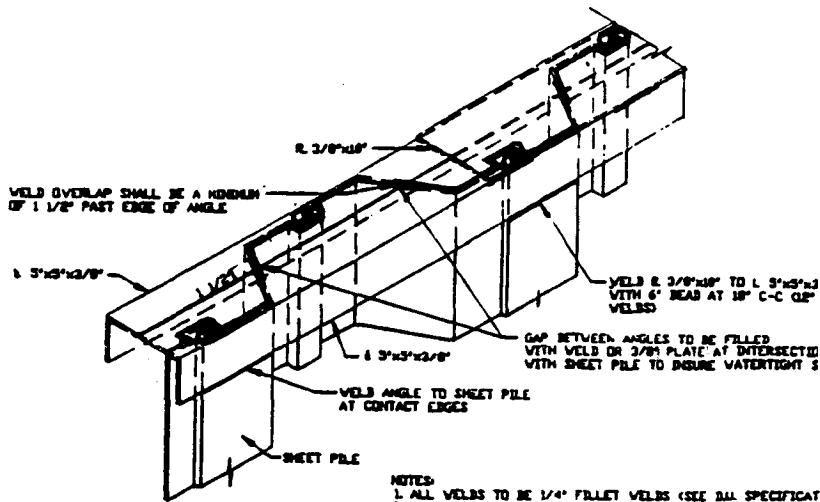
PURPOSE: Wetland Enhancement
 DATUM
 ADJACENT PROPERTY OWNERS:
 1
 2

IN Buffalo Lake
 AT Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 6 OF 7 DATE 5 March 1993

NOTE: ALL WELDS BELOW F.S.L. ELEV. 1638.8 SHALL BE CONTINUOUS AND WATERTIGHT.



DETAIL 'B'
NOT TO SCALE

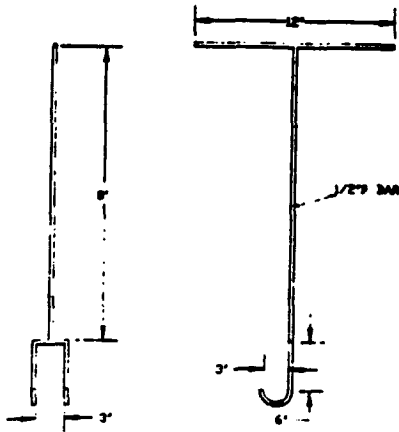


NOTES:

1. ALL WELDS TO BE 1/4" FILLET WELDS (SEE ALL SPECIFICATIONS)
2. ALL WELDS WILL BE SUBJECT TO LAPING. ANY AREAS FAILING WILL BE REWELED BEFORE ACCEPTANCE OF PROJECT.
3. TOP OF SHEET PILE SHALL BE TRIMMED TO GRADES INDICATED ON PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED FROM THE COST OF "SHEET PILE INSTALLATION".
4. ABOVE F.S.L. PILE CAP NEED NOT BE WATERTIGHT. WELDS SHALL CONSIST OF A 6" BEAD AT 18" C-C (12" BETWEEN WELDS).
5. LENGTH OF PILE CAP AS SHOWN ON PLANS.
6. ALL WELDS AROUND STOPLOG BAY TO BE CONTINUOUS TO INSURE A WATERTIGHT SEAL. WELD STOPLOG GUIDE CHANNELS TO PILE CAP, BOTH SIDES.

**SHEET PILE CAP
FABRICATION DETAIL**

NOT TO SCALE



STOPLOG LIFTING HOOK DETAIL
NOT TO SCALE

<p>DUCKS UNLIMITED INC.</p>	PROJECT NO. 89-100-B	DESIGNED BY
	<p>BUFALO LAKE WPA</p>	
<p>WETLAND ENHANCEMENT PROJECT</p>	<p>SHEET PILE AND CATWALK FABRICATION DETAILS</p>	<p>DRAWN BY</p>
<p>DATE 3-11-93</p>	<p>APPROVED BY</p>	<p>APPROVED BY</p>

PURPOSE: Wetland Enhancement
 DATUM
 ADJACENT PROPERTY OWNERS:
 1
 2

IN Buffalo Lake
 AT Sec. 2, T104N, R52W
 COUNTY OF Minnehaha STATE SD
 APPLICATION BY US Fish & Wildlife Service
 SHEET 7 OF 7 DATE 5 March 1993

Report on Application No. 5707-3
U.S. Fish and Wildlife Service
February 19, 1993

This application proposes to appropriate an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use) by increasing the outlet elevation of Buffalo Lake. The outlet is located in the NE1/4 SW1/4 Section 2 with water being impounded in portions of the SW1/4 Section 2, E1/2 Section 10, NW1/4, NW1/4 SW1/4 Section 11; all in T104N, R52W. This application proposes to increase the outlet elevation for Buffalo Lake to 1650.0 fmsl. Vested Water Right No. 856-3 and this application, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 fmsl. Water is to be used to provide habitat for fish and wildlife production.

According to the Design Report by Doug Lipetzky, Regional Engineer for Ducks Unlimited Inc., submitted with the application, the structure is less than 6' in height and therefore is not considered a "dam" for the purposes of Chapter 74:02:08 "Safety of Dams". However, if the structure was to be considered a "dam", it would be a Category 3, Intermediate size dam, evidenced by the risk assessment and storage capacity in the Design Report.

The effective height of the dam is 5.5' with a storage capacity of 2290 acre-feet to the crest and 951 acre-feet to the full service level. The structure consists of a steel sheet weir with a 34' long crest at elevation 1650.0 fmsl. The weir will be constructed completely across the outlet channel and tied into the banks. The weir is sized to accommodate the outlet channel capacity, which is the controlling factor in the design.

The weir has a discharge capacity, with the stoplogs removed, of approximately ~~680~~⁶³⁰ cfs. The existing two 6', culverts in the road embankment at the north end of the lake, have a capacity of approximately 560 cfs. This makes the culverts the controlling factor before water reaches the outlet. The outlet channel will handle approximately 470 cfs. A 25 year event, over the entire 19.6 square mile drainage area, will result in an inflow of approximately 1114 cfs. The outlet channel will become inundated during large events whether the weir is in place or not. Flood elevations would be increased slightly (see Table No. 1) due to the loss of storage because of the proposed additional 2' of water to be held in the lake.

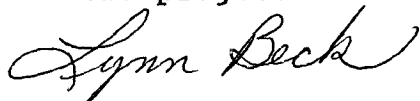
Also to be considered is the potential for inundating the county road which bisects the lake at the north end. With the weir in place the road could be overtopped during a 10 year event. Without the weir the road would be inundated during a 25 year event (see Table No. 1). The Minnehaha County Highway Engineer, Bobby Meister, reviewed the proposed project and granted approval to proceed on behalf of the County of Minnehaha. Minnehaha County did reserve the right to withdraw its support and approval of the proposed project if during the environmental assessment and permitting process, substantial local opposition would be presented.

The lands that would be inundated by the increase in the outlet elevation are owned by the U.S. Fish and Wildlife Service (F&WS) and the SD Department of Game Fish and Parks (GF&P). An agreement allows transfer of Vested Water Right No. 867-3 from the GF&P to F&WS. GF&P has agreed to the inundation of some of its lands to accommodate an outlet elevation of 1650.0.

The structure will be located across the Buffalo Lake outlet, approximately 12 miles south of Madison, South Dakota. GF&P holds two Vested Right claims on Buffalo Creek. One is Vested Right No. 867-3 which is to be transferred to the F&WS. Vested Right No. 794-3 is for 1700 acre-feet to fill Buffalo Slough which is downstream from Buffalo Lake.

Conclusions:

1. There is water available from the drainage.
2. Existing water rights will not be impaired.
3. Lands to be inundated belong to the applicant, F&WS, and GF&P who has agreed to allow the flooding.
4. Minnehaha County, as relevant to the county road, has approved of the project.



Lynn Beck
Natural Resource Engineer III

Approved By:



Gale N. Selken, P.E.
Natural Resource Engineer IV

Table No. 1

From the Design Report prepared by Doug Lipetzky, Regional Engineer,
Ducks Unlimited, Incorporated.

<u>EVENT</u>	<u>EXISTING SITUATION</u>		<u>WITH 30' WEIR @ 1650.00</u>		
	<u>SOUTH MARSH PEAK ELEV.#</u>	<u>NORTH MARSH PEAK ELEV.*</u>	<u>SOUTH MARSH PEAK ELEV.#</u>	<u>NORTH MARSH PEAK ELEV.</u>	<u>OUTLET CHANNEL*</u>
1 YR	1649.38	1649.72	1651.12	1650.82	1650.68
2 YR	1650.16	1650.48	1651.78	1651.17	1651.61
5 YR	1651.50	1651.73	1652.94	1651.69	1652.71
10 YR	1652.42	1652.52	>1653.20	1652.06	1653.35
25 YR	>1653.20	1653.24	>1653.20	1652.50	>1653.50
50 YR	>1653.20	>1653.50	>1653.20	1652.92	>1653.50
100 YR	>1653.20	>1653.50	>1653.20	1653.21	>1653.50

- The elevation of the highway that runs between the north and south portions of the marsh (lake) is 1653.20.

* - The top elevation of the outlet channel banks is 1653.50.

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5707-3, U.S. Fish and Wildlife Service

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Water Permit Application No. 5707-3, U.S. Fish and Wildlife Service, c/o Wilbur Ladd, Acting Regional Director, PO Box 25486, Denver Federal Center, Denver, CO 80225.

The Chief Engineer is recommending APPROVAL of Application No. 5707-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualification:

Approval of Water Permit No. 5707-3 authorizes additional storage of 641 acre-feet plus 260 acre-feet seasonal use to offset evaporation losses in Buffalo Lake. Vested Water Right No. 856-3 and this Permit, combined, authorize a total storage capacity of 951 acre-feet of water to an outlet elevation of 1650.0 feet msl.

See report on application for additional information.



JOHN HATCH, Chief Engineer
March 4, 1993



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.**

March 12, 1993

Wilbur Ladd, Acting Regional Director
U.S. Fish and Wildlife Service
PO Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Ladd:

Water Permit Application No. 5707-3 for fish and wildlife production use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Argus Leader printed at Sioux Falls, SD (Ph # 331-2200) and Madison Daily Leader, PO Box 348, Madison, SD (Ph # 256-4555). For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

cc: Cheryl Williss, U.S. Fish & Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 12, 1993

Madison Daily Leader
PO Box 348
Madison, SD 57042

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 5707-3 to be published twice. Please publish the first notice on March 26, 1993, with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225 (Ph # (303)236-5321).

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. No action may be taken on the permit application until proof of publication has been received.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

TO: Eric Gronlund
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to Appropriate Water by Application No. _____ which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 12, 1993

Argus Leader
PO Box 5034
Sioux Falls, SD 57117-5034

ATTENTION: Legal Department

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Sincerely,

Eric Gronlund (handwritten signature)

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE TO: Eric Gronlund
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

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Name _____

Newspaper _____

Water Rights Division - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: USFWS Water Permit Appl. No. 5707-3

ADDRESS: _____ COUNTY: _____

DATE: 3/17/93 TELEPHONE: 303 236-5321

RE: Discussion of crest length for WP Appl. No. 5707-3

COMMENTS:

Lynn Beck pointed out that there was a discrepancy in the crest length for the proposed new outlet for Buffalo Lake. On the front page of the COE 404 Permit notice and in the design report the length stated is 30 feet, however, the actual plans show 34 feet as the crest length.

I contact Cheryl Willis and she followed up on this discrepancy. The actual crest length is 34 feet, however, the effective crest length is 30 feet due to 6 - 8 inch supports to hold up the cat walk.

This does not effect the storage capacity of the lake. However, Lynn is going to adjust the report to account for the lesser capacity of the outlet.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Eric Lundberg

Instruction to Newspaper - Publish first Notice on March 26, 1993, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Application No. 5707-3 to Appropriate Water

Notice is given that the U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225 has filed an application for a water permit to appropriate an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use) by increasing the outlet elevation of Buffalo Lake. Existing Vested Water Right No. 856-3 authorizes sufficient runoff water annually to fill Buffalo Lake to an outlet elevation of 1648.0 feet mean sea level (msl) [310 acre-feet storage capacity]. The outlet is located in the NE 1/4 SW 1/4 Section 2 with water being impounded in portions of the SW 1/4 Section 2, E 1/2 Section 10, NW 1/4, NW 1/4 SW 1/4 Section 11; all in T104N-R52W. This application proposes to increase the outlet elevation for Buffalo Lake to 1650.0 feet msl. Vested Water Right No. 856-3 and this application, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 feet msl. Water is to be used to provide habitat for fish and wildlife production.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5707-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 23, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Board will consider this application at 10:00 a.m., May 5, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The May 5, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by April 23, 1993.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by April 23, 1993, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Robert E. Roberts, Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION



STATE OF SOUTH DAKOTA)
County of Lake) ss

I, Deanna D. Bergheim

certify that the attached printed Notice was
taken from the Madison Daily Leader
printed and published in Madison, SD

County of Lake and State of

South Dakota. The notice was published in
the newspaper on the following two dates:

Friday, March 26, 1993
Friday, April 2, 1993

Cost of Printing: 53.59

Deanna D. Bergheim
(Signature)

Secretary
(Title)

4-2-93
(Date Signed)

NOTICE OF HEARING ON APPLICATION NO. 5707-3 TO APPROPRIATE WATER

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Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5707-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605-773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 23, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Board will consider this application at 10:00 a.m., May 5, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The May 5, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by April 23, 1993.

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ROBERT E. ROBERTS
Secretary

Department of Environment
and Natural Resources

100



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.

April 27, 1993

Wilbur Ladd, Acting Regional Director
U.S. Fish and Wildlife Service
PO Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Ladd:

Water Permit Application No. 5707-3 for fish and wildlife production use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Argus Leader printed at Sioux Falls, SD (Ph # 331-2200) and Madison Daily Leader printed at Madison, SD (Ph # 256-4555). Please review the enclosed notice prior to publication and notify this office, if you have any corrections or questions.

The original notice of hearing was published in the Madison Daily Leader for the May 5, 1993, Water Management Board meeting; however, the Sioux Falls Argus Leader failed to publish the notice of hearing. The Chief Engineer has determined that publication of this notice of hearing will be required in both counties due to a new hearing date and the use of a different notice format.

Be sure to contact the above newspapers to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the papers can eliminate delays. The publishers have been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspapers have been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosure

cc: Cheryl Williss, U.S. Fish & Wildlife Service, PO Box 25486, Denver Federal Center,
Denver, CO 80225



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

April 27, 1993

Madison Daily Leader
PO Box 348
Madison, SD 57042

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 5707-3 to be published twice. Please publish the first notice on May 5, 1993, with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225 (Ph # (303)236-5321).

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

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Sincerely,

Eric S. Gronlund
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

TO: Eric Gronlund
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to Appropriate Water by Application No. _____ which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

April 27, 1993

Argus Leader
PO Box 5034
Sioux Falls, SD 57117-5034

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Sincerely,

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

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Notice is given that the U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225 has filed an application for a water permit to appropriate an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use) by increasing the outlet elevation of Buffalo Lake. Existing Vested Water Right No. 856-3 authorizes sufficient runoff water annually to fill Buffalo Lake to an outlet elevation of 1648.0 feet mean sea level (msl) [310 acre-feet storage capacity]. The outlet is located in the NE 1/4 SW 1/4 Section 2 with water being impounded in portions of the SW 1/4 Section 2, E 1/2 Section 10, NW 1/4, NW 1/4 SW 1/4 Section 11; all in T104N-R52W. This application proposes to increase the outlet elevation for Buffalo Lake to 1650.0 feet msl. Vested Water Right No. 856-3 and this application, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 feet msl. Water is to be used to provide habitat for fish and wildlife production.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5707-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. Unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Water Management Board will NOT CONDUCT a HEARING to consider this application and the chief engineer will issue the permit as recommended. Petitions filed in support of the application will NOT require the Board to hear the application.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by May 24, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

For purposes of publishing 1) the notice of hearing on Application No. 5707-3 and 2) the chief engineer's recommendation, a meeting at the Division of Water Rights office to hear this application is scheduled for June 1, 1993, at 9:00 am in Room 413, Joe Foss Building, 523 E Capitol, Pierre SD. If this application is opposed or the recommendation is contested, the June 1, 1993, hearing date will be rescheduled for a regularly scheduled Board meeting. Notice of the time and place of the rescheduled hearing before the Board will be given by First Class Mail to the applicant and persons filing petitions. Anyone not filing a petition, but interested in attending the hearing, may contact the Division of Water Rights to confirm a hearing date and location. The June 1, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by May 24, 1993.

If a hearing is held, the Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by May 24, 1993, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Robert E. Roberts, Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss
County of Minnehaha)

I, M. Devish

certify that the attached printed Notice was
taken from the Argus Leader

printed and published in Sioux Falls

County of Minnehaha and State of

South Dakota. The notice was published in
the newspaper on the following two dates:

Wednesday, May 5, 1993

Wednesday, May 12, 1993

Cost of Printing: \$148.18

M. Devish
(Signature)

Controller
(Title)

5/12/93
(Date Signed)

NOTICE OF HEARING on Application No. 5707-3 to Appropriate Water

Notice is given that the U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO 80225 has filed an application for a water permit to appropriate an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use) by increasing the outlet elevation of Buffalo Lake. Existing Vested Water Right No. 856-3 authorizes sufficient runoff water annually to fill Buffalo Lake to an outlet elevation of 1648.0 feet mean sea level (msl) (310 acre-feet storage capacity). The outlet is located in the NE 1/4 SW 1/4 Section 2 with water being impounded in portions of the SW 1/4 Section 2, E 1/2 Section 10, NW 1/4, NW 1/4 SW 1/4 Section 11; all in T104N-R52W. This application proposes to increase the outlet elevation for Buffalo Lake to 1650.0 feet msl. Vested Water Right No. 856-3 and this application, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 feet msl. Water is to be used to provide habitat for fish and wildlife production.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5707-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. Unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Water Management Board will NOT CONDUCT a HEARING to consider this application and the chief engineer will issue the permit as recommended. Petitions filed in support of the application will NOT require the Board to hear the application.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by May 24, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

For purposes of publishing 1) the notice of hearing on Application No. 5707-3 and 2) the chief engineer's recommendation, a meeting at the Division of Water Rights office to hear this application is scheduled for June 1, 1993, at 9:00 am in Room 413, Joe Foss Building, 523 E Capitol, Pierre SD. If this application is opposed or the recommendation is contested, the June 1, 1993, hearing date will be rescheduled for a regularly scheduled Board meeting. Notice of the time and place of the rescheduled hearing before the Board will be given by First Class Mail to the applicant and persons filing petitions. Anyone not filing a petition, but interested in attending the hearing, may contact the Division of Water Rights to confirm a hearing date and location. The June 1, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by May 24, 1993.



If a hearing is held, the Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) defer, or 3) deny this application based on the facts presented at the public hearing. Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by May 24, 1993, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Robert E. Roberts, Secretary
Department of Environment and
Natural Resources
May 5, 12, 1993

Wed., May 5, 12

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Lake) ss

I, Deanna D. Bergheim

certify that the attached printed Notice was
taken from the Madison Daily
Leader

printed and published in Madison, SD

County of Lake and State of

South Dakota. The notice was published in
the newspaper on the following two dates:

Wednesday, May 5, 1993
Wednesday, May 12, 1993

Cost of Printing: 68.58

Deanna Bergheim
(Signature)

Secretary
(Title)

May 12, 1993
(Date Signed)

NOTICE OF HEARING ON APPLICATION NO. 5707-3 TO APPROPRIATE WATER

Notice is given that the U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver, CO, 80225 has filed an application for a water permit. This notice of hearing is a readvertisement of the notice published March 26 and April 2, 1993. This readvertisement is necessary because the original notice did not get published in a Minnehaha newspaper at the same time.

Water Permit Application No. 5707-3 is to appropriate an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use) by increasing the outlet elevation of Buffalo Lake. Existing Vested Water Right No. 856-3 authorizes sufficient runoff water annually to fill Buffalo Lake to an outlet elevation of 1648.0 feet mean sea level (msl) (310 acre-feet storage capacity). The outlet is located in the NE 1/4 SW 1/4 Section 2 with water being impounded in portions of the SW 1/4 Section 2, E 1/2 Section 10, NW 1/4, NW 1/4 SW 1/4 Section 11; all in T104N-R52W. This application proposes to increase the outlet elevation for Buffalo Lake to 1650.0 feet msl. Vested Water Right No. 856-3 and this application, combined, propose a storage capacity of 951 acre-feet of water in Buffalo Lake with an additional 260 acre-feet of water annually to offset evaporation and maintain the lake level at 1650.0 feet msl. Water is to be used to provide habitat for fish and wildlife production.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5707-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. Unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Water Management Board will NOT CONDUCT a HEARING to consider this application and the chief engineer will issue the permit as recommended. Petitions filed in support of the application will NOT require the Board to hear the application.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by May 24, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

For purposes of publishing 1) the notice of hearing on Application No. 5707-3 and 2) the chief engineer's recommendation, a meeting at the Division of Water Rights office to hear this application is scheduled for June 1, 1993, at 9:00 a.m. in Room 413, Joe Foss Building, 523 E Capitol, Pierre, SD. If this application is opposed or the recommendation is contested, the June 1, 1993, hearing date will be rescheduled for a regularly scheduled Board meeting. Notice of the time and place of the rescheduled hearing before the Board will be given by First Class Mail to the applicant and persons filing petitions. Anyone not filing a petition, but interested in attending the hearing, may contact the Division of Water Rights to confirm a hearing date and location. The June 1, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by May 24, 1993.

If a hearing is held, the Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by May 24, 1993, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 41-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

ROBERT E. ROBERTS
Secretary
Department of Environment
and Natural Resources





JUN 1 1993

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

Wilbur Ladd, Acting Regional Director
U.S. Fish and Wildlife Service
PO Box 25486
Denver Federal Center
Denver, CO 80225

Dear Mr. Ladd:

Enclosed is Water Permit No. 5707-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Also enclosed is Form 10, Notice of Completion of Works and Application of Water to Beneficial Use, which you are to complete and submit to the Chief Engineer when you have completed the system and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water License may be issued, thus completing your acquisition of a Water Right.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

enclosures

PLEASE NOTE: Certain changes can be made in your permit within the five year construction period, usually without affecting the priority date provided an application to amend your permit is made within the five year period - i.e. changes in location or number of diversion points (wells) or location of land to be irrigated. Well locations for wells into the same aquifer can be moved up to 660 feet without application.

Applications to amend a permit after the five year construction period will be assigned a new priority date. Applications to change water sources, to add lands or increase original diversion rates, if approved will usually receive the date of the new application as a priority date regardless of the five year construction period.

cc: Cheryl Williss, U.S. Fish & Wildlife Service, PO Box 25486,
Denver Federal Center, Denver, CO 80225



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region



IN REPLY REFER TO:

BA WTR
WR SD
Mail Stop 60189

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

JUN 08 1995

Ms. Cheryl F. Frost
Department of Environment and
Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Dear Ms. Frost:

The Fish and Wildlife Service (Service) holds Water Permit No. 5707-3 for appropriation of an additional 901 acre-feet of water (641 acre-feet storage plus 260 acre-feet seasonal use).

Enclosed is the Notice of Completion of Works and Application of Water to Beneficial Use. Also enclosed is a Money Order in the amount of \$50 to cover the inspection fee and issuance of the Water License for Water Permit No. 5707-3.

If you have questions or require further information, please contact Linda Coe, Division of Water Resources, at (303) 236-5321.

Sincerely,

Regional Director

Enclosures

ACTING

Buffalo Lake WPA



NOTICE OF COMPLETION OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE

Date June 8, 1995

TO: Water Rights Division, DWRN
Joe Foss Building
Pierre SD 57501-3181

FROM: UNITED STATES OF AMERICA, Fish and Wildlife Service
P.O. Box 25486, Denver Federal Center, Denver, CO 80225


name address city

I have completed the construction of the water diversion system and I have put the water to beneficial use to the maximum extent it is going to be used. I have not exceeded the amounts specified in Water Permit No. 5707-3.

Water Permit No. 5707-3 states that the diversion system is to be constructed by 06-01-1998, and that the water it put to beneficial use by 06-01-2002.

The diversion system was completed on 09-17-1993.
Applying the water to beneficial use was completed on 04-11-1994.

You may schedule an inspection so that the Water License may be issued.



signature REGIONAL DIRECTOR
ACTING



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

June 12, 1995

5707-3

Linda Coe
US Fish & Wildlife Service
Division of Water Resources
PO Box 25486
Denver Federal Center
Denver, CO 80225

Dear Ms. Coe:

This will acknowledge receipt of the *"Notice of Completion of Works and Application of Water to Beneficial Use"* submitted for Water Permit No. 5707-3. Receipt of this form will enable us to schedule an inspection and begin processing the water license.

Enclosed is your money order for \$50.00. The fee submitted by your regional director, is not due until after the actual inspection is conducted and the license is ready to be issued. Someone from our office will contact you prior to the inspection. This is done to arrange for access to the area and to see if someone from your regional staff would like to be present during the inspection.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Division
(605) 773-3352

enclosure

Permit No. 5707-3
Big Sioux River - Water District

Contact Person & Address: Colleen Kolbeck, US FWS, PO Box 48 Madison SD 57042

Report Of Examination Of Works

On, May 23 2000, I made a thorough examination of the water use system constructed by US Fish and Wildlife Service of PO Box 25486, Denver Federal Center, Denver CO 80225 holder of Permit No. 5707-3, bearing the priority of September 2, 1992 authorizing the storage of 641 acre-feet plus of the waters of 260 acre-feet seasonal use for providing habitat for fish and wildlife production purposes, in Minnehaha County.

The system is in the following condition good. The point of diversion is located from the SW corner of Sec 2 T104 N-R52W: 1665 ft N and 2470 ft E; with a longitude of -97.03964 and a latitude of 43.83810. The works are capable of storing of 641 acre-feet plus of the seasonal use of 260 acre-feet of water which is to be used for providing habitat for fish and wildlife production. Water has been put to beneficial use to the maximum and the license should be issued for the storage 641 acre-feet plus of the seasonal use of 260 acre-feet.

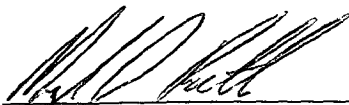
Review of Permit Qualifications And Regulations:

- 1) Special qualifications to permit being abided by yes
- 2) All structures, wells and lands on map yes
- 3) Exceptions to compliance are: none

Report On the Specifics of the System

Dam Information:

- 1) Height to crest 5.5 feet
- 2) Height to primary spillway or outlet 3 feet
- 3) Crest width 1 feet
- 4) Crest length 34 feet
- 5) Outlet structure:
 - a) type gated
 - b) type stop log
 - c) valved yes
 - d) valve type stop log



Mark D. Rath
Natural Resources Engineer
DENR, Water Rights Program

8/22/00
Date

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 5707-3

(1) The U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225 made Application No. 5707-3, September 2, 1992 for a water permit to impound an additional 641 acre-feet of water in Buffalo Lake, Minnehaha County, South Dakota for fish & wildlife propagation purposes. Permit No. 5707-3, with a priority date of September 2, 1992 was approved June 1, 1993 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before June 1, 1995 and for the application to beneficial use of said water on or before June 1, 2002.

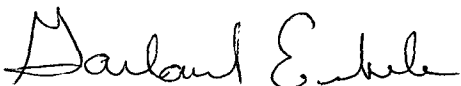
The permit holder submitted a *Notice of Completion of Works and Application of Water to Beneficial Use* on June 12, 1995. The *Notice* stated the diversion system was completed on September 17, 1993 and the water placed to beneficial use on April 11, 1994.

Vested Water Right No. 856-3, with a November 2, 1889 priority date, authorized storage of 310 acre-feet of water in Buffalo Lake. No. 5707-3 increased the outlet elevation of Buffalo Lake to 1650.0 feet mean sea level for a combined total storage capacity of 951 acre-feet of water.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the storage dam and is entitled to impound 641 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation of 1650.0 feet mean sea level. The location of the storage dam (spillway) is 1,665 feet north and 2,470 feet east of the southwest corner of Section 2-T104N-R52W (NE ¼ SW ¼).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use.

(4) Pursuant to South Dakota Water Law 46-5-30.1 the U.S. Fish and Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225 the holder and/or owner of Water Right No. 5707-3 is issued a license to appropriate water, the right to impound 641 acre-feet of water from runoff in Buffalo Lake with sufficient water annually to maintain the water level to the outlet elevation of 1650.0 feet mean sea level with a priority date of September 2, 1992 from the location specified in (2) of this license for fish & wildlife propagation purposes. This license is subject to any limitations or qualifications listed in Water Right No. 5707-3 and subject to South Dakota State Law.



Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

APR 04 2001

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 19, 2001

5707-3

Cheryl C Williss, Agent
US Fish and Wildlife Service
PO Box 25486
Denver Federal Center
Denver CO 80225

Dear Ms. Williss:

On May 23, 2000 the investigation of the water use system, including the extent of application of water to beneficial use, as developed under Water Permit No. 5707-3, was completed by Mark Rath, a staff engineer with our program. The final water right document, the water license, can now be issued. Water Permit No. 5707-3 authorizes storage of water in Buffalo Lake located in Minnehaha County (SW ¼ Section 2-T104N-R52W).

State law requires that we charge a \$50.00 fee for the investigation and issuance of the water license. Upon receipt of the \$50.00 fee, we will complete processing your water license. The check or money order for the fee should be made payable to the "Water Rights Program".

The licensed water right will be similar to a property right that can not be lost as long as the water use continues and you abide by the permit requirements.

If you have any questions regarding the water permit, investigation of your water use system or payment of the fee, please contact Genny McMath with our program at (605) 773-3352.

Sincerely,

Karen Schlaak

Karen Schlaak
Environmental Scientist
Water Rights Program
(605) 773-3352



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

* INVOICE *

Invoice No. 20411-5707-3

Attn: Kathleen
US Fish & Wildlife Service
PO Box 25486
Denver federal Center
Denver CO 80225

\$50.00 fee for investigation and issuance of water license Water Permit No. 5707-3.

\$50.00

PLEASE PAY THIS AMOUNT: \$50.00

Glenda Marks
Secretary
Water Rights Program
(605) 773-3352

fax # 303-236-4791



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region

IN REPLY REFER TO:

WTR BA
WR SD
Mail Stop 60189

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228-1807

JAN 24 2001

Ms. Karen Schlaak
Department of Environment and
Natural Resources
Water Rights Program
523 East Capitol
Pierre, South Dakota 57501-3182

RE: Water Permit No. 5707-3

Dear Ms. Schlaak:

In response to your letter dated January 19, the \$50 fee has been forwarded via electronic fund transfer for issuance of the water license under Water Permit 5707-3, Buffalo Lake Waterfowl Production Area, Minnehaha County.

If you have questions or require further information, please contact me at (303) 236-5321 extension 227.

Sincerely,

Linda Coe
Water Rights Specialist



Verhelst, Sandy

From: Tillman, Sandy
Sent: Monday, January 29, 2001 10:04 AM
To: Verhelst, Sandy
Subject: RE: fee owned to Water Rights Program

FWS TREAS 312 MISC PAY 012901 466000364141600 RMT*IV*60181-1-P207 **
\$50.00 01/29/2001

-----Original Message-----

From: Verhelst, Sandy
Sent: Thursday, January 25, 2001 10:33 AM
To: Tillman, Sandy
Subject: FW: fee owned to Water Rights Program

Would you please e-mail when this comes in? Thanks.

-----Original Message-----

From: McMath, Genny
Sent: Tuesday, January 23, 2001 2:51 PM
To: Verhelst, Sandy
Subject: fee owned to Water Rights Program

Linda Coe would like to do a wire transfer for money owed by the US Fish & Wildlife Service. We sent them a letter dated January 19, 2001 requesting \$50.00 for the inspection and issuance of Water License No. 5707-3.

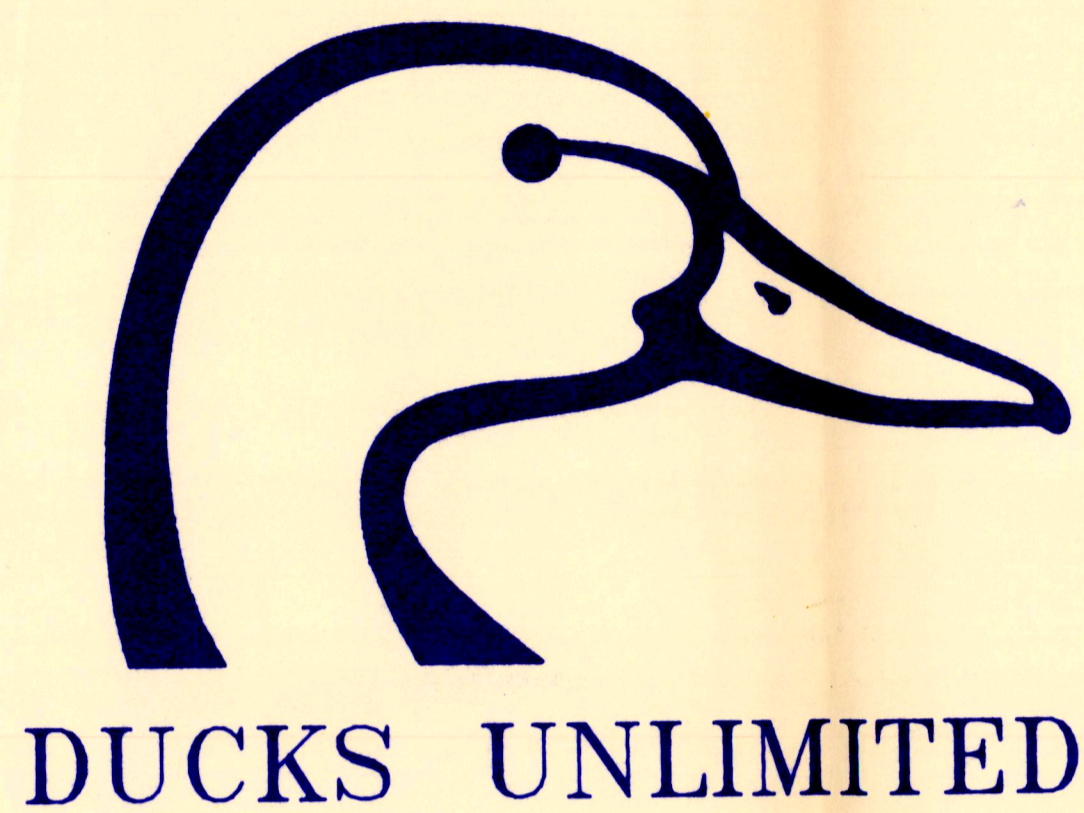
The letter for the \$50.00 was sent to: Cheryl C Williss, Agent, US Fish & Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BUFFALO TRADING POST QUADRANG
SOUTH DAKOTA
7.5 MINUTE SERIES (TOPOGRAPHIC)



SEP 1992
DIVISION OF
WATER RIGHTS
Pierre, SD



DUCKS UNLIMITED

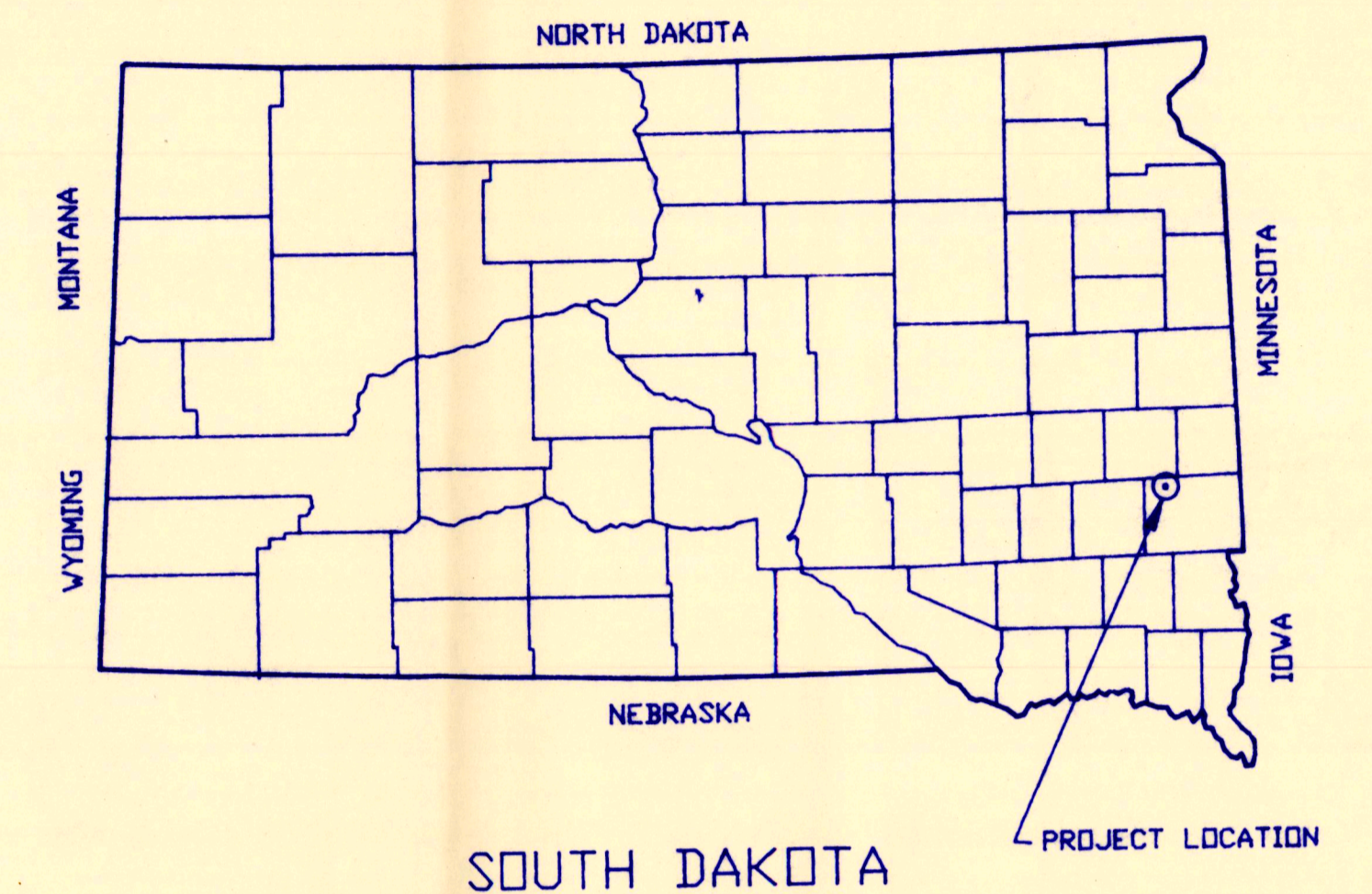
PROJECT

BUFFALO LAKE WPA

SECTIONS 2, 10, & 11, TWP-104-N, RGE-52-W
MINNEHAHA COUNTY, SOUTH DAKOTA

IN COOPERATION WITH

UNITED STATES FISH AND WILDLIFE SERVICE
AND
SOUTH DAKOTA DEPT. OF GAME, FISH, AND PARKS



SPECIFICATIONS

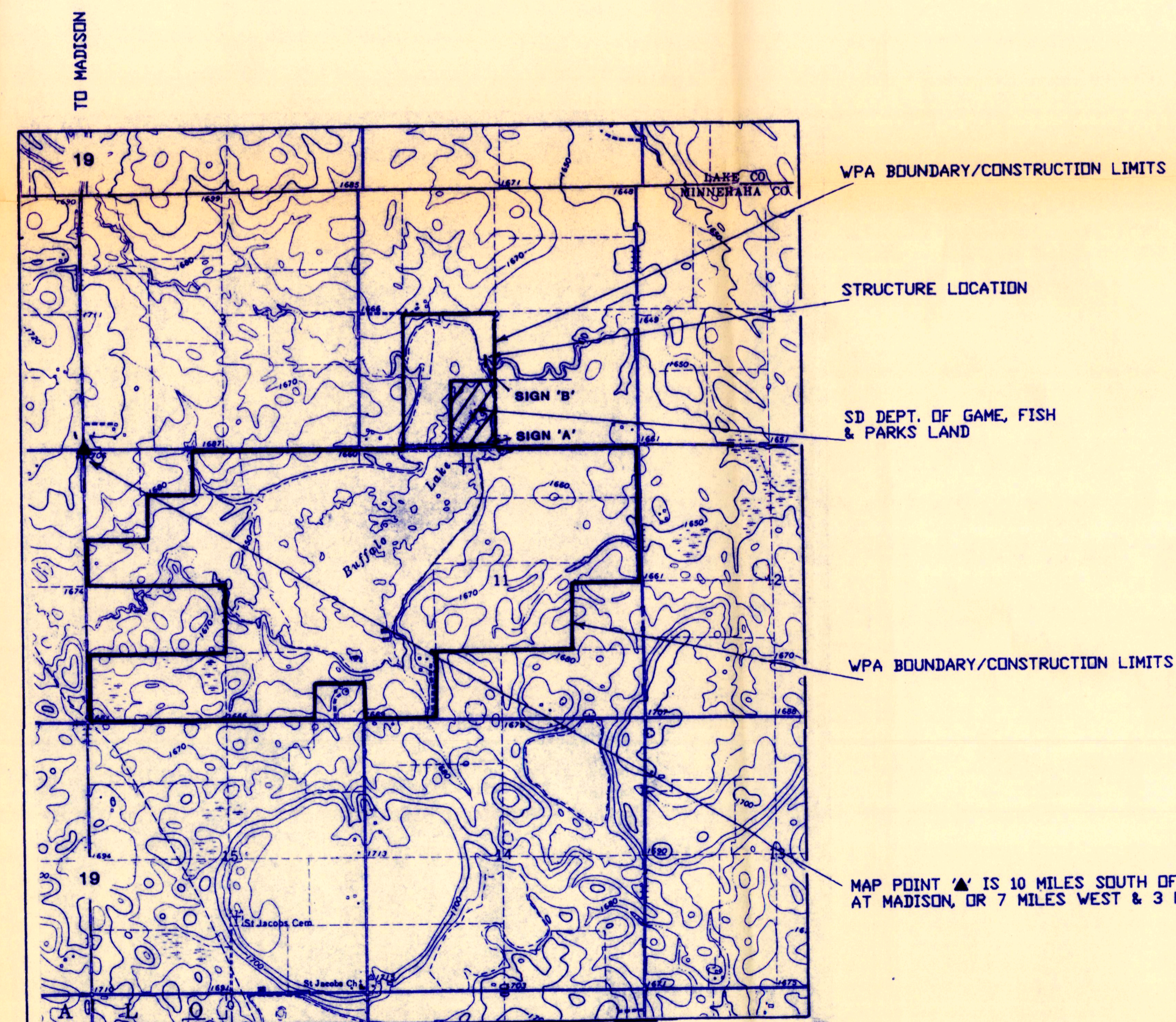
- 101 GENERAL CONDITIONS
- 201 MOBILIZATION
- 202 SITE PREPARATION
- 203 EXCAVATION
- 209 RIPRAP PLACEMENT
- 214 SHEET PILE MATERIAL
- 215 SHEET PILE INSTALLATION
- 216 STRUCTURAL STEEL
- 217 STEEL H-PILE

PLAN INDEX

- SHEET NO. 1 PROJECT LOCATION MAPS
- SHEET NO. 2 SITE TOPOGRAPHY, MARSH DATA
- SHEET NO. 3 WATER CONTROL STRUCTURE-
PLAN AND PROFILE
- SHEET NO. 4 WATER CONTROL STRUCTURE-
DETAILS
- SHEET NO. 5 SOIL INFORMATION (WHEN AVAILABLE)

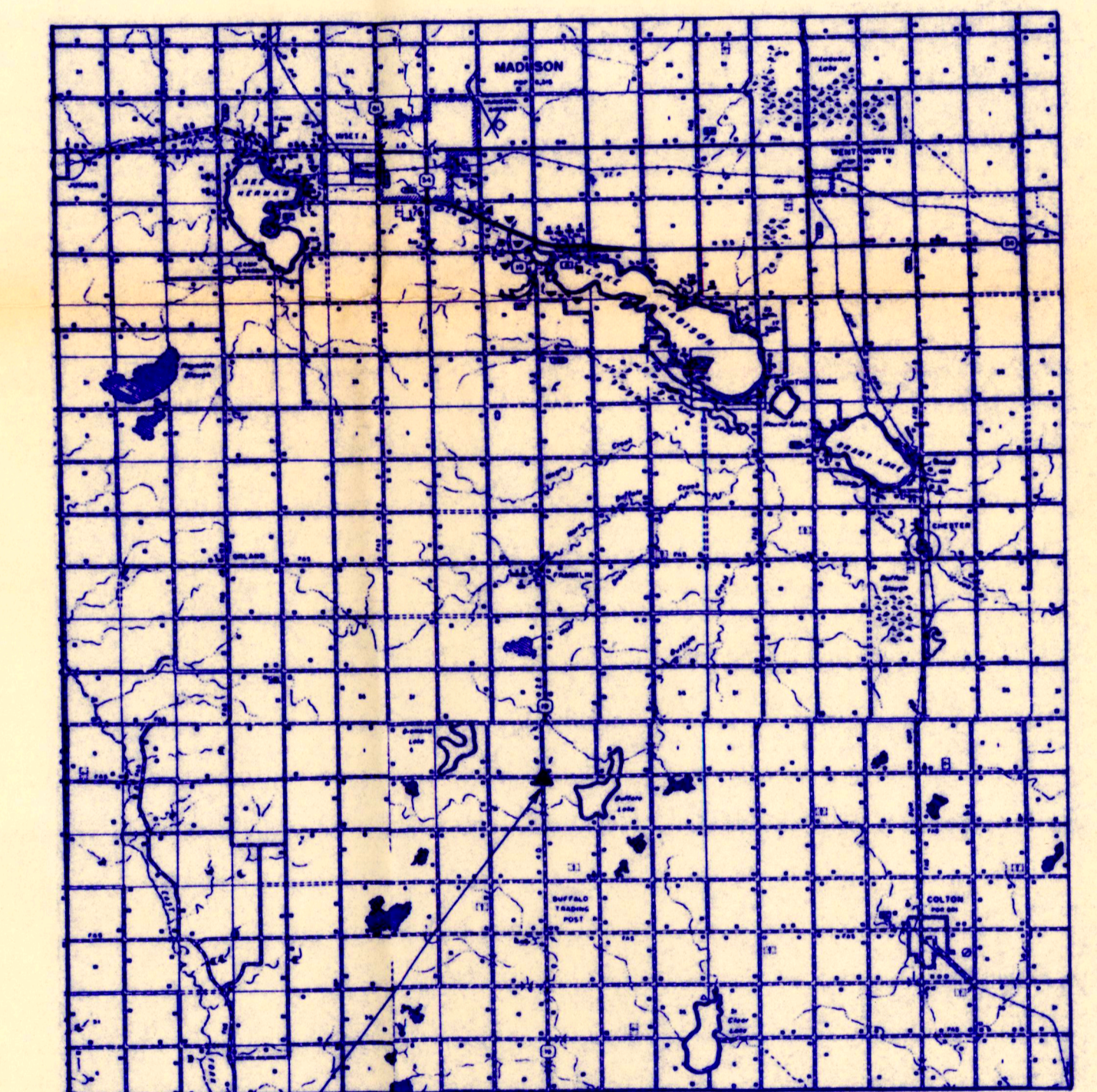
ESTIMATED QUANTITIES

MOBILIZATION	1	L.S.
SITE PREPARATION	1	L.S.
EXCAVATION	870	C.Y.-S
RIPRAP PLACEMENT	131	C.Y.-P
SHEET PILE MATERIAL	818	S.F.-P
SHEET PILE INSTALLATION	818	S.F.-P
STRUCTURAL STEEL	1	L.S.
STEEL H-PILE	87.5	L.F.-P



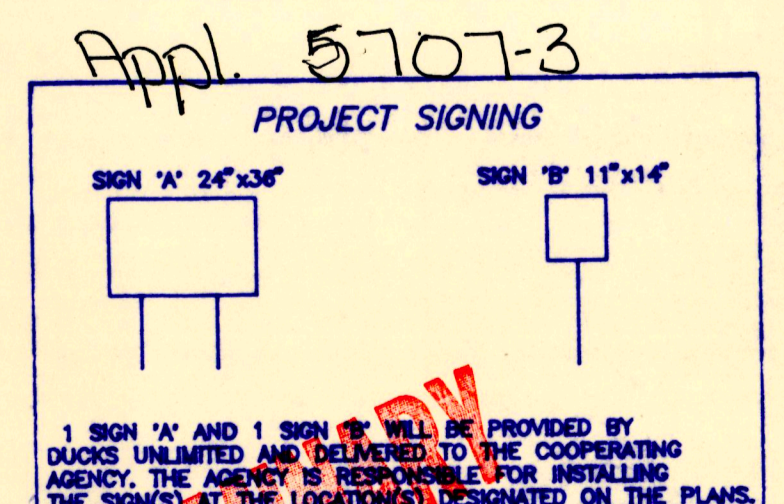
LOCATION MAP

SCALE: 1"=2000'



VICINITY MAP

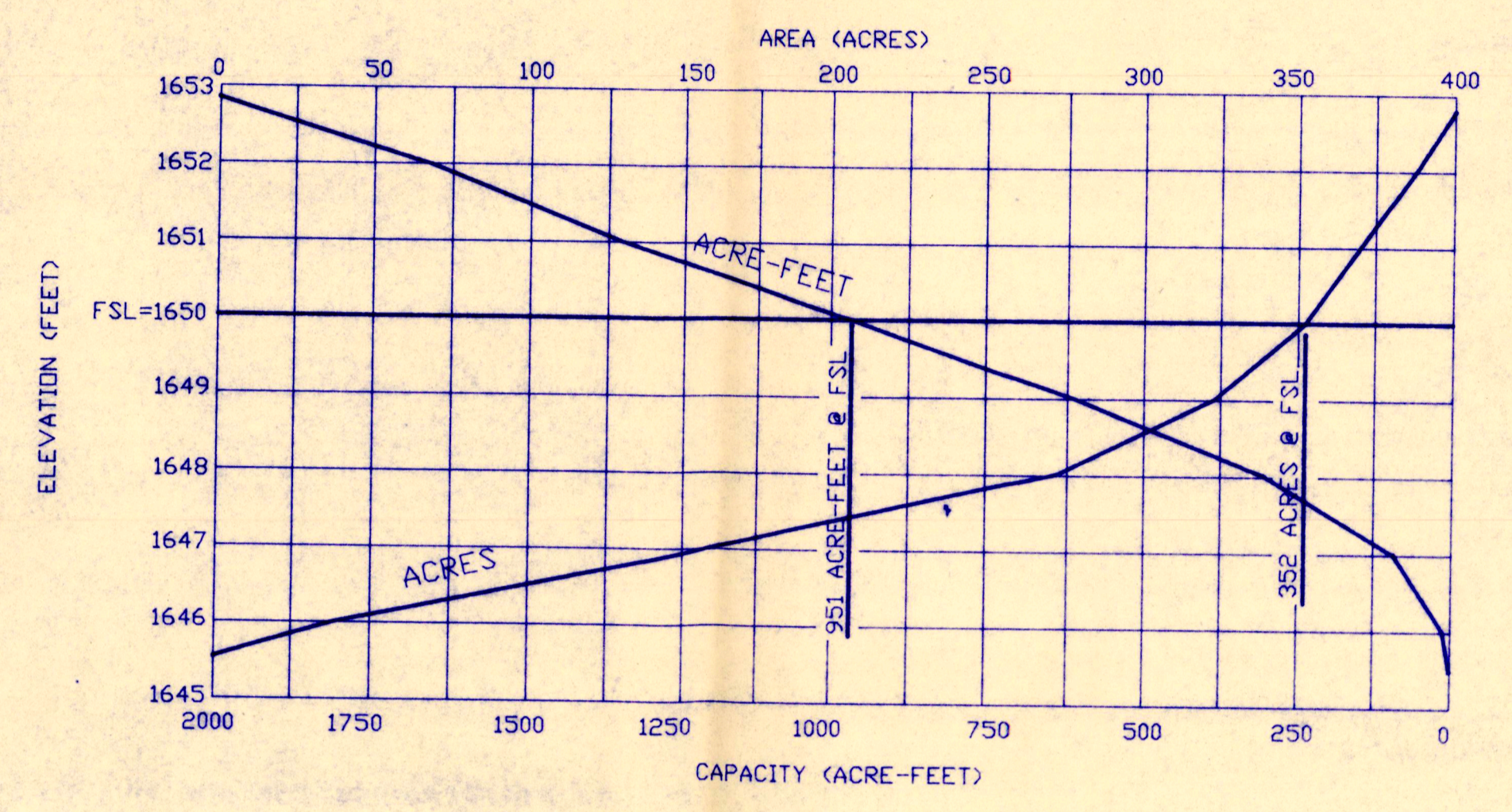
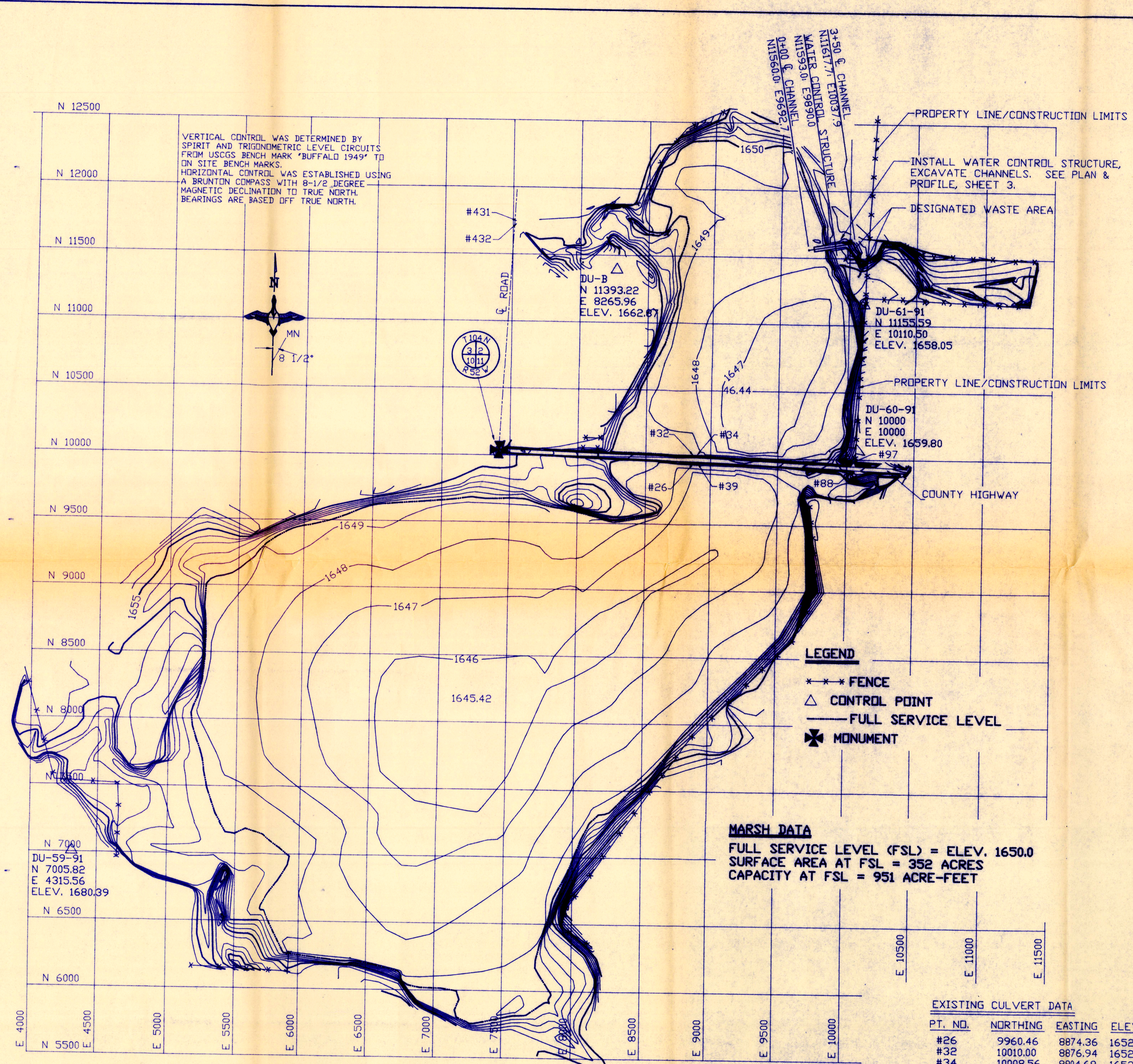
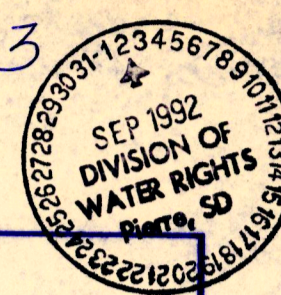
NTS



AGENCY CONTACT PERSON:
TIM TORNOV, U.S. FISH & WILDLIFE
MADISON, S.D. (605)-256-2974

<p>DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE</p>	<p>PROJECT NO. SD-120-01</p> <p>LOCATION MAPS</p>	<p>DESIGNED BY: DJL</p> <p>DRAWN BY: TSP</p> <p>SURVEYED BY: GLJ</p> <p>CHECKED BY: BRK</p>
	<p>DATE: 7-24-1992</p> <p>SHEET NO. 1 OF 5</p>	<p>APPROVED BY:</p>

5707-3



AREA-CAPACITY CURVE

SITE TOPOGRAPHY
SCALE: 1" = 400'

EXISTING CULVERT DATA

PT. NO.	NORTHING	EASTING	ELEV.	DESCRIPTION
#26	9960.46	8874.36	1652.84	S. INV. 72" CMP
#32	10010.00	8876.94	1652.75	N. INV. 72" CMP
#34	10008.56	8904.68	1652.86	N. INV. 72" CMP
#39	9959.07	8902.56	1652.79	S. INV. 72" CMP
#88	9969.63	10032.96	1655.98	W. INV. 24" CMP
#97	9968.18	10066.75	1656.23	E. INV. 24" CMP
#431	11741.05	7524.49	1661.87	N. INV. 72" CMP
#432	11726.60	7523.02	1661.67	S. INV. 72" CMP

DUCKS UNLIMITED INC.

PROJECT NO. SD-12034

DESIGNED BY: D.J.L.

DRAWN BY: T.S.P.

SURVEYED BY: G.L.J.

CHECKED BY: BRK.

APPROVED BY:

APPROVED BY:

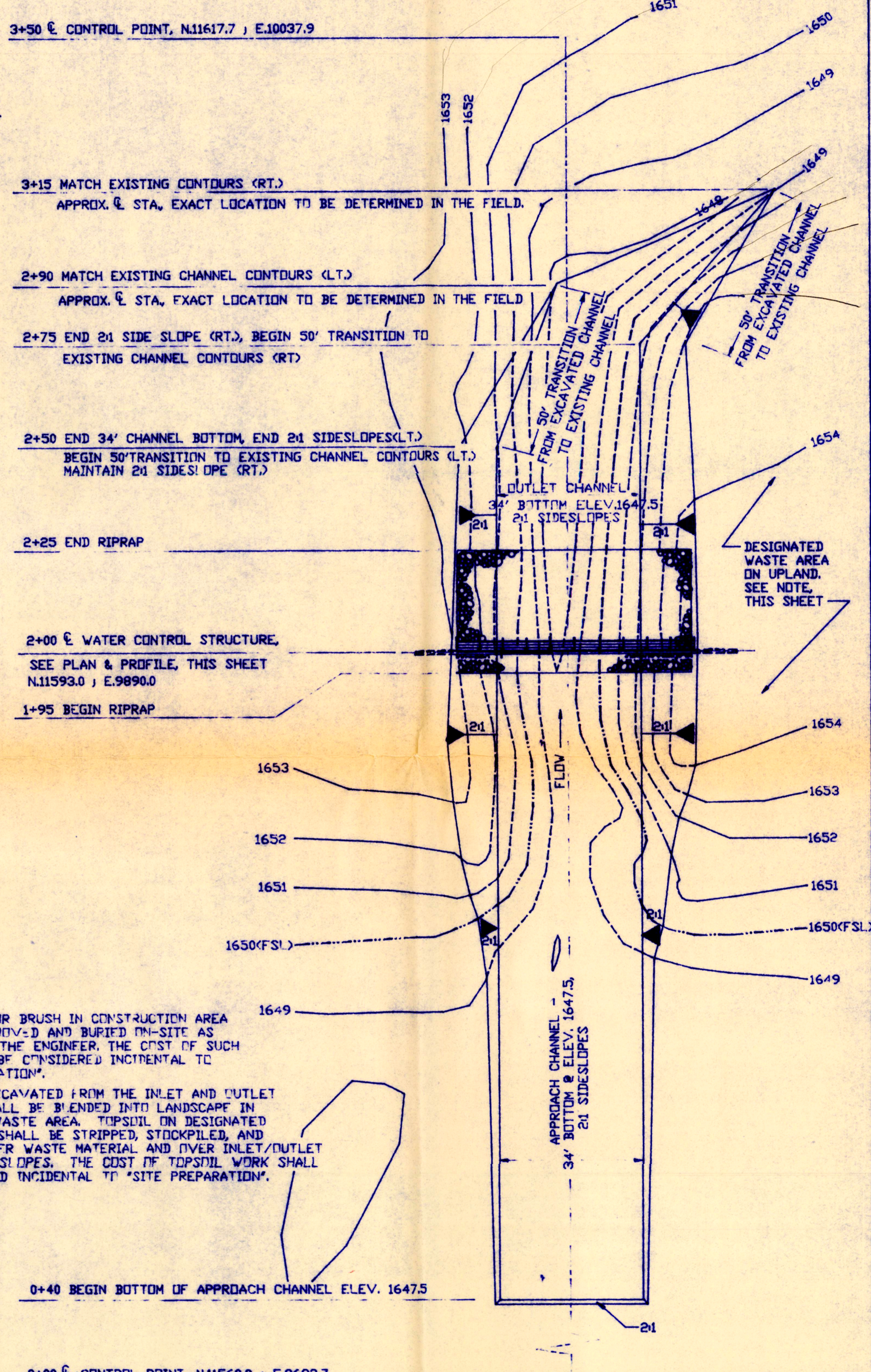
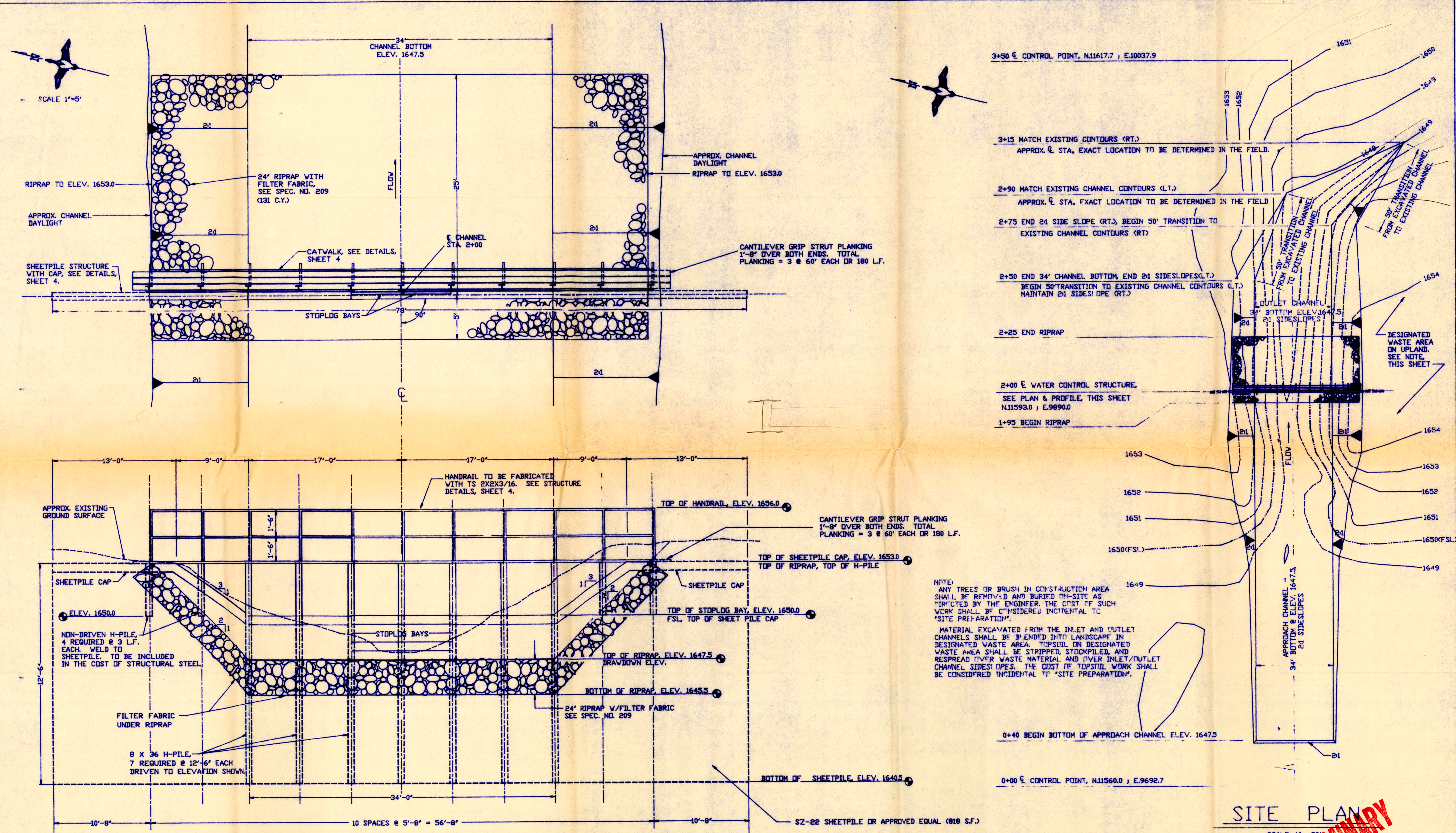
DATE: 8-14-1992 SHEET NO. 2 OF 5

GREAT PLAINS REGIONAL OFFICE

BUFFALO LAKE WPA

SITE TOPOGRAPHY, MARSH DATA, ISLAND CONSTRUCTION

PRELIMINARY



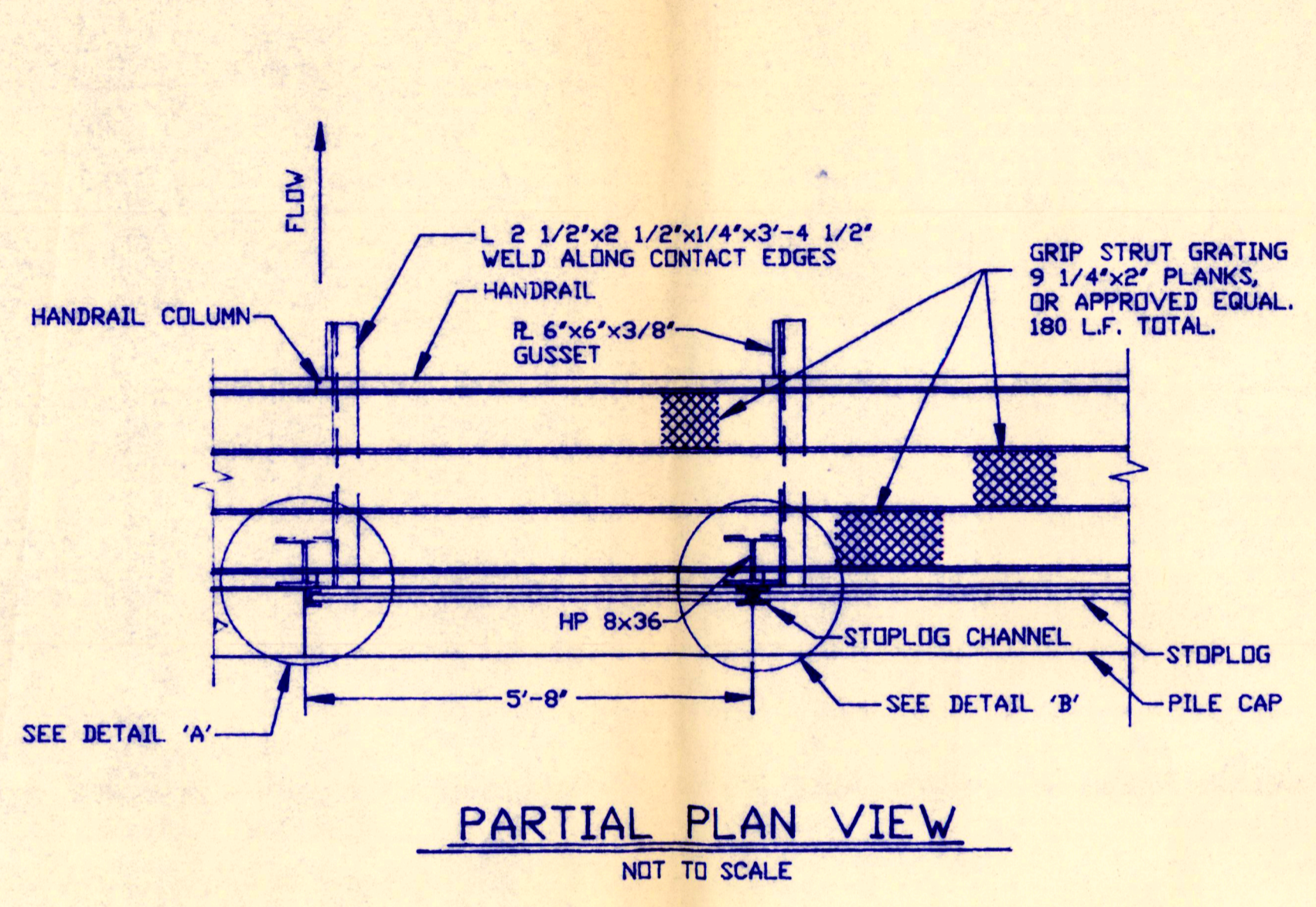
NOTE:
 ANY TREES OR BRUSH IN CONSTRUCTION AREA SHALL BE REMOVED AND BURIED ON-SITE AS DIRECTED BY THE ENGINEER. THE COST OF SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".
 MATERIAL EXCAVATED FROM THE INLET AND OUTLET CHANNELS SHALL BE BLENDED INTO LANDSCAPE IN DESIGNATED WASTE AREA. TOPSOIL ON DESIGNATED WASTE AREA SHALL BE STRIPPED, STOCKPILED, AND RESPREAD OVER WASTE MATERIAL AND OVER INLET/OUTLET CHANNEL SIDESLOPES. THE COST OF TOPSOIL WORK SHALL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".

WATER CONTROL STRUCTURE PLAN AND PROFILE

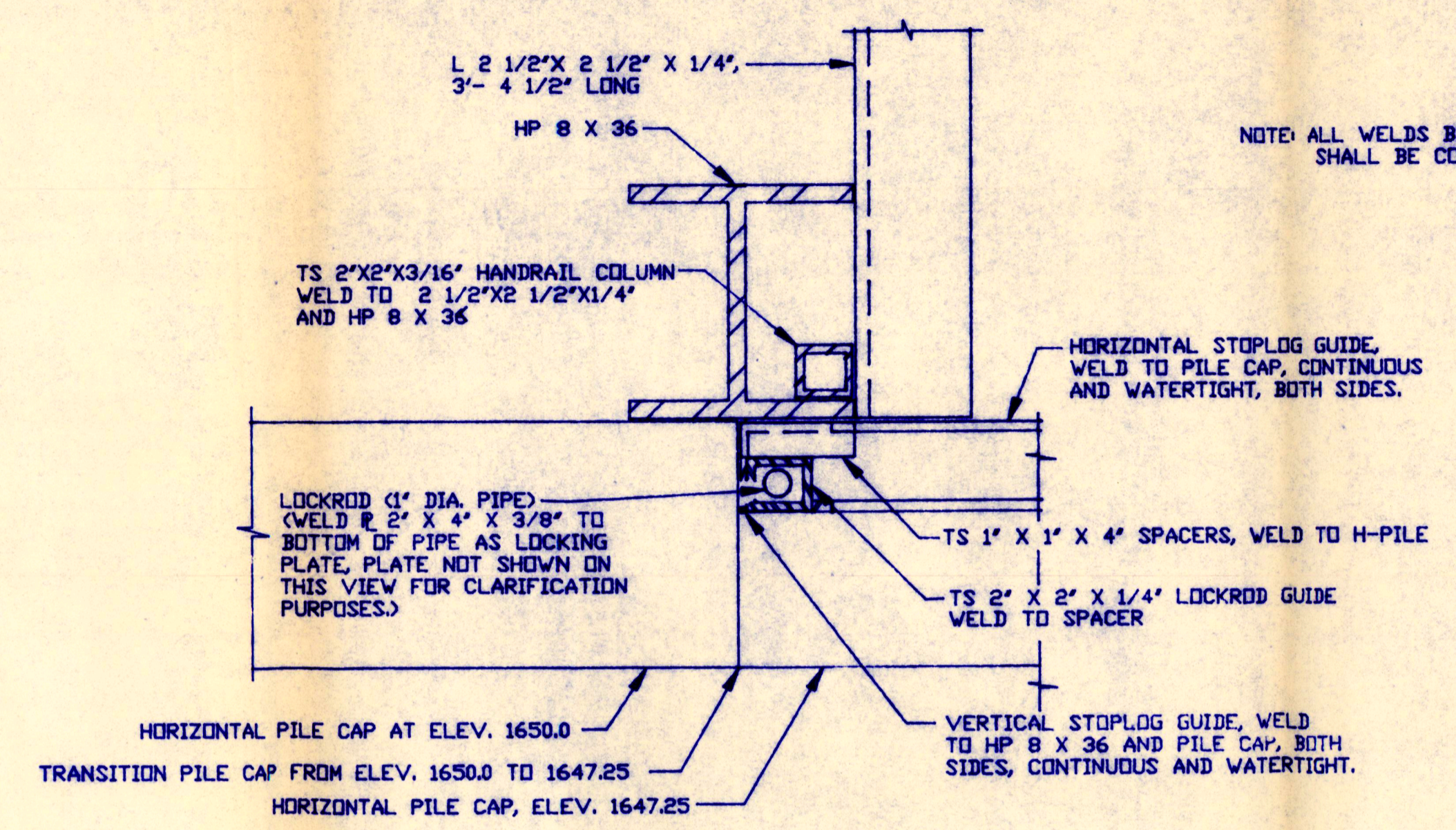
NOT TO SCALE

DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE		PROJECT NO. SD-120-01 BUFFALO LAKE WPA WATER CONTROL STRUCTURE PLAN AND PROFILE	DESIGNED BY: DJL DRAWN BY: TSP SURVEYED BY: CHECKED BY: BRK
DATE: 7-27-1992	SHEET NO. 3 OF 5	APPROVED BY:	APPROVED BY:

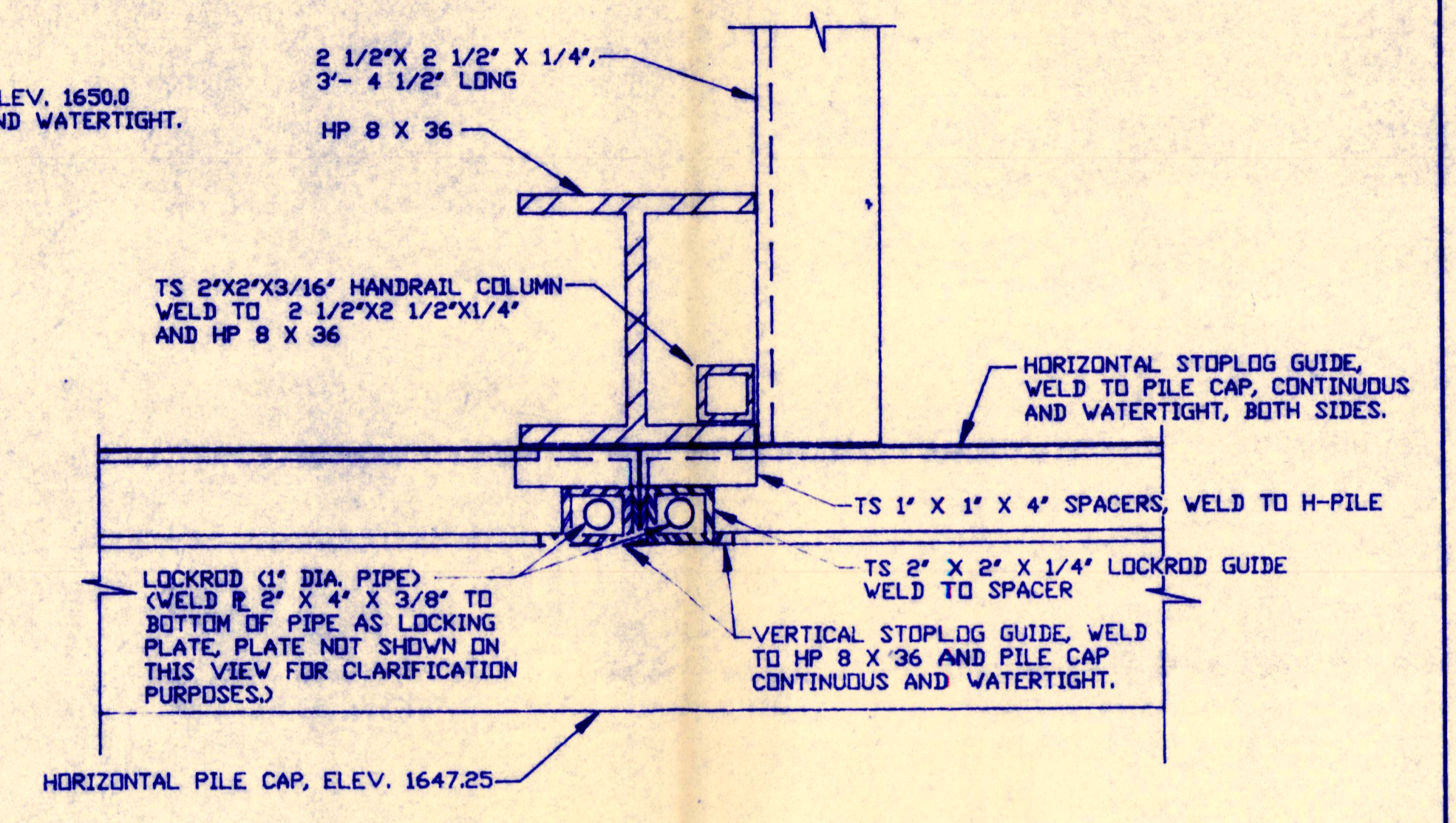
5707-3



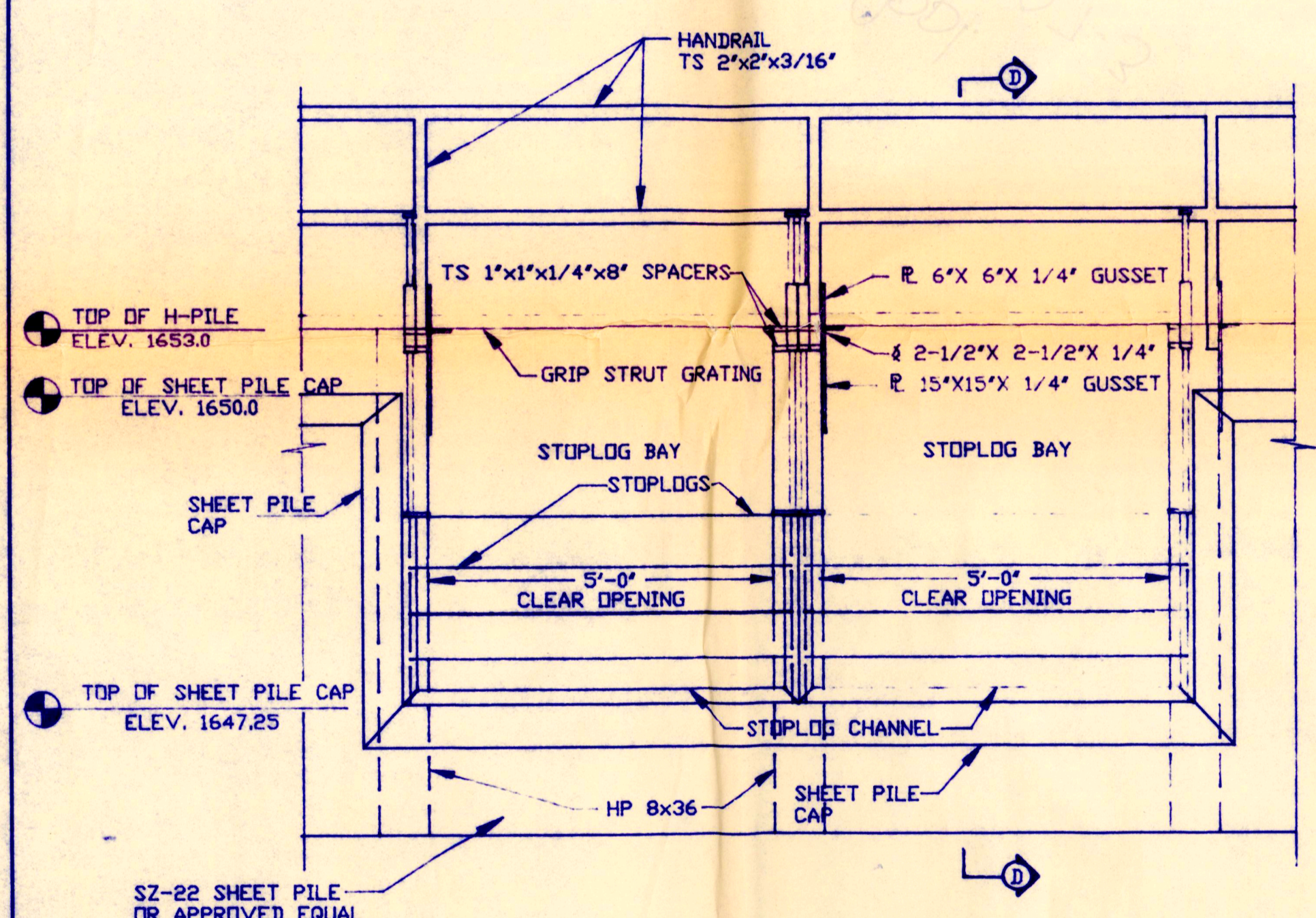
PARTIAL PLAN VIEW
NOT TO SCALE



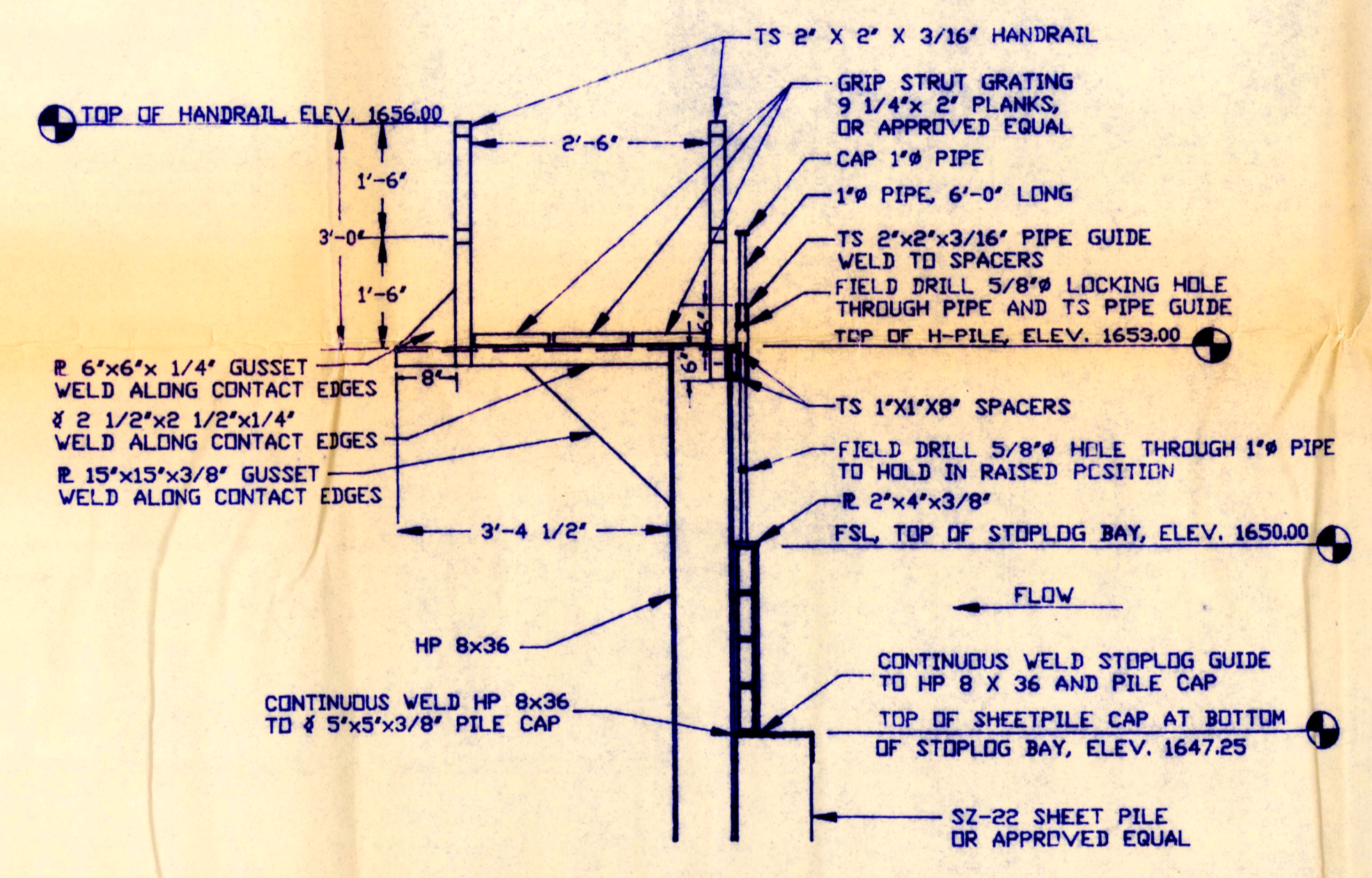
DETAIL 'A'
NOT TO SCALE



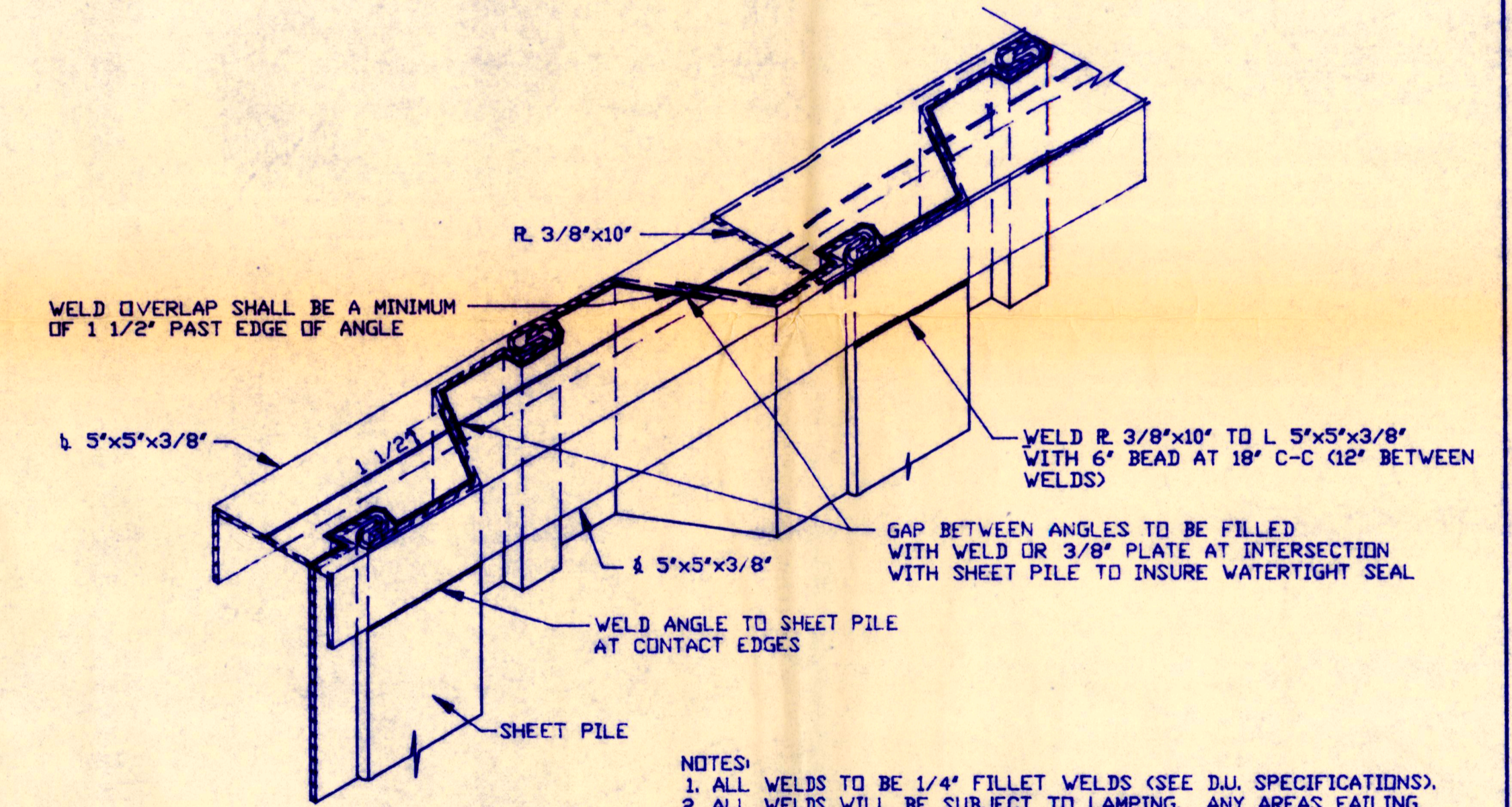
DETAIL 'B'
NOT TO SCALE



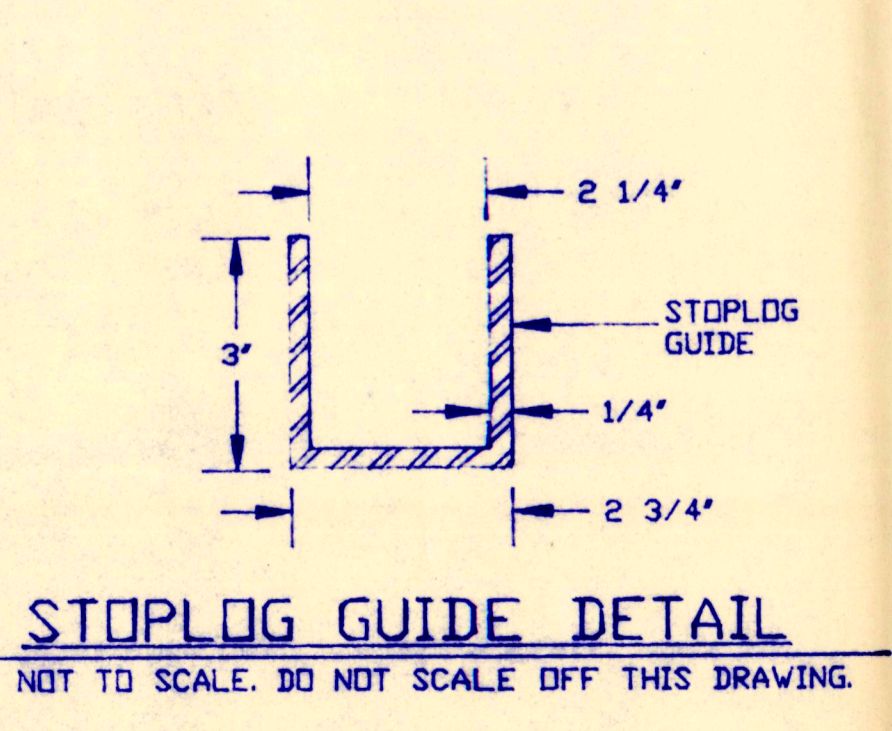
PARTIAL UPSTREAM ELEVATION
NOT TO SCALE



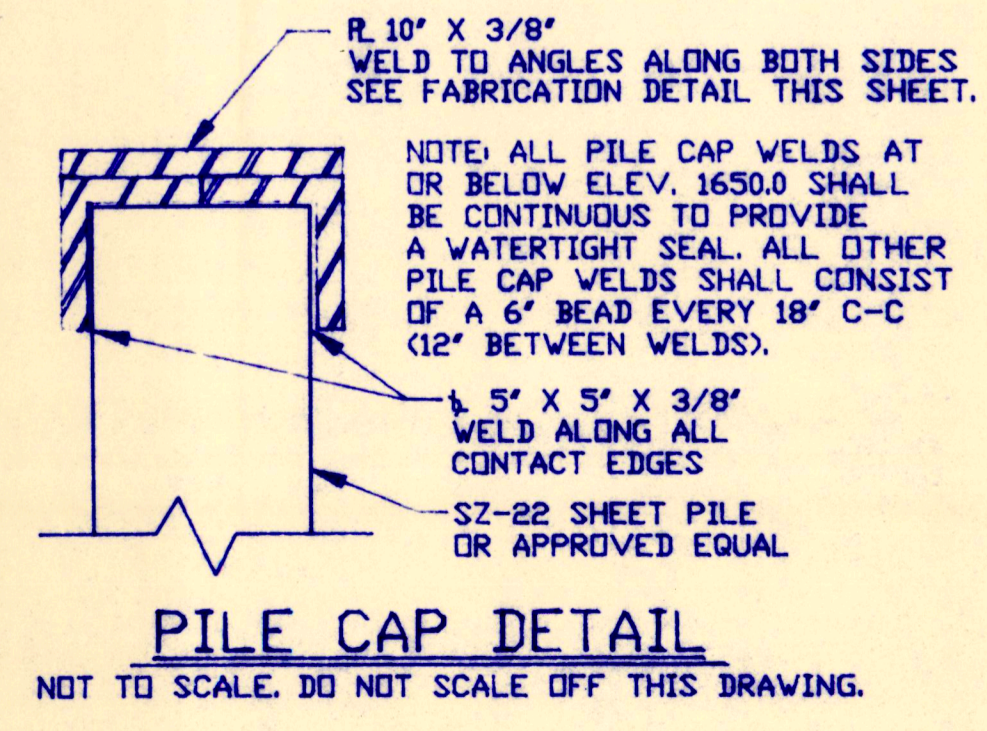
SECTION 'D-D'
NOT TO SCALE



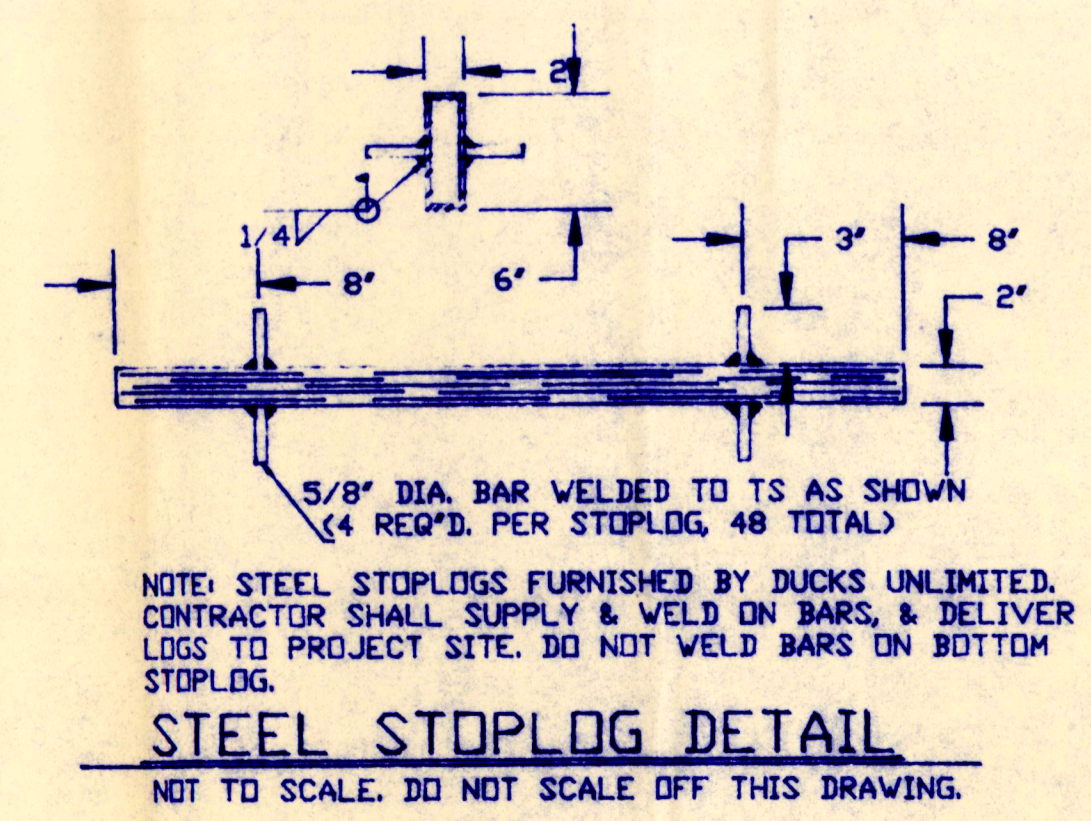
- NOTES:
1. ALL WELDS TO BE 1/4" FILLET WELDS (SEE D.U. SPECIFICATIONS).
 2. ALL WELDS WILL BE SUBJECT TO LAMPING. ANY AREAS FAILING WILL BE REWELDED BEFORE ACCEPTANCE OF PROJECT.
 3. TOP OF SHEET PILE SHALL BE TRIMMED TO GRADES INDICATED ON PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED FROM THE COST OF "SHEET PILE INSTALLATION".
 4. ABOVE F.S.L. PILE CAP NEED NOT BE WATERTIGHT, WELDS SHALL CONSIST OF A 6" BEAD AT 18" C-C (12" BETWEEN WELDS).
 5. LENGTH OF PILE CAP AS SHOWN ON PLANS.
 6. ALL WELDS AROUND STOPLOG BAY TO BE CONTINUOUS TO INSURE A WATERTIGHT SEAL. WELD STOPLOG GUIDE CHANNELS TO PILE CAP, BOTH SIDES.



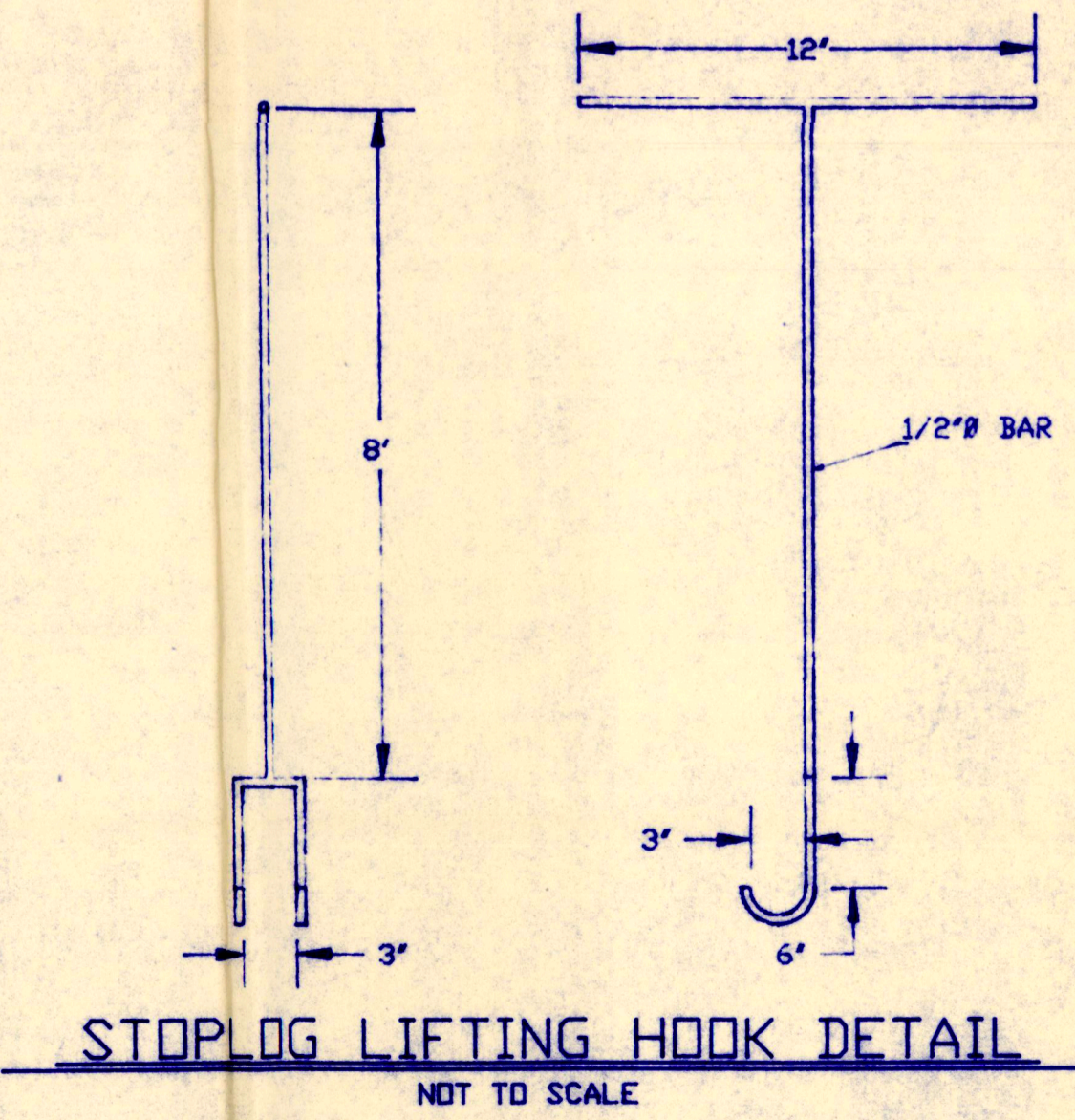
STOPLOG GUIDE DETAIL
NOT TO SCALE. DO NOT SCALE OFF THIS DRAWING.



PILE CAP DETAIL
NOT TO SCALE. DO NOT SCALE OFF THIS DRAWING.



STEEL STOPLOG DETAIL
NOT TO SCALE. DO NOT SCALE OFF THIS DRAWING.



STOPLOG LIFTING HOOK DETAIL
NOT TO SCALE

	PROJECT NO. SD-120-01	DESIGNED BY: DJL
	BUFFALO LAKE WPA	DRAWN BY: TSP
	SHEET PILE AND CATWALK FABRICATION DETAILS	SUPERVISED BY:
		CHECKED BY: BRK
DATE: 7-27-1992	SHEET NO. 4 OF 5	APPROVED BY: