

WATER PERMIT NO. 2372-2

Name of Applicant: Ralph Jones

Address: Box 228, Midland SD 57552

Phone: 605 843-2242

Amount of Water Claimed: 57.35 acre-feet

Total Acres: NA

Source of Water Supply: runoff

Water to be used for: fish and wildlife propagation and livestock watering County: Jackson

Type of Waste Disposal System: NA

Location: about 6 miles northeast of Kadoka

PRIORITY Date Received: 9-16-96

Fee: \$150.00

Corrected Application Received:

Period of Annual Use: January 1 - December 31

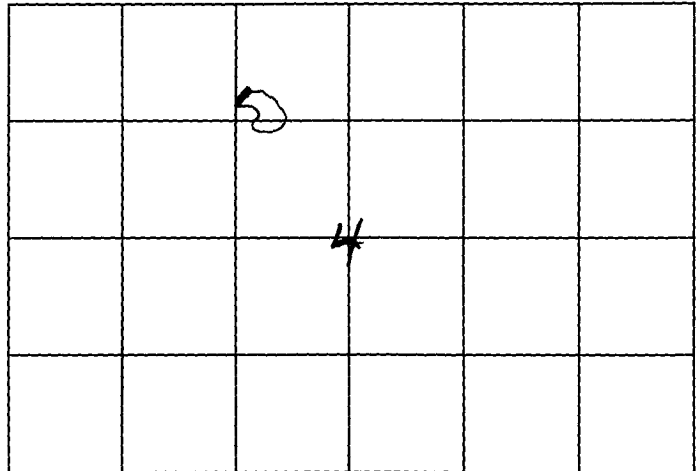
Remarks:

Diversion Point: NW 1/4 NW 1/4 Sec 4 -

T2S-R23E

Water Impounded: ²W 1/4 NW 1/4 Sec 4 -

T2S-R23E



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: topo

Prepared by: Gerald Magelky, NRCS

Reviewed and the Number Assigned on: 9-17-96

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 2372-2

Date of first receipt of application September 16, 1996.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2372-2 to Ralph Jones, Box 228, Midland SD 57552 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. 2372-2 appropriates 38 acre-feet of water from runoff by constructing a dam located in the NW 1/4 NW 1/4 Section 4 with water impounded in the W 1/2 NW 1/4 Section 4; all in T2S-R23E.
2. The water appropriated shall be used for the purpose of supplying water for fish and wildlife propagation and livestock watering 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. 2372-2 is October 21, 1996.
5. The date from which applicant may claim right is September 16, 1996.
6. One-fifth of the construction is to be completed on or before April 21, 1999.
7. All construction is to be completed on or before October 21, 2001.
8. Water is to be put to beneficial use on or before October 21, 2005.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Water Permit No. 2372-2 authorizes a dam with storage capacity of 38 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.

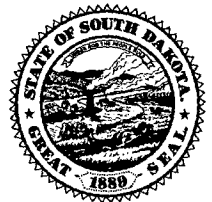
WATER MANAGEMENT BOARD

By: _____

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

DEC 26 1996

date



FORM 2: Application for uses other than irrigation

(type or print)

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

No. 2372-2 Hydrologic Unit 10/40/02
Basin Bad River
Newspaper Kadoka Press, Kadoka, SD
(office use only)



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

Check use of water:

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

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

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

- Name of Applicant Ralph Jones Phone (605) 843-2242
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address Box 228 Midland State SD 57552
(Street, RR, or Box) (City) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 38 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable
- Source of water supply Runoff
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) NW1/4, NW1/4, Sec 4, T2S, R23E
58 Rods South, 6 Rods East of the NW corner of said section water impounded:
W1/2 NW1/4 sec. 4-T2S-R23E County Jackson
- County or counties where water will be used Jackson
- Annual period during which water is to be used all year Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

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

STATE OF SOUTH DAKOTA)

County of Haskell)SS

I, Ralph D Jones, 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 Ralph D Jones

Subscribed and sworn to before me this 13 day of September 1996

Carol A. Hunt, Notary Public
My Commission Expires Aug. 6, 1997

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

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

2. Dugout Information

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

3. Water Storage Dams

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

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

Gerard Magelky, NRCS (CET)
Kadoka, SD 57543

b) Freeboard _____ 3.5 Feet

c) Crest Width _____ 12 Feet

Crest Length _____ 400 Feet

d) Height _____ 22.8 Feet

e) Primary Outlet Capacity _____ 74.7 CFS

If pipe, diameter _____ 30"

f) Secondary Spillway Capacity _____ 727.5 CFS

Spillway Width _____ 100 Feet

g) X & Y Slope

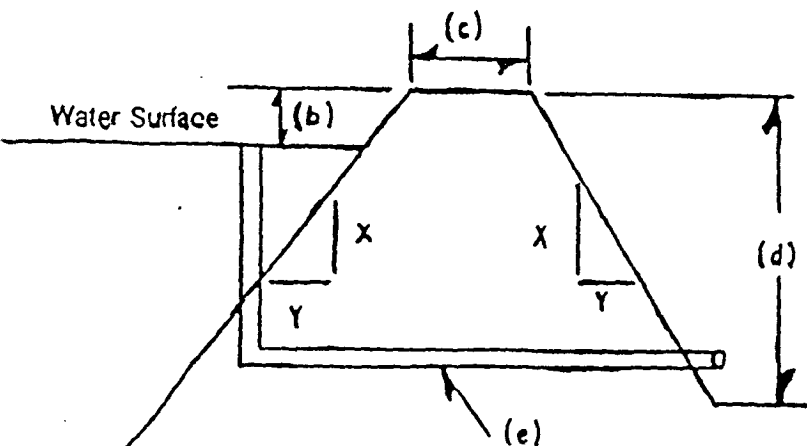
Upstream _____ 3:1

Downstream _____ 2:1

h) Surface Area of Impoundment _____ 6.2 Acres

i) Storage _____ 57.35 _____ Acre Feet

j) Drainage Area Above Dam _____ 1125 _____ Acres



Round Hill

2419

2389

2297

2268

36

2389

31

2301

32

2289

2230

33

2354

2292

2305

2240

2288

2376

6

2298

5

2300

4

2335

2284

2276

2332

2288

B E L V I D E R E

2322

7

2311

2302

8

2348

9

BM

2323

2384

2330

2290

BR 2288

BM

2316

13

18

17

16

E SW

R 22 E

R 23 E

25'

INTERIOR GEOLOGICAL SURVEY, WASHINGTON, D. C. - 1955-NS

M R-0200

7 MI. TO U.S. 16 AND S. DAK. 40

15100 101°22'30"

4000

Handwritten: (CET) NRCS

1 MILE

4000 5000 6000 7000 FEET

Handwritten: Quad sheet Belvidere NW

ROAD CLASSIFICATION

Heavy-duty	4 LANE 16 LANE	Light-duty
Medium-duty	4 LANE 16 LANE	Unimproved dirt

79

R

18

5

Point of
Diver

[Signature]
(CET) NRCS

14

7

14

RECEIPT

415109

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, September 23, 19 96

RECEIVED OF Ralph Jones, P.O.Box 228, Midland, SD 57552

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

Fee for Application for Permit No. <u>2372-2</u> to Appropriate Water, to construct 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 _____	

(Any Other Work Provided by Law)	
Total	150 00

By

Chief Engineer

John Hatch

STRUCTURE DATA

DRAINAGE AREA	ANNUAL YIELD	PEAK RUNOFF	EMERG. SPLWY. CAPACITY	WATER DEPTH	SURFACE AREA	SEDIMENT STORAGE	TOTAL STORAGE
ACRES	AC.FT.	25-YR.	C.F.S.	FEET	ACRES	AC.FT.	AC.FT.
1125	60	851	617	13'	5.2	4.7	38.0

NOTE: EARTH QUANTITIES COMPONENTS

EARTH FILL

- STRIPPING - 460 cu.yd.
- PIPE INSTALLATION 1,024 cu.yd.
- Embankment 3435 cu.yd.
- Emergency Spillway 1767 cu.yd.

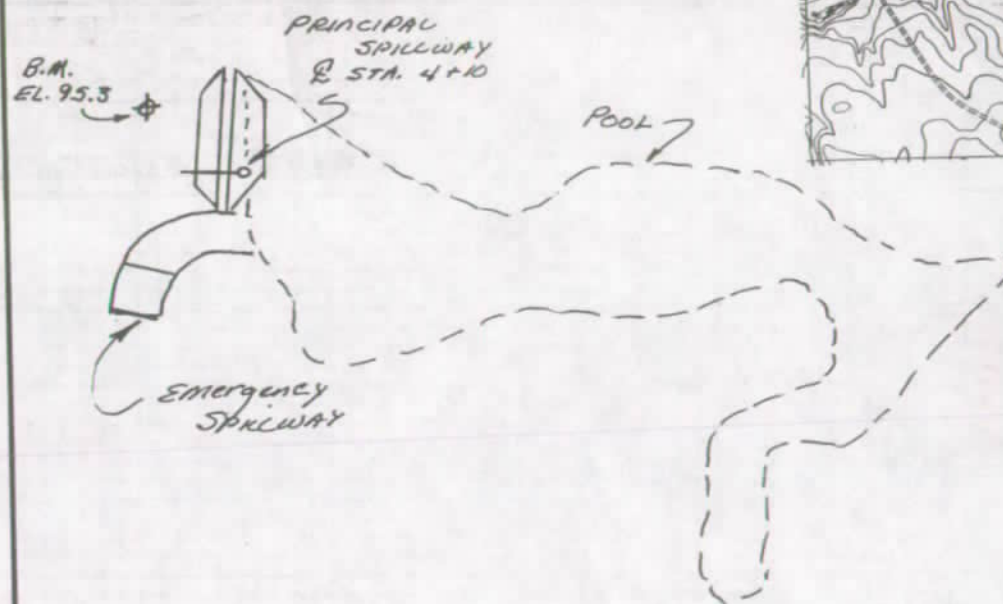
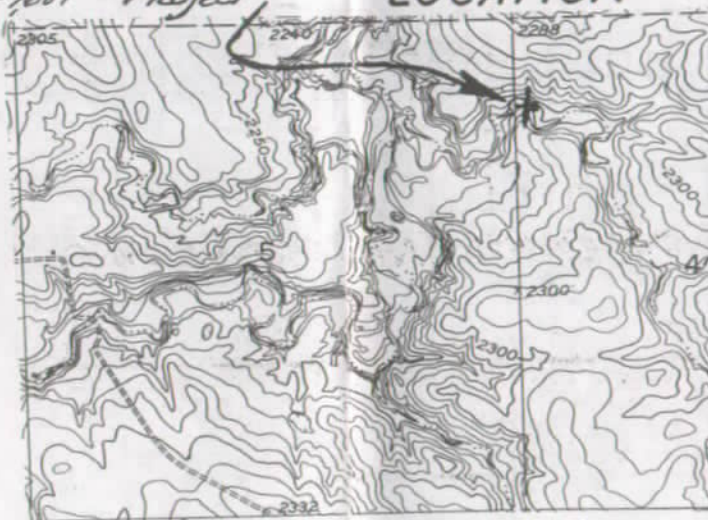
EXCAVATION

- STRIPPING 460 cu.yd.
- STRUCTURE REMOVAL 1024
- Emergency Spillway 7681

Project

SEC. 4 T. 25 R. 23E
JACKSON COUNTY

LOCATION



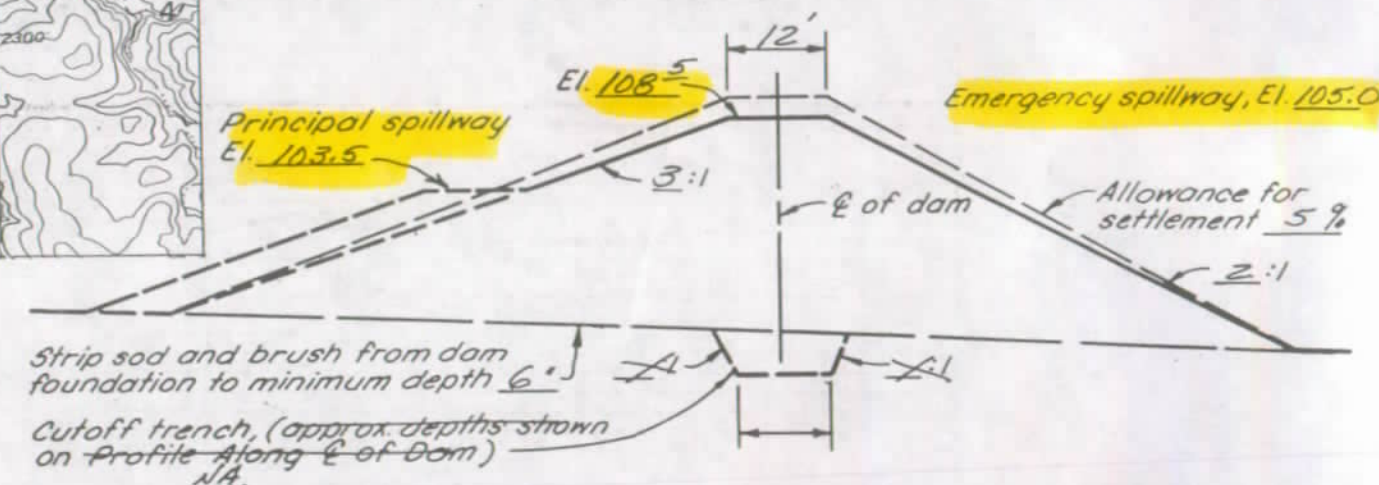
SKETCH PLAN OF DAM AND RESERVOIR AREA

NOT TO SCALE
APPROXIMATE SCALE 1" =

REFERENCE: GUIDE PLAN NO. 1.0

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
1. 30" GALV. STEEL, CORR. METAL PIPE, 16 ga. ^{W/AL COATED}	L.F.T.	76
2. 72" GALV. STEEL, CORR. METAL RISER, 10 ga. 6' long, w/ 30" x 4' long hand inlet tee. @ 100', ALL W/AL COATED (JOB PLAN 5.4)	EA.	1
3. CONCRETE (RISER BASE) (JOB PLAN 5.4)	CU.YD.	2.4
4. Connecting BANDS, 30" dia. x 24" wide ^{WATER TIGHT}	EA.	3
5. Elbow - 30" O.M. (FABRICATED ON OUTLET SECTION) ^(SEE SHEET 2-FB)	EA.	1
6. SAND DRAIN (ANTI-SEEP DRAIN - JOB PLAN 3.8P)	CU.YD.	6.1
7. Sch 40, 4" PVC PIPE (ANTI-SEEP DRAIN, J.P. 3.8P)	L.F.T.	35
8. Timber Pipe Support (JOB PLAN 4.0)	EA.	1
9. CATHODIC PROTECTION SYSTEM (JOB PLAN 3.6)	EA.	1
10. TRASH RACK (JOB PLAN 6.4)	EA.	1
11. Reinforcing Steel (RISER BASE - JOB PLAN 5.4)	LBS.	80
12. EARTH FILL (TOTAL)	CU.YD.	6686
13. EXCAVATION (TOTAL)	CU.YD.	9165



TYPICAL CROSS SECTION OF DAM

EARTH DAM

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

SEE ATTACHED SPEC. PACKETS

Notes:

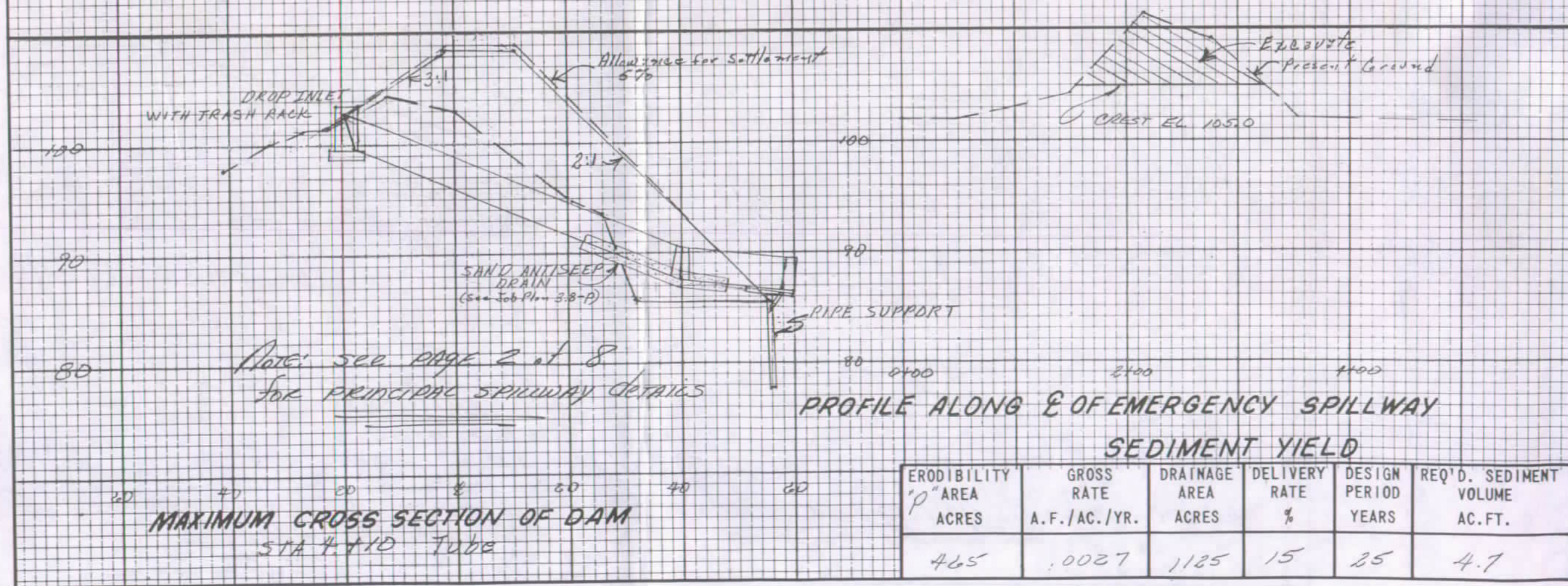
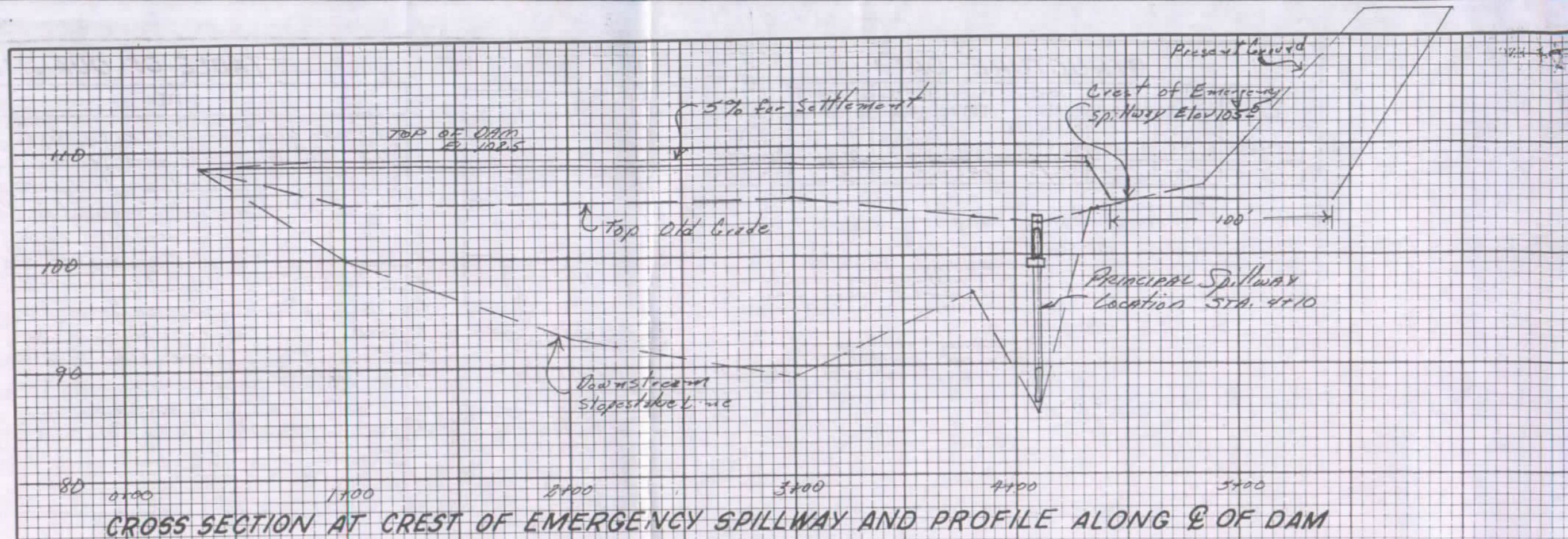
1. ALL CORRUGATED METAL PIPE IS TO BE WATER TIGHT - EITHER CAULKED SEAM CLOSE RIVETED ANNULAR CORRUGATIONS OR HELICAL CORRUGATED PIPE.
2. See construction spec. 5D-15 for installation & backfill requirements for the corrugated metal pipe
3. Notify NRCS TECHNICIAN PRIOR TO CATHODIC PROTECTION INSTALLATION.
 JOB PLAN NO. 1.0
4. REMOVE EXISTING CORRUGATED METAL PRINCIPAL SPILLWAY PIPE & dispose.

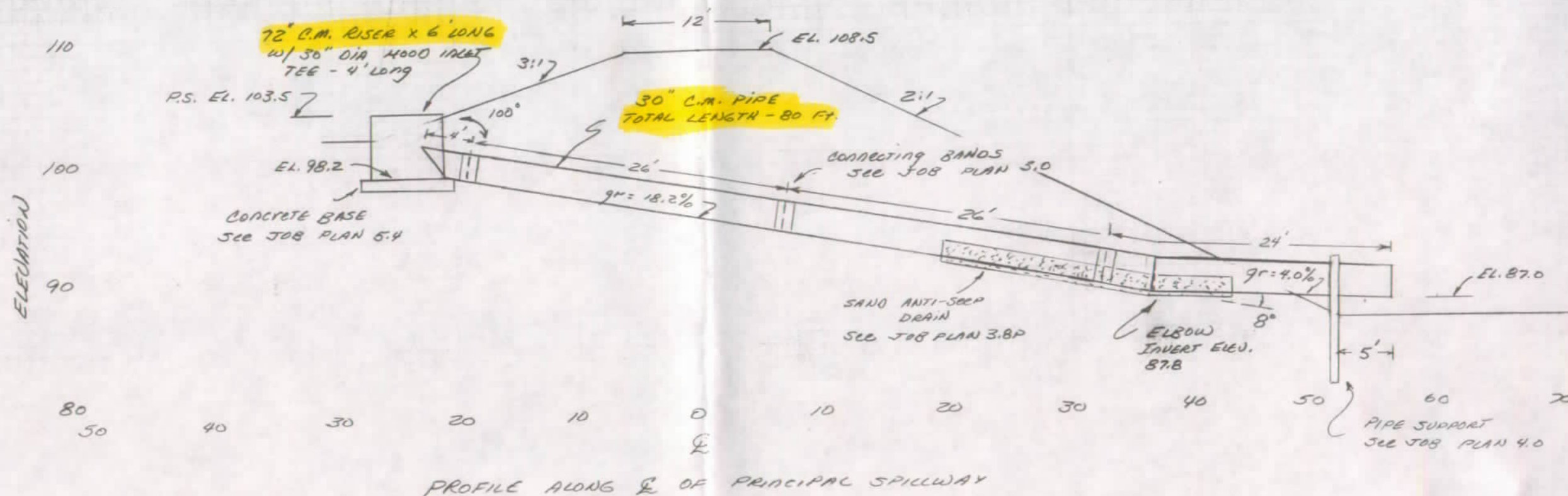
OPERATOR: RALPH JONES

CONSERVATION DISTRICT: Hooker (Jackson Co. DAM SITE)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed: <u>Russell</u>	Drawn: <u>Angels</u>	Traced: <u>Angels</u>	Checked: <u>Angels</u>
Date: <u>8/16</u>	Title: <u>Hooker Dam</u>	Sheet: <u>1</u>	Project No. <u>1</u>





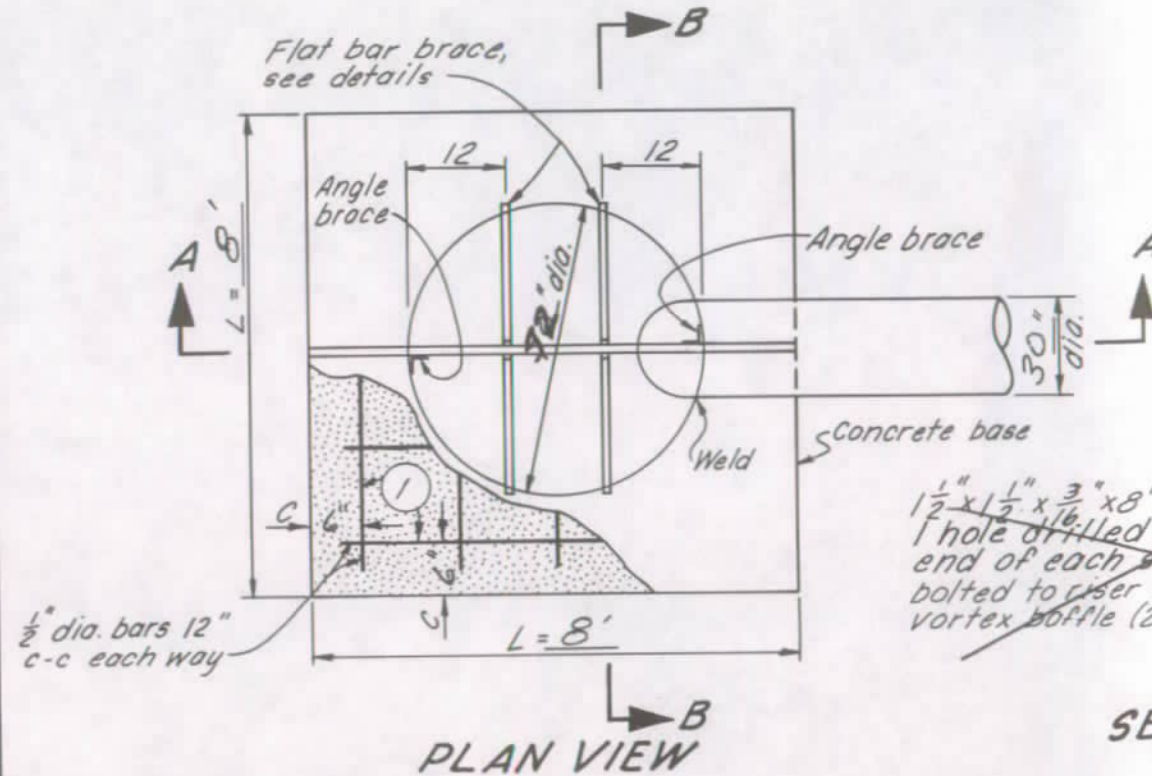
PIPE NOTES:

1. RISER & BARREL ARE TO BE VINYL COATED CORRUGATED STEEL.
2. RISER IS TO BE 72" DIA., 10 GA., TOTAL LENGTH 6'-0" WITH PREFABRICATED TEE, 30" DIA. WITH HOOD INLET, TOTAL LENGTH ON TEE INCLUDING HOOD INLET IS 4'-0".
3. BARREL IS TO BE 30" DIA., 16 GA. FABRICATED IN 3 SECTIONS WITH THE END SECTION BEING 24 FT. INCLUDING THE ELBOW (SEE ABOVE).

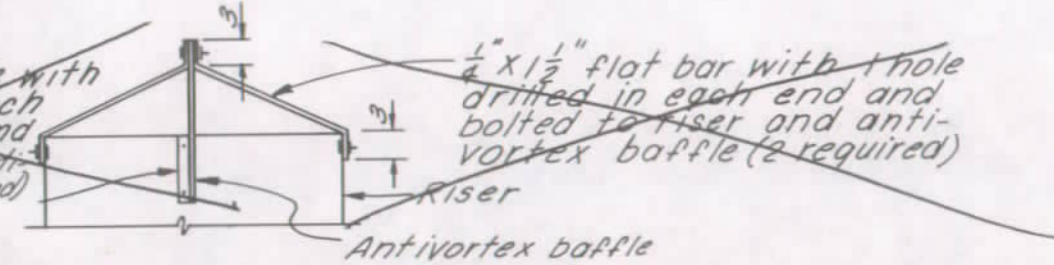
RALPH JONES FARM POND Hawken Co. S. Dak.	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed _____	Approved by _____
Drawn <u>5. Jussell</u> <u>8/96</u>	Title _____
Traced _____	Title _____
Checked _____	Sheet <u>2</u> of <u>8</u>
	Drawing No. _____

STEEL SCHEDULE AND CONCRETE QUANTITIES

RISER DIA. IN.	BARREL DIA. IN.	BAR SIZE	MARK	TYPE	NO. REQ'D.	LENGTH FT.-IN.	TOTAL LENGTH FT.-IN.	TOTAL WT. LB.	CONC. CU.YD.	C IN.	L FT.-IN.
72	30	4	1	STR.	16	7'-6"	120	80	2.4	6"	8'-0"



~~1 1/2" x 1 1/2" x 3/16" x 8" angle with 1 hole drilled in each end of each side and bolted to riser and antivortex baffle (2 required)~~

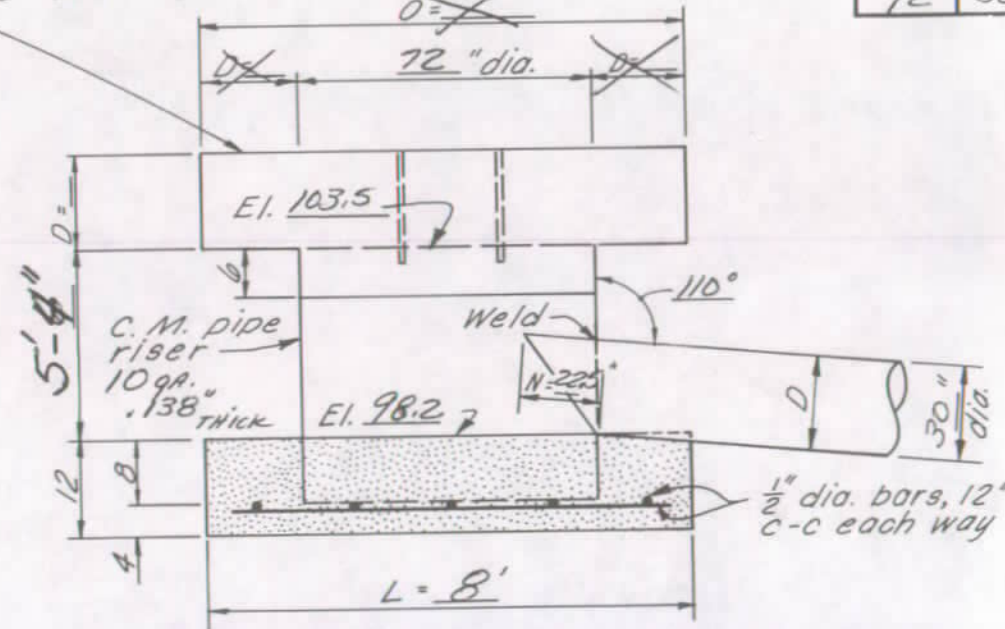


SECTIONAL ELEVATION B-B

STRUCTURAL STEEL AND ANTIVORTEX BAFFLE QUANTITIES

RISER DIA. IN.	D IN.	N IN.	O FT.-IN.	BAFFLE AREA SQ.FT.	BAFFLE WT. LB.	1/4" X 1 1/2" FLAT BAR LENGTH, FT. IN.	NO. REQ'D.	FLAT BAR WT. LB.	1 1/2" X 1 1/2" X 3/16" ANGLE INCHES	NO. REQ'D.	ANGLE WT. LB.
72	30	22.5	—	—	—	—	—	—	—	—	—

~~Antivortex baffle required, 0.138" thick. If trash rack is required, see notes 3 and 5. JOB PLAN 6.4 for TRASH RACK~~



SECTIONAL ELEVATION A-A

NOTES:

- ALL CUTS SHALL BE SAW OR SHEAR CUTS.
- ALL GALVANIZING DAMAGED BY CUTTING, DRILLING, OR WELDING SHALL BE REPAIRED BY PAINTING WITH TWO COATS OF ZINC DUST-ZINC OXIDE PRIMER.
- FOR TRASH RACK AND BAFFLE DETAILS, SEE PLAN SERIES 6.
- ALL BOLTS SHALL HAVE A NUT AND SPLIT WASHER.
- ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED, CADMIUM PLATED, OR STAINLESS STEEL.
- HOLES IN BRACES SHALL BE SPACED AND LOCATED TO MATCH CORRUGATIONS IN PIPE AND BAFFLE.

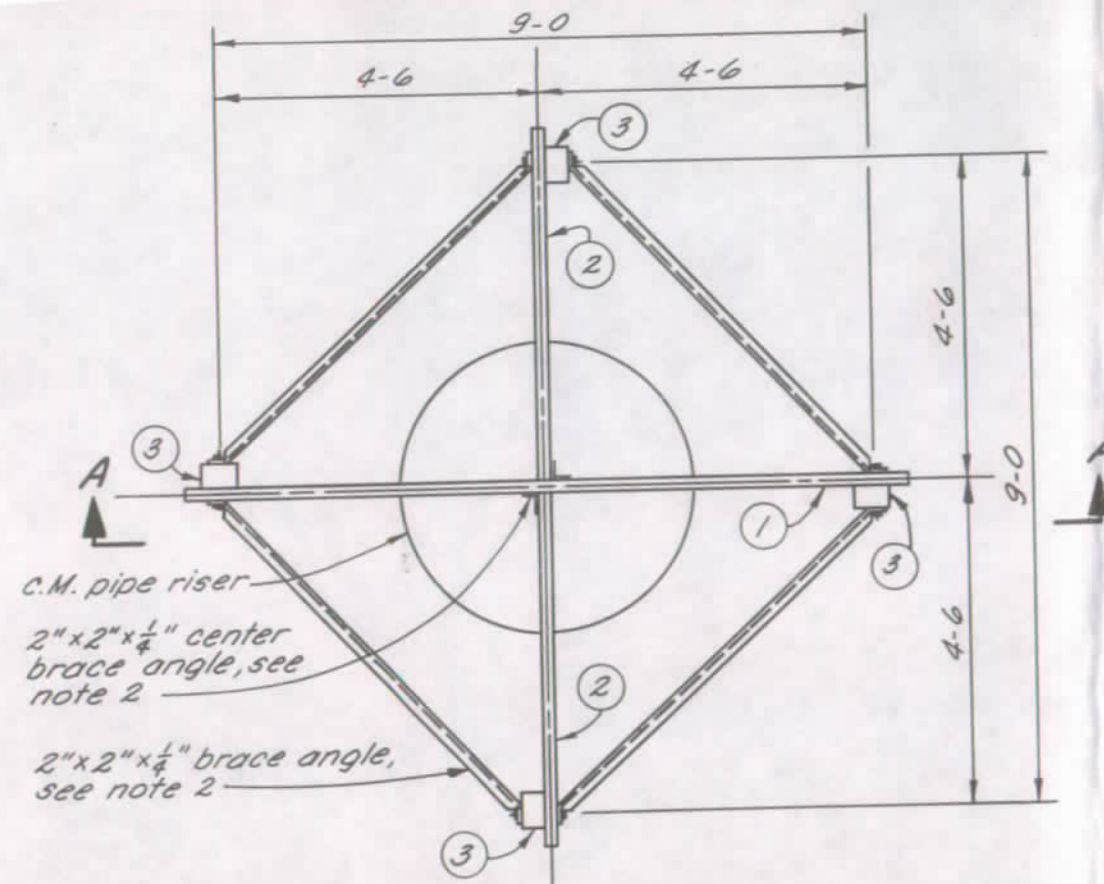
RISER AND HOOD INLET COMBINATION

OPERATOR: <u>RALPH JONES</u>	
CONSERVATION DISTRICT: <u>Haskell Co.</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>S. Quissell</u>	Date: <u>8/96</u>
Drawn: <u>S. Quissell</u>	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Sheet: <u>3</u> of <u>8</u>
Drawing No. _____	

REFERENCE: GUIDE PLAN NO. 5.4

JOB PLAN NO. 5.4

5, N-29, 073.5-4a

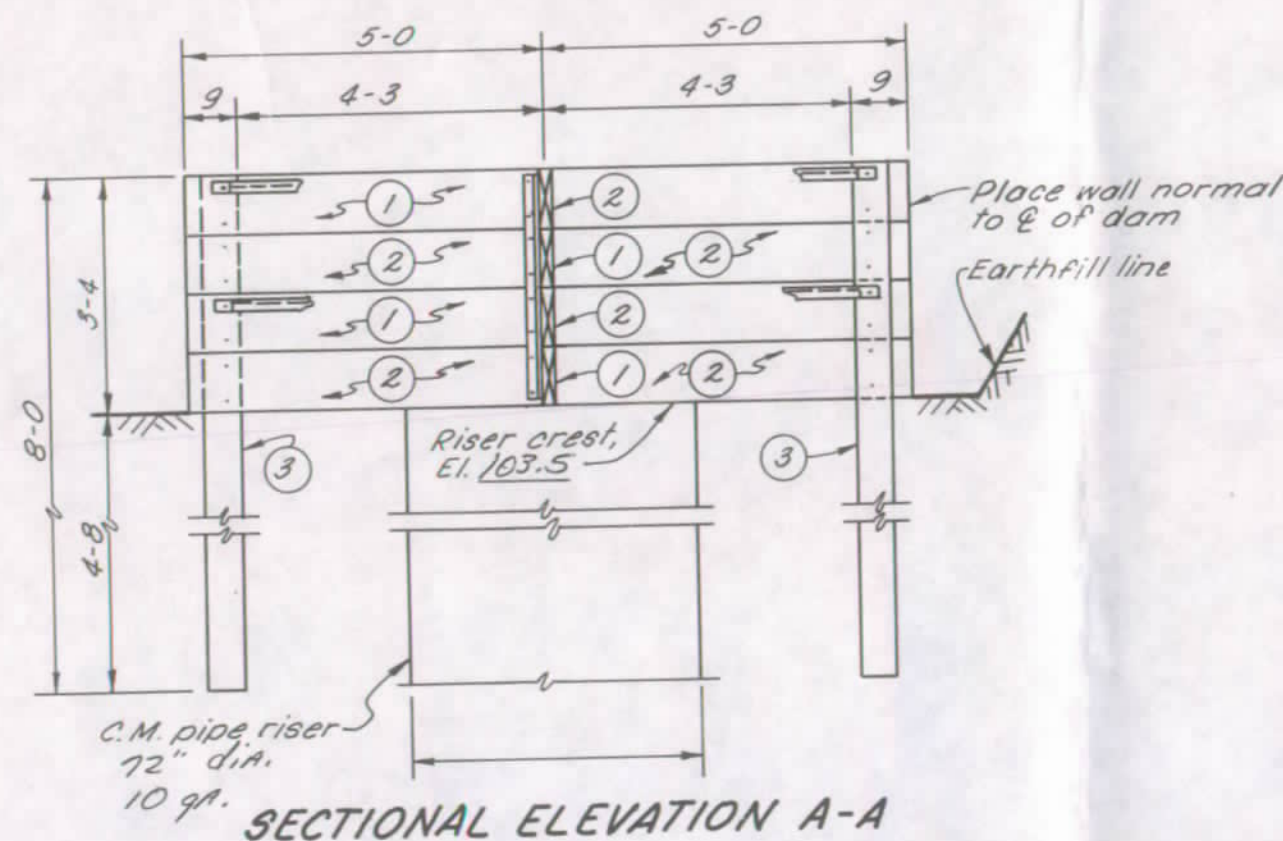


C.M. pipe riser

2" x 2" x 1/4" center brace angle, see note 2

2" x 2" x 1/4" brace angle, see note 2

PLAN VIEW



C.M. pipe riser
72" dia.
10 ft.

Riser crest,
El. 103.5

Place wall normal
to E of dam
Earthfill line

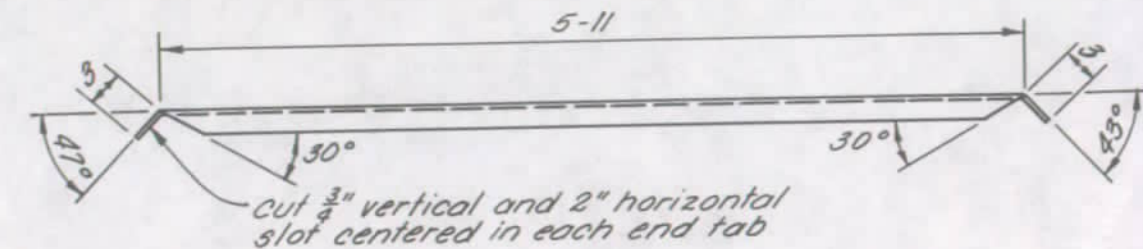


TABLE OF QUANTITIES

ITEM	MARK	NO. REQ'D.	QUANTITY
2" X 10" X 10' PRESSURE TREATED LUMBER	1	4	67 BD.FT.
2" X 10" X 4'-11" PRESSURE TREATED LUMBER	2	8	66 BD.FT.
4" X 6" X 8' PRESSURE TREATED POST	3	4	64 BD.FT.
2" X 2" X 1/4" X 6'-5" STEEL ANGLE		8	164 LB.
2" X 2" X 1/4" X 3'-2" STEEL ANGLE		2	20 LB.
5/8" X 8" STEEL BOLTS, NUTS, 2 WASHERS		32	32 SETS
1/2" X 3" STEEL BOLTS, NUTS, 2 WASHERS		32	32 SETS

NOTES:

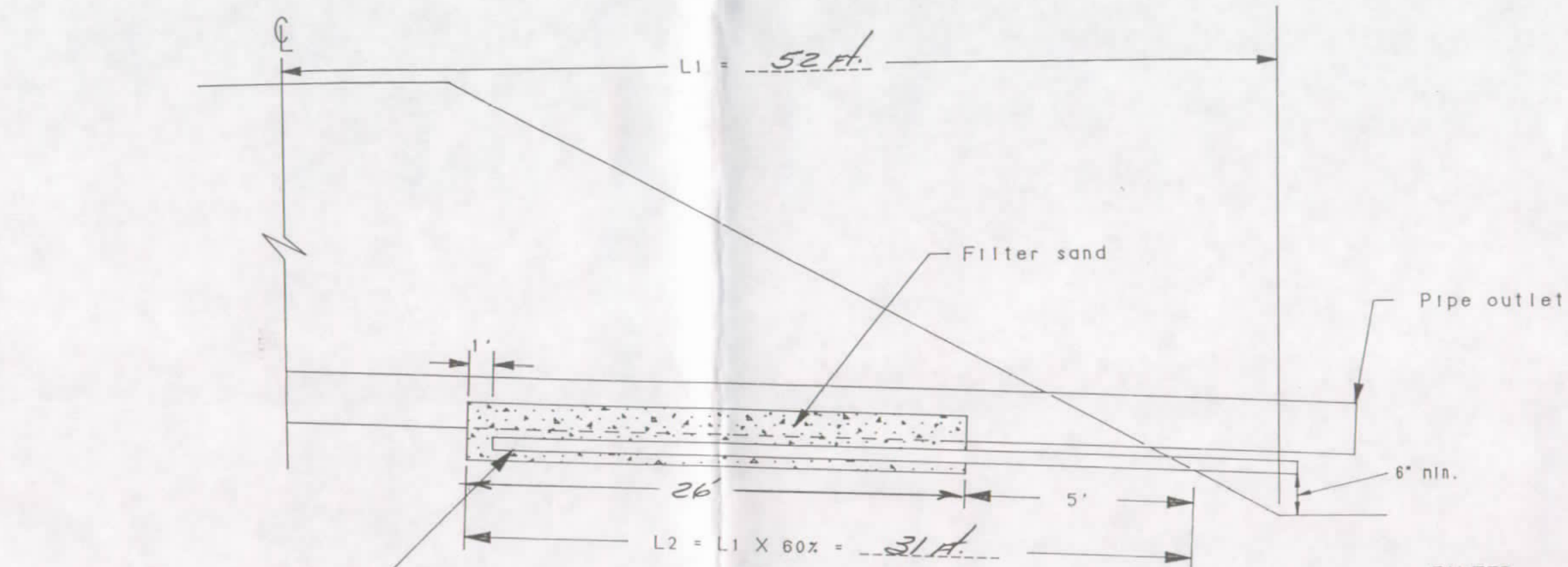
- TO 4" X 6" POSTS (4 REQUIRED) BOLT 2" X 10" BOARDS USING TWO 5/8" X 8" BOLTS PER 2" X 10" BOARD. DO NOT PLACE BOLTS CLOSER THAN 1 1/2" FROM EDGE OF BOARD.
- FOR CENTER BRACE ANGLES DRILL 8 - 9/16" HOLES 5/8" FROM OUTER EDGE OF EACH LEG OF EACH ANGLE AND CENTERED 5 1/4" APART ALONG THE LEG.
- ATTACH BRACE ANGLES TO TOP BOLT ON TOP 2" X 10" BOARD AND TO TOP BOLT ON NEXT TO BOTTOM BOARD.

TRASH RACK AND BAFFLE
FOR RISER DIA. 36" THRU 60"

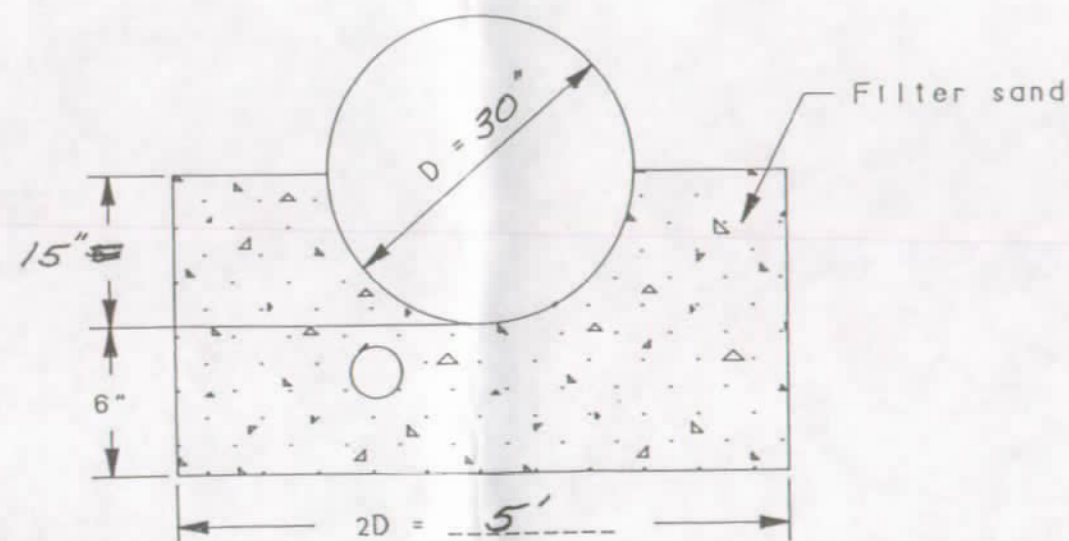
OPERATOR: <u>RALPH JONES</u>	
CONSERVATION DISTRICT: <u>Asakos</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>S. Quisenberry</u>	Date: <u>8/90</u>
Drawn: <u>S. Quisenberry</u>	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Sheet: <u>4</u> of <u>8</u>
	Drawing No. _____

JOB PLAN NO. 6.4

5,N-29,073.6-4a



SIDE VIEW



UPSTREAM VIEW

FILTER GRADATION

SIEVE SIZE	PERCENT PASSING
3/8"	100
4	95-100
8	80-100
16	50-85
30	25-60
50	10-30
100	2-10

Volume Sand Required = 6.1 cu. yd.

SAND ANTISEEP DRAIN

NOTE:

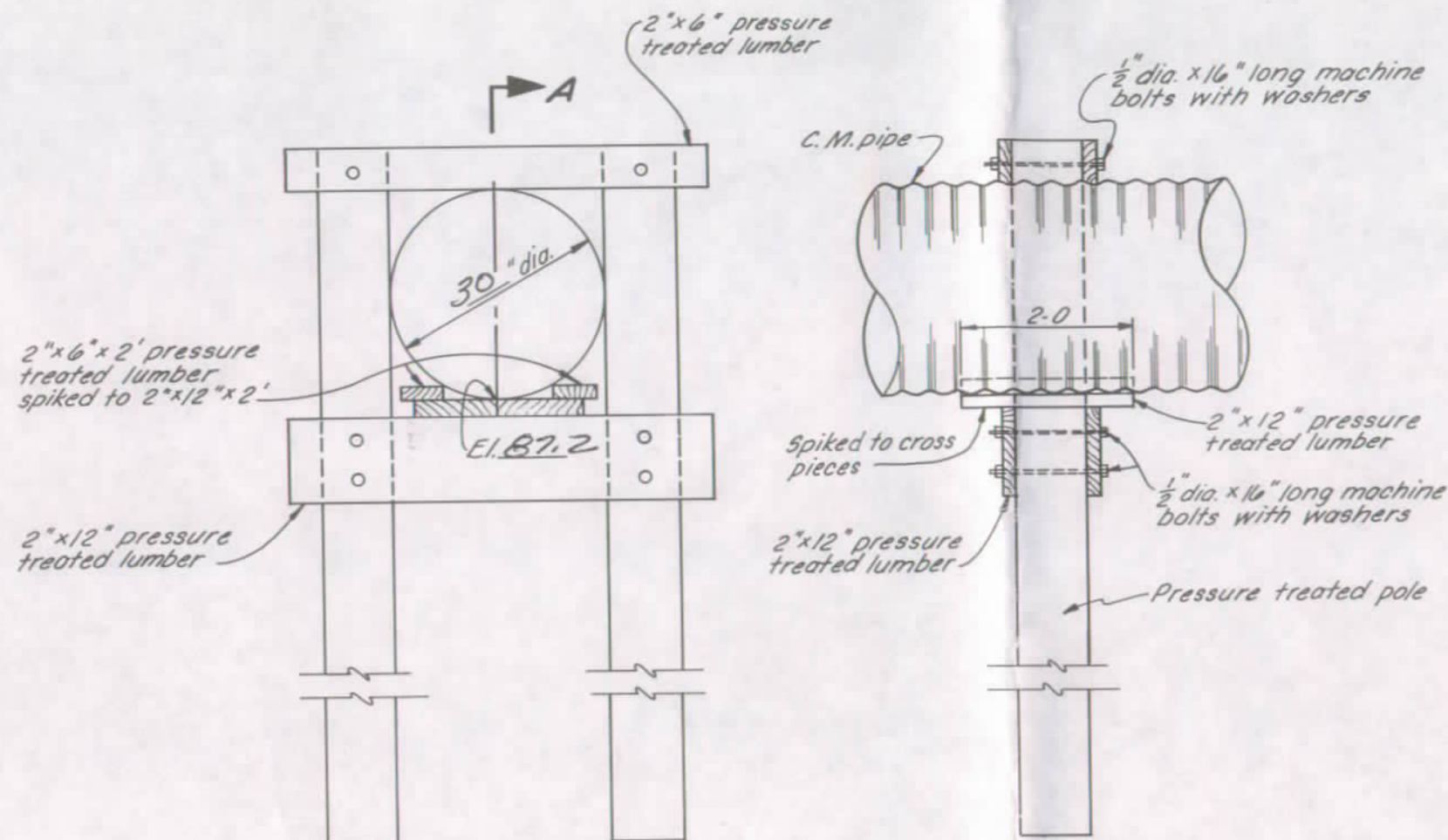
1. THE 4" DIA. PIPE SHALL BE SDR 35 PVC, OR STRONGER
2. PROVIDE AN ANIMAL GUARD ON DRAIN OUTLET PIPE. DRILL 2. 1/2" DIA. HOLES, ON 6" FROM END OF PIPE AND PLACE A 3/8" DIA., 5 1/2" LONG GALVANIZED STEEL BOLT THRU THEM AND SECURE WITH A NUT (PLACE BOLT HORIZONTAL).
3. FILTER SAND WILL BE CLEAN PEA AGGREGATE OR CONCRETE SAND.

4. Note: Concrete Sand - washed & well graded MAY BE USED FOR THE ANTI-SEEP DRAIN.

Rev. 3/96

JOB PLAN NO. 3.8-P

OPERATOR <u>RALPH JONES</u>	
CONSERVATION DISTRICT <u>Alaska</u>	
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	
Designed <u>S. Quissell</u>	Date <u>8/96</u>
Drawn <u>S. Quissell</u>	Approved by _____
Traced _____	Title _____
Checked _____	Title _____
	Sheet No. <u>5</u> of <u>8</u>
	Dwg. No. _____



ELEVATION
SECTIONAL ELEVATION A-A

TABLE OF QUANTITIES

ITEM	LENGTH FOR 30" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 10" DIA.	10'-0"	EACH	2
2" X 12" PRESSURE TREATED LUMBER	5'-0"	EACH	2
2" X 6" PRESSURE TREATED LUMBER	5'-0"	EACH	2
2" X 12" PRESSURE TREATED LUMBER	2'-0"	EACH	2
2" X 6" PRESSURE TREATED LUMBER	2'-0"	EACH	2
1/2" DIA. MACHINE BOLTS WITH NUTS	1'-4"	EACH	6
1/2" DIA. WASHERS	—	EACH	12

REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

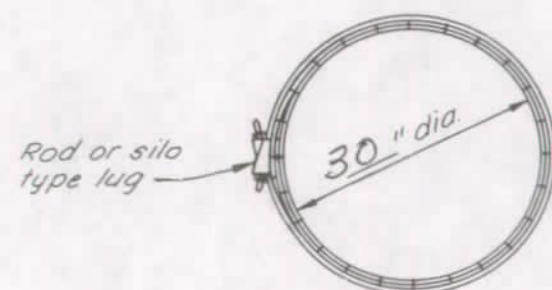
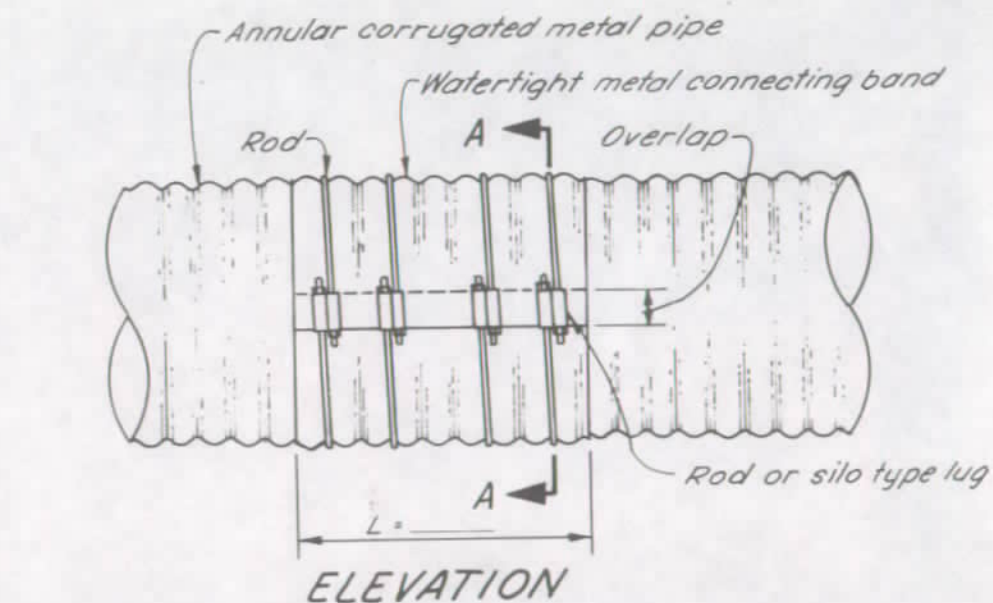
NOTES:

- HAND OR MACHINE TAMP BACKFILL THOROUGHLY AROUND FOOTINGS AND COLUMNS.

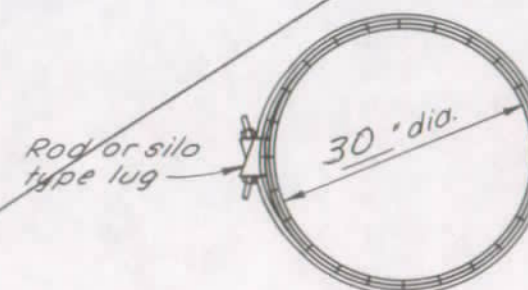
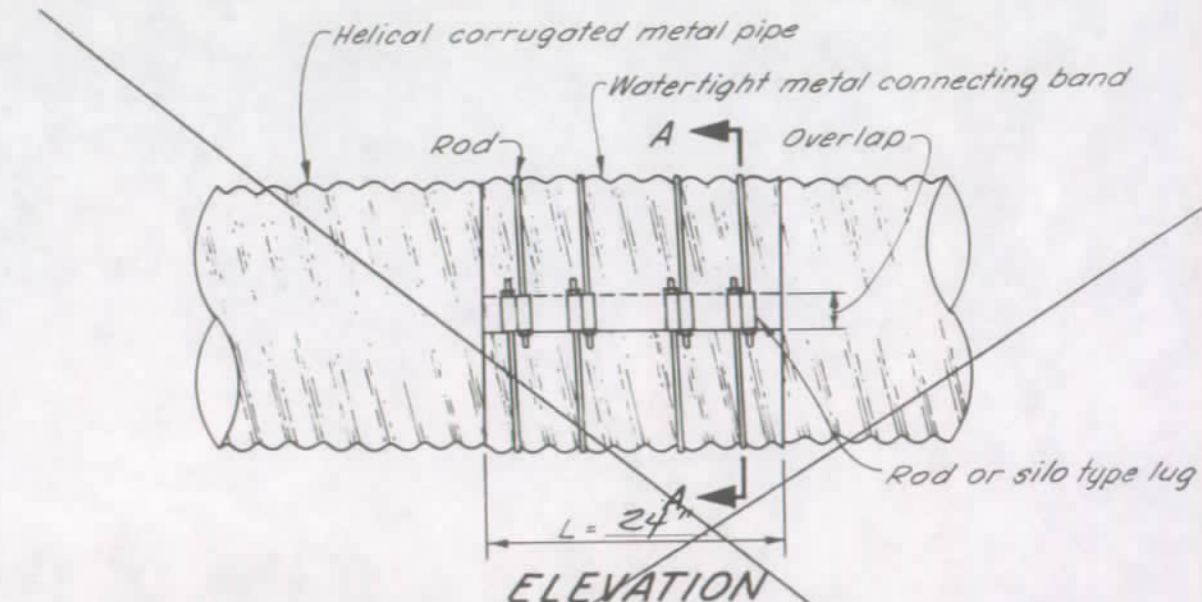
TIMBER PIPE SUPPORT

OPERATOR: <u>Ralph Jones</u>	
CONSERVATION DISTRICT: <u>Haskell</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>J. Puissell</u>	Date: <u>8/96</u>
Drawn: <u>J. Puissell</u>	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Sheet: <u>6</u> of <u>8</u>
	Drawing No. _____

5, N-29,073.4a



SECTIONAL ELEVATION A-A



SECTIONAL ELEVATION A-A

DIMENSIONS AND QUANTITIES

PIPE DIA. INCHES	MINIMUM "L" INCHES	APPROX. OVERLAP INCHES	NUMBER OF RODS & LUGS	MINIMUM ROD DIA. IN.	NEOPRENE GASKET WIDTH INCHES	ASPHALT MASTIC GAL.
6-18	12	2	2	1/2	12	1/2
21-30	24	3	4	1/2	12	1 1/2
36-48	24	6	4	1/2	12	2

NOTES:

1. WATERTIGHTNESS WILL BE OBTAINED BY USE OF (1) 3/8" THICK NEOPRENE GASKET (WIDTH AS SHOWN) OR (2) ASPHALT MASTIC SEALING MATERIAL TO COVER FULL WIDTH OF BAND.
2. CROSS OUT BAND AND QUANTITIES NOT APPLICABLE.

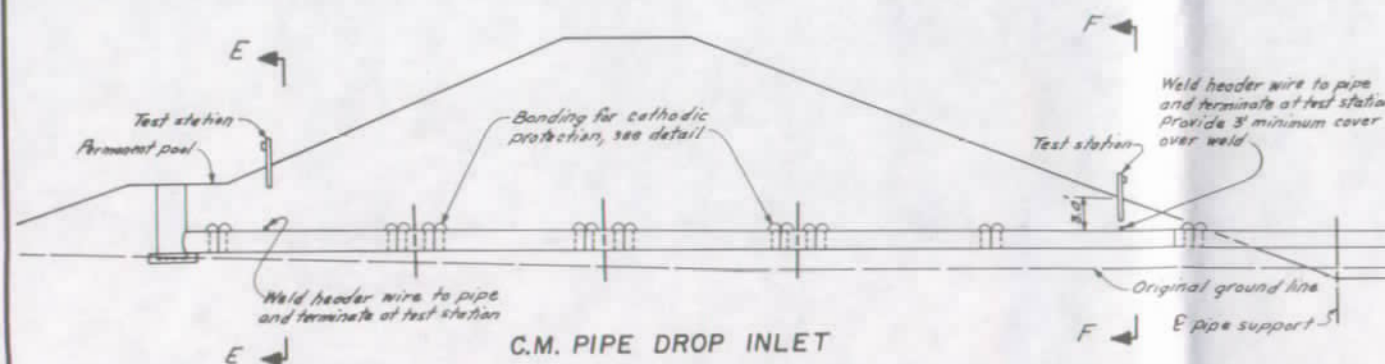
WATERTIGHT CONNECTING BAND FOR ANNULAR AND HELICAL CORRUGATED METAL PIPE

OPERATOR: <u>RALPH JONES</u>	
CONSERVATION DISTRICT: <u>ANKOKS</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed <u>J. Quissel</u>	Date <u>8/96</u>
Drawn	Approved by
Traced	Title
Checked	Sheet <u>7</u> of <u>8</u>
	Drawing No.

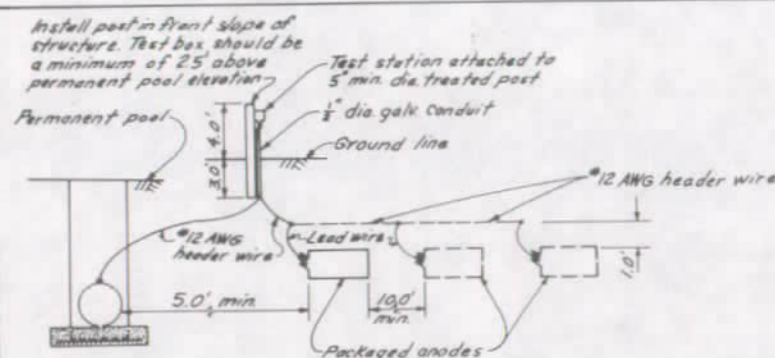
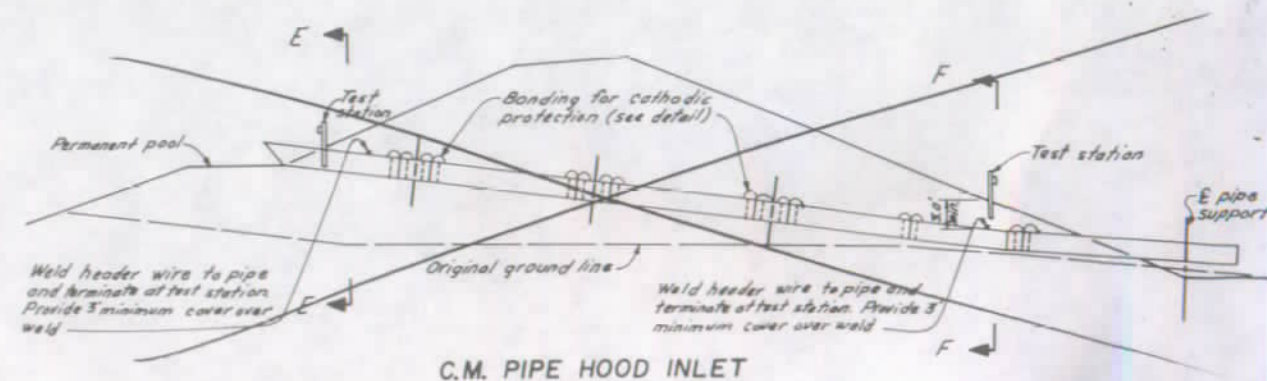
JOB PLAN NO. 3.0

5, N-29, 073.30

Note: 1 piece anti-seep collars are shown, see note 6.

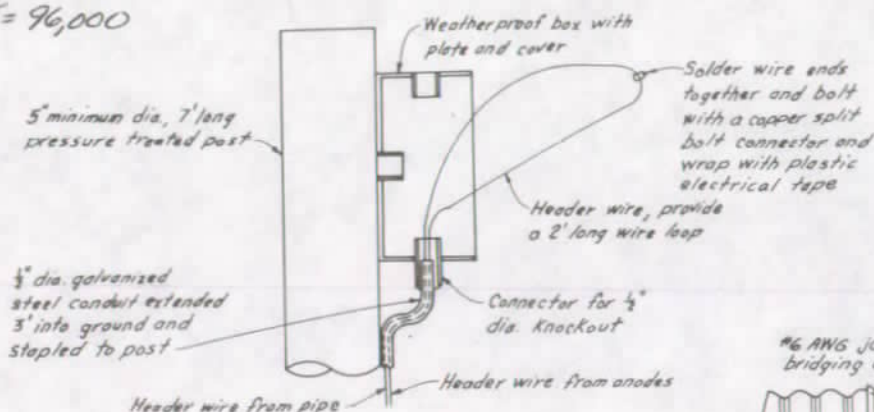


Note: 1 piece anti-seep collars are shown, see note 6.

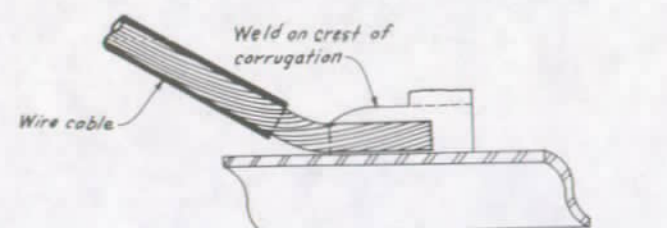


PACKAGED MAGNESIUM ANODES REQUIRED (Upstream)

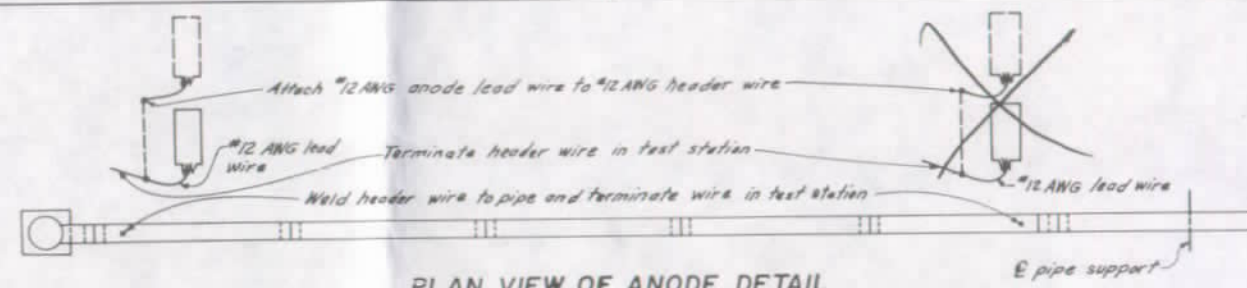
32# 2A. $K=96,000$
SECTION E-E



DETAIL OF ANODE TEST STATION

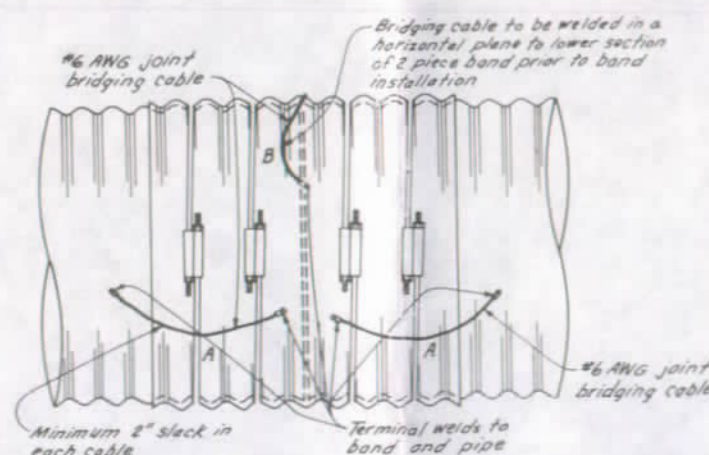


DETAIL OF CABLE WELD CONNECTION



PLAN VIEW OF ANODE DETAIL

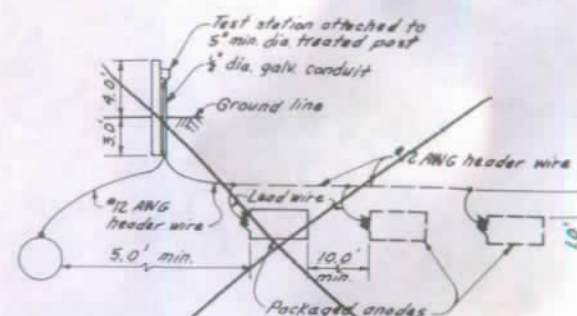
TABLE OF QUANTITIES		
ITEM	UNIT	QUANTITY
5" DIA. 7' LONG PRESSURE TREATED POST	EACH	1
1/2" DIA. 6' LONG GALV. STEEL CONDUIT	EACH	1
WEATHERPROOF BOX	EACH	1
PACKAGED MAGNESIUM ANODES	EACH	12
#6 AWG JOINT BRIDGING CABLE	LIN. FT.	12
#12 AWG HEADER WIRE	LIN. FT.	150



PLAN VIEW CABLE FOR C.M. PIPE AND COUPLING BAND

NOTES:

1. LOCATE ANODES IN NATURAL SOIL WITHIN 200' OF TEST STATION AS DIRECTED BY THE ENGINEER.
2. PIPE WELD CONNECTION AREAS SHALL BE ROUGHENED AND CLEANED TO EXPOSE THE BASE METAL TO PROVIDE GOOD CONDUCTIVITY.
3. TERMINAL WELDS ON BANDS SHALL BE PLACED OUTSIDE OF BAND LAP AREA TO AVOID INTERFERENCE WITH LAP.
4. AFTER WELDING, ALL EXPOSED METAL SHALL BE COATED AS SPECIFIED FOR PATCHING DAMAGED PIPE COATING.
5. THE POWDER WELDING CARTRIDGE SHALL BE EQUAL TO OR BETTER THAN CADWELD CARTRIDGE CA 15+.
6. WHEN TWO PIECE ANTI-SEEP COLLARS ARE USED, WELD A LENGTH OF BRIDGING CABLE TO UPPER AND LOWER PIECES AND FROM PIPE TO COLLAR.
7. BACKFILL AROUND ANODE WITH WELL TAMPED, MOIST CL MATERIAL.
8. MINIMUM TRENCH WIDTH FOR ANODES SHALL BE 2'.
9. ANODE MAY BE LOCATED EITHER DOWNSTREAM OR UPSTREAM OR BOTH LOCATIONS.
10. CROSS OUT VIEWS NOT APPLICABLE.



PACKAGED MAGNESIUM ANODES REQUIRED (Downstream)

SECTION F-F

JOINT BRIDGING CABLE LENGTHS

PIPE DIAMETER	CABLES			
	A	B	A	B
12	2-0	2	1-0	1
15	2-0	2	1-3	1
18	2-0	2	1-6	1
21	2-0	2	1-9	1
24	2-0	2	2-0	1
30	2-0	2	2-6	1
36	2-0	2	3-0	1
42	2-0	2	3-6	1
48	2-0	2	4-0	1
54	2-0	2	4-6	1
60	2-0	2	5-3	1

* B CABLES ARE NOT REQUIRED WITH ONE PIECE BANDS

These cables only require 17 TWO PIECE BANDS ARE USED

CATHODIC PROTECTION SYSTEM

OPERATOR: Ralph Jones

CONSERVATION DISTRICT: Hooker

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed by: S. Quisenberry
Drawn by: S. Quisenberry
Traced by: S. Quisenberry
Checked by: S. Quisenberry

[illegible]

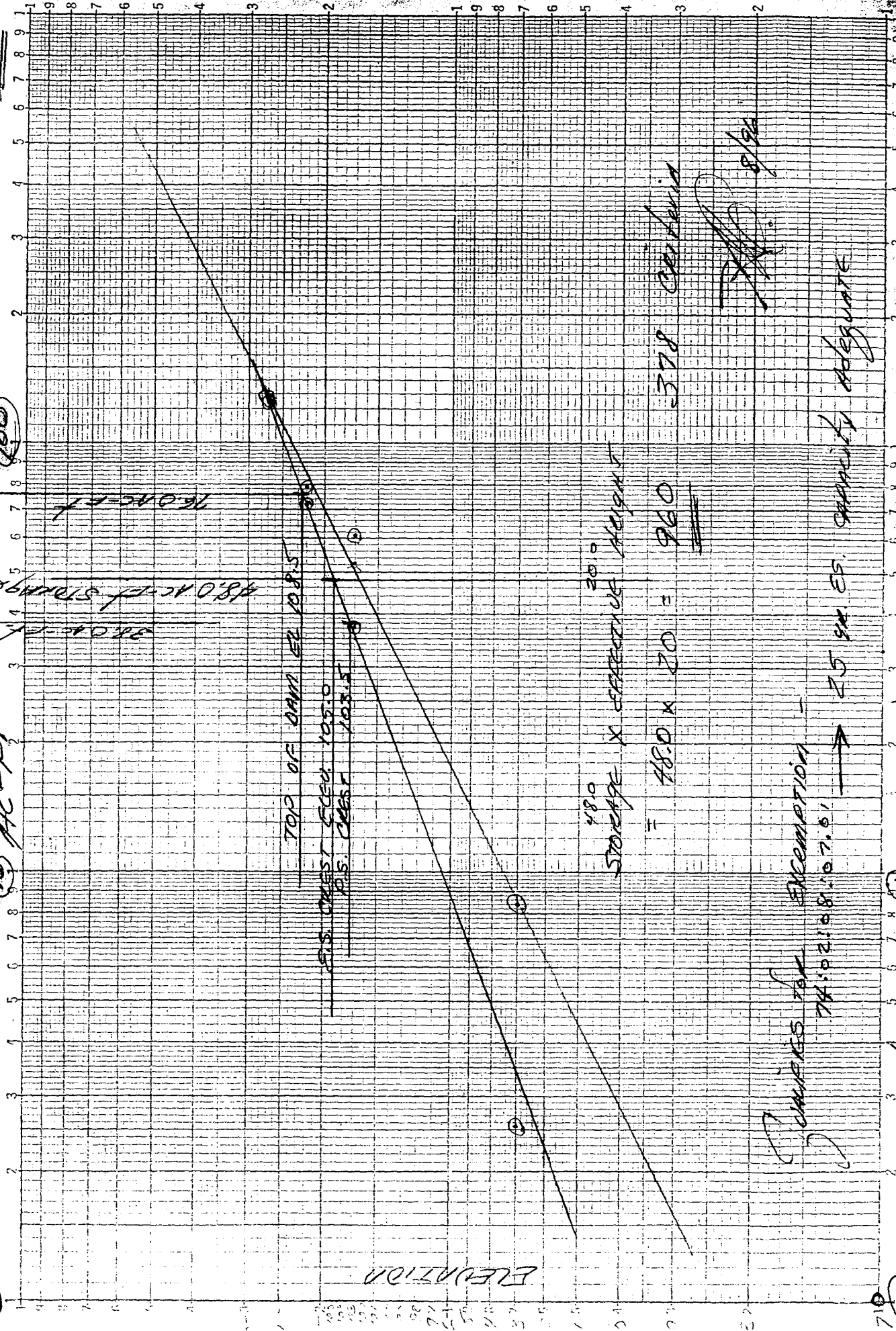
NOT LOGARITHMIC
REFUEL A EXHAUSTIVE USE IN U.S.

Storage
100 AC-Ft

Scott Jans

RTMC

NORTH of CANAL



CHANGES FOR EXEMPTION -

74102108107.01

25 sq. ft. capacity adequate

11

SMALL CATEGORY 3 Dam

378 ACRES POOL AREA

10

Hooker Co. RALPH JONES
J. Quissell 8/96
CATHODIC PROTECTION NW 1/4 NW 1/4 4-25-23E

CATHODIC PROTECTION REQUIREMENTS

ESTIMATED SOIL RESISTIVITY FROM SOIL SURVEY.

Pierie - Samsil soils
High Corrosivity (1,000 - 2,000 ohm-cm from soils P.D.)

Assume an $R = 1,000$ ohm-cm

TOTAL CURRENT REQUIREMENT

$$I_t = C A / R$$

$C = 120$ VINYL COATED CMP

$A = \text{SURFACE AREA} = (\pi)(1.25)^2(2)(80) = 628.3 \text{ sq. ft.}$

$(\pi)(3)^2(2)(6) = 113 \text{ sq. ft.}$

TOTAL = 741.4 sq. ft.

$R = 1,000$

$$I_t = (120)(741.4) / 1,000 = 89 \text{ ma}$$

AVERAGE CURRENT OUTPUT PER ANODE - I_m

$$I_m = I_o = K / R$$

Use 5.5-32 MAGNESIUM ANODES

5.5 sq. ft

32# EACH

$K = 96,000$

$$I_m = 96,000 / 1,000 = 96 \text{ ma}$$

Hooker Jones
J. Quissell 8/96
Cathodic Protection

2

N = NUMBER OF ANODES REQUIRED

$$N = I_t / I_a = 89 \text{ ma} / 96 \text{ ma} = .92 = \underline{1 \text{ ANODE}}$$

LIFE OF ANODE

$$Y = 47 \frac{\text{W}}{I_a}$$

$$= (47) \frac{32^{\#}}{96 \text{ ma}} = \underline{\underline{15.7 \text{ YEARS LIFE}}}$$

NOTE: Design Life Should be a Min of 15 YRS.

Use (1) 5.5-32 magnesium anodes

32[#] TOTAL

$$K = 96,000$$

30" METAL PIPE

1DAMS2 XEQ 09/10/96
REV 01/01/90
TIME 16:28:54

STRUCTURE SITE ANALYSIS COMPUTER PROGRAM
SCS TECHNICAL RELEASE 48, (USER MANUAL) DATED JAN. 1990

***** THIS PROGRAM IS IN TEST STATUS *****

***** 80-80 LIST OF INPUT DATA *****

DAMS2 01/01/90 SCOTT JONES SJNC JACKSON COUNTY SD.
STRUCTURE SCOTT JONES SJNC NW4 T2S R23E REBUILD DAM.

87.0	0.0
93.0	2.5
103.0	37.2
108.0	72.2

} A-C
Data

ENDTABLE

WSDATA	2A101	AC	80	2 yr	1125	1.57	25 yr.
PDIRECT			2.0		AS CRIST	3.9	
POOLDATA	ELEV			TUBE length	103.5	100.0	87.0
PSDATA	1		80		30" dia.		0.025
PSINLET	ELEV		1.0		18.85	72" riser	CMP
ESCREST	ELEV				105.0		
ESDATA	01		170		0.03	3	0.035 .10
BTMWIDTH	FEET		100				
CLPROFILE			- .5		CL PROFILE OF EST. ORIGINAL GROUND		
	1		106		100	100	200 87
	282		90.0		310	100	331 103
	360		106				

ENDTABLE

COMMENT (378 SPECS.) SCOTT JONES DAM NORTH OF CORRALS.
COMMENT DESIGNED FOR 25 YEAR EMERGENCY SPILLWAY CAPACITY
COMMENT 2 YR. 24 HR. PRIN SPWY STORM TYPE 1
COMMENT (TYPE 1 STORM PROVIDES SAME VOLUME OF RUNOFF WITH
COMMENT LOWER PEAK FLOWS WHICH ARE CLOSER TO ACTUAL STREAM
COMMENT GAUGING RECORDS PUBLISHED FOR THE BAD RIVER IN USGS
COMMENT PUBLICATION 80-80)
COMMENT 25 YR. EMER.SPWY STORM (SEE PREVIOUS RUN UTILIZING
COMMENT TWO EMERGENCY SPILLWAYS AT ELEVATIONS 0.5 FT APART)
COMMENT used farm.dat sample file
COMMENT PRINCIPAL SPILLWAY IS 30" CORRUGATED METAL WITH
COMMENT 72" RISER
COMMENT THIS DAM IS CLASSIFIED AS A CATEGORY 3 SMALL DAM
COMMENT QUALIFYING FOR THE EMERGENCY SPILLWAY EXEMPTION REQUIRING
COMMENT ONLY A 25 YR. EMERGENCY SPILLWAY STORM. (STATE STATUTES)
COMMENT NRCS CRITERIA-- STAGE X STORAGE = 960
COMMENT CLASS a, 378 FARM POND
COMMENT OUTPUT OPTIONS, COL. 11-20 BELOW---L=ELEV-DISCHGE RATING TABLES
COMMENT P=PLOTTED HYDROGRAPHS
COMMENT E=COMPUTE YARDAGE
GO, DESIGN L TYPE2 24 TYPE1 378 24
ENDJOB

***** MESSAGE - DRAINAGE AREA FROM WSDATA CONTROL BEING CONVERTED FROM
ACRES TO SQUARE MILES FOR COMPUTATION PURPOSES.

1DAMS2 XEQ 09/10/96
REV 01/01/90

S SJNC JACKSON COUNTY SD.

WSID = SCOTT JO

(378 SPECS.) SCOTT JONES DAM NORTH OF CORRALS.

DESIGNED FOR 25 YEAR EMERGENCY SPILLWAY CAPACITY

2 YR. 24 HR. PRIN SPWY STORM TYPE 1

(TYPE 1 STORM PROVIDES SAME VOLUME OF RUNOFF WITH
LOWER PEAK FLOWS WHICH ARE CLOSER TO ACTUAL STREAM
GAUGING RECORDS PUBLISHED FOR THE BAD RIVER IN USGS
PUBLICATION 80-80)

25 YR. EMER.SPWY STORM (SEE PREVIOUS RUN UTILIZING
TWO EMERGENCY SPILLWAYS AT ELEVATIONS 0.5 FT APART)
used farm.dat sample file

PRINCIPAL SPILLWAY IS 30" CORRUGATED METAL WITH
72" RISER

THIS DAM IS CLASSIFIED AS A CATEGORY 3 SMALL DAM
QUALIFYING FOR THE EMERGENCY SPILLWAY EXEMPTION REQUIRING
ONLY A 25 YR. EMERGENCY SPILLWAY STORM. (STATE STATUTES)

NRCS CRITERIA-- STAGE X STORAGE = 960

CLASS a, 378 FARM POND

OUTPUT OPTIONS, COL. 11-20 BELOW--L=ELEV-DISCHGE RATING TABL

P=PLOTTED HYDROGRAPHS

E=COMPUTE YARDAGE

1DAMS2

XEQ 09/10/96 S SJNC JACKSON COUNTY SD.

REV 01/01/90 S SJNC NW4 T2S R23E REBUILD DAM.

TIME 16:28:54

SITE = SCOTT

PASS= 1

WSID= SCOTT J

SUBW= 01

PAGE= 1

HUMID- SUBHUMID CLIMATE AREA

BASIC DATA

DESIGN CLASS A1 =LT 3000

STORM DISTRIBUTION-PSH 24 HOUR TYPE I RAINFALL DISTRIBUTION

STORM DISTRIBUTION ESH...24 HOUR TYPE II RAINFALL DISTRIBUTION

PRECIP.-	P-PS1 DAY	P-PS10 DAY	P-ES	P-FB
	2.00	.00	3.90	3.90

WSDATA-	CN	DA-SM	TC/L	-/H
	80.00	1.76	1.57	.00

SITEDATA-	PERM POOL	CREST PS	FP SED	QRF
-----------	-----------	----------	--------	-----

	.00	103.50	100.00	.00
BASEFLOW	INITIAL EL	EXTRA VOL.		
.00	.00	.00		
PSDATA- NO. COND.	COND L	D/W	-/H	
1.00	80.00	30.00	.00	
		72" dia		
PS N	KE	WEIR L	TW EL	
.025	1.00	18.85	87.10	
2ND STG	ORF H	ORF L	START ES	
.00	.00	.00	.00	
CRESTS- ES1	ES2	ES3	ES4	ES5
.00	105.00	.00	.00	.00
EMG DATA- SIDE SLOPE	EXIT N	EXIT SLOPE		
3.00	.035	.100		
EMG DATA- ES TYPE	ES LENGTH	ES ENTRANCE N		
1	170	.030		
BTM WIDTH- BW1	BW2	BW3	BW4	BW5
100.00	.00	.00	.00	.00

***** NOTE - THIS IS ONLY A PRELIMINARY EMG RATING CURVE OF DISCHARGE/FT OF WIDTH AND DOES NOT INCLUDE SIDESLOPE CORRECTION OR REVISED RATING USING ACTUAL EMG. CONFIGURATION.

EMG ID CODE	01	ELEVATION INCREMENT (FT) = 1.000	
DISCHARGES-Q1	Q2	Q3	Q4
1.514	5.664	11.740	19.405
Q5	Q6	Q7	Q8
28.359	38.488	49.591	61.702
Q9	Q10	Q11	Q12
74.635	88.402	102.949	118.218

1DAMS2 -----

XEQ 09/10/96	S SJNC JACKSON COUNTY SD.	WSID= SCOTT J
REV 01/01/90	S SJNC NW4 T2S R23E REBUILD DAM.	SUBW= 01
TIME 16:28:54	SITE = SCOTT	PAGE= 2
	PASS= 1	

CREST PS	103.50 FT	40.7 ACFT	.00 AC	.0 CFS
SED ACCUM	103.50 FT	40.7 ACFT	.00 AC	.0 CFS
STARTING E	103.50 FT	40.7 ACFT	.00 AC	.0 CFS
SCS-PSH	D= 24.00 HR	P= 2.00 IN	Q= .56 IN	DA = 1.76 SM
	TC= 1.57 HR	CN= 80.00	VOL= 52.7 ACFT	
PEAK =	113.0 CFS, AT 11.0 HRS.			

ROUTED RESULTS - HYD TYPE	EMAX	VOL-MAX	AMAX	QMAX
---------------------------	------	---------	------	------

SCS-PSH 104.66 FT 48.8 ACFT .00 AC 73.5 CFS

PS STORAGE 8.1 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

DRAWDOWN (DDT) TEST 103.50 FT 40.7 ACFT .00 CFS
CONTROL IS .000 DETENTION STORAGE

TIME = 1.20 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

RATING TABLE DEVELOPED, SITE = SCOTT
BY PROGRAM FOR PS AND EMG SPILLWAYS

*Primary 2nd
Spillway Rating*

RATING TABLE NUMBER 1

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	103.50	.00	.00	40.70	.00
2	103.80	9.49	9.49	42.78	.00
3	104.10	26.85	26.85	44.87	.00
4	104.39	49.33	49.33	46.95	.00
5	104.69	75.95	75.95	49.04	.00
6	105.10	76.84	76.84	51.93	.00
7	105.52	77.72	77.72	54.83	.00
8	105.93	78.59	78.59	57.72	.00
9	106.35	79.45	79.45	60.62	.00
10	106.76	80.30	80.30	63.51	.00
11	107.17	81.14	81.14	66.41	.00
12	107.59	81.97	81.97	69.30	.00
13	108.00	82.79	82.79	72.20	.00

FULL CONDUIT FLOW, ELEV = 104.69 FT

1DAMS2 -----

XEQ 09/10/96 S SJNC JACKSON COUNTY SD.

WSID= SCOTT J

REV 01/01/90 S SJNC NW4 T2S R23E REBUILD DAM.

SUBW= 01

TIME 16:28:54

SITE = SCOTT

PASS= 1

PAGE= 3

ES CREST 104.66 FT 48.8 ACFT .00 AC 73.5 CFS

PS STORAGE 8.1 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

STARTING E 103.50 FT 40.7 ACFT .00 AC .0 CFS

EFFECTIVE HEIGHT(H) = 18.2 FEET, PRODUCT = 887. (H * STORAGE AT CREST EMG.)

INPUT DESIGN CLASS = A1 =LT 3000

SCS-ESH *Duration* D= 24.00 HR *Precip 24hr* P= 3.90 IN Q= 1.96 IN DA = 1.76 SM
TC= 1.57 HR CN= 80.00 VOL= 183.7 ACFT

PEAK = 850.6 CFS, AT 13.0 HRS.

SCS-FBH D= 24.00 HR *25 years* P= 3.90 IN Q= 1.96 IN DA = 1.76 SM
TC= 1.57 HR CN= 80.00 VOL= 183.7 ACFT

PEAK = 850.6 CFS, AT 13.0 HRS.

 RATING TABLE DEVELOPED, SITE = SCOTT
 BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 2

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	103.50	.00	.00	40.70	.00
2	103.63	2.72	2.72	41.61	.00
3	103.76	7.69	7.69	42.51	.00
4	103.89	14.12	14.12	43.42	.00
5	104.02	21.74	21.74	44.32	.00
6	104.15	30.38	30.38	45.23	.00
7	104.28	39.93	39.93	46.13	.00
8	104.41	50.32	50.32	47.04	.00
9	104.53	61.48	61.48	47.94	.00
10	104.66	73.36	73.36	48.85	.00
11	104.67	75.59	74.22	48.91	.00
12	104.68	77.83	75.09	48.97	.00
13	104.69	80.07	75.95	49.04	.00
14	104.86	105.60	76.31	50.20	.00
15	105.02	131.23	76.67	51.35	.00
16	105.32	177.56	77.30	53.44	.00
17	105.68	239.82	78.07	55.99	.00
18	106.35	524.68	79.45	60.62	.00
19	107.17	991.85	81.14	66.41	.00
20	108.00	1594.09	82.79	72.20	.00

FULL CONDUIT FLOW, ELEV = 104.69 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	100.0	106.89	64.4	.0	2.23	15.6

PEAK - CFS Q-PS Q-ES Q-TOT
 DISCHARGE = 80.6 752.9 833.5

 CRITICAL CRITICAL CRITICAL 25% OF
 DEPTH VELOCITY SLOPE-S/C S/C
 EMERGENCY FT FT/SEC FT/FT FT/FT
 SPILLWAY---- 1.19 6.09 .017 .023

 DURATION ATTACK SUMMATION
 FLOW OE/B VEL**2 DELTA T
 EMERGENCY HRS ACFT/FT (FT/SEC)**2 HRS
 SPILLWAY---- 6.6 1.1 218.6

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED
 ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.47 FT/SEC
 EXIT SLOPE = .100 FT/FT
 FLOW DEPTH = .704

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 104.66 FT.

DRAWDOWN (DDT) TEST 103.50 FT 40.7 ACFT .00 CFS
 CONTROL IS .000 DETENTION STORAGE

TIME = 1.18 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	100.0	106.89	64.4	.0	2.23	15.6

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	80.6	752.9	833.5

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY SPILLWAY----	FT	FT/SEC	FT/FT	FT/FT
	1.19	6.09	.017	.023

	DURATION FLOW	ATTACK OE/B	SUMMATION
EMERGENCY SPILLWAY----	HRS	ACFT/FT	VEL**2 DELTA T (FT/SEC)**2 HRS
	6.6	1.1	218.6

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.47 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .704

***** ES378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM, REQUIRED FOR THIS PASS. NEW TOP OF DAM ELEVATION = 107.89

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
MINIMUM ES	100.0	107.89	71.4	.0	3.23	22.6

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGES =	82.6	1433.1	1515.7

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY SPILLWAY----	FT	FT/SEC	FT/FT	FT/FT
	1.82	7.46	.015	.020

1DAMS2 -----
XEQ 09/10/96 S SJNC JACKSON COUNTY SD. WSID= SCOTT J
REV 01/01/90 S SJNC NW4 T2S R23E REBUILD DAM. SUBW= 01
TIME 16:28:54 SITE = SCOTT PASS= 1 PAGE= 4

ES CREST 105.00 FT 51.2 ACFT .00 AC 156.4 CFS

PS STORAGE 10.5 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

STARTING E 103.50 FT 40.7 ACFT .00 AC .0 CFS

EFFECTIVE HEIGHT(H)= 18.5 FEET, PRODUCT = 947. (H * STORAGE AT CREST EMG.)

INPUT DESIGN CLASS = A1 =LT 3000

SCS-ESH D= 24.00 HR P= 3.90 IN Q= 1.96 IN DA = 1.76 SM
 TC= 1.57 HR CN= 80.00 VOL= 183.7 ACFT

PEAK = 850.6 CFS, AT 13.0 HRS.

SCS-FBH D= 24.00 HR P= 3.90 IN Q= 1.96 IN DA = 1.76 SM
 TC= 1.57 HR CN= 80.00 VOL= 183.7 ACFT

PEAK = 850.6 CFS, AT 13.0 HRS.

 RATING TABLE DEVELOPED, SITE = SCOTT
 BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 3

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	103.50	.00	.00	40.70	.00
2	103.80	9.49	9.49	42.78	.00
3	104.10	26.85	26.85	44.87	.00
4	104.39	49.33	49.33	46.95	.00
5	104.69	75.95	75.95	49.04	.00
6	104.73	76.04	76.04	49.31	.00
7	104.77	76.12	76.12	49.58	.00
8	104.81	76.20	76.20	49.85	.00
9	104.85	76.29	76.29	50.12	.00
10	104.88	76.37	76.37	50.39	.00
11	104.92	76.45	76.45	50.66	.00
12	104.96	76.54	76.54	50.93	.00
13	105.00	76.62	76.62	51.20	.00
14	105.15	99.73	76.94	52.25	.00
15	105.30	122.94	77.26	53.30	.00
16	105.57	164.89	77.83	55.19	.00
17	105.90	216.40	78.52	57.50	.00
18	106.50	446.63	79.76	61.70	.00
19	107.25	824.83	81.29	66.95	.00
20	108.00	1313.98	82.79	72.20	.00

FULL CONDUIT FLOW, ELEV = 104.69 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	100.0	107.23	66.8	.0	2.23	15.6

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	81.3	735.1	816.4

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.17	6.05	.017	.023

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	6.6	1.0	214.2

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED
 ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.37 FT/SEC
 EXIT SLOPE = .100 FT/FT
 FLOW DEPTH = .694

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 105.00 FT.

DRAWDOWN (DDT) TEST 103.50 FT 40.7 ACFT .00 CFS
 CONTROL IS .000 DETENTION STORAGE

TIME = .97 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	100.0	107.23	66.8	.0	2.23	15.6

PEAK - CFS DISCHARGE =	Q-PS	Q-ES	Q-TOT
	81.3	735.1	816.4

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.17	6.05	.017	.023

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	6.6	1.0	214.2

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.37 FT/SEC
 EXIT SLOPE = .100 FT/FT
 FLOW DEPTH = .694

***** ES378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM, REQUIRED FOR THIS PASS. NEW TOP OF DAM ELEVATION = 108.23

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
MINIMUM ES	<u>100.0</u>	108.23	73.8	.0	3.23	22.6

PEAK - CFS DISCHARGES =	Q-PS	Q-ES	Q-TOT
	83.3	1382.8	1466.1

3.5 - 3.23 = 0.27

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.78	7.38	.015	.020

***** WARNING - THIS SOLUTION EXCEEDED MAXIMUM INPUT ELEVATION (108.00)

1DAMS2....JOB NO. 1 COMPLETE

SCOTT JO S SJNC JACKSON COUNTY SD.

0 SUBWATERSHED(S) ANALYZED

1 STRUCTURE(S) ANALYZED

5 HYDROGRAPHS ROUTED AT LOWEST SITE

0 TRIALS TO OBTAIN BOTTOM WIDTH FOR SPECIFIED VELOCITY(S)

DAMS2.....COMPUTATIONS COMPLETE

1

SUMMARY TABLE 1

DAMS2 VERSION 01/01/90

WATERSHED ID	RUN DATE	RUN TIME
SCOTT JO	09/10/96	16:28:54

>>>	SITE ID	SUBWS ID	SUBWS DA (SQ MI)	CURVE NO.	TC (HRS)	TOTAL DA (SQ MI)	TYPE DESIGN	STRUC CLASS	<<<
	SCOTT	01	1.76	80.	1.57	1.76	378CR	A1	

PASS NO.	DIA/ WIDTH (IN/FT)	ES CREST ELEV (FT)	BTM WIDTH (FT)	MAX HP (FT)	MAX ELEV (FT)	YARDAGE EMB (CY)	OE/B* (AF/FT)	EXIT* VELOCITY (FT/SEC)	TYPE HYD
1	30.0	104.66	100.00	3.23	107.89	0.	1.1	10.47	MINIMUM ES
1	30.0	105.00	100.00	3.23	108.23	0.	1.0	10.37	MINIMUM ES

* OE/B AND EXIT VELOCITY ARE BASED ON THE ROUTED HYDROGRAPH AND WILL NOT RELATE TO THE MAX. ELEV.(TOP OF DAM), WHICH IS SET BY MINIMUM DESIGN CRITERIA.

DAMS2.....SUMMARY TABLE 1 COMPLETED

SCS DAMS2 VERSION 01/01/90
SCOTT JO FILES

INPUT = D:SJNCMETL
OUTPUT = D:SJNCMETL.OUT

DATED 09/10/96 16:28:54



United States
Department of
Agriculture

Natural Resources
Conservation
Service

Federal Building, Room 239
515 9th Street
Rapid City, SD 57701-2663

September 12, 1996



Gale Selken
Natural Resources Engineer
DENR-Division of Water Rights
Joe Foss Building
523 E Capitol
Pierre, SD 57501-3182

SUBJECT: Ralph Jones Dam, Jackson County, SD (Safety of Dams)

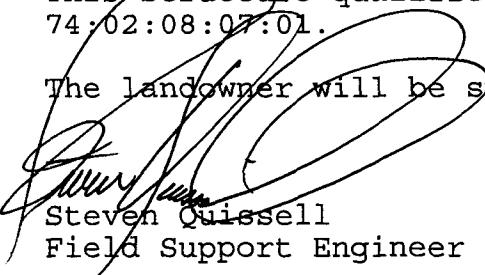
Attached for review and approval by your staff are construction plans and specifications for a stockwater dam for Ralph Jones, NW1/4, NW1/4, S4-T2S-R23E. This is a rehabilitation of an existing dam. The original structure had a principal spillway which rusted out and was subsequently plugged. This action caused the emergency spillway to cut out and threaten the integrity of the dam. The present plans call for raising the dam, installing a new principal spillway and enlarging the emergency spillway.

Structure data is as follows:

NRCS classification - Class a, 378 Tech Guide Standards
State criteria - Category 3, small dam
Fill height - 23.5 ft.
Storage at emergency spillway elevation - 38.0 Ac-ft.
Storage at dam crest - 76 Ac-ft.
Storage x effective height = 960
Crest length - 400'
Principal spillway - 30" CMP
Barrel size - 30"
Riser size - 72"
Emergency spillway width - 100'
Emergency spillway design capacity - 25 yr., 24 hr.
(735 cfs at hp of 2.2 ft.)

This structure qualifies for the exemption under statute
74:02:08:07:01.

The landowner will be submitting a water permit application.


Steven Quissell
Field Support Engineer

cc: Rod Voss, DC, NRCS, Kadoka
Nina Pekron, DC, NRCS, Philip



CONSTRUCTION SPECIFICATIONS

for

RALPH JONES

FARM Pond

1996

Prepared by:

USDA-NATURAL RESOURCES CONSERVATION SERVICE

Assisting:

Heaton

Conservation District

CHECKLIST

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

Check Column	Specification No. SD-	Title
	1	Clearing 6/82
	2	Clearing and Grubbing 6/82
✓	3	Structure Removal 6/82
✓	4	Stripping 6/82
✓	5	Excavation 6/82
	6	Excavated Ponds (Dugouts) 6/82
	7A	Earth Fill - Class A - (Controlled Compaction) 6/82
✓	7S	Earth Fill - Class S - (Method Type Compaction) 6/82
	7U	Earth Fill - Class U - (Uncompacted) 8/71
	8	Rock Riprap and Bedding 6/82
✓	9	Drain Fill and Filter 6/82
	10	Salvaging and Spreading Topsoil 6/82
	11	
	12A	Concrete (Class 3500) 6/82
✓	12B	Concrete for Minor Structures (less than 5 c.y.) 6/82
✓	13	Steel Reinforcement 8/71
	14	
✓	15	Corrugated Metal Pipe Conduits 12/81
✓	16	Timber Fabrication and Installation 7/77
	17	Metal Fabrication and Installation 8/71
	18	Wire Mesh Gabions 6/82
	19	

CONSTRUCTION SPECIFICATIONS

Check Column	Specification No. SD-	Title
	20	Pipeline-Plastic (Irrigation) 6/82
	20A	Pipeline-Plastic (Stockwater and/or Domestic) 6/82
	21	Steel Pipelines 6/82
	22	Concrete Pipelines 6/82
	23	Asbestos Cement Pipelines 8/71
	24	Land Leveling 11/77
	25	Diversion 6/82
	26	Terraces 6/82
	27	Waterway Improvement 8/71
	28	Seeding (Requires Specific Site Recommendations) 8/71
	29	Sodding (Requires Specific Site Recommendations) 8/71
	30	Fencing 6/82
✓	31	Cathodic Protection 11/79
	32	Well 9/80

MATERIAL SPECIFICATIONS

✓	50	Zinc-Coated Iron or Steel Corrugated Pipe 8/71
	51	Aluminum Corrugated Pipe 8/71
	52	Steel Pipe and Fittings 8/71
	53	Concrete Irrigation Pipe, Drainage Pipe, and Drain Tile 10/75
	54	Asbestos-Cement Pipe 6/82
	55	Plastic Pipe 6/82

CONSTRUCTION INSPECTION

SD-3 STRUCTURE REMOVAL

3.1 SCOPE

The work shall consist of the removal, salvage, and disposal of man-made structures (including buried structures and fences).

3.2 REMOVAL

Structures to be removed shall be removed to the extent and depth shown on the drawings or as designated by the technician.

3.3 SALVAGE

Structures designated to be salvaged shall be carefully removed, disassembled (if designated for disassembly) and neatly placed in the storage area shown on the drawings or other areas selected by the contractor and approved by the technician. All salvaged materials shall remain the property of the owner unless otherwise specified.

3.4 DISPOSAL OF REFUSE AND UNSALVAGED MATERIALS

Refuse and unsalvaged materials shall be disposed of by burning and/or burying at locations shown on the drawings or as approved by the technician. Materials to be buried shall be placed at least 2 feet below the surrounding ground line and have a minimum of 2 feet of cover with the finished surface graded to drain. Burning operations shall be subject to all public laws governing such operations.

CONSTRUCTION SPECIFICATION

SD-4 STRIPPING

4.1 SCOPE

The work shall consist of removing topsoil and other undesirable materials from borrow areas and foundations of structures and earth fills.

4.2 GENERAL

The stripping excavation shall extend to a depth sufficient to expose subsoil reasonably free of roots and other perishable material. Excavated earth material deemed satisfactory by the technician shall be used for earth fill. All waste material shall be disposed of in areas shown on the drawings or as directed by the technician. Stripped material suitable for topsoil shall be stockpiled and respread over disturbed areas as directed by the technician.

4.3 STRIPPING FOUNDATIONS

Stripping excavation shall extend to consolidated subsoil and shall be to reasonably smooth surfaces free of unconsolidated or loose soil. Unless otherwise shown on the drawings, foundation slopes shall be excavated to one to one, or flatter slopes.

4.4 STRIPPING BORROW AREAS

The areas from which borrow is to be taken shall be stripped to sufficient depth to expose material suitable for the earth fill.

CONSTRUCTION SPECIFICATION

SD-5 EXCAVATION

5.1 SCOPE

The work shall consist of all excavations to the lines and grades as shown on the drawings and the use and disposal of the excavated materials.

5.2 CLASSIFICATION

Common excavation shall be defined as the excavation of all materials that can be removed and transported by heavy duty construction equipment having a power rating of at least 200 net peak flywheel horsepower 1/, and includes boulders and loose rock less than 1 cu. yd. in volume.

Rock excavation shall be defined as the excavation of all hard compacted or cemented materials requiring blasting or larger equipment than defined under common excavation, including boulders and loose rock 1 cu. yd. or greater in volume.

5.3 USE OF EXCAVATED MATERIALS

Excavated materials deemed satisfactory by the technician shall be used for earth or rock fill to the extent needed.

5.4 DISPOSAL OF WASTE MATERIAL

All surplus or waste material shall be disposed of in areas shown on the drawings or as directed by the technician, and left in a neat, sightly condition and sloped to provide drainage.

5.5 BRACING AND SHORING

Excavated surfaces too steep to be stable shall be supported to prevent soil movement. The contractor shall furnish, place, and subsequently remove the supports.

5.6 STRUCTURE AND TRENCH EXCAVATION

Structure or trench excavation shall be approved by the technician before any structure, pipe, or earth fill is placed in the excavation.

5.7 BORROW EXCAVATION

When quantities of suitable materials obtained from specified excavations are insufficient to construct specified fills.

1/ D8 Caterpillar or equivalent

additional materials shall be obtained from the designated borrow area as directed by the technician.

Borrow pits shall be excavated and finely dressed in a manner to eliminate steep or unstable side slopes or other hazardous or unsightly conditions.

5.8 BLASTING

The transportation, handling, storage, and use of dynamite and other explosives shall be directed by a person of proven experience and ability in blasting operations.

Blasting shall be done in such a way as to prevent damage to the work or unnecessary fracturing of the foundation.

CONSTRUCTION SPECIFICATION

SD-7S EARTH FILL-CLASS S

7S.1 SCOPE

The work shall consist of the construction of compacted earth fills where the amount of compaction is to be controlled by a method type of specification.

7S.2 MATERIALS

All fill materials shall be obtained from required excavations and designated borrow areas. The selection, blending, routing and disposition of materials shall be subject to approval by the technician.

Fill materials shall not contain frozen material, sod, brush, roots, or other perishable materials, or rocks larger than 8 inches in diameter. Fill shall not be placed on a frozen surface.

7S.3 FOUNDATION PREPARATION

After stripping (see stripping specification), the foundation shall be scarified or plowed to a minimum depth of 4 inches. The entire foundation area shall then be compacted by the process used on the fill.

7S.4 PLACEMENT

All foundation excavations and/or preparation shall be completed before placing fill. The fill shall be placed such that the distribution of materials is essentially uniform throughout the entire fill and is free from lenses, pockets, streaks, or layers of materials differing substantially from surrounding material.

Fill, adjacent to structures, shall be placed in a manner that will prevent damage to the structures and allow the structures to assume the backfill loads gradually and uniformly. Equipment weighing more than 400 pounds shall not be operated within 2 feet of any structure.

Fill shall be placed in approximately equal horizontal layers. Fill layer thicknesses shall not exceed 9 inches for machine compaction or 4 inches for hand compaction (including hand directed power tampers adjacent to structures).

7S.5 MOISTURE CONTENT

The fill material shall have a moisture content that when kneaded in the hand will form a ball which does not easily crumble when struck sharply with a pencil or which does not crumble when pressed between the hands.

If the soil is too wet, it will yield free water when kneaded in the hand. The fill may have to be wetted or dried to achieve proper moisture control.

7S.6 COMPACTION (CLASS S)

The fill shall be compacted by one of the following methods.

- a. By routing the hauling and spreading equipment such that all points of the fill is traversed by at least one tread track of the loaded equipment, parallel to the centerline of the fill.
- b. By at least two passes of a tamping (sheepfoot) roller weighing at least 100 pounds per square inch of bearing area.

Fill adjacent to structures shall be compacted to a density equivalent to that of the surrounding fill by means of hand tamping or manually directed power tampers or plate vibrators. Heavy equipment shall not be operated within 2 feet of any structure.

Compaction of fill adjacent to concrete structures shall not be started until the following time limits have elapsed after placement of the concrete.

<u>Structure</u>	<u>Time Interval</u>
Walls and counterforts	14 days
Conduits and Spillway Risers (cast in place)	14 days
Conduits, precast, cradled	2 days
Conduits, precast, bedded	1 day
Anti-seep Collars and Cantilever pipe props	3 days

CONSTRUCTION SPECIFICATION

SD-9 DRAIN FILL AND FILTER

9.1 SCOPE

The work shall consist of furnishing and placing drain fill and filter sands or gravels.

9.2 MATERIALS

a. Quality

Aggregates shall be sand, gravel, or crushed stone, composed of clean, hard, durable mineral particles free from organic matter, clay balls, soft particles or other substances that would interfere with their free draining properties.

Not more than 5 percent of the material may be crushed limestone, not more than 15 percent may be flat, elongated particles, and not more than 5 percent may be finer than a No. 200 sieve.

b. Gradation

The aggregates shall meet the following gradation requirements unless otherwise specified in the plans.

<u>Size</u>	<u>% Finer</u>
3"	100%
1"	90-100%
#4	50- 85%
#50	10- 40%
#200	0- 5%

9.3 BASE PREPARATION

Surfaces on which drain fill will be placed shall be as undisturbed as possible (do not scarify), and will be free of standing water during placement of the fill. Care shall be taken to prevent trench walls from sliding.

9.4 PLACEMENT

Material shall be placed in uniform, approximately 6-inch thick layers. Extreme care shall be taken to assure uniformity of the drain fill, and to prevent segregation or contamination of the drain fill with foreign matter. When collector pipes are included in drains, the fill materials shall be placed in a manner to avoid displacing the pipe.

CONSTRUCTION SPECIFICATION

SD-13 STEEL REINFORCEMENT

13.1 SCOPE

The work shall consist of furnishing and placing steel reinforcement for reinforced concrete.

13.2 MATERIALS

All reinforcement shall be free from all flaky rust, oil, grease, paint, mill scale, or other foreign substance.

Steel bar reinforcement shall be deformed billet steel conforming to either ASTM specification A 15 Intermediate Grade or A 615 Grade 40.

Welded Steel wire fabric reinforcement shall conform to the requirements of ASTM Specification A 185.

13.3 CUTTING AND BENDING

Reinforcing bars may be mill or field cut or bent. All bends shall be made without heating and in accordance with standard practices. (See American Concrete Institute Standard 315). Bars with kinks, cracks, or improper bends will be rejected.

13.4 SPLICING BAR REINFORCEMENT

Unless otherwise specified on the drawings, splices of reinforcing bars shall provide an overlap equal to at least 30 times the diameter of the smaller bar in the splice but not less than 12 inches.

Welded wire fabric shall be overlapped one full mesh (not counting cut portions) and tied as necessary to keep the fabric in place during pouring.

13.5 PLACING

All reinforcement shall be placed as shown on the drawings, and shall be supported and tied in a manner assuring that it will not be moved during concrete placement. Tack welding of bars will not be allowed. Dimensions shown on the plans, indicating concrete cover, are the clear distance from the concrete surface to the reinforcing steel.

Reinforcement hangers and supports shall be of a type and used in such a manner that they will not be exposed or contribute to discoloration and deterioration of the concrete. On structures exceeding one cu. yd. in volume, concrete shall not be placed until the reinforcement has been inspected and approved by the technician.

CONSTRUCTION SPECIFICATION

SD-15 CORRUGATED METAL PIPE CONDUITS

15.1 SCOPE

The work shall consist of furnishing and placing circular, arched, or elliptical corrugated metal pipe and the necessary fittings as shown on the plans.

15.2 MATERIALS

Pipe and fittings shall conform to the requirements of Material Specification SD-50 or Material Specification SD-51, whichever is specified. When specified, caulked seam corrugated metal pipe shall conform to the following additional requirements:

- (1) Caulked seam corrugated metal pipe shall have all circumferential and horizontal seams caulked with an asphalt compound before riveting. This shall be accomplished by applying a uniform bead ($\frac{1}{4}$ inch minimum diameter) of the asphalt compound to the inner lap surface before riveting such that when the rivets are in place all voids are filled and a coating of asphalt is between the lap surfaces.
- (2) The asphalt compound shall consist of an asphalt base combined with asbestos fiber and other inert filler material to form a heavy-bodied compound that will not sag or run out of the seam. The compound should contain 63 to 68 percent solids by weight. It shall be similar in type and equal in quality to Trumbull 5X Asphalt Mastic, knife grade, as manufactured by the Trumbull Asphalt Company of Delaware.

15.3 HANDLING THE PIPE

The Contractor shall furnish such equipment as is necessary to place the pipe without damaging the pipe or coatings. The pipe shall be transported and handled in such a manner as to prevent bruising, scaling, or breaking of the zinc, bituminous or plastic coating.

Whenever the coating or zinc coated pipe is damaged in any individual area larger than 12 square inches, or if more than 0.2 percent of the total surface area of the pipe is damaged, the section will be rejected.

Whenever the coating on bituminous or plastic coated pipe is damaged in any individual area that exceeds 36 square inches or when the total area of breaks exceeds 0.5 percent of the total surface area of the pipe, the section will be rejected.

15.4 REPAIR OF DAMAGED COATINGS

Breaks, scuffs or other damage to the various coatings shall be repaired as follows:

- (1) Zinc Coating - by thoroughly wire brushing and cleaning the damaged area with solvent. Then painting two coats of zinc dust-zinc oxide primer conforming to Federal Specification TT-P-641, Type III or zinc dust paint conforming to Military Specification MIL-P-21035.
- (2) Bituminous Coating - by the application of two coats of hot asphaltic paint or a coating of cold-applied bituminous mastic. The repair coating shall be at least 0.05 inches thick after hardening and shall bond securely and permanently to the pipe. The material shall meet the physical requirements of the original coating.
- (3) Plastic or Vinyl Coating - by using a plastic coating similar and equal to Scotch-Clad Protective Coating 1706, manufactured by 3M Co., 3M Center, St. Paul, Minnesota. Surfaces to be coated must be clean and dry. A 10 mil coating thickness is required. If the repair coating thickness is not measured, six coats shall be applied allowing 30 minutes drying time between coats.

15.5 LAYING AND BEDDING THE PIPE

Unless otherwise specified, the pipe shall be installed in accordance with the manufacturer's recommendations. The pipe shall be laid with the outside laps of circumferential joints pointing upstream and with longitudinal laps at the sides at about the vertical midheight of the pipe. Field welding on corrugated galvanized iron or steel pipe will not be permitted. Unless otherwise specified, the pipe sections shall be joined with water-tight coupling bands, with a minimum width of 12 inches, or flanges for a flange-type connection. The area between pipe and coupling band shall be coated with either an asphalt cement to insure a water-tight joint or a rubber neoprene gasket 3/8 inch thick and as wide as the connecting band ± 1 inch.

The trench or foundation width in or on which the pipe will be laid should be at least: (a) 2 times the pipe diameter, or (b) the pipe diameter plus 2 feet, whichever is the greater.

Pipe should be laid on a moist, compacted foundation (not wet nor hard and dry). Just before the pipe is laid, spread a 2 to 3 inch layer of moist loose soil for the pipe to be placed on. The pipe should make uniform contact with the soil along its entire length.

Perforated pipe shall be laid with perforation down and oriented symmetrically about a vertical centerline. Perforations shall be clear of any obstructions at the time the pipe is laid.

15.6 BACK FILLING

The pipe shall be loaded sufficiently during backfilling around the side to prevent its being lifted from the bedding.

Backfill around the pipe shall be placed in layers not more than 4 inches thick before compaction. Each layer of backfill shall be compacted with power tampers or hand tamping to the same density requirements as specified for the adjacent embankment. Backfill over and around the pipe shall be brought up uniformly on all sides and shall extend a minimum of 2 feet over the pipe before earth embankment with earth moving equipment over the pipe is started. Special care shall be taken not to disturb the grade and alignment during backfill operations.

CONSTRUCTION SPECIFICATION

SD-16 TIMBER FABRICATION AND INSTALLATION

16.1 SCOPE

This specification covers the quality and installation of plywood and pressure treated structural timber poles, posts, and lumber structure and timber and lumber portions of composite structure.

16.2 MATERIAL

a. Plywood

Plywood shall be new, exterior grades, and shall meet Product Standard PS 1-66.

Plywood for use underground shall be pressure treated in accordance with the American Wood Preservers Bureau AWPB-FDN Standard (stamped on plywood).

b. Structural Timber and Lumber

Structural timber and lumber shall be structural grade or better. Structural timber, poles, posts, and lumber shall be new, sound, decay free, straight, not warped or cracked. Unless otherwise specified on the drawings, all lumber and timber except red wood and red cedar shall be treated by any of the following preservatives:

- Commercial Coal Tar Creosote
- Hot and Cold Bath Creosote
- Pentachlorophenol - Commercial Treatment
- Pentachlorophenol - Cold Soaking Method
- AWPB-FDN Standard Preserving Salts

c. Hardware

Bolts, rods, nuts, washers, and other hardware shall be an appropriate grade of steel, and if to be placed underground, shall be galvanized or otherwise corrosion protected.

16.3 INSTALLATION

The material shall be of the dimensions, and installed at the location, as shown on the drawings. All lumber to be treated shall be cut to size, insofar as practical, prior to treatment. Raw ends of lumber which has been cut after treatment shall be immersed in the preservative solution, or painted with four (4) heavy coats of the solution. Each application should be allowed to dry. For home treatment, the preservative manufacturer's directions shall be carefully followed.

CONSTRUCTION SPECIFICATION

SD-31 CATHODIC PROTECTION

31.1 SCOPE

The work shall consist of furnishing and installing all materials necessary to provide cathodic protection to steel pipelines, corrugated metal pipe conduits, and other buried metal structures.

31.2 MATERIALS

a. Anodes

The anodes shall be of the type and size specified. They shall be commercially cast and pre-packaged. Each anode shall have a full length core with a #12 AWG or larger insulated copper lead wire attached.

Zinc anodes shall conform to the requirements of ASTM B418, Type II composition. Unless otherwise specified, the packaged backfill shall be 20-50 percent bentonite and 50-80 percent gypsum.

Magnesium anodes shall have a chemical composition of 5-7 percent aluminum, 2-4 percent zinc, 0.15-0.25 percent manganese, a maximum of 0.7 percent other varied elements, and the balance magnesium. The packaged backfill shall be approximately 75 percent hydrated gypsum, 20 percent bentonite, and 5 percent sodium sulfate.

b. Wire

The wire for header cables, anode leads, and joint bridging shall be a single conductor, stranded, plain annealed copper with a black, high-molecular weight polyethylene insulation and jacket. The polyethylene shall conform to ASTM Designation D1248, Type I, Class C, Grade 5.

Wire for header cables and anode leads shall be #12 AWG copper or larger. Wire for bridging joints shall be #6 AWG copper or larger.

c. Powder Weld Process

The welder and powder charge shall be of the size, type, and composition recommended by the manufacturer for permanently fastening copper wire to copper wire or to steel or cast iron surfaces. The resulting weld shall be a permanent, low resistance copper connection.

d. Silver Solder Process

The silver solder process shall be for very low voltage electrical connections. Manufacturer's instructions shall be followed.

31.3 INSTALLING ANODES

Anodes shall be placed as shown on the drawings. They may be placed either horizontally or vertically and shall be deep enough to have at least three (3) feet of earth cover. Anodes shall not be placed in fill areas, and magnesium anodes must be placed a minimum distance of 10 feet from the pipeline or structure.

Anodes shall be bedded in moist fine grained soils such as CH, CL, MH, or ML. In sandy and gravelly areas, fine materials must be imported for bedding and for covering the anodes to a depth of approximately 6 inches. The packaged anodes and the fine textured soil used for bedding and backfill shall be thoroughly wetted. Compaction of the backfill shall be to the density of the surrounding material.

If the anode cannot be placed in a low or wet location, sand or gravel shall be used as backfill above the fine grained fill around and over the anode. This backfill shall be left at least 6 inches lower than the surrounding area and the surrounding area shaped to direct runoff to the anode.

31.4 ATTACHING THE ANODE

Unless otherwise specified the lead wire from the anode, or from the header wire for multiple anode installations, shall be attached to the pipeline or structure by a powder welding process. The area of damaged pipe or structure coating and the weld shall be covered with a coating equal in quality to the specified original coating.

Unless otherwise specified, the lead wires from anodes shall be connected to the header wire by a powder weld, brazed, or silver soldered. The connection shall be made waterproof and tightly wrapped to a minimum thickness of 24 mils of vinyl plastic electrical tape. The connection shall be thoroughly cleaned to remove all foreign material and moisture before wrapping.

31.5 TESTING STATIONS

A testing station shall be located and installed as shown on the drawings or as otherwise specified. All connections shall be as specified and shall be electrically insulated.

MATERIAL SPECIFICATION

SD-50 ZINC-COATED IRON OR STEEL CORRUGATED PIPE

50.1 SCOPE

This specification covers the quality of zinc-coated iron or steel corrugated pipe and fittings.

50.2 PIPE

Zinc-coated iron or steel corrugated pipe and fittings shall conform to the requirements of Federal Specification WW-P-405 for the specified classes and shapes of pipe, and to the following additional requirements:

- a. Unless otherwise specified, circumferential shop riveted seams shall have a maximum rivet spacing of 6 inches, except that 6 rivets will be sufficient for 12-inch diameter pipe.
- b. When close riveted pipe is specified: (1) the pipe shall be fabricated so that the rivet spacing in the circumferential seams shall not exceed 3 inches, except that 12 rivets will be sufficient to secure the circumferential seams in 12-inch pipe, and (2) in those portions of the longitudinal seams that will be covered by the coupling bands the rivets shall have finished flat heads or the rivets and holes shall be omitted and the seams shall be connected by welding to provide a minimum of obstruction to the seating of the coupling bands.
- c. Double riveting or double spot welding of pipe less than 42 inches in diameter may be required. If specified, the riveting or welding shall be done in the manner specified for pipe 42 inches or greater in diameter.

50.3 COATING

Coating shall conform to the requirements of Federal Specification WW-P-405 for the specified types of coatings.

Water Permit Application No. 2372-2

Ralph Jones

Cat. 3 - Low Hazard Dam

Top of Dam Elev. - 108.5
 2nd Spillway Elev. - 105
 Primary Spillway Elev. - 103.5
 Bottom - 85.5 } Height = 23 ft

Normal Storage Capacity - 38 Ac-Ft
 Intermediate Storage Capacity - 48 Ac-Ft
 Maximum Storage Capacity - 76 Ac-Ft

Int. Capacity x Eff. Height. $48 \times 20 = 960 < 3000 \therefore 25 \text{ yr. Flood}$
Minimum Spillway Design

From USGS WRI 80-80 "Tech. for Estimating Flood Peaks ... in SD"

$$DA = 1125 \text{ Ac} = 1.76 \text{ mi.}^2$$

$$SI = 1.76$$

$$\text{Slope} = 100 \text{ ft/mile} \quad Q_{25} = 83.4 A^{.64} S^{.72} \quad Q_{100} = 132 A^{.65} S^{.67}$$

$$= 83.4 (1.76)^{.64} (100)^{.72} \quad = 132 (1.76)^{.65} (100)^{.67}$$

$$= 83.4 (1.4) (7.5) (0.66) \quad = 132 (1.44) (7.5) (0.68)$$

$$= \underline{585 \text{ cfs}} \quad = \underline{925 \text{ cfs}}$$

100 ft. wide Secondary Spillway

$$Q = CLH^{3/2}$$

$$= (2.6)(100)(3.5)^{3/2}$$

$$= \underline{1700 \text{ cfs}}$$

The NRCS uses their DAMS2 program to route a 25-year-24 hr event peak discharge of 850 cfs through the 100 foot wide secondary spillway with 0.27 feet of freeboard remaining.

Section 74:02:08:09

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

SCS Annual Yield

CN=80 Isogram #2
 DA = 1125 Ac

$$50\% \text{ chance} = 0.66 \text{ Ac-In/Ac}$$

$$0.66 \times 1125/12 = \underline{62 \text{ Ac-Ft.}}$$

$$10\% \text{ chance} = 2.5 \text{ Ac-In/Ac}$$

$$2.5 \times 1125/12 = \underline{235 \text{ Ac-Ft.}}$$



The 10⁰⁰ fee was
sent in with previous
Location notices and 150⁰⁰
permit fee that was not
due in addition to 150⁰⁰ fee
according to Jerry Magelky
NRCS

File No. 2372-2

Water Rights Division -DENR
Conversation or File Documentation

NAME OF PERSON OR FILE: Ralph Jones

ADDRESS: Box 228, Midland, SD 57552

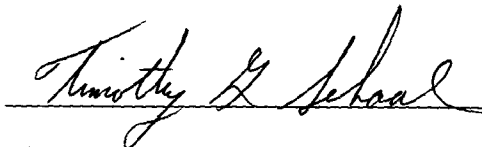
COUNTY: Jackson

DATE: September 25, 1996

TELEPHONE: 843-2242

RE: Storage capacity of dam

I talked to Gerald Magelky, NRCS Kadoka, (837-2242) today about Water Permit Application No. 2372-2. He said the correct storage capacity for the dam is 38 acre-feet NOT 57.35 acre-feet as indicated on the application. I told him we would make the change.



Timothy G. Schaal, P.E.
Natural Resources Engineer III
Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

October 3, 1996

Steve Quissell, P.E.
Natural Resources Conservation Service
Federal Building, Room 239
515 9th Street
Rapid City, SD 57701-2663

Dear Mr. Quissell:

We have reviewed the plans and specifications for the Ralph Jones Dam located in the NW 1/4 of Section 4-T2S-R23E, in Jackson County. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the dam. Construction may not begin until Water Permit Application No. 2372-2 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 Mr. Jones, as owner of the dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Jones Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 23 feet, a normal storage capacity of 38 acre-feet, and a maximum storage capacity of 76 acre-feet.

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

Sincerely,

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

c: Ralph Jones
Gerald Magelky, NRCS, Kadoka

REPORT ON
WATER PERMIT APPLICATION NO. 2372-2
RALPH JONES
September 23, 1996

Water Permit Application No. 2372-2 has been filed by Ralph Jones to impound 38 acre-feet of water by constructing a dam located in the NW 1/4 NW 1/4 of Section 4-T2S-R23E, in Jackson County. The water will be used for fish and wildlife propagation and for livestock watering.

Discussion:

The Jones Dam will be classified as a Category 3, Low Hazard dam. It has been designed by the Natural Resources Conservation Service (NRCS). The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 2372-2 is approved.

The dam will be 23 feet high with a normal storage capacity of 38 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 76 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 25 year frequency event.

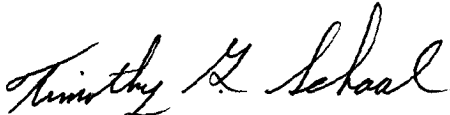
The Jones Dam will have a drainage area of 1.76 square miles which produces a peak of 585 cfs for a 25- year frequency event. A 100-year frequency event will produce a peak of approximately 925 cfs. The Jones Dam is designed to have a 100 foot wide earthen secondary spillway with 3.5 feet of available head, giving the spillway the capacity to pass 1700 cfs.

The annual yield for this drainage with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 62 acre-feet. The annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 235 acre-feet.

The Jones Dam will be located on an unnamed tributary to Indian Creek. It will be located approximately 10 miles upstream of the confluence of Indian Creek and the Bad River. There are no existing downstream Water Permits/Rights on the unnamed tributary or Indian Creek between the proposed dam and the Bad River.

Conclusions:

1. Water Permit Application No. 2372-2 should be approved since unappropriated water is available and approval will not have any adverse effects on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 2372-2.



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

Approved by:



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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2372-2, Ralph Jones**

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. 2372-2, Ralph Jones, Box 228, Murdo, SD 57552.

The Chief Engineer is recommending APPROVAL of Application No. 2372-2 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion has been developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualifications:

1. Water Permit No. 2372-2 authorizes a dam with storage capacity of 38 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.



JOHN HATCH, Chief Engineer
September 25, 1996



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

September 27, 1996

Ralph Jones
Box 228
Midland, SD 57552

Dear Mr. Jones:

Water Permit Application No. 2372-2 for fish and wildlife propagation and livestock watering use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Kadoka Press printed at Kadoka, SD (Ph # (605) 832-2259). For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 27, 1996

Kadoka Press
Box 309
Kadoka, SD 57543-0309

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 2372-2 to be published twice. Please publish the first notice on October 3, 1996, with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is Ralph Jones, Box 228, Midland, SD 57552 (Ph # (605) 843-2242).

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

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

Sincerely,


Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

FIRST TRANSMITTAL NOTICE

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

No. _____

Date _____

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

Name

Newspaper

Instruction to Newspaper - Publish first Notice on October 3, 1996, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 2372-2 to Appropriate Water

Notice is given that Ralph Jones, Box 228, Midland, SD 57552 has filed an application for a water permit to impound 38 acre-feet of water from runoff by constructing a dam located in the NW 1/4 NW 1/4 Section 4 with water impounded in the W 1/2 NW 1/4 Section 4; all in T2S-R23E. The water is to be used to provide habitat for fish and wildlife propagation and for livestock watering purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2372-2 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and chief engineer. The applicant must file a petition if contesting the chief engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by October 21, 1996.

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

PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

)SS

COUNTY OF JACKSON



OK

Ronda K. Dennis of said County and State, being duly sworn, on oath says: THE KADOKA PRESS is a weekly newspaper of general circulation, printed and published in KADOKA, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said KADOKA PRESS is a legal newspaper and has been in existence for more than one year immediately preceding the first publication herein mentioned; and has more than 200 bona fide subscribers; that I, the undersigned, am Legal Adv. Manager of said newspaper, and in charge of the advertising department thereof, and have personal knowledge of all facts stated in this affidavit; and that the advertisement headed Notice - No. 2372-2 a printed copy of which is hereto attached, was printed and published in said newspaper for two successive issues, the first publication being on the 3rd day of October, 1996 and the last publication on the 10th day of October, 1996; that \$ 37.03 being the full amount of the fee for publication of the annexed notice insures solely to the benefit of the publishers said newspaper; that no arrangement or understanding for a division thereof has been made with any person that no part thereof has been agreed to be paid to any other person whomsoever.

Ronda K. Dennis

Subscribed and sworn to before me this 21st day of October,

1996.



Cynthia Letellier
Notary Public

My commission expires
March 21, 2003

NOTICE
OF APPLICATION NO. 2372-2
TO APPROPRIATE WATER

Notice is given that Ralph Jones, Box 228, Midland, SD 57552 has filed an application for a water permit to impound 38 acre-feet of water from run-off by constructing a dam located in the NW1/4 NW1/4 Section 4 with water impounded in the W1/2 NW1/4 Section 4; all in T2S-R23E. The water is to be used to provide habitat for fish and wildlife propagation and for livestock watering purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2372-2 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. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605-773-3352)," and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by October 21, 1996.

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

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

Publish: October 3 & 10, 1996



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

DEC 26 1996

Ralph Jones
Box 228
Midland, SD 57552

Dear Mr. Jones:

Enclosed is Water Permit No. 2372-2 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

Very truly yours,

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

enclosures

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

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

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 2372-2

I have this day, October 1, 2018, made a thorough examination of the water use system constructed by Blue Stem Land LLC, Box 228, Midland, SD 57552 of Permit No. 2372-2, bearing the priority of 9/16/1996 authorizing the diversion and storage of 38 acre-feet of water of an unnamed tributary of Indian Creek for fish, wildlife and domestic purposes, in Jackson County.

Inspection contact & relationship to permit holder, if applicable:

Ralph Jones, co-owner/manager
605-843-2242

A. Dam Information:

- 1) Height to crest 23.5 feet from downstream toe
 - 2) Height to primary spillway 18.5 feet from downstream toe
 - 3) Height to secondary spillway 20.0 feet from downstream toe
 - 4) Crest width 12 feet
 - 5) Crest length 510 feet
 - 6) Primary Spillway diameter 30 inches
 - 7) Secondary Spillway width 100 feet
 - 8) Approx. storage to primary spillway 38 ac-ft
 - 9) Approx. storage to crest 76 ac-ft
- Date constructed: 1997

B. Works used to put water to beneficial use:

This is an earth fill embankment utilizing a PE pipe principal spillway and a vegetated earth emergency spillway. The water impounded in the reservoir is put to beneficial use in-place and in a stock tank located immediately below the dam.

C. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: Yes

Low flows as needed for downstream domestic use including livestock and prior water rights must be by-passed. A permanent by-pass structure was not installed. Any by-pass of flows if needed will use temporary means.

Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period. N/A

List any extended period of nonuse: none

- 2) Exceptions to compliance are: none

D. Condition and Location:

1. The system is in **good** condition with the point of diversion located as follows:
142' E and 942' S of the NW corner Section 4 T2S R23E (43.905378, -101.382677)

The works are capable of diverting to the place of use and storing **38.0** acre-feet of water which is to be used for **fish, wildlife and domestic** use. Water has been put to beneficial use to the maximum extent and the license should be issued for **38.0 acre-feet** storage.

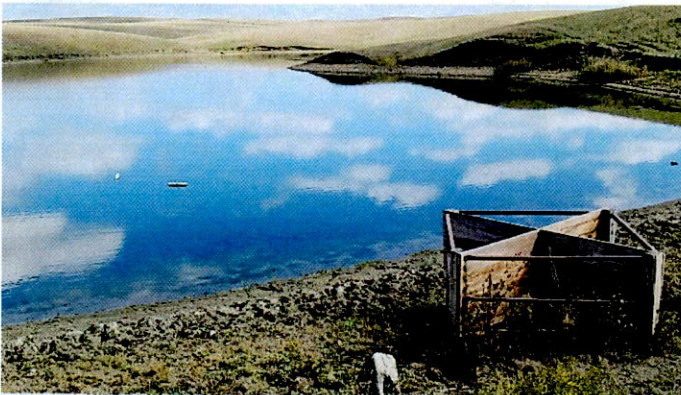
2. All structures, wells and lands on map **Yes**

E. Comments or other permit(s) associated with the project: none



Steven Quissell
Water Rights Inspector
DENR, Water Rights Program

Date report completed: **10/3/2018**



Dam pool and spillway inlet with trash rack

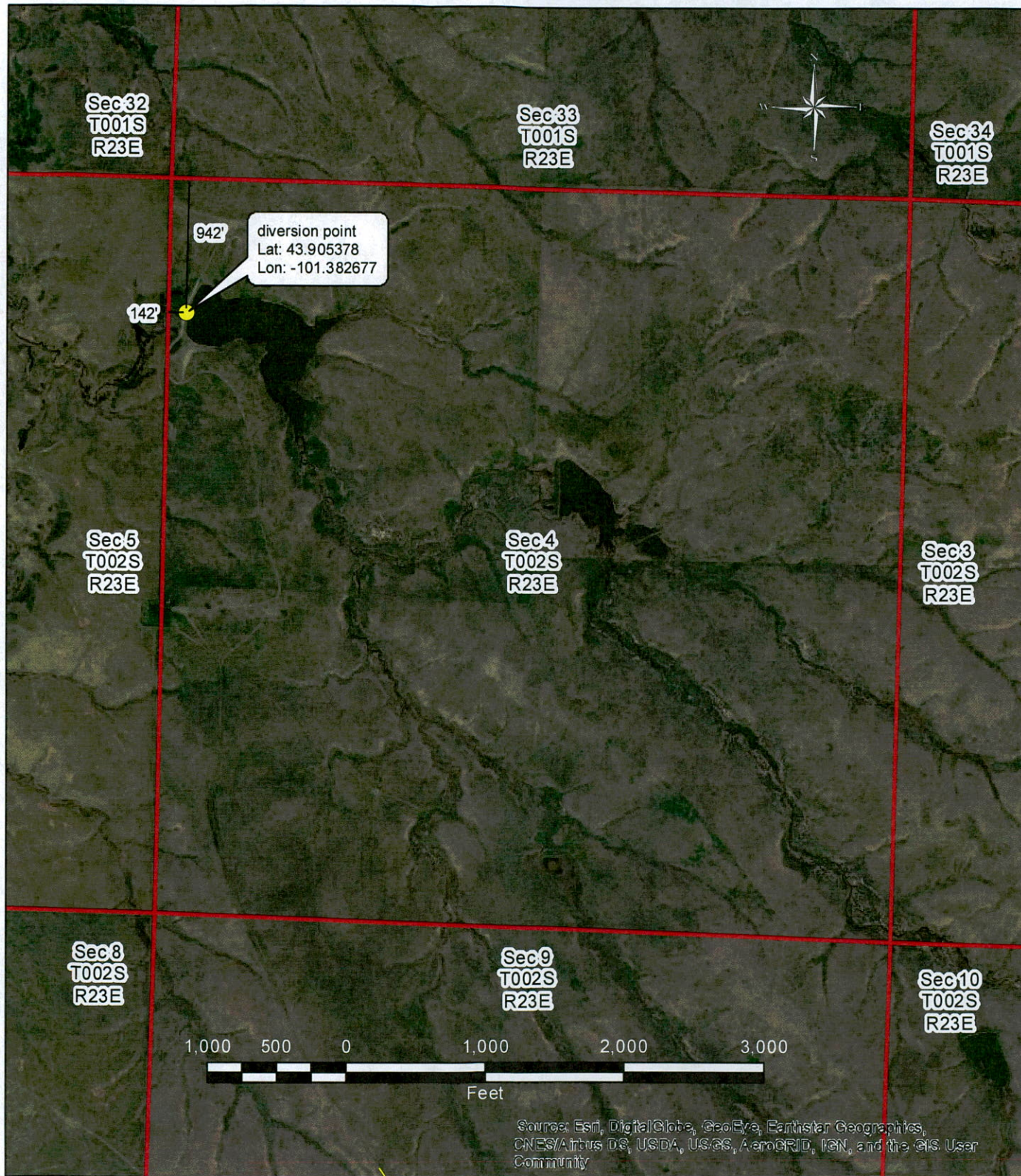


Crest of dam and pool

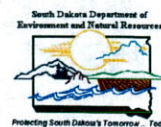


PE spillway outlet

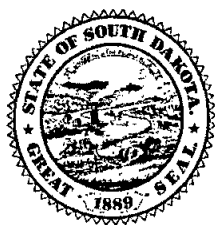
Water Right #2372-2
Bluestem Land LLC
10/1/2018



Steven Quissell
Water Rights Inspector
DENR Water Rights Program



Fee is for Investigation & Licensing of Water Permit No. 2372-2



South Dakota Secretary of State

SHANTEL KREBS

Filing Information

Name: **BLUESTEM LAND COMPANY, LLC**

General Information

SOS Business ID: **DA002229**
 Filing Type: Limited Liability Company - Domestic
 04/28/1999
 Status: Good Standing
 Duration Term: Perpetual
 Business Type: Farm
 Managed By: Manager-Managed

Registered Agent Address

RALPH D. JONES
 23473 SD HWY 63
 MIDLAND, SD 57552

Principal Address

23473 SD HWY 63
 MIDLAND, SD 57552

The following document(s) was/were filed in this office on the date(s) indicated below:

<u>Date Filed</u>	<u>Filing Description</u>	<u>Image #</u>
03/20/2018	2018 Annual Report	B0056-3914
05/08/2017	2017 Annual Report	B0031-0141
04/11/2016	2016 Annual Report	
05/11/2015	2015 Annual Report	
04/01/2014	2014 Annual Report	
06/02/2013	2013 Annual Report	
06/02/2013	2012 Annual Report	
06/02/2013	2012 Annual Report	
10/09/2012	Farm Qualification	
04/09/2012	2012 Annual Report	
03/23/2011	2011 Annual Report	
04/07/2010	2010 Annual Report	
04/23/2009	2009 Annual Report	
04/01/2008	2008 Annual Report	
04/01/2007	2007 Annual Report	
04/01/2006	2006 Annual Report	
04/01/2005	2005 Annual Report	

Filing Information

Name: **BLUESTEM LAND COMPANY, LLC**

04/01/2004 2004 Annual Report

04/15/2003 2003 Annual Report

03/15/2002 2002 Annual Report

04/24/2001 2001 Annual Report

05/23/2000 2000 Annual Report

04/28/1999 Initial Filing

DA002229

PAID

NOV 01 2018

Ck# 2147

NOTICE OF TRANSFER OF OWNERSHIP

To: Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

No. 2372-2
Date: 10-29-2018

I/We request that Water Permit No. 2372-2

formerly owned by: Ralph Jones

be transferred to: (name & address) Bluestem Land Company LLC
P.O. Box 228 Midland, S.D. 57552

Telephone No. 605-843-2240

Title to the following described land(s)/property has been transferred as described above:

storage dam location: NW ¼ NW ¼ Section 4, T2S, R23E

I/We understand that the validity of Water Permit No. 2372-2 has not been determined by this transfer action. If I/We have any questions on validity, I/We understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Fifty Dollars (\$50.00) is required to cover the filing fees as required under SDCL 46-2-13. This form must be signed by the new owner.

I/We Bluestem Land Co. LLC, the new owner, certify that the above information is true and correct.


Ralph Jones, Manager Bluestem Land Co. LLC
(Signed by new owner)

NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date November 1, 20 18

RECEIVED OF Bluestem Land Company LLC PO Box 228 Midland SD 57552

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	100	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. <u>2372-2</u>		
Fee for Filing Transfer Form <u>2372-2</u>		
Fee for _____	100	00
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	100 00

No. **08790**

By

Jeanne Goodman

Chief Engineer

lyn



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

DEC 20 2018

2372-2

Ralph Jones
Bluestem Land Company LLC
PO Box 228
Midland SD 57552-0228

Dear Mr. Jones:

Enclosed is Water License No. 2372-2. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

Prior to licensing, the water permit was transferred to "Bluestem Land Company LLC". The receipt for the filing fee you paid for the ownership change and for payment of the investigation and issuance of the water license is enclosed.

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. 2372-2

(1) Ralph Jones, PO Box 228, Midland SD 57552 made Application No. 2372-2, September 16, 1996 for a water permit to impound 38 acre feet of water from runoff (unnamed tributary to Indian Creek), Jackson County, South Dakota for fish & wildlife propagation and domestic livestock watering purposes. Permit No. 2372-2, with a priority date of September 16, 1996 was approved October 21, 1996 and issued to the applicant for diversion of water with construction of the storage dam to be completed on or before October 21, 2001 and for the application to beneficial use of water on or before October 21, 2005.

On November 1, 2018, Water Permit No. 2372-2 was transferred to Bluestem Land Company LLC.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 38 acre feet of water for beneficial use.

The storage dam (spillway) is located:

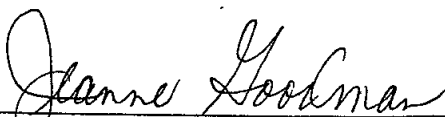
- 142'E and 942'S of the NW corner of Section 4, T2S, R23E (NW ¼ NW ¼) with water impounded within the NW ¼ Section 4.
Latitude 43.905378, Longitude -101.382677

(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 Bluestem Land Company LLC, PO Box 228, Midland SD 57552-0228 the holder and/or owner of Water Right No. 2372-2 is issued a license to appropriate water, the right to impound 38 acre feet of water from runoff with a priority date of September 16, 1996 from the location specified in (2) of this license for fish & wildlife propagation and domestic livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2372-2 and subject to the following qualifications:

- Water Permit No. 2372-2 authorizes a dam with storage capacity of 38 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

DEC 20 2018

date

