

Considered: _____

WATER PERMIT NO. 2126-2

Phone: 745-4107

Name of Applicant U.S. Forest Service

Post Office Address 209 N. River, Hot Springs, SD 57747

Amount of Water Claimed 62.1 acre feet Total Acres _____

Source of Water Supply Surface (dam)

Water to be used for Wildlife County Pennington

About 4 miles SW of Farmingdale

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved _____ Subject to _____

F.F.& C/.L. Adopted _____ Not Approved _____ Deferred _____

PRIORITY _____ Date Received 4/18/90 Fee \$150.00 Remarks Repair of a

dam that was breached sometime prior to the 1970's. This is a Ducks Unlimited project

Corrected Application Received _____ Period of Annual Use Jan. 1 - Dec. 31

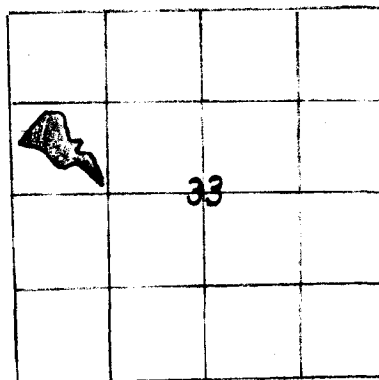
WATER QUALITY APPROVAL RECEIVED NA APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as Application YES _____ NO _____ REMARKS _____

Diversion Point SW1/4 NW1/4 Section 33-T1S-R10E

(Dam Location)

Land to be irrigated NA



Well Log: Driller NA Licensed YES _____ NO _____

Depth of Well _____ REMARKS _____

Type of Map Topo PREPARED BY Michael Erk Reviewed and the Number

Assigned on 4/26/90 By Eric Gronlund *EG*

No. 2126-2 Hydrologic Unit 10120110
 Map No. _____ Basin Upper Cheyenne
 Newspaper Rapid City Journal, Box 450, RC, SD

523 E. Capitol
 Pierre, SD 57501
 (605) 773-3352
 P.C. 6/13/89

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 ☒ (Wildlife)
 Livestock

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 U.S. Forest Service Phone No. 745-4107

Post Office Address 209 N. River Hot Springs State SD 57747
(Street, RR or Box) (City) Zip Code

2. Amount of water claimed (c.f.s.) 62.1 acre-ft

3. Source of water supply Unnamed tributary to Antelope Creek

4. Location of point of diversion SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 33, T1S, R10E

County Pennington

5. Counties where water will be used Pennington

6. Annual period during which water is to be used Yearlong 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)

Repair of existing breached dam. Installation of primary and emergency spillways. Our records indicate we had a state water right, number US318, on this dam, filed in 1936.

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instruction)

STATE OF SOUTH DAKOTA
 County of Fall River ^{SS}

I, USDA-Forest Service 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 Michael E. Ert for USDA-F.S.

Subscribed and sworn to before me this 13th day of April 1990

My Commission Expires 11/2/96

David P. Rader
 Notary Public

(7) Complete the following information for the proposed dam/dugout:

* Items to be completed for a dugout

*a) Dam/Dugout designed by Ducks Unlimited, 6115 East Main, Bismarck, ND 58501

(name and address)

b) Freeboard 1.18 feet

c) Crest Width 12 feet

Crest Length 156 feet

d) Height 20 feet

* Depth, if Dugout _____

e) Outlet Dimensions:

Pipe diameter 72 inch

Spillway width 30 feet

f) X & Y Slope:

Upstream 3:1

Downstream 3:1

*g) Water surface area 15

*h) Storage at spillway crest or overflow elevation

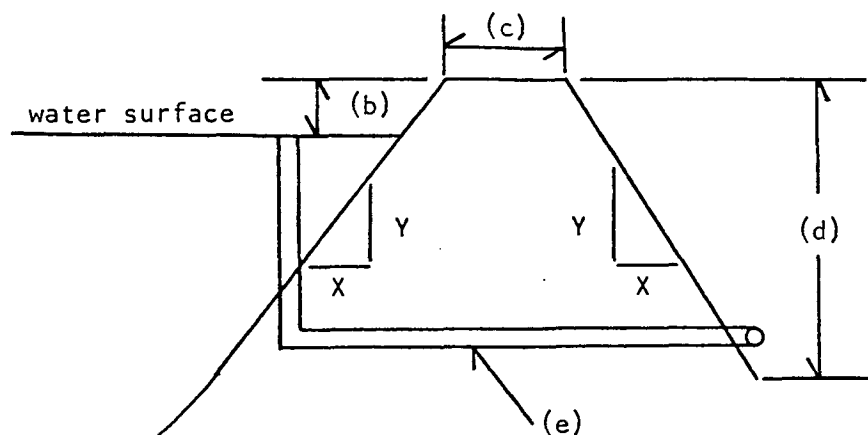
(acre feet) 62.1

i) Maximum storage to top of dam

(acre feet) _____

*j) Drainage area above dam/dugout

1078 acres



**SOUTH DAKOTA
WATER PERMIT No. 2126-2**

Date of first receipt of application April 18, 1990.

The Water Management Board approved Water Permit Application No. 2126-2 on February 27, 1991 for U.S. Forest Service, 209 N. River, Hot Springs, SD 57747 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. 2126-2 authorizes impoundment 62.1 acre feet of runoff water by repairing a breached dam located in the S1/2 NW1/4 Section 33, T1S, R10E on a tributary of Antelope Creek. Water is to be stored annually to an approximate elevation of 2962 feet mean sea level and is to provide habitat for wildlife production.
2. The water appropriated shall be used for the purpose of livestock watering and wildlife habitat and may not exceed the amount of water needed for beneficial use for domestic and wildlife propagation purposes.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date from which applicant may claim right is April 18, 1990.
5. One-fifth of the construction is to be completed on or before August 27, 1993.
6. All construction is to be completed on or before February 27, 1996.
7. Water is to be put to beneficial use on or before February 27, 2000.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

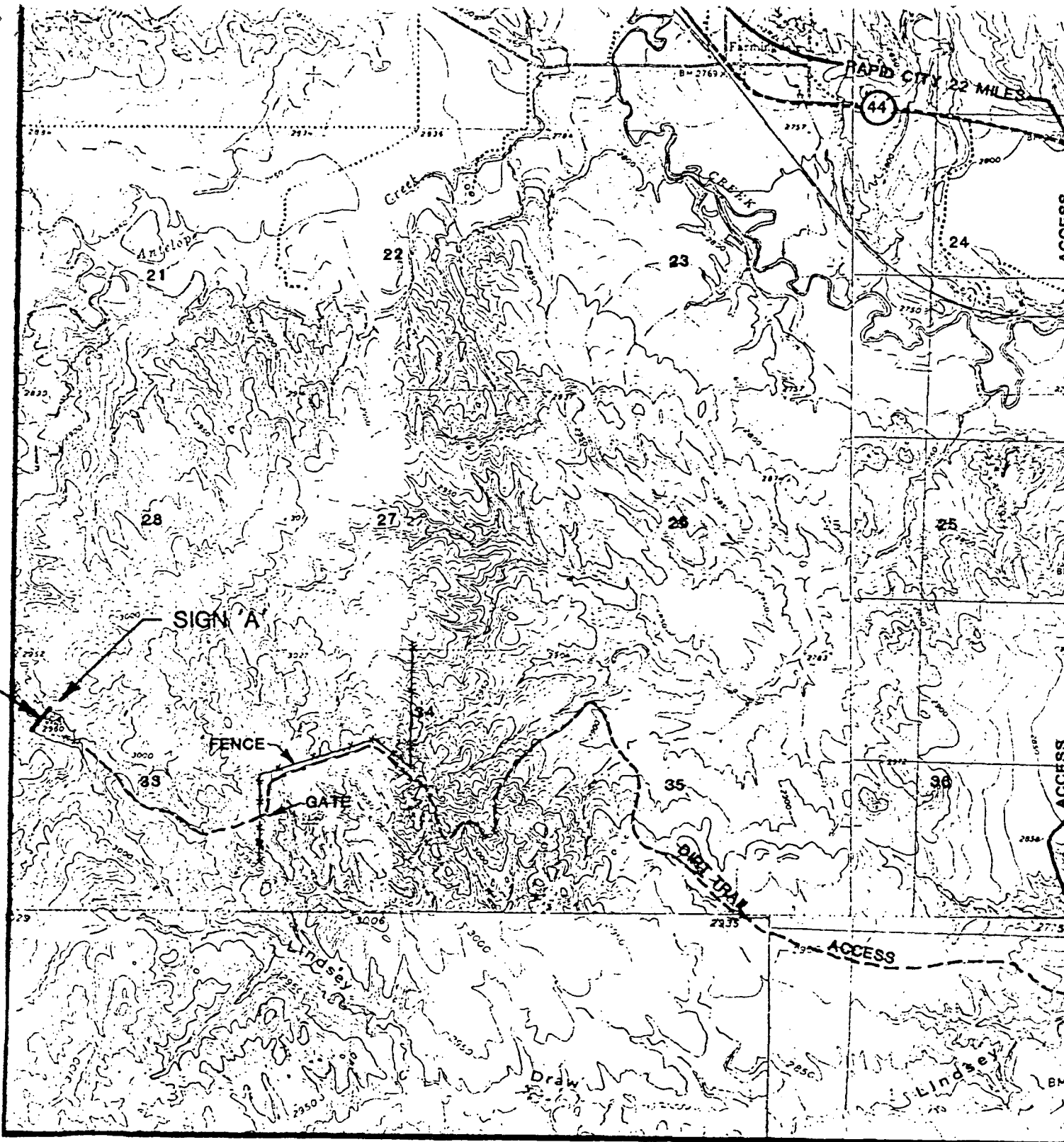
QUALIFICATIONS

1. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of permit No. 2126-2 authorizes storage of up to 62.1 acre feet annually.

WATER MANAGEMENT BOARD

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

APR 25 1991
(date)

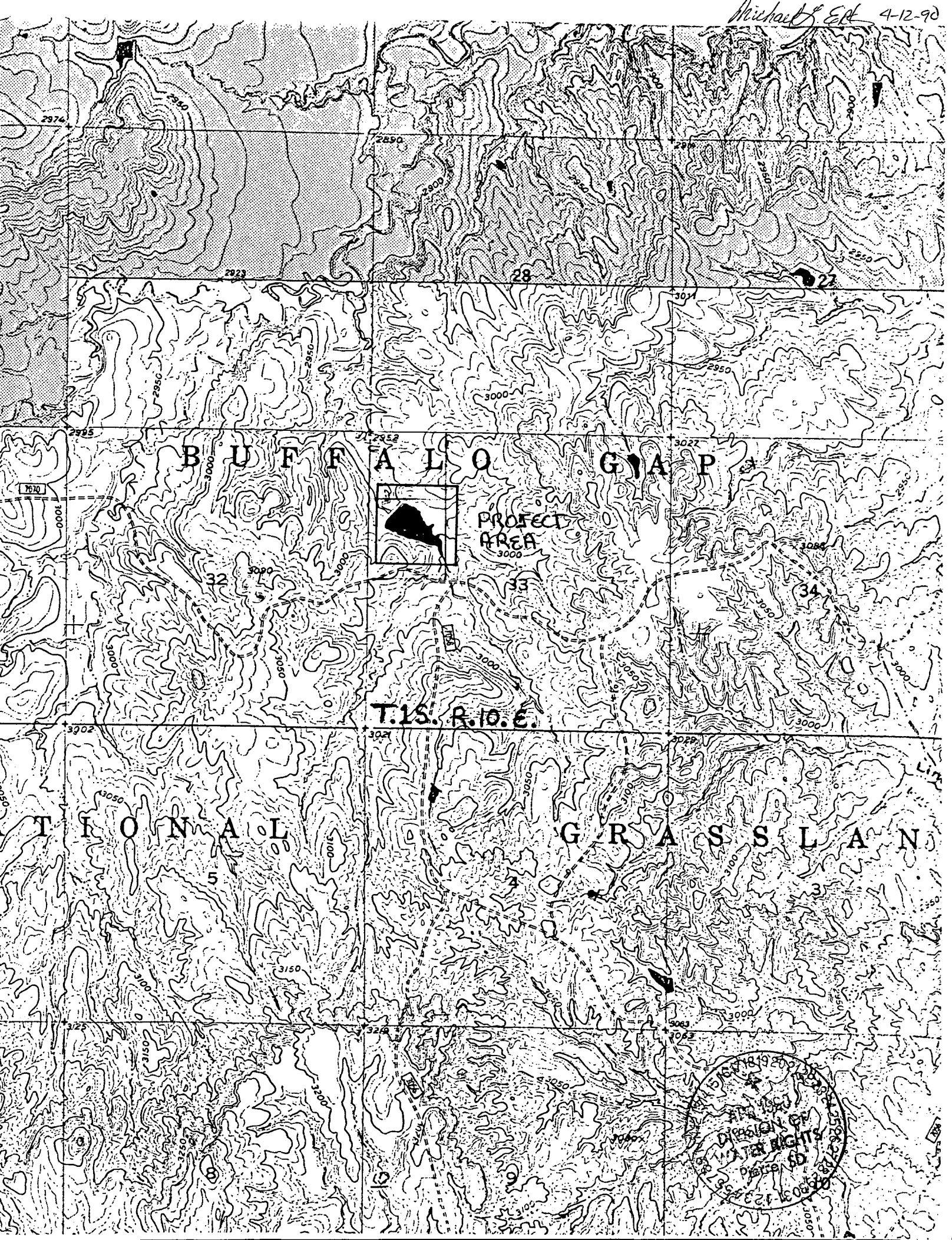


Newman G. Ert
4-12-90

VICINITY MAP

NTS





WATERSHED DATA

WATER PERMIT APPLICATION NO. 2126-2 WARD DAM PROJECT

November 27 1990

Ron Duvall

Drainage area above proposed Ward dam site 1,078 acres

Total drainage area contributing to creek through
Marsh property (Yellow area on Forest Service map)
including drainage area above Ward dam 6,549 acres

Percentage of drainage area contributing to Ward dam 16.4 %

Percentage of drainage area contributing to Marsh
property excluding Ward dam drainage 83.6 %

ANNUAL SURFACE RUNOFF ESTIMATES:

Storage capacity of proposed dam 62.1 acre-feet

Estimated annual runoff yield for drainage above Ward dam:

	*Yield (acre-feet)	**Conservative Yield (acre-feet)
80 percent chance every year	32	7
50	74	20
20	171	65
10	260	117

Estimated annual runoff yield through Marsh property excluding
the Ward dam drainage:

	Yield (acre-feet)	Conservative Yield (acre-feet)
80 percent chance every year	164	32
50	374	103
20	866	328
10	1,322	593

Runoff estimates were calculated using the Soil Conservation Service
Engineering Field Manual (Annual Surface Yield).

**Conservative yield based on Soil Group C, good range conditions.

*Yield based on Soil Group C, poor range conditions or Soil Group D,
between poor and good conditions.



United States
Department of
Agriculture

Forest
Service

Nebraska
National
Forest

Fall River Ranger District
209 N. River
Hot Springs, SD 57747
605 745-4107

Reply To: 2500

Date: April 17, 1990

Water Rights Division
Department of Water and Natural Resources
Foss Building
Pierre, SD 57501

Enclosed you will find our application for permit to appropriate water and our \$150 application fee. This is in cooperation with Ducks Unlimited on our Ward Dam Project. We are also enclosing the construction specifications.

If you have any questions, please call Mike Erk at 745-4107.

Sincerely,



for ROBERT G. CHILDRESS
District Ranger

Enclosures



RECEIPT

412208

Division of Water Rights

South Dakota Department of Water and Natural Resources

Pierre, April 18, 19 90RECEIVED OF US Forest Service, 209 N. River, Hot Springs, SD 57747

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

Fee for Application for Permit No. _____ to Appropriate Water, to construct works and to put water to beneficial use _____	150	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 Certified Copy of _____		
Fee for Print Copy of Map _____		
Fee for Certifying _____		
Fee for _____		
(Any Other Work Provided by Law)	Total	150 00

By John Hatch
Chief Engineer

ANNUAL SURFACE YIELD
(Method A)

Definition

The annual surface yield obtained by the following procedure will determine the volume of runoff which can be expected for a twelve month period, a given percent of the time. It can be adapted to all types of areas by its relationship to soil cover index numbers.

Limitations

The procedure is applicable for the design of soil and water conservation measures most usually encountered in the Great Plains area. The yield as obtained by this procedure does not account for losses in transmission or evaporation from storage which will be encountered through its application to various measures. It does not apply to areas within the Rocky Mountains or the Black Hills.

Data Required

The data required for the application of this procedure to a specific need is (1) the isogram number for the given location; (2) the soil cover index (or complex) number which fits the contributing area; (3) size of the contributing area in acres; and (4) the dependency required in percent chance of occurrence.

The Isogram Number is a base to which various conditions affecting surface runoff yield are related to a specific locality. The numbers in the isogram map on Exhibit 2-10, actually represent the acre inches per acre of runoff to be expected from that location, 50 percent of the time if the watershed had a composite soil cover index number 90. Exhibit 2-10 includes a total annual yield graph for each isogram value shown on the inset map.

The Soil Cover Complex Number for a contributing area is a composite of similar numbers for sub areas within. The values are found from Exhibit 2-2 and a composite value determined.

Size of Contributing Area is computed in acres so that volume of runoff can be conveniently determined in acre inches or acre feet. The contributing area should encompass only the area which will drain to the point of design under the most adverse conditions. If there are shallow pot holes in the area, they should be considered as empty, and thereby noncontributing for dependable yield forecasts. Areas on which level terraces are constructed are noncontributing for this purpose.

The Dependency Required will be determined by SCS design standards or good judgement based on the need. A value obtained from the 80 percent chance occurrence curve, is the volume of runoff which the area can be depended upon yielding 80 years in every 100; or that there is an 80 percent chance every year of having that much volume of runoff or more.

between 1.4 and 2.1 inches during a growing season or between 0.5 and 1.1 inches during a dormant season, the AMC is considered average. If the AMC is greater than 2.1 or 1.1 inches respectively, a wet antecedent moisture condition (AMC III) is presumed. If it is less than 1.4 or 0.5 inches respectively, a dry antecedent moisture condition (AMC I) is presumed. This is explained in Chapter 4, NEH-4.(1)

HYDROLOGIC SOIL GROUPS

Over 8,000 soils have been classified into four hydrologic soil groups as shown in Exhibit 2-1. The hydrologic soil groups, according to their infiltration and transmission rates, are:

- A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmission in that water readily passes through them.
- B. Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- C. Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impedes downward movement of water or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
- D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted. These consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

HYDROLOGIC CONDITIONS

The soil and its hydrologic condition, in most cases, affect the volume of runoff more than any other single factor. The hydrologic condition of the soil is determined by its moisture content at the time of the storm, its humus and organic content and its temperature, and whether or not it is frozen.

The 5-day antecedent rainfall described above under precipitation is an indicator of the moisture content of the soil. Runoff curve numbers (described later) can be increased or decreased to estimate extreme high and low volumes of runoff, according to the procedure in Chapter 10, NEH-4.

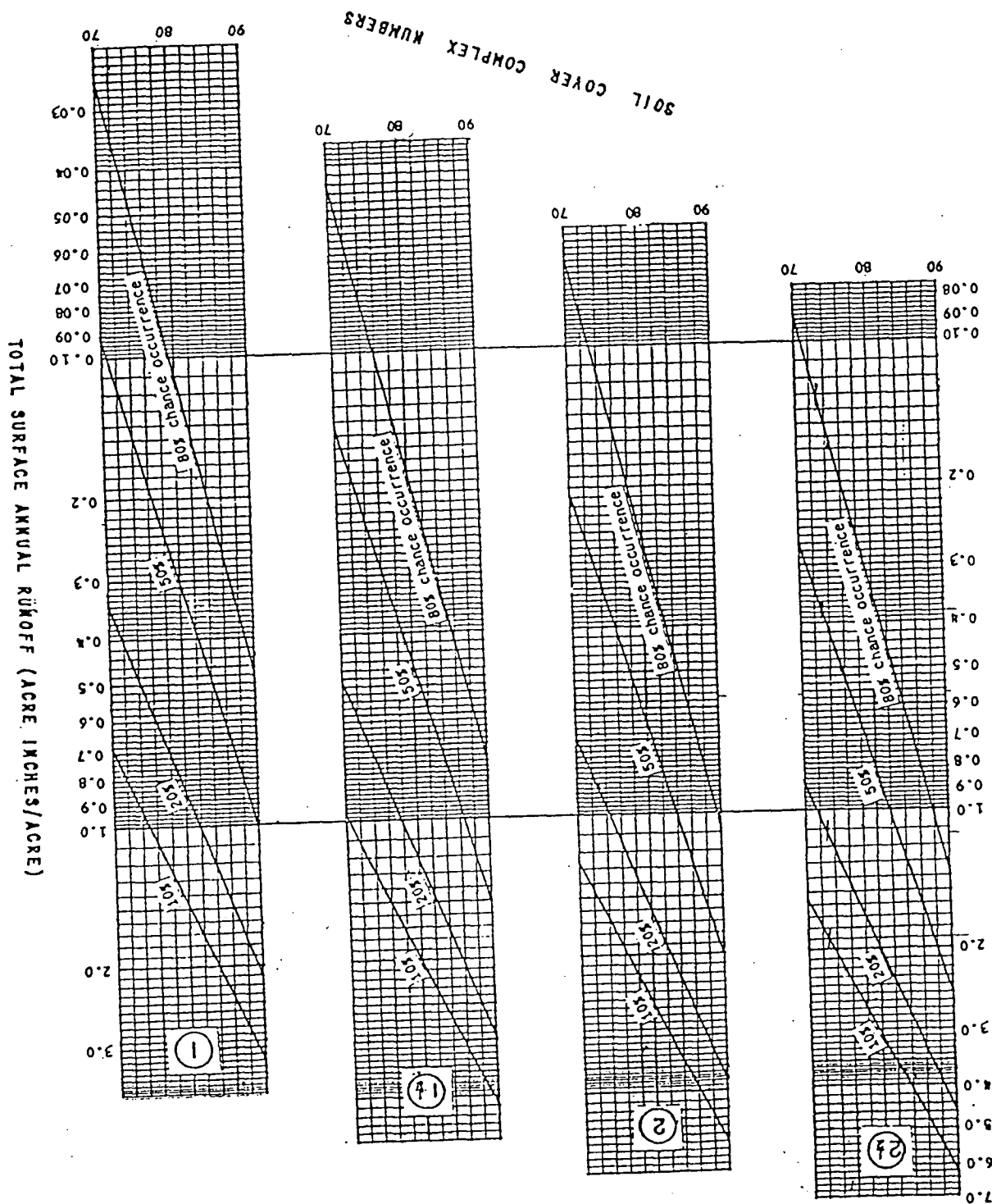
The spring snowmelt in the mountains may saturate the soil to the extent that early spring rains of a lesser amount than subsequent summer storms may cause the highest rate and volume of runoff for the year.

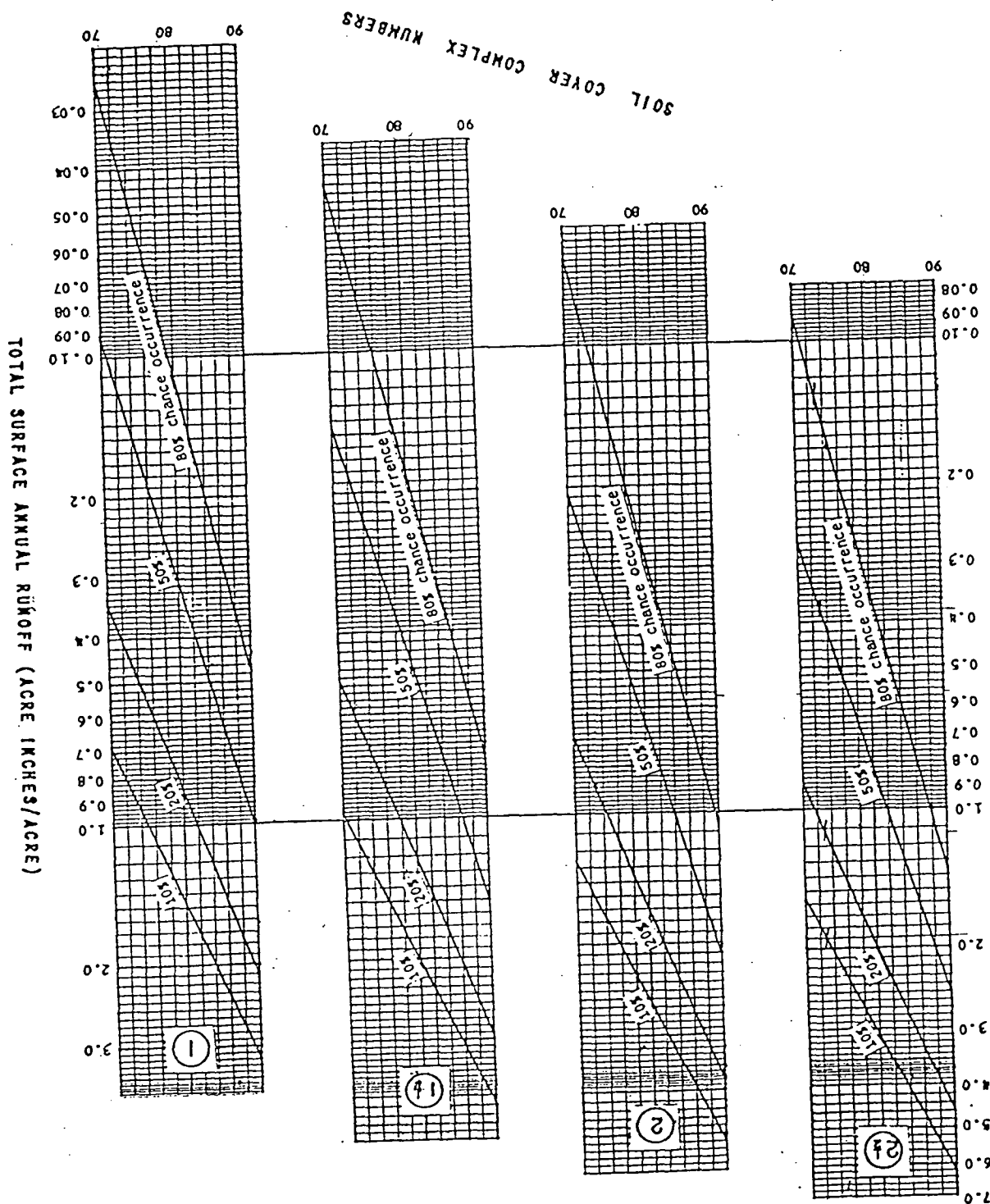
Description	Hydrologic Soil Group			
	A	B	C	D
Cultivated - without conservation treatment - with conservation treatment	72	81	88	91
	62	71	78	81
Pasture or range - poor condition - good condition	68	79	86	89
	<u>39</u>	61	74	80
Meadow	<u>30</u>	<u>58</u>	71	78
Woods or Forest - thin stand, poor cover, no mulch - good cover	<u>45</u>	66	77	83
	<u>25</u>	<u>55</u>	70	77
Farmsteads	<u>59</u>	74	82	86
Roads	74	84	90	92

Note: The underlined CN's are below the values in ES-1026 and ES-1027 charts. Use CN 60 for these conditions unless the job warrants computing the peak discharge by special procedures.(1)(2)

Exhibit 2-2 Runoff curve numbers (CN's)

FIGURE 2-10 (cont'd.)





DO YOU WISH TO GENERATE A SYNTHETIC HYDROGRAPH FOR WARD DAM - 2
DRAINAGE BASIN? (Y/N).
? Y

ENTER THE NUMERICAL FLOODING FREQUENCY, i.e. for a 25 year
flood enter the value 25.0
? 25.0

THE 25 YEAR SYNTHETIC HYDROGRAPH FOR THE WARD DAM - 2
DRAINAGE IS AS FOLLOWS:

TIME (MINUTES)	DISCHARGE (CFS)
0	0
54.45424	33.53308
90.75706	77.84466
127.0599	149.7013
181.5141	293.4145
199.6655	341.3189
217.817	359.283
235.9684	353.295
254.1198	329.3428
326.7254	227.5459
417.4825	137.7252
544.5424	71.85661
726.0565	31.13786
907.5707	11.9761
1089.085	2.994025
1270.599	0

DO YOU WISH TO GENERATE ANOTHER SYNTHETIC HYDROGRAPH? (Y/N)
? Y
ENTER THE NUMERICAL FLOODING FREQUENCY, i.e. for a 25 year
flood enter the value 25.0
? 10.0

THE 10 YEAR SYNTHETIC HYDROGRAPH FOR THE WARD DAM - 2
DRAINAGE IS AS FOLLOWS:

TIME (MINUTES)	DISCHARGE (CFS)
0	0
60.93997	21.34374
101.5666	49.54796
142.1933	95.28454
203.1332	186.7577
223.4466	217.2488
243.7599	228.6829
264.0732	224.8715
284.3865	209.626
365.6398	144.8325
467.2065	87.66178
609.3998	45.73658
812.533	19.81918
1015.666	7.622763
1218.8	1.905691
1421.933	0

IF YOU WISH TO RUN THIS PROGRAM AGAIN, TYPE RUN.
HAVE A NICE DAY!

Ok
RUN
Hello, this program estimates peak discharges and runoff volumes for 2, 5, 10, 25, 50, and 100 year floods based upon equations specified in USGS publication: Techniques for Estimating Flood Peaks Volumes, and Hydrographs on Small Streams, September 1980, Water Resources Investigations 80-80. Input data needed to run this program are: drainage basin size (sq. mi.), soil infiltration index (see Figure 13 in publication), and main channel slope in feet per mile.

WHAT IS THE DRAINAGE BASIN NAME?
? WARD DAM - 2
ENTER THE DRAINAGE BASIN AREA (SQ. MI.)
? 0.85
ENTER THE SOIL INFILTRATION INDEX FROM FIGURE 13
? 1.76
DO YOU WISH TO DETERMINE THE PEAK DISCHARGE? (Y/N)
? Y
ENTER SLOPE ALONG MAIN CHANNEL (FT/MILE)
? 87

THE ESTIMATED PEAK DISCHARGE FOR 2, 5, 10,
25, 50, AND 100 YEAR FLOODS FOR WARD DAM - 2 DRAINAGE
ARE:

Q2 = 72.61908 CFS
Q5 = 147.4588 CFS
Q10 = 228.6829 CFS
Q25 = 359.283 CFS
Q50 = 483.3032 CFS
Q100 = 634.4269 CFS

THE ESTIMATED RUNOFF VOLUME FOR 2, 5, 10, 25, 50,
AND 100 YEARS FLOODS FOR WARD DAM - 2 DRAINAGE ARE:

V2 = 42.91206 ACRE-FEET
V5 = 75.96582 ACRE-FEET
V10 = 103.436 ACRE-FEET
V25 = 145.2125 ACRE-FEET
V50 = 181.6981 ACRE-FEET
V100 = 223.8484 ACRE-FEET

THE ACCURACY OF THE ESTIMATED PEAK DISCHARGES AND RUNOFF
VOLUMES ARE SUBJECT TO THE LIMITATIONS AS SPECIFIED IN
THE ABOVE USGS PUBLICATION

Peak-discharge relation	Standard error of estimate (%) Average Range	Runoff volume relation	Standard error of estimate (%) Average Range
Q2	106 (+152, -60)	V2	96 (+136, -58)
Q10	90 (+124, -55)	V10	92 (+128, -56)
Q25	90 (+125, -56)	V25	90 (+125, -56)
Q50	93 (+130, -56)	V50	89 (+123, -55)
Q100	98 (+139, -58)	V100	89 (+123, -55)

ENTER THE NUMERICAL FLOODING FREQUENCY, i.e. for a 25 year
flood enter the value 25.0
? 25.0

THE 25 YEAR SYNTHETIC HYDROGRAPH FOR THE WARD DAM - 1
DRAINAGE IS AS FOLLOWS:

TIME (MINUTES)	DISCHARGE (CFS)
0	0
52.3868	34.85647
87.31132	80.9168
122.2359	155.6092
174.6227	304.9941
192.0849	354.789
209.5472	373.4621
227.0095	367.2377
244.4717	342.3403
314.3208	236.526
401.6321	143.1605
523.8679	74.69242
698.4906	32.36672
873.1133	12.44874
1047.736	3.112184
1222.359	0

DO YOU WISH TO GENERATE ANOTHER SYNTHETIC HYDROGRAPH? (Y/N)
? Y

ENTER THE NUMERICAL FLOODING FREQUENCY, i.e. for a 25 year
flood enter the value 25.0
? 10.0

THE 10 YEAR SYNTHETIC HYDROGRAPH FOR THE WARD DAM - 1
DRAINAGE IS AS FOLLOWS:

TIME (MINUTES)	DISCHARGE (CFS)
0	0
58.67788	22.16656
97.79647	51.45808
136.9151	98.95785
195.5929	193.9574
215.1522	225.6239
234.7115	237.4989
254.2708	233.5405
273.8301	217.7073
352.0673	150.4159
449.8638	91.04122
586.7788	47.49977
782.3718	20.58323
977.9647	7.916628
1173.558	1.979157
1369.151	0

DO YOU WISH TO GENERATE ANOTHER SYNTHETIC HYDROGRAPH? (Y/N)
? N

RUN

Hello, this program estimates peak discharges and runoff volumes for 2, 5, 10, 25, 50, and 100 year floods based upon equations specified in USGS publication: Techniques for Estimating Flood Peaks Volumes, and Hydrographs on Small Streams, September 1980, Water Resources Investigations 80-80. Input data needed to run this program are: drainage basin size (sq. mi.), soil infiltration index (see Figure 13 in publication), and main channel slope in feet per mile.

WHAT IS THE DRAINAGE BASIN NAME?

? WARD DAM - 1

ENTER THE DRAINAGE BASIN AREA (SQ. MI.)

? 0.85

ENTER THE SOIL INFILTRATION INDEX FROM FIGURE 13

? 1.76

DO YOU WISH TO DETERMINE THE PEAK DISCHARGE? (Y/N)

? Y

ENTER SLOPE ALONG MAIN CHANNEL (FT/MILE)

? 95

THE ESTIMATED PEAK DISCHARGE FOR 2, 5, 10, 25, 50, AND 100 YEAR FLOODS FOR WARD DAM - 1 DRAINAGE ARE:

Q2 = 75.485 CFS

Q5 = 153.0089 CFS

Q10 = 237.4989 CFS

Q25 = 373.4621 CFS

Q50 = 502.819 CFS

Q100 = 660.6259 CFS

THE ESTIMATED RUNOFF VOLUME FOR 2, 5, 10, 25, 50, AND 100 YEARS FLOODS FOR WARD DAM - 1 DRAINAGE ARE:

V2 = 42.91206 ACRE-FEET

V5 = 75.96582 ACRE-FEET

V10 = 103.436 ACRE-FEET

V25 = 145.2125 ACRE-FEET

V50 = 181.6981 ACRE-FEET

V100 = 223.8484 ACRE-FEET

THE ACCURACY OF THE ESTIMATED PEAK DISCHARGES AND RUNOFF VOLUMES ARE SUBJECT TO THE LIMITATIONS AS SPECIFIED IN THE ABOVE USGS PUBLICATION

Peak-discharge relation	Standard error of estimate (%)	Runoff volume relation	Standard error of estimate (%)
	Average Range		Average Range
Q2	106 (+152, -60)	V2	96 (+136, -58)
Q10	90 (+124, -55)	V10	92 (+128, -56)
Q25	90 (+125, -56)	V25	90 (+125, -56)
Q50	93 (+130, -56)	V50	89 (+123, -55)
Q100	98 (+139, -58)	V100	89 (+123, -55)

DO YOU WISH TO GENERATE A SYNTHETIC HYDROGRAPH FOR WARD DAM - 1 DRAINAGE BASIN? (Y/N).

? Y

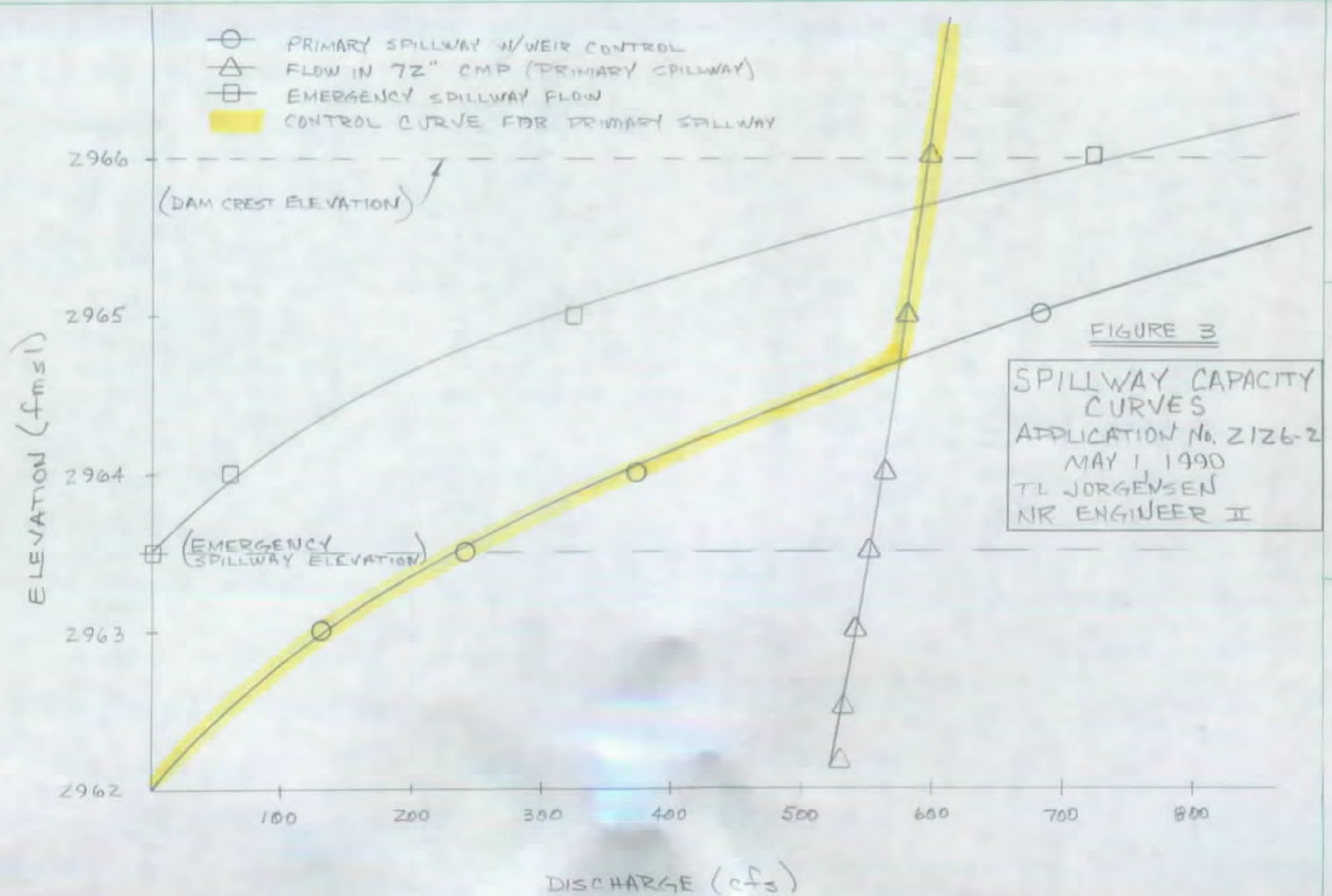


FIGURE 2

DISCHARGE HYDROGRAPH
WARD DAM DRAINAGE BASIN
APPLICATION No Z126-2
MAY 1, 1990
TL JORGENSEN
NR ENGINEER II

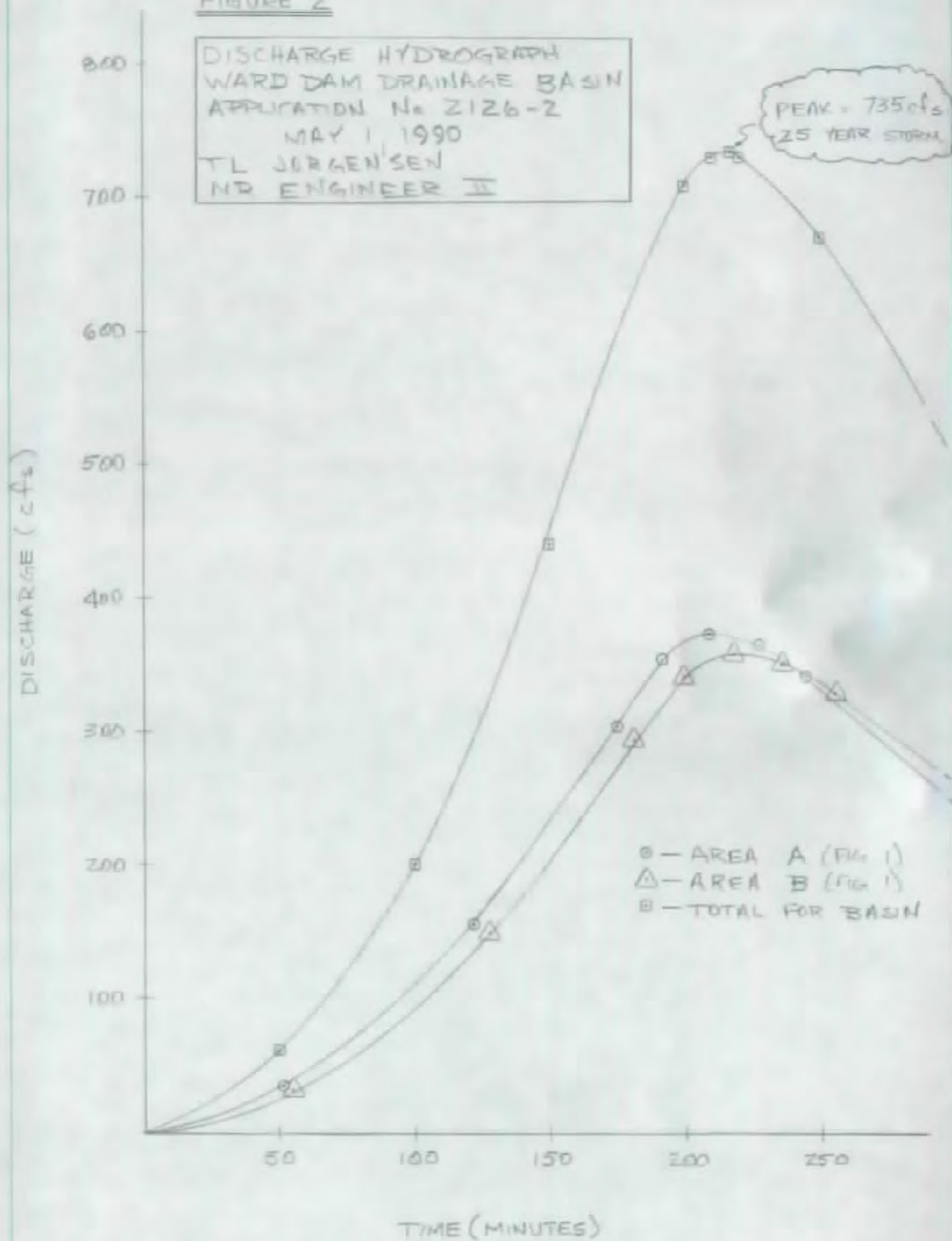
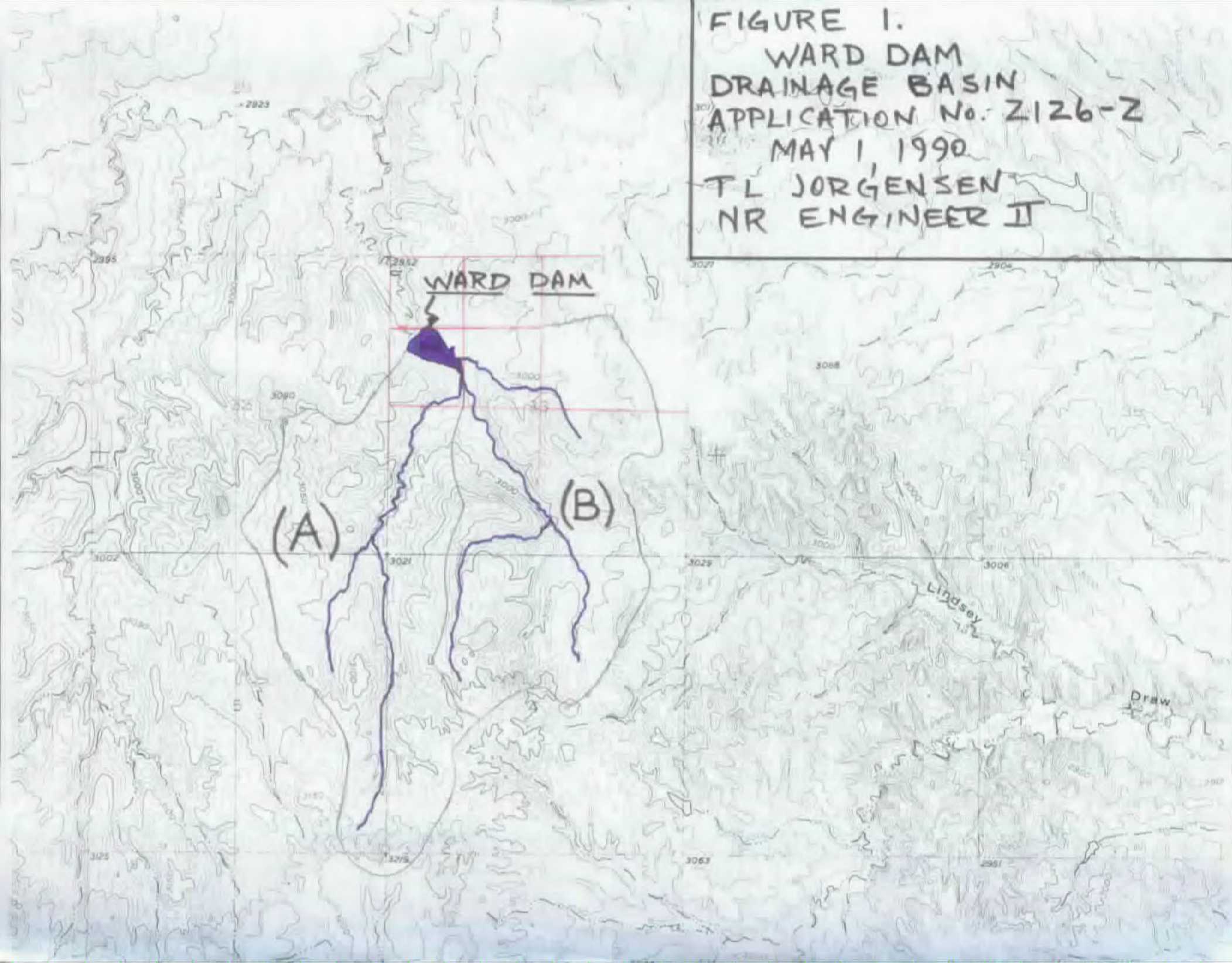


FIGURE 1.
WARD DAM
DRAINAGE BASIN
APPLICATION No. Z126-Z
MAY 1, 1990
T L JORGENSEN
NR ENGINEER II



Conversation or File Documentation

NAME OF PERSON OR FILE: U.S. Forest ServiceADDRESS: 209 N. River COUNTY PenningtonDATE: 4/25/90 TELEPHONE 745-4107RE: Mike Erk

COMMENTS:

I discussed with Mike Erk when this dam breached. He did
not know the exact year but said it was prior to the
1970's. There are supposedly cottonwood trees growing
in the inundated area that are at least 20 years old.

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 Ironlund

LOCATION NOTICE FOR DAM/DUGOUT

Mail to: Water Rights Div.
DWNR, Foss Bldg.
Pierre, SD 57501
(605) 773-3352

Pennington

County



DOC NO. A 756

Loc. BOOK Notice PAGE

FEE 1.00

Copy of filing
90 APR 16 AM 11:42

LORRAINE HEDLUN, of
PENNINGTON COUNTY
REGISTER OF DEEDS

I, USDA - Forest Service

Name

209 N. River, Hot Springs, SD 57747

Address & Zip Code

Fall River

County

owner

(owner or operator)

, of the following described land, do hereby

notify the Water Management Board of the State of South Dakota and all others concerned that I am exercising my right under SDCL 46-4, for construction of a dam (dam or dugout) for the purpose of impounding runoff waters for wildlife & domestic purposes.
(type of use)

The following data is presented in compliance with SDCL 46-4-3 and 46-4-4.

(1) Date of:

(a) This notice April 13, 1990

(b) Proposed construction August 1, 1990

(2) Legal description of the land upon which the dam/dugout is located:

SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 33, T1S, R10E

(describe to the nearest 40 acre sub-division)

(3) Location of the dam/dugout from a section corner:

(describe distance N.S.E.W. from the corner)

(4) County Pennington

(5) The owner of the land USDA - Forest Service

(6) Acre feet of water claimed annually 62.1

Notes: If the storage of the proposed structure at the spillway crest or overflow elevation exceeds twenty five (25) acre feet, a water permit from the Water Management Board is required.

A location notice is only required on a dugout, if the dugout captures surface runoff waters.

** Continue on other side **

(7) Complete the following information for the proposed dam/dugout:

* Items to be completed for a dugout

*a) Dam/Dugout designed by Ducks Unlimited

6115 East Main, Bismarck, ND 58501

(name and address)

b) ~~Board~~ 18 feet

c) Crest Width 12 feet

Crest Length 156 feet

d) Height 20 feet

* Depth, if Dugout _____

e) Outlet Dimensions:

Pipe diameter 72 inches

Spillway width 30 feet

f) X & Y Slope:

Upstream 3:1

Downstream 3:1

*g) Water surface area 15 acres

*h) Storage at spillway crest or overflow elevation

(acre feet) 62.1

i) Maximum storage to top of dam

(acre feet) _____

*j) Drainage area above dam/dugout

1078 acres

Enclosed herewith is ten dollars (\$10.00). The Water Management Board is requested to file this Location Notice in their official records. A copy of this Location Notice has been filed (do not record) with the Register of Deeds of Pennington County in accordance with SDCL 46-4-3.

Richard L. Ert
for USDA - Forest Service ^{owner}

STATE OF SOUTH DAKOTA)

COUNTY OF Fall River) ss

locator

I, USDA - Forest Service the applicant, certify that I have read this Location Notice and that the matters stated in this notice are true and that I intend, and am able to start construction within sixty days after the filing of this notice.

Signed Richard L. Ert for USDA - FOREST SERVICE

Subscribed and sworn to before me this 13 day of April, 1990.

David H. Linder
notary public

My Commission Expires 11/2/96

REPORT ON APPLICATION NO. 2126-2
U. S. Forest Service
May 2, 1990

Application No. 2126-2 proposes to impound 62.1 acre-feet of water by repair of an existing breached dam. U.S. Withdrawal No. 318-2 authorized impoundment of 37 acre-feet of water from this dam which is known as the Ward Dam. Water is to be stored annually to an approximate elevation of 2962 feet mean sea level (fmsl) and is to provide habitat for wildlife production. The dam is thought to have breached prior to the 1970s.

HYDRAULIC/HYDROLOGIC ANALYSIS

Ward Dam will impound water from an unnamed tributary of Antelope Creek and will be located in the SW1/4 NW1/4, section 33, T1S, R10E, Pennington County, SD. The drainage basin for the proposed structure covers 1078 acres (1.7 square miles) and will produce a peak discharge of 735 cfs during a 25 year storm event (see FIGURE 2).

The dam crest will have a height of 20 feet (elevation of 2966 fmsl) with a crest width of 12 feet and length of 156 feet. The primary spillway is a 72 inch diameter corrugated metal pipe (CMP) with an inlet elevation of 2962 fmsl. The emergency spillway is a trapezoidal channel with a bottom width of 30 feet and an entrance elevation of 2963.5 fmsl. The storage capacity of the dam will be as follows:

<u>Elevation (fmsl)</u>	<u>Storage (acre-feet)</u>
2962.0 - primary spillway	62.1 (Full Service Level)
2963.5 - emergency spillway	84.4
2966.0 - crest of dam	137.5

The discharge capacities of the spillways are shown in FIGURE 3 and indicate that the primary spillway will discharge approximately 600 cfs before overtopping the dam. In addition, the emergency spillway has a discharge capacity of 720 cfs with the water elevation at the dam crest. The total spillway capacity (primary plus emergency) is therefore approximately 1320 cfs without overtopping the dam.

SAFETY OF DAMS COMPLIANCE

According to the applicant's preliminary risk assessment, there are no dwellings located immediately downstream from the dam and damage to property would be minimal in the event of a dam failure. Therefore, in accordance with ARSD 74:02:08:06, the dam should be classified as a small (50 - 1000 acre-feet storage) category 3 dam. The product of the intermediate storage capacity (84.4 acre-feet) and the effective height (24.0 feet) is 2026. According to ARSD 74:02:08:07.01, the spillway qualifies for a capacity exemption and must be capable of discharging the peak flows from a 25 year flood (735 cfs) as the minimum design

requirement. As mentioned previously, the combined discharge capacity for the spillways is 1320 cfs and therefore exceeds that required by the Safety of Dams Regulations. Plans and specifications were submitted with the application in accordance with ARSD 74:02:08:09.

REVIEW OF AREA WATER RIGHTS

The dam proposed in this application was once covered under U.S. Withdrawal No. US318-2. The dam was authorized to impound 37 acre-feet for use as stock water. This dam breached sometime prior to 1970 so the water right has not been used for over 20 years. US318-2 should be cancelled since Application No. 2126-2, if approved, will include the same area and diversion point. There are no other water rights in this area that would be affected by the approval of Application No. 2126-2.

CONCLUSIONS

1. Application No. 2126-2, if approved, proposes to impound 62.1 acre-feet at an elevation of 2962.0 fmsl (primary spillway) for use as wildlife habitat.
2. There are no water rights or permits that will be affected by the approval of this application.
3. Plans and Specifications have been submitted as required pursuant to the Safety of Dams Regulations (ARSD 74:02:08). All requirements regarding the safety of the dam have been met and the plans are considered approvable.
4. U.S. Withdrawal No. US318-2 should be cancelled since the dam breached and has not been in use for approximately 20 years. This dam is the subject for rehabilitation as proposed in Application No. 2126-2 and the water appropriated will be covered under this permit, if approved.

Terry L. Jorgensen /KS
Terry L. Jorgensen
Natural Resources Engineer
Division of Water Rights

Approved by:

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

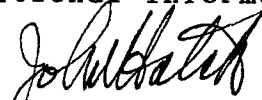
RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2126-2, U.S. Forest Service

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Water Permit Application No. 2126-2, U.S. Forest Service, 209 North River, Hot Springs SD.

The Chief Engineer is recommending APPROVAL of Application No. 2126-2 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 qualifications:

Approval of Permit No. 2126-2 authorizes storage of up to 62.1 acre feet annually.

See the attached report for additional information.



JOHN HATCH, Chief Engineer
June 14, 1990

REVISED RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2126-2, U.S. Forest Service

Pursuant to SDCL 46-2A-2, the following is the Revised recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Water Permit Application No. 2126-2, U.S. Forest Service, 209 North River, Hot Springs SD.

The Chief Engineer is recommending APPROVAL of Application No. 2126-2 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 qualifications:

1. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of Permit No. 2126-2 authorizes storage of up to 62.1 acre feet annually.

See the attached report for additional information.


JOHN HATCH, Chief Engineer
July 19, 1990

 **Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

June 18, 1990

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

U.S. Forest Service
Michael L Erk
209 N River
Hot Springs SD 57747

Dear Mr. Erk:

Water Permit Application No. 2126-2 to provide habitat for wildlife production 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 Rapid City Journal printed at Rapid City SD. 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 the application can be considered by the Water Management Board.

Sincerely,



Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

June 18, 1990

Rapid City Journal
Box 450
Rapid City SD 57709

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 2126-2 to be published twice. Please publish the first notice on or before June 27, 1990 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. Forest Service, 209 N River, Hot Springs SD 57747.

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. The permit application cannot be considered by the Water Management Board 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

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss.
 County _____)

I, Mary K. Garness

certify that the attached printed Notice was taken
 from the Rapid City Journal

A newspaper which during the whole time of publication of
 said notice herein after stated, has been and is printed and
 published in the _____

City of Rapid City

County of Pennington and State of South Dakota;
 that the said notice was published in said newspaper on the
 following two dates:

June 26, 1990

July 3, 1990

Mary K. Garness
 (Signature)

Bookkeeper
 (Title)

July 3, 1990
 (Date Signed)

Cost of Printing: Ran 8 8/16 inches legal advertising
in the Rapid City Journal on June 26 & July 3 @
\$4.20 epr inch = \$71.40

Ran public notice of application L681



June 26, July 3 L681
NOTICE OF HEARING
ON APPLICATION NO. 2126-2
TO APPROPRIATE WATER
 Notice is given that U.S. Forest Service, 209 N. River, Hot Springs, SD 57447 has filed an application for a water permit to impound 62.1 acre-feet of water by repair of an existing breached dam, U.S. Withdrawal No. 318-2 authorized impoundment of 37 acre feet of water in the dam which was known as the Ward Dam. Water is to be stored annually to an approximate elevation of 2962 feet mean sea level and is to provide habitat for wildlife production. The dam is believed to have been breached prior to the 1970's.

Pursuant to SDCL 46-2A-2, the Chief Engineer of the Water Rights Division recommends APPROVAL of Application No. 2126-2 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. This application will be considered by the Water Management Board in the Room 216, Joe Foss Building, 523 E. Capitol, Pierre, S.D., on July 25, 1990 at 10:00 a.m. 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 interested person that intends to participate in the hearing before the Board by presenting evidence or cross-examining witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and Chief Engineer by July 13, 1990. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre, SD 57501, (605) 773-3352." 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 legal counsel if legal counsel is obtained. The applicant need not file a petition. Contact the Water Rights Division to request information on this application or to assure access to the hearing by the handicapped.

This hearing is an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer. 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. The time of the hearing will also be automatically delayed for at least twenty days upon written request to the Chief Engineer from the applicant or a petitioner. The request for a delay must be received by July 13, 1990.

This application is made pursuant to SDCL 46-1-1 thru 46-1-12 thru 46-1-15; 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; 46-5-1 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.

Conversation or File Documentation

NAME OF PERSON OR FILE: U.S. Forest Service (Mike Erk)ADDRESS: _____ COUNTY PNDATE: 7/9/80 TELEPHONE 745-4107

RE: _____

COMMENTS:

*not be
before July 25 & 26*
Called Mr. Erk to tell him that permit No. 2126-2 would
because legal description was left off legal notice and
that there was downstream landowner Jerry Marsh concerned
about the permit. The chief engineer wanted to re-evaluate
this permit to assure Rapid Creek downstream right would
not be impacted. Mr. Erk was busy right now but
said he'd call me back.

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.

Conversation or File Documentation

NAME OF PERSON OR FILE: U.S. Forest ServiceADDRESS: Hot Springs COUNTY PNDATE: 7/10/90 TELEPHONE 745-4107

RE: _____

COMMENTS:

Mike Erk called ~~was~~ in regard to the permit application for the Ward Dam. I had called him yesterday to tell him the legal description had been left out of the notice of hearing. He asked when the next hearing (board mtg) would be and I told him the Oct. 3+4, 1990. He wanted to know if there was any way to expedite this to which I responded that there wasn't. They had planned to begin construction soon after the July meeting. He needed to check with his ranger & Old to see if funds could be secured until Oct. 3+4.

I also explained the concerns of Perry Marsh and they were going to contact him to try to work things out.

I also stated the chief engineer wanted to take another look at whether prior downstream right would or could be interfered with.

Mike Erk called back to say he did not think the statutes say that the legal description must be included, I stated

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 Jonlund

that (2) under statute 46-2A-4 states that a brief description of the project ~~and~~ including the proposed place or places of use of the water or facilities are to be used. I said it was normal practice to have the legal description stated in all notice of hearings.

However, since it was noticed they have every right to come before the Board on July 25 & 26, 1990.



July 11, 1990

Chief Engineer
Water Rights Division
Foss Building
523 E. Capitol
Pierre, S. D. 57501

Dear Sir:

Pursuant to statute, this letter is notice of objection to, and intent to oppose, Water Right Application number 2126-2 filed by the U. S. Forest Service, 209 N. River, Hot Springs, S. D. 57747.

Lacking any description in the published legal notice as to location, i.e., legal description, county, grasslands division, grazing allotment or distance and direction from any town or well known landmark, we question if the legal requirements of SDCL 46-2A-4 have been fulfilled.

For purpose of this petition, we are assuming that the dam in question is the old "Ward Dam" on the Buffalo Gap National Grasslands and located in Township 1 South, Range 10 East, BHM, located southeast of Caputa, S.D. Based on this assumption, the proposed dam would greatly diminish or cut off completely storm run-off which supplies livestock water to the southeast corner of our ranch and that is the basis for our objection. The old "Ward Dam" is only one half mile up watershed from our property and this dam would impound storm water which falls to the south of the dam site and which presently supplies water to our pasture.

If you have questions regarding this matter or wish to discuss it with us, please contact either Jerry Marsh or Ken Marsh, Marsh Hereford Ranch, HCR 36 Box 35, Caputa, S. D. 57725 or call us at 605-393-2333.

Sincerely,

Marsh Hereford Ranch
Jerry Marsh

Copy to:
U. S. Forest Service
209 N. River
Hot Springs, S. D. 57747



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

July 27, 1990

Rapid City Journal
Box 450
Rapid City SD 57709-0450

ATTN: Legal Publications:

Enclosed is a Notice of Hearing on Application No. 2126-2 to be published twice. Please publish the first notice on or before August 2, 1990 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 Department of Water & Natural Resources, Water Rights Division, 523 E. Capitol, Pierre, SD 57501-3181 for the cost of publication.

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. The permit application cannot be considered by the Water Management Board 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 _____

**SOUTH Dakota Department of
Water & Natural Resources**

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

July 27, 1990

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

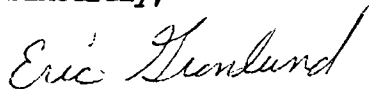
Michael L. Erk
U.S. Forest Service
209 N. River
Hot Springs, SD 57747

Dear Mr. Erk:

Water Permit Application No. 2126-2 to provide habitat for wildlife production 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 Rapid City Journal printed at Rapid City SD. For your information, a copy of the notice is enclosed. Copies of the revised report and the Chief Engineer's revised recommendation are also 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 Intent to Appropriate Water. 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. We must receive Proof of Publication before the application can be considered by the Water Management Board.

Sincerely,



Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

cc: Roger Smith, Ducks Unlimited
Jerry Marsh

Instruction to Newspaper - Publish first Notice on or before August 2, 1990 with 2nd publication 7 days later.

NOTICE OF HEARING on Application No. 2126-2 to Appropriate Water

Notice is given that the U.S. Forest Service, 209 N. River, Hot Springs, SD 57747 has filed an application for a water permit to impound 62.1 acre feet of runoff water by repairing a breached dam located in the S1/2 NW1/4 Section 33-T1S-R10E on a tributary of Antelope Creek. U.S. Withdrawal No. 318-2 authorized impoundment of 37 acre feet of water in the dam which was known as the Ward Dam. Water is to be stored annually to an approximate elevation of 2962 feet mean sea level and is to provide habitat for wildlife production. The dam is believed to have been breached prior to the 1970's.

Pursuant to SDCL 46-2A-2, the Chief Engineer of the Water Rights Division recommends APPROVAL of Application No. 2126-2 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. This application will be considered by the Water Management Board in the Community Room, Brule County Courthouse, 300 S Courtland, Chamberlain, SD on September 6, 1990 at 8:30 am. 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 interested person that intends to participate in the hearing before the Board by presenting evidence or cross-examining witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and Chief Engineer by August 27, 1990. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)". 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 legal counsel if legal counsel is obtained. The applicant need not file a petition. Contact the Water Rights Division to request information on this application or to assure access to the hearing by the handicapped.

This hearing is an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer. 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. The time of the hearing will also be automatically delayed for at least twenty days upon written request to the Chief Engineer from the applicant or a petitioner. The request for a delay must be received by August 27, 1990.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 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; 46-5-1 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.



Affidavit of Publication

STATE OF SOUTH DAKOTA

SS.

County of Pennington

I, Jerry J. Shoener, being first duly sworn, upon his oath says: That he is now and was at all times hereinafter mentioned, an employee of the RAPID CITY JOURNAL COMPANY, a corporation, of Rapid City, South Dakota, the owner and publisher of the RAPID CITY JOURNAL, a legal and daily newspaper printed and published in Rapid City, in said County of Pennington, and has full and personal knowledge of all the facts herein stated as follows: that said newspaper is and at all of the times herein mentioned has been a legal and daily newspaper with a bonafide paid circulation of at least Two Hundred copies daily, and has been printed and published in the English language, at and within an office maintained by the owner and publisher thereof, at Rapid City, in said Pennington County, and has been admitted to the United States mail under the second class mailing privilege for at least one year prior to the publication herein mentioned; that the advertisement, a printed copy of which, taken from said RAPID CITY JOURNAL, the paper in which the same was published, is attached to this sheet and made a part of this affidavit, was published in said newspaper once each week for two successive weeks, the first publication thereof being on the second day of August, 19 90, that the fees charged for the publication thereof are seventy-one Dollars and ninty-two cents.

Jerry J. Shoener

Subscribed and sworn to before me this 9th day of

August, 19 90

Dary Washington

Notary Public.

Commission expires April 13, 1995

Aug. 2, 9
L899
NOTICE OF HEARING
ON APPLICATION NO. 2126-2
TO APPROPRIATE WATER
Notice is given that the U.S.
Forest Service, 209 N. River, Hot
Springs, SD 57747 has filed an ap-
plication for a water permit to
impound 62.1 acre feet of runoff
water by repairing a breached
dam located in the S1/4 NW1/4 Sec-
tion 33, T15S, R10E, on a tributary
of Antelope Creek, U.S. With-
drawal No. 318-2 authorized im-
poundment of 37 acre feet of water
in the dam which was known as
the Ward Dam. Water is to be
stored annually to an approximate
elevation of 2942 feet mean sea
level and is to provide habitat for
wildlife production. The dam is
believed to have been breached
prior to the 1970's.
Pursuant to SDCL 46-2A-2, the
Chief Engineer of the Water
Rights Division recommends AP-
PROVAL of Application No. 2126-2
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. This ap-
plication will be considered by the
Water Management Board in the
Community Room, Brule County
Courthouse, 390 S. Courtland,
Chamberland, SD on September 6,
1990 at 8:30 a.m. The Chief En-
gineer'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 interested person that in-
tends to participate in the hearing
before the Board by presenting
evidence or cross-examining wit-
nesses according to SDCL 1-26,
must file a written petition with
BOTH the applicant and Chief
Engineer by August 27, 1990. The
Chief Engineer's address is "Water
Rights Division, Park Building,
323 E. Capitol, Pierre, S.D. 57501
(605-773-3332)". The petition may
be informal, but must include a
statement describing the peti-
tioner's interest in the application,
the petitioner's reasons for op-
posing or supporting the application
and the signature and mailing ad-
dress of the petitioner or legal
counsel if legal counsel is ob-
tained. The applicant need not file
a petition. Contact the Water
Rights Division to request infor-
mation on this application or to
assure access to the hearing by the
handicapped.
This hearing is an adversary
proceeding. Any person filing a
petition and/or the applicant have
the right to be represented by a
lawyer. These and other due pro-
cess rights will be forfeited if not
exercised. Decision of the Board
may be appealed to the Circuit
Court and State Supreme Court as
provided by law. The time of the
hearing will also be automatically
delayed for at least twenty days
upon written request to the Chief
Engineer from the applicant or a
petitioner. The request for a delay
must be received by August 27,
1990.
This application is made pursu-
ant to SDCL 46-1-1 thru 46-1-9, 46-1-
12 thru 46-1-15, 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,
46-5-1 thru 46-5-17, 46-5-13 thru 46-5-
15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-
30.4, 46-3-31, and Board Rules
ARSD 74:02-01-01 thru 74:02-01-15.

IN THE _____ COURT
COUNTY OF PENNINGTON

**Publisher's and Attorney's
Affidavit**

Filed in the office of _____

on

the _____ day of _____

19 _____

Attorney for _____

(date)

page

Parties of Record before Water Management Board

U.S. Forest Service 2126-2

Proponent

U.S. Forest Service

209 N. River

Hot Springs, SD 57747

(Michael Erk)

Opposition

Marsh Hereford Ranch

HCR 36 Box 35

Caputa, SD 57725

Runoff Volume - DOT Method

$S_i = 1.76$

$DA = 1078 \text{ Ac.} = 1.68 \text{ mi.}^2$

$V_2 = 129 A_i^{.72} S_i^{-1.74}$

$= 129 (1.68)^{.72} (1.76)^{-1.74} = 129 (\cancel{1.68})^{1.45} (0.37) = \underline{69 \text{ Ac.-Ft.}}$

$V_5 = 222 A_i^{.72} S_i^{-1.69}$

$= 222 (1.68)^{.72} (1.76)^{-1.69} = 222 (\cancel{1.68})^{1.45} (0.38) = \underline{124 \text{ Ac.-Ft.}}$

SCS Method

$DA = 1078 \text{ Ac.} = 1.68 \text{ mi.}^2$

Hydrologic Soil Group - DPasture / Range - Fair Condition - CN = 84Exhibit 2-3 2 year - 24 hour Rainfall = 2.1 inchesExhibit 2-7 Runoff Depth = 0.68 inches

$$\frac{0.68 \text{ in} \times 1078 \text{ Ac.}}{12 \text{ in/ft}} = \underline{61 \text{ Ac.-Ft.}}$$

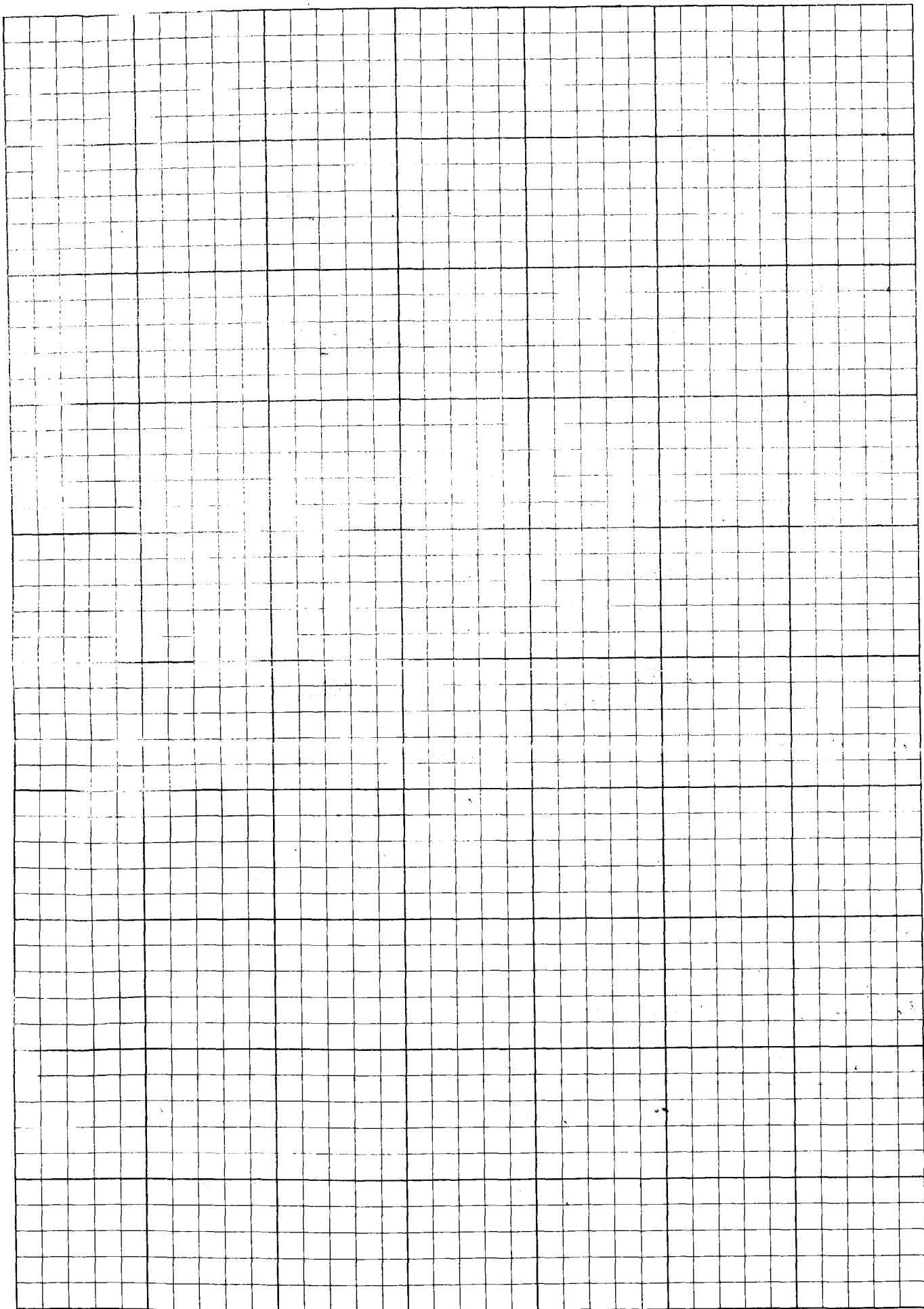
Exhibit 2-3 5 year - 24 hour Rainfall = 2.6 inchesExhibit 2-7 Runoff Depth = 1.02 inches

$$\frac{1.02 \text{ in} \times 1078 \text{ Ac.}}{12 \text{ in/ft}} = \underline{92 \text{ Ac.-Ft.}}$$

Annual YieldIsogram $1\frac{1}{2}$ Pasture / Range - Fair Condition - CN = 84Figure 2-10 Total Surface Annual Runoff (Ac.-in / Ac.)
page 2-86

$$80\% = .34 \text{ in} \times 1078 / 12 = \underline{31 \text{ Ac.-Ft.}}$$

$$50\% = .74 \text{ in} \times 1078 / 12 = \underline{67 \text{ Ac.-Ft.}}$$



REVISED REPORT
ON APPLICATION NO. 2126-2
U. S. FOREST SERVICE
July 16, 1990

Application No. 2126-2 proposes to impound 62.1 acre-feet of water by repair of an existing breached dam. U.S. Withdrawal No. 318-2 authorized impoundment of 37 acre-feet of water from this dam which is known as the Ward Dam. Water is to be stored annually to an approximate elevation of 2962 feet mean sea level (fmsl) and is to provide habitat for wildlife production. The dam is thought to have breached prior to the 1970s.

HYDRAULIC/HYDROLOGIC ANALYSIS

Ward Dam will impound water from an unnamed tributary of Antelope Creek and will be located in the SW1/4 NW1/4, Section 33, T1S, R10E, Pennington County, SD. The drainage basin for the proposed structure covers 1078 acres (1.7 square miles) and will produce a peak discharge of 735 cfs during a 25 year storm event (see FIGURE 2).

The dam crest will have a height of 20 feet (elevation of 2966 fmsl) with a crest width of 12 feet and length of 156 feet. The primary spillway is a 72 inch diameter corrugated metal pipe (CMP) with an inlet elevation of 2962 fmsl. The emergency spillway is a trapezoidal channel with a bottom width of 30 feet and an entrance elevation of 2963.5 fmsl. The storage capacity of the dam will be as follows:

<u>Elevation (fmsl)</u>	<u>Storage (acre-feet)</u>
2962.0 - primary spillway	62.1 (Full Service Level)
2963.5 - emergency spillway	84.4
2966.0 - crest of dam	137.5

The discharge capacities of the spillways are shown in FIGURE 3 and indicate that the primary spillway will discharge approximately 600 cfs before overtopping the dam. In addition, the emergency spillway has a discharge capacity of 720 cfs with the water elevation at the dam crest. The total spillway capacity (primary plus emergency) is therefore approximately 1320 cfs without overtopping the dam.

SAFETY OF DAMS COMPLIANCE

According to the applicant's preliminary risk assessment, there are no dwellings located immediately downstream from the dam and damage to property would be minimal in the event of a dam failure. Therefore, in accordance with ARSD 74:02:08:06, the dam

should be classified as a small (50 - 1000 acre-feet storage) category 3 dam. The product of the intermediate storage capacity (84.4 acre-feet) and the effective height (24.0 feet) is 2026. According to ARSD 74:02:08:07.01, the spillway qualifies for a capacity exemption and must be capable of discharging the peak flows from a 25 year flood (735 cfs) as the minimum design requirement. As mentioned previously, the combined discharge capacity for the spillways is 1320 cfs and therefore exceeds that required by the Safety of Dams Rules. Plans and specifications were submitted with the application in accordance with ARSD 74:02:08:09.

REVIEW OF AREA WATER RIGHTS

The dam proposed in this application was once covered under U.S. Withdrawal No. US318-2. The dam was authorized to impound 37 acre-feet for use as stock water. This dam breached sometime prior to 1970 so the water right has not been used for over 20 years. US318-2 should be cancelled since Application No. 2126-2, if approved, will include the same area and diversion point.

There are four Water Rights located on Rapid Creek below the confluence of Antelope Creek. These Water Rights should not be affected by the approval of Application No. 2126-2. The drainage area above Ward Dam is only 1.7 square miles and the total drainage area for Antelope Creek is approximately 30 square miles. Also, the downstream Water Rights divert water for irrigation from Rapid Creek and Pactola and Deerfield storage and do not rely on Antelope Creek for irrigation water.

We have received opposition from a downstream landowner concerned about water for domestic use below Ward Dam. The low flow bypass requirement should be included on Application No. 2126-2. This would require the U. S. Forest Service to bypass inflows as needed for downstream domestic use. Ward Dam will have a normal capacity of 62 Acre-Feet. According to runoff calculations using SCS procedures, there is a 50% chance of occurrence, or one out of every two years, that the annual yield for the Ward Dam drainage area will produce 67 Acre-Feet. With this expected yield, especially after the Ward Dam reaches its normal capacity, there should be discharges from the dam to provide water for domestic use.

CONCLUSIONS

1. Application No. 2126-2, if approved, proposes to impound 62.1 acre-feet at an elevation of 2962.0 fmsl (primary spillway) for use as wildlife habitat.
2. There are no water rights or permits that will be affected by the approval of this application.

3. Plans and Specifications have been submitted as required pursuant to the Safety of Dams Regulations (ARSD 74:02:08). All requirements regarding the safety of the dam have been met and the plans are considered approvable.
4. U.S. Withdrawal No. US318-2 should be cancelled since the dam breached and has not been in use for approximately 20 years. This dam is the subject for rehabilitation as proposed in Application No. 2126-2 and the water appropriated will be covered under this permit, if approved.
5. The low flow bypass requirement should be included on Application No. 2126-2 to provide water for downstream domestic use.

Tim Schaal /ks

Timothy G. Schaal, P.E.
Natural Resources Engineer
Division of Water Rights

Approved by:

Gale Selken /ks

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

SOUTH Dakota Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

July 18, 1990

Michael Erk
U.S. Forest Service
209 N. River
Hot Springs, SD 57747

Dear Mr. Erk:

We have reviewed the plans and specifications for the Ward Dam project in Pennington County. The plans and specification as submitted are approved.

Our review was to determine compliance with the minimum spillway design flood requirements as specified by the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval applies only to the portion of the plans and specifications that could result in the uncontrolled release of water from the dam. Approval of these plans and specifications does not release the U.S. Forest Service as owner of Ward Dam from the responsibility for operating and maintaining the dam in good repair to assure the safety of the dam.

If you have any questions, please let us know.

Sincerely,



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

cc: Roger Smith, P.E.
Ducks Unlimited

SOUTH Dakota Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

July 20, 1990

U.S. Forest Service
Michael L Erk
209 N River
Hot Springs SD 57747

Dear Mr. Erk:

Enclosed is a copy of the Revised Report and Recommendation of the Chief Engineer for Water Permit Application No. 2126-2.

If you have questions, please contact this office.

Sincerely,

Karen Schlaak

KAREN SCHLAAK
Senior Secretary
Water Rights Division
605 773-3352

enclosures

cc: Marsh Hereford Ranch



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

September 7, 1990

NOTICE

TO: Michael Erk
U.S. Forest Service
209 N. River
Hot Springs, SD 57747

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352

A handwritten signature in black ink that reads "John Hatch". The signature is written in a cursive, flowing style.

Subject: Deferral of Water Permit Application No. 2126-2

On September 6, 1990, the Water Management Board deferred consideration of Water Permit Application No. 2126-2 to allow for investigation of feasible methods to ensure that downstream domestic use of water is not unlawfully impaired. The Board requested that the applicant investigate installation of a pipeline from the dam to a point downstream to provide for adequate livestock water.

The Board will reconsider this application upon submittal of a plan to address downstream domestic use of water. Upon submittal of this plan to the Water Rights Division, notice will be given of the future hearing time and place.

Please contact Eric Gronlund, staff engineer (605 773-3352) if you have any questions.

cc: John Haak, Assistant Attorney General
John Guhin, Deputy Attorney General
Jerry Marsh

CERTIFICATION

I hereby certify that on September 7, 1990 I have personally deposited with the U.S. Mail postage prepaid envelopes containing a Notice regarding Deferral of Water Permit Application No. 2126-2 addressed as follows:

Michael Erk, US Forest Service, 209 N River, Hot Springs SD 57747
Jerry Marsh, Marsh Hereford Ranch, HCR 36, Box 35, Caputa SD 57725

Marie Arakun

Marie Arthur
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 12th day of September, 1990.



John A. Walsh
Notary Public



United States
Department of
Agriculture

Forest
Service

Nebraska
National
Forest

Fall River Ranger District
209 N. River
Hot Springs, SD 57747
605 745-4107

Reply To: 2540/2600

Date: October 23, 1990

John Hatch, Chief Engineer
Water Rights Division
Joe Foss Building
523 East Capitol
Pierre, SD 57501



Here's our plan, John --

Per the Water Board's request to investigate methods to ensure downstream domestic water use.

As I see it, there are four methods that will comply with South Dakota Codified Law 46-1-5 and ensure Marsh's downstream use is not impaired. They are; 1) Construct dugout on Marsh's private land. 2) Construct pipeline from Ward Dam to Marsh's private land. 3) Haul water from Ward Dam to Marsh's private land, and 4) Monitor instream flows and by-pass low flow when necessary.

The cost of the four methods is:

	1 Dugout	2 Pipeline	3 Haul	Monitor & By-Pass
* Total Cost	\$2500	\$4778	\$14,521	\$175,000
**Cost per Animal Unit Month	\$2.00	\$3.82	\$11.62	\$140.00

*Total Cost is cost of method over expected life (25 years) of the Ward Dam Project.

**Equal to total cost of method divided by (50 AUM's/year x 25 years)

- 2500 cubic yards @ \$1.00/yd
- 3696 feet pipeline @ \$1.20/foot plus one 10 foot stock tank @ \$343.00
- (2 man hrs/day x \$10/hr x 15 days)+(vehicle maintenance @ \$10/day x 15 days) +(gas @ 5 gal/day x \$1.50/gal x 15 days)+(one 300 gpm pump @ \$459.00). Assume Johnson Creek supplies other 15 day need.
- Annual monitoring costs based on USGS estimate for contract to monitor two instream monitoring devices.





I hope I can assume hauling water and monitoring flows is not economical and won't be considered by the Water Board to ensure downstream domestic use is not impaired.

That may mean permit issuance with the dugout or the pipeline, or no permit issuance, are the only options left for the Board to consider. But to consider for what? Is the impairment of downstream domestic water use (cattle watering) the real issue here? Two points to consider:

If Marsh's need is so great to water cattle, why have they not supplied that need themselves and when they needed it, years ago? Why is it so critical at a time in 1990 when the Forest Service proposes to build a dam, we must also supply a downstream need when Marshes themselves took no previous action to satisfy it on Johnson Creek? From our table, one can see the dugout would have been the most cost effective method on Johnson Creek, one that Marshes could have built years ago.

Ducks Unlimited offered to design, construct and pay for a dugout on Marsh's private land. The dugout would have stored approximately one acre foot of water, more than enough to satisfy Marsh's expected .138 acre foot need. This offer was made in good faith and as a sincere effort to cooperate with any downstream landowners concerned about the Ward Dam project. Under the assumption the water permit would be approved in September, Ducks Unlimited could do this at very little added cost to their total planned costs of other projects in Pennington County which were being constructed at the time. Jerry Marsh refused this alternative at the September meeting as a means to satisfy their needs.

No, I don't see our supposed impairment of downstream domestic use as being the real issue. The issue may more be the improved flexibility in management that Marshes might enjoy if they had a continual good water supply to their pasture. It should not be our responsibility to pay for their improved management.

In summary, I question if downstream use was ever much of a need from the legal standpoint as it was a management standpoint. Really, I doubt that if we use 13.6% of Johnson Creek's watershed that we will impair any downstream flows. It certainly isn't economical to monitor flows nor haul water. It may be economical for Marshes to construct their own dugout or pipeline to meet their management needs. We certainly would be willing to let them construct a pipeline across the National Grassland to improve management. Construction can be permitted by special use, and would cost them about \$45 yearly.

Please contact me or Mike Erk at 745-4107 if there are any further questions. Otherwise, I will be anxiously awaiting notice of the future hearing time and place so we may finally get this issue resolved.

Sincerely,

ROBERT G. CHILDRESS
District Ranger



Art Carter
Marsh Ranch



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

October 30, 1990

NOTICE

TO: Robert Childress, District Ranger
Fall River Ranger District
209 N. River
Hot Springs, SD 57747

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352

A handwritten signature in cursive script that reads "John Hatch".

Subject: Reconsideration of Deferred Water Permit Application
No. 2126-2

Water Permit Application No. 2126-2 was deferred on September 6, 1990 by the Water Management Board to allow for investigation to ensure that downstream domestic use of water is not unlawfully impaired. This investigation by the U.S. Forest Service has been completed and submitted to the Water Rights Division.

The Board will conduct a hearing to reconsider Water Permit Application No. 2126-2 at the Hilton Inn, Deerfield Room, 445 Mt. Rushmore Road, Rapid City SD on December 5, 1990 at 11:00 am. The agenda time is an estimate. The actual time of hearing may be later than 11:00 am due to prior agenda items. Applicable provisions of the Notice of Hearing published on August 2 & 9, 1990 in the Rapid City Journal will still apply at this hearing.

cc: John Guhin, Deputy Attorney General
John Haak, Assistant Attorney General
Jerry Marsh

CERTIFICATION

I hereby certify that on October 30, 1990 I have personally deposited with the U.S. Mail postage prepaid envelopes containing a Notice of Reconsideration of Deferred Water Permit Application No. 2126-2 addressed as stated below.

Robert Childress, District Ranger, Fall River Ranger District,
209 N. River, Hot Springs, SD 57747

Marie R. Arthur
Marie R. Arthur
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 31st day of October, 1990.



John Hated
Notary Public



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

GREAT FACES. GREAT PLACES.

December 11, 1990

NOTICE

TO: Michael Erk
US Forest Service
209 N River
Hot Springs, SD 57747

Jerry Marsh
Marsh Hereford Ranch
HCR 36 Box 35
Caputa, SD 57725

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352

SUBJECT: Preparation of Findings of Fact, Conclusions of Law and
Final Decision

The Water Management Board has directed John Guhin, the Board's attorney to prepare proposed Findings of Fact, Conclusions of Law and a Final Decision on approval of Water Permit Application No. 2126-2. The Board will consider the proposed Findings, Conclusions and Final Decision at 1:00 pm, Meeting Room, Governor's Inn, 700 W Sioux, Pierre SD. The agenda time is an estimate. The actual time of consideration may be delayed due to prior agenda items.

The Board has requested that a copy of the proposed Findings, Conclusions and Final Decision be mailed to each Board member by February 7, 1991. Any comments pertaining to the proposed Findings, Conclusions and Decision are to be mailed to each Board member and the Board attorney by February 18, 1991.

The public hearing was completed December 5, 1990. No additional testimony will be received on February 27, 1991.

cc: John Guhin, Deputy Attorney General
John Haak, Assistant Attorney General

CERTIFICATION

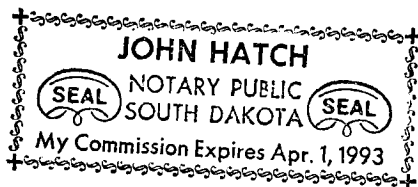
I hereby certify that on December 11, 1990, I have personally deposited with the U.S. Mail postage prepaid envelopes containing a Notice regarding Water Permit Application No. 2126-2 addressed as stated on the Notice.

Jaci Komop

JACI KONOP
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 13th day of December, 1990.




Notary Public



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

January 23, 1991

AMENDED NOTICE

TO: Michael Erk
US Forest Service
209 N River
Hot Springs, SD 57747

Jerry Marsh
Marsh Hereford Ranch
HCR 36 Box 35
Caputa, SD 57725

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352

SUBJECT: Preparation of Findings of Fact, Conclusions of Law and
Final Decision for Water Permit Application 2126-2

The Notice of December 11, 1990, failed to include the date of the Water Management Board meeting at the Governors Inn in Pierre. This Amended Notice is to advise the parties that the Board will consider Findings of Fact, Conclusions of Law and Final Decision at 1:00 pm, February 27, 1991, Meeting Room, Governors Inn, 700 W Sioux, Pierre, SD.

Applicable provisions of the Notice of Preparation of Findings of Fact, Conclusions of Law and Final Decision dated December 11, 1990, will still apply at this time.

cc: John Guhin, Deputy Attorney General
John Haak, Assistant Attorney General

CERTIFICATION

I hereby certify that on January 23, 1991, I have personally deposited with the U.S. Mail postage prepaid envelopes containing an Amended Notice regarding Water Permit Application No. 2126-2 addressed as stated on the Amended Notice.

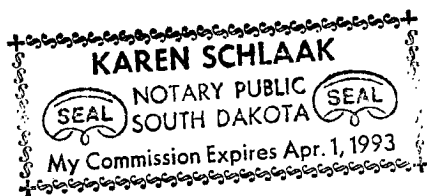
Jaci Konop

JACI KONOP
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 23rd day of January, 1990.

Karen Schlaak
Notary Public





DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

GREAT FACES. GREAT PLACES.

March 12, 1991

NOTICE

TO: Michael Erk
US Forest Service
209 N River
Hot Springs, SD 57747

Jerry Marsh
Marsh Hereford Ranch
HCR 36 Box 35
Caputa, SD 57725

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352 *John Hatch*

SUBJECT: Adoption of Findings of Fact, Conclusions of Law and
Final Decision

This is to notify you that a Final Decision, including Findings of Fact, Conclusions of Law were adopted by the Water Management Board for Water Permit Application No. 2126-2 which was considered at the February 27, 1991, meeting.

A copy of the signed final Decision, Findings and Conclusion is enclosed. South Dakota Statutes provide that the decision of the Board may be appealed to the Courts.

cc: Diane Best, Assistant Attorney General

CERTIFICATION

I hereby certify that on March 12, 1991, I have personally deposited with the U.S. Mail, postage prepaid envelopes containing a Notice regarding Adoption of Findings of Fact, Conclusions of Law and Final Decision on Water Permit Application No. 2126-2 addressed as stated on the Notice.

Jaci R. Konop

JACI R. KONOP
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 13th day of March, 1991.



John Hatch
Notary Public

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE	)	
APPLICATION FOR WATER PERMIT	)	FINDINGS OF FACT,
NO. 2126-2, UNITED STATES	)	CONCLUSIONS OF LAW
FOREST SERVICE.	)	AND FINAL DECISION

FINDINGS OF FACT

I

This is an application to impound 62.1 acre feet of water from an unnamed tributary of Antelope Creek in Pennington County, South Dakota.

II

The applicant United States formerly held United States Withdrawal #318-2 which authorized impoundment of 37 acre feet of water from this dam, which is popularly known as the Ward Dam. The dam was breached prior to the 1970's and no right is premised upon this withdrawal.

III

According to the Department, the drainage area for the proposed structure covers 1,078 acres. Using conservative yield statistics, there is a 50% chance every year of a runoff of 20 acre feet; the same conservative use statistics show a 20% chance every year of a 65 acre feet runoff. Using less conservative statistics, there is a 50% chance of a 74 acre feet runoff each year; again using these less conservative statistics, there is a 20% chance of a 171 acre feet runoff each year.

IV

The dam is proposed to be built on federally owned grasslands.

V

The downstream landowner, Mr. Marsh, is opposed to the grant of the permit insofar as it might interfere with his domestic use.

VI

Mr. Marsh states that, after a storm, he will commonly move cattle into the area below the proposed Ward Dam. The flowing water is then available to his cattle. Moreover, the water flows into depressions in the land and is then available for approximately 10 days.

VII

According to the Department, excluding the Ward Dam drainage, and using conservative statistics, there is a 50% chance every year of a runoff of 103 acre feet to the Marsh property; using the same conservative statistics there is a 20% chance every year of a runoff of 328 acre feet. Using less conservative statistics, there is a 50% chance every year of a yield of 374 acre feet to the Marsh property, excluding the Ward Dam drainage; using those same less conservative statistics, there is a 20% chance every year of a yield of 866 acre feet.

VIII

As noted, the statistics set forth in paragraphs III and VII were developed by the Department and indicate,

to the satisfaction of the Board that there will in many years be substantial water available for the landowner and the applicant at and below Ward Dam. It also appears probable that there will be substantial water available on the Marsh property regardless of the use of the Ward Dam water by the applicant. The landowner has responded to the Department's statistics by asserting that the Ward Dam drainage actually produces more water than does the drainage from the remainder of the property but this reinforces the conclusion that there will be water available in most years for both the applicant and the landowner at and below Ward Dam, the central issue before this Board.

IX

There is a reasonable probability that there is unappropriated water available for the applicant's proposed use.

CONCLUSIONS OF LAW

I

The Board has jurisdiction of this matter.

II

There is a reasonable probability that there is unappropriated water available for the applicant's proposed use.

III

The proposed diversion can be developed without unlawful impairment of existing rights, when developed with the qualifications set out in the Final Decision.

IV

The proposed uses are for domestic livestock and wildlife purposes and are beneficial uses.

V

The proposal is in the public interest as qualified below.

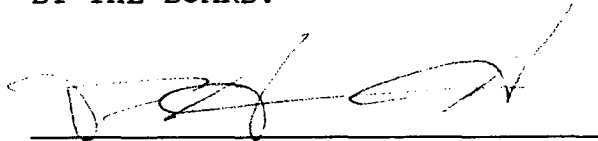
FINAL DECISION

The application for water permit No. 2126-2 is approved subject to the following qualifications:

1. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

2. Approval of permit No. 2126-2 authorizes storage of up to 62.1 acre feet annually.

BY THE BOARD:

A handwritten signature in dark ink, appearing to be "J. J. [unclear]", is written over a horizontal line.

DATED:

3/8/91

s-pld7.jpg



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

GREAT FACES. GREAT PLACES.

APR 25 1991

Michael Erk
U.S. Forest Service
209 North River
Hot Springs, SD 57747

Dear Mr. Erk:

Enclosed is Water Permit No. 2126-2 authorizing construction of your water diversion system and put the water to beneficial use, 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.



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

March 25, 1991

Roger Smith, P.E.
Regional Engineer
Ducks Unlimited, Inc.
6115 East Main Avenue
Bismarck, North Dakota 58501

Dear Mr. Smith:

We have reviewed the revised plans for the Ward Dam Project in Pennington County, South Dakota. These plans include the installation of a 6 inch gated conduit at elevation 2956.0 to serve as the structure's low level outlet. The plans as submitted are approved.

The installation of the outlet at elevation 2956.0 does not release the U.S Forest Service from the responsibility for releasing inflows for downstream domestic use purposes if the reservoir is below this elevation.

If you have any questions, please let us know.

Sincerely,

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

cc: Mike Erk, U.S. Forest Service
Dan Limmer, SD GF&P



United States
Department of
Agriculture

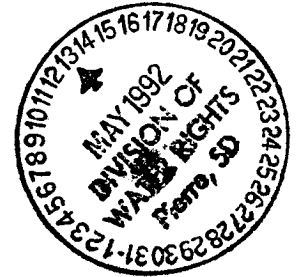
Forest
Service

Nebraska
National
Forest

Fall River Ranger District
209 N. River
Hot Springs, SD 57747
605 745-4107

Reply To: 2630

Date: May 11, 1992



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

Attn: John Hatch

Here's our notice, John --

For completion of the Ward Dam project, water permit 2126-2.

Please schedule an inspection with Mike Erk or Bob Hodorff of my office,
745-4107, at your convenience.

Sincerely,

ROBERT G. CHILDRESS
District Ranger

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



Caring for the Land and Serving People

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



Date May 6, 1992

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

FROM: USDA-Forest Service 209 North River, Hot Springs, SD 57747
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. 2126-2.

Water Permit No. 2126-2 states that the diversion system is to be constructed by February 27, 1996, and that the water it put to beneficial use by February 27, 2000.

The diversion system was completed on August 20, 1991.

Applying the water to beneficial use was completed on May 6, 1992.

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

signature



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 21, 1995

2126-2

Michael L. Erk
U.S. Forest Service
209 North River
Hot Springs, SD 57747

Dear Mr. Erk:

The inspection of your water use system and the inspection of the extent of application of water to beneficial use, as developed under Water Permit No. 2126-2, has been completed. Your final water right document, the Water License, can now be issued.

Statutes require that we charge a \$50.00 fee for the inspection and issuance of the Water License. Upon receipt of the \$50.00 fee from you, we will begin processing your Water License.

Please remit fee to:
Department of Environment & Natural Resources
Water Rights Program
523 E. Capitol
Pierre, SD 57501-3181

South Dakota Water Law 46-5-30.1 requires that a permit holder may not divert water until the \$50.00 license fee has been paid. Please contact us if you have any questions.

Sincerely,

Cheryl F. Frost
Secretary
Water Rights Program
(605) 773-3352

NOTE: On check or money order, please specify your permit number. This will insure proper handling of the fee.

RECEIPT

414632

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, _____, October 3, 19 95

RECEIVED OF US Forest Service, 209 North River, Hot Springs, SD 57747

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. <u>2126-2</u>	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	50 00

By John Hatch
Chief Engineer

PHASE I INSPECTION CHECKLIST

NAME OF DAM: *Ward Dam*
 STATE: *SD*
 COUNTY: *Pennington*
 INVENTORY NO.:
 HAZARD CATEGORY:
 TYPE OF DAM:

OWNER: *US Forest Serv.*
 DATE INSPECTED: *Aug 94*
 WEATHER:
 TEMPERATURE:
 POOL ELEVATION:
 TAILWATER ELEVATION:

DIRECTIONS: Mark an "X" in the YES or NO column.

If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	REMARKS
1. CREST.			
a. Any visual settlements?		☒	
b. Misalignment?		☒	
c. Cracking?	☒	☒	<i>minor cracking ~ heat cracks</i>
2. UPSTREAM SLOPE.			
a. Adequate grass cover?	☒	☒	
b. Any erosion?	☒	☒	<i>bank erosion just N.E. of the outlet works</i>
c. Are trees growing on slope?	☒	☒	<i>small cottonwood trees along upstream slope</i>
d. Longitudinal cracks?		☒	
e. Transverse cracks?		☒	
f. Adequate riprap protection?	☒	☒	<i>some riprap is sparse but present</i>
g. Any stone deterioration?		☒	
h. Visual depressions or bulges?		☒	
i. Visual settlements?		☒	
3. DOWNSTREAM SLOPE.			
a. Adequate grass cover?	☒	☒	
b. Any erosion?		☒	
c. Are trees growing on slope?		☒	
d. Longitudinal cracks?		☒	
e. Transverse cracks?		☒	
f. Visual depressions or bulges?		☒	
g. Visual settlements?		☒	
h. Is the toe drain dry?	☒	NA	
i. Are the relief wells flowing?		NA	
j. Are boils present at the toe?		☒	
k. Is seepage present?	☒	☒	<i>some seepage but outlet was also running</i>
4. ABUTMENT CONTACTS.			
a. Any erosion?		☒	
b. Visual differential movement?		☒	
c. Any cracks noted?		☒	
d. Is seepage present?		☒	
5. INTAKE STRUCTURE.			
a. Do concrete surfaces show:	NA		
(1) Spalling?		☒	
(2) Cracking?		☒	
(3) Erosion?		☒	
(4) Scaling?		☒	
(5) Exposed reinforcement?		☒	
(6) Other?		☒	
b. Do the joints show:	NA		
(1) Displacement or offset?		☒	
(2) Loss of joint material?		☒	
(3) Leakage?		☒	

ITEM	YES	NO	REMARKS
c. Metal appurtenances?	N	A	
(1) Corrosion present?			
(2) Breakage present?			
(3) Anchor system secure?			
6. CONDUIT.			
a. Is the conduit concrete?		X	
b. Do concrete surfaces show:			
(1) Spalling?			
(2) Cracking?			
(3) Erosion?			
(4) Scaling?			
(5) Exposed reinforcement?			
(6) Other?			
c. Do the joints show:			
(1) Displacement or offset?			
(2) Loss of joint material?			
(3) Leakage?			
d. Is the conduit metal?		X	
(1) Corrosion present?			
(2) Protective coatings adequate?			
(3) Is the conduit misaligned?			
7. STILLING BASIN.	N	A	
a. Do concrete surfaces show:	N	A	
(1) Spalling?			
(2) Cracking?			
(3) Erosion?			
(4) Scaling?			
(5) Other?			
(6) Exposed reinforcement?			
b. Do the joints show:	N	A	
(1) Displacement or offset?			
(2) Loss of joint material?			
(3) Leakage?			
c. Do the energy dissipators show:			
(1) Signs of deterioration?			
(2) Are they covered with debris?			
(3) Other?			
d. Is the channel:			
(1) Eroding or backcutting?			
(2) Sloughing?			
(3) Obstructed?			
e. Is released water:			thick growth of water weeds
(1) Undercutting the outlet?			
(2) Eroding the embankment?			
8. SPILLWAY.			
a. Does spillway concrete show:	N	A	
(1) Spalling?			
(2) Cracking?			
(3) Erosion?			
(4) Scaling?			
(5) Other?			
(6) Exposed reinforcement?			
b. Do the joints show:	N	A	
(1) Displacement or offset?			
(2) Loss of joint material?			
(3) Leakage?			

ITEM	YES	NO	REMARKS
c. Do the energy dissipators show:	<i>N</i>	<i>A</i>	
(1) Signs of deterioration?			
(2) Are they covered with debris?			
(3) Other?			
d. Is the spillway earth cut?	<i>X</i>		
(1) Are slopes eroding?			
(2) Are slopes sloughing?			
(3) Other?			
e. Is the channel:			
(1) Eroding or backcutting?			
(2) Obstructed?			
f. Has released water:			
(1) Eroded the embankment?			
(2) Undercut the outlet?			
(3) Other?			
g. Is weir in good condition?		<i>NA</i>	
h. Is control at the weir?		<i>NA</i>	
9. GATES.			
a. Are the flood gates:	<i>NA</i>		
(1) Broken or bent?			
(2) Corroded or rusted?			
(3) Periodically maintained?			
(4) Operational?			
(5) Date last operated.			<i>the square head for the key is slightly displaced Aug. 3, 1995</i>
b. Is there a low level gate?	<i>X</i>		
c. Is the low-level gate operational?			
10. RESERVOIR CONTROL.			
a. Recent upstream development?			
b. Slides in reservoir area?			
c. Change in reservoir operation?	<i>X</i>		<i>the low level gate had been mysteriously opened.</i>
d. Large Impoundment upstream?			
11. INSTRUMENTATION. <i>NA</i>			
a. List type(s) of instrumentation.			
b. In good condition?			
c. Read periodically?			
d. Is data available?			

Other comments:

Small Cottonwood trees on upstream slope. Water level was low due to low level gates being left open. Larger Cottonwood trees near outlet channel. Square for outlet works key is off center making it difficult to operate and since the gate is

This dam was inspected by:

*DeRon Peters
Bob Novotny / Forest Service
Bob Hodorf /*

Permit No. 2126-2
Upper Cheyenne - Water District

Report Of Examination Of Works And/Or Application of Water To Beneficial Use

TO: Chief Engineer, Division of Water Rights, DENR, Foss Bldg., Pierre, SD 57501

I have this day, August 3, 1995, made a thorough examination of the water use system constructed by U.S. Forest Service of Hot Springs holder of Permit No. 2126-2, bearing the priority of April 18, 1990 authorizing the the storage of 62.1 acre-feet of the waters of tributary of Anelope Creek for stock watering and wildlife propagation purposes, in Pennington County.

I have to report on the conditions of the same as follows:

A. Works used to divert the water:

A 750 ft. long dam, 25 ft. in height, with low level gates to bypass

B. Works used to transport water to place of use:

Water is collected from a 1,078 acre drainage area

C. Works used to apply water to beneficial use:

Ward Dam

The system is in the following condition good. The point of diversion is located in the SE 1/4 NW 1/4 Section 33 - T1S-R10E. The works are capable of storing 62.1 acre-ft of water which is to be used for wildlife and livestock watering. Water has been put to beneficial use to the maximum extent as follows:

The propagation of wildlife habitat and livestock watering.

Applicable permit qualifications have been complied with: Yes

Exceptions to compliance are: none

Date Report Completed: August 25, 1995



DelRon Peters
Natural Resources Engineer
DENR, Water Rights Division

REPORT ON INSPECTION OF PERMIT NO. 2126-2

Other permit(s) associated with the project: none

DATE OF INSPECTION: August 3, 1995

NAME & ADDRESS OF INSPECTION CONTACT/

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: U.S. Forest Service

NAME & ADDRESS OF PERMIT HOLDER: 209 N. River

Hot Springs S.D. 57747

DIVERSION POINT LEGAL LOCATION: SE 1/4 NW 1/4 Section 33 - T1S-R10E

DISTRIBUTION LINES OR CANALS:

2 - 72" CMP low level spillway tubes.

SYSTEM TYPE: Dam built for wildlife.

DAM INFORMATION:

- 1) Height to crest 25 feet
- 2) Height to primary spillway 20 feet
- 3) Crest width 15 feet
- 4) Crest length 750 feet
- 5) Spillway width 32 feet
- 6) Approx. storage 62 ac-ft
- 7) Date constructed:

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Soil and water permit lands agree with lands being irrigated and lands listed on permit N/A
- 2) Special qualifications to permit being abided by Y
- 3) All structures, wells and lands on map Y
- 4) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period N/A

NW Section Corner 33

TS-RIDE

2952

Exposed
Spillway

Low level
gates

2960

Ward Dam

3000

33

3000

3050

TS-RIDE

3021

DelRon Peters
Natural Resources Eng.
Dept. Envir. & Nat. Resources
Aug. 03, 1995

3050

2126-2

STATE OF SOUTH DAKOTA
WATER LICENSE NO. 2126-2

(1) The U. S. Forest Service, 209 N River, Hot Springs SD 57747 made Application No. 2126-2, April 18, 1990 for a water permit to store 62.1 acre-feet of water from a tributary of Antelope Creek, Pennington County, South Dakota for livestock watering and fish and wildlife propagation purposes. Permit No. 2126-2, with a priority date of April 18, 1990 was approved February 27, 1991 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before February 27, 1996 and for the application to beneficial use of said water on or before February 27, 2000.

The permit holder submitted a "*Notice of Completion of Works and Application of Water to Beneficial Use*" on May 13, 1992. The "*Notice*" stated the diversion system was completed on August 20, 1991 and the water placed to beneficial use on May 6, 1992.

(2) It is certified that the applicant has complied with the provisions of South Dakota State Law relating to completion of the construction of the dam with a storage capacity of 62.1 acre-feet and is entitled to store sufficient water annually to maintain the water level at the outlet elevation of 2962 feet mean sea level. The location of the dam is 1370 feet south and 415 feet east of the NW corner of Section 33-T1S-R10E (SE 1/4 NW 1/4).

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

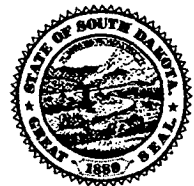
(4) Pursuant to South Dakota Water Law 46-5-30.1 the U. S. Forest Service, 209 N River, Hot Springs SD 57747 the holder and/or owner of Water Permit No. 2126-2 issued a license to appropriate water, the right to store 62.1 acre-feet of water annually (with sufficient water annually to maintain the outlet elevation of 2962 feet mean sea level) from a tributary of Antelope Creek with a priority date of April 18, 1990 from the location specified in (2) of this license. The water to be used for the purpose of livestock watering and fish and wildlife propagation. This license is subject to any limitations or qualifications listed in Water Permit No. 2126-2 and subject to South Dakota State Law.



JOHN HATCH, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

DEC 18 1995

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

DEC 18 1995

2126-2

Michael L. Erk
U.S. Forest Service
209 N. River
Hot Springs, SD 57747

Dear Mr. Erk:

Enclosed is Water License No. 21126-2 and Receipt No. 414632 for \$50.00 which was assessed for an inspection and issuance of the license. Water License No. 2126-2 is the final document which completes the process of obtaining a water right.

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.

Very truly yours,

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

rd
enclosures

DESIGN REPORT

WARD DAM

LOCATION OF PROPOSED DAM

The proposed dam reconstruction will be located on Forest Service land in NW $\frac{1}{4}$, Section 33, Township 1S, Range 10E. in Pennington County, SD on an unnamed tributary to the Antelope Creek. The watershed contributing to the proposed reconstruction is 1078 acres.

RISK ASSESSMENT

By use of the Caputa Quadrangle and by interviewing Forest Service personnel it has been determined that there are no man made structures along the watercourse that would be at risk due to failure of the proposed reconstruction.

CLASSIFICATION OF THE EXISTING DAM

As described in Section 74:02:08:05 CLASSIFICATION OF DAMS -- HAZARD POTENTIAL, no loss of life and minimal or no economic loss is excepted on surrounding lands as a result of constructing the proposed dam. It is recommended the dam be classified as a small category 3 dam. The product of the intermediate storage capacity and the effective height is 2064.

DESIGN

Ward Dam reconstruction is designed to meet or exceed South Dakota standards for a small category 3 dam. The primary spillway will pass flows produced by a 10 year 24 hour rainfall without utilizing the emergency spillway. The emergency spillway will pass flows produced by the 100 year 24 hour rain with a maximum velocity of 3.0 feet per second in the control section and 13.0 feet per second on the outlet slope. The level crest is of sufficient length as to prevent failure in the emergency spillway from headcutting during the 100 year 24 hour rain.

DISCHARGE CAPACITY

The 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 data inputted into the TR-20 program was calculated from accepted formulas and procedures. The primary spillway capacity was calculated by comparing discharges developed by the weir flow formula, orifice flow formula, and formulas for calculating head loss through corrugated metal pipe. The emergency spillway capacity was calculated using Technical Release No. 39 Hydraulics of Broad-Crested Spillways developed by the Soil Conservation Service.

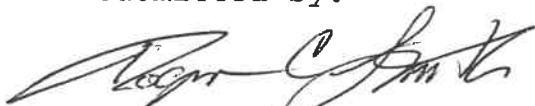
The following is a relationship between peak inflows, corresponding outflows and reservoir elevations:

EVENT	INFLOWS (CFS)	MAX. WATER SURFACE ELEVATION (MSL)	OUTFLOWS (CFS)
10 Yr.	479.5	2963.87	344.4
100 Yr.	835.4	2964.82	608.96

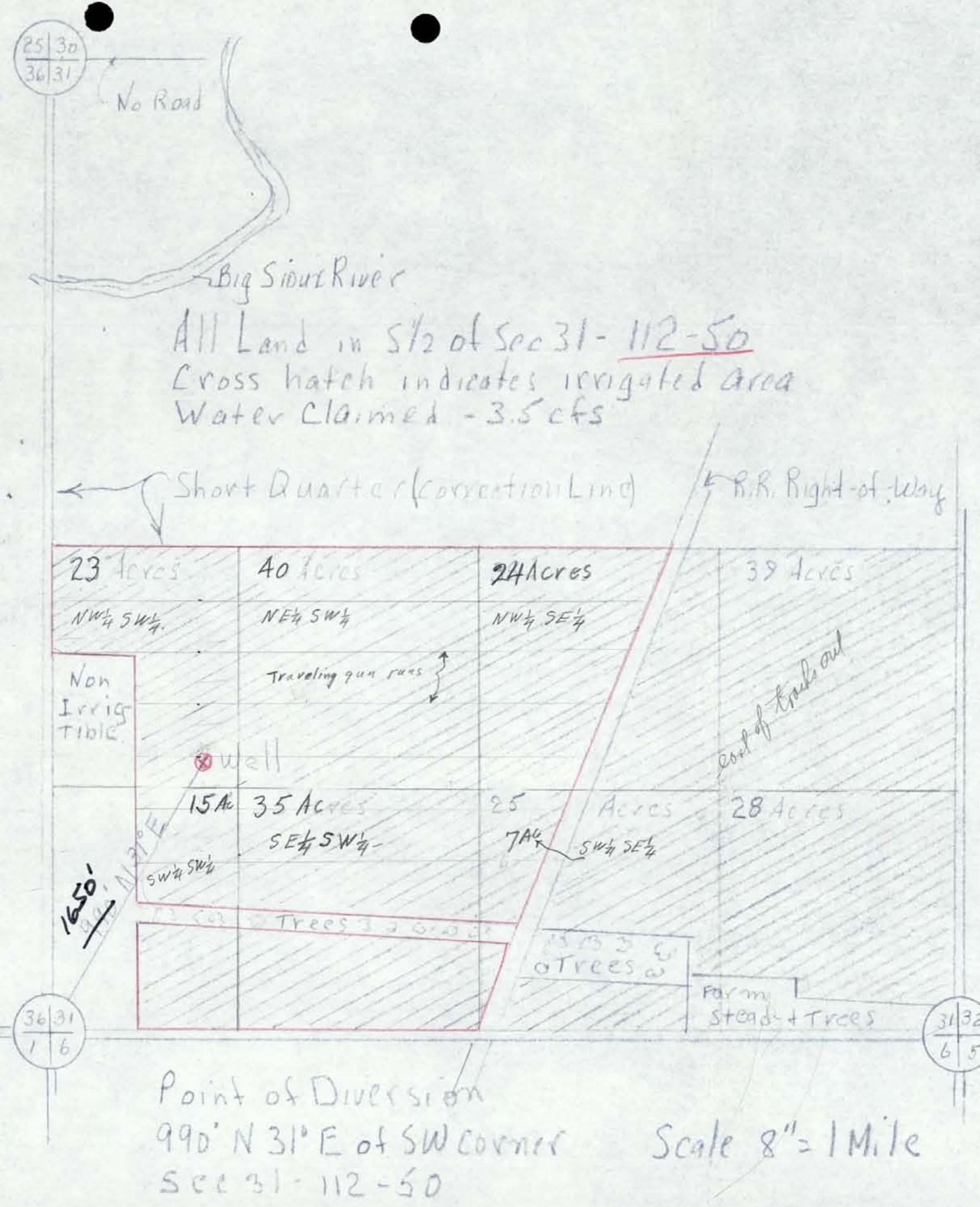
PLANS, SPECIFICATIONS, AND SOILS REPORT

The preliminary set of plans and soil report are submitted with the Design Report. A set of standard construction specifications has been submitted to the Division of Water Rights for the purpose of permit review. This information will satisfy section 74:02:08:09 of the "SD Dam Safety Requirements."

Submitted by:



Roger C. Smith, P.E.
PE-4325

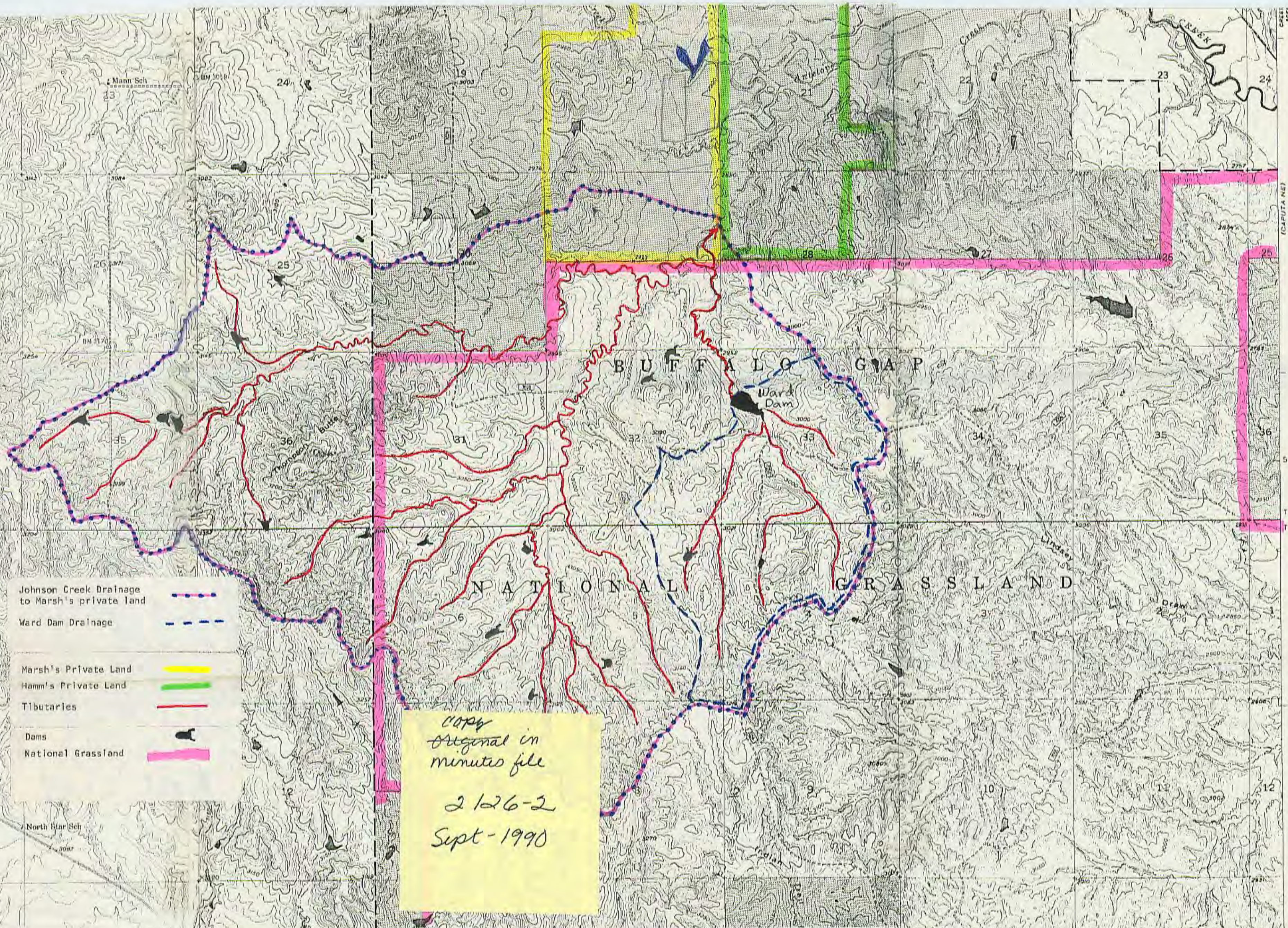


Ulvested Irrigation Project # One

Bruce South Dakota
Brookings County

Land Description	Acres Irrigated
NW 1/4 of SW 1/4 Sec 31-112-50	23
NE 1/4 of SW 1/4 Sec 31	40
SW 1/4 of SW 1/4 Sec 31	15
SE 1/4 of SW 1/4 Sec 31	35
NW 1/4 of SE 1/4 Sec 31-112-50	38
NE 1/4 of SE 1/4 Sec 31	39
SW 1/4 of SE 1/4 Sec 31	25
SE 1/4 of SE 1/4 Sec 31	28
Total Acres	243

Surveyor's Certificate
I, John L. Wiersma, do hereby certify that this map identifies a reasonably accurate record of the land of:
Wesley Ulvested
Bruce South Dakota Brookings County
Drawn by J.L.W. 10-5-74
John L. Wiersma P.E. # 1916
Brookings S. Dakota



Johnson Creek Drainage
to Marsh's private land

Ward Dam Drainage

Marsh's Private Land

Hamm's Private Land

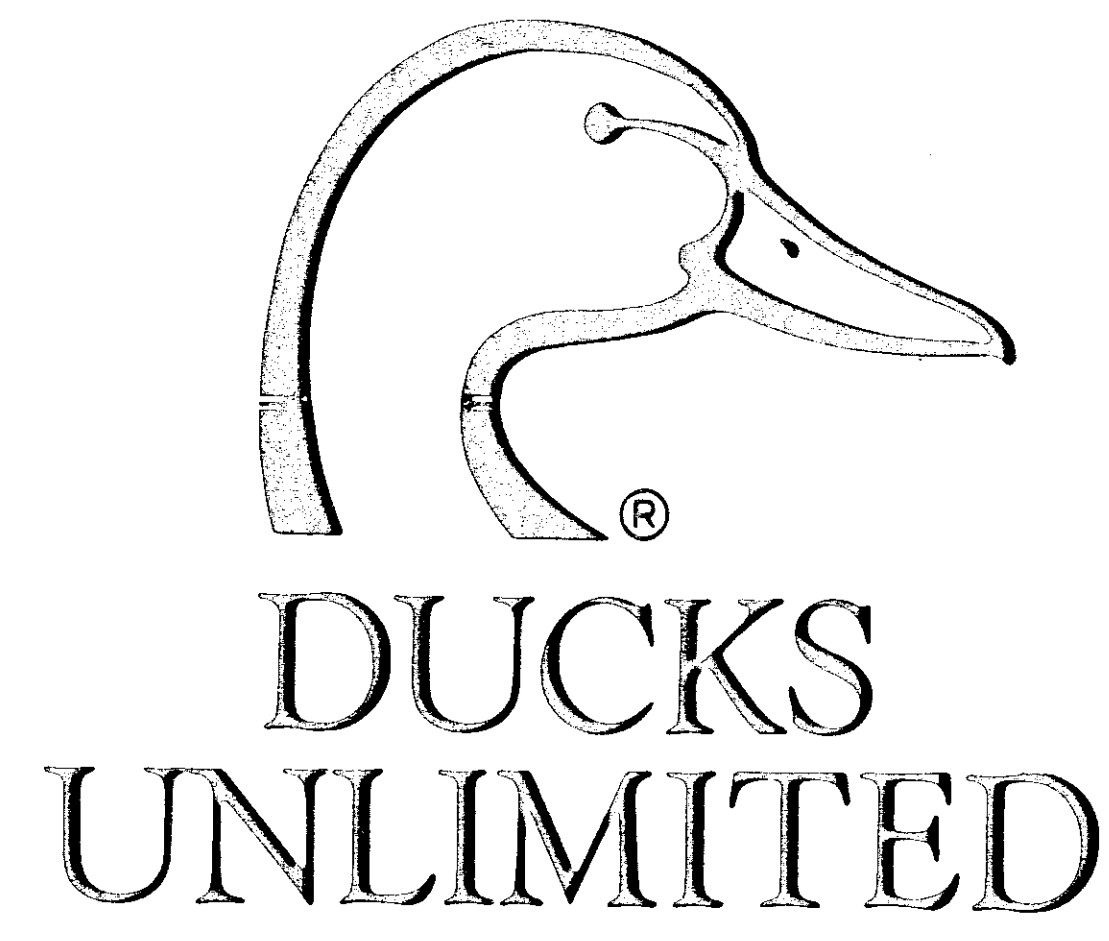
Tributaries

Dams

National Grassland

copy
original in
minutes file

2126-2
Sept-1990



DUCKS UNLIMITED

PROJECT

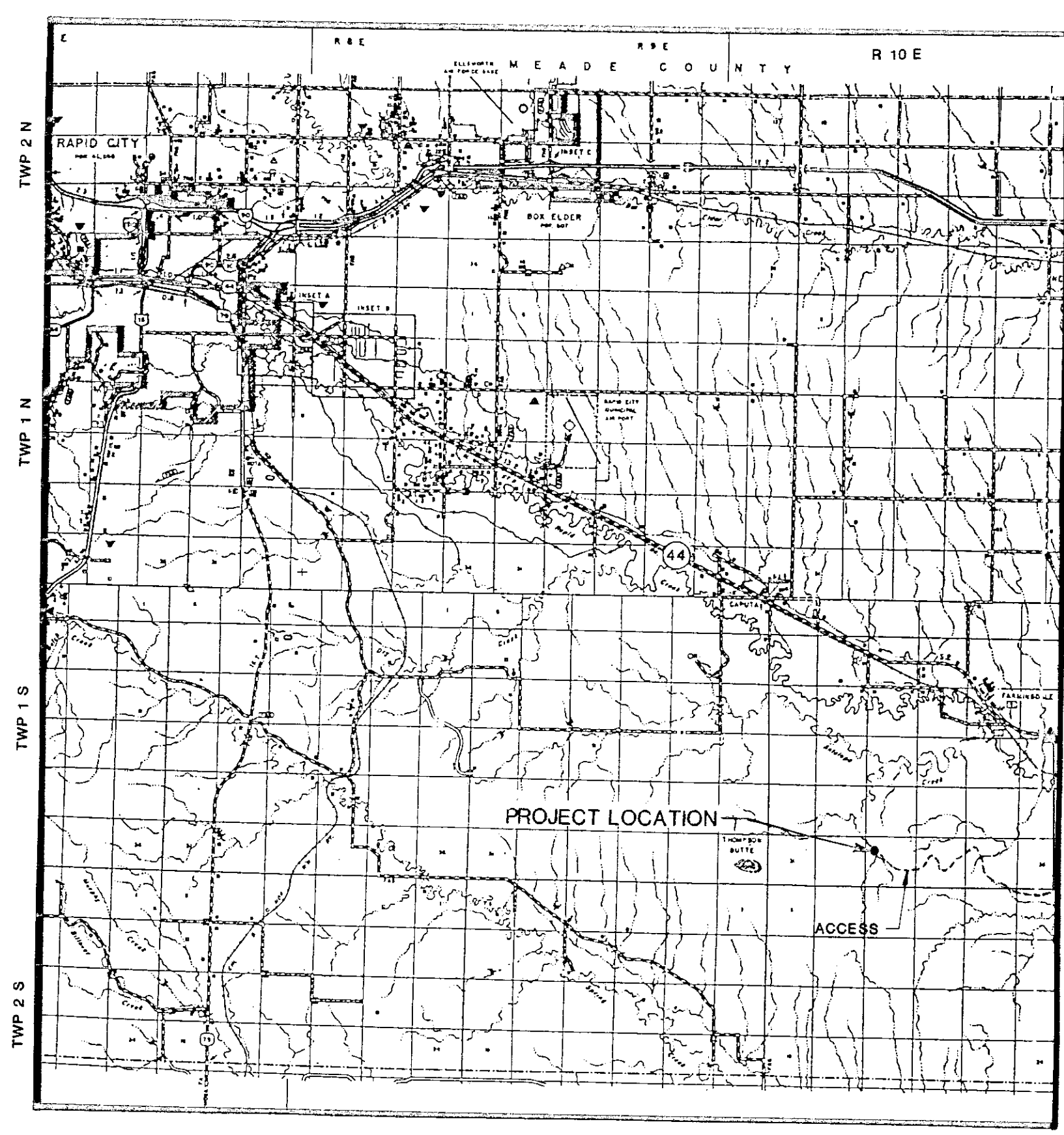
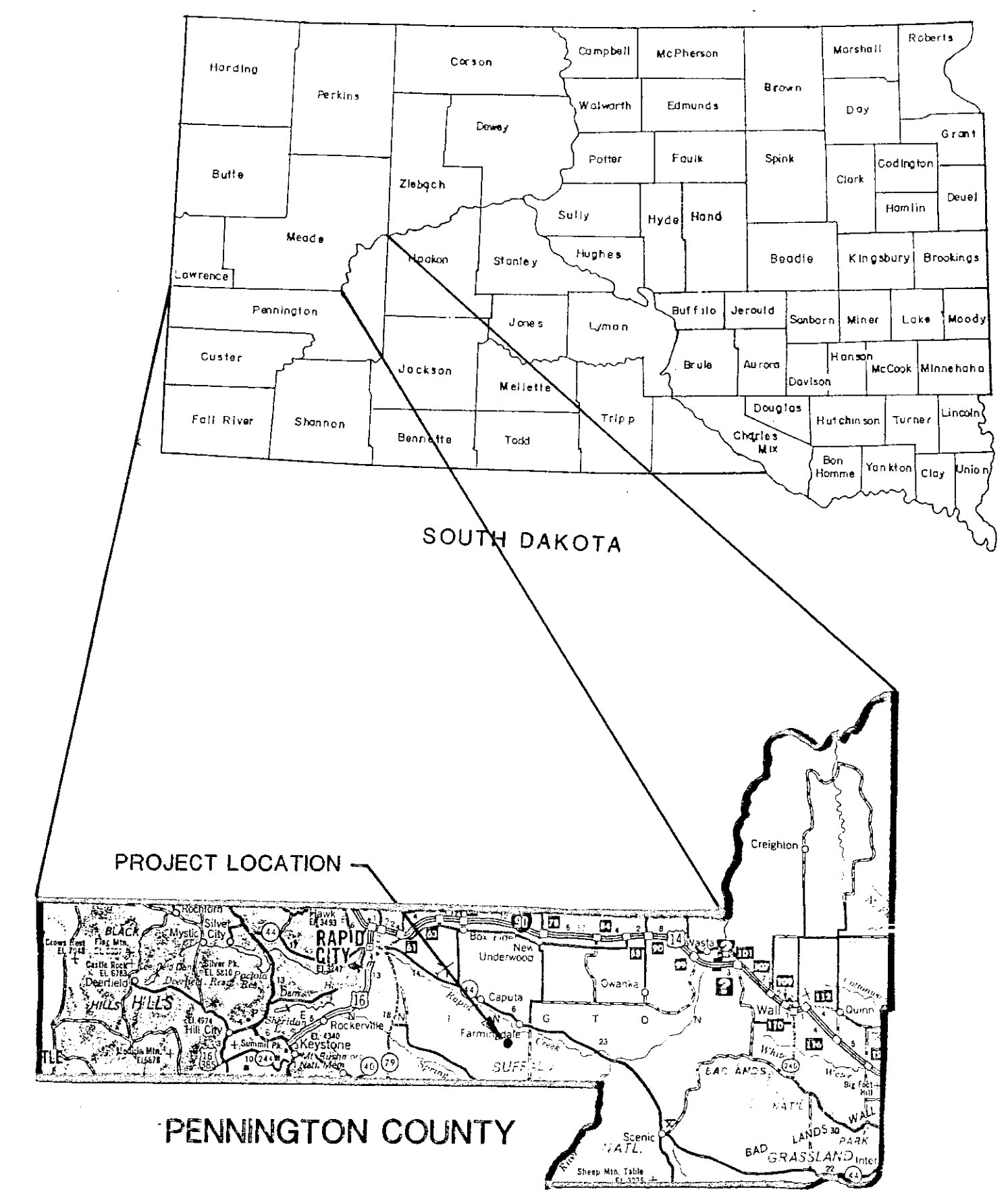
WARD DAM

SEC. 33, TWP. 1 S., RGE. 10 E.

PENNINGTON COUNTY, SOUTH DAKOTA

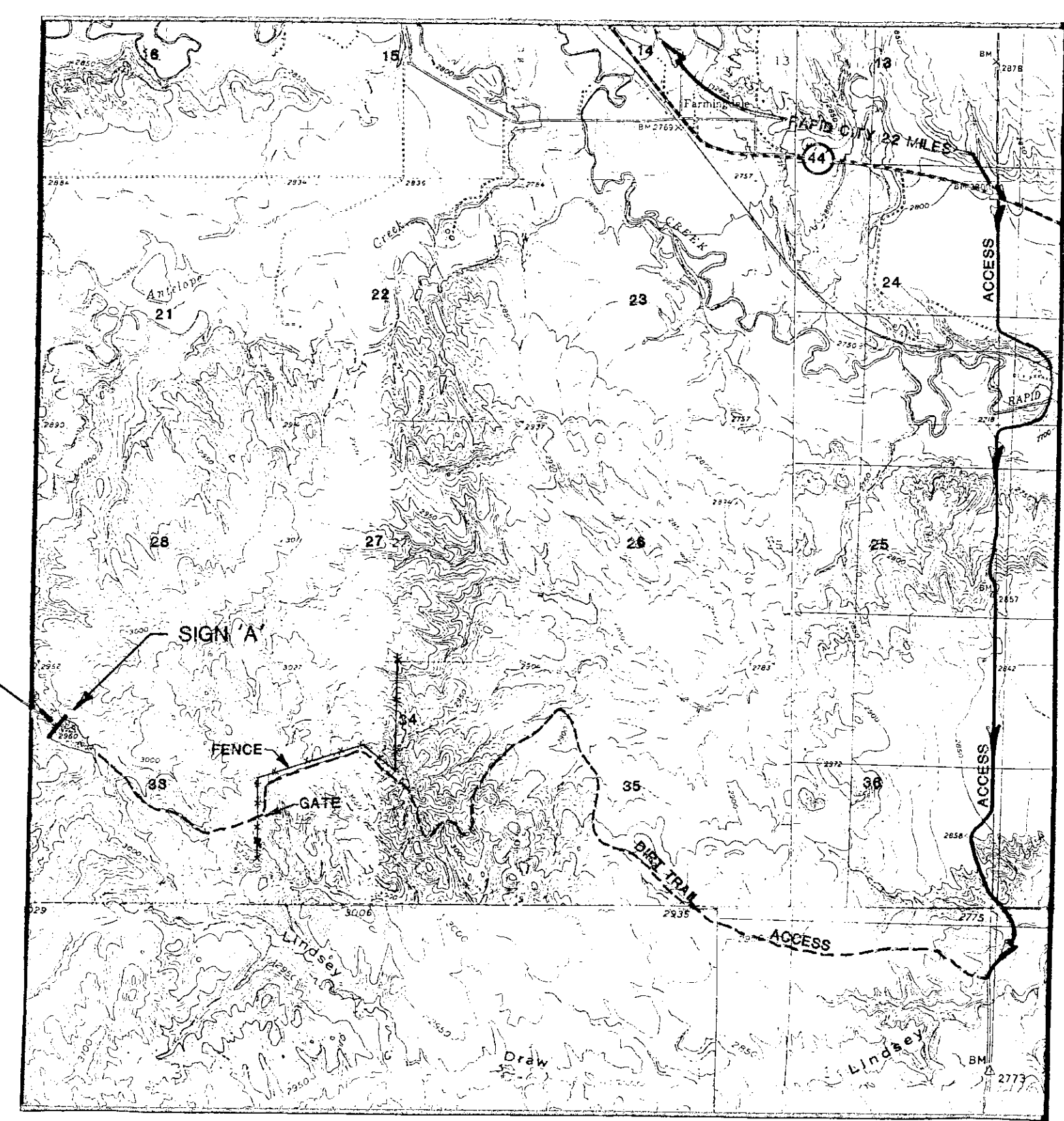
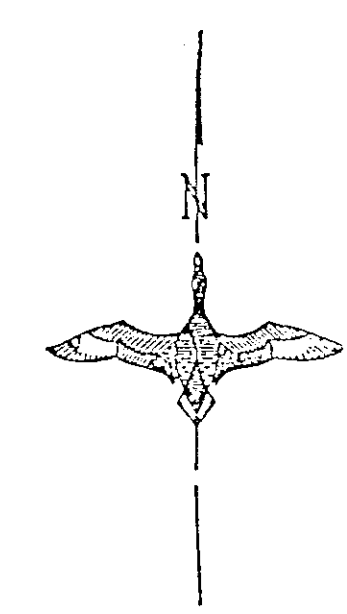
IN COOPERATION WITH

U.S. FOREST SERVICE



LOCATION MAP

NTS



VICINITY MAP

NTS

INDEX

1. LOCATION AND VICINITY MAPS
2. SITE PLAN, MARSH DATA, PROFILES
3. SITE LAYOUT, EMBANKMENT SECTIONS
4. WATER CONTROL STRUCTURE-PLAN, PROFILE, AND DETAILS
5. SOILS INFORMATION (WHEN AVAILABLE)

SPECIFICATIONS

- 201 MOBILIZATION
- 202 SITE PREPARATION
- 203 EXCAVATION
- 204 EMBANKMENT CONSTRUCTION
- 205 WATER
- 206 WATER CONTROL STRUCTURE INSTALLATION
- 207 CULVERT INSTALLATION
- 208 CAST-IN-PLACE REINFORCED CONCRETE
- 209 RIPRAP PLACEMENT

PROJECT SIGNING

SIGN 'A' 24" x 36"

SIGN 'B' 11" x 14"

1. SIGN 'A' AND 0. SIGN 'B' WILL BE PROVIDED BY DUCKS UNLIMITED AND DELIVERED TO THE CO-OPERATING AGENCY. THE AGENCY IS RESPONSIBLE FOR INSTALLING THE SIGNS AT LOCATIONS DESIGNATED ON THE PLANS.

Project Engineer

APR 09 1990
DIVISION OF
WATER RIGHTS
PINE, SD

DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: MARCH 27, 1990	PROJECT NO. SD-091-01	DESIGNED BY: RCS
	WARD DAM LOCATION & VICINITY MAPS	DRAWN BY: TSP
SHEET NO. 1 OF 5	CHECKED BY: <i>[Signature]</i>	APPROVED BY: <i>[Signature]</i>



DUCKS UNLIMITED

PROJECT

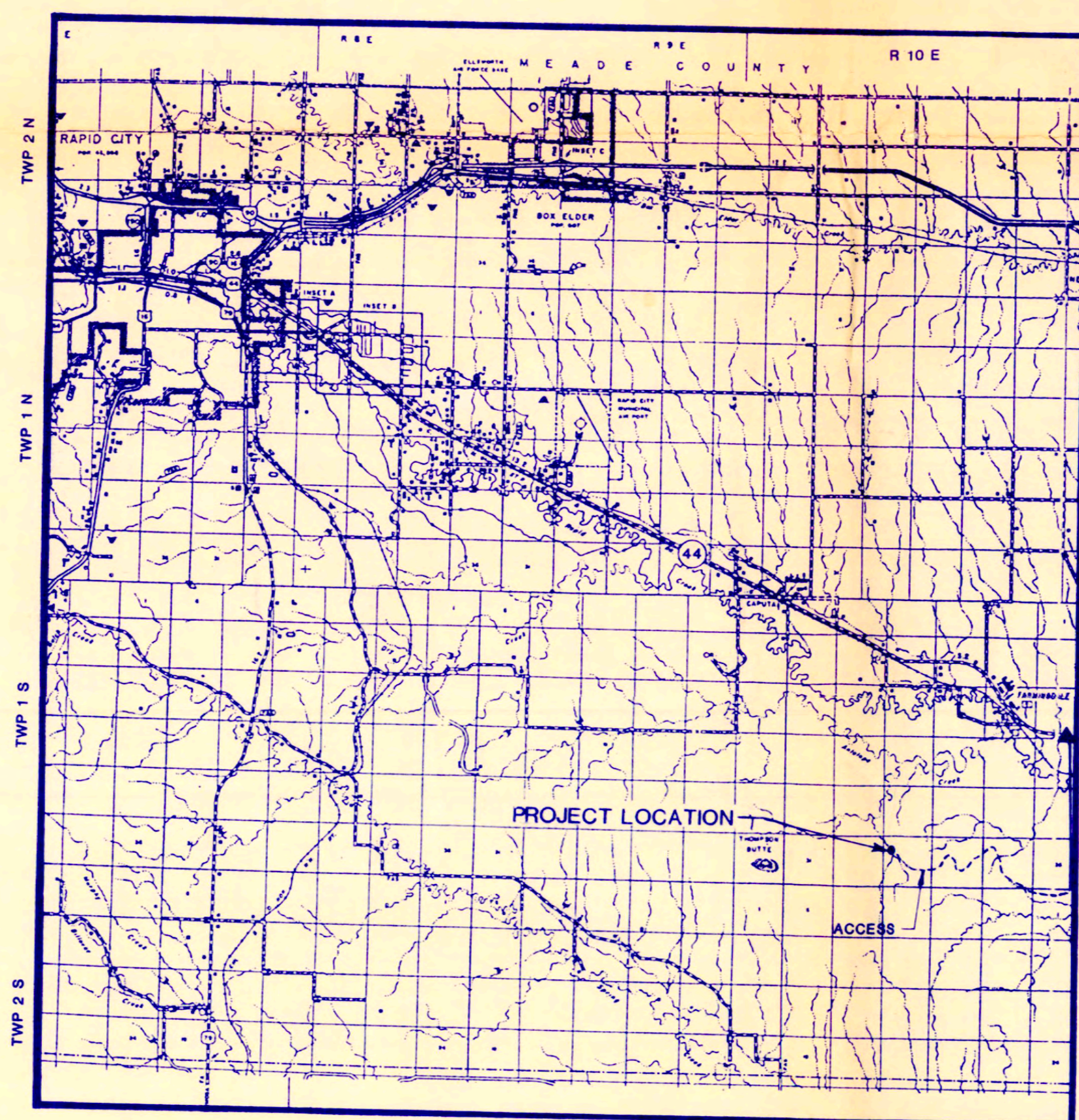
WARD DAM

SEC. 33, TWP. 1 S., RGE. 10 E.

PENNINGTON COUNTY, SOUTH DAKOTA

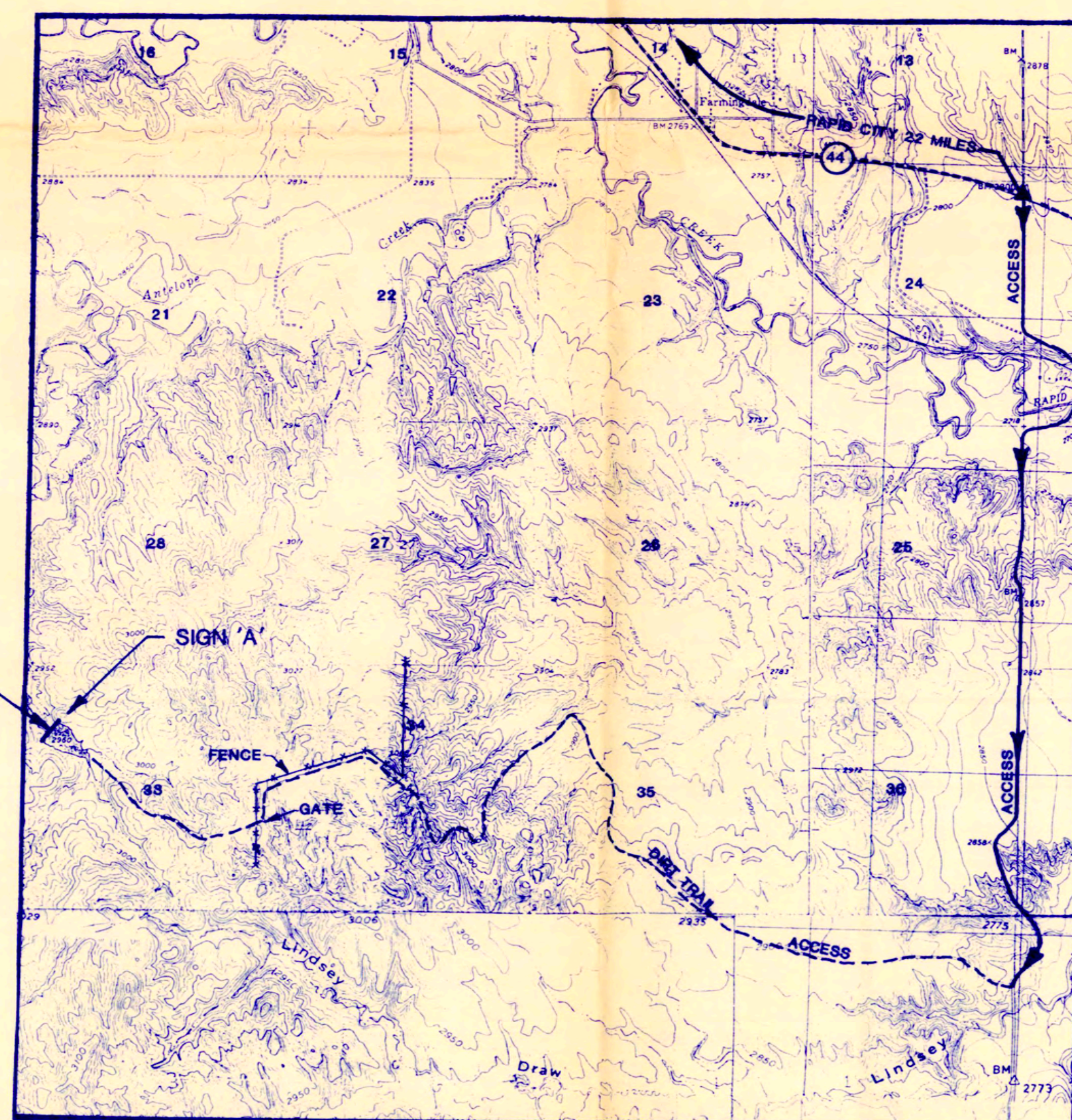
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U.S. FOREST SERVICE



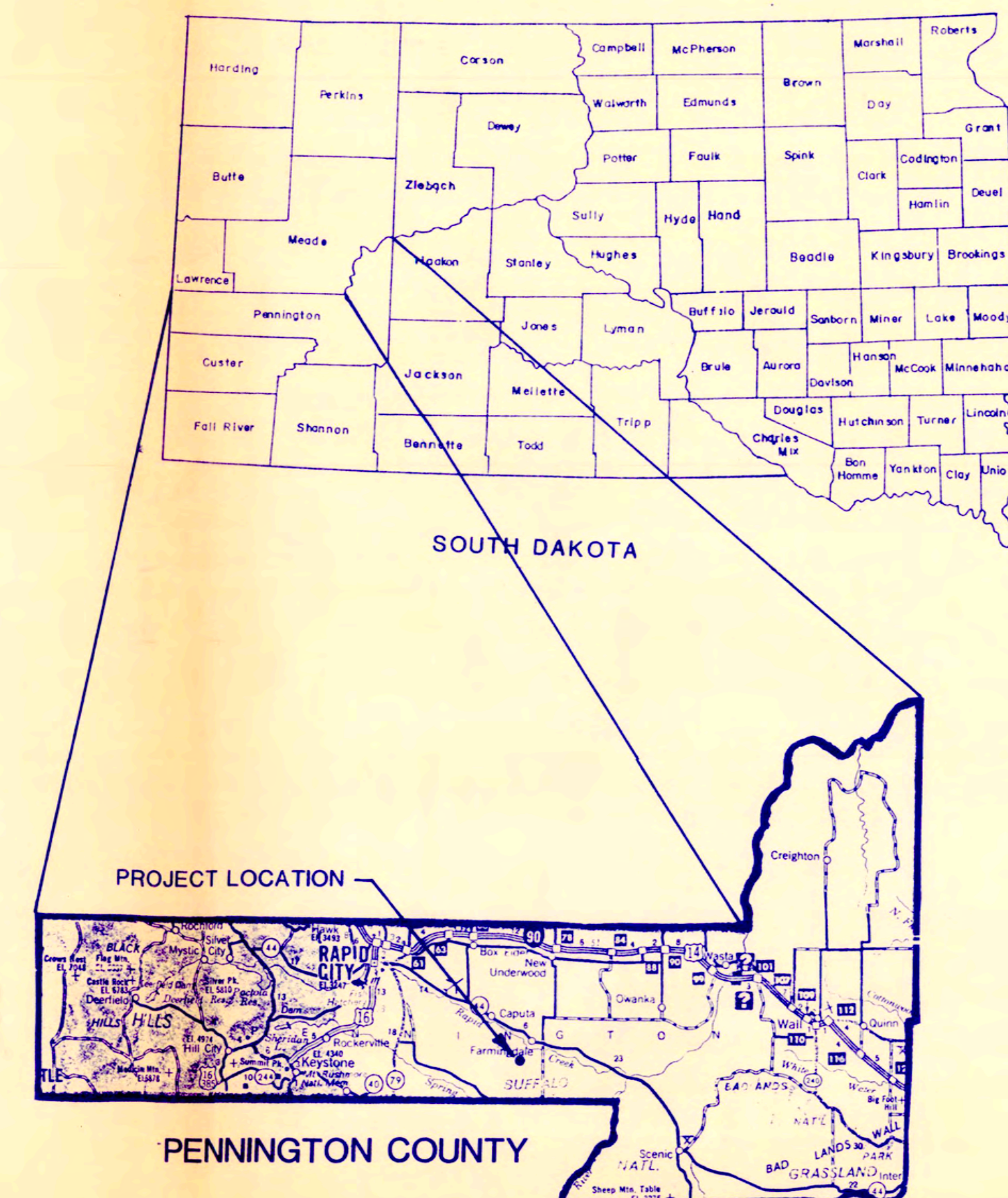
LOCATION MAP

NTS



VICINITY MAP

NTS

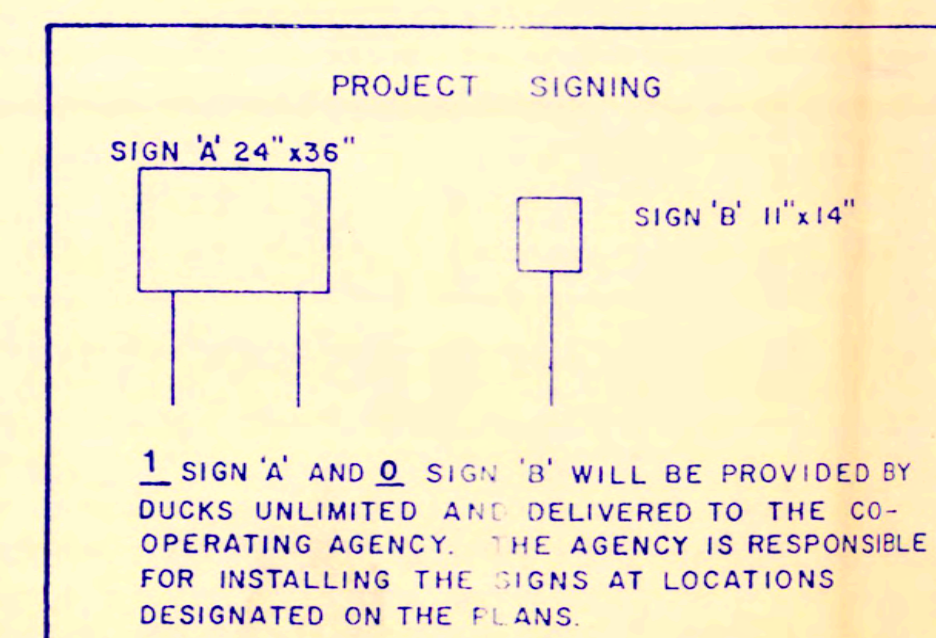


INDEX

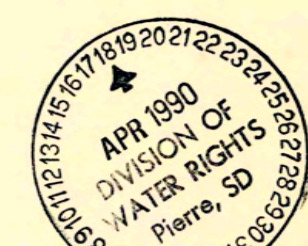
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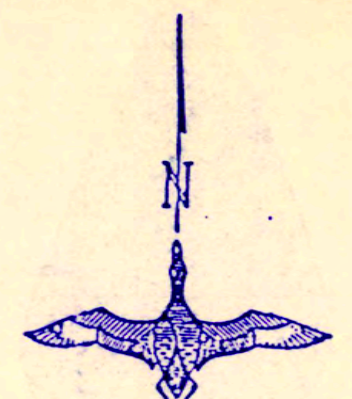
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	PROJECT NO.	SD-091-01	DESIGNED BY	RCS
	WARD DAM		DRAWN BY	TSP
LOCATION & VICINITY MAPS		SURVEYED BY	GLJ	
DATE		MARCH 27, 1990	SHEET NO.	1 OF 5
APPROVED BY				

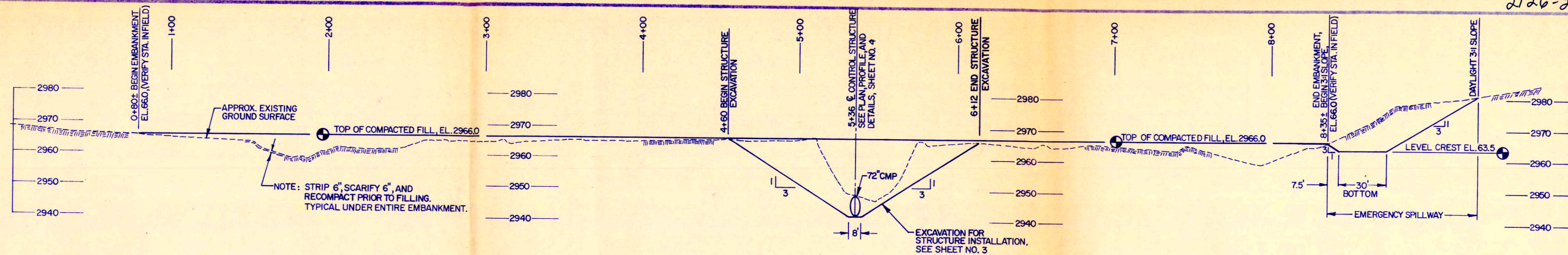


2126-2



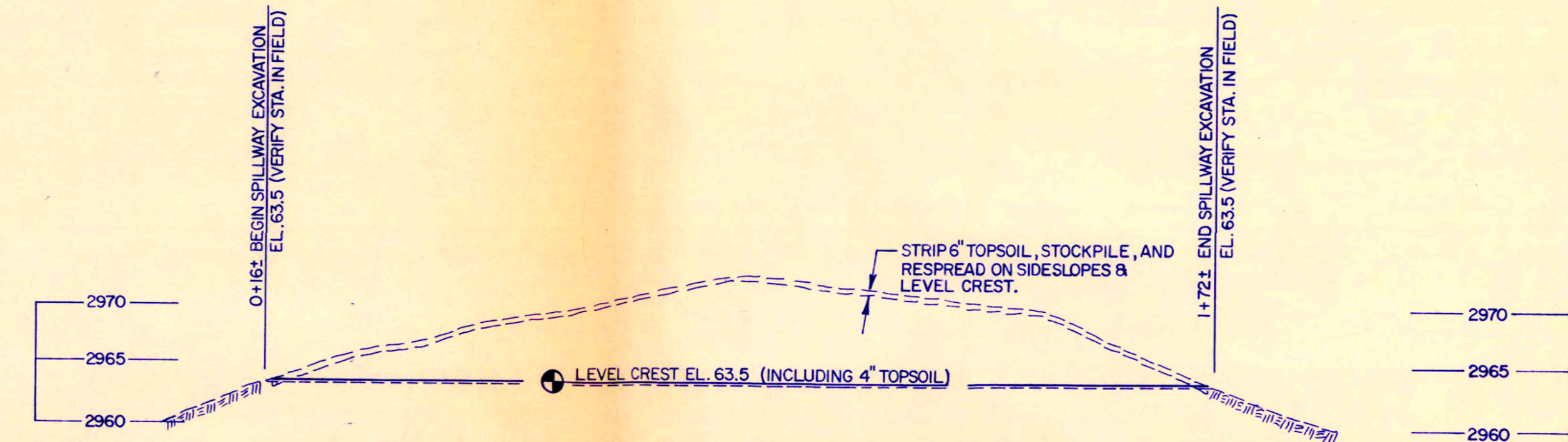
SITE PLAN

SCALE: 1" = 100'



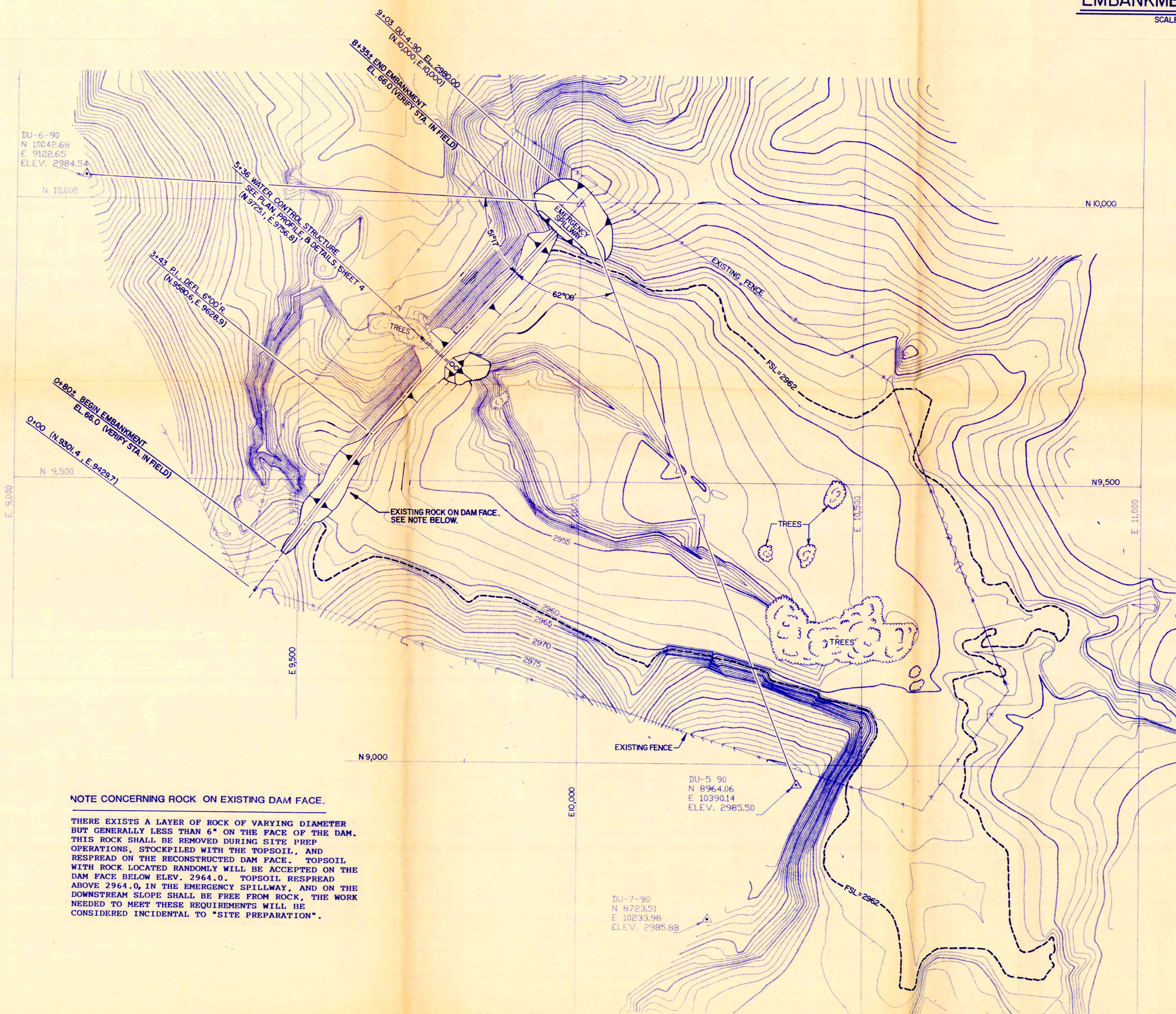
EMBANKMENT - C PROFILE

SCALE: 1" = 40' HOR.
1" = 20' VERT.



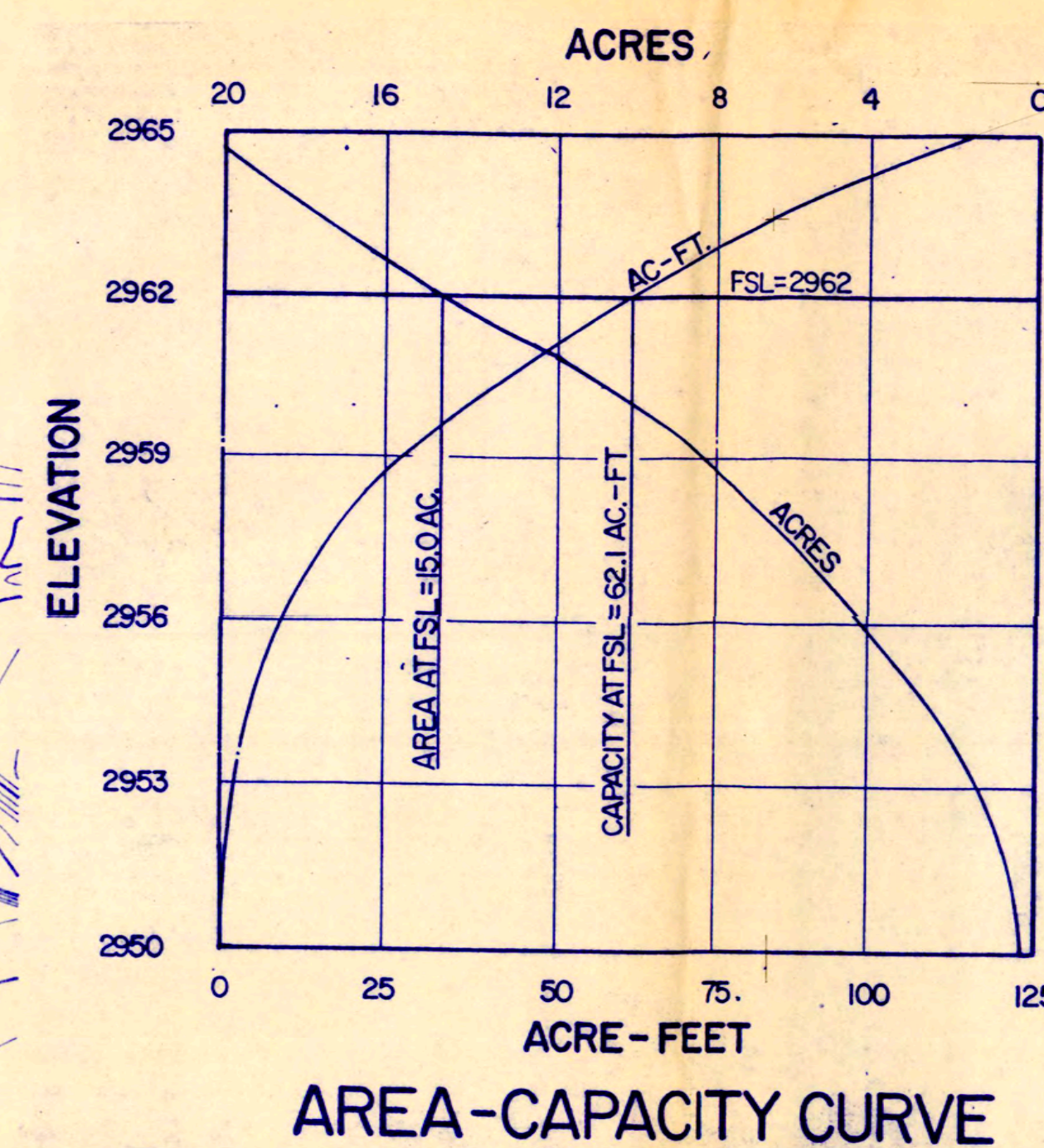
EMERGENCY SPILLWAY - C PROFILE

SCALE: 1" = 20' HOR.
1" = 10' VERT.



NOTE CONCERNING ROCK ON EXISTING DAM FACE.

THERE EXISTS A LAYER OF ROCK OF VARYING DIAMETER BUT GENERALLY LESS THAN 6" ON THE FACE OF THE DAM. THIS ROCK SHALL BE REMOVED DURING SITE PREP OPERATIONS, STOCKPILED WITH THE TOPSOIL, AND RESPREAD ON THE RECONSTRUCTED DAM FACE. TOPSOIL WITH ROCK LOCATED RANDOMLY WILL BE ACCEPTED ON THE DAM FACE BELOW ELEV. 2964.0. TOPSOIL RESPREAD ABOVE 2964.0, IN THE EMERGENCY SPILLWAY, AND ON THE DOWNSTREAM SLOPE SHALL BE FREE FROM ROCK. THE WORK NEEDED TO MEET THESE REQUIREMENTS WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".

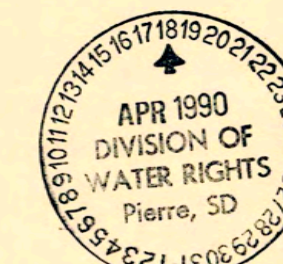


MARSH DATA
FULL SERVICE LEVEL (FSL) = EL. 2962.0
SURFACE AREA AT FSL = 15.0 ACRES
CAPACITY AT FSL = 62.1 ACRE-FEET
SHORELINE AT FSL = 0.9 MILES

ESTIMATED QUANTITIES

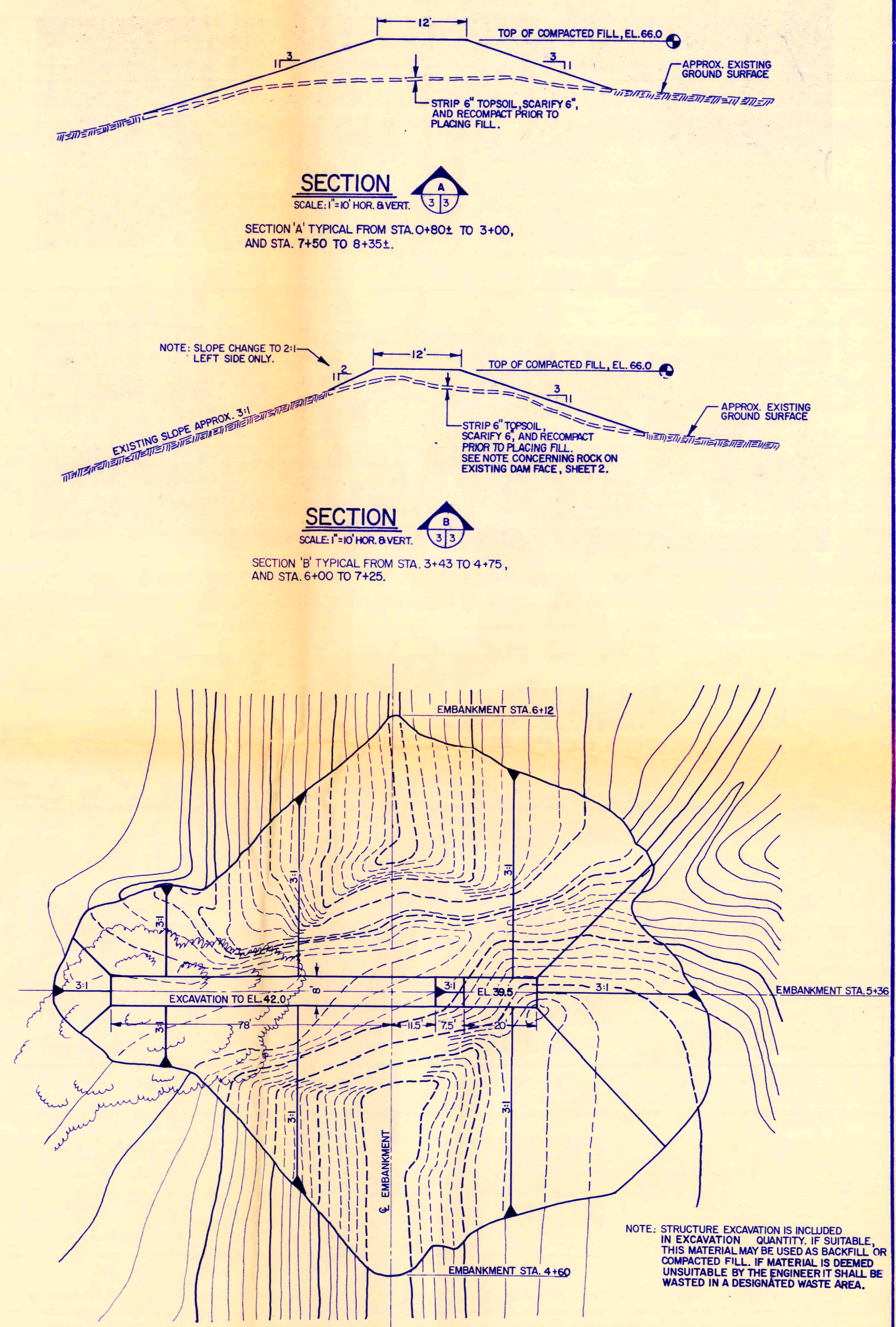
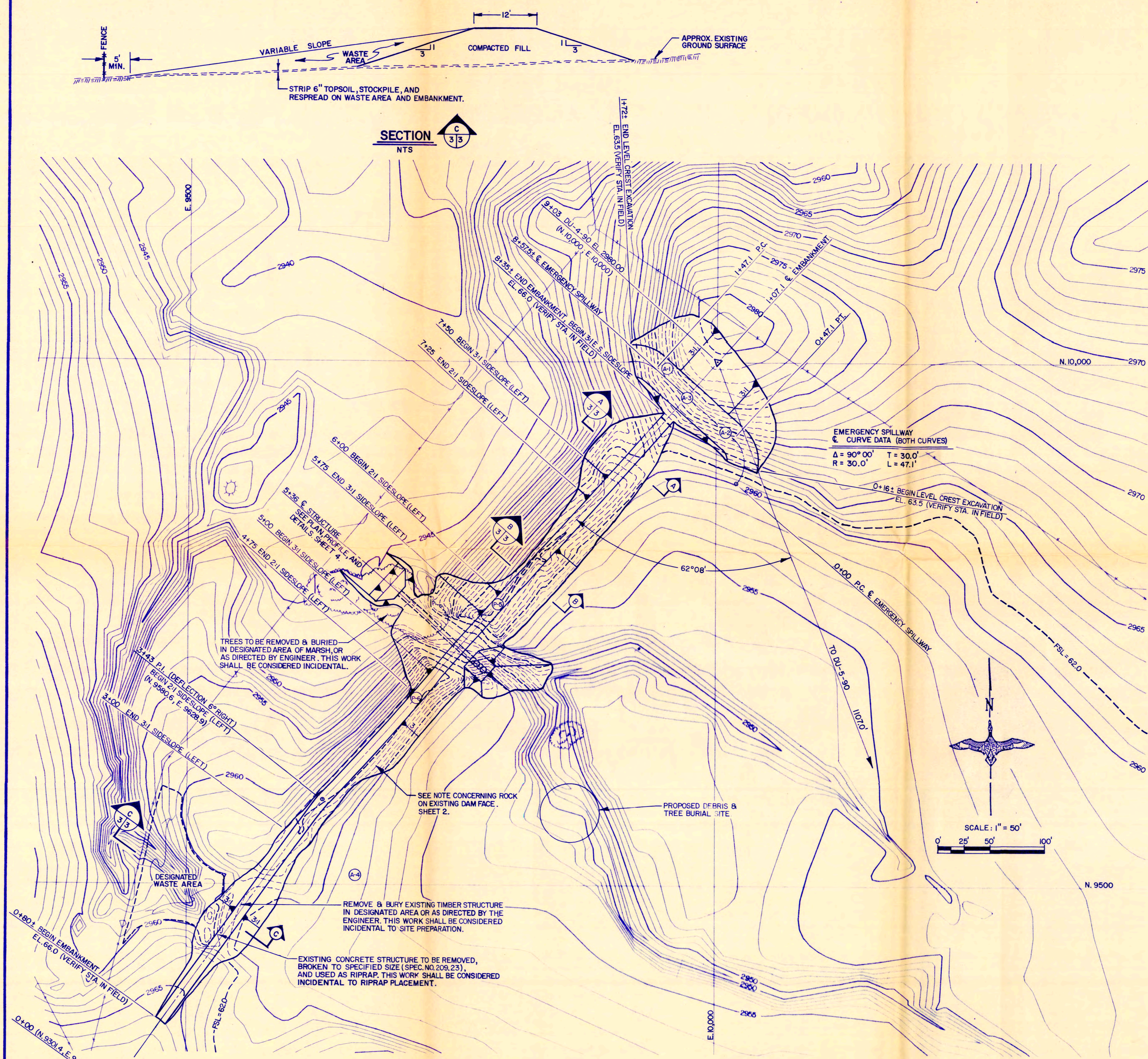
SITE PREPARATION	
TOPSOIL FROM EXISTING EMBANKMENT	409 CY-P
TOPSOIL FROM BREECH AREA	252 CY-P
TOTAL	661 CY-P
EXCAVATION	
OUTLET CHANNEL	87 CY-P
STRUCTURE INSTALLATION	2969 CY-P
EMERGENCY SPILLWAY	1984 CY-P
TOTAL	5040 CY-P
EMBANKMENT CONSTRUCTION	
(INFORMATION ONLY, NO PAY ITEM)	4576 CY
WATER CONTROL STRUCTURE INSTALLATION	
	1 EA
CULVERT INSTALLATION	
72" CMP, 14 GAUGE	96 LF
RIPRAP PLACEMENT	
	11 CY *

*Volume represents riprap required. No estimate was made of salvageable material from existing concrete structure.

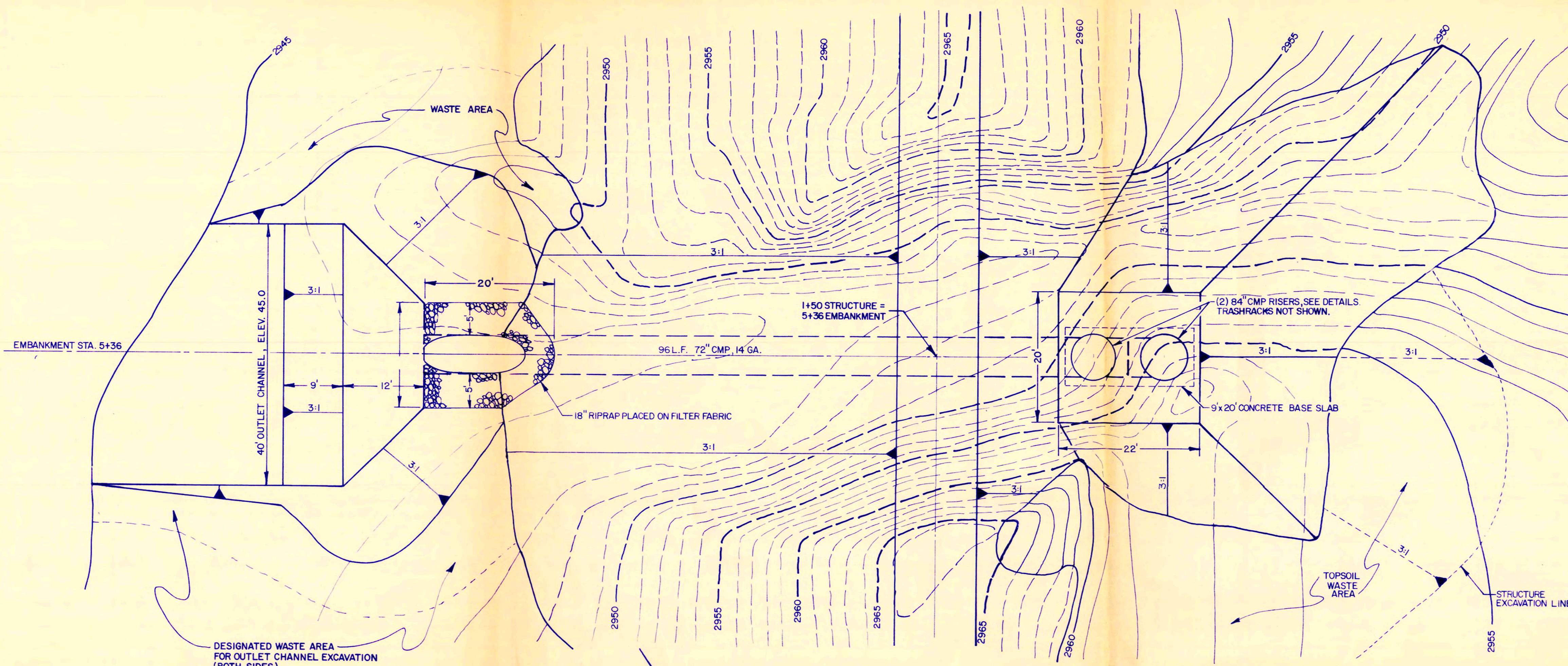


SD-091-01
WARD DAM
SITE PLAN, MARSH DATA, PROFILES

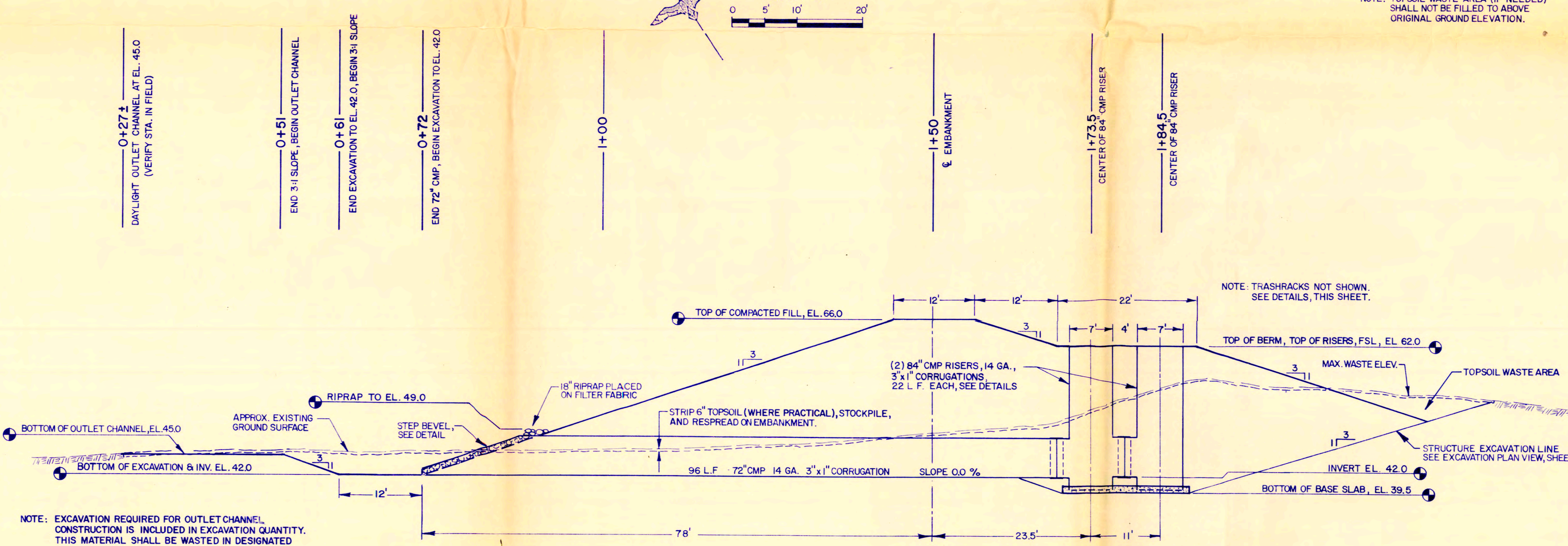
RCS
TSP
GLJ



2126-2

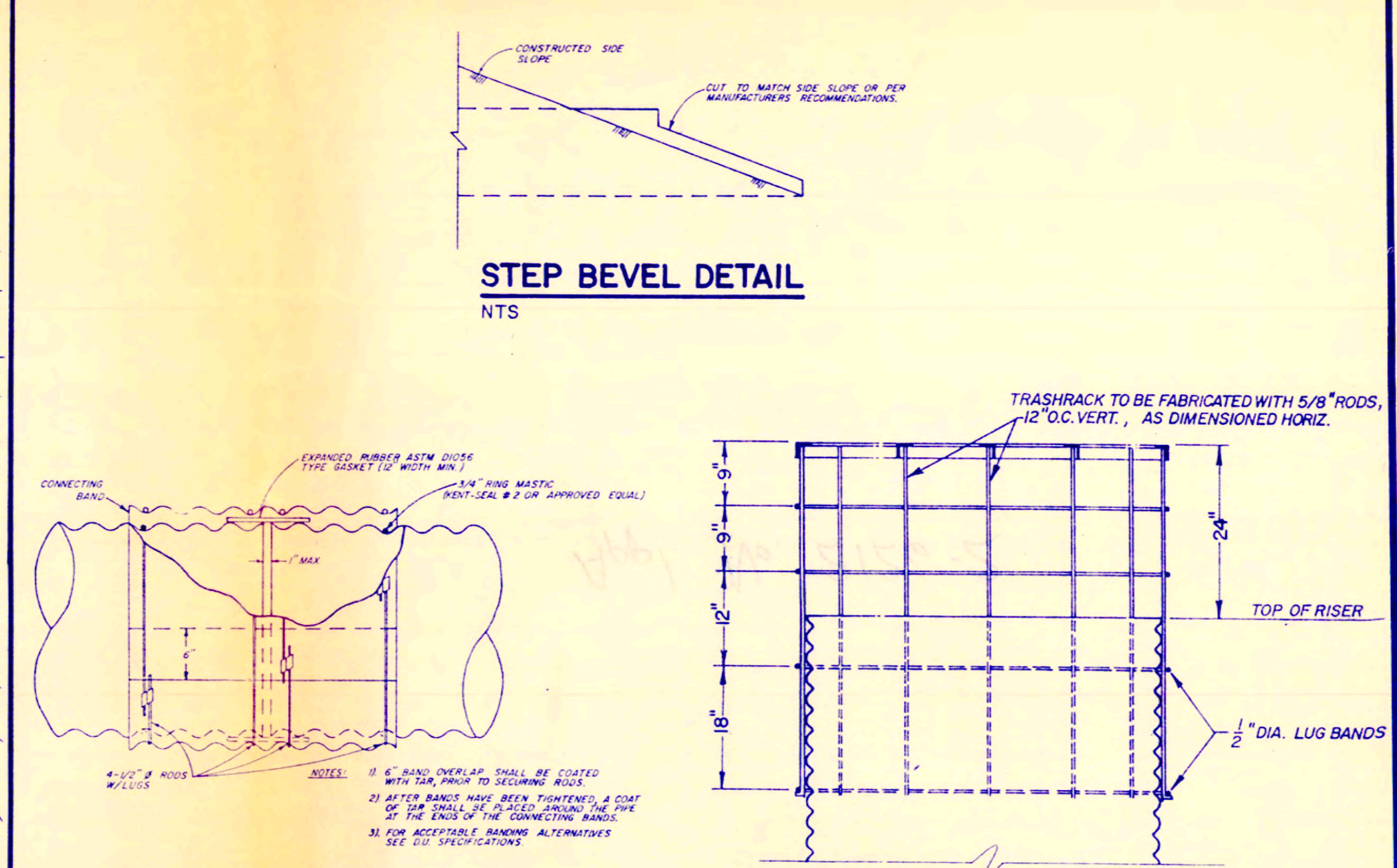


PLAN VIEW
SCALE: 1" = 10'



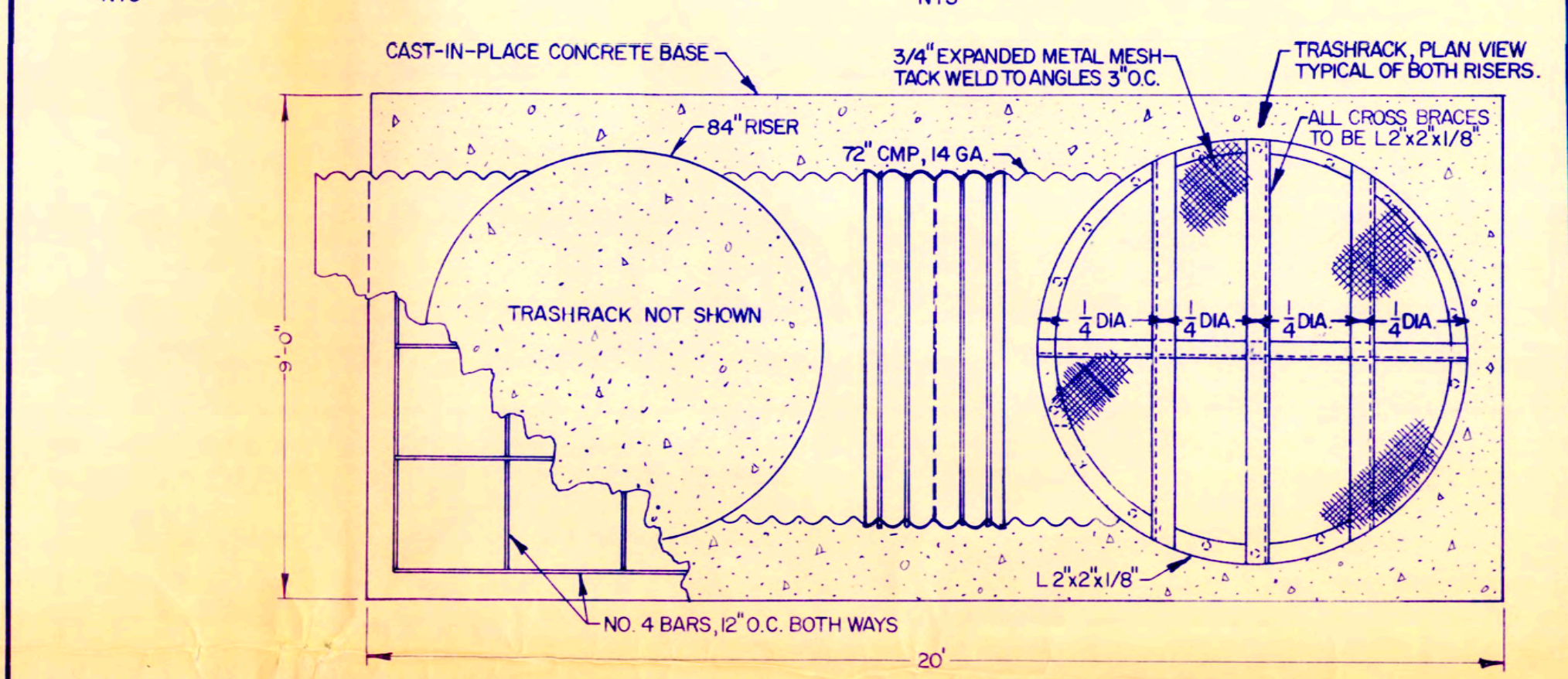
CL PROFILE
SCALE: 1" = 10' HOR. & VERT.

WATER CONTROL STRUCTURE

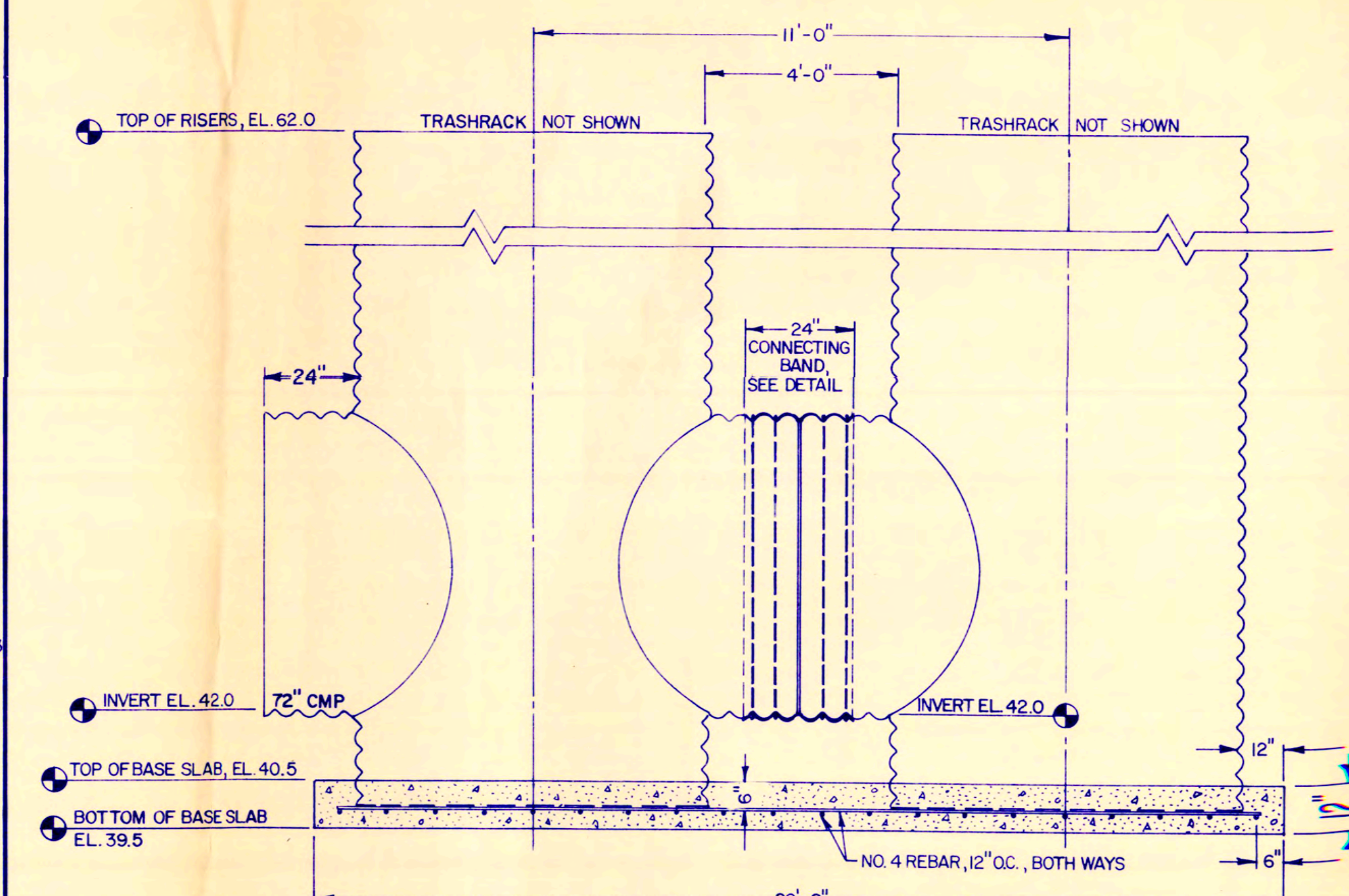


CONNECTING BAND DETAIL
NTS

TRASHRACK, CL PROFILE
NTS



PLAN VIEW
SCALE: 3/8" = 1'



CL PROFILE
SCALE: 3/8" = 1', HOR. & VERT.

84" RISER DETAILS

DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-091-01	DESIGNED BY: RCS
	WARD DAM	DRAWN BY: TSP
	WATER CONTROL STRUCTURE-PLAN, PROFILE, & DETAILS	SURVEYED BY: GLJ
	CHECKED BY:	APPROVED BY:
DATE: MARCH 27, 1990	SHEET NO. 4 OF 5	APPROVED BY: