

WATER PERMIT NO. 2423-2

Name of Applicant: Gene Deuchar

Address: Box 55, Milesville SD 57553

Phone: 605 544-3357

Amount of Water Claimed: 109 AF

Total Acres: NA

Source of Water Supply: runoff

Water to be used for: fish & wildlife and livestock water

County: Haakon

Type of Waste Disposal System: NA

Location: 21 miles northwest of Philip or 5 miles southwest of Milesville

PRIORITY

Date Received: 4-28-1999

Fee: \$15.00

Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks: Claimed priority date of January 1, 1950

Diversion Point: SW ¼ NW ¼ Sec 18-T5N-R20E

Water Impounded: SW ¼ NW ¼ Sec 18-T5N-R20E & S ½ NE ¼ Sec 13-T5N-R19E

Depth of Well: NA

Well Driller:

Remarks:

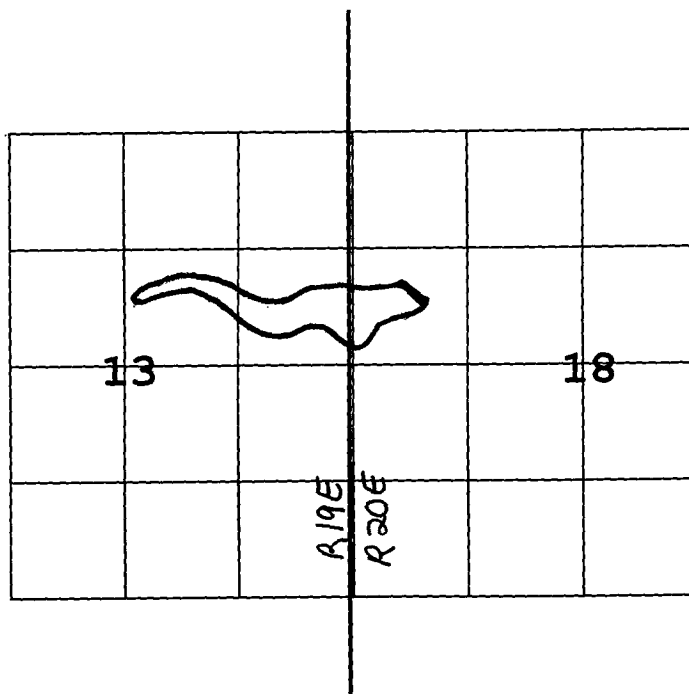
Type of Map: topo

Prepared by: Steve Quissell, SCS

Reviewed and the Number Assigned on: 4-30-1999

By: Karen Schlaak

Notice of Hearing - date to intervene: _____



FORM 2: Application for uses other than irrigation
(type or print)

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>2423-2</u>	(office use only) Hydrologic Unit <u>10/20/12</u>
	Basin <u>Lower Cheyenne</u>	
	Newspaper <u>The Pioneer Review, Philip, SD</u>	



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

Check use(s) of water:

☐ Municipal	☐ Suburban Housing	☐ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☒ Fish & Wildlife	☐ Geothermal Heat
☐ Domestic (over 18 gpm)	☐ Industrial	☒ Other <u>LIVESTOCK WATER</u>	

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

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

- Name of Applicant GENE DEUCHAR Phone (605) 544-3357
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address Box 55, Milesville, SD State 57553
(Street, RR. or Box) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM _____ ***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) SPILLWAY FOR DAM
SW NW SECTION 18, TOWNSHIP 5N, RANGE 20E Water Impounded: SW1/4 NW1/4 sec. 18-
T5N-R20E & S1/2 NE1/4 sec. 13-T5N-R19E County HAAKON
- County or counties where water will be used HAAKON
- Annual period during which water is to be used YEAR AROUND 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)
REPAIR EXISTING DAM (SEE ATTACHED PLANS)

STATE OF SOUTH DAKOTA)
County of HAAKON) SS

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

I, Gene Deuchar, 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 Gene Deuchar

Subscribed and sworn to before me this 27th day of April 19 99

Karen Schubert

Notary Public

**SOUTH DAKOTA
VESTED WATER RIGHT NO. 2423-2**

Date of Receipt of Claim April 28, 1999.

Date of Validation July 19, 1999.

The Chief Engineer, on behalf of the Water Management Board validated Vested Water Right Claim No. 2423-2 for Gene Deuchar, Box 55, Milesville SD 57553 with the following limitations, conditions and qualifications:

1. Vested Water Right No. 2423-2 authorizes impoundment of 109 acre-feet of runoff water by reconstructing a dam located in the SW ¼ NW ¼ Section 18-T5N-R20E with water impounded in the SW ¼ NW ¼ Section 18-T5N-R20E and S ½ NE ¼ Section 13-T5N-R19E.
2. The appropriated water is used for providing habitat for fish and wildlife propagation and for livestock water and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following annual period: January 1 – December 31.
4. The priority date of Vested Water Right No. 2423-2 is January 1, 1950.
5. The water use system has been constructed and water has been applied to beneficial use.
6. Water Rights obtained in compliance with the laws of the State of South Dakota must not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Water Permit No. 2423-2 authorizes a dam with storage capacity of 109 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, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

AUG 6 1999
date



STATE OF SOUTH DAKOTA

VESTED RIGHT WATER LICENSE NO. 2423-2

(1) Gene Deuchar, Box 55, Milesville SD 57553 made Application No. 2423-2, for validation of a vested right claim to impound 109 acre-feet of water from runoff, Haakon County, South Dakota for fish & wildlife propagation and livestock watering purposes. Vested Water Right No. 2423-2 was validated July 19, 1999 with a priority date of January 1, 1950. Construction of the described water supply system and application of water to beneficial use has been completed and complies with applicable provisions of South Dakota State Law.

(2) It is certified that the vested right owner is entitled to impound 109 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation. The location of the storage dam is SW ¼ NW ¼ Section 18-T5N-R20E.

(3) Pursuant to Section 46-5-30.1 Gene Deuchar, Box 55, Milesville SD 57553 the holder and/or owner of Vested Water Right No. 2423-2 is issued a license to impound 109 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation with a priority date of January 1, 1950 from the location specified in (2) of this license. The water is to be used for fish & wildlife propagation and livestock water purposes. This license is subject to any limitations, conditions or qualifications listed in Vested Water Right No. 2423-2 and subject to South Dakota State Law.



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

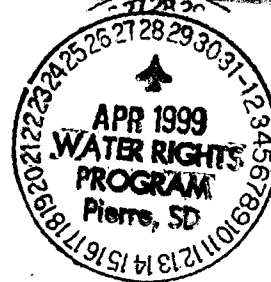
AUG 6 1999

date



Supplemental Information

(type or print in ink)



1. Well Information - Proposed Construction

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

2. Wastewater Disposal System Information

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

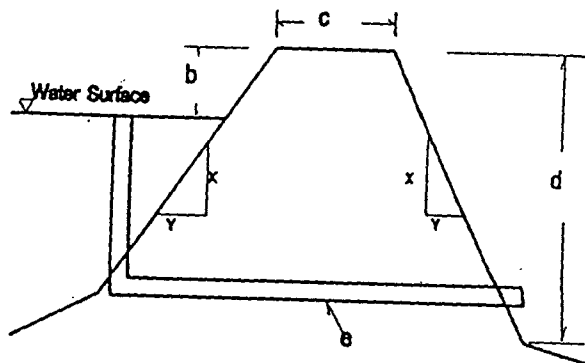
3. Dugout Information

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

4. Water Storage Dams

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

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



- b) Freeboard _____ 5.5 FEET
- c) Crest Width _____ 16.0 FEET
- Crest Length _____ 730.0 FEET
- d) Height _____ 19.0 FEET
- e) Primary Outlet Capacity _____ 142 CFS
- If pipe, diameter _____ 36 INCH
- f) Secondary Spillway Capacity _____
- Spillway Width _____ 230 FEET
- g) X & Y Slope _____
- Upstream _____ 3:1
- Downstream _____ 2:1
- h) Surface Area of Impoundment _____ 18.5 ACRES
- i) Storage _____ 109 Acre Feet
- j) Drainage Area Above Dam _____ 1365 Acres

Affidavit of Water Use

Form 2B

(Type or Print in Ink)

Note: This Form is supplemental to Form 2 and is to be used when an affidavit is needed to document historical water use, primarily with vested right claims.

Affidavit Of Construction Of Water Use System And Application Of Water To Beneficial Use

Name of Applicant (Same as Form 2) GENE DEUCHAR

Mailing Address HC 2, BOX 55 MILESVILLE, SD 57553-9603
(Street, RR or Box) (City) (State) (Zip Code)

A. Notice of Appropriation _____ Date of Posting _____

Date of Recording _____ Recording Date _____

B. Date of start of construction of water supply system _____

C. Date that water was first applied to beneficial use _____

D. Name of owner of original water supply system _____

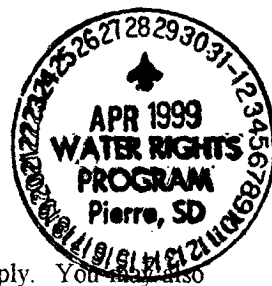
E. Amount of water originally applied to beneficial use 109 AF

F. Present use of water - amount of water now being used _____

Date that this water was first used January 1, 1950

G. Chronological History of Water Use

I WAS BORN AND RAISED ON THIS FARM AND THE DAM HAS BEEN HERE AS LONG AS I CAN REMEMBER, WHICH HAS BEEN ALMOST 49 YEARS.



Attach to this Form 2B any copies of notices, postings, filings, publications, affidavits, or other records that apply. You may also attach any written statement by you, or by others, that you deem pertinent.

State of South Dakota)

SS

County of Hank)

I, Gene Deuchar
(print or type)

the applicant, certify that I have read the foregoing and that the matters therein are true.

Signed Gene Deuchar

Subscribed and sworn to before me April 27 19 99

Karen Husband
Notary Public

I, the undersigned do hereby certify that I know about the water use system described above, that I have read the foregoing, and that the matters therein are true.

Gene Deuchar 19 99
(Print Name)

_____, 19 ____
(Print Name)

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

N^o 416111

Pierre, April 28, 19 99

RECEIVED OF Gene or Theresa Deuchar, Box 55, Milesville, SD 57553
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>2423-2</u> to Appropriate Water, to construct and to put water to beneficial use _____	15	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 _____		

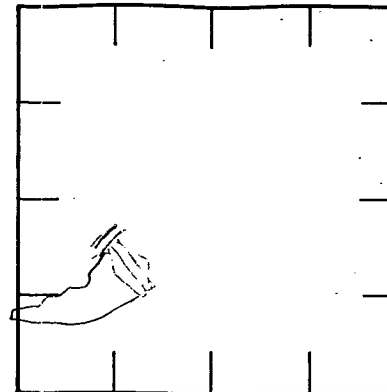
(Any Other Work Provided by Law)	Total	15 00

By _____
Chief Engineer

John Hatch (Signature)

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.
1365	72.8	803	805	13	18.5	109	243



DNW Sec. 18 T. 5N R. 20E
Haskell County

LOCATION

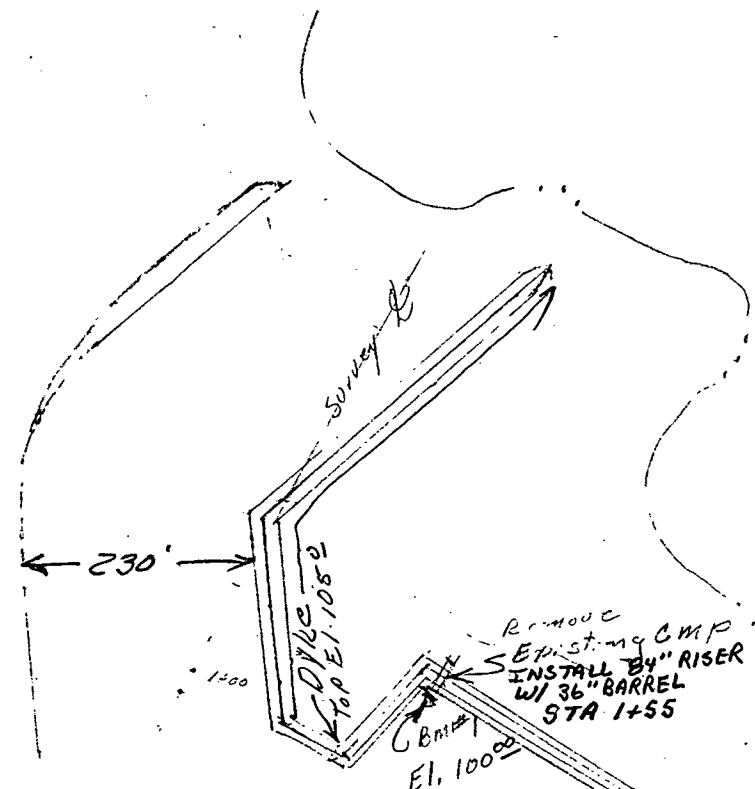
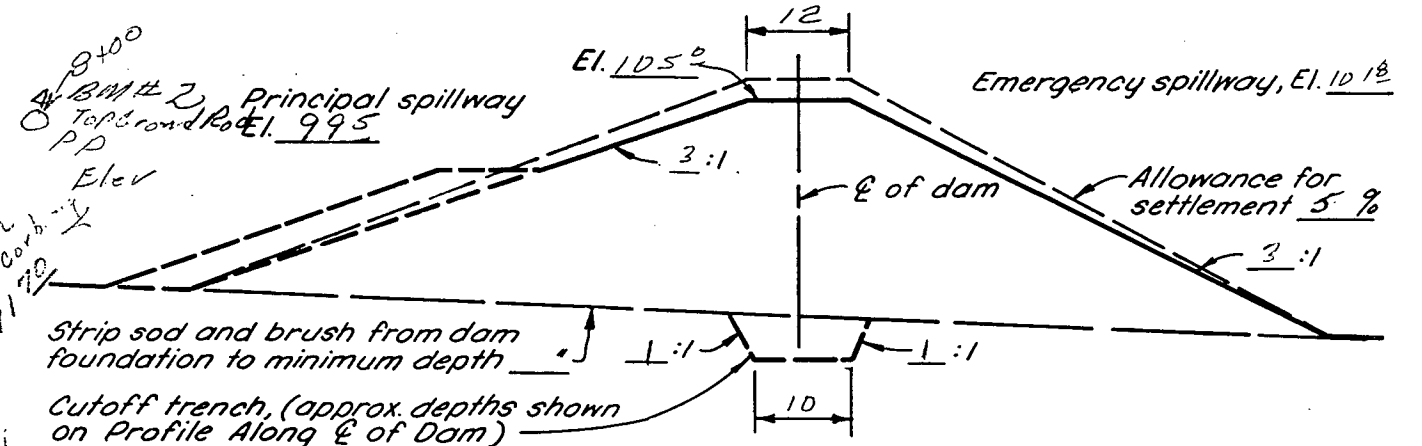


TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
Earth - Fill Class 'S' PAY	cuyd	5674
Stripping		N/A
Pipe Installation		Included
Embankment +5% for Settlement		3449
Em Sp Dyke		2225
Excavation	cuyd	2500±
Stripping		N/A
Structure Removal (old)		Included
Emergency Spillway		2500±
Sand Drain (Anti-Seep Job Plan 3.8P)	cuyd	6.0
Concrete (Drop Inlet Job Plan 5.4)	cuyd	3.0
Reinforcing Steel	lbs	122
Trash Rack (Sheet 5 of 6)	Ez	1
Pipe Support (Job Plan 4.0)	Ez	1
36" dia 92 ga CORRUGATED METAL PIPE	LF	74
84" X 6" Drop Inlet with 30" X 4" Hooped Inlet & Sill	Ez	1
4" PVC Pipe, Sch 40 Anti-Seep Drain (Job Plan 3.8P)	LF	30



TYPICAL CROSS SECTION OF DAM

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

- SD-5 - Excavation
- SD-75 - Earth Fill Class 'S'
- SD-12B - Concrete for Minor Str
- SD-13 - Steel Reinforcement
- SD-16 - Timber Fabrication and Inst.
- SD-3 - Structure Removal
- SD-50 - Zinc-Coated Iron or Steel Corros. Pipe
- SD-9 - Drain Fill & Filter

No Stripping Required
See Job Plan No. 1.04

EARTH DAM

OPERATOR: <u>Gene Deucher</u>	Date: <u>11/16/59</u>
CONSERVATION DISTRICT: <u>Haskell</u>	Approved by: <u>[Signature]</u>
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>C.L. M...</u>	Title: <u>[Signature]</u>
Drawn: <u>C.L. M...</u>	Title: <u>[Signature]</u>
Traced: <u>[Signature]</u>	Sheet: <u>1</u>
Checked: <u>[Signature]</u>	Drawing No. <u>1</u>

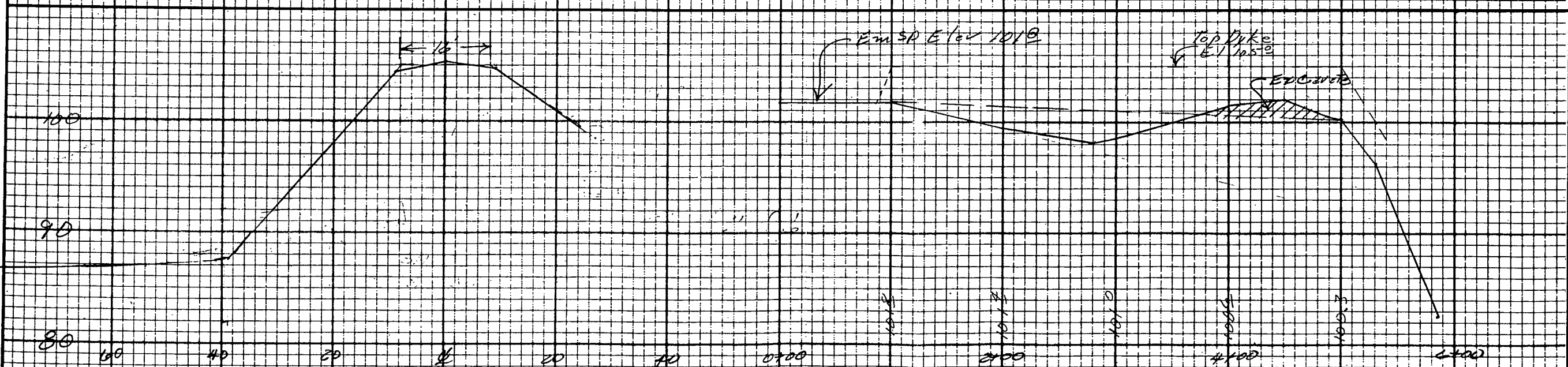
SKETCH PLAN OF DAM AND RESERVOIR AREA

Approximate scale 1" = 200'

REFERENCE: GUIDE PLAN NO. 1.0



CROSS SECTION AT CREST OF EMERGENCY SPILLWAY AND PROFILE ALONG E OF DAM



PROFILE ALONG E OF EMERGENCY SPILLWAY

SEDIMENT YIELD

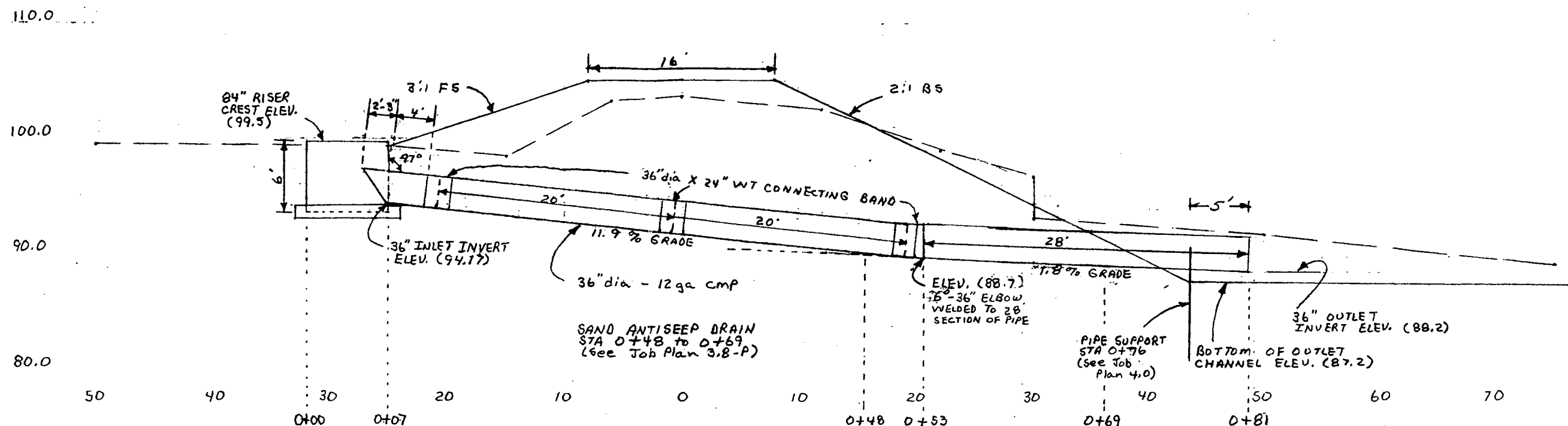
MAXIMUM CROSS SECTION OF DAM

512 5+25

ERODIBILITY AREA P ACRES	GROSS RATE A.F./AC./YR.	DRAINAGE AREA ACRES	DELIVERY RATE %	DESIGN PERIOD YEARS	REQ'D. SEDIMENT VOLUME AC. FT.
710 AC	.0034	1365	14	25	8.4

Below Dam

(Rev. 4-73) 5, N-29, 073.1a (2)



PROFILE ALONG & OF PRINCIPAL SPILLWAY
Scale 1" = 10'

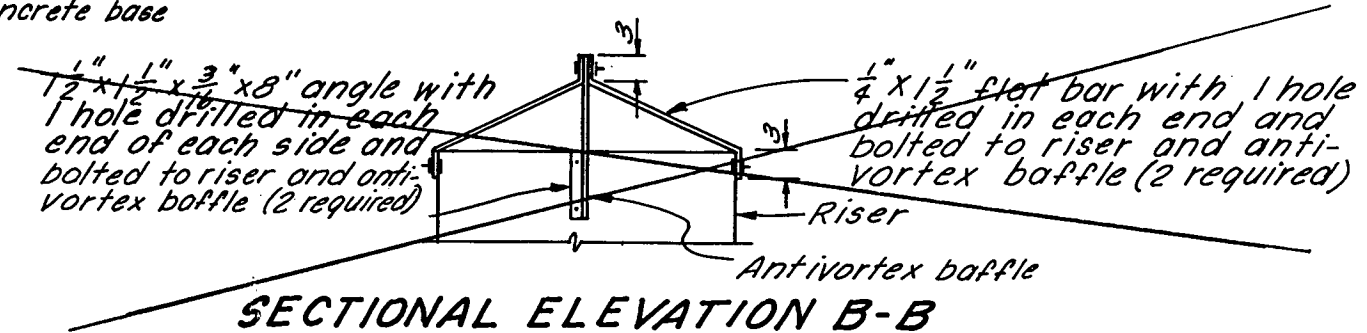
PIPE MATERIALS LIST			
ITEM NO	ITEM	UNIT	QUANTITY
1	84" dia x 6' Long 10 ga. CMP RISER w/ HOOD INLET - 4' STUB 36" dia 12 ga.	ea.	1
2	36" dia x 20' Long CMP	ea.	2
3	36" dia x 28' Long CMP w/ 6" ELBOW	ea.	1
4	36" dia x 24" Wide WT CONNECTING BANDS	ea.	3

GENE DEVCHAR
DAM RESTORATION
HARCON CO. SD.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed _____		Date _____	Approved by _____
Drawn <u>S. Miller</u>		<u>4/99</u>	Title _____
Traced _____		Sheet No. <u>2</u>	Drawing No. _____
Checked _____		of <u>6</u>	

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.
84	36	#4	1	STR.	18	8-0	144-0	96	3.0	6	9-0

[illegible]

NOTES:

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

OPERATOR: GENE DEUCHAR

CONSERVATION DISTRICT: HAAKON

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

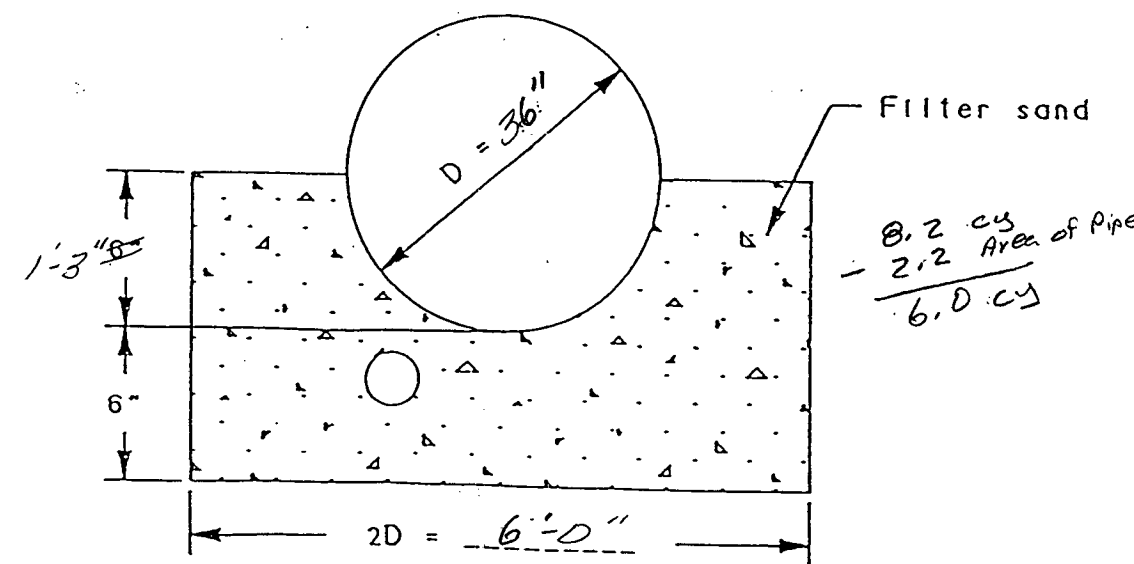
Designed <u>G. L. MACELKY</u>	Date <u>3/99</u>	Approved by _____
Drawn _____		Title _____
Traced _____		Title _____
Checked _____	Sheet No. <u>3</u> of <u>6</u>	Drawing No. _____

JOB PLAN NO. 5.4

5, N-29, 073.5-4a

4" dia. perforated pipe
20' - 0" long
4" dia. non-perforated pipe
10' - 0" long

SIDE VIEW



UPSTREAM VIEW

- 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 ϕ 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.

L1 = 43

L2 = L1 X 60% = 26'

Filter sand

Pipe outlet

6" min.

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

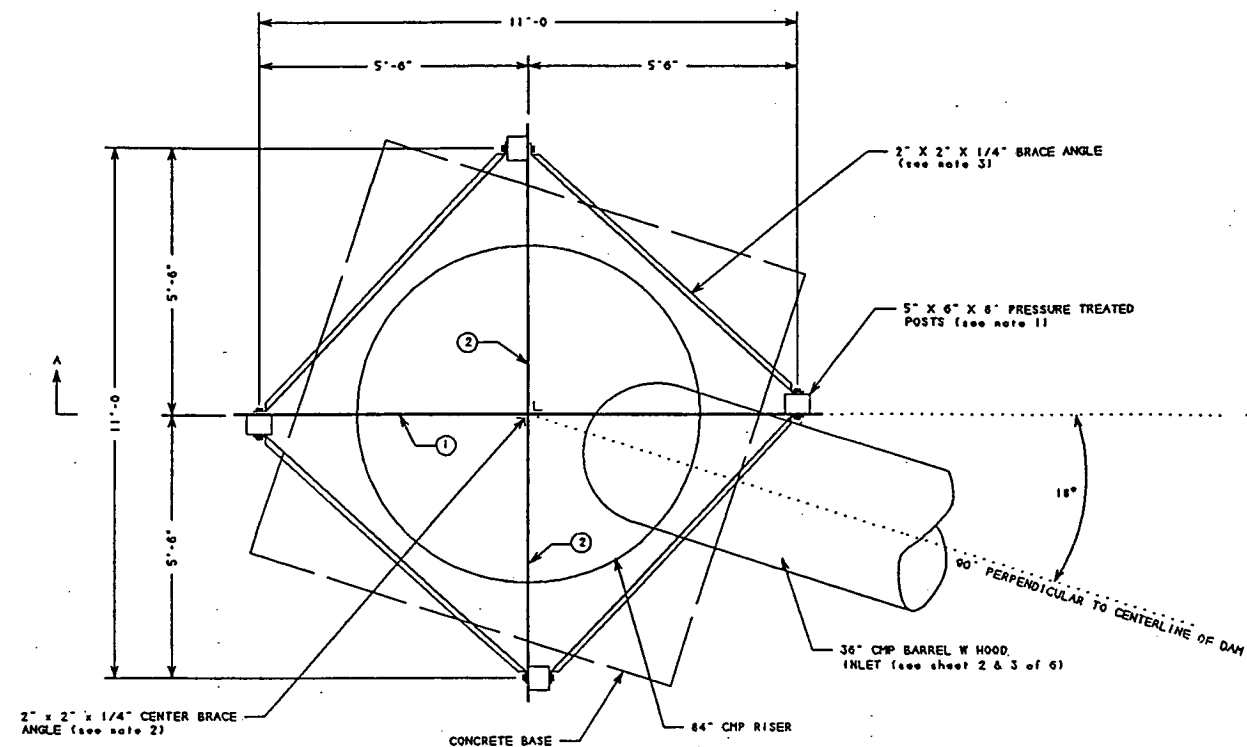
6.0 cu Sand

SAND ANTISEEP DRAIN

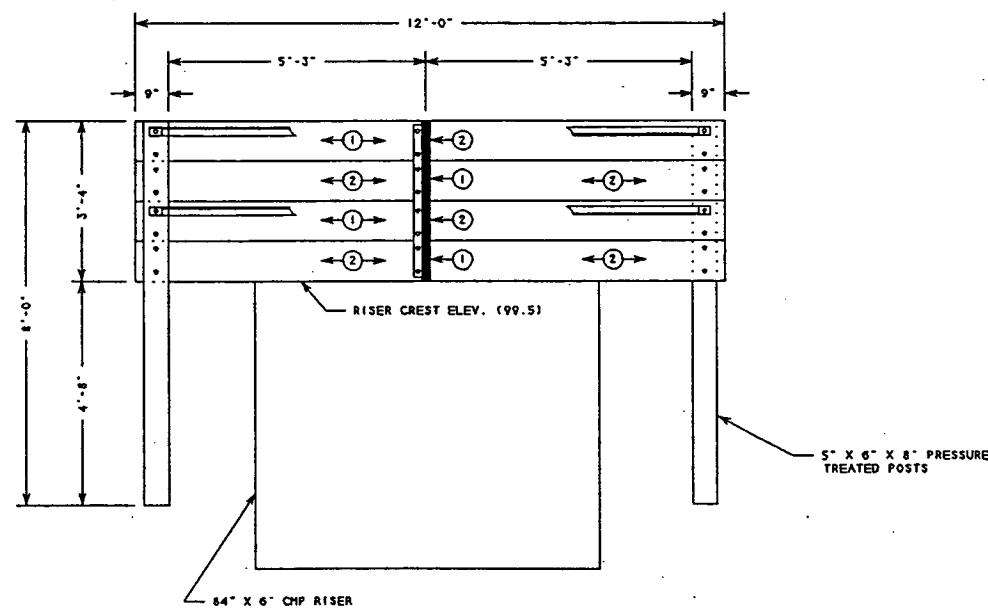
OPERATOR <u>Gene Deuchar</u>	
CONSERVATION DISTRICT <u>Horizon</u>	
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	
Designed <u>GLM</u> Date <u>3/99</u>	Approved by _____
Drawn _____	Title _____
Traced _____	Title _____
Checked _____	Sheet No. <u>4</u> of <u>4</u>
	Dwg. No. _____

Rev. 3/96

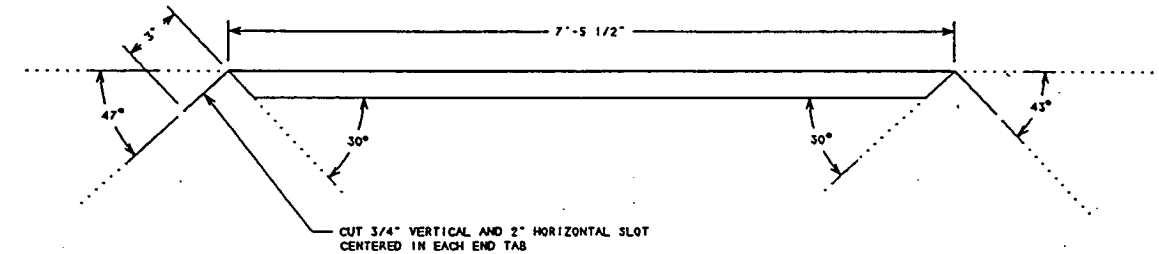
JOB PLAN NO. 3.8-P



PLAN VIEW
SCALE 1" = 4'



SECTIONAL ELEVATION A-A
SCALE 1" = 4'



PLAN VIEW OF BRACE ANGLE
SCALE 1" = 2'

TABLE OF QUANTITIES

ITEM OR MATERIAL	MARK	QUANTITY
1. 2" X 10" X 12" PRESSURE TREATED LUMBER	1	4
2. 2" X 10" X 5'-11" PRESSURE TREATED LUMBER	2	8
3. 5" X 6" X 8" PRESSURE TREATED POST		4
4. 2" X 2" X 1/4" (7'-9 1/2" Long) ANGLE IRON		8
5. 2" X 2" X 1/4" (3' -2" Long) ANGLE IRON		2
6. 5/8" X 9" STEEL BOLTS. NUTS. 2 WASHERS		32 sets
7. 1/2" X 3" STEEL BOLTS. NUTS. 2 WASHERS		32 sets

NOTES:

- BOLT 2" X 10" BOARDS TO POSTS WITH (2) 5/8" BOLTS PER BOARD. DO NOT PLACE BOLTS CLOSER THAN 1 1/2" FROM EDGE OF BOARD.
- FOR CENTER BRACE ANGLE DRILL (8) 9/16" HOLES 5/8" FROM OUTER EDGE OF EACH LEG (16 total holes) FOR EACH ANGLE AND CENTERED 5 1/4" APART. THEN BOLT TO 2" X 10" BOARDS WITH 1/2" X 3" BOLTS.
- 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 84" RISER

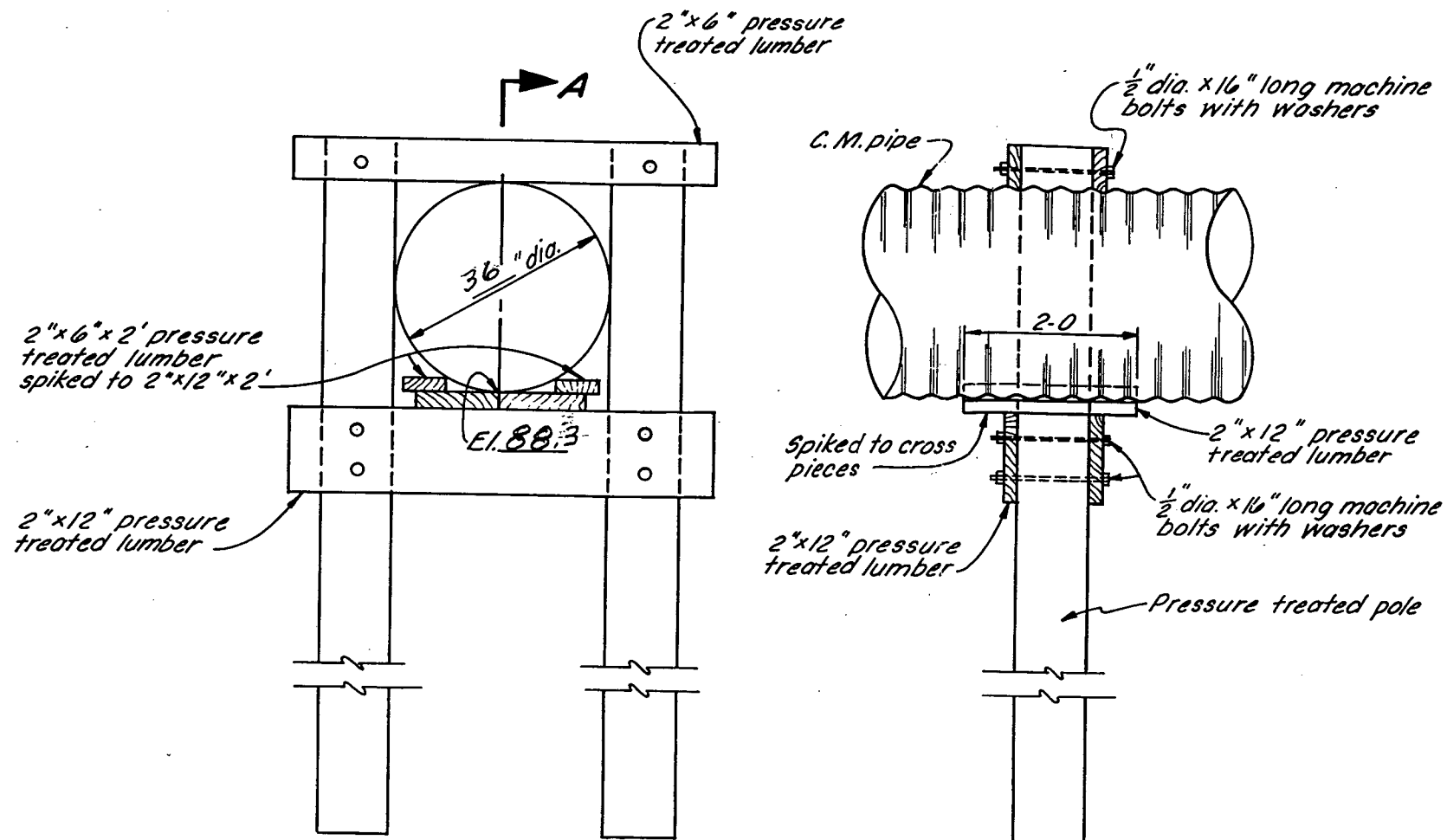
~~USFS - BOECHERT DAM REST.~~
~~BUFFALO GAP NATIONAL GRASSLANDS~~
~~FALL RIVER CO. SD. FALL RIVER CO.~~
~~SELV-18-T8S-R9E~~

USDA U.S. Department of Agriculture
Natural Resources Conservation Service

DESIGNED: g. m.
DRAFTED: g. m.
DATE: 4/99

APPROVED BY: _____
TITLE: _____
DWG NO.: _____
SHEET 5 OF 6 deuchar5

Gene Deuchar



ELEVATION

SECTIONAL ELEVATION A-A

TABLE OF QUANTITIES

ITEM	LENGTH FOR 36" 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	3'-0"	EACH	3
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

NOTES:

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

TIMBER PIPE SUPPORT

OPERATOR: Gene Deuch

CONSERVATION DISTRICT: Heckman

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed: <u>G.L. Weyant</u>	Date: <u>3/99</u>	Approved by: _____
Drawn: _____	Title: _____	
Traced: _____	Title: _____	
Checked: _____	Sheet No. <u>6</u>	Drawing No. _____

REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

5, N-29,073.4a

Haakon Co.
S. Quissell 4/13/99

Gene Deuchar

Hazard Class

Site Inspection 4/12/99 (Magers & Perron)

- Cross section of channel taken @ FARMSTEAD (12,400 ft downstream from dam)

Cross section shows house is located on an elevated knoll approximately 20' above channel base grade. Therefore the dam located upstream would not create a hazard to the house or occupants. There are sheds & a barn located adjacent to the creek (1-2') that do flood on a regular basis during normal runoff events. The dam would create a flooding flow at these out-buildings but the damage should not be significantly greater than normal 5, 10 or 20 yr. ~~greater~~ runoff events which are now occurring.

- Hazard Class "A"
- Water depth in dam = 14'

Site Inspection 4/15/99

Magers checked site where channel crosses Highway 34 downstream of dam approx. 2,000 ft. - Highway 34 grade is approximately 31 ft. tall with a 7'x7' concrete box culvert. The highway will be in no danger of damage in the event of a dam failure, and the 7'x7' box will serve as a restriction to lower the flood peak downstream from the highway, thereby reducing the flood hazard downstream to the farmstead noted above.

Gene Deuchar 4/15/99

South Dakota

Gene Deucher Dam Restoration

Design Info.

Existing Dam - Aux Spillway Elev. - 101.8

- Low Point Along $\frac{1}{2}$ of Dam - 86.8

- Drainage Area. 1365 ac.

- Storage @ Aux Spillway - 151.2 Ac-ft.

- Effective Height - 15.1 ft.

* There is a Farmstead located next to drainage 12,400 LF downstream of Dam.

* Tech Guide Spec - Required AS Capacity for Ponds with a Product of Storage times effective height exceeding 2000 factor, a 10 yr. freq. 24 hr. duration runoff must be contained between the crests of the Aux. Spillway & Principal Spillway when flood routing

$$(15.1' \times 151.2) = 2283 > 2000$$

Due to site Conditions, Aux Spillway crest must be set @ Elev. 101.8. Operator would like permanent pool Elev. as high as possible to maintain some depth in Pond. Principal Spillway was set @ Elev. 99.5

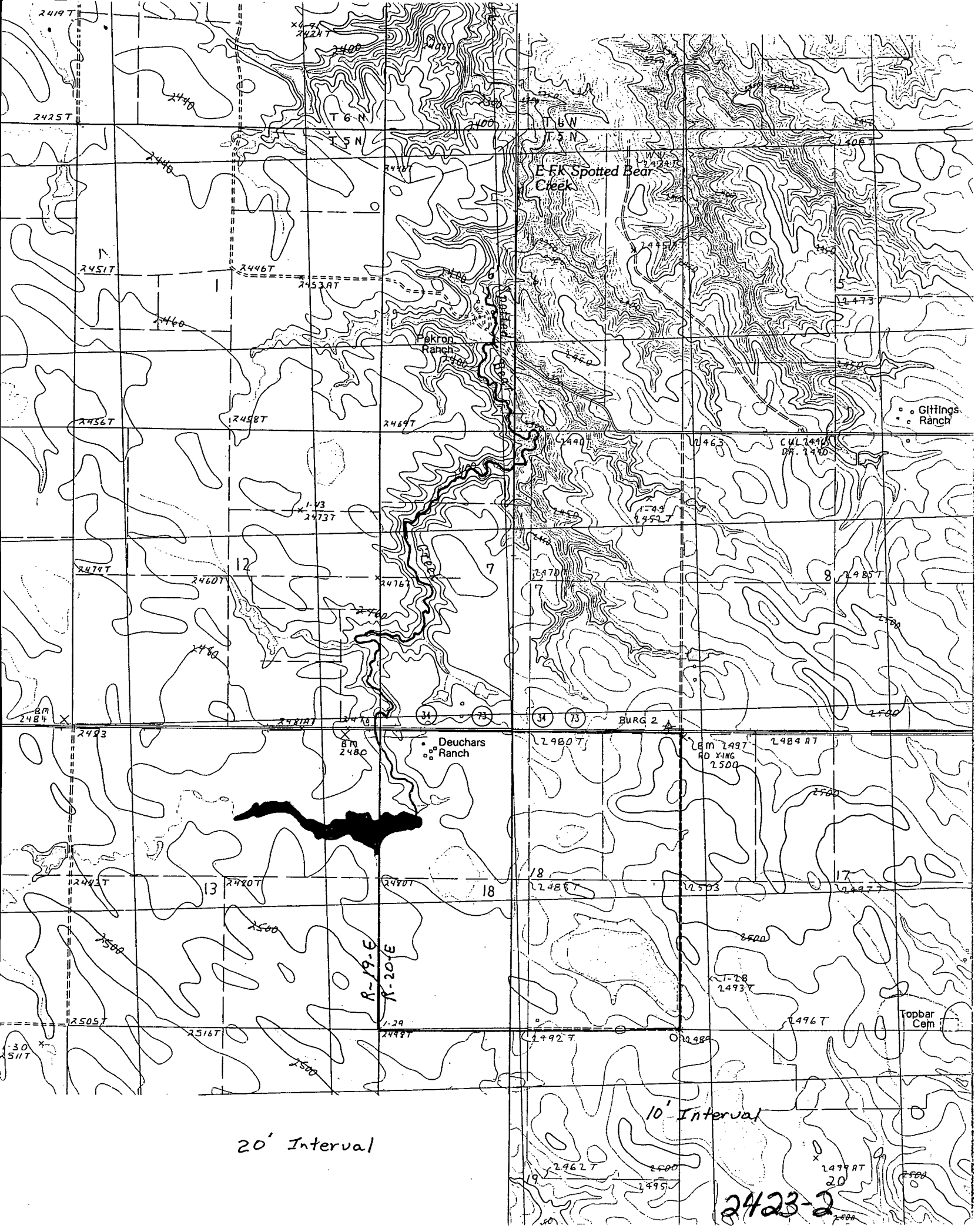
Flood routing (sites) using 84" Riser w/ 36" Barrel showed that between Elev's 101.8 & 99.5 would contain a 3.0" rainfall or approx. 7yr. 24hr. storm duration.

10yr. 24 hr. storm duration - 3.4" rainfall

5yr. 24 hr. storm duration - 2.8" rainfall

with a storage x effective height of less than 2000 and Drainage Area of 1365 ac., a 2 yr. 24 hr. storm routing would be adequate.

Since storage x effective height is borderline of 2000 factor, Dam height of 18.2', Farmstead is located 2.35 miles downstream of Dam, hazard class (a), and the fact that Dam restoration will have a larger tube, wider Aux. Spillway, no change in permanent storage, and past history of dam it was determined that a 7 yr. 24hr. storm would be adequate.



20' Interval

10' Interval

2423-2

P's Review

Vested Water Right Application #2423-2
Gene Deuchar

Existing Cat. 3 - Low Hazard Dam

Top of Dam Elev. - 105
2nd Spillway Elev. - 101.8
P. Spillway Elev. - 99.5
DIS Toe Elev. - 86

} HT = 19 ft.

Normal Storage Capacity = 109 A.-Ft
Int. Storage Capacity = 151.2 A.-Ft
Max. Storage Capacity = 210 A.-Ft

Int Capacity x Eff HT. = $151.2 \times 15.8 = 2389 < 3000$ ∴ 25 year
Minimum Spillway Design

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

DA = 1365 Ac = 2.13 mi.²
Slope = 40 ft/mile
SI = 1.76

$$Q_{25} = 83.4 A^{.65} S^{.46} S^{-.72}$$

$$= 83.4 (2.13)^{.65} (40)^{.46} (1.76)^{-.72}$$

$$= 83.4 (1.57) (5.07) (0.67)$$

$$= \underline{442 \text{ cfs}}$$

$$Q_{100} = 132 A^{.65} S^{.46} S^{-.67}$$

$$= 132 (2.13)^{.65} (40)^{.46} (1.76)^{-.67}$$

$$= 132 (1.63) (5.46) (0.68)$$

$$= \underline{800 \text{ cfs}}$$

Secondary Spillway Flow

$$Q = C L H^{3/2}$$

$$= (2.6)(230)(3.2)^{1.5}$$

$$= \underline{3420 \text{ cfs}}$$

$L = 230'$
 $C = 2.6$
 $H = 3.2'$

Section 74:02:08:09

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

NRCS Annual Yield

DA = 1365 Ac CN = 76 ISO = 2

80% chance = 0.15
 $0.15 \times 1365^{1/2} = \underline{17 \text{ A.-Ft}}$

50% chance = 0.40
 $0.40 \times 1365^{1/2} = \underline{46 \text{ A.-Ft}}$

10% chance = 2.0
 $2.0 \times 1365^{1/2} = \underline{230 \text{ A.-Ft}}$



2423-2
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

April 9, 1999

Gerard I. Magelky
Natural Resources Conservation Service
Kadoka Field Office
PO Box 457
Kadoka, SD 57543-0457

Dear Mr. Magelky:

As we discussed yesterday, enclosed are application forms and an instruction sheet for filing for a Vested Right Claim for the Deuchars Dam in Haakon County.

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

Sincerely,

Timothy G. Schaal, P.E.
Natural Resources Engineer III
Water Rights Program
(605) 773-3352

enclosures



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

June 22, 1999

Gene Deuchar
HC 2, Box 55
Milesville, SD 57553-9603

Dear Mr. Deuchar:

We have reviewed the plans and specifications for the repair of your dam located in the NW ¼ of Section 18-T5N-R20E, in Haakon 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 Vested Water Right Application No. 2423-2 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 you, as owner of the dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Deuchar Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 19 feet and a normal storage capacity of 109 acre-feet and a maximum storage capacity of 210 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: Gerald Magelky, NRCS, Kadoka
Bruce Schoonover, USFWS, Spearfish

REPORT ON
VESTED WATER PERMIT APPLICATION NO. 2423-2
Gene Deuchar
June 10, 1999

Vested Water Permit Application No. 2423-2 has been filed by Gene Deuchar to reconstruct an existing dam located in the NW ¼ of Section 18-T5N-R20E, in Haakon County. Vested Water Right Application No. 2423-2 authorizes a dam with a storage capacity of 109 acre-feet of water and sufficient water annually to maintain the water level at the primary spillway elevation. The water will be used for fish and wildlife propagation and livestock watering purposes. The water use has a claimed priority date of January 1, 1950.

Discussion:

The earthcut spillway on the existing Deuchar Dam has experienced erosion damage from recent runoff events. The repair project will replace an existing CMP primary spillway with a larger CMP drop inlet structure at the same elevation of 99.5 (local datum) and repair and enlarge the damaged earthcut spillway at the same elevation of 101.8 (local datum).

The reconstructed Deuchar Dam will be classified as a Category 3, Low Hazard dam. The repair project has been designed by the Natural Resources Conservation Service (NRCS) and the plans and specifications have been reviewed and approved; however, reconstruction of the dam can not begin until Vested Water Permit Application No. 2423-2 is approved.

The Deuchar Dam is 19 feet high with a normal storage capacity of 109 acre-feet with a reservoir level at the primary spillway elevation of 99.5 (local datum), and a maximum storage capacity of 210 acre-feet with a reservoir level at the top of dam elevation of 105 (local datum). 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 dam will have a drainage area of 2.13 square miles. A 25 year frequency event for this drainage area will produce a peak of 442 cfs, a 100 year frequency event will produce a peak of approximately 800 cfs.

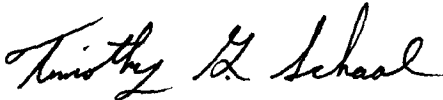
The Deuchar Dam is designed to have a CMP drop inlet primary spillway with an 84 inch diameter riser with a 36 inch diameter barrel with 5.5 feet of available head. It will also have a 230 foot wide earthcut secondary spillway with 3.2 feet of available head and a capacity of approximately 3400 cfs.

The annual yield for this drainage area with a 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 17 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 46 acre-feet; and a 10 percent chance of occurrence, or 1 out of 10 years, is expected to be 230 acre-feet.

The Deuchar Dam will be located on the East Fork of Spotted Bear Creek, about 10 miles upstream of its confluence with the Cheyenne River. There are no existing Water Permits/Rights located between the Deuchar Dam and the Cheyenne River.

Conclusions:

1. Vested Water Permit Application No. 2423-2 should be approved since water had been appropriated since 1950, and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Vested Water Permit Application No. 2423-2.



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 VALIDATION OF VESTED WATER
RIGHT APPLICATION NO. 2423-2, Gene Deuchar

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Validation of Vested Water Right Application No. 2423-2, Gene Deuchar, Box 55, Milesville SD 57553

The Chief Engineer is recommending VALIDATION of Application No. 2423-2 for impoundment of 109 acre feet of water because 1) water has been appropriated as described for fish and wildlife propagation and livestock watering uses with a priority date of January 1, 1950, 2) the use has been developed without unlawful impairment of existing rights, 3) the use is a beneficial use and 4) it is in the public interest.

1. Water Permit No. 2423-2 authorizes a dam with storage capacity of 109 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.

A handwritten signature in cursive script, appearing to read "John Hatch".

JOHN HATCH, Chief Engineer

June 15, 1999



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

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

June 22, 1999

Gene Deuchar
Box 55
Milesville, SD 57553

Dear Mr. Deuchar:

Vested Water Right Application No. 2423-2 for fish and wildlife, and livestock water 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 Pioneer Review printed at Philip, SD (Ph # (605) 859-2516). 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
www.state.sd.us/denr

June 22, 1999

The Pioneer Review
Box 788
Philip, SD 57567-0788

ATTENTION: Legal Public Notice

Enclosed is a Notice of Hearing on Application No. 2423-2 to Appropriate Water to be published twice. Please publish the first notice on July 1, 1999, 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 Gene Deuchar, Box 55, Milesville, SD 57553 (Ph # (605) 544-3357).

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

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CU T HERE-----

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

No. 2423-2

Date _____

We are in receipt of your letter of June 22, 1999, enclosing Notice of Hearing to Appropriate Water by Application No. 2423-2 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 July 1, 1999, with the second publication 7 days later. The applicant is responsible for payment.

**NOTICE OF HEARING To Validate
Vested Water Right Application No. 2423-2 to Appropriate Water**

Notice is given that Gene Deuchar, Box 55, Milesville SD 57553 has filed an application to validate a vested water right claim to impound 109 acre-feet of runoff water by reconstructing a dam located in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 18-T5N-R20E with water impounded in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 18-T5N-R20E and S $\frac{1}{2}$ NE $\frac{1}{4}$ Section 13-T5N-R19E. This application requests impoundment of sufficient water to maintain water at the outlet elevation and is to be used to provide habitat for fish and wildlife propagation and for livestock water. The water use has a claimed priority date of January 1, 1950.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends VALIDATION of Vested Water Right Application No. 2423-2 because 1) water has been appropriated as described for fish and wildlife propagation and livestock water with a priority date of January 1, 1950, 2) the use has been developed without unlawful impairment of existing rights, 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 July 19, 1999.

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.

Notice of Hearing

To Validate Vested Water Right
Application No. 2423-2
to Appropriate Water

PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

)ss

COUNTY OF HAAKON

Andrea Cook, of said County and State, being duly sworn, on oath says: THE PIONEER REVIEW is a weekly newspaper of general circulation, printed and published in PHILIP, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said PIONEER REVIEW 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 bonafide subscribers; that I, the undersigned, am Editor 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 of Hearing

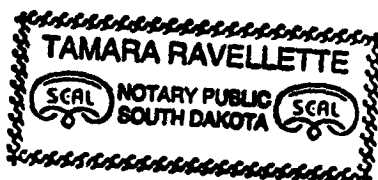
a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive issues, the first publication being on the 1st day of July, 19 99 and the last publication on the 8th day of July, 19 99 that \$43.53 being the full amount of the fee for publication of the annexed notice insures solely to the benefit of the publishers of the said newspaper; that no arrangement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.

Andrea Cook

Subscribed and sworn to before me this 13th day of July, 19 99.

Tamara Ravellette
Notary Public, Haakon County

My Commission Expires
April 3, 2003



Notice is given that Gene Deuchar, Box 55, Milesville, SD 57553, has filed an application to validate a vested water right claim to impound 109 acre-feet of runoff water by reconstructing a dam located in the SW1/4NW1/4 Section 18-T5N-R20E with water impounded in the SW1/4NW1/4 Section 18-T5N-R20E and S1/2NE1/4 Section 13-T5N-R19E. This application requests impoundment of sufficient water to maintain water at the outlet elevation and is to be used to provide habitat for fish and wildlife propagation and for livestock water. The water use has a claimed priority date of January 1, 1950.

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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 hearing will be given to the applicant and any person filing a petition.

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[Publish July 1 & 8, 1999]



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and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

AUG 6 1999

VR 2423-2

Gene Deuchar
Box 55
Milesville, SD 57553

Dear Mr. Deuchar:

Enclosed are your Validated Vested Water Right and Water License No. 2423-2. As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water.

Very truly yours,

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

enclosures