

WATER PERMIT NO. <sup>45</sup>~~59~~**3**

Name of Applicant: US Fish & Wildlife Service

Address: PO Box 25486, Denver Federal Center, Denver CO 80225 Phone: 303 236-5321

Amount of Water Claimed: 1555 AF (477 AF storage & 1,078 AF seasonal) Total Acres: NA

Source of Water Supply: unnamed drainage

Water to be used for: fish & wildlife production

County: Brookings

Type of Waste Disposal System: NA

Location: 3 miles southeast of Arlington

PRIORITY Date Received: 6-24-96

Fee: \$500

Corrected Application Received:

Period of Annual Use: January 1 - December 31

Remarks:

Diversion Point: <sup>W/2</sup>~~NW 1/4~~ NW 1/4 Sec 11-  
T110N-R52W

Water Impounded: SW 1/4 SW 1/4 Sec 2, NW 1/4 NW 1/4 Sec 11, NW 1/4, N 1/2 SE 1/4, N 1/2 SW 1/4, E 1/2 NW 1/4, SW 1/4 SW 1/4 Sec 10, S 1/2 NW 1/4, N 1/2 SE 1/4 Sec 9; all in T110N-R52W

Depth of Well: NA

Well Driller: NA

Remarks:

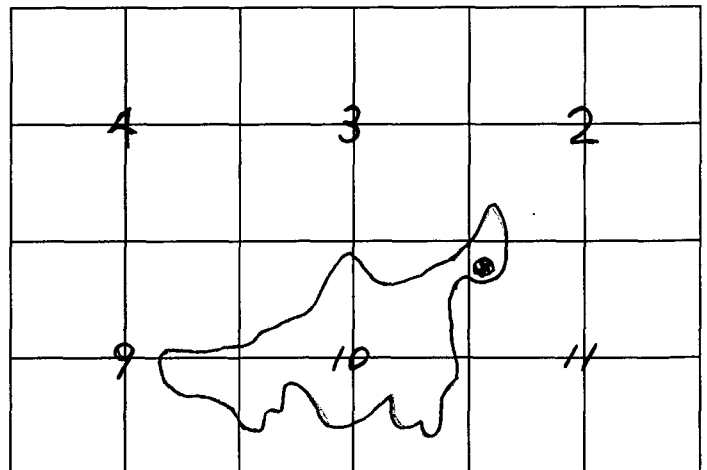
Type of Map: topo

Prepared by: Albert E. Bevilacqua

Reviewed and the Number Assigned on: 6-24-96

By: Karen Schlaak

Notice of Hearing - date to intervene: \_\_\_\_\_



**SOUTH DAKOTA**  
**WATER PERMIT NO. 5945-3**

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Date of first receipt of application June 24, 1996.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 5945-3 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. 5945-3 appropriates 1,555 acre feet of water annually by constructing a dam on a unnamed drainage ditch located in the W 1/2 NW 1/4 Section 11 with water impounded in portions of the SW 1/4 SW 1/4 Section 2, W 1/2 NW 1/4 Section 11, N 1/2, N 1/2 SE 1/4, SE 1/4 SE 1/4, N 1/2 SW 1/4 Section 10, N 1/2 SE 1/4 Section 9; all in T110N-R52W. This permit authorizes impoundment of water sufficient to maintain water at the outlet elevation of 1721.0 feet mean sea level. The dam will impound 477 acre feet of water with an additional 1,078 acre feet to be appropriated to offset evaporation and maintain a pool elevation of 1721.0 feet mean sea level.
2. The water appropriated shall be used for the purpose of providing habitat for fish and wildlife propagation and may not exceed the amount of water needed for beneficial use for fish and wildlife propagation purposes.
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. 5945-3 is September 3, 1996.
5. The date from which applicant may claim right is June 24, 1996.
6. One-fifth of the construction is to be completed on or before March 3, 1999.
7. All construction is to be completed on or before September 3, 2001.
8. Water is to be put to beneficial use on or before September 3, 2005.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

**QUALIFICATIONS**

1. Water Permit No. 5945-3 authorizes a dam with storage capacity of 477 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation of 1,721 feet mean sea level.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

**WATER MANAGEMENT BOARD**

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

SEP 23 1996  
date





FORM 2: Application for uses other than irrigation

(type or print)

Mail to:  
Water Rights Division  
Joe Foss Building  
523 E Capitol  
Pierre SD 57501-3181  
605 773-3352

No. 5945-3 Hydrologic Unit 10/70202  
Basin Sioux River  
Newspaper Brookings Register, Brookings, SD  
(office use only)



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

Check use of water:

☐ Municipal ☐ Suburban Housing ☐ Recreational ☐ Institutional  
☐ Rural Water System ☐ Commercial ☒ Fish & Wildlife ☐ Geothermal Heat  
☐ Domestic ☐ Industrial ☐ Other \_\_\_\_\_  
(over 18 gpm)

Type of Application: ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation  
(check one) ☐ Place to Beneficial Use Water Reserved by Future Use Permit No. \_\_\_\_\_  
☐ Amendment/Correction to Permit No. \_\_\_\_\_

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.) \_\_\_\_\_

- Name of Applicant UNITED STATES OF AMERICA  
Fish and Wildlife Service Phone (303) 236-5321  
Mailing Address P.O. Box 25486, Denver Federal Center, Denver State CO 80225  
(Street, RR, or Box) (City) 477 ac-ft storage (Zip Code)  
1078 ac-ft seasonal
- Amount of water claimed \_\_\_\_\_ \*CFS or \_\_\_\_\_ \*\*GPM 1,555 \*\*\*AF  
(\*Cubic Feet per Second) (\*\*Gallons per Minute) (\*\*\*)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Unnamed Drainage Ditch
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) \_\_\_\_\_  
W1/2 NW Section 11, T110N R52W Water impounded SW1/4 SW1/4 sec 2, W1/2 NW1/4 section 11;  
N1/2, N1/2 SW1/4, N1/2 SE1/4, SE1/4 SE1/4 sect. 10, N1/2 SE1/4 sect. 9, all in T110N, R52W County Brookings
- County or counties where water will be used Brookings
- Annual period during which water is to be used January 1 thru December 31
- Give a description of the 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 Attachment No. 1

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Attach map and any other technical information. (see instructions)

STATE OF ~~SOUTH DAKOTA~~ COLORADO)

County of Jefferson )<sup>ss</sup>

I, George R. Smith, 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 George R. Smith  
Subscribed and sworn to before me this 18th day of June 19 96

Susan E. Craddock  
Notary Public

My Commission Expires Aug. 5, 1997.

## 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

- 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 for each dam. The locations of the dams need to 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.  
3502 Franklin Ave., Bismarck, ND 58501-0761

- b) Freeboard 5'  
c) Crest Width 30'

Crest Length 108'

- d) Height 10'

- e) Primary Outlet Capacity 677 cfs

If pipe, diameter \_\_\_\_\_

- f) Secondary Spillway Capacity None

Spillway Width \_\_\_\_\_

- g) X & Y Slope

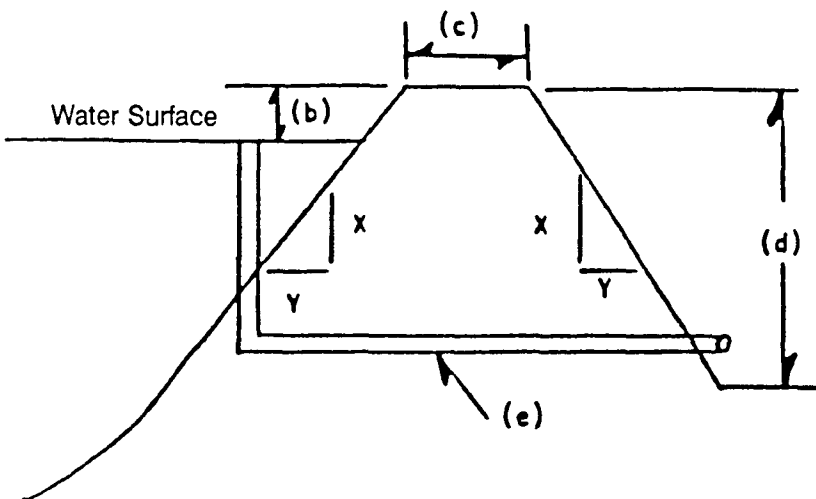
Upstream 3:1

Downstream 3:1

- h) Surface Area of Impoundment 350 acres

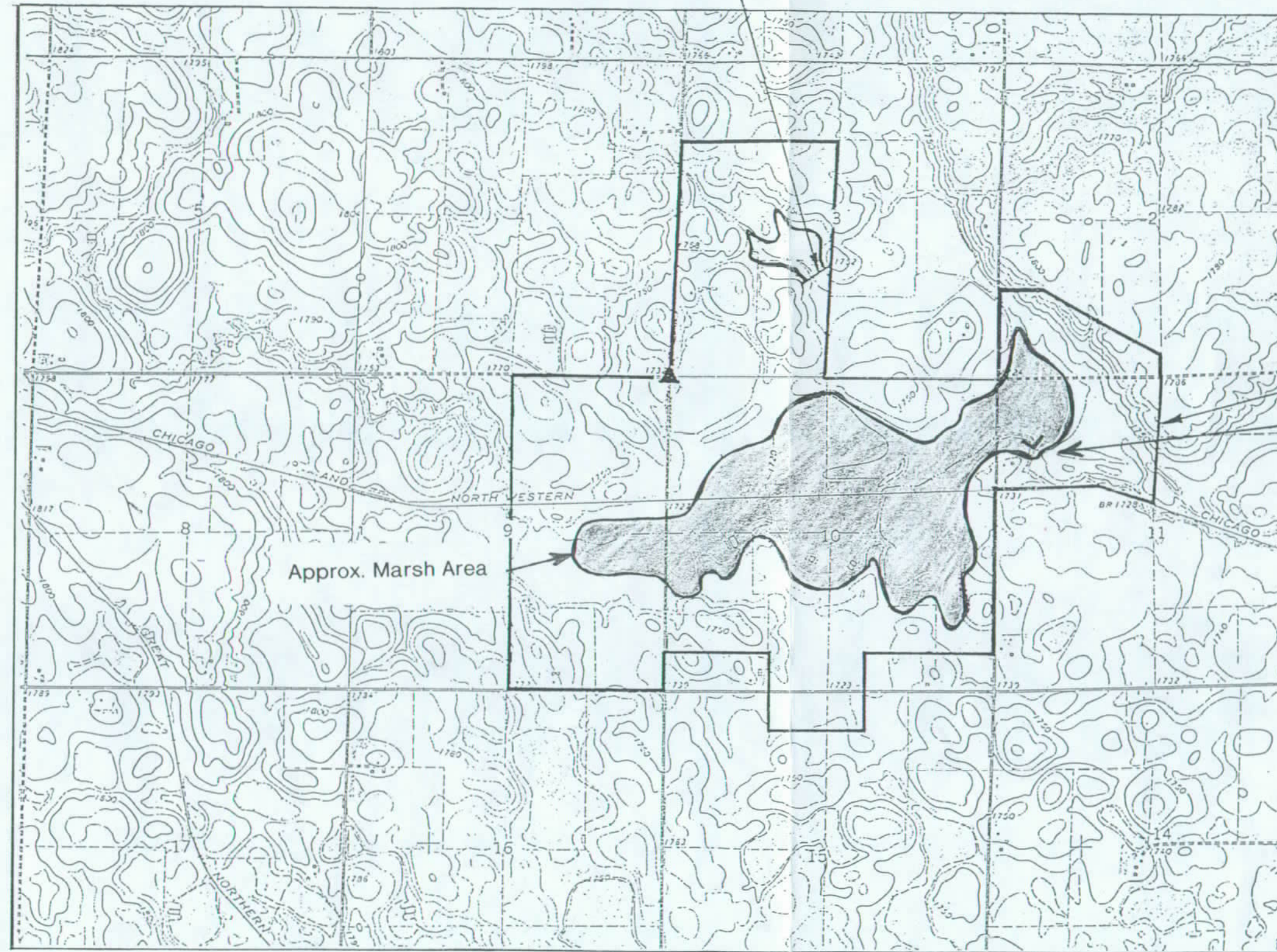
- i) Storage 477 Acre Feet

- j) Drainage Area above Dam 5,225 Acres





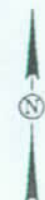
Permit No. 5855-3



WPA Boundary  
Point of Diversion  
T 110 N

Approx. Marsh Area

R 52 W



VICINITY MAP  
SCALE 1"=2000'

I, Albert E. Bevilacqua, of the U.S. Fish and Wildlife Service, P.O. Box 25486, DFC, Denver, CO. 80225, do hereby certify that this map was prepared from notes and drawings obtained under my direction, and that it correctly represents the works for the accompanying application.

*Albert E. Bevilacqua*  
Regional Engineer

UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
ENGINEERING

DRY LAKE  
WATERFOWL PRODUCTION AREA  
BROOKINGS COUNTY, SOUTH DAKOTA

WATER RIGHTS FILING MAP

|                                    |               |                |               |                  |
|------------------------------------|---------------|----------------|---------------|------------------|
| DESIGNED:<br>GP                    | DRAWN:<br>DLM | CHECKED:<br>CW | DATE:<br>6/96 | DENVER, COLO.    |
| DRAWING No.<br>6R-SD-672-WR-P-32.0 |               |                |               | SHEET:<br>1 OF 1 |

5954-3



# RECEIPT

414994

## Division of Water Rights

### South Dakota Department of Environment and Natural Resources

Pierre, \_\_\_\_\_ June 24, 19 96

RECEIVED OF U.S.F.W.S., P.O. Box 25486, Denver Federal Center, Denver, CO 80225-0486  
the following amount in fees for services rendered as provided for by law:

|                                                                                                                              |       |        |
|------------------------------------------------------------------------------------------------------------------------------|-------|--------|
| Fee for Application for Permit No. <u>5945-3</u> to Appropriate Water, to construct and to put water to beneficial use _____ | 500   | 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 | 500 00 |

By John Hatcher  
Chief Engineer

Attachment #1

DRY LAKE WPA  
BROOKINGS COUNTY, SOUTH DAKOTA

477 AF Storage  
+ 1,078 AF Seasonal \*  
= 1,555 AF Total



\* Per Gale Selken, South Dakota Department of  
Environment and Natural Resources, Water Rights  
Division, the Net Evaporation of 37 inches or  
3.08 feet over the 350 surface acre marsh =  
1,078 AF annual seasonal use.

3. It is further mutually agreed that no Member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract, or to any benefit to arise thereupon. Nothing, however, herein contained shall be construed to extend to any incorporated company, where such contract is made for the general benefit of such corporation or company.

4. Payment of the consideration will be made by a United States Treasury check after acceptance of this indenture by the Secretary of the Interior or his authorized representative and after the Field Solicitor of the Department of the Interior shall have approved the easement interest thus vested in the United States.

IN WITNESS WHEREOF the party of the first part has hereunto set their hand and seal this 5th day of March, 1996.

THE DAKOTA, MINNESOTA & EASTERN RAILROAD CORPORATION,  
BROOKINGS COUNTY, SOUTH DAKOTA

BY: Douglas G. DeBerg (L.S.)  
ATTEST: Chris Scanlon (L.S.)

(Corporate Seal)

ACKNOWLEDGEMENT

STATE OF SOUTH DAKOTA )  
COUNTY OF BROOKINGS ) ss

On this 5th day of March, 1996, before me, the subscriber, a Notary Public in and for the County of Brookings, State of South Dakota, appeared Douglas G. DeBerg

to me personally known to be the Chief Engineer of The Dakota, Minnesota & Eastern Railroad Corporation, a Delaware Corporation and who, being by me duly sworn, did say that he is the Chief Engineer of the said The Dakota, Minnesota & Eastern Railroad Corporation, a Delaware Corporation, and that the seal affixed to this instrument, dated the 5th day of March, 1996 is the corporate seal of said corporation, that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said Douglas G. DeBerg acknowledged said instrument to be the free act and deed of said corporation.

Given under my hand and official seal.

(SEAL)

Joyce E. Hock  
Notary Public

My commission expires: May 5, 2002

ACCEPTANCE

The Secretary of the Interior, acting by and through his authorized representative, has executed this agreement on behalf of the United States this \_\_\_\_\_ day of \_\_\_\_\_, 1996.

THE UNITED STATES OF AMERICA

By \_\_\_\_\_

(Title) U.S. Fish and Wildlife Service

This instrument was prepared by:  
U.S. Fish and Wildlife Service  
Federal Building, Room 113  
Huron, South Dakota 57350 (605) 352-7014

United States Department of the Interior  
Fish and Wildlife Service

Branch of Realty

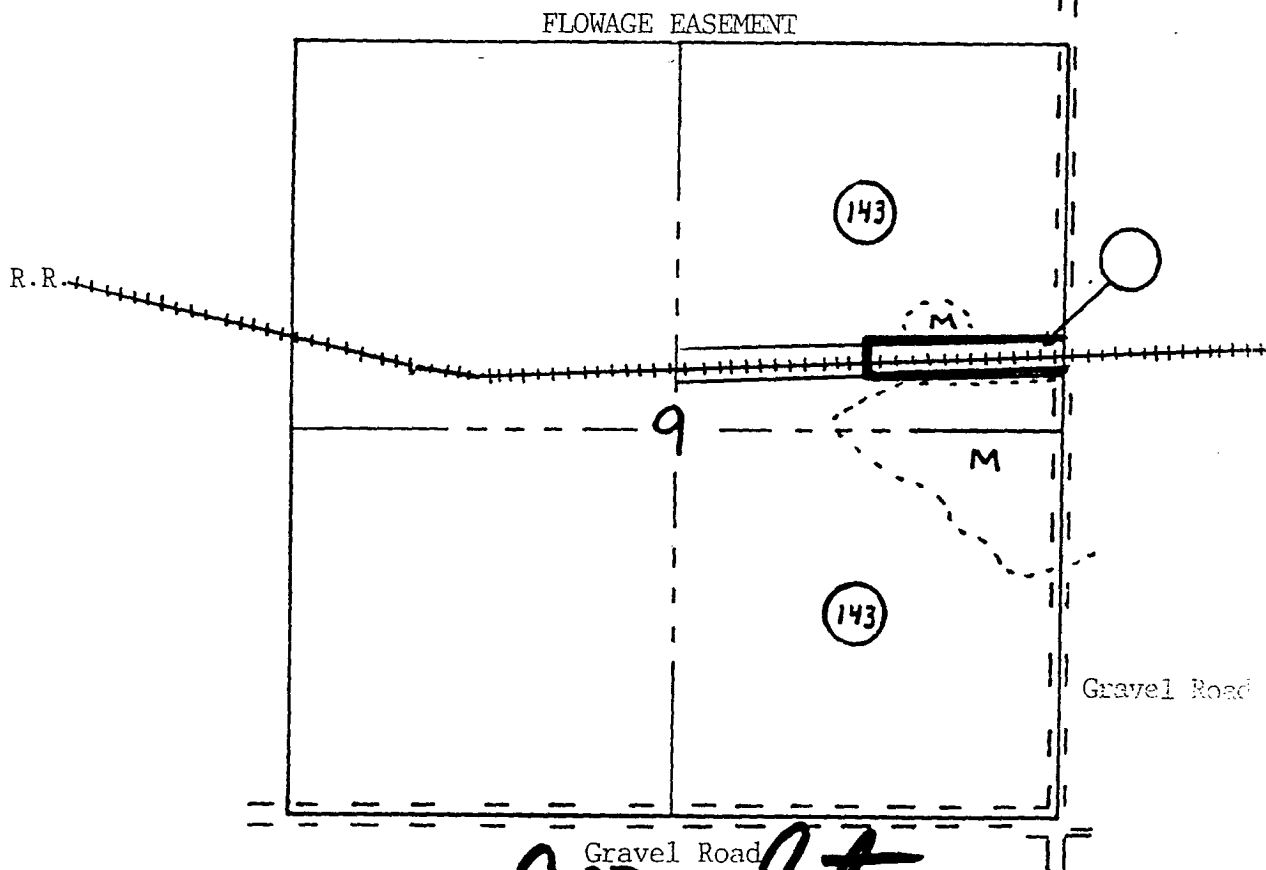
OWNER: Dakota, Minnesota and Eastern Railroad TRACT NO.: 6.1 ACFF

UNIT: Brookings W.A. Brookings COUNTY STATE OF: South

DESCRIPTION: 5th PRINCIPAL MERIDIAN

T. 110 North R. 52 West,

Section 9, the railroad right-of-way 200 feet in width passing through the SE $\frac{1}{4}$ NE $\frac{1}{4}$  as shown on plats Number 1 and 10 filed on August 7, 1879 with the Office of the Secretary of Interior



*JC McIntyre*  
Landowner Signature

Base from B.L.M. Plat approved \_\_\_\_\_ Aerial Photo No. VU11L-257 Dated 2-20-95

LEGEND

Scale: 4 inches = 1 mile

|  |             |  |                   |
|--|-------------|--|-------------------|
|  | Agriculture |  | Swamp             |
|  | Grass       |  | Marsh             |
|  | Hay, wild   |  | Water             |
|  | Timber      |  | Railroad R-O-W    |
|  | Brush       |  | Easement Boundary |

Photograph Station

Examined by PMcF 2-22-95

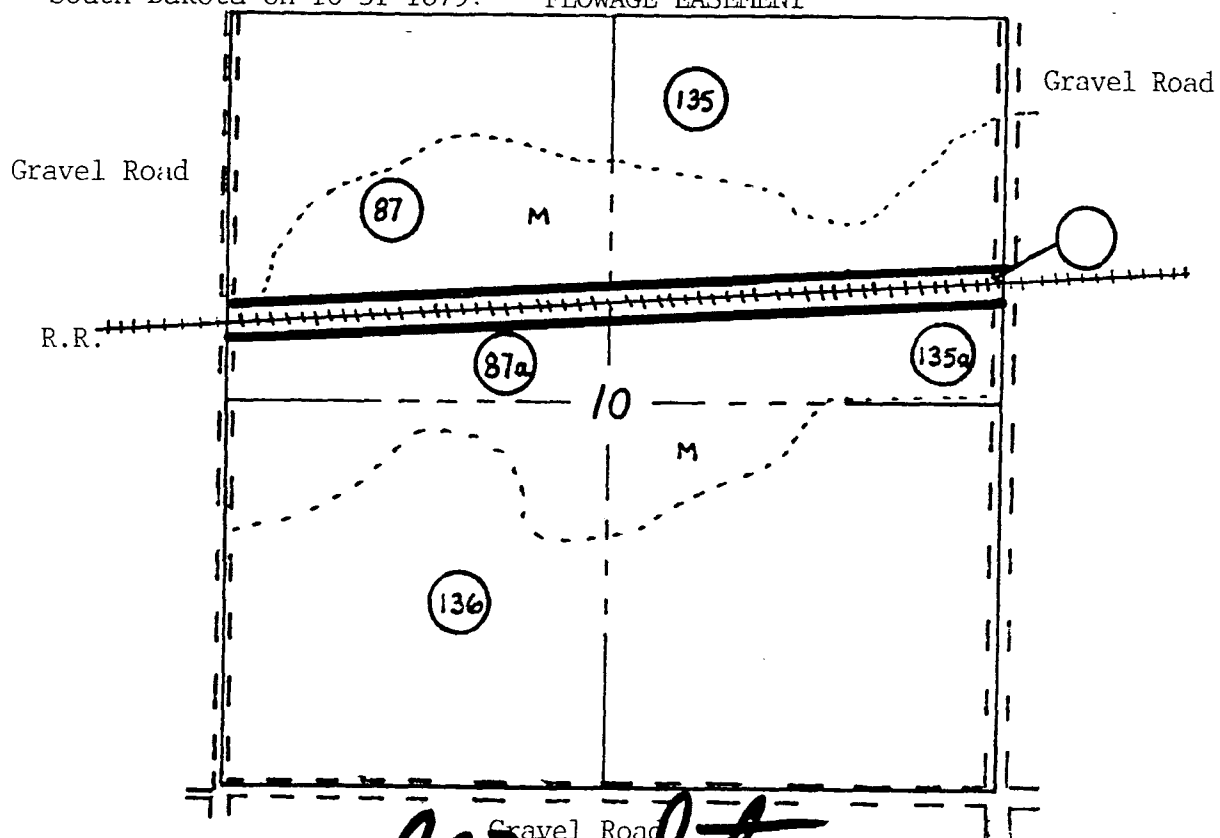
Platted by PMcF 2-24-95

Checked by BAK 2-28-95

Exhibit \_\_\_\_\_

## Branch of Realty

↑  
N



Landowner Signature

○ → Photograph Station

Checked by BAK 2-28-95

**Exhibit**



## A circular stamp with a star in the center. The text "JUNE 1996" is at the top, "WATER RIGHTS PROGRAM" is in the middle, and "BUREAU OF LAND MANAGEMENT" is at the bottom. A serial number "3031-123456789011101088" is written around the perimeter.

2. Notice of acceptance of this agreement shall be given to the party of the first part by certified mail addressed to: Dakota, Minnesota & Eastern Railroad Corporation, c/o Mr. Tim Carlson, P.O. Box 178, Brookings, South Dakota 57006 and such notice shall be binding upon the party of the first part.



DUCKS  
UNLIMITED  
INC.



DUCKS UNLIMITED, INC.  
GREAT PLAINS REGIONAL OFFICE

3502 Franklin Avenue  
Bismarck, North Dakota 58501-0761  
(701) 258-5599

May 21, 1996

U.S. Fish & Wildlife Service  
ATTN: Al Bevilacqua, Regional Engineer  
PO Box 25486-DFC  
Denver, CO 80225

RE: Dry Lake WPA (SD-0164-002)

Dear Mr. Bevilacqua:

Enclosed are two copies of **preliminary** design plans for a proposed project located on Dry Lake WPA near Arlington, South Dakota in Brookings County. The project was submitted through Tom Tornow at Madison Wetland Management District.

Please review the plans and let us know if you have any questions or comments. I have included a **preliminary** copy of my Design Report as well. In addition, the required map for the water permit application is provided. After the initial review process is complete, I will finalize and sign the plans and Design Report, and send the appropriate number to your office for submittal with the South Dakota Water Rights application.

A copy of the plans and Design Report are being provided to Tom Tornow at Madison WMD so you can discuss them with him as needed. We are hoping to bid the project and begin construction this summer or early fall. If I can be of any assistance, please let me know.

Sincerely,

Doug Lipetzky, P.E.  
Regional Engineer

Enclosures

cc: Tom Tornow, Madison WMD



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE Mountain-Prairie Region

IN REPLY REFER TO:

BA WTR  
WTR SD  
Mail Stop 60189

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

STREET LOCATION:  
134 Union Blvd.  
Lakewood, Colorado 80228-1800



JUN 18 1996

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

Dear Mr. Hatch:

Please find enclosed the following documents pertaining to the Dry Lake Waterfowl Production Area in Brookings County, South Dakota:

- (1) Forms 2 and 2A, Application for Permit to Appropriate Water Within the State of South Dakota, with attachment;
- (2) Ducks Unlimited, Inc. Engineer's Design Report;
- (3) Ducks Unlimited, Inc. set of standard construction specifications;
- (4) Filing Map No. 6R-SD-672-WR-P-32.0;
- (5) Money Order in the amount of \$500 to cover filing fees; and
- (6) Copy of Easement granted by the Railroad.

Please notify this office of the newspaper selected, prior to publication of Notice of Hearing, so that the Authorizations of Advertisement can be forwarded to them.

If you have any questions regarding the specifications, please contact Doug Lipetzky at Ducks Unlimited, Inc. at (701) 258-5599. Should you have any questions or require further information pertaining to the application, please contact Ginger Price of our Water Resources Division at (303) 236-5321.

Sincerely,

Chief, Water Resources Division

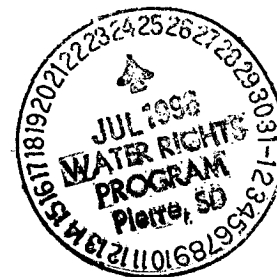
Enclosures (6)



DUCKS UNLIMITED, INC.  
GREAT PLAINS REGIONAL OFFICE

3502 Franklin Avenue  
Bismarck, North Dakota 58501-0761  
(701) 258-5599

July 19, 1996



Tim Schaal  
SD Dept. of Water & Natural Resources  
Division of Water Rights  
Joe Foss Building  
523 East Capitol Avenue  
Pierre, SD 57501

RE: Dry Lake WPA Project  
SD-0164-002

Dear Tim:

Enclosed is a final, signed set of plans and the Design Report for the above-referenced project.  
Please discard the preliminary items.

If you have any questions or need any additional information, please give me a call. Thanks.

Sincerely,

Doug Lipetzky, P.E.  
Regional Engineer

Encl.

# DESIGN REPORT

for

DRY LAKE WPA PROJECT

SD-0164-002



December 1, 1995

Prepared by:  
Ducks Unlimited, Inc.

PROJECT:

DRY LAKE WPA  
SD-164-002

LOCATION:

Sections 9, 10 & 11, T 110 N, R 52 W  
1 mile south, 4 miles east of Arlington  
Brookings County, South Dakota

MARSH DATA:

Full Service Level (FSL) @ 1721.0  
350 Surface Acres @ FSL  
477 Acre-Feet Capacity @ FSL

Top of Compacted Embankment @ 1726.0  
571 Surface Acres @ Top of Embankment  
2935 Acre-Feet Capacity @ Top of Embankment

PROJECT DESCRIPTION:

The project as proposed involves the installation of a water control structure located on Federal land managed by the U.S. Fish & Wildlife Service. The proposed structure is to be constructed across an unnamed drainage ditch in the northwest quarter of section 11, that discharges into another unnamed drainage, which discharges into Lake Goldsmith and eventually into the Big Sioux River.

The watershed contributing runoff directly to the wetland consists of approximately 5,225 acres or 9.73 square miles. In addition, discharge flows from the Bullis wetland project which was completed by Ducks Unlimited in 1995, enter the basin as well. Also, excess flows from a watershed south of Highway 14 have been diverted into the wetland via an open ditch, however, it is my understanding that a 36" *maximum* diameter tile line would be buried and used to divert the flows for the long term. Therefore, a 36" diameter tile line was assumed to be in place for the purposes of this review. Even if the open ditch was left as is, a 36" diameter culvert through a road currently controls flows entering the basin.

PRELIMINARY RISK ASSESSMENT:

The project site is located in a rural area of Brookings County. No residences or other buildings are located directly downstream adjacent to the outlet channel. Upon leaving the outlet structure, flows will follow an improved channel, paralleling a railroad



embankment. The channel crosses the railroad embankment twice in the next mile utilizing four span timber bridges according to railroad documents. The channel then meets County Road 1 where flows pass through a 5' by 5' reinforced concrete box culvert with approximately 7 feet of total available head (invert to top of road). The existing channel continues, intersecting four more section line roads before entering Lake Goldsmith.

Based on information obtained in the field, data present on the U.S.G.S. quadrangular maps, the rural location of the site, downstream land use and the relative small size of the dam, the general public would be in no danger in the unlikely event of a structure failure. No loss of life and minimal or no economic loss would be expected. Therefore, per the classification criteria outlined in Chapter 74:02:08 "Safety of Dams" of the South Dakota Department of Environment and Natural Resources, it is recommended that the proposed dam be classified as a low hazard, *Category 3* dam.

With a dam height of 10 feet and maximum storage capacity (at the top of the embankment) equal to 2,935 acre-feet, the dam size is classified as *Intermediate*. Based on State rules, the minimum spillway design flood for a *Category 3, Intermediate-Size* dam is a 100-year frequency and must be passed through the spillway without overtopping the embankment.

#### DESIGN:

As designed, the primary spillway will pass flows in excess of those produced by a 100-year, 24-hour rainfall event without overtopping the embankment.

A steel sheet pile weir with a 50' clear opening is proposed as the primary spillway. The structure will have removable stoplogs to provide variable control and drawdown capability to elevation 1716.0. The weir crest elevation or full service level (FSL) is proposed at elevation 1721.0. No emergency spillway will be constructed since the primary spillway can pass the design flows.

Regression equations provided in *Techniques for Estimating Flood Peaks, Volumes, and Hydrographs on Small Streams in South Dakota*<sup>1</sup> were used to develop flood peaks for design purposes for the Dry Lake WPA large basin watershed. The Natural Resources Conservation Service (NRCS) TR-20 Hydrology program was then calibrated by adjusting the curve numbers to produce a peak inflow for the various design events similar to those determined using the regression equations. Potential inflows from the proposed 36" diameter south tile diversion were also accounted for in the calibration procedure. Flows from the Bullis watershed were flood routed through its control structure and the outflow hydrograph added to the Dry Lake WPA inflow hydrograph.

The calibrated TR-20 model was then used to determine the discharge from the proposed structure at various reservoir stages with respect to time. The TR-20 model uses accepted procedures to develop inflow and outflow hydrographs. The primary spillway capacity was calculated using the weir flow formula. A discharge curve for the proposed Dry Lake WPA outlet structure is attached.

The following is a relationship between peak inflows, corresponding outflows, and reservoir elevations using the previously-mentioned methods of analysis:

| <u>EVENT</u> | <u>PEAK<br/>INFLOWS</u> | <u>MAXIMUM WATER<br/>SURFACE ELEVATION</u> | <u>FREEBOARD<br/>AVAILABLE</u> | <u>TOTAL<br/>DISCHARGE</u> |
|--------------|-------------------------|--------------------------------------------|--------------------------------|----------------------------|
| 2 yr         | 89 CFS                  | 1721.21                                    | 4.79 FT                        | 20 CFS                     |
| 5 YR         | 230 CFS                 | 1721.56                                    | 4.44 FT                        | 60 CFS                     |
| 10 YR        | 389 CFS                 | 1721.86                                    | 4.14 FT                        | 120 CFS                    |
| 25 YR        | 647 CFS                 | 1722.24                                    | 3.76 FT                        | 220 CFS                    |
| 50 YR        | 929 CFS                 | 1722.57                                    | 3.43 FT                        | 319 CFS                    |
| 100 YR       | 1296 CFS                | 1722.95                                    | 3.05 FT                        | 434 CFS                    |

Primary Spillway (Weir) Crest Elevation . . @ 1721.0

Top of Compacted Embankment Elevation. . . . @ 1726.0

---

<sup>1</sup>Becker, Lawrence D., U.S. Geological Survey, Water Resources Investigations 80-80, September 1980.

Although the top of the compacted embankment elevation is specified as 1726.0, very little actual embankment work will be required. The existing structure abutments are at or very near elevation 1726.0, thus, any embankment work is primarily for aesthetic purposes.

As indicated by the previous table results, the structure will easily comply with State dam safety rules passing the 100-year, 24-hour rainfall event without overtopping the embankment. Since the controlled outlet height is less than 6 feet, the dam would appear to be categorized as a low-hazard, noninventory dam based on U.S. Fish & Wildlife Service (Service) guidelines. Therefore, the Service's spillway design flood requirements are equivalent to the State rules which again are satisfied.

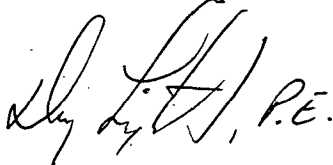
The Service has been in contact with township officials regarding roads in the area. Also, it should be noted an active rail line dissects the wetland, however, the Service has obtained a flood easement from the railroad company to allow restoration of the basin to FSL elevation 1721.0. No other land should be affected by the project.

In addition to providing excellent waterfowl and other wildlife habitat, the basin will provide flood storage and water quality benefits as well.

Construction plans have been drafted outlining project specifics. A set of standard construction specifications has previously been submitted to the Division of Water Rights.

Dated: December 1, 1995

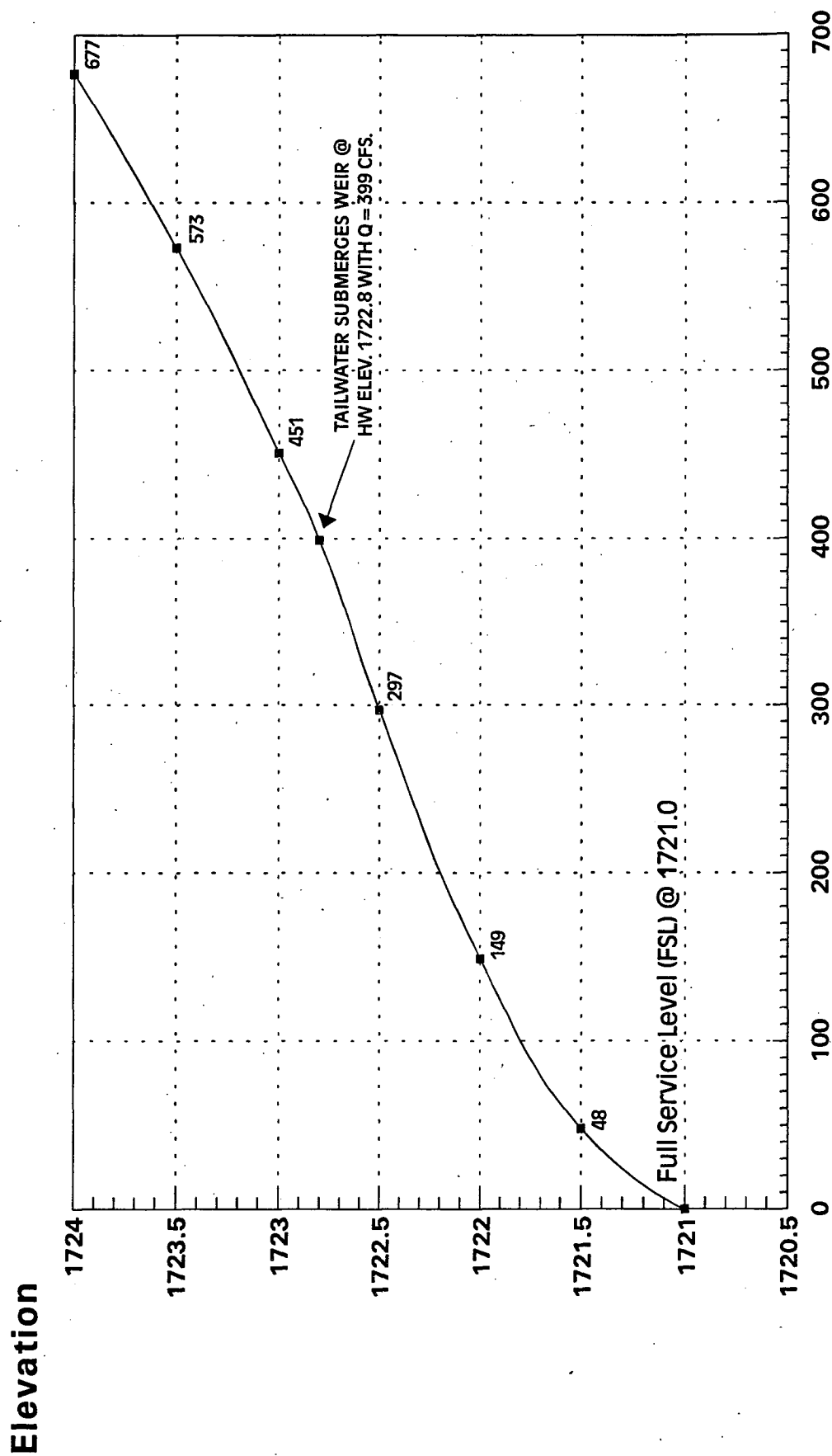
Submitted By:

A handwritten signature in dark ink, appearing to read "Doug Lipetzky, P.E.", with a stylized flourish at the end.

Doug Lipetzky, P.E.  
PE-4499

# DRY LAKE WPA WETLAND

## Discharge Curve For 50' Sheet Pile Weir



— 50' Sheet Pile Weir

Water Permit, Application #5945-3  
US Fish & Wildlife Service

Top of Dam Elev. - 1726  
P. Spillway Elev. - 1721  
Dam Height - 10 ft.

Cat. 3 - Low Hazard Dam

Normal Storage Capacity - 477 Ac-Ft.  
Max. Storage Capacity - 2935 Ac-Ft.

Intermediate size, Cat. 3 Dam - 100 year frequency event  
Minimum Spillway Design

From USGS WRI 80-80 "Techniques for est. Flood Peaks ... in SD"

$$DA = 9.73 \text{ mi}^2$$

$$\text{Slope} = 30 \text{ ft/mi}^2$$

$$S_i = 3.16$$

$$Q_{50} = 106 A^{.63} S_i^{.45} \dots^{.69}$$

$$= 106 (9.73)^{.63} (30)^{.45} (3.16)^{.69}$$

$$= 106 (4.19) (4.62) (0.45)$$

$$Q_{50} = 923 \text{ cfs}$$

$$Q_{100} = 132 A^{.65} S_i^{.46} \dots^{.67}$$

$$= 132 (9.73)^{.65} (30)^{.46} (3.16)^{.67}$$

$$= 132 (4.39) (4.78) (0.46)$$

$$Q_{100} = 1275 \text{ cfs}$$

Ducks Unlimited uses the SCS TR-20 model to route a  $Q_{50}$  peak = 929 cfs through the dam with 3.43 feet of freeboard remaining and a  $Q_{100}$  peak = 1296 cfs through the dam with 3.05 feet of freeboard remaining.

Section 74:02:08:09

1. Topo Maps - OK
2. Dam Axis Profile - OK
3. Dam Max X-Sec. - OK
4. Area-Capacity Data - OK
5. Outlet Drawings - OK
6. Spillway Rating Curve - OK
7. Spillway Details - OK
8. Specs. - Std. - OK
9. EPP - N/A - OK

SCS Annual Yield

$$DA = 9.73 \text{ mi}^2 = 6227 \text{ Ac.}$$

Use Isogram No. 2 1/2  
Assume CN = 74

$$50\% \text{ chance} = 0.41 \text{ Ac-In/Acre}$$

$$0.41 \times 6227 / 12 = 213 \text{ Ac-Ft.}$$

$$10\% \text{ chance} = 2.0 \text{ Ac-In/Acre}$$

$$2.0 \times 6227 / 12 = 1038 \text{ Ac-Ft.}$$

$$80\% \text{ chance} = 0.15 \text{ Ac-In/Acre}$$

$$0.15 \times 6227 / 12 = 78 \text{ Ac-Ft.}$$

REPORT ON  
WATER PERMIT APPLICATION NO. 5945-3  
U. S. Fish & Wildlife Service  
June 19, 1996

Water Permit Application No. 5945-3 has been filed by the U. S. Fish & Wildlife Service to appropriate 1555 acre-feet of water annually by constructing a dam on an unnamed drainage located in the W 1/2 NW 1/4 of Section 11-T110N-R52W, in Brookings County. This application requests impoundment of water sufficient to maintain water at the spillway elevation of 1721.0 feet mean sea level. The water will be used to provide habitat for fish and wildlife production.

Discussion:

The Dry Lake WPA Project has been designed by Ducks Unlimited, Inc., and the plans and specifications have been reviewed and can be approved; however, construction of the dam can not begin until Water Permit Application No. 5945-3 is approved. The Dry Lake Dam will be classified as an intermediate size Category 3, Low Hazard dam. It will be 10 feet high with a normal storage capacity of 477 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 2935 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 100-year frequency event.

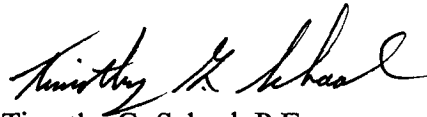
The Dry Lake Dam is designed to have a 50 foot wide steel sheet pile spillway with 5 feet of available freeboard. The drainage area above the dam is 9.73 square miles. Ducks Unlimited uses the Soil Conservation Service TR-20 model to route a 50-year frequency event peak of 929 cfs through the spillway with 3.43 feet of freeboard remaining. A 100-year frequency event peak of 1275 cfs is routed through the spillway with 3.05 feet of freeboard remaining.

The annual yield for this drainage area with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 213 acre-feet. The annual yield with a 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 78 acre-feet and the annual yield with a 10 percent chance of occurrence, or 1 out of 10 years, is expected to be 1038 acre-feet.

The Dry Lake WPA will be located in the W 1/2 NW 1/4 of Section 11-T110N-R52W. The dam will be located on an unnamed drainage about 5 miles upstream of Lake Goldsmith. The Department of Game, Fish and Parks holds Vested Right Claim No. 898-3 for the storage of 900 acre-feet of water annually in Lake Goldsmith. There are no other Water Rights/Permits located between Lake Goldsmith and the proposed project. Lake Goldsmith has a drainage area of about 20 square miles. The Dry Lake WPA will involve about one-half of this drainage area; however, if necessary, the Dry Lake structure will have stop logs that could be removed or lowered to allow flow downstream to Lake Goldsmith.

Conclusions:

1. Water Permit Application No. 5945-3 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 5945-3.



Timothy G. Schaal, P.E.  
Natural Resources Engineer III

Approved by:



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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT  
APPLICATION NO. 5945-3, U.S. Fish and Wildlife Service**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 5945-3, U.S. Fish and Wildlife Service, %George R. Smith, P.O. Box 25486, Denver Federal Center, Denver, CO 80225.

The Chief Engineer is recommending APPROVAL of Application No. 5945-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion has been developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualifications:

1. Water Permit No. 5945-3 authorizes a dam with storage capacity of 477 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation of 1,721 feet mean sea level.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.



JOHN HATCH, Chief Engineer  
July 26, 1996





**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

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

July 30, 1996

Doug Lipetzky, P.E.  
Regional Engineer  
Ducks Unlimited, Inc.  
3502 Franklin Ave.  
Bismarck, ND 58501-0761

Dear Mr. Lipetzky:

We have reviewed the plans and specifications for the Dry Lake Waterfowl Product Area located in Section 11-T110N-R52W, in Brookings County. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the project. Construction of the project may not begin until Water Permit Application No. 5945-3 is approved.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release the U.S. Fish and Wildlife Service, as owner of the dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Dry Lake Dam will be classified as a intermediate size Category 3 dam with a dam height of 10 feet, a normal storage capacity of 477 acre-feet, and a maximum storage capacity of 2935 acre-feet.

If you have any questions, please feel free to contact us.

Sincerely,

Gale N. Selken, P.E.  
Natural Resources Engineer IV  
for John Hatch, Chief Engineer  
Water Rights Program  
(605) 773-3352

c: Tom Tornow, USFWS, Madison  
Ginger Price, USFWS, Denver, CO



**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.

July 30, 1996

U.S. Fish & Wildlife Service  
%George R. Smith  
P.O. Box 25486  
Denver Federal Center  
Denver, CO 80225

Dear Mr. Smith:

Water Permit Application No. 5945-3 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 Brookings Register printed at Brookings, SD (Ph # (605) 692-6271). 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.



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

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

July 30, 1996

Brookings Register  
P.O. Box 177  
Brookings, SD 57006-0177

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 5945-3 to be published twice. Please publish the first notice on August 14, 1996, 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 & Wildlife Service, %George R. Smith, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (Ph # (303) 236-5321).

A copy of BOTH publications must be SENT to the WATER RIGHTS PROGRAM. 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 Program  
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

Instruction to Newspaper - Publish first Notice on August 14, 1996, with the second publication 7 days later. The applicant is responsible for payment.

---

NOTICE OF APPLICATION NO. 5945-3 to Appropriate Water

Notice is given that the U.S. Fish & Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 has filed an application for a water permit to appropriate 1,555 acre feet of water annually by constructing a dam on a unnamed drainage ditch located in the W 1/2 NW 1/4 Section 11 with water impounded in portions of the SW 1/4 SW 1/4 Section 2, W 1/2 NW 1/4 Section 11, N 1/2, N 1/2 SE 1/4, SE 1/4 SE 1/4, N 1/2 SW 1/4 Section 10, N 1/2 SE 1/4 Section 9; all in T110N-R52W. This application requests impoundment of water sufficient to maintain water at the outlet elevation of 1721.0 feet mean sea level. The dam will impound 477 acre feet of water with an additional 1,078 acre feet to be appropriated to offset evaporation and maintain a pool elevation of 1721.0 feet mean sea level. Water is to be used to provide habitat for fish and wildlife propagation.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5945-3 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and chief engineer. The applicant must file a petition if contesting the chief engineer's recommendation. The Chief Engineer's address is "Water Rights Program, 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 September 3, 1996.

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. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Nettie H. Myers, Secretary, Department of Environment and Natural Resources.

Form 8



# PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA )  
County of Brookings ) SS

1. Nancy P Skyberg

certify that the attached printed Notice was

taken from the Brookings  
Register

printed and published in Brookings

County of Brookings and State of

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

August 14, 1996

August 21, 1996

Cost of Printing: forty-one dollars  
and ninety-nine cents \$41.99

Nancy P Skyberg  
(Signature)

Legal Ad Coordinator  
(Title)

8-22-96

(Date Signed)



Legal 516, 2x, August 14, 21

## NOTICE OF APPLICATION

NO. 5945-3 to Appropriate Water  
Notice is given that the U.S. Fish & Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 has filed an application for a water permit to appropriate 1,555 acre feet of water annually by constructing a dam on a unnamed drainage ditch located in the W 1/2 NW 1/4 Section 11 with water impounded in portions of the SW 1/4 SW 1/4 Section 2, W 1/2 NW 1/4 Section 11, N 1/2, N 1/2 SE 1/4, SE 1/4 SE 1/4, N 1/2 SW 1/4 Section 10, N 1/2 SE 1/4 Section 9; all in T110N-R52W. This application requests impoundment of water sufficient to maintain water at the outlet elevation of 1721.0 feet mean sea level. The dam will impound 477 acre feet of water with an additional 1,078 acre feet to be appropriated to offset evaporation and maintain a pool elevation of 1721.0 feet mean sea level. Water is to be used to provide habitat for fish and wildlife propagation.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5945-3 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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Nettie H. Myers, Secretary  
Department of Environment and Natural Resources.



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

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

SEP 23 1996

Cheryl C. Williss  
U.S. Fish and Wildlife Service  
P.O. Box 25486  
Denver Federal Center  
Denver, CO 80225

Dear Ms. Williss:

Enclosed are Water Permit Nos. 5938-3 and 5945-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permits.

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 systems and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water Licenses may be issued, thus completing your acquisition of a Water Right.

Very truly yours,

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

enclosures

**PLEASE NOTE:** Certain changes may be made to your water permits usually without affecting the priority date. The location of a point of diversion may be changed or additional points of diversion may be approved if the water source remains unchanged; no additional water is appropriated; and, if irrigating, no additional land is irrigated. The change may be allowed without application or publication, if the Water Rights Program is contacted and the chief engineer makes a finding that the change does not increase the potential for interference with existing diversions.

A new water permit application is required to change water sources, increase the permitted diversion rate, or increase the irrigated acreage. If the application is approved, the water permit will receive a new priority date.



# 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

JUN 08 1998



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

Dear Sir or Madam:

Enclosed are Notices of Completion of Works and Application of Water to Beneficial Use forms for the following water permits:

|        |                       |
|--------|-----------------------|
| 5714-3 | Hamlin County WPA     |
| 5855-3 | Bullis WPA (Dry Lake) |
| 5882-3 | Bolstad WPA           |
| 5938-3 | Big Slough WPA, and   |
| 5945-3 | Dry Lake              |

Also enclosed is FedSelect Check in the amount of \$250 to cover the inspection fees and issuance of the Water Licenses.

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

Sincerely,

Cheryl C. Williss  
Chief, Division of Water Resources

Enclosures

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



Date JUN 16 1998

TO: Water Rights Division, DENR  
523 E. Capitol  
Pierre, SD 57501-3181

FROM: UNITED STATES OF AMERICA  
Fish and Wildlife Service P.O. Box 25486, Denver Federal Center  
(name) (address)  
Denver, CO 80225 (303) 236-5321  
(city) (state) (zip) (phone)

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. 5945-3.

Water Permit No. 5945-3 states that the diversion system is to be constructed by 09-03-2001, and that the water is put to beneficial use by 09-03-2005.  
(date) (date)

The diversion system was completed on 06-26-97.  
(date)

Applying the water to beneficial use was completed on 09-25-97.  
(date)

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

*Cheryl C. Willis*  
(signature)  
Cheryl C. Willis, Agent



# RECEIPT

## Water Rights Program

South Dakota Department of Environment and Natural Resources

49 415798

Pierre, June 11, 1998

RECEIVED OF USFWS, P.O. Box 25486, Denver, CO 80225-0486  
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. \_\_\_\_\_ to Appropriate Water, to construct  
and to put water to beneficial use \_\_\_\_\_

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. 5945-3

Fee for Filing Transfer Form \_\_\_\_\_

Fee for Filing Extension Request \_\_\_\_\_

Fee for \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Any Other Work Provided by Law)

Total

50 00

By

Chief Engineer

*John Hatch* 

**Permit No. 5945-3**  
**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 24, 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. 5945-3, bearing the priority of June 24, 1996 authorizing the storage of 477 acre-feet at an elevation of 1721.0 fmsl with an additional 1078 acre-feet annually to offset evaporation of the waters of surface water for providing habitat for fish and wildlife production purposes, in Brookings County.

The system is in the following condition good. The point of diversion is located W ½ NW ¼ Section 11 T110N-R52W with a longitude of -97.04511 and a latitude of 44.35131. The works are capable of storing 477 acre-feet with an additional 1078 acre-feet annually to offset evaporation which is to be used for providing habitat for fish and wildlife production. Water has been put to beneficial and the license should be issued the storage of 477 acre-feet with an additional 1078 acre-feet annually to offset evaporation.

**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 <u>10</u> feet            | 2) Height to primary spillway or outlet <u>5</u> feet |
| 3) Height to secondary spillway <u>NA</u> ft | 4) Crest width <u>12</u> feet                         |
| 5) Crest length <u>108</u> feet              | 6) Spillway length <u>NA</u> feet                     |
| 7) Spillway width <u>NA</u> feet             | 8) Approx. storage <u>477</u> ac-ft                   |
| 9) Outlet tubes:                             |                                                       |
| a) type <u>60" CMP riser</u>                 |                                                       |

**COMMENTS: The original map adequately describes the project and will be used for licensing.**



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

2-12-01

Date

# STATE OF SOUTH DAKOTA

## WATER LICENSE NO. 5945-3

(1) US Fish & Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225 made Application No. 5945-3, June 24, 1996 for a water permit to impound 477 acre-feet of water from runoff, Brookings County, South Dakota for fish & wildlife propagation purposes. Permit No. 5945-3, with a priority date of June 24, 1996 was approved September 3, 1996 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before September 3, 2001 and for the application to beneficial use of said water on or before September 3, 2005.

The permit holder submitted a *Notice of Completion of Works and Application of Water to Beneficial Use* on June 11, 1997. The *Notice* stated the diversion system was completed on June 26, 1997 and the water placed to beneficial use on September 25, 1997.

(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 477 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation of 1721.0 feet mean sea level. The location of the storage dam (spillway) is W ½ NW ¼ Section 11-T110N-R52W.

(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 U.S. Fish & Wildlife Service, PO Box 25486, Denver Federal Center, Denver CO 80225 the holder and/or owner of Water Right No. 5945-3 is issued a license to appropriate water, the right to impound 477 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation of 1721.0 feet mean sea level with a priority date of June 24, 1996 from the location specified in (2) of this license for fish & wildlife propagation. This license is subject to any limitations or qualifications listed in Water Right No. 5945-3 and subject to South Dakota State Law.

*Garland Erbele*

APR 04 2001

date

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





**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

APR 04 2001

5714-3, 5855-3, 5882-3, 5938-3, 5945-3

Cheryl Willis, Agent  
US Fish & Wildlife Service  
PO Box 25486  
Denver Federal Center  
Denver, CO 80225

Dear Ms. Willis:

Enclosed are Water License Nos. 5714-3, 5855-3, 5882-3, 5945-3 and 5938-3. This is the final water right document completing your process of obtaining a Water Right. Enclosed are Receipt Nos. 415794, 415795, 415796, 415798 and 415797 in the amount of \$50.00 which you paid for the investigation and issuance of the Water License.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

Garland Erbele, Chief Engineer  
Water Rights Program  
(605) 773-3352

enclosures

## Rath, Mark

---

**From:** Best, Diane  
**Sent:** Monday, July 23, 2001 9:55 AM  
**To:** Erbele, Garland; Rath, Mark; Selken, Gale  
**Subject:** Kingsbury County complaint

I received a call from Dale Knutson about the installation and operation of gates on Dry Lake in Brookings County. According to this guy, the FWS installed the gates on the lake outlet and the water is impairing a n/s township road about 2 miles west of Highway 81. There is a culvert in the township road but apparently it isn't handling the flows. The water is backed up for a two mile stretch along the township road. I'm not familiar with this as a lake. The guy also called it a slough. According to the map I have, it is called the Dry Lake/Selken Van Moorlehen WPA. (the Selken part is a distant cousin of Gale)

As I recall Gale, we talked and had understood this to be a drainage problem. Yet, the county has referred it to us again. Gale, I know you are out of the office this week, so I am also sending to Mark and Garland. I don't know why Dave Rusten is sending it back to us. Dale Knutson is at 627-9934 and is generally in the house at noon. As far as FWS is concerned, the person he's talked to is Carl Madsen. It seems to me that if this is truly a lake outlet, then it is one where the gates would be under state jurisdiction. Or if the gates are backing up a navigable waterway, then the state would have jurisdiction. Another one that might be in the middle.

## Water Rights Program - DENR

### File Documentation

File No. 5945-3

County: Brookings

**Name of Person:** Dale Knutson, Bangor township board

**Address:** #

**Date:** 8/14/01    **Telephone:** #

**RE:** Road erosion upstream from USFWS control structure

**Comments:**

*I met with Mr. Knutson and David Rusten, Brookings County Drainage Office, concerning erosion to two township roads. Mr. Knutson said that following a large rainstorm earlier this summer, water was backed up in the slough behind the USFWS control structure and caused some erosion damage to the township roads. We went to the roads and looked at the damage and also went and looked at the control structure. The control structure blocks and abandoned drainage ditch causing water to be impounded in a slough.*

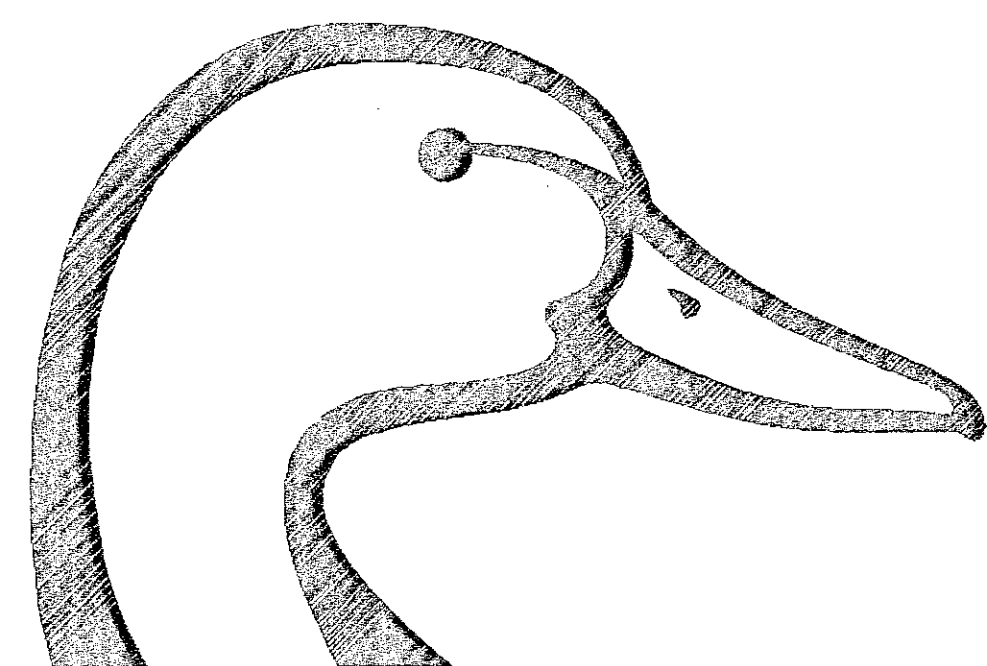
*What we found was the structure was designed to pass a 100 year event and was in good working condition. What I believe happed is the township roads are not capable of passing the large flows following big storms. Water builds up behind the road and overtops the road causing erosion. I suggested they add some more culverts, clean out the road ditches, build up the roads leaving a short section lower in case water still comes so only a small section of road will be damaged by over topping.*



Mark D Rath  
Natural Resources Engineering Specialist



# DUCKS UNLIMITED



DUCKS UNLIMITED

PROJECT

## DRY LAKE WATERFOWL PRODUCTION AREA SECTION 11, T 110 N, R 52 W BROOKINGS CO., SOUTH DAKOTA

IN COOPERATION WITH

MADISON WETLAND MANAGEMENT DISTRICT  
U.S. FISH & WILDLIFE SERVICE

### SPECIFICATIONS

|                         |     |
|-------------------------|-----|
| GENERAL CONDITIONS      | 101 |
| MOBILIZATION            | 201 |
| SITE PREPARATION        | 202 |
| EXCAVATION              | 203 |
| EMBANKMENT CONSTRUCTION | 204 |
| WATER                   | 205 |
| RIPRAP PLACEMENT        | 209 |
| SHEET PILE MATERIAL     | 214 |
| SHEET PILE INSTALLATION | 215 |
| STRUCTURAL STEEL        | 216 |
| STEEL H-PILES           | 217 |

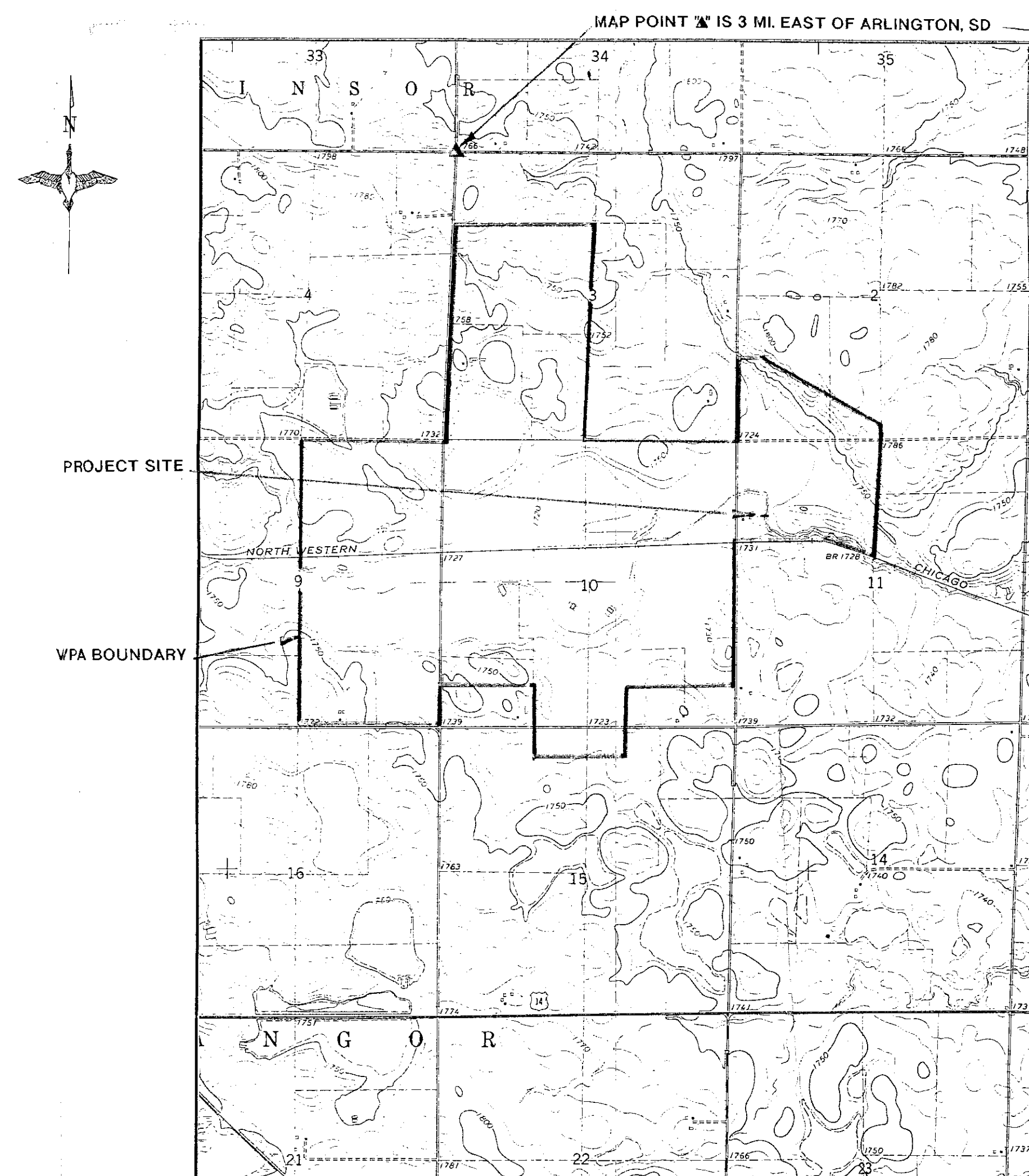
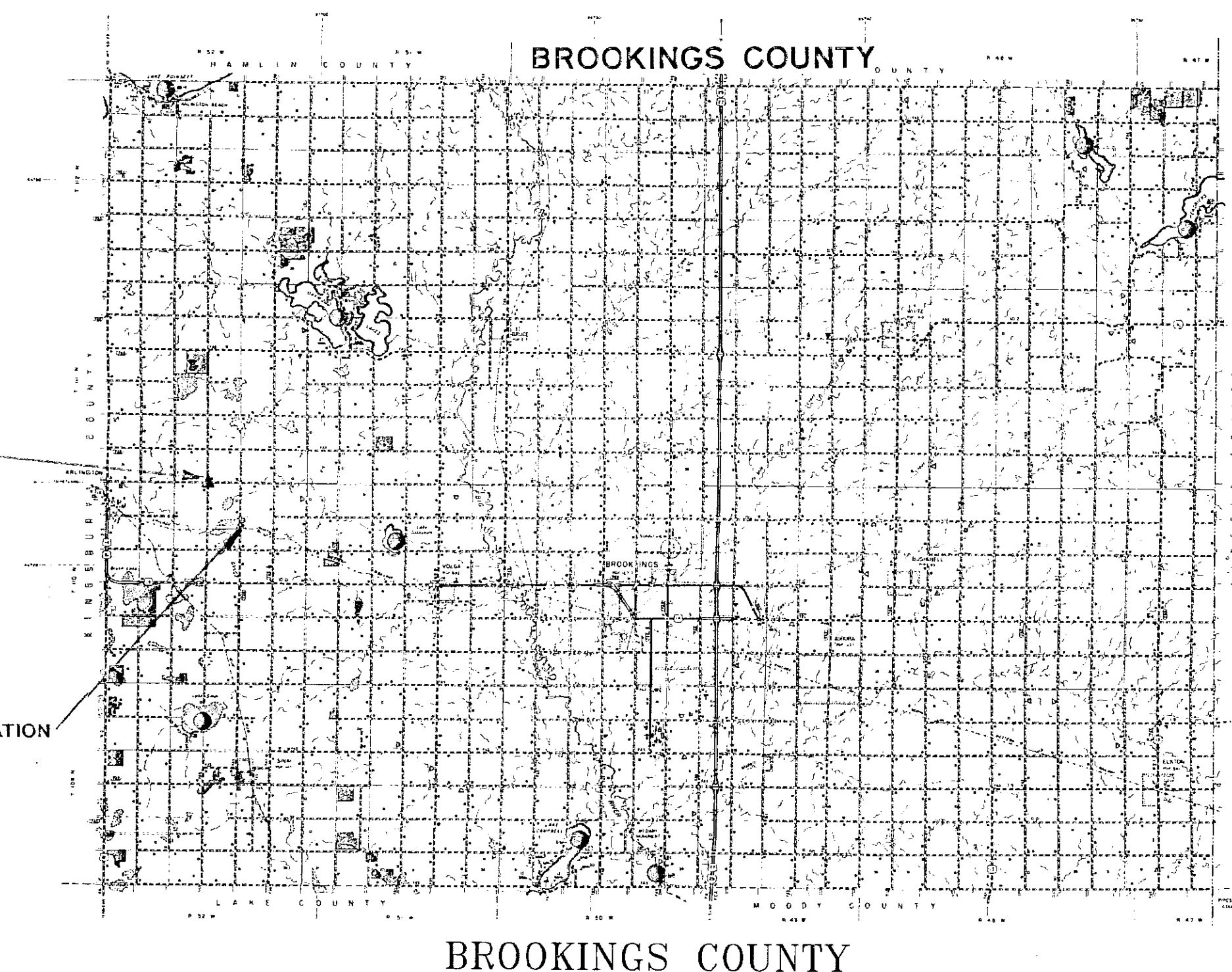
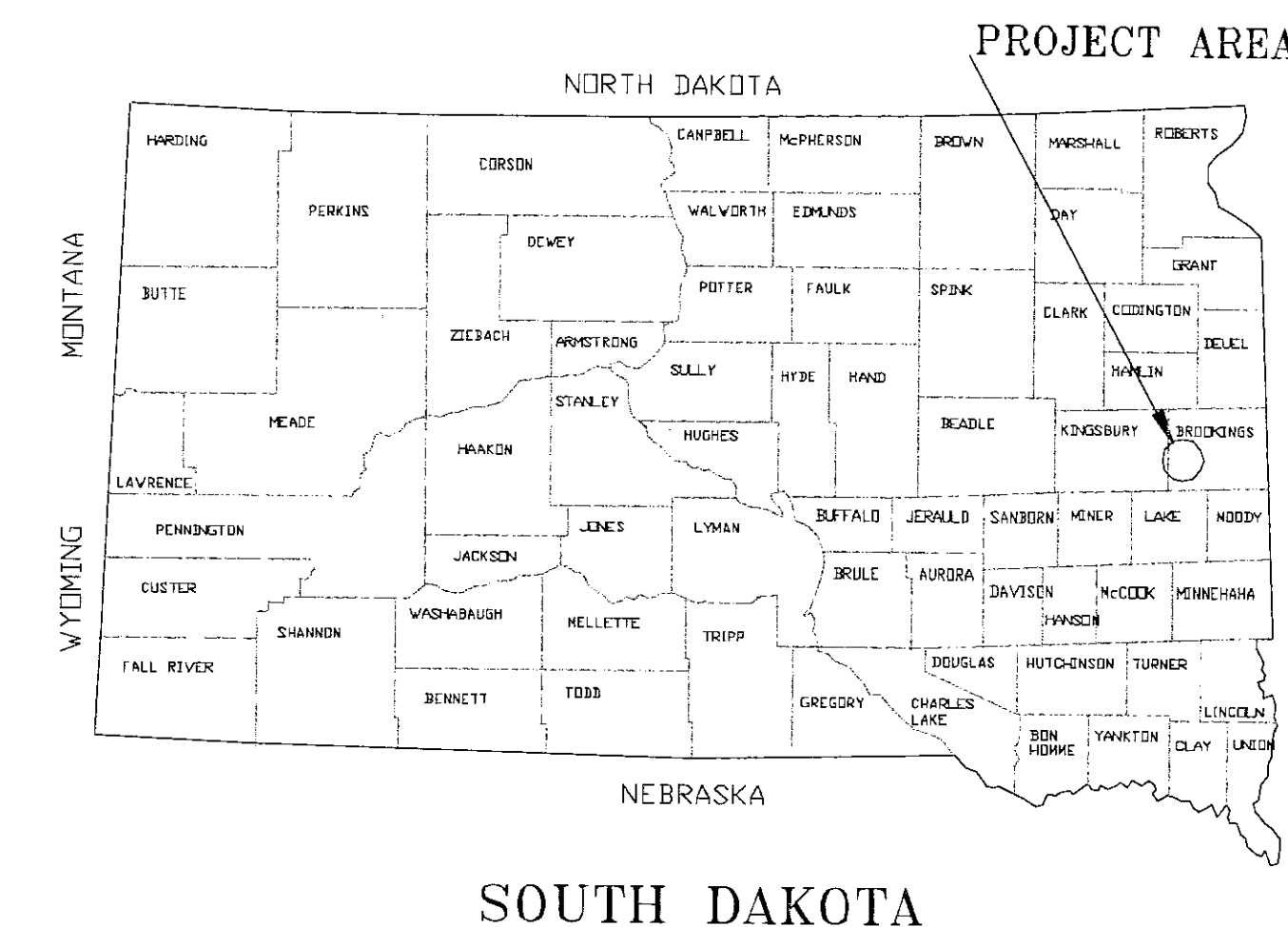
### PLAN INDEX

|                            |   |
|----------------------------|---|
| VICINITY MAP               | 1 |
| PROJECT TOPOGRAPHY & SOILS | 2 |
| PROJECT SITE PLAN          | 3 |
| STRUCTURE PLAN & PROFILE   | 4 |
| STRUCTURE DETAILS          | 5 |

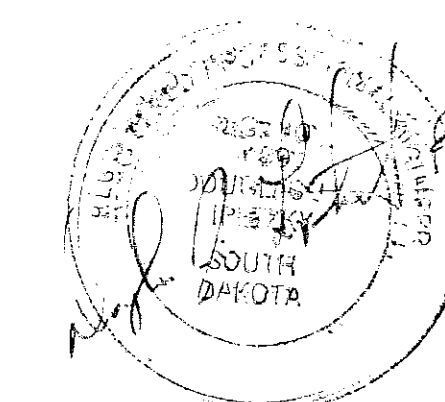
### QUANTITIES

|                         |             |
|-------------------------|-------------|
| MOBILIZATION            | 1 L.S.      |
| SITE PREPARATION        | 1 L.S.      |
| EXCAVATION*             | 3950 C.Y.-S |
| CLASS II RIPRAP         | 200 C.Y.-P  |
| SHEET PILE MATERIAL     | 1984 S.F.-P |
| SHEET PILE INSTALLATION | 1984 S.F.-P |
| STRUCTURAL STEEL        | 1 L.S.      |
| STEEL H-PILE            | 105 L.F.    |

\*INCLUDES SPOIL PILE & CHANNEL EXCAVATION



VICINITY MAP  
SCALE: 1" = 2000'



AGENCY CONTACT:  
TOM TURNOW  
MADISON WMD-USFWS  
MADISON, SD  
605/256-2974

PROJECT SIGNING

SIGN "A" 24" x 36"

SIGN "B" 11" x 14"

2 SIGN "A" AND 1 SIGN "B" WILL BE PROVIDED BY DUCKS UNLIMITED AND DELIVERED TO THE COOPERATING AGENCY. THE AGENCY IS RESPONSIBLE FOR INSTALLING THE SIGN(S) AT THE LOCATION(S) DESIGNATED ON THE PLANS.

|                              |                         |                          |
|------------------------------|-------------------------|--------------------------|
| DUCKS UNLIMITED INC.         | PROJECT NO. SD-0164-002 | DESIGNED BY: D.J.L.      |
|                              | DRY LAKE WPA            | DRAWN BY: JS             |
| GREAT PLAINS REGIONAL OFFICE | VICINITY MAP            | SURVEYED BY:             |
| DATE: 5-17-96                | SHEET NO. 1 OF 5        | APPROVED BY: [Signature] |
|                              |                         | CHECKED BY:              |



Appl. 5945-3

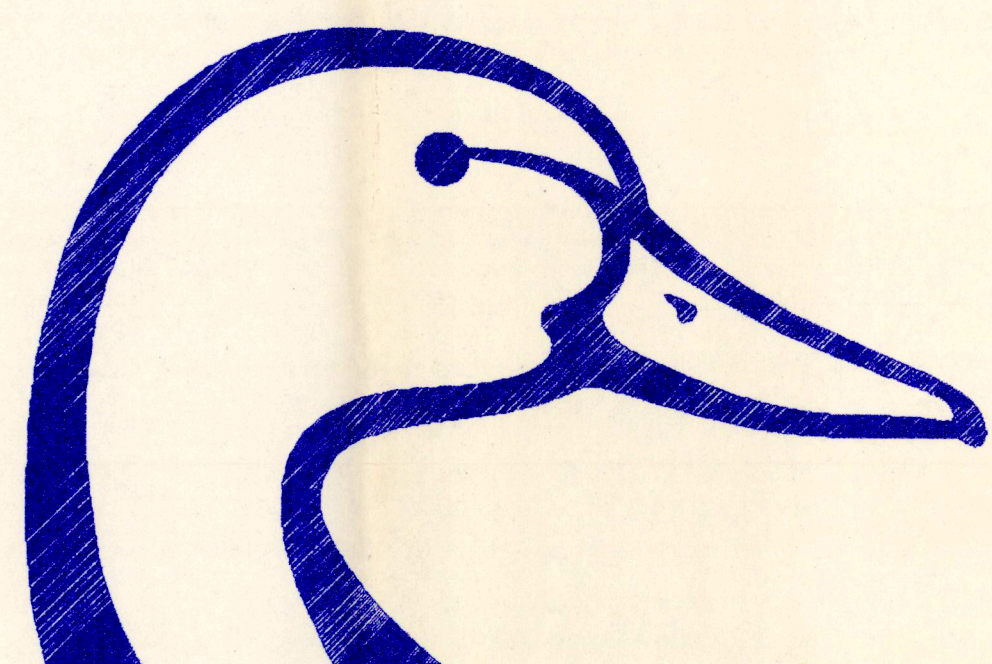
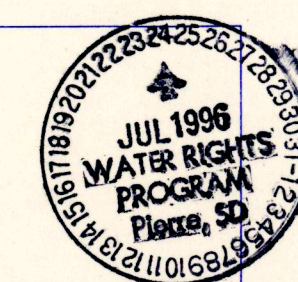
# DUCKS UNLIMITED

PROJECT

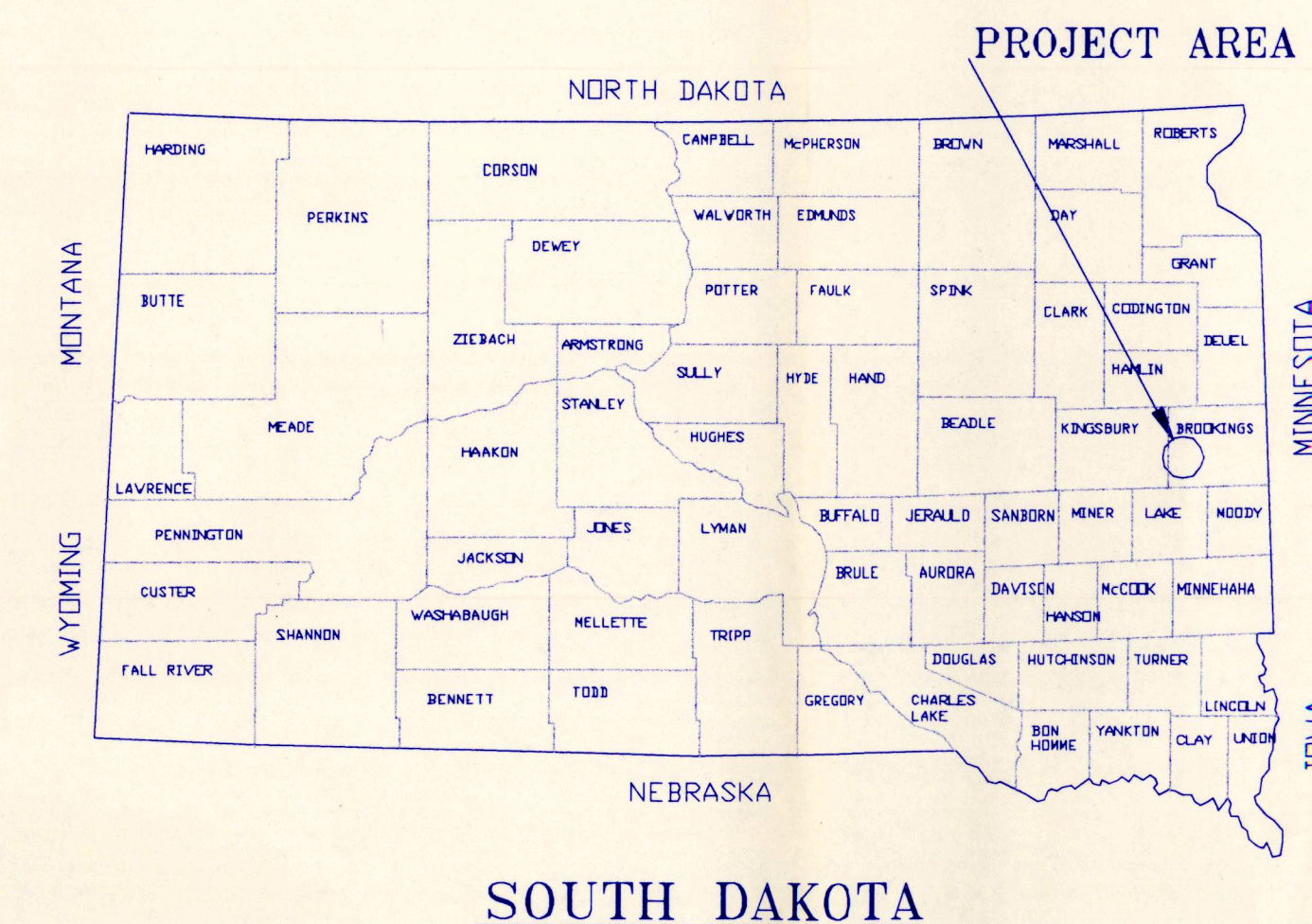
## DRY LAKE WATERFOWL PRODUCTION AREA SECTION 11, T 110 N, R 52 W BROOKINGS CO., SOUTH DAKOTA

IN COOPERATION WITH

MADISON WETLAND MANAGEMENT DISTRICT  
U.S. FISH & WILDLIFE SERVICE



DUCKS UNLIMITED



### SPECIFICATIONS

|                         |     |
|-------------------------|-----|
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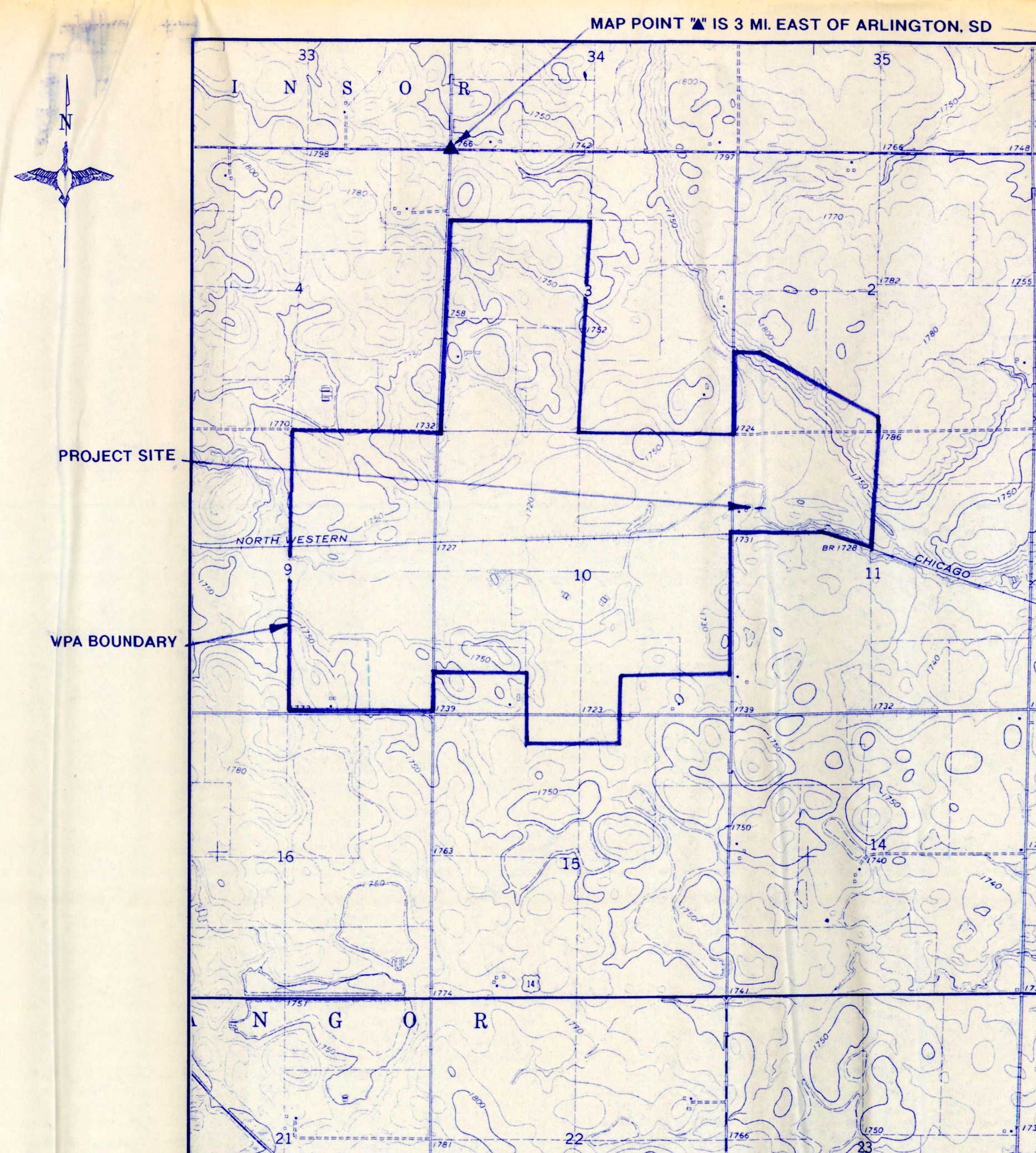
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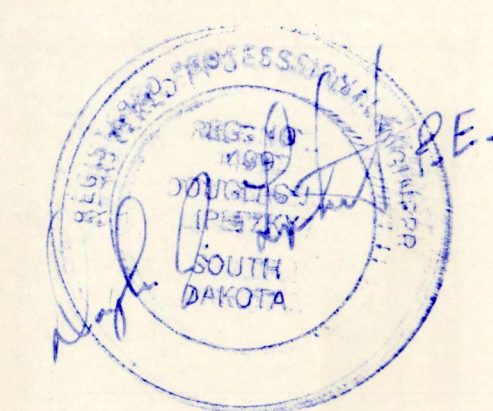
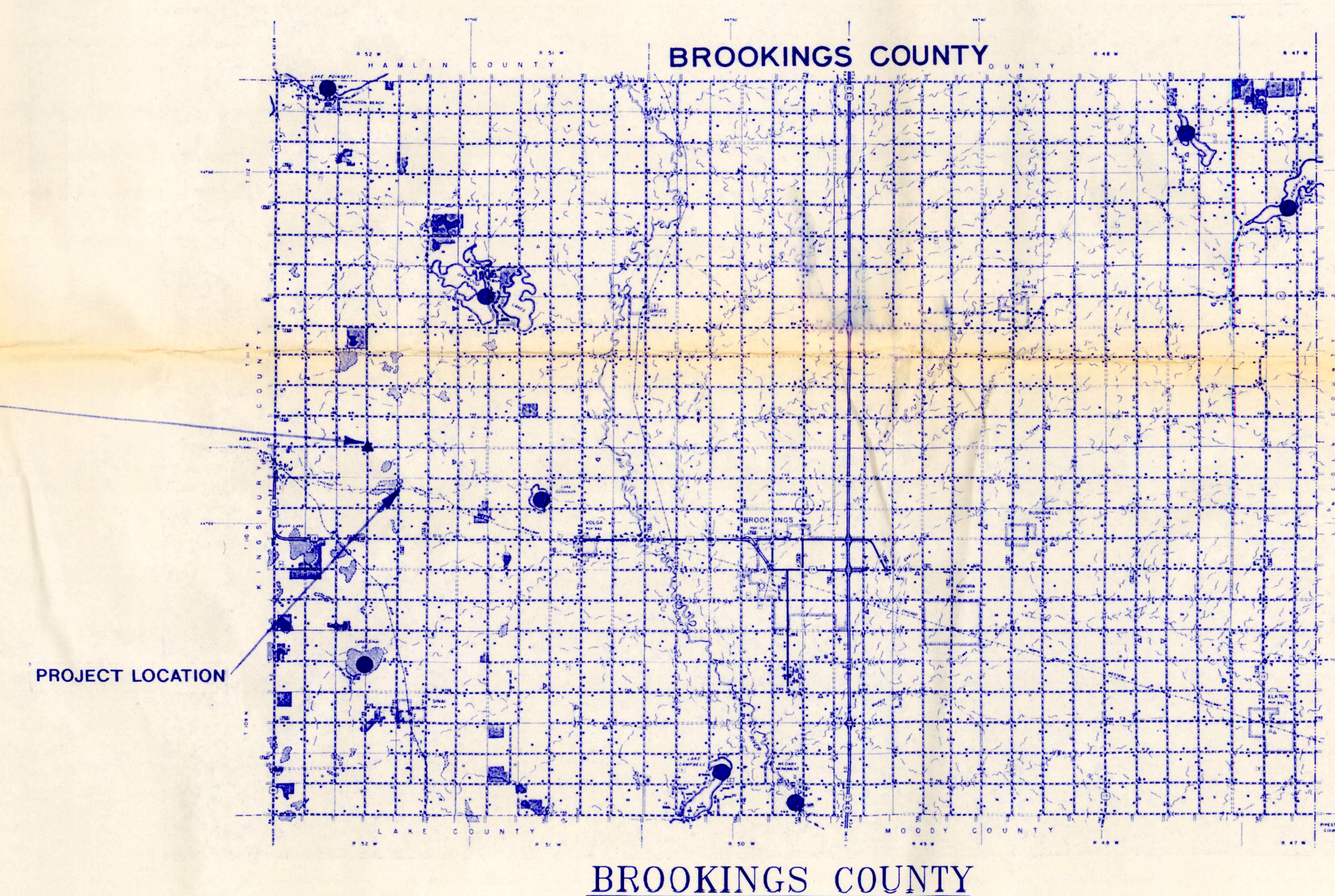
### QUANTITIES

|                         |             |
|-------------------------|-------------|
| MOBILIZATION            | 1 L.S.      |
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| EXCAVATION*             | 3950 C.Y.-S |
| CLASS II RIPRAP         | 200 C.Y.-P  |
| SHEET PILE MATERIAL     | 1984 S.F.-P |
| SHEET PILE INSTALLATION | 1984 S.F.-P |
| STRUCTURAL STEEL        | 1 L.S.      |
| STEEL H-PILE            | 105 L.F.    |

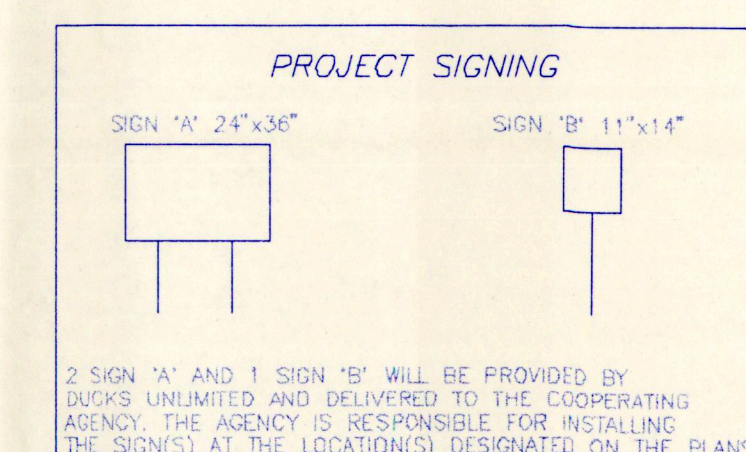
\*INCLUDES SPOIL PILE & CHANNEL EXCAVATION



VICINITY MAP  
SCALE: 1"=2000'



AGENCY CONTACT:  
TOM TURNOW  
MADISON WMD-USFWS  
MADISON, SD  
605/256-2974



|               |                              |                          |                     |
|---------------|------------------------------|--------------------------|---------------------|
|               | DUCKS UNLIMITED INC.         | PROJECT NO. SD-0164-002  | DESIGNED BY: D.J.L. |
|               | GREAT PLAINS REGIONAL OFFICE | DRY LAKE WPA             | DRAWN BY: 'B'       |
| DATE: 5-17-96 | SHEET NO. 1 OF 5             | APPROVED BY: [Signature] | SURVEYED BY:        |
|               |                              | CHECKED BY:              | APPROVED BY:        |



## DESCRIPTIVE TERMINOLOGY

### RELATIVE DENSITY OF CONCRETELESS SOILS

| Term         | "N" Value |
|--------------|-----------|
| Very Loose   | 0-4       |
| Loose        | 4-8       |
| Medium Dense | 8-15      |
| Very Dense   | 15-30     |

### THICKNESS OF SOIL STRICTIONS

| Term             | Range      |
|------------------|------------|
| Lamin/Lamination | 0.1" to 1" |
| Stratification   | 1" to 12"  |

### CONSTENCY OF CONCRETELESS SOILS

| Term       | "N" Value" |
|------------|------------|
| Soft       | 0-4        |
| Medium     | 4-8        |
| Stiff      | 8-15       |
| Very Stiff | 15-30      |
|            | Over 30    |

### PARTICLES SIZES

| Term     | Range              |
|----------|--------------------|
| Boulders | Over 8"            |
| Gravel   | 2" to 8"           |
| Coarse   | 3/4" to 2"         |
| Fine     | 1/4" to 3/4"       |
| Silt     | 0.075" to 0.0075"  |
| Clay     | 0.0075" to 0.0002" |

### RELATIVE PROPORTIONS

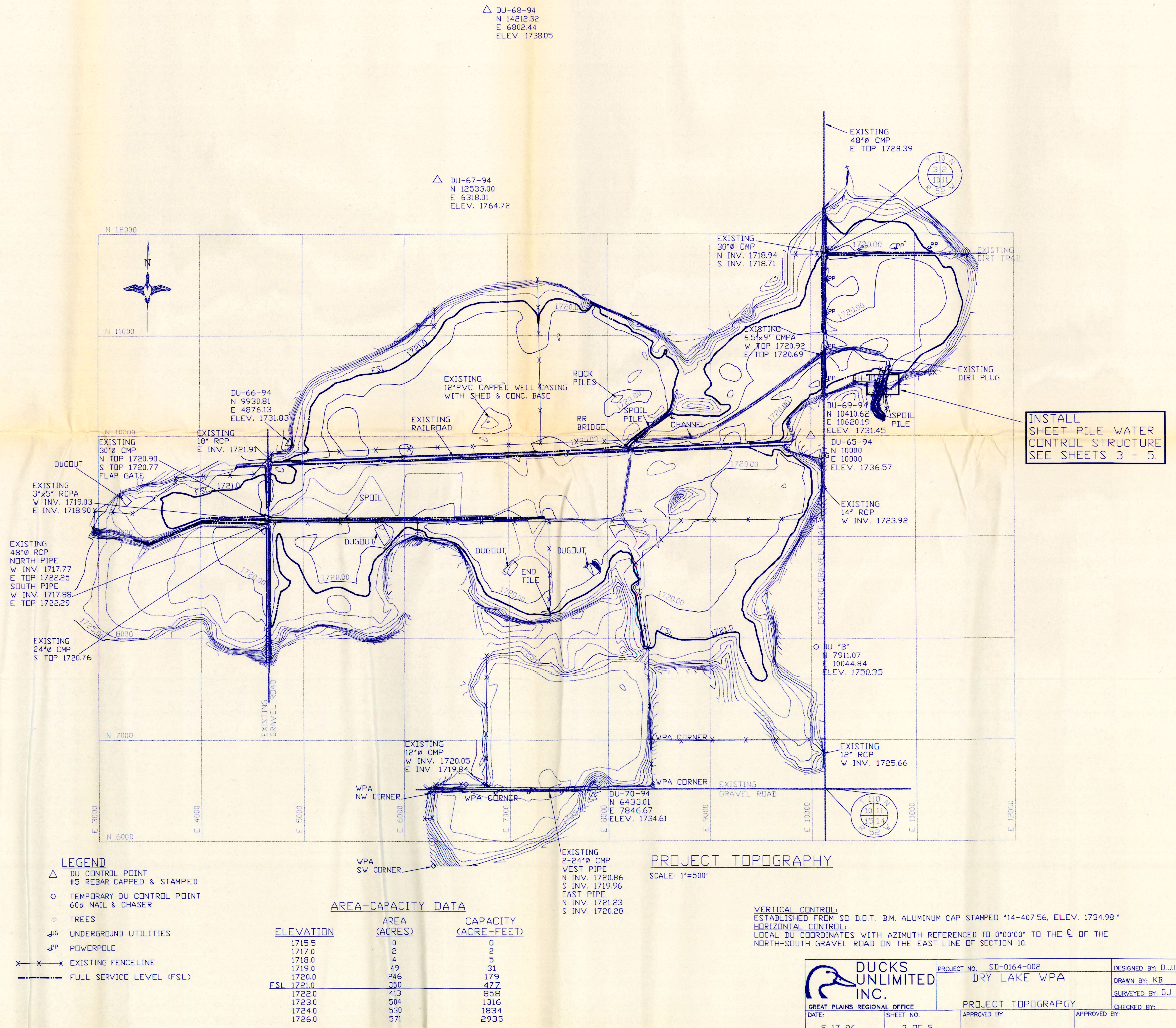
| Term       | Range   |
|------------|---------|
| Loose      | 0.5-1.0 |
| Light      | 1.1-1.5 |
| Very Light | 1.6-2.0 |

| Term               | Range        |
|--------------------|--------------|
| Silt               | 2000-4000 mm |
| Less than 1/200 mm |              |

Note: Sieve sizes shown are U.S. Standard

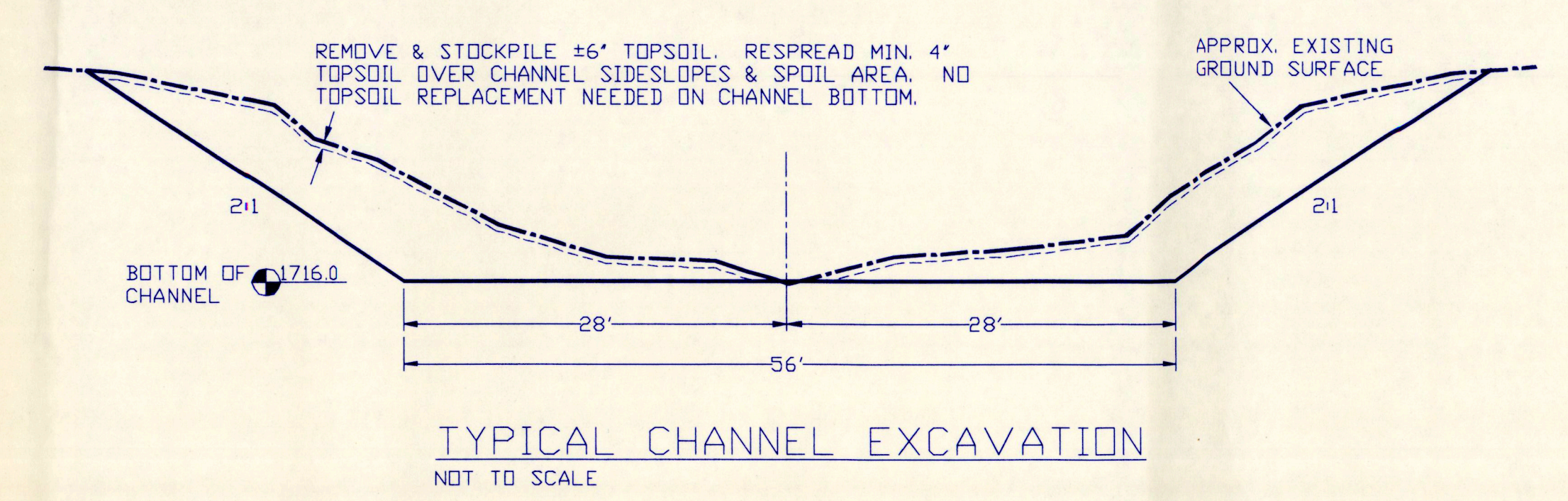
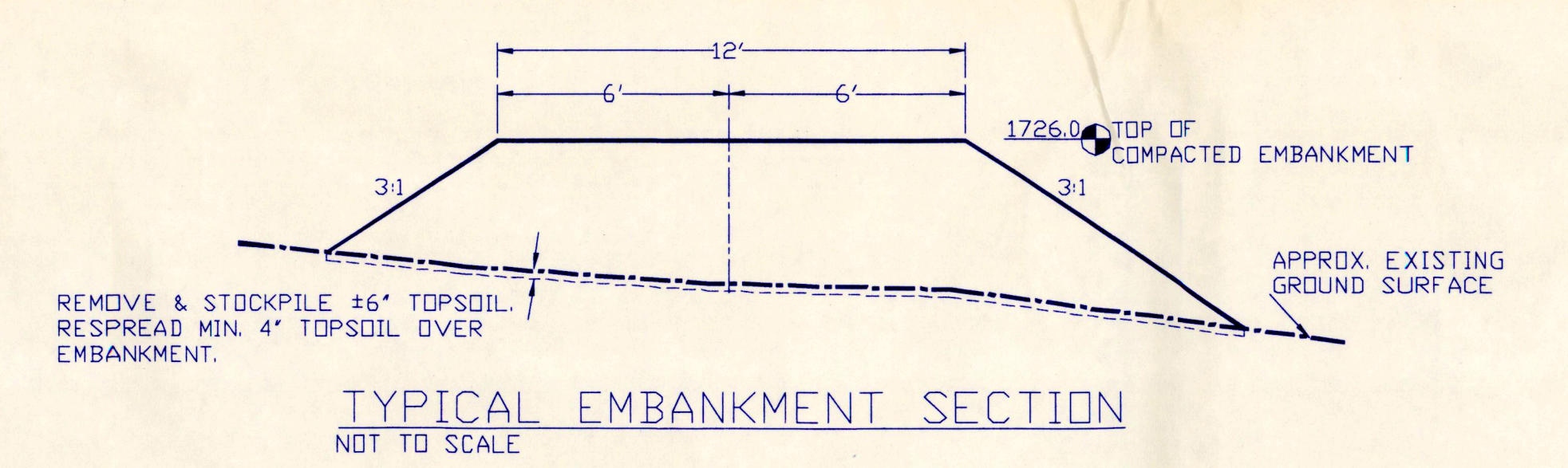
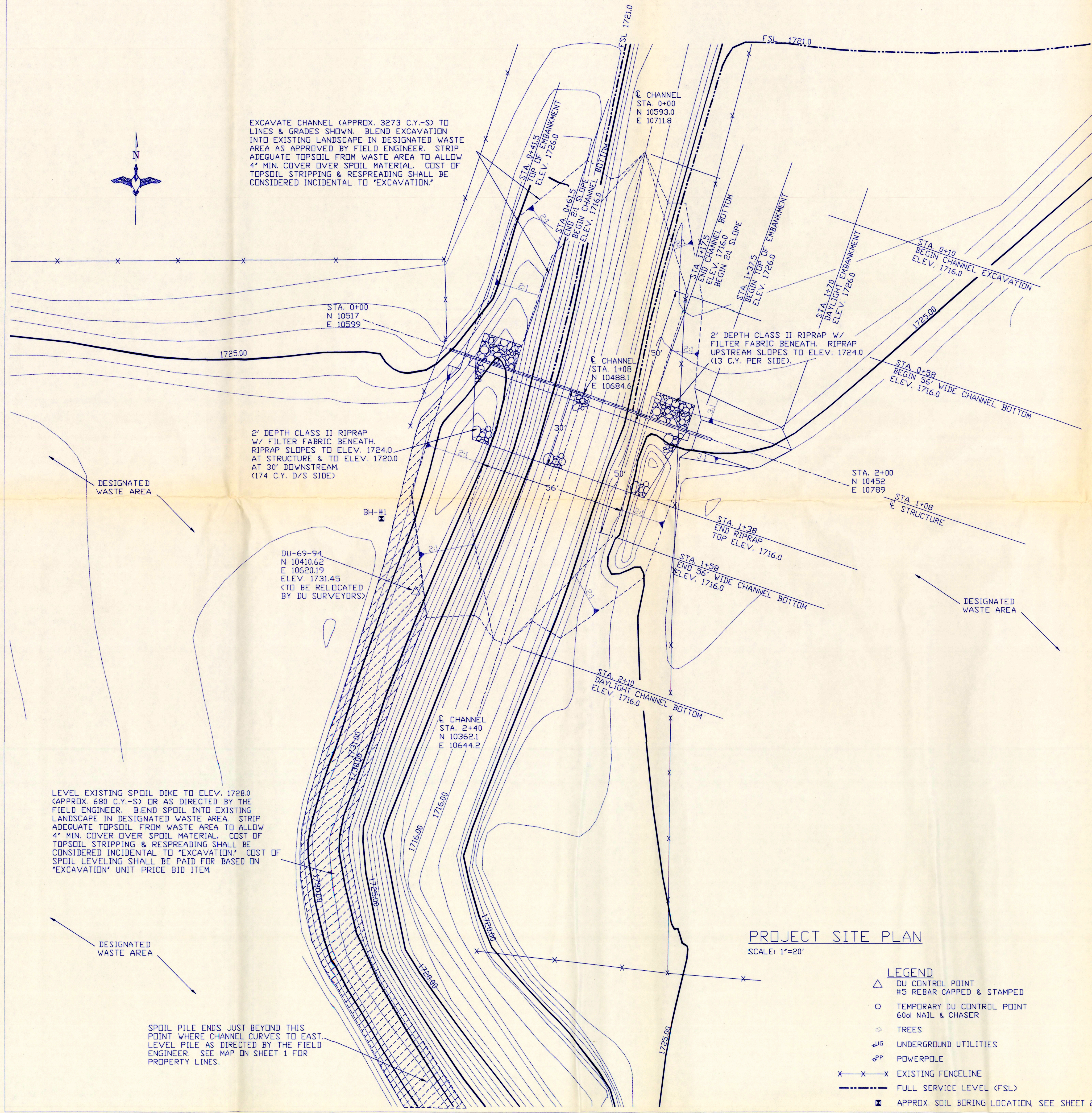
### DRAWING & SAMPLING SYMBOLS

| Symbol  | Definition               |
|---------|--------------------------|
| FL      | Flight Auger             |
| SO      | Soil Spoon               |
| SW      | Shallow Water Table      |
| SS      | Shallow Soil Sample      |
| PA      | Penetration Resistance   |
| 2" SO   | 2" diameter soil spoon   |
| 4" SO   | 4" diameter soil spoon   |
| 6" SO   | 6" diameter soil spoon   |
| 8" SO   | 8" diameter soil spoon   |
| 10" SO  | 10" diameter soil spoon  |
| 12" SO  | 12" diameter soil spoon  |
| 14" SO  | 14" diameter soil spoon  |
| 16" SO  | 16" diameter soil spoon  |
| 18" SO  | 18" diameter soil spoon  |
| 20" SO  | 20" diameter soil spoon  |
| 22" SO  | 22" diameter soil spoon  |
| 24" SO  | 24" diameter soil spoon  |
| 26" SO  | 26" diameter soil spoon  |
| 28" SO  | 28" diameter soil spoon  |
| 30" SO  | 30" diameter soil spoon  |
| 32" SO  | 32" diameter soil spoon  |
| 34" SO  | 34" diameter soil spoon  |
| 36" SO  | 36" diameter soil spoon  |
| 38" SO  | 38" diameter soil spoon  |
| 40" SO  | 40" diameter soil spoon  |
| 42" SO  | 42" diameter soil spoon  |
| 44" SO  | 44" diameter soil spoon  |
| 46" SO  | 46" diameter soil spoon  |
| 48" SO  | 48" diameter soil spoon  |
| 50" SO  | 50" diameter soil spoon  |
| 52" SO  | 52" diameter soil spoon  |
| 54" SO  | 54" diameter soil spoon  |
| 56" SO  | 56" diameter soil spoon  |
| 58" SO  | 58" diameter soil spoon  |
| 60" SO  | 60" diameter soil spoon  |
| 62" SO  | 62" diameter soil spoon  |
| 64" SO  | 64" diameter soil spoon  |
| 66" SO  | 66" diameter soil spoon  |
| 68" SO  | 68" diameter soil spoon  |
| 70" SO  | 70" diameter soil spoon  |
| 72" SO  | 72" diameter soil spoon  |
| 74" SO  | 74" diameter soil spoon  |
| 76" SO  | 76" diameter soil spoon  |
| 78" SO  | 78" diameter soil spoon  |
| 80" SO  | 80" diameter soil spoon  |
| 82" SO  | 82" diameter soil spoon  |
| 84" SO  | 84" diameter soil spoon  |
| 86" SO  | 86" diameter soil spoon  |
| 88" SO  | 88" diameter soil spoon  |
| 90" SO  | 90" diameter soil spoon  |
| 92" SO  | 92" diameter soil spoon  |
| 94" SO  | 94" diameter soil spoon  |
| 96" SO  | 96" diameter soil spoon  |
| 98" SO  | 98" diameter soil spoon  |
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| 106" SO | 106" diameter soil spoon |
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| 124" SO | 124" diameter soil spoon |
| 126" SO | 126" diameter soil spoon |
| 128" SO | 128" diameter soil spoon |
| 130" SO | 130" diameter soil spoon |
| 132" SO | 132" diameter soil spoon |
| 134" SO | 134" diameter soil spoon |
| 136" SO | 136" diameter soil spoon |
| 138" SO | 138" diameter soil spoon |
| 140" SO | 140" diameter soil spoon |
| 142" SO | 142" diameter soil spoon |
| 144" SO | 144" diameter soil spoon |
| 146" SO | 146" diameter soil spoon |
| 148" SO | 148" diameter soil spoon |
| 150" SO | 150" diameter soil spoon |
| 152" SO | 152" diameter soil spoon |
| 154" SO | 154" diameter soil spoon |
| 156" SO | 156" diameter soil spoon |
| 158" SO | 158" diameter soil spoon |
| 160" SO | 160" diameter soil spoon |
| 162" SO | 162" diameter soil spoon |
| 164" SO | 164" diameter soil spoon |
| 166" SO | 166" diameter soil spoon |
| 168" SO | 168" diameter soil spoon |
| 170" SO | 170" diameter soil spoon |
| 172" SO | 172" diameter soil spoon |
| 174" SO | 174" diameter soil spoon |
| 176" SO | 176" diameter soil spoon |
| 178" SO | 178" diameter soil spoon |
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| 182" SO | 182" diameter soil spoon |
| 184" SO | 184" diameter soil spoon |
| 186" SO | 186" diameter soil spoon |
| 188" SO | 188" diameter soil spoon |
| 190" SO | 190" diameter soil spoon |
| 19      |                          |



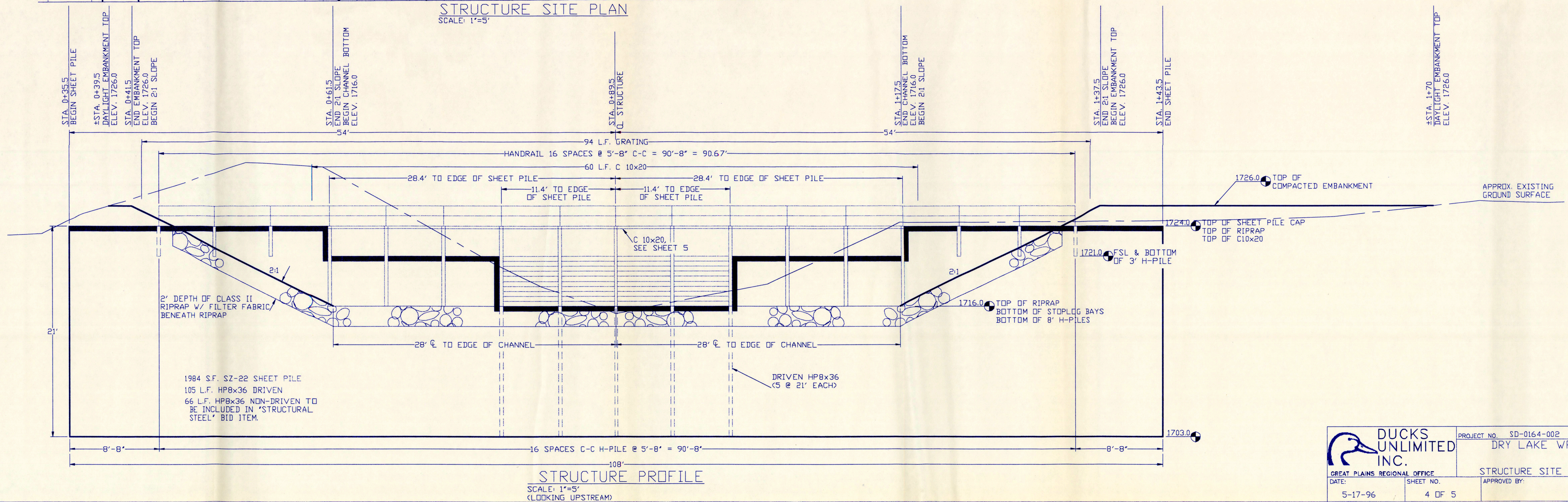
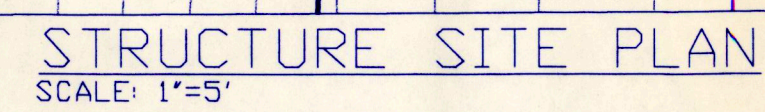


5945-3

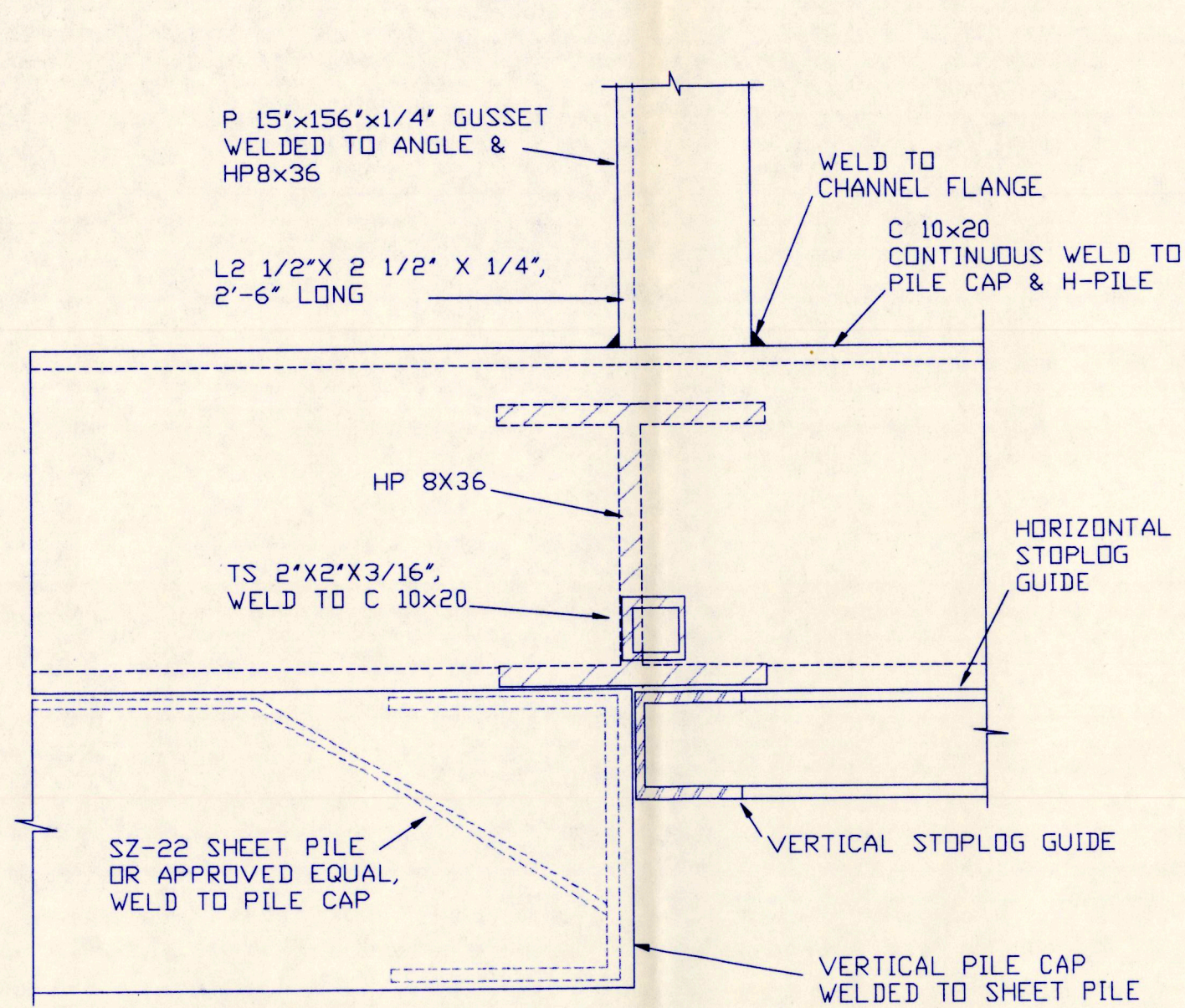
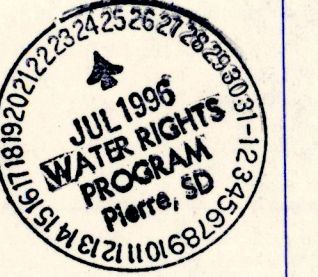


|                              |                         |                     |
|------------------------------|-------------------------|---------------------|
|                              | PROJECT NO. SD-0164-002 | DESIGNED BY: D.J.L. |
|                              | DRY LAKE WPA            | DRAWN BY: B         |
| GREAT PLAINS REGIONAL OFFICE | PROJECT SITE PLAN       | SURVEYED BY:        |
| DATE: 5-17-96                | SHEET NO. 3 OF 5        | CHECKED BY:         |
|                              | APPROVED BY:            |                     |

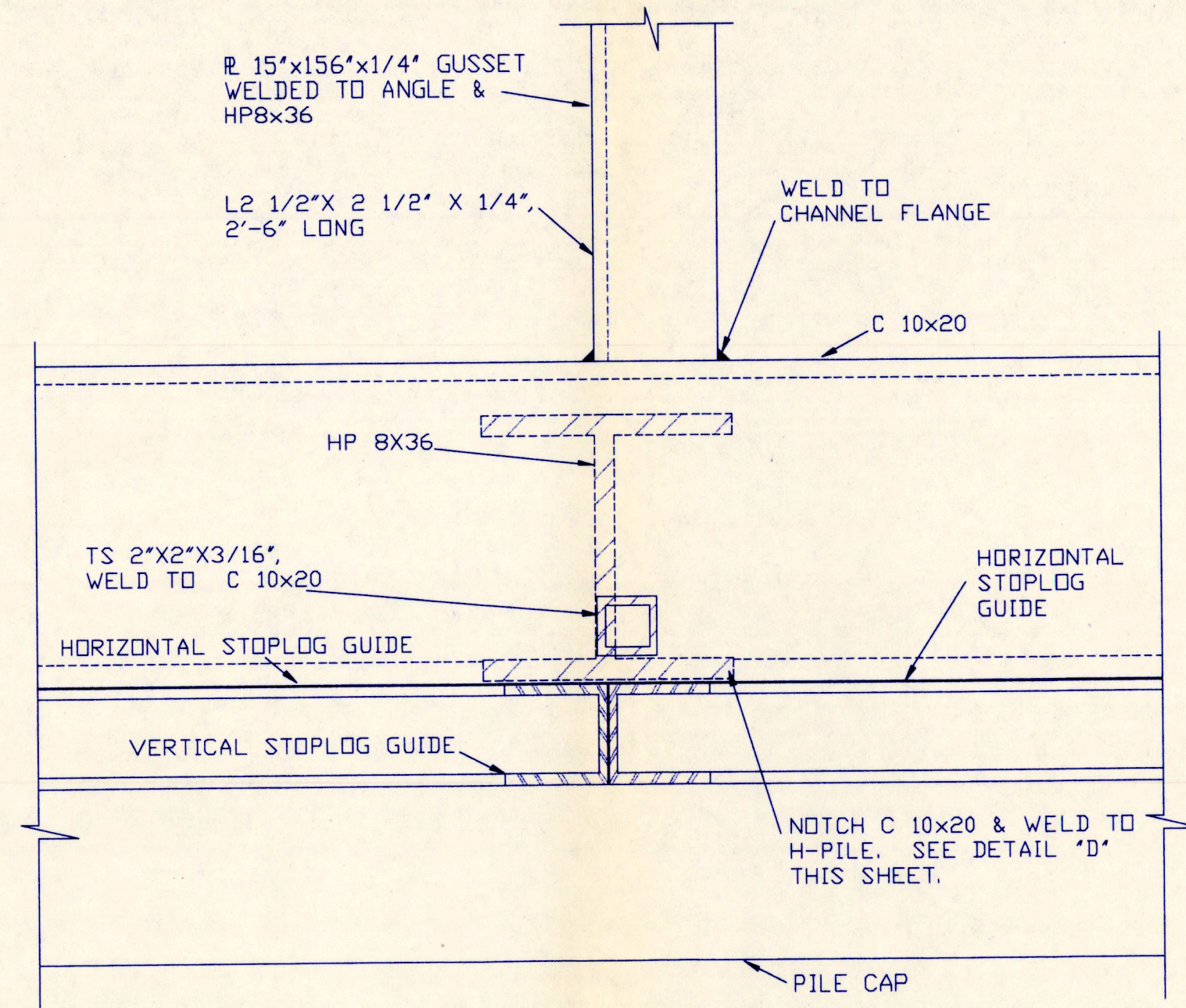




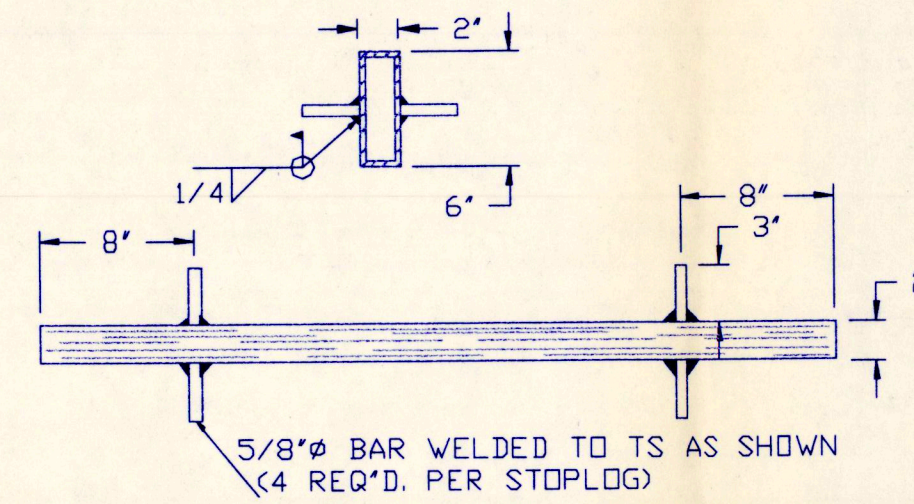




DETAIL 'A'  
NOT TO SCALE



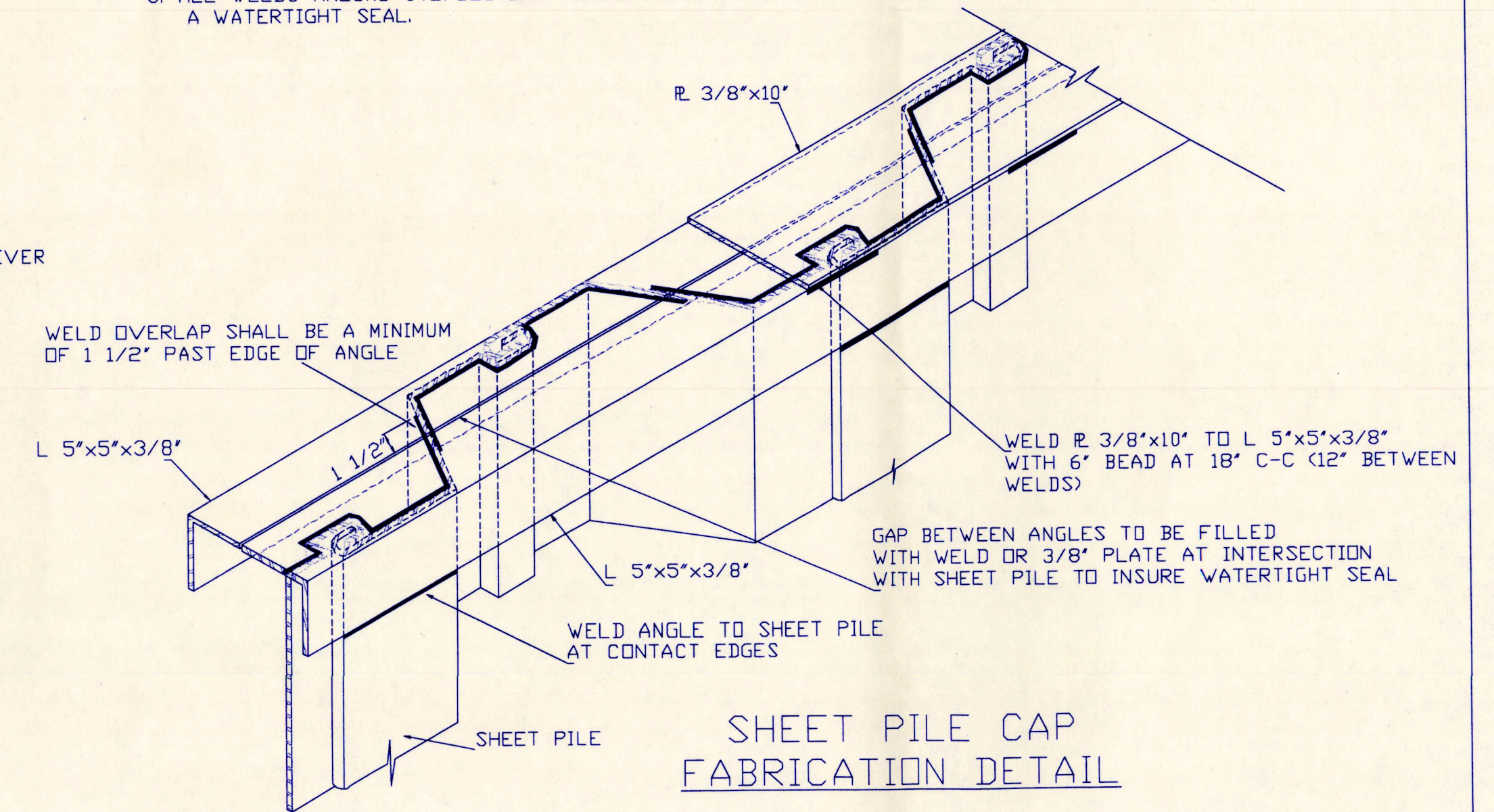
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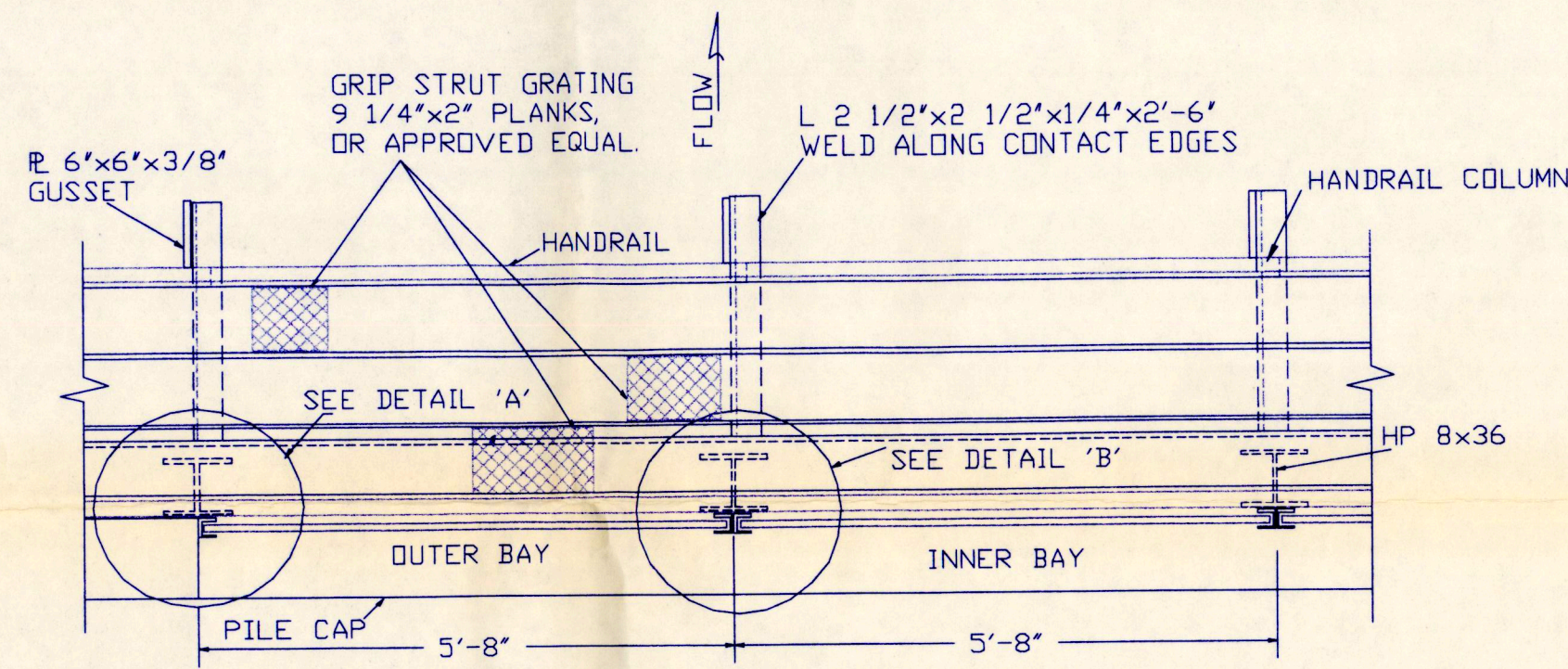
NOTE: STEEL STOPLOGS FURNISHED BY DUCKS UNLIMITED. CONTRACTOR SHALL SUPPLY & WELD ON 5/8" BARS & DELIVER LOGS TO PROJECT SITE. NO BARS SHALL BE WELDED ON BOTTOM STOPLOGS.

STEEL STOPLOG DETAIL  
NOT TO SCALE

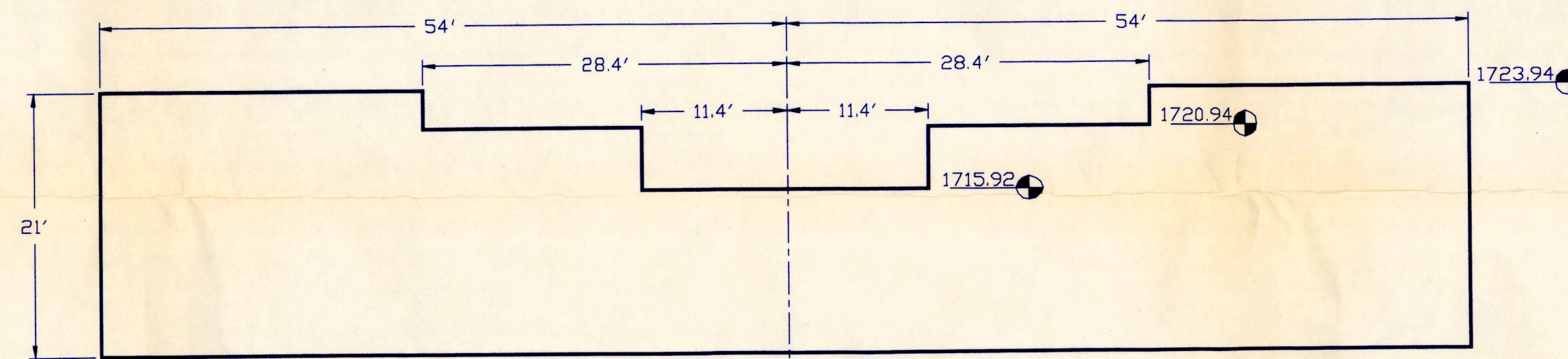
- NOTES:
1. ALL WELDS TO BE 1/4" FILLET WELDS
  2. ALL WELDS WILL BE SUBJECT TO LAMPING. ANY AREAS FAILING WILL BE REWELDED BEFORE ACCEPTANCE OF PROJECT
  3. TOP OF SHEET PILE SHALL BE TRIMMED TO GRADES INDICATED ON PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING OVER 3" SHALL BE CONSIDERED 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.



SHEET PILE CAP  
FABRICATION DETAIL

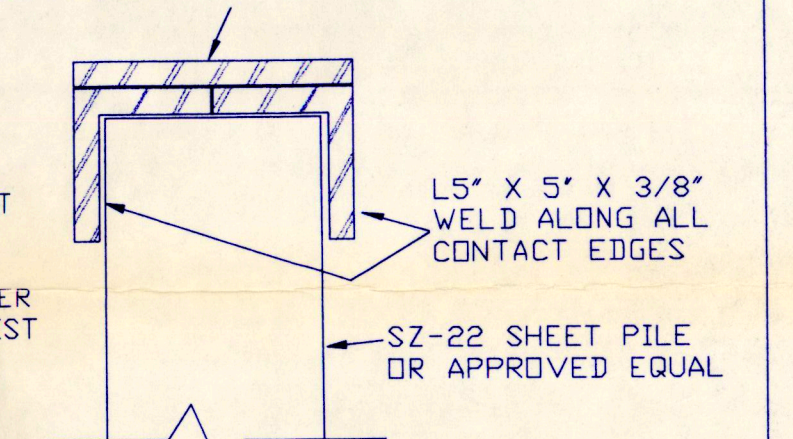


PLAN VIEW  
NOT TO SCALE

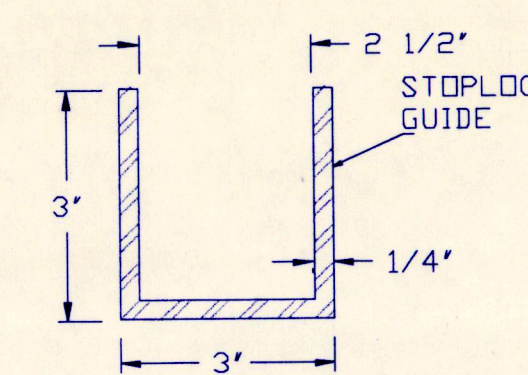


SHEET PILE ELEVATIONS  
ELEVATIONS IN THIS DRAWING ARE TO  
TOP OF DRIVEN SHEET PILE.

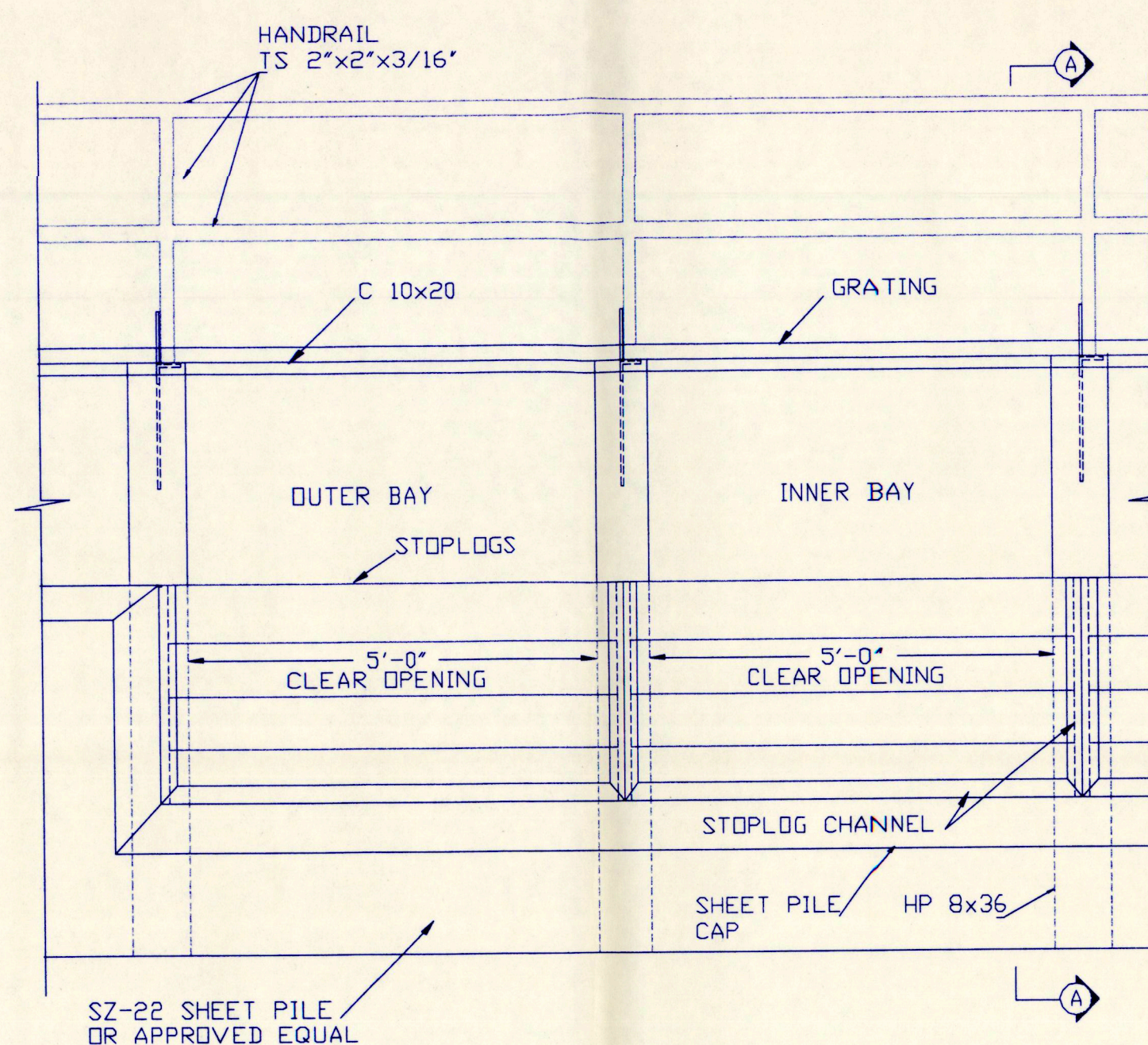
R 10' x 3/8" WELD TO ANGLES ALONG BOTH SIDES. SEE FABRICATION DETAIL THIS SHEET.



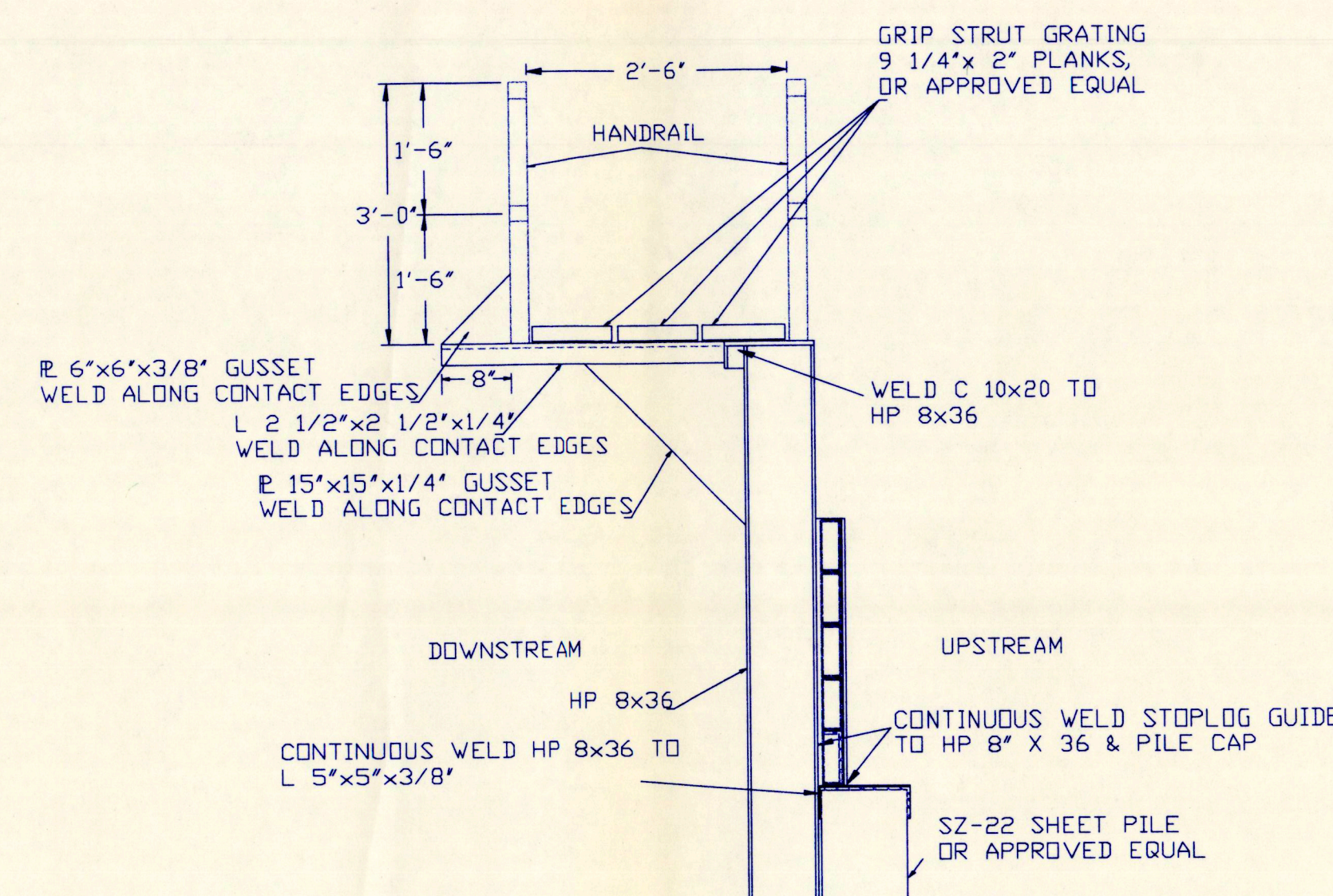
PILE CAP DETAIL  
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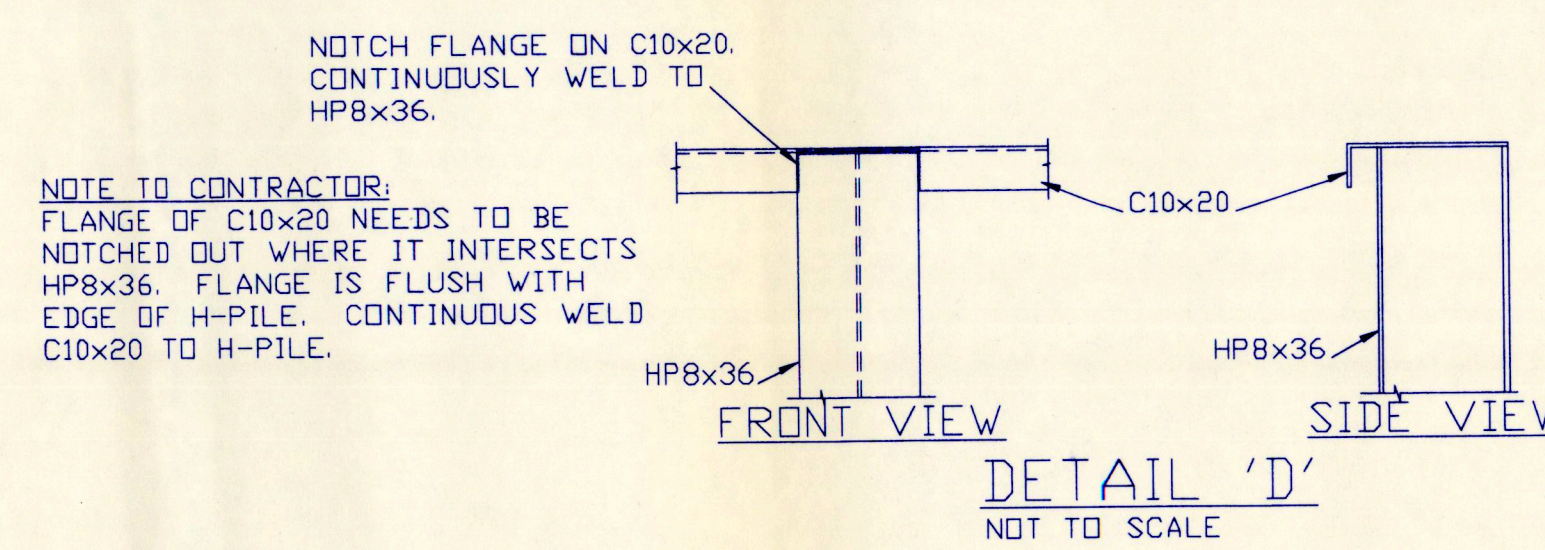
STOPLOG GUIDE DETAIL  
NOT TO SCALE



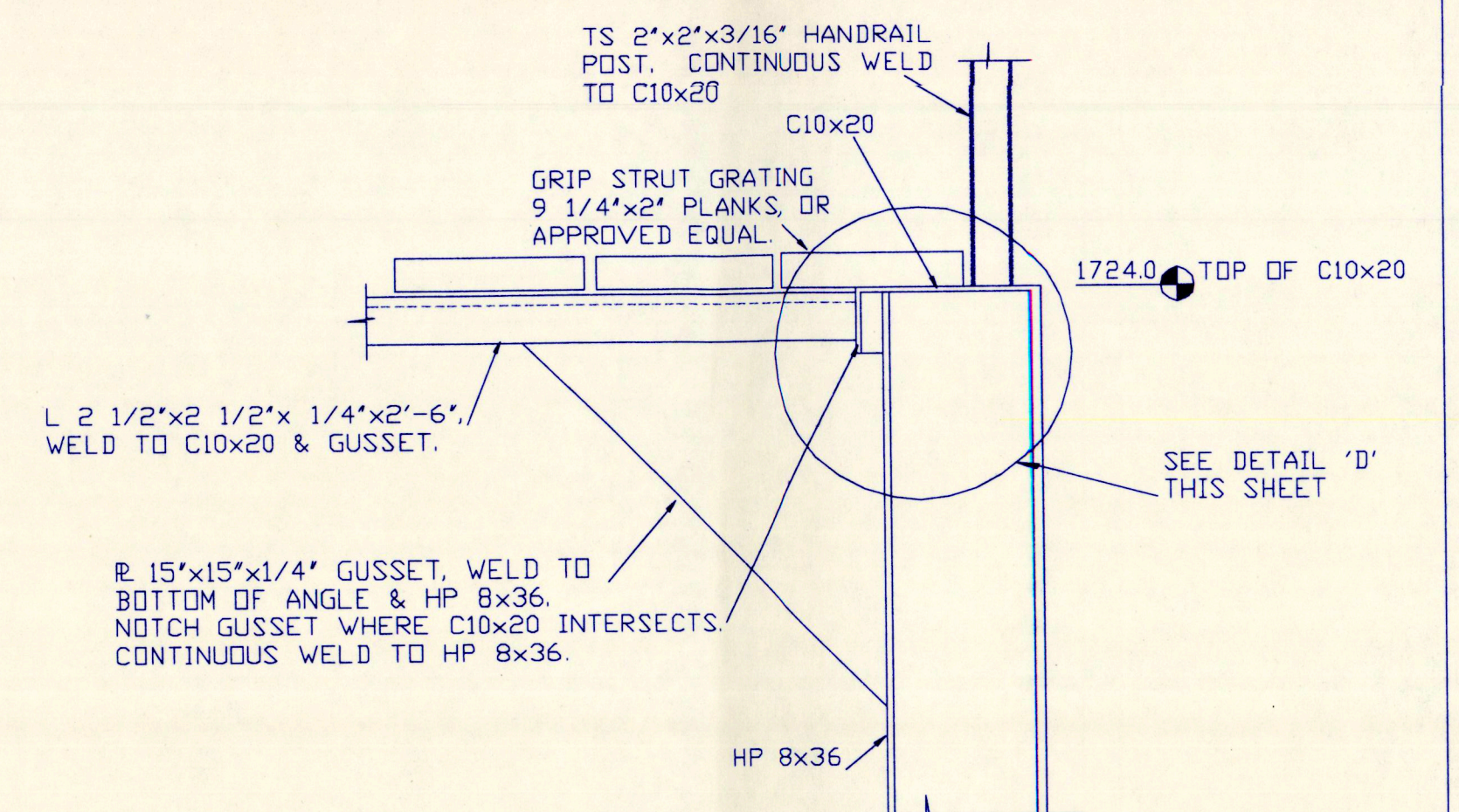
PARTIAL UPSTREAM ELEVATION  
NOT TO SCALE



SECTION 'A'  
NOT TO SCALE



DETAIL 'D'  
NOT TO SCALE



DETAIL 'C'  
NOT TO SCALE

|               |                         |                     |
|---------------|-------------------------|---------------------|
|               | PROJECT NO. SD-0164-002 | DESIGNED BY: D.J.L. |
|               | DRY LAKE WPA            | DRAWN BY: 16        |
|               | STRUCTURE DETAILS       | SURVEYED BY:        |
|               | APPROVED BY:            | CHECKED BY:         |
| DATE: 5-17-96 | SHEET NO. 5 OF 5        | APPROVED BY:        |