

WATER PERMIT NO. 7164-3

Name of Applicant: **SD Dept. Game, Fish & Parks**

Address: **523 E Capitol, Pierre SD** Phone: **773-3387**

Amount of Water Claimed: **120 AF** Total Acres: **NA**

Source of Water Supply: **South Fork Medicine Knoll Creek**

Water to be used for: **fwp and recreation** County: **Hughes**

Type of Waste Disposal System: **NA**

Location: **2 miles southwest of Harrold**

PRIORITY Date Received: **9-11-09**

Application/License Fee: **\$700**

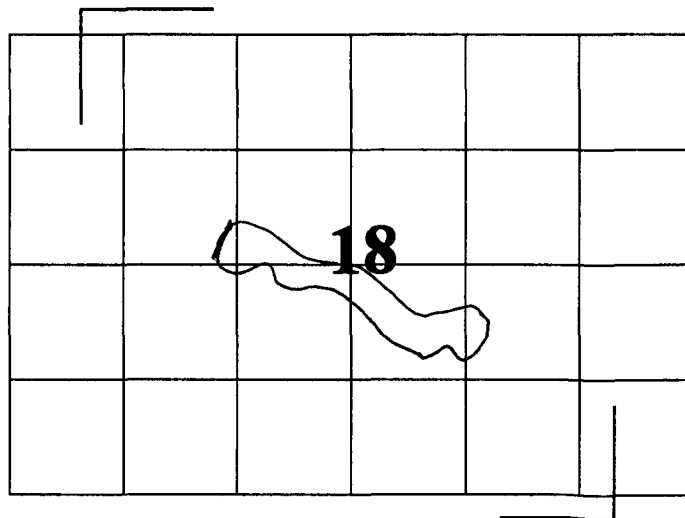
Corrected Application Received: **10-5-09**

Period of Annual Use: **January 1 – December 31**

Remarks: **Reconstruction of Woodruff Dam**

Diversion Point: **SW ¼ NW ¼ Sec 18-T112N-R74W**

Water Impounded: **S ½ NW ¼, NE ¼ SW ¼, N ½
SE ¼ Sec 18-T112N-R74W**



Depth of Well: **NA**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by: **Greg Otkin, GF &P**

Reviewed and the Number Assigned on: **10-5-09**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>7164-3</u> (office use only)	Hydrologic Unit <u>10140103</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Capital Journal</u>	<u>PO Box 878</u>
	<u>605-224-2301</u>	<u>Pierre 57501</u>

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SEP 11 2009
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

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

Type of Application: (check one)

- ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
☐ Amendment/Correction to Permit No. _____

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

- Name of Applicant South Dakota Department of Game, Fish & Parks Phone (605) 773-3387
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 523 East Capitol Ave Pierre State SD 57501
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 120 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply South Fork of Medicine Knoll Creek
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Hughes
Township 112 North, Range 74 West, Section 18 (SW1/4 NW1/4) Water impounded
S 1/2 NW 1/4 NE 1/4 SW 1/4 N 1/2 SE 1/4 Sec 18 T 112 N R 74 W
- County or counties where water will be used Hughes
- Annual period during which water is to be used Continuously
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

A capped sheetpile weir will be placed approximately 300 feet south of the breached structure. The new low-water weir will be about 5 feet lower in height than the original dam and will allow for an average water depth of 6 feet. Engineering diagrams are enclosed.

STATE OF SOUTH DAKOTA)

County of Hughes SS

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

I, Leslie Petersen, 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.

Applicant's signature Leslie Petersen

Subscribed and sworn to before me this 10th day of September, 2009

2-2009

(SEAL)

My Commission Exp. 6/05/10

Richard J. Hall
Notary Public signature

**SOUTH DAKOTA
WATER PERMIT NO. 7164-3**

Date of first receipt of application September 11, 2009.

Date of return to applicant for corrections, amendments or changes September 11, 2009.

Date of receipt of corrected application October 1, 2009.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7164-3 to the South Dakota Department of Game, Fish and Parks, 523 E Capitol, Pierre SD 57501 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 7164-3 authorizes impoundment of 120 acre-feet of water from the South Fork of Medicine Knoll Creek by reconstructing Woodruff Dam located in the SW 1/4 NW 1/4 Section 18 with water impounded in the S 1/2 NW 1/4, NE 1/4 SW 1/4, N 1/2 SE 1/4 Section 18; all in T112N-R74W.
2. The water appropriated shall be used for fish and wildlife propagation and recreational use purposes and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 7164-3 is November 2, 2009.
5. The date from which applicant may claim right is September 11, 2009.
6. One-fifth of the construction is to be completed on or before May 2, 2012.
7. All construction is to be completed on or before November 2, 2014.
8. Water is to be put to beneficial use on or before November 2, 2018.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Water Permit No. 7164-3 authorizes a dam with a storage capacity of 120 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

WATER MANAGEMENT BOARD

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

JAN 18 2010

date



(type or print in ink)

1. Well Information - Proposed Construction

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

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System _____

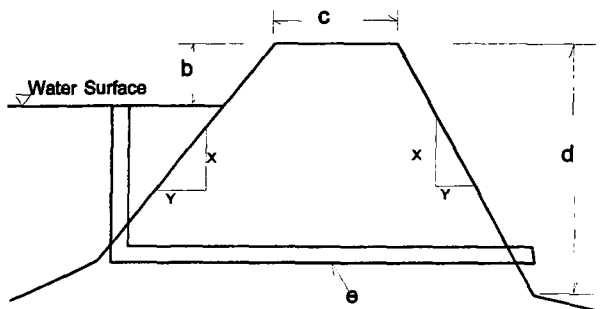
3. Dugout Information

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

4. Water Storage Dams

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

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



- b) Freeboard 13 feet
- c) Crest Width _____
Crest Length _____
- d) Height 32 feet
- e) Primary Outlet Capacity _____
If pipe, diameter _____
- f) Secondary Spillway Capacity _____
Spillway Width _____
- g) X & Y Slope _____
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam 68,480 Acres



WEIR
LOCATION

Greg Otkin

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SEP 11 2009
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RECEIVED

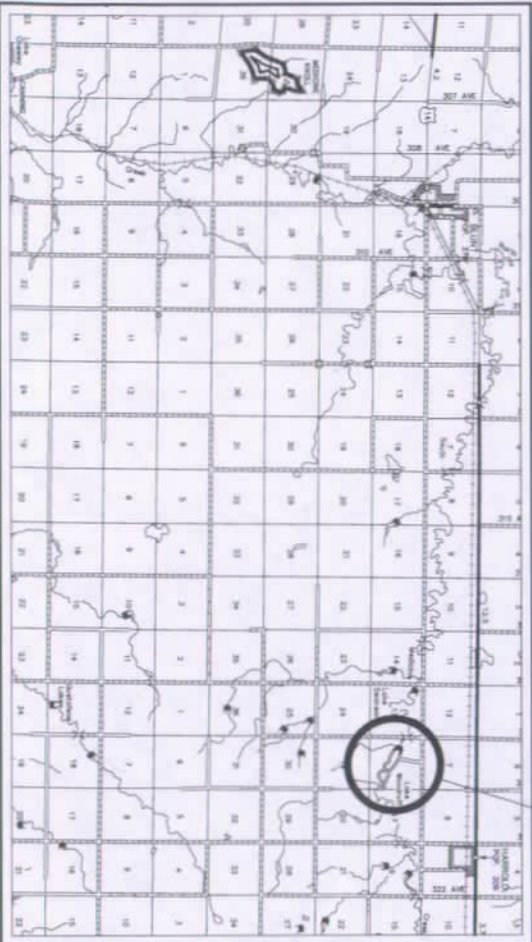
SEP 14 2009

WATER RIGHTS
PROGRAM

WOODRUFF DAM
SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS
OUTLET WEIR CONSTRUCTION
PROJECT NO. WdrfOWCa
HUGHES COUNTY, SOUTH DAKOTA
T 112N, R 74W, SEC. 18



VICINITY MAP



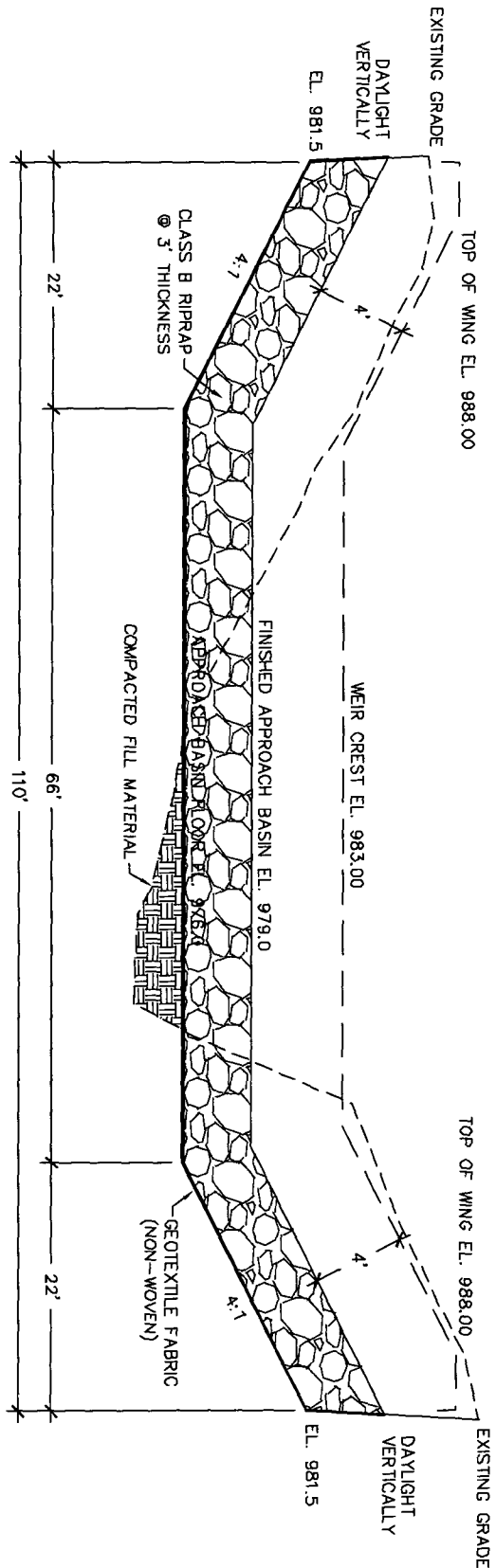
LOCATION MAP

INDEX OF SHEETS	
SHEET 1	TITLE SHEET
SHEET 2	ESTIMATE OF QUANTITIES
SHEETS 3-5	GENERAL NOTES
SHEET 6	LAYOUT
SHEET 7	PLAN
SHEET 8	PROFILE
SHEET 9	APPROACH BASIN SECTION
SHEET 10	OUTLET BASIN SECTION
SHEET 11	LONGITUDINAL SECTION
SHEET 12	SHEET PILE INSTALLATION DETAILS
SHEET 13	SHEET PILE DETAILS



PLAN VIEW

GENERAL NOTE:
SURVEY REFERENCES LOCAL DATUM
CONSTRUCTION STAKING TO BE DONE BY SD GFP



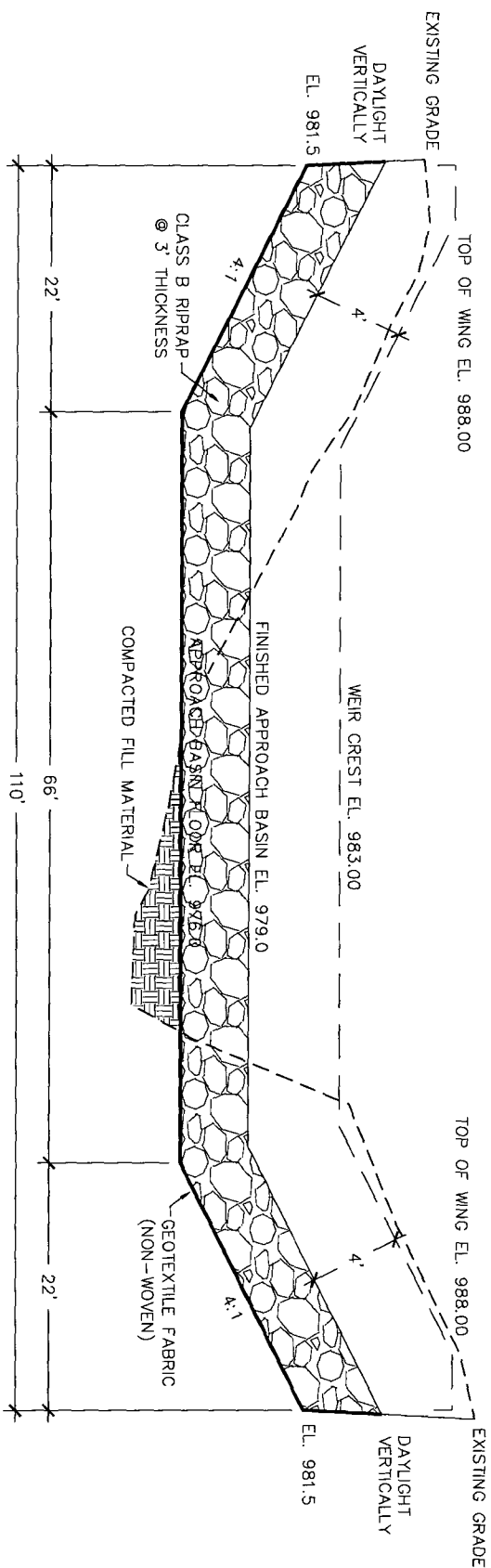
1
9

APPROACH BASIN SECTION

SCALE: 1"=10'

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WATER RIGHTS
PROGRAM

GENERAL NOTE:
 SURVEY REFERENCES LOCAL DATUM
 CONSTRUCTION STAKING TO BE DONE BY SD GFP



1
9

APPROACH BASIN SECTION

SCALE: 1"=10'

9
15

OUTLET WEIR CONSTRUCTION
 WOODRUFF DAM
 HUGHES COUNTY, SOUTH DAKOTA

PROJECT NUMBER: 9/1/09
 DRAWN BY: GNO
 CHECKED BY: JCP



Division of Administration
 Foss Building
 525 E. Capitol Ave.
 Pierre, South Dakota 57501-3182
 Phone: (605) 773 - 6082

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNITS	QUANTITY
1.00	MOBILIZATION AND SITE PREPARATION	LUMP SUM	1
1.01	P2 22 SHEET PILE FURNISHED AND INSTALLED	S.F.	2581
1.02	4"x4"x $\frac{3}{8}$ " ANGLE IRON FURNISHED AND INSTALLED	L.F.	225.71
1.03	A-30 PILE SEALANT FURNISHED AND INSTALLED	GAL.	15
1.04	BASIN GRADING/EXCAVATION	C.Y.	910
1.05	GEOTEXTILE FABRIC (NON-WOVEN) FURNISHED AND INSTALLED	S.Y.	605
1.06	EXISTING ON-SITE RIPRAP MATERIAL SALVAGE AND INSTALLATION	TONS	200
1.07	CLASS B RIPRAP FURNISHED AND INSTALLED	TONS	545
1.08	COMPACTED FILL MATERIAL	C.Y.	23
1.09	SEEDING AND EROSION CONTROL	LUMP SUM	1
1.10	TRAFFIC CONTROL	LUMP SUM	1

2 of 2
13

OUTLET WEIR CONSTRUCTION
WOODRUFF DAM
HUGHES COUNTY, SOUTH DAKOTA

Work Order
JWC
JOP



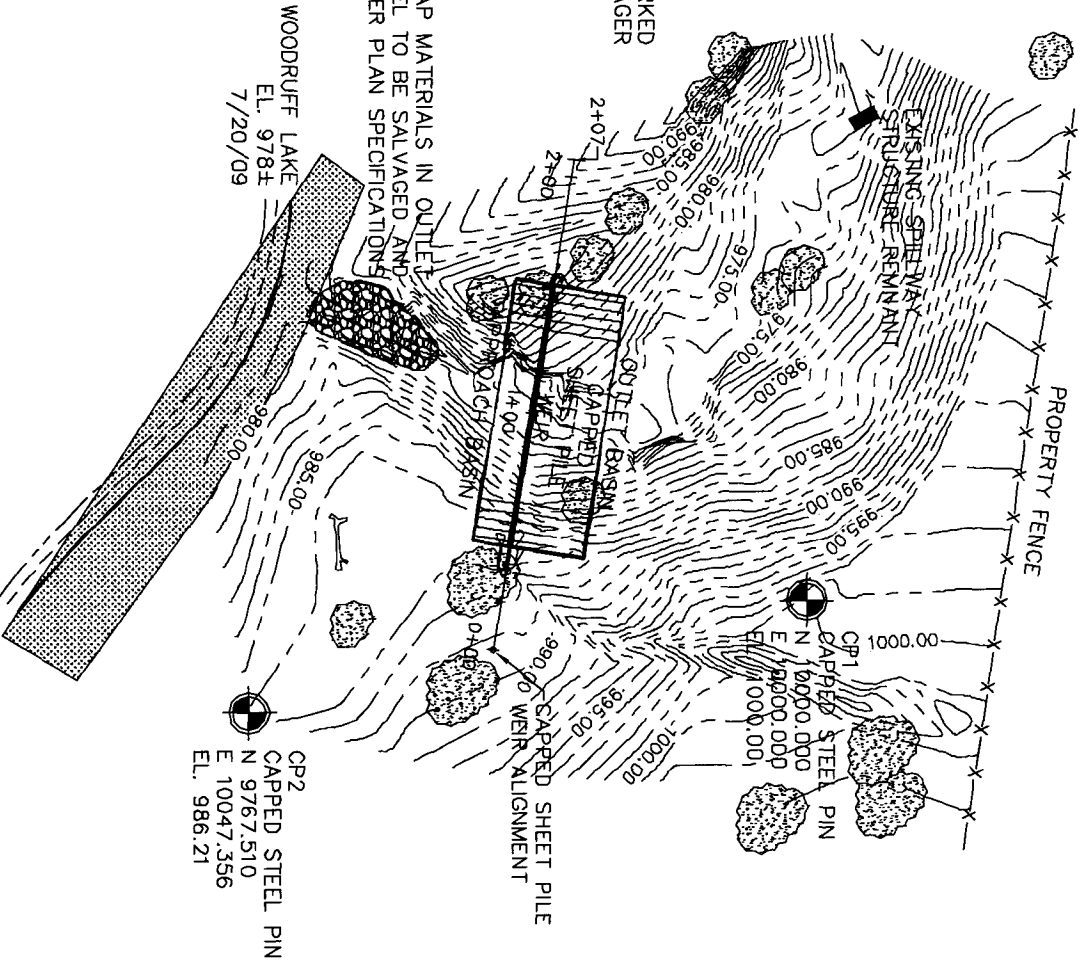
Division of Administration
Foss Building
525 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773 - 8082

GENERAL NOTE:
SURVEY REFERENCES LOCAL DATUM

GRADING SPOILS TO BE WASTED
ON SITE AT THE DIRECTION
OF THE PROJECT MANAGER

TREES TO BE REMOVED TO BE MARKED
AS SUCH BY PROJECT MANAGER

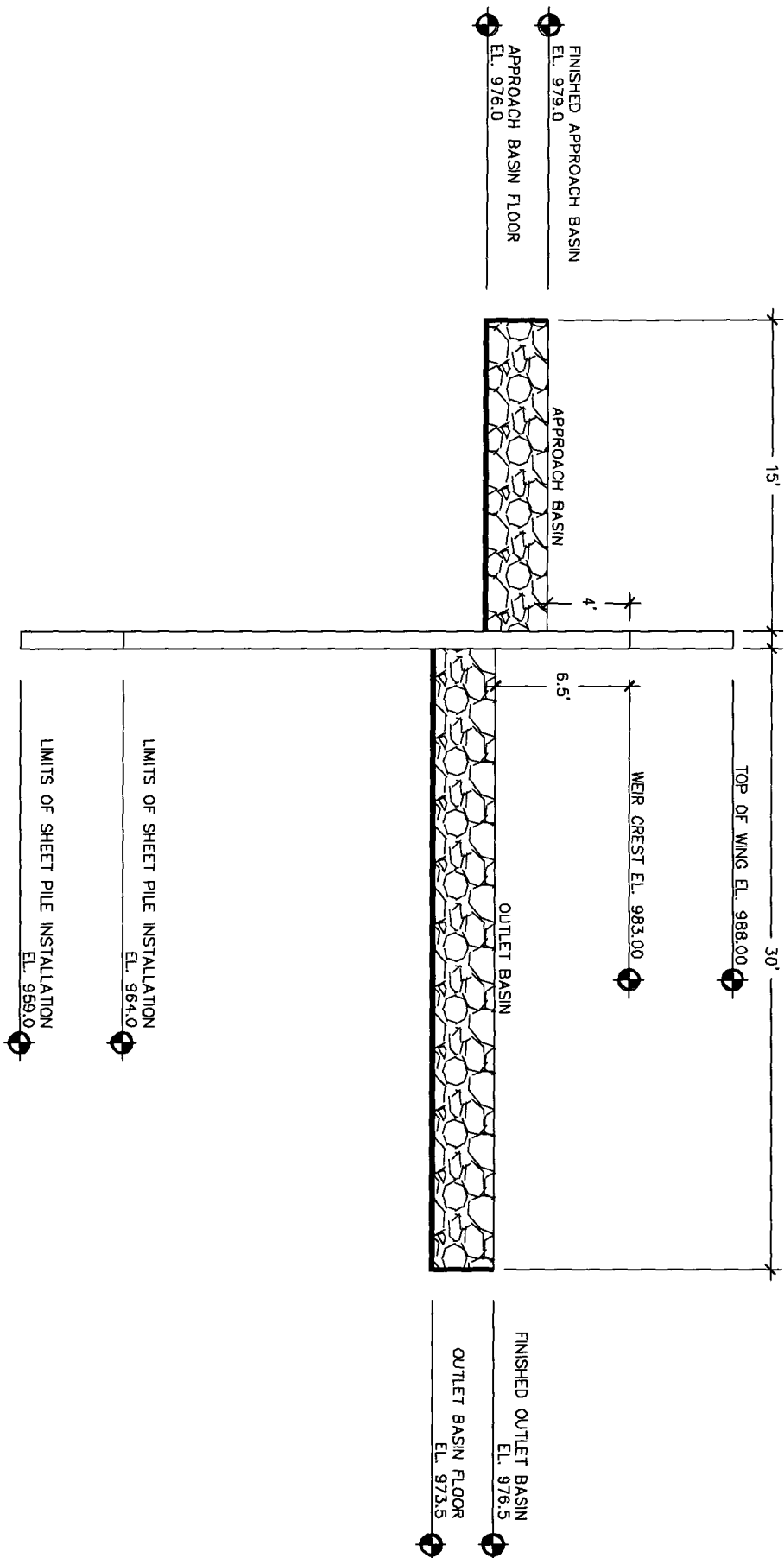
EXISTING RIPRAP MATERIALS IN OUTLET
CHANNEL TO BE SALVAGED AND
INSTALLED AS PER PLAN SPECIFICATIONS



LAYOUT
SCALE: 1"=50'

SCALE: 1"=50'

GENERAL NOTE:
SURVEY REFERENCES LOCAL DATUM
CONSTRUCTION STAKING TO BE DONE BY SD GFP



3
11

LONGITUDINAL SECTION

SCALE: 1"=5'

OUTLET WEIR CONSTRUCTION
WOODRUFF DAM
HUGHES COUNTY, SOUTH DAKOTA

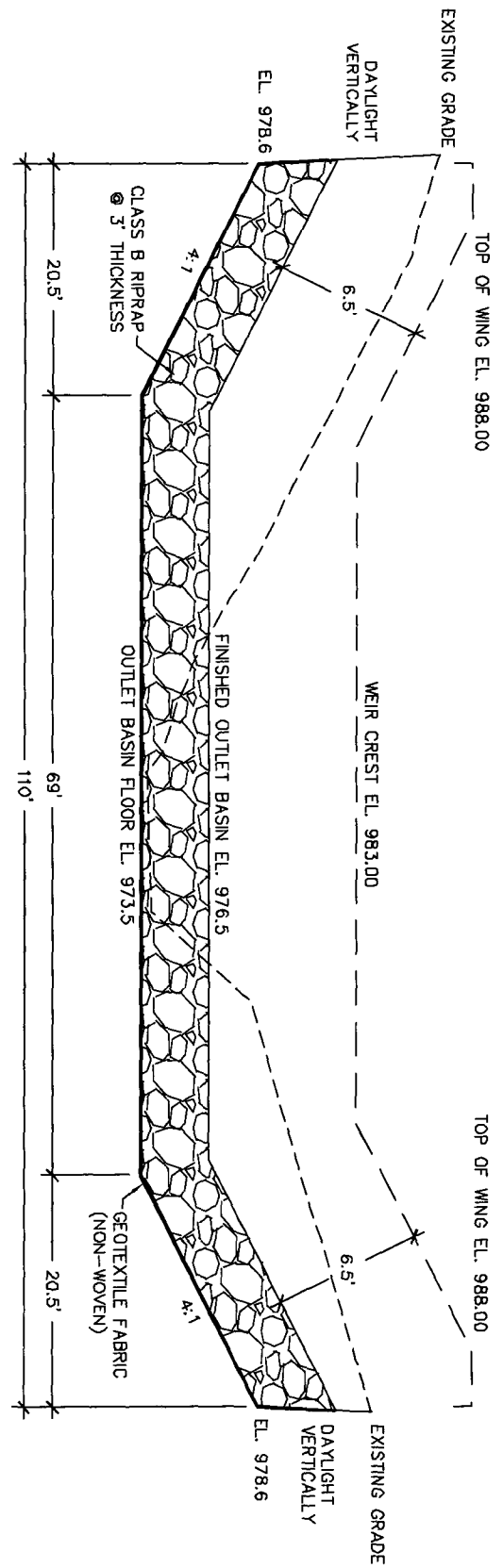
9/1/09
200
CP



Department of Game, Fish & Parks

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773 - 8082

GENERAL NOTE:
 SURVEY REFERENCES LOCAL DATUM
 CONSTRUCTION STAKING TO BE DONE BY SD GFP



2
10

OUTLET BASIN SECTION

SCALE: 1"=10'

GENERAL NOTE:
SURVEY REFERENCES LOCAL DATUM
CONSTRUCTION STARTING TO BE DONE BY SD GFP

COMPACTED FILL MATERIAL
TO BE PLACED AT END OF SHEET PILE WEIR
PLACE GEOTEXTILE FABRIC (NON-WOVEN)
AND ARMOR W/ CLASS B RIPRAP

CLASS B RIPRAP
@ 3' THICKNESS

COMPACTED FILL MATERIAL
TO BE PLACED AT END OF SHEET PILE WEIR
PLACE GEOTEXTILE FABRIC (NON-WOVEN)
AND ARMOR W/ CLASS B RIPRAP

SCALE: 1"=10'

END SHEET PILE INSTALLATION
Sta 1+54.11
EL. 988.00

Sta 1+49.11
EL. 988.00

Sta 1+29.11
EL. 983.00

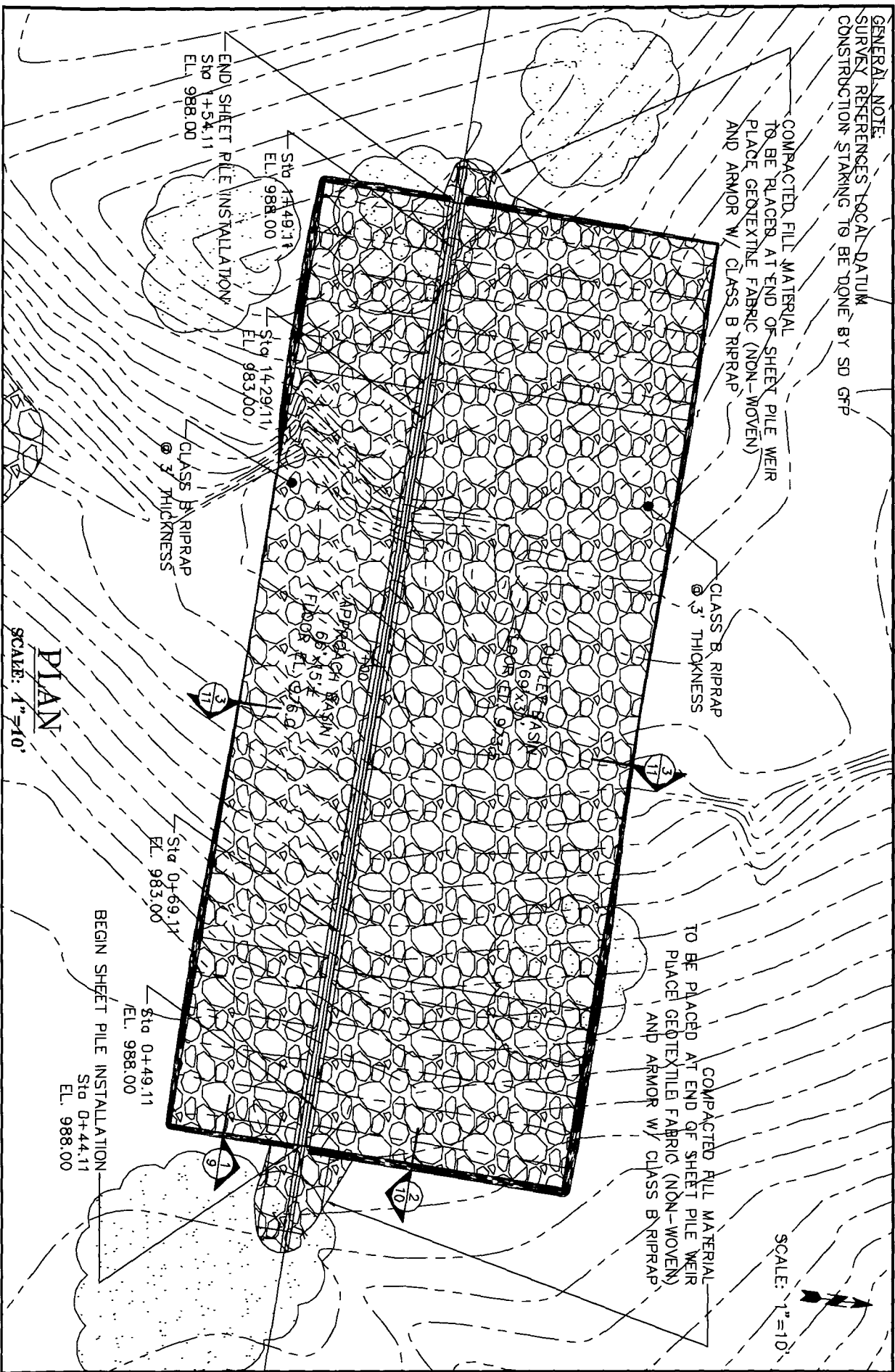
CLASS B RIPRAP
@ 3' THICKNESS

Sta 0+69.11
EL. 983.00

Sta 0+49.11
EL. 988.00

BEGIN SHEET PILE INSTALLATION
Sta 0+44.11
EL. 988.00

PLAN
SCALE: 1"=10'



GENERAL NOTE:
SURVEY REFERENCES LOCAL DATUM
CONSTRUCTION STAKING TO BE DONE BY SD GFP

RESERVOIR INFORMATION
STORAGE AT TOP OF CREST 540 ACRE FEET
DRAINAGE AREA 107 SQUARE MILES CONTRIBUTING

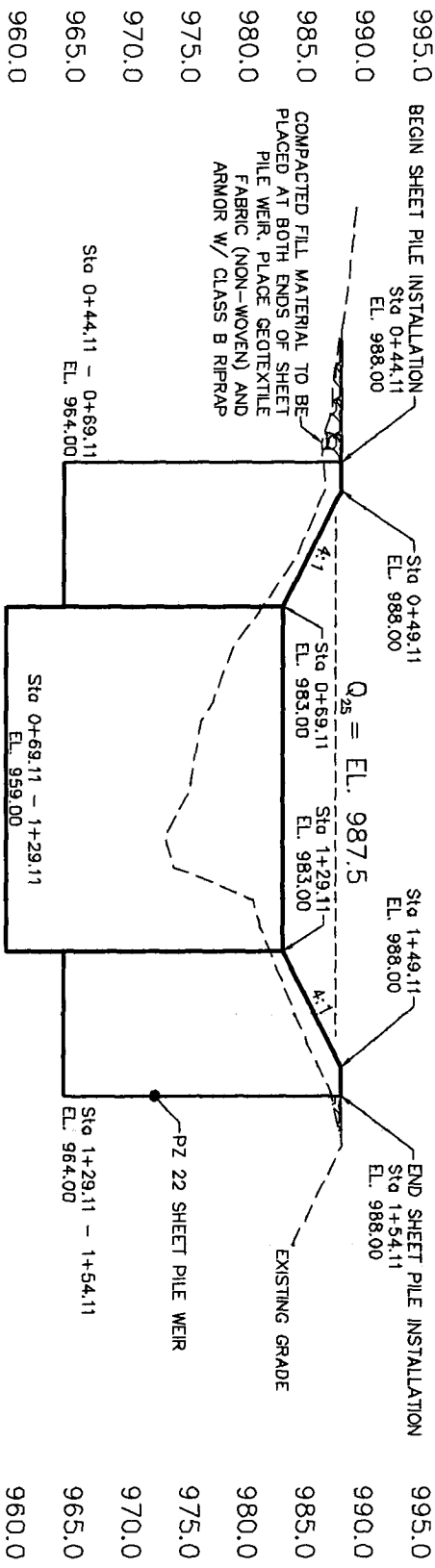
FREQUENCY INFORMATION

Q ₁₀	= 912 CFS
Q ₂₅	= 1873 CFS
Q ₅₀	= 2890 CFS
Q _{max} (PRIMARY)	= 2195 CFS
Q _{PRIMARY & SECONDARY}	= 2500 CFS MAX

HYDRAULIC DATA

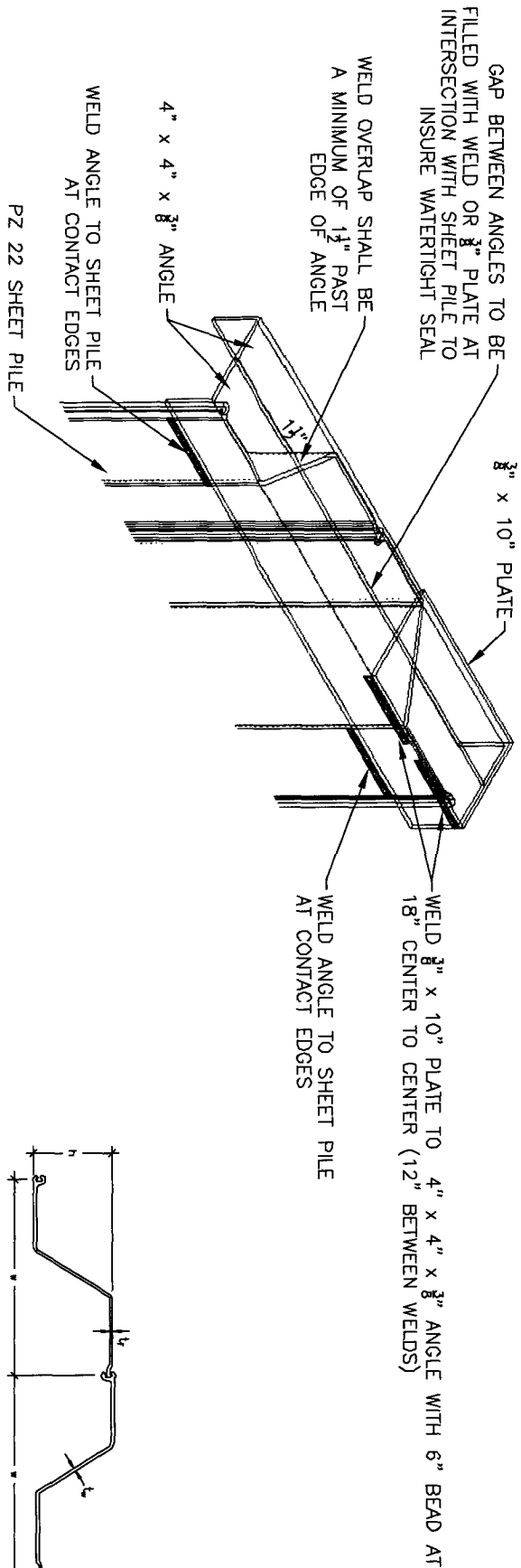
Top of Dam Elev = 996±
End Spillway Elev = 992

NOTE:
PREVIOUS PRIMARY SPILLWAY EL. = 989.0-990.0±



WEIR ALIGNMENT PROFILE

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=10'



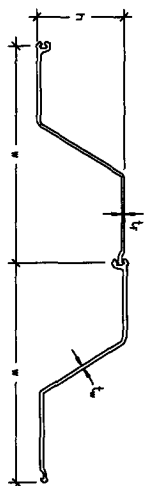
SHEET PILE CAP FABRICATION DETAIL

SCALE: N.T.S.

NOTES:

1. ALL WELDS SHALL BE $\frac{1}{4}$ " FILLET WELDS.
2. ALL WELDS WILL BE SUBJECT TO LAMPING. ANY AREAS FAILING WILL BE REWELDED BEFORE ACCEPTANCE OF PROJECT.
3. TOP OF SHEET PILE SHALL BE TRIMMED TO GRADES INDICATED ON PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED FROM THE COST OF "SHEET PILE INSTALLATION."
4. ABOVE EL. ??? PILE CAP NEED NOT BE WATERTIGHT. WELDS SHALL CONSIST OF A 6" BEAD @ 18" CENTER TO CENTER (12" BETWEEN WELDS.)
5. LENGTH OF PILE CAP AS SHOWN ON PLANS.

SHEET PILE DETAILS



PZ

PZ 22

WIDTH (w) = 22 in.

HEIGHT (h) = 9 in.

FLANGE THICKNESS (t_f) = 0.375 in.

WALL THICKNESS (t_w) = 0.375 in.

AREA = 6.47 in.²/ft.

WEIGHT (PILE) = 40.3 lb./ft.

WEIGHT (WALL) = 22.0 lb./ft.²

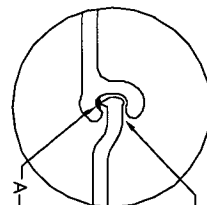
SECTION MODULUS = 18.1 in.³/ft.

MOMENT OF INERTIA = 84.38 in.⁴/ft.

SHEET PILE SPECIFICATION

SCALE: N.T.S.

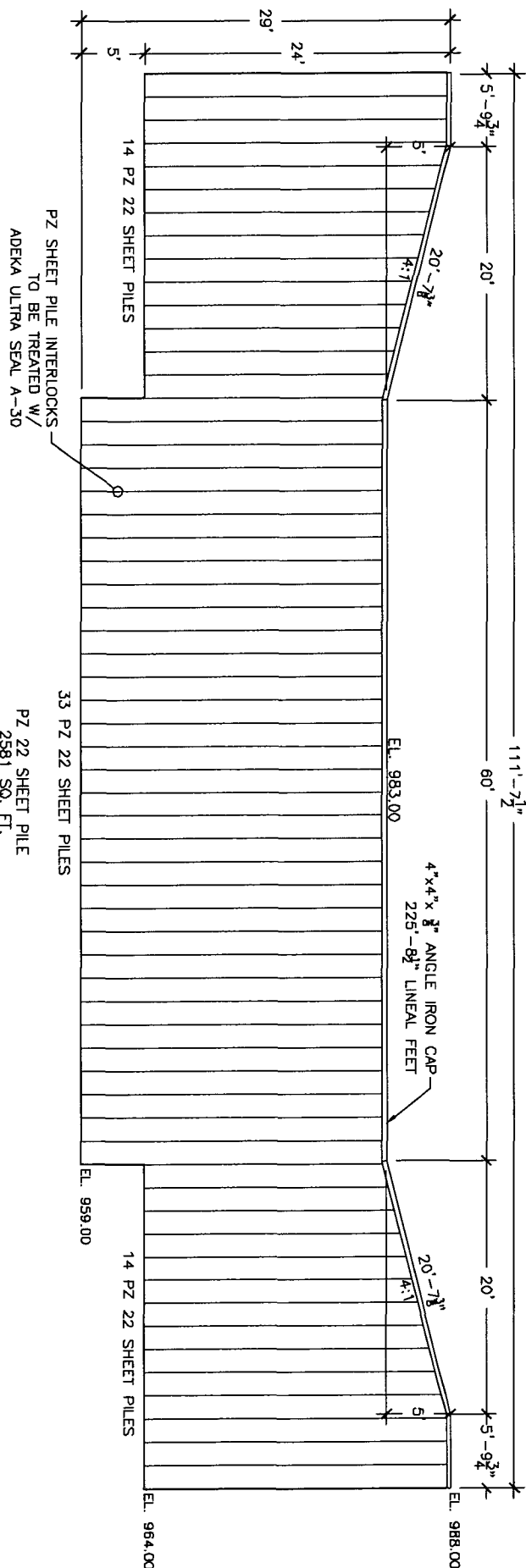
ADEKA ULTRA SEAL A-30
www.adeka.com
1-800-999-3959



INTERLOCKS MUST BE CLEAN AND FREE OF RUST AND/OR DEBRIS
PILE TO BE PLACED IN A HORIZONTAL LEVEL POSITION FOR SEALANT INSTALLATION AND REMAIN IN THAT POSITION UNTIL SEALANT CURES (8 HOURS±)

SEALANT INSTALLATION DETAIL

SCALE: N.T.S.



GENERAL A-30 SEALANT NOTES :

INTERLOCKS MUST BE CLEAN AND FREE FROM RUST AND/OR DEBRIS. PILES MUST BE LEVEL FOR INSTALLATION AND REMAIN LEVEL UNTIL SEALANT CURES.

THE SEALANT IS A TWO COMPONENT MATERIAL; A RESIN AND A HARDENER. MIX RATIO TO BE MEASURED CAREFULLY AND MIXED THOROUGHLY. POT LIFE UPON MIXING IS APPROXIMATELY 2 HOURS.

SEALANT INSTALLATION DEPTH TO BE MEASURED AND CHECKED TO ASSURE PROPER INSTALLATION DEPTH (3").

UPON INSTALLATION OF SEALANT, PILES/INTERLOCKS TO BE KEPT DRY. ONE (1) GALLON OF A-30 SEALANT WILL TREAT APPROXIMATELY 100 LINEAL FEET OF PILE INTERLOCK.

SHEET PILE INSTALLATION DETAIL

SCALE: 3/8"=1'-0"

12
13

OUTLET WEIR CONSTRUCTION
WOODRUFF DAM
HUGHES COUNTY, SOUTH DAKOTA

DATE	9/1/09
BY	GWC
CHECKED	JP



South Dakota
Department of Game, Fish & Parks

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773-6082

Water Permit Application No. 7164-3
SD Game, Fish and Parks

Repair Project for Woodruff Dam (SD 00025)

Woodruff Dam breached thru the primary spillway structure in March 1997. In 1999, G.F.P. had a repair/clean-up project to the primary spillway channel. The project resulted in a rock berm in the channel entrance. The proposed project associated with Water Permit Application will construct a steel sheet pile weir in the old primary spillway channel, resulting in the storage of 120 A.-Ft of water in the reservoir.

Top of Dam Elev. - 996	} Cat. 3 - Low Hazard Dam (SD 00025)
2nd Spillway Elev. - 992	
P. Spillway (Weir) Elev. - 983	
Existing Emb. Toe Elev. - 964	
} <u>Ht. = 32 ft</u>	

Normal Storage Capacity (Elev. 983) - 120 A.-Ft
Max. Storage Capacity (Elev. 996) - 540

Minimum Spillway Design = 50 yr

From USGS WRI 98-4055 "Tech. Ser. Est. Peak Flows ... in 50" Region B DA = 107 mi.² P_H = 0.77

$$\begin{aligned}
 Q_{25} &= 148 CA^{.584} P_H^{.730} \\
 &= 148 (107)^{.584} (0.77)^{.730} \\
 &= 148 (15.3165) (.8263) \\
 &= \underline{1873 \text{ cfs}}
 \end{aligned}$$

$$\begin{aligned}
 Q_{50} &= 206 CA^{.606} P_H^{.728} \\
 &= 206 (107)^{.606} (0.77)^{.728} \\
 &= 206 (16.9749) (.8267) \\
 &= \underline{2890 \text{ cfs}}
 \end{aligned}$$

Secondary Spillway Capacity

$$\begin{aligned}
 Q &= CLH^{3/2} \quad C = 2.6 \\
 &= 2.6 (100)^{1.5} L = 100 \\
 &= 2.6 (100) (4) \quad H = 4 \\
 &= \underline{2080 \text{ cfs}}
 \end{aligned}$$

$$\begin{aligned}
 Q_{100} &= 275 CA^{.625} P_H^{.742} \\
 &= 275 (107)^{.625} (0.77)^{.742} \\
 &= 275 (18.5509) (.8237) \\
 &= \underline{4200 \text{ cfs}}
 \end{aligned}$$

G.F.P. routes a $Q_{25} = 1873 \text{ cfs}$ thru the sheet pile weir with 4.5 ft head.

$$\begin{aligned}
 \text{Total Spillway Capacity} &= 1873 + \\
 &\quad \underline{2080} \\
 &= \underline{3953 \text{ cfs}}
 \end{aligned}$$

OK

Section 74:02:08:09

1. Topo Map - OK
2. Dam Axis Profile - OK
3. Dam Max X-sec. - OK
4. Area Capacity - OK
5. Outlet Details - OK
6. Spillway Rating - OK
7. Spillway Details - OK
8. Specs - OK
9. EPP - N/A Cont. 3 - OK

NRCS Annual Yield

$$DA = 68480 \text{ Ac} - CN = 70 \text{ ISO} = 2$$

$$80\% \text{ chance} = 0.062$$

$$0.062 \times 68480/2 = \underline{350 \text{ Ac-Ft}}$$

$$50\% \text{ chance} = 0.20$$

$$0.20 \times 68480/2 = \underline{1140 \text{ Ac-Ft}}$$

$$10\% \text{ chance} = 1.2$$

$$1.2 \times 68480/2 = \underline{6850 \text{ Ac-Ft}}$$



DEPARTMENT OF GAME, FISH AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

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SEP 11 2009

WATER RIGHTS
PROGRAM

September 10, 2009

Mr. Eric Gronlund
DENR- Water Rights Division
523 East Capitol Avenue
Pierre, SD 57501

**RE: Woodruff Dam Reconstruction
Hughes County, South Dakota**

Dear Mr. Gronlund:

Enclosed please find a water right application for the reconstruction of Woodruff Dam near Harrold, South Dakota. The previous structure was breached and has been in a breached condition since 1997. This Department would like to place a new sheetpile weir structure approximately 300 feet south of the breached structure.

The new low-water weir will be approximately 5 feet lower than the original dam grade and will hold back approximately 120 acre feet of water. The average water depth will be 6 feet with some deep water areas of 10 feet. The area will be utilized by the public for recreational purposes.

Thank you for your consideration of this application. If you have any questions, please contact me at (605) 773-6208.

Sincerely,

Leslie Petersen
Aquatic Resource Coordinator

State of South Dakota

VOUCHER

Direct Invoice

BC

JOURNAL VOUCHER ENTRY

212

NEXT FUNCTION: _____ ACTION: _____

APP: 34

DOCUMENT ID: N06010M021

EFFECTIVE DATE	100109	TOTAL	1400.00
COMPANY ID	3122	DATA TYPE CODE	1
LEVEL OF FUNDS CHK	-	UPDATE AFF	-
SOURCE GEN CODE	-	CLOSED PRD ADJ	-
PROJECT COMPANY	-	TRANSFER COMPANY	-

GAME FISH PARKS PAYS DENR WATER RIGHTS PROGRAM WATER RIGHTS FEES
OF 500.00 AND INSPECTION FEE OF 200.00 FOR THW WOODRUFF DAM PROJECT

OPTIONS: (E)ND, (H)OLD, (K)ILL, OR NEXT LINE _____

I declare and affirm under the penalties of perjury that this claim has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Claimant

Date

Authorization

Date

10/01/2009 14:24

Authorization

Date

State of South Dakota
VOUCHER
Direct Invoice

BC

JOURNAL VOUCHER ENTRY

213

NEXT FUNCTION: _____ ACTION: _____
BC 202: END OF DOCUMENT

=====

APP: 34

DOCUMENT ID: N06010M021

TOTAL: 1,400.00

LINE 1 _____ TRANSACTION CODE A

COMP/ACCT/CNTR 3122 52049600 _____ 0610610 _____

DEBIT/CREDIT AMOUNT 700.00 _____

DEBIT/CREDIT CODE DR

DESCRIPTION _____

PROJECT COMP/CODE _____

ACCOUNTING RULE _____

EFFECTIVE DATE 10/01/2009

SOURCE CODE _____

LEVEL OF FUNDS CHK _____

UPDATE AFF _____

TRANSFER COMPANY _____

OPTIONS: (E)ND, (H)OLD, (K)ILL, OR NEXT LINE _____

I declare and affirm under the penalties of perjury that this claim has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Claimant

Date

Authorization

Date

10/01/2009 14:24

Authorization

Date



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

October 9, 2009

SD Dept. of Game, Fish & Parks
c/o Leslie Petersen
523 E. Capitol
Pierre, SD 57501

Dear Ms. Petersen:

We have reviewed the plans and specifications for the Outlet Weir Construction Project at Woodruff Dam located in the NW ¼ of Sec. 18-T112N-R74W, in Hughes County. The plans and specifications for the project are approved. Approval of the plans and specifications does not authorize reconstruction of the dam. The reconstruction of the dam may not begin until Water Permit No. 7164-3 is approved.

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

Woodruff Dam (SD00025) will be classified as a small size Category 3, Low Hazard dam with a dam height of 32 feet and a normal storage capacity of 120 acre-feet and a maximum storage capacity of 540 acre-feet.

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

Sincerely,

Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist
for Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

c: Jeff Peters, GF&P ✓



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7164-3, SD Department of Game, Fish and Parks**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 7164-3, SD Department of Game, Fish and Parks, c/o Leslie Petersen, 523 E Capitol Avenue, Pierre SD 57501.

The Chief Engineer is recommending APPROVAL of Application No. 7164-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Water Permit No. 7164-3 authorizes a dam with a storage capacity of 120 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.

Garland Erbele, Chief Engineer
October 9, 2009

REPORT ON
WATER PERMIT APPLICATION No. 7164-3
SD Dept. of Game, Fish & Parks
October 9, 2009

Water Permit Application No. 7164-3 has been filed by the SD Department of Game, Fish & Parks to impound 120 acre-feet of water from runoff by reconstructing Woodruff Dam (SD00025) located in the NW ¼ of Section 18-T112N-R74W, in Hughes County. The application also requests impoundment of sufficient water to maintain water to the outlet elevation. The water will be used for fish and wildlife production and recreational use.

Discussion:

Woodruff Dam breached and failed through the primary spillway structure in March 1997. In 1999, the Department of Game Fish and Parks had a project to repair/clean up the breached spillway and spillway channel. A small rock berm was placed in the entrance of the channel to store water in the reservoir. The project associated with Water Permit Application No. 7164-3 will construct a steel sheet pile weir in the channel, which will result in 120 acre-feet of water being stored in the reservoir.

Woodruff Dam is classified as a small size, Category 3, Low Hazard dam. The dam has been designed by the Department of Game, Fish and Parks. The plans and specifications have been reviewed and will be approved; however, reconstruction of the dam can not begin until Water Permit Application No. 7164-3 is approved.

The dam will be 32 feet high with a normal storage capacity of 120 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 540 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 50-year frequency event.

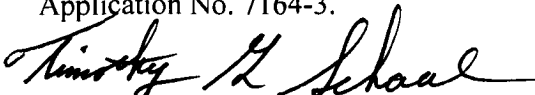
The dam has a drainage area of 68480 acres or 107 square miles. The sheet pile weir will have a base width of 60 with 13 feet of freeboard as the primary spillway, and Woodruff Dam still has the original 100 foot wide earth cut secondary spillway with 4.0 feet of freeboard. A 50 year frequency event produces a peak runoff of approximately 2890 cfs and a 100 year frequency event produces a peak runoff of approximately 4200 cfs. Woodruff Dam will have a combined spillway capacity of well over a 100 year frequency event.

The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 350 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 1140 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 6850 acre-feet.

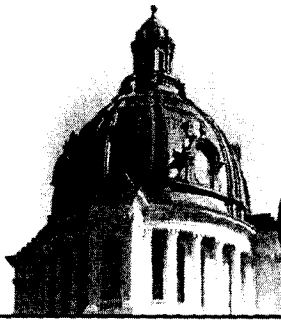
The Department of Game, Fish and Parks previously held Water Right No 712-3 for the storage of 270 acre-feet of water in Woodruff Dam; however, since the dam has been breached since 1997 Water Right No. 712-3 will be schedule for cancellation due to forfeiture and/or abandonment.

Conclusions:

1. Water Permit Application No. 7164-3 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for domestic use should be a qualification on Water Permit Application No. 7164-3.



Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist



RECEIVED

NOV - 4 2009

WATER RIGHTS
PROGRAM

Capital Journal

AFFIDAVIT OF PUBLICATION

State of South Dakota, County of Hughes

Jackie Odom of said county, being, first duly sworn, on oath, says: That ~~he~~she is the publisher or an employee of the publisher of the Capital Journal, a daily newspaper published in the City of Pierre in said County of Hughes and State of South Dakota; that ~~he~~she has full and personal knowledge of the facts herein stated, that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive, that said newspaper has been published within the said County of Hughes and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the ~~legal~~display advertisement headed Notice of Application No. 7164-3 to
Appropriate Water
a printed copy of which, taken from the paper in which the same was published, and which is here-to attached and made a part of this affidavit, was published in said newspaper for two successive week(s) to wit:

<u>October 15</u> 20 <u>09</u>	<u>20</u>
<u>October 22</u> 20 <u>09</u>	<u>20</u>
<u>20</u>	<u>20</u>
<u>20</u>	<u>20</u>
<u>20</u>	<u>20</u>

That the full amount of the fee charged for the publication of the attached public notice inures to the sole benefit of the publisher or publishers; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are: \$ 57.56

Signed: Jackie Odom

subscribed and sworn to before me this 3 day of November 20 09

May Baker

Notary Public in and for the County of Hughes, South Dakota.
My Commission expires 2-19, 2015.

petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 2, 2009.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to his application.

Steven M. Pinner, Secretary, Department of Environment and Natural Resources.

July 10/15, 10/22
NOTICE OF
APPLICATION
NO. 7164-3 to
Appropriate
Water

Published twice at the total approximate cost of \$57.56.

Notice is given that the South Dakota Department of Game, Fish and Parks, c/o Leslie Petersen, 523 E. Capitol, Pierre SD 57501 has filed an application for a water permit to impound 120 acre-feet of water from the South Fork of Medicine Knoll Creek by reconstructing Woodruff Dam located in the SW 1/4 NW 1/4 Section 18 with water impounded in the S 1/2 NW 1/4, NE 1/4 SW 1/4, N 1/2 SE 1/4 Section 18; a 11

T112N-R74W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and recreational use purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7164-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition. Any person interested in opposing or supporting this application or recommendation must file a written



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

October 9, 2009

Capital Journal
PO Box 878
Pierre SD 57501

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7164-3 to Appropriate Water to be published twice. Please publish the first notice on October 15, 2009 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

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 SD Dept. of Game Fish & Parks, c/o Leslie Peterson, 523 E Capitol Ave., Pierre SD 57501 (Ph # 605-773-3387).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,


Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

No. 7164-3

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

Date _____

We are in receipt of your letter of October 9, 2009 enclosing Notice to Appropriate Water by Application No. 7164-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

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

October 9, 2009

SD Dept of Game Fish & Parks
c/o Leslie Peterson
523 E Capitol Ave
Pierre SD 57501

Dear Ms. Peterson:

Water Permit Application No. 7164-3 for fish & wildlife propagation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Capital Journal printed at Pierre SD (Ph # 605-224-7301). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and reports on the applications 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 and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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

Instruction to Newspaper - Publish first Notice on October 15, 2009 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 7164-3 to Appropriate Water

Notice is given that the South Dakota Department of Game, Fish and Parks, c/o Leslie Petersen, 523 E Capitol, Pierre SD 57501 has filed an application for a water permit to impound 120 acre-feet of water from the South Fork of Medicine Knoll Creek by reconstructing Woodruff Dam located in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 18 with water impounded in the S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 18; all in T112N-R74W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and recreational use purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7164-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 2, 2009.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

Published twice at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

JAN 13 2010

SD Dept of Game Fish & Parks
c/o Leslie Peterson
523 E Capitol Ave
Pierre SD 57501

Dear Ms. Peterson:

Enclosed is Water Permit No. 7164-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *?Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

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

enclosures

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

Date 3-8-10

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

FROM: South Dakota Dept. of Game, Fish & Parks

(name)

523 E. Capitol Ave.

(address)

Pierre, SD 57501

(city, state, zip)

605-773-6208

(phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

Water Permit No. 7164-3 states that the water use system is to be constructed by November 2, 2014 , and water is to be put to beneficial use by November 2, 2018 .
(date) (date)

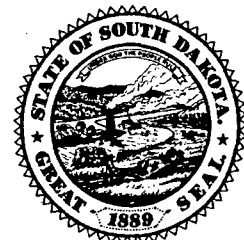
The water use system was completed on 3-8-10 .
(date)

Applying the water to beneficial use was completed on 3-8-10 .
(date)

You may schedule an investigation so that the water license may be issued.

Legia Petersen

(signature)



Permit No. 7164-3
Missouri River - Water District

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

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

I have this day, July 17, 2014, made a thorough examination of the water use system constructed by South Dakota Department of Game, Fish & Parks of 523 E. Capitol, Pierre, SD 57501 holder of Permit No. 7164-3, bearing the priority of September 11, 2009 authorizing the storage of 120 acre-feet of the waters of South Fork Medicine Knoll Creek for fish & wildlife propagation and recreation purposes, in Hughes County.

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

A. Works used to divert the water:

A 32 ft. high earthen dam (Woodruff Dam) with a normal storage capacity of 120 ac-ft.

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

N/A

C. Works used to apply water to beneficial use:

A 32 ft. high earthen dam (Woodruff Dam) with a normal storage capacity of 120 ac-ft.

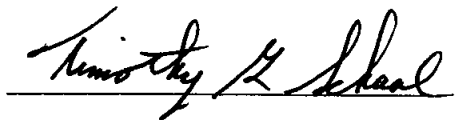
The system is in the following condition good. The point of diversion is located 2250 ft. south & 1250 ft. east of the NW corner of Sec. 18-T112N-R74W (SW ¼ NW ¼) (Lat. 44.50626 Long. -99.78045). The works are capable of storing 120 acre-feet of water which is to be used for fish & wildlife propagation and recreation. Water has been put to beneficial use to the maximum extent as follows:

A 32 ft. high earthen dam (Woodruff Dam) with a normal storage capacity of 120 ac-ft.

and the license should be issued for 120 acre-feet of storage.

Applicable permit qualifications have been complied with: Yes X

Exceptions to compliance are: none Date Report Completed: March 11, 2015



Timothy G. Schaal, P.E.
Engineer IV
SD DENR, Water Rights Program

REPORT ON INSPECTION OF PERMIT NO. 7164-3

DATE OF INSPECTION: July 17, 2014

NAME & ADDRESS OF PERMIT HOLDER: South Dakota Department of Game, Fish & Parks,
523 E. Capitol, Pierre SD, 57501

DIVERSION POINT LEGAL LOCATION: 2250 ft. south & 1250 ft. east of the NW corner of
Section 18-T112N-R74W (SW ¼ NW ¼) (Lat. 44.50626 Long. -99.78045).

DAM INFORMATION:

- 1) Height to crest 32 feet
- 2) Height to primary spillway 19 feet
- 3) Height to secondary spillway 28 feet
- 4) Crest width 12 feet
- 5) Crest length XXX feet
- 6) Spillway length XXX feet
- 7) Spillway width 60 feet
- 8) Approx. storage (Normal) 120 acre-feet
- 9) Approx. storage (Maximum) 540 acre-feet
- 10) Date constructed: 2010

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 yes
- 3) All structures, wells and lands on map yes
- 4) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period N/A

Water Permit Application No. 7164-3



0 0.25 0.5 1 Miles



Timothy G. Schaal

Timothy G. Schaal, P.E.

Engineer IV

SD DENR, Water Rights Program

3/11/15



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

APR 24 2015

7164-3

Leslie Murphy
SD Dept of Game, Fish & Parks
523 E Capitol
Pierre SD 57501

Dear Ms. Murphy:

Enclosed is Water License No. 7164-3. This is the final water right document completing the process of obtaining a Water Right. Included with the license is a map prepared by the staff engineer who conducted the field investigation.

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

Sincerely,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 7164-3

(1) The South Dakota Department of Game, Fish and Parks, 523 E Capitol, Pierre SD 57501 made Application No. 7164-3, September 11, 2009 for a water permit to impound 120 acre feet of water from the South Fork of Medicine Knoll Creek by reconstructing Woodruff Dam located in Hughes County, South Dakota. The water is appropriated for the purpose of fish & wildlife propagation and recreational use. Permit No. 7164-3, with a priority date of September 11, 2009 was approved November 2, 2009 and issued to the applicant for diversion of water with construction of the impoundment to be completed on or before November 2, 2014 and for the application to beneficial use of said water on or before November 2, 2018.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to construction of the storage dam and is entitled to impound 120 acre feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation.

The location of Woodruff dam (spillway) is:

- 2,250 feet S and 1,250 feet E of the NW corner of Section 18, T112N, R74W (SW $\frac{1}{4}$ NW $\frac{1}{4}$).
Water is impounded in the S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$ and N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 18, T112N, R74W.

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 the South Dakota Department of Game, Fish and Parks, 523 E Capitol, Pierre SD 57501 the holder and/or owner of Water Right No. 7164-3 is issued a license to appropriate water, the right to impound 120 acre feet of water from the South Fork of Medicine Knoll Creek with a priority date of September 11, 2009 from the location specified in (2) of this license for fish & wildlife propagation and recreational purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 7164-3 and subject to the following qualifications:

- Water Right No. 7164-3 authorizes a dam with a storage capacity of 120 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
- Low flows as needed for downstream domestic use, including livestock water and prior water rights must be bypassed.



Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

APR 24 2015

date

