

Considered: _____

WATER PERMIT NO. 5721-3

Phone: 605 765-9588

Name of Applicant: Eldore Holzwarth

Post Office Address: RR 3, Box 74, Gettysburg SD 57442

Amount of Water Claimed: 285 AF Total Acres: no add'l

Source of Water Supply: existing storage dam

Water to be used for: irrigation County: Potter

About 14W, 1N miles _____ of Gettysburg

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved _____ Subject to _____

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

PRIORITY _____ Date Received: 9-25-92 Fee: \$250 Remarks Used to

irrigate lands covered by Permit No. 2302-3

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

WATER QUALITY APPROVAL RECEIVED 10-21-92 APPROVED/CONDITIONAL (Circle one)

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

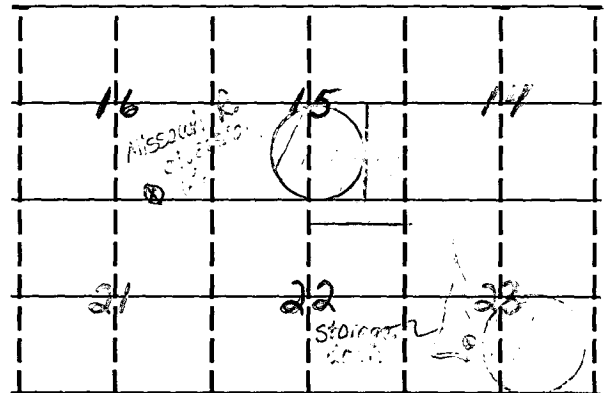
Diversion Point: storage dam - W 1/2

Section 23-T118N-R78W

Land to be Irrigated: _____

S 1/2 Sec 23, S 1/2 Sec 15, N 1/2 NE 1/4

Sec 22; all in T118N-R78W



Well Log: Driller: _____ Licensed YES _____ NO _____

Depth of Well: _____ REMARKS _____

Type of Map: aerial PREPARED BY: Lynn Beck Reviewed and the Number

Assigned on 9-22-92 By Karen Schlaak

FORM 2: Application for irrigation in South Dakota

(type or print)

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

No. 5721-3 Hydrologic Unit 10130105
Basin Missouri River
Newspaper Potter Co. News, Gettysburg
(office use only)



Application For Soil/Water Compatibility Permit And Permit To Appropriate Water

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(check one) (Use predates Mar 2, 1955)

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

- Name of Applicant Eldore Holzwarth Phone (605) 765-9588
Mailing Address RR 3 Box 74 Gettysburg State SD 57442
(Street, RR, or Box) (City) (Zip Code)
- Amount of water claimed no add'l *CFS or 285 **GPM ***AF Total Acreage _____
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout if applicable)
- Source of water supply Missouri River
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) storage dam in the
W 1/2 of Section 23-T118N-R78W.
- County Potter
- County or counties where water will be used Potter
- Annual period during which water is to be used Jan. 1 thru Dec. 31
- List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.

(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
see permit nos. 2302-3 and 4872-3.			

- Type of Irrigation: Gravity: _____ Towline: _____ Center Pivot: _____ Gun: _____ Other (Specify): _____
- Crops to be irrigated: _____
- Give a description of the project. (Attach sheet if more space is needed)

This application is for a 285 acre-foot storage dam already in existence. The water is used to irrigate lands covered under permit no. 2302-3.

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

STATE OF SOUTH DAKOTA)

County of Potter)^{ss}

I, Eldore Holzwarth, the applicant, certify that I have read this application and examined the attached maps, that the water sample, if needed, has been taken by the required procedures and has not been adulterated or tampered with and is representative of the water to be used, and that the matters stated in this application are true and correct.

Signed

Eldore Holzwarth

Subscribed and sworn to before me this 25th day of September 19 92

Jennifer J. Hegg
Notary Public

JENNIFER J. HEGG, Notary Public
My Commission Expires Oct. 1, 1993

Attachment - Land Description

Eldore Holzwarth

all in T118N-R78W

Section 15	NE 1/4 SW 1/4	24 ac
	SE 1/4 SW 1/4	24 ac
	NW 1/4 SE 1/4	38 ac
	NE 1/4 SE 1/4	35 ac
	SW 1/4 SE 1/4	38 ac
	SE 1/4 SE 1/4	35 ac
Section 22	NW 1/4 NE 1/4	18.5 ac
	NE 1/4 NE 1/4	18.5 ac
Section 23	NE 1/4 SW 1/4	3.5 ac
	SE 1/4 SW 1/4	3.5 ac
	NW 1/4 SE 1/4	36 ac
	NE 1/4 SE 1/4	28 ac
	SW 1/4 SE 1/4	36 ac
	SE 1/4 SE 1/4	29 ac

Total 366 acres

NOT TO SCALE

88-L

.16

Mary Ann Knudsen
Tom Knudsen
Marion Buckley
Debra Cronin

118-78

1580'

Bernice Guamme

Ernest Johnson
7.5y

.21

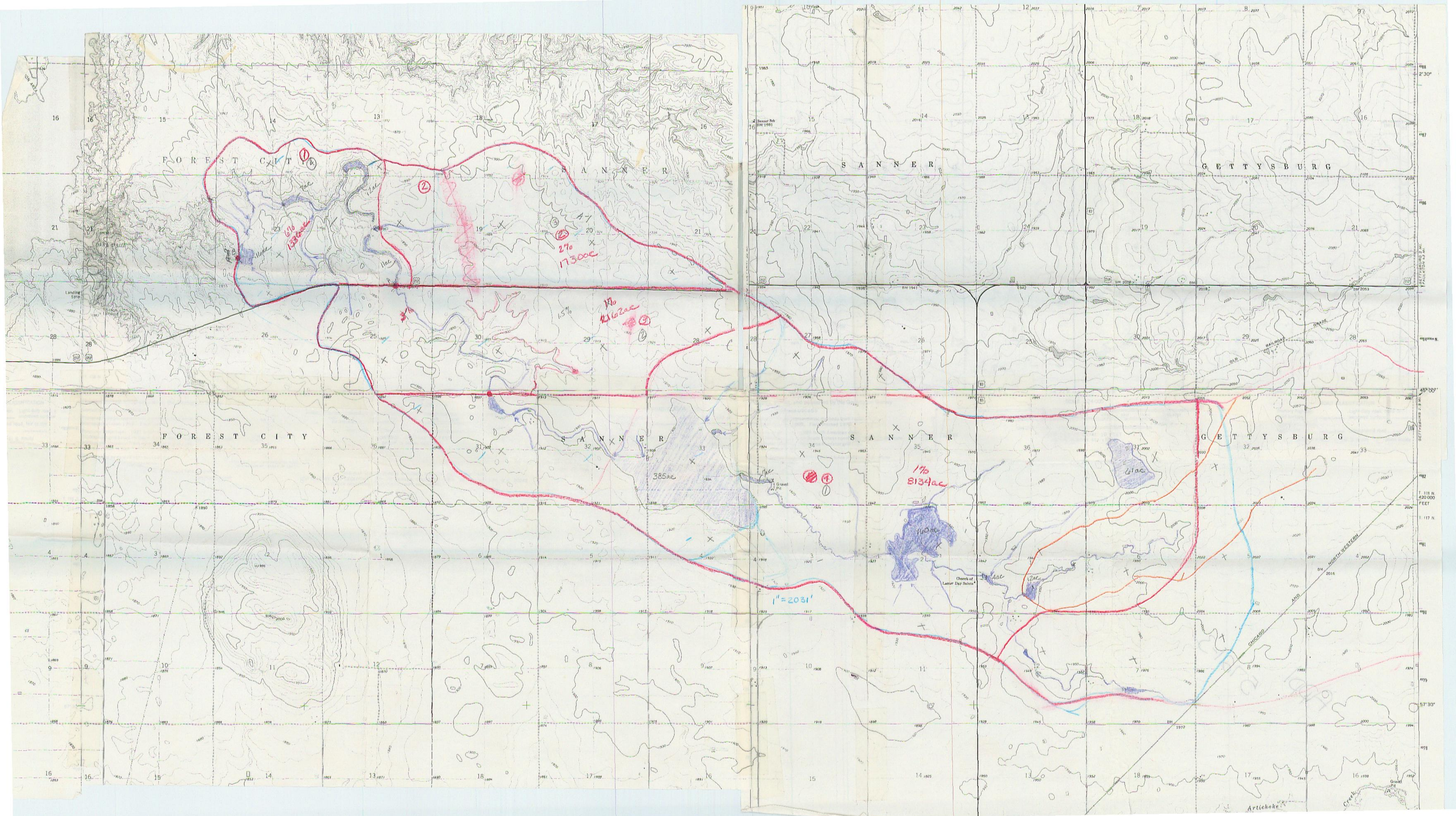
Eldora Holzworth

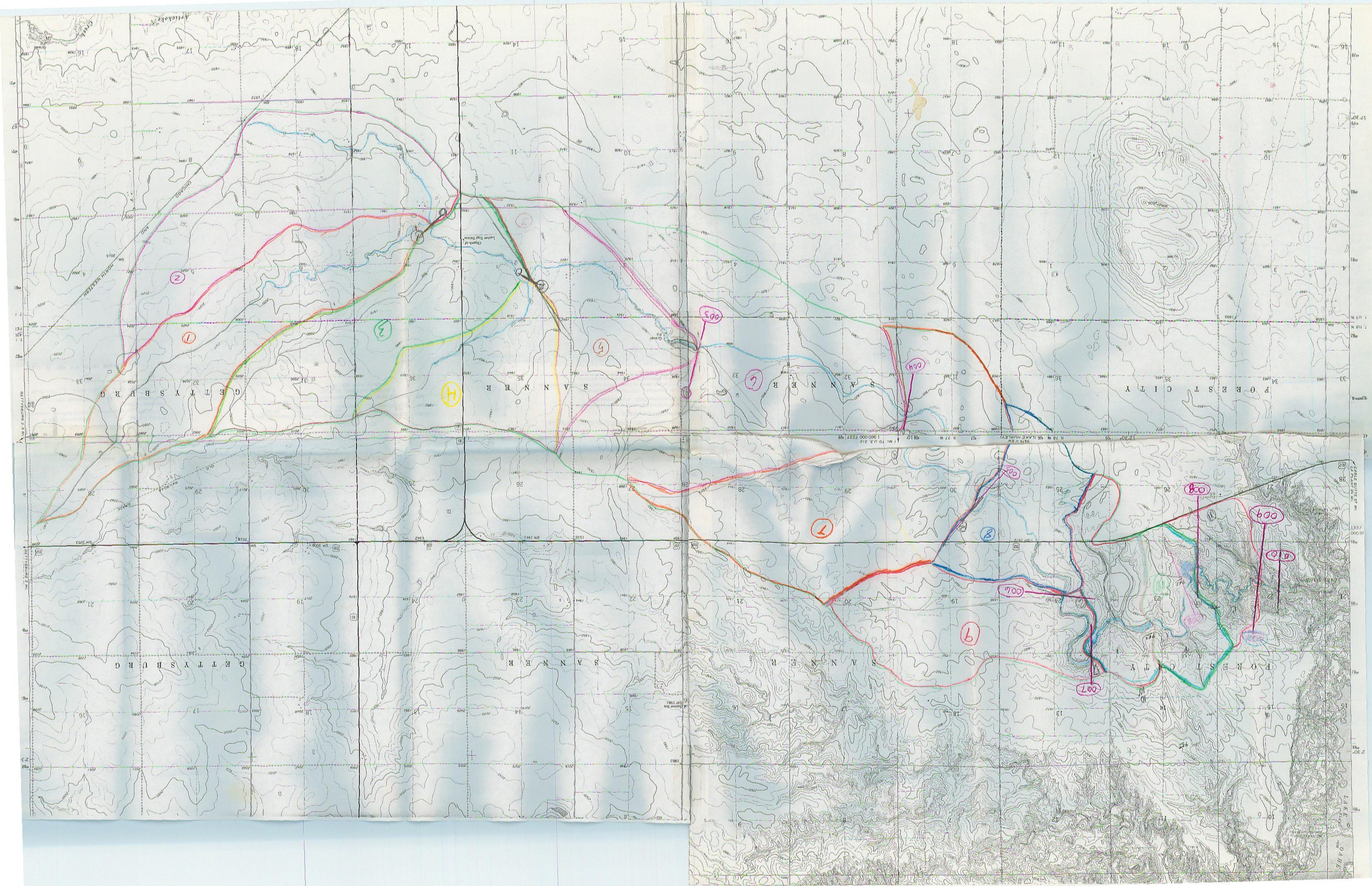
8 1/2-15-118-78 (E-S) (E-S) 14-118
 T617 T616
 (15) 62° (16) 58° CRP
 (16) 26°
 T645 (10) 58° T643 (19) 58° NE 4 SE 4 28 ac
 NW 4 SE 4 38 ac
 NE 4 SW 4 24 ac
 SE 4 SW 4 24 ac
 SW 4 SE 4 38 ac
 (11) 52° (7) 8' 95' aluminum
 (18) 6' 54° (16) 54° (17) 99°
 1/2 mile
 Center Point
 towing
 8" aluminum
 10" aluminum
 T641 (11) 41° (12) 15°
 T643 NW 4 NE 4 18.5 ac NE 4 NE 4 28 ac
 (11) 20° (12) 15°

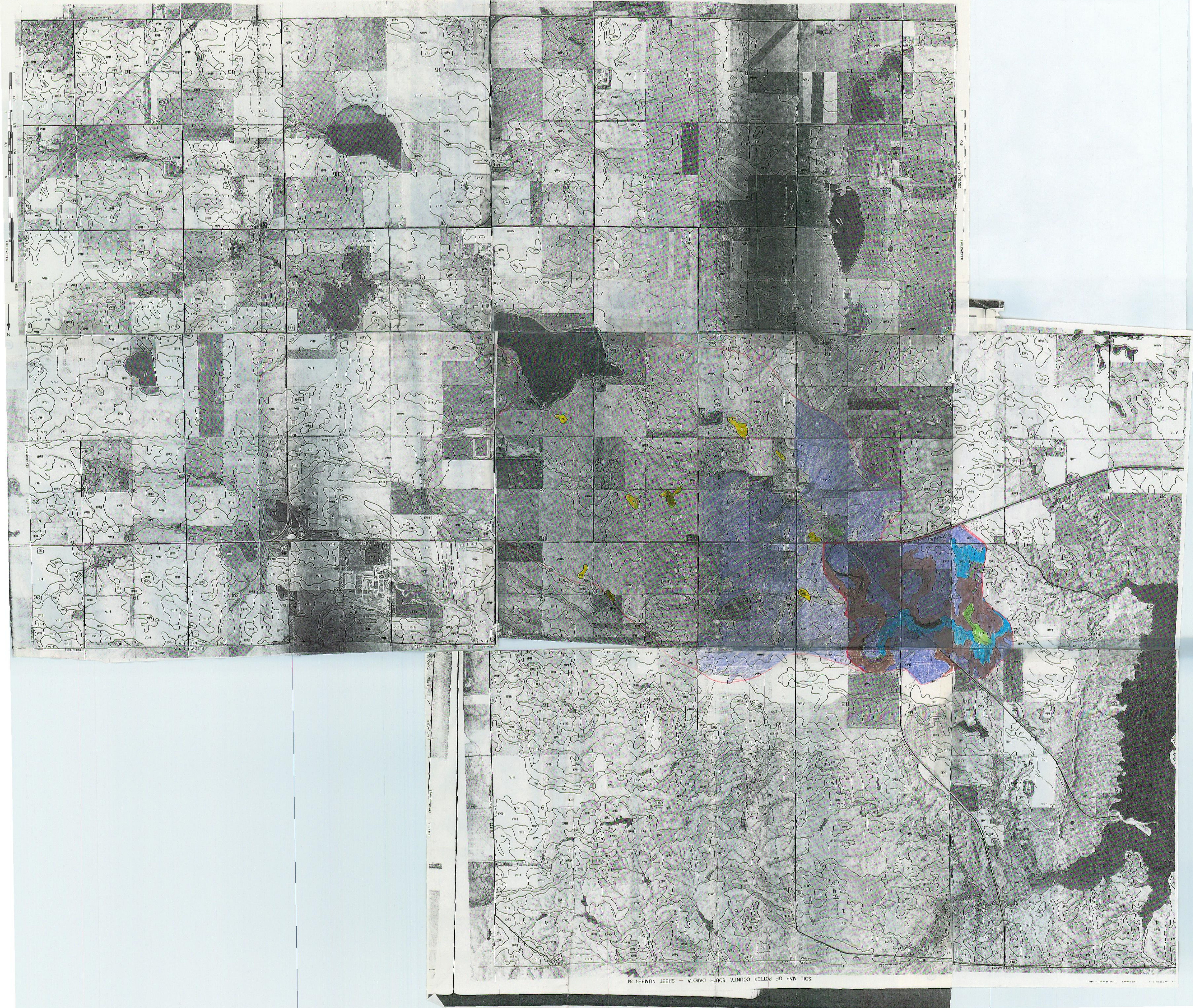
Prepared by: *Lynn Beck*
Lynn Beck
Natural Resources Engineer
DENR, Division of Water Rights
8-24-92

(17) 99°
 T643
 10" aluminum
 135°
 (13) 135°
 (14) 6°
 (16) 16°
 (17) 3°
 CRP
 (15) 14°
 (18) 3°
 T615
 (20) 40°
 (1) 7°
 NE¹SW⁴ 35 ac.
 NW⁴SE⁴ 36 ac.
 NE⁴SE⁴ 28 ac.
 SW⁴SE⁴ 36 ac.
 SE⁴SE⁴ 28 ac.
 SE⁴SW⁴ 3.5 ac.
 1885'
 100'
 P.S.
 8" PVC
 8" PVC
 Center Pivot
 (2) 135°
 (3) 135°
 (4) 92°
 23-118-78 (8-S)

5721-3







**SOUTH DAKOTA
WATER PERMIT NO. 5721-3**

Date of first receipt of application September 25, 1992.

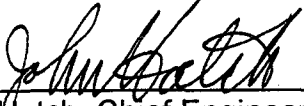
The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 5721-3 to Eldore Holzwarth, RR 3, Box 74, Gettysburg SD 57442 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5721-3 authorizes storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4 Section 15, N 1/2 NE 1/4 Section 22, E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River from a diversion point located in the SE 1/4 Section 16-T118N-R78W to irrigate 1268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of the 366 acres. This permit adds the existing 285 acre-feet storage dam to the project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this permit.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: January 1 - December 31.
3. The date from which applicant may claim right is September 25, 1992.
4. The date of approval of Permit No. 5721-3 is March 13, 1995.
5. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATION

Water Permit No. 5721-3 authorizes a dam with a storage capacity of 285 acre-feet of water. The dam may be filled one or more times per year.

WATER MANAGEMENT BOARD

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

SEP 5 1995

date

Supplemental Information

(type or print in ink)



1. Well Information - Proposed Construction

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

2. Dugout Information

- Surface Dimensions _____ Depth _____
- 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.

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

- Freeboard 4'
- Crest Width 14'
Crest Length 1030'

- Height 21'

- Primary Outlet Capacity none

If pipe, diameter _____

- Secondary Spillway Capacity 260 sq. ft.

Spillway Width 65'

- X & Y Slope

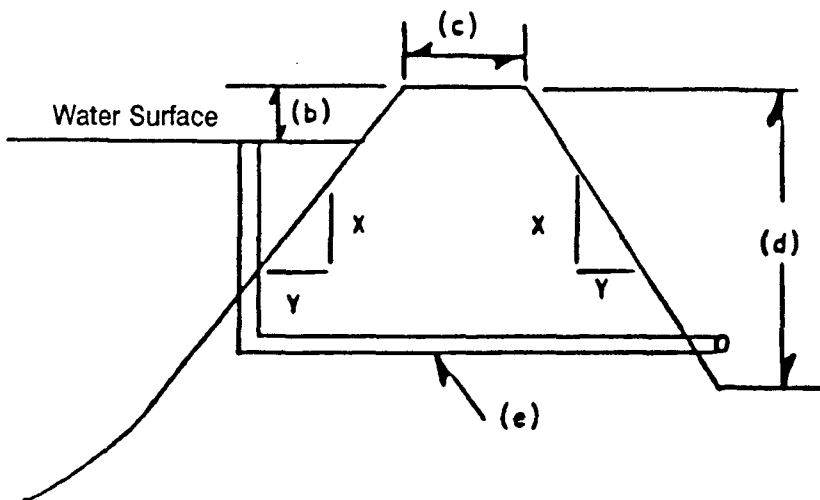
Upstream 3:1

Downstream 2:1

- Surface Area of Impoundment 23 acres

- Storage 285 Acre Feet

- Drainage Area above Dam 568 Acres



SIMPLIFIED DAMBREAK MODEL (SMPDBK) VERSION: 7/88-1
 BY L. FREAD, J.M. LEWIS, & J.N. WETMORE - PHONE: (301) 427-7640
 NWS HYDROLOGIC RESEARCH LAB, RM 530 8060 13TH ST, SILVER SPRING, MD 20910

THE DATA FOR THIS DAM IS AS FOLLOWS:

TYPE OF DAM (IDAM)	EARTH
DAM BREACH ELEVATION (HDE)	1815.00 FT
FINAL BREACH ELEVATION (BME)	1790.00 FT
VOLUME OF RESERVOIR (VOL)	285. ACRE-FT
SURFACE AREA OF RESERVOIR (SA)	23.00 ACRES
FINAL BREACH WIDTH (BW)	75.00 FT
TIME OF DAM FAILURE (TFM)	16.00 MINUTES
NON-BREACH FLOW (QO)	3120.00 CFS
DEAD STORAGE EQUIV. MANN. N (CMS)	.30

CROSS SECTION NO. 1

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1790.0	1800.0	1810.0	1820.0	1825.0	1830.0
TWIDTHS(FT) (BS)	.0	200.0	460.0	640.0	680.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 2

REACH LENGTH (D) .64 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1765.0	1770.0	1780.0	1790.0	1800.0	1810.0
TWIDTHS(FT) (BS)	.0	40.0	120.0	240.0	400.0	520.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 3

REACH LENGTH (D) 1.45 MI

FLOOD DEPTH (FLD) 11.40 FT

ELEV.(FT) (HS)	1730.0	1740.0	1750.0	1760.0	1770.0	1780.0
TWIDTHS(FT) (BS)	40.0	120.0	480.0	560.0	660.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	800.0	1200.0	1600.0	2000.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 4

REACH LENGTH (D) 1.77 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1700.0	1710.0	1720.0	1730.0	1740.0	1750.0
TWIDTHS(FT) (BS)	.0	160.0	240.0	400.0	480.0	600.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

AN ASTERISK (*) BESIDE A PARAMETER IMPLIES THAT A DEFAULT VALUE WAS COMPUTED

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

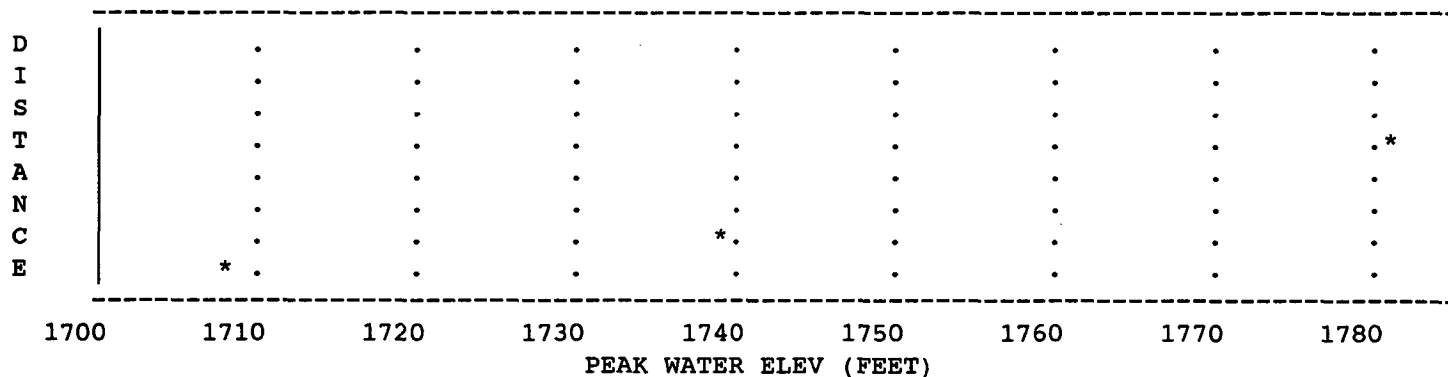
RVR MILE FROM DAM	MAX FLOW (CFS)	MAX ELEV (FT-MSL)	MAX DEPTH (FT)	TIME(HR) MAX DEPTH	TIME(HR) FLOOD	TIME(HR) DEFLOOD	FLOOD DEPTH(FT)
*****	*****	*****	*****	*****	*****	*****	*****
.00	20550.	1802.13	12.13	.27	.00	.00	.00
.64	18110.	1781.34	16.34	.33	.00	.00	.00
1.45	12425.	1739.89	9.89	.39	.00	.00	11.40
1.77	11584.	1708.97	8.97	.41	.00	.00	.00

ANALYSIS IS COMPLETE

Elev. bot. creek = 1746.0
Elev. top of bank = 1757.5
Elev. cellar entrance = 1739.6

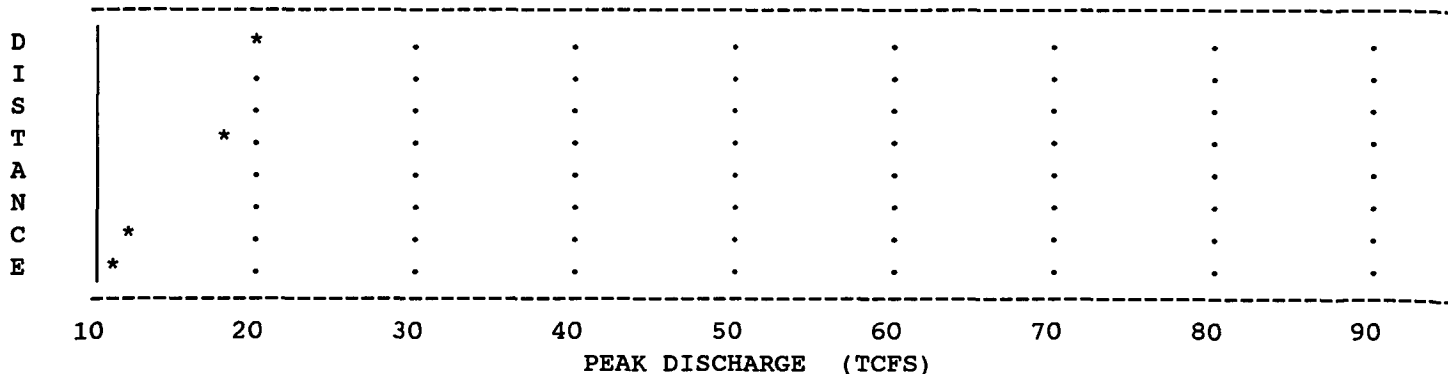
NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed



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 NWS HYDROLOGIC RESEARCH LAB, RM 530 8060 13TH ST, SILVER SPRING, MD 20910

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TYPE OF DAM (IDAM)	EARTH
DAM BREACH ELEVATION (HDE)	1815.00 FT
FINAL BREACH ELEVATION (BME)	1790.00 FT
VOLUME OF RESERVOIR (VOL)	285. ACRE-FT
SURFACE AREA OF RESERVOIR (SA)	23.00 ACRES
FINAL BREACH WIDTH (BW)	50.00 FT
TIME OF DAM FAILURE (TFM)	8.00 MINUTES
NON-BREACH FLOW (QO)	3120.00 CFS
DEAD STORAGE EQUIV. MANN. N (CMS)	.30

CROSS SECTION NO. 1

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1790.0	1800.0	1810.0	1820.0	1825.0	1830.0
TWIDTHS(FT) (BS)	.0	200.0	460.0	640.0	680.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 2

REACH LENGTH (D) .64 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1765.0	1770.0	1780.0	1790.0	1800.0	1810.0
TWIDTHS(FT) (BS)	.0	40.0	120.0	240.0	400.0	520.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 3

REACH LENGTH (D) 1.45 MI

FLOOD DEPTH (FLD) 11.40 FT

ELEV.(FT) (HS)	1730.0	1740.0	1750.0	1760.0	1770.0	1780.0
TWIDTHS(FT) (BS)	40.0	120.0	480.0	560.0	660.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	800.0	1200.0	1600.0	2000.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 4

REACH LENGTH (D) 1.77 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1700.0	1710.0	1720.0	1730.0	1740.0	1750.0
TWIDTHS(FT) (BS)	.0	160.0	240.0	400.0	480.0	600.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

0

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FINAL BREACH WIDTH (BW)	50.00 FT
TIME OF DAM FAILURE (TFM)	16.00 MINUTES
NON-BREACH FLOW (QO)	3120.00 CFS
DEAD STORAGE EQUIV. MANN. N (CMS)	.30

CROSS SECTION NO. 1

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1790.0	1800.0	1810.0	1820.0	1825.0	1830.0
TWIDTHS(FT) (BS)	.0	200.0	460.0	640.0	680.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 2

REACH LENGTH (D) .64 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1765.0	1770.0	1780.0	1790.0	1800.0	1810.0
TWIDTHS(FT) (BS)	.0	40.0	120.0	240.0	400.0	520.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 3

REACH LENGTH (D) 1.45 MI

FLOOD DEPTH (FLD) 11.40 FT

ELEV.(FT) (HS)	1730.0	1740.0	1750.0	1760.0	1770.0	1780.0
TWIDTHS(FT) (BS)	40.0	120.0	480.0	560.0	660.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	800.0	1200.0	1600.0	2000.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 4

REACH LENGTH (D) 1.77 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1700.0	1710.0	1720.0	1730.0	1740.0	1750.0
TWIDTHS(FT) (BS)	.0	160.0	240.0	400.0	480.0	600.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

AN ASTERISK (*) BESIDE A PARAMETER IMPLIES THAT A DEFAULT VALUE WAS COMPUTED

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

RVR MILE FROM DAM	MAX FLOW (CFS)	MAX ELEV (FT-MSL)	MAX DEPTH (FT)	TIME(HR) MAX DEPTH	TIME(HR) FLOOD	TIME(HR) DEFLOOD	FLOOD DEPTH(FT)
*****	*****	*****	*****	*****	*****	*****	*****
.00	16769.	1801.23	11.23	.27	.00	.00	.00
.64	15297.	1780.24	15.24	.33	.00	.00	.00
1.45	10608.	1739.14	9.14	.40	.00	.00	11.40
1.77	10107.	1708.52	8.52	.42	.00	.00	.00

ANALYSIS IS COMPLETE

1

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

0

D	.	.	.	.	.	.	.	.
I	.	.	.	.	.	.	.	.
S	.	.	.	.	.	.	.	.
T	.	.	.	.	.	.	.	*
A	.	.	.	.	.	.	.	.
N	.	.	.	.	.	.	.	.
C	.	.	.	*	.	.	.	.
E	*.	.	.	.	.	.	.	.

1700 1710 1720 1730 1740 1750 1760 1770 1780

PEAK WATER ELEV (FEET)

0

1

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

0

D	*	.	.	.	.	.	.	.
I	.	.	.	.	.	.	.	.
S	.	.	.	.	.	.	.	.
T	*	.	.	.	.	.	.	.
A	.	.	.	.	.	.	.	.
N	.	.	.	.	.	.	.	.
C	*	.	.	.	.	.	.	.
E	*	.	.	.	.	.	.	.

10 20 30 40 50 60 70 80 90

PEAK DISCHARGE (TCFS)

0

400

11-12-32

Don't

T. L. P.

Don't

I. K. Schink

Eldora Holman

BS

HI

FS

Elev.

14²114²100⁰⁰6²107⁵2⁸111⁴4⁶109⁶4²110⁰4⁰⁵110¹⁵1⁴112⁸

TP

6⁶119¹⁵16⁵112⁵⁵1⁴117¹⁵

Creek bottom

g.l. NE of house

at back door

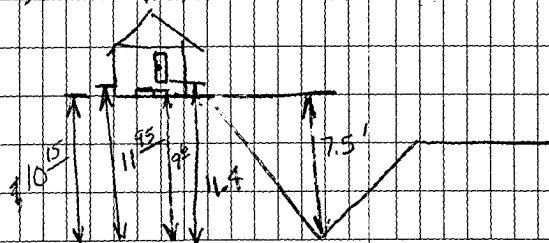
low cr. seller on road

g.l. SE of house

cr. concrete at door 1/2" below 1" - 5"

NV 1 cr. below at back door

Conc. slab at door 1/2" from ground
near back door



w/ hand level

BS

HI

11⁹

5⁰

100

4⁶

5⁸

4⁰

Inv. Inverted

6' ϕ steel

① crossing & invert

② cross & invert

" " high spot



Picture

1. house

2-9. pr.

10-9. upstream at house

10. downstream at house

11. buildings to be removed

12. house

13. farm buildings

14. creek

15. ...

45'	40		
.7x2031	1.2x2031	1.5x2031	1.3x2031
.0317	.0164	.0151	.0170
			= .0803
			4

Area 1 = 1215.82 ac = 1.9 mi²
 Slope = .0201% = 105.9' / mi

$$Q_{100,1} = 132 (1.9 \text{ mi}^2)^{0.65} (105.9' / \text{mi})^{0.46} (3.33)^{-0.67}$$

$$= 764.15 \text{ cfs}$$

$\frac{55}{4.5 \times 2031} = .0060$ $\frac{80}{6.5 \times 2031} = .0061$ $\frac{60}{4.2 \times 2031} = .0059$ $\frac{.0179}{3} = .0060$

Area 2 = 6479.75 ac = 10.1 mi²
 Slope = .0060% = 31.6' / mi

$$Q_{100,2} = 132 (10.1 \text{ mi}^2)^{0.65} (31.6')^{0.46} (3.33)^{-0.67}$$

$$= 1297.78 \text{ cfs}$$

$Q_{100 \text{ total}} = 2,061.93$ 2062 cfs

SCS Method

CN, t_c ,

- Determine subareas and their weighted CN's.

Soil Survey = Potter Co.

Well drained, nearly level to undulating, silty soils on upland. Agar association.

B 0-9%

			Group
	RgD	Raben-Gettys complex 9-25% slopes	C
	-LoC	Lowry silt loam 6-9% slope	B
F.L.	LoB	Lowry silt loam 2-6% slope	B
	GeF	Gettys clay loam 25-40% slope	C
	LpD	Lowry-Reno complex 9-15% slope	B-C
	-LpC	" " " 6-9% slope	B-C
F.L.	LoA	Lowry silt loam 0-2% slope	B
F.L.	Mo	Moberge silt loam	B
F.L.	AgB	Agar silt loam 2-6% slope	B
F.L.	AmA	Agar-Moberge silt loam 0-3% slope	B
	EpB	Ekin-perio complex 2-6% slope	B-C
F.L.	AgA	Agar silt loam 0-2% slope	B
	PK	Plankinton silt loam	D
	Te	Tetonka silt loam	C-D
67.46	Ho	Hoven silt loam	D
F.L.	EaA	Eakin silt loam 0-2% slope	B

Subarea #1

Type B soil 5.38% slope 9,951.9' reach
= 1.88 mi.

B 2-6%
B-C 9-15%
C 25-40%

BC 6-9%

$$48 + 127 + 114 + 300 + 113 = 712 \div 1.4 = \underline{509 \text{ ac}}$$

Type B 0-6% slope LOA, LoB, Mo, AgB, AmA, EpB

$$\frac{1''}{2031} = \frac{10}{.2} = \frac{10}{400} = .024611 = 2.5\%$$

$$\frac{30'}{1.4''} = .0106 \quad \frac{20}{.2} = 1.17\% = 5.0\%$$

$$\frac{2.5 + 5.0 + 1.1}{3} = \underline{2.87\%}$$

Type B-C 6-9% slope LoC, LpC, Mo

$$238 + 279 + 176 + 1 = 693 \div 1.4 = \underline{495 \text{ ac}}$$

$$\begin{array}{ccccc} \frac{30'}{.35} & \frac{20'}{.15} & \frac{30'}{.25} & \frac{30'}{.30} & \frac{40'}{.40} \\ .0422 & .0630 & .0591 & .0492 & \end{array}$$

$$\frac{.2161}{4} = .0540$$

Say 6%

Type B-C 9-15% slope LpD, RgD

$$111 + 93 + 55 + 98 = \frac{267}{1.4} = \underline{191 \text{ ac}}$$

$$\begin{array}{ccc} \frac{50'}{.3} & \frac{20'}{.1} & \frac{30'}{.2} \\ .0821 & .0985 & .0739 \end{array} = .2545 \div 3 = .0848$$

8.5%

Type C 25-40% slope Gcf

$$\begin{array}{ccc} \frac{45}{.65} & \frac{30}{.075} & \frac{45}{.15} \\ .0525 & .075 & .15 \end{array} \quad .1678 = \underline{17\%}$$

$$\frac{45}{1.4} = \underline{32 \text{ ac}}$$

$$\begin{array}{r} 232 \times 17 = 544 \\ 191 \times 8.5 = 1623.5 \\ 495 \times 6 = 2970 \\ 509 \times 2.87 = 1460.83 \\ \hline 6598.33 \\ \div 1227 \\ \hline 5.38\% \text{ avg.} \end{array}$$

$$\begin{array}{r} 275 \\ 640 \\ 362 \\ 79 \\ \hline 1400 \\ 50 \end{array}$$

$$1425 \quad 1227$$

$$\begin{array}{r} 160 \text{ ac} \\ 225 \text{ dots} \\ 1.4 \text{ ac} \\ \hline \text{dot} \end{array}$$

Further study on Holzworth Dam Appl. 5721-3 to classify dam.

Small size category 2 dam. Spillway design 100-yr frequency.

Simplified Dambreak Model (SMPDBK)

Max. depth of flood at the house 11.46, first floor of the house is 11.4'. Flow = 14,801 cfs.

$$\begin{aligned}\text{Using breach width} &= 3 \times h_t = 3 \times 25 = 75' \\ \text{breach ht} &= 25' \\ \text{time to breach} &= h_t/3 = 25/3 = 8 \text{ min.} \\ n &= .03\end{aligned}$$

IR-20 Flood Routing Model

Watershed area = 24.3 mi²
50% PMP = 11.0 in.

Flood depth at the house = 1732.08
Top of bank and low ground elev. around house = 1735.5
Bot. of creek elev. = 1728.0,
Flow @ house = 3528 cfs

Top of dam = 1812.1
Depth of flow in spillway @ 1810.22
Flow in spillway = 3482 cfs

- Spillway passes 50% PMP
- Depth of water from dambreak slightly over bottom of door sill at the downstream house. Using 75' x 25' breach and 8 min. breach time.

Safety of Dams: 74:02:08:06

Storage Capacity 50 < 263 ac-ft. < 1000 ∴ small size
Ht. 25 = 25 < 40 ∴ small size

74:02:08:07

For a small size category 2 dam spillway must meet 100-year frequency.

Spillway on Holzworth dam meets 50% PMP design
∴ O.K.

Small Size, Category 2 Dam

X- Sec. for HOLZDAM5.IN SMPDBK - Model

	<u>1790</u>	<u>1800</u>	<u>1810</u>	<u>1820</u>	<u>1825</u>	<u>1830</u>	<u>1835</u>
Sta. 0+00	0	200	460	640	680	720	760

	<u>1765</u>	<u>1770</u>	<u>1780</u>	<u>1790</u>	<u>1800</u>	<u>1810</u>
Sta. 34+00	0	40	120	240	400	520

	<u>1730</u>	<u>1740</u>	<u>1750</u>	<u>1760</u>	<u>1770</u>	<u>1780</u>	
Sta. 76+80	40	120	480	560	660	720	HOUSE

	<u>1760</u>	<u>1710</u>	<u>1720</u>	<u>1730</u>	<u>1740</u>	<u>1750</u>
Sta. 93+60	0	160	240	400	480	600

Ht. dam 25'

Breach width 75' = 3 x ht.

Breach time 8 min. = ht/3

Surface Area 23 ac.

Storage 285 ac. ft.

$$Q_0 = 2.6 \times 150 (4)^{3/2} = 3120 \text{ cfs}$$

2/7/95 Use ✓
HOLZDAM5.OUT

SIMPLIFIED DAMBREAK MODEL (SMPDBK) VERSION: 7/88-1
BY L. FREAD, J.M. LEWIS, & J.N. WETMORE - PHONE: (301) 427-7640
NWS HYDROLOGIC RESEARCH LAB, RM 530 8060 13TH ST, SILVER SPRING, MD 20910

C1	holzwarth dam						
C2	unnamed						
C3	IBC= 1	ISH= 0	JNK= 0	IDAM=0			
	HDM	BME	VOL	SA	BW	TFM	QO
C4	1815.0	1790.0	285.	23.0	75.0	8.0	3120
C5	NS= 4	NCS= 6	CMS=.30				
	X-S NO.	1					
C6- 1	D= .00	FLD= .00					
C7-1	HS= 1790.00	BS= 0.	BSS= 0.		CM= .030		
C7-2	HS= 1800.00	BS= 200.	BSS= 0.		CM= .030		
C7-3	HS= 1810.00	BS= 460.	BSS= 0.		CM= .030		
C7-4	HS= 1820.00	BS= 640.	BSS= 0.		CM= .030		
C7-5	HS= 1825.00	BS= 680.	BSS= 0.		CM= .030		
C7-6	HS= 1830.00	BS= 720.	BSS= 0.		CM= .030		
	X-S NO.	2					
C6- 2	D= .64	FLD= .00					
C7-1	HS= 1765.00	BS= 0.	BSS= 0.		CM= .030		
C7-2	HS= 1770.00	BS= 40.	BSS= 0.		CM= .030		
C7-3	HS= 1780.00	BS= 120.	BSS= 0.		CM= .030		
C7-4	HS= 1790.00	BS= 240.	BSS= 0.		CM= .030		
C7-5	HS= 1800.00	BS= 400.	BSS= 0.		CM= .030		
C7-6	HS= 1810.00	BS= 520.	BSS= 0.		CM= .030		
	X-S NO.	3					
C6- 3	D= 1.45	FLD= 11.40					
C7-1	HS= 1730.00	BS= 40.✓	BSS= 0.		CM= .030		
C7-2	HS= 1740.00	BS= 120.✓	BSS= 0.		CM= .030		
C7-3	HS= 1750.00	BS= 480.✓	BSS= 800.		CM= .030		
C7-4	HS= 1760.00	BS= 560.✓	BSS= 1200.		CM= .030		
C7-5	HS= 1770.00	BS= 660.✓	BSS= 1600.		CM= .030		
C7-6	HS= 1780.00	BS= 720.✓	BSS= 2000.		CM= .030		
	X-S NO.	4					
C6- 4	D= 1.77	FLD= .00					
C7-1	HS= 1700.00	BS= 0.	BSS= 0.		CM= .030		
C7-2	HS= 1710.00	BS= 160.	BSS= 0.		CM= .030		
C7-3	HS= 1720.00	BS= 240.	BSS= 0.		CM= .030		
C7-4	HS= 1730.00	BS= 400.	BSS= 0.		CM= .030		
C7-5	HS= 1740.00	BS= 480.	BSS= 0.		CM= .030		
C7-6	HS= 1750.00	BS= 600.	BSS= 0.		CM= .030		

Handwritten notes:
Z.6 x 150 x (4.1) 7/8
X-axis for top width = dist. to like contours.

THE DATA FOR THIS DAM IS AS FOLLOWS:

TYPE OF DAM (IDAM)	EARTH
DAM BREACH ELEVATION (HDE)	1815.00 FT
FINAL BREACH ELEVATION (BME)	1790.00 FT
VOLUME OF RESERVOIR (VOL)	285. ACRE-FT
SURFACE AREA OF RESERVOIR (SA)	23.00 ACRES
FINAL BREACH WIDTH (BW)	75.00 FT
TIME OF DAM FAILURE (TFM)	8.00 MINUTES
NON-BREACH FLOW (QO)	3120.00 CFS
DEAD STORAGE EQUIV. MANN. N (CMS)	.30

CROSS SECTION NO. 1

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1790.0	1800.0	1810.0	1820.0	1825.0	1830.0
TWIDTHS(FT) (BS)	.0	200.0	460.0	640.0	680.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 2

REACH LENGTH (D) .64 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1765.0	1770.0	1780.0	1790.0	1800.0	1810.0
TWIDTHS(FT) (BS)	.0	40.0	120.0	240.0	400.0	520.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 3

REACH LENGTH (D) 1.45 MI

FLOOD DEPTH (FLD) 11.40 FT

ELEV.(FT) (HS)	1730.0	1740.0	1750.0	1760.0	1770.0	1780.0
TWIDTHS(FT) (BS)	40.0	120.0	480.0	560.0	660.0	720.0
INACTIVE TW(FT) (BSS)	.0	.0	800.0	1200.0	1600.0	2000.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

CROSS SECTION NO. 4

REACH LENGTH (D) 1.77 MI

FLOOD DEPTH (FLD) .00 FT

ELEV.(FT) (HS)	1700.0	1710.0	1720.0	1730.0	1740.0	1750.0
TWIDTHS(FT) (BS)	.0	160.0	240.0	400.0	480.0	600.0
INACTIVE TW(FT) (BSS)	.0	.0	.0	.0	.0	.0
MANNING N (CM)	.030	.030	.030	.030	.030	.030

AN ASTERISK (*) BESIDE A PARAMETER IMPLIES THAT A DEFAULT VALUE WAS COMPUTED

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

RVR MILE FROM DAM	MAX FLOW (CFS)	MAX ELEV (FT-MSL)	MAX DEPTH (FT)	TIME(HR) MAX DEPTH	TIME(HR) FLOOD	TIME(HR) DEFLOOD	FLOOD DEPTH(FT)
*****	*****	*****	*****	*****	*****	*****	*****
.00	25383.	1803.13	13.13	.13	.00	.00	.00
.64	21648.	1782.52	17.52	.19	.00	.00	.00
1.45	14801.	1741.46	11.46	.25	.24	.31	11.40
1.77	13602.	1709.52	9.52	.27	.00	.00	.00

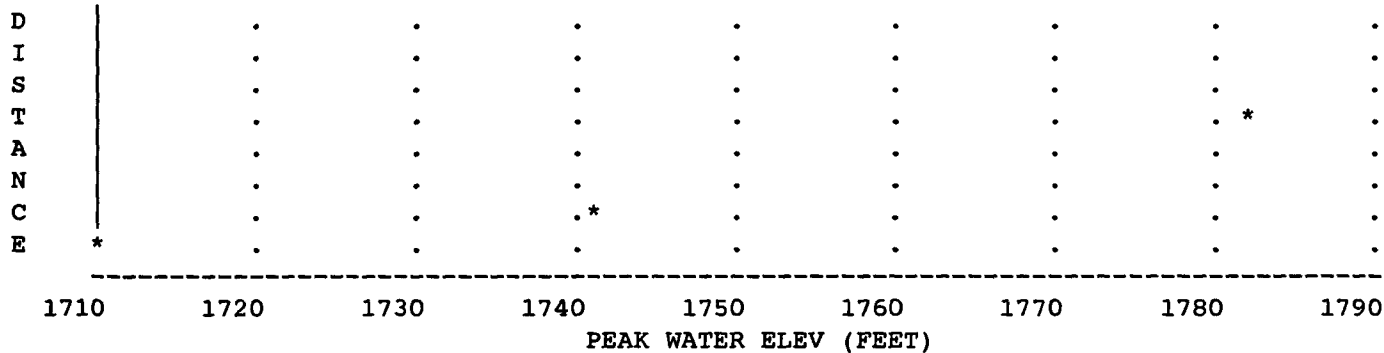
ANALYSIS IS COMPLETE

1

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

0



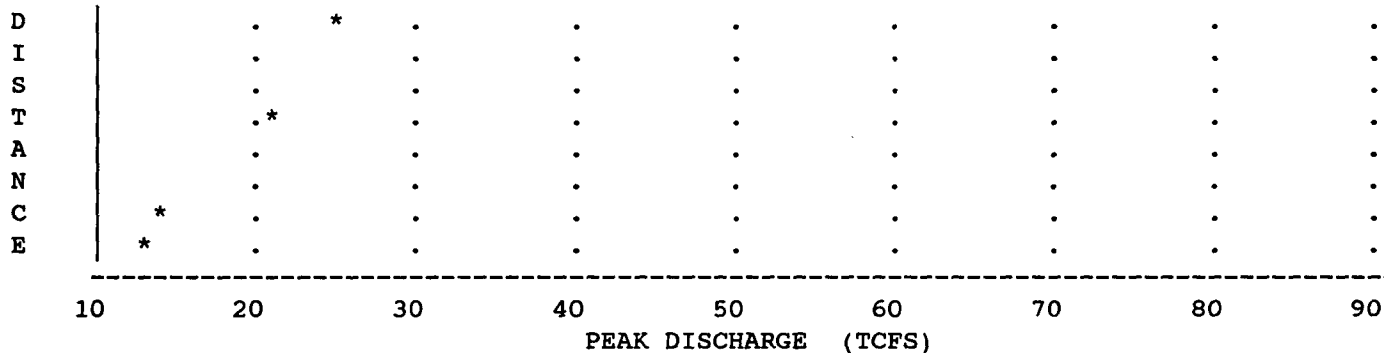
0

1

NAME OF DAM: holzwarth dam

NAME OF RIVER: unnamed

0



0

HOLZWARTH DAM

Overland flow

Stream reach

reservoir

X-section

22" storm

<u>At House</u> - 1735.5	<u>At Dam</u> - 1812 fsm
@ 100% PMP	@ 100% PMP
11,655 cfs	11,541 cfs
1735.66 fsm	1812.42 fsm

@100% PMP

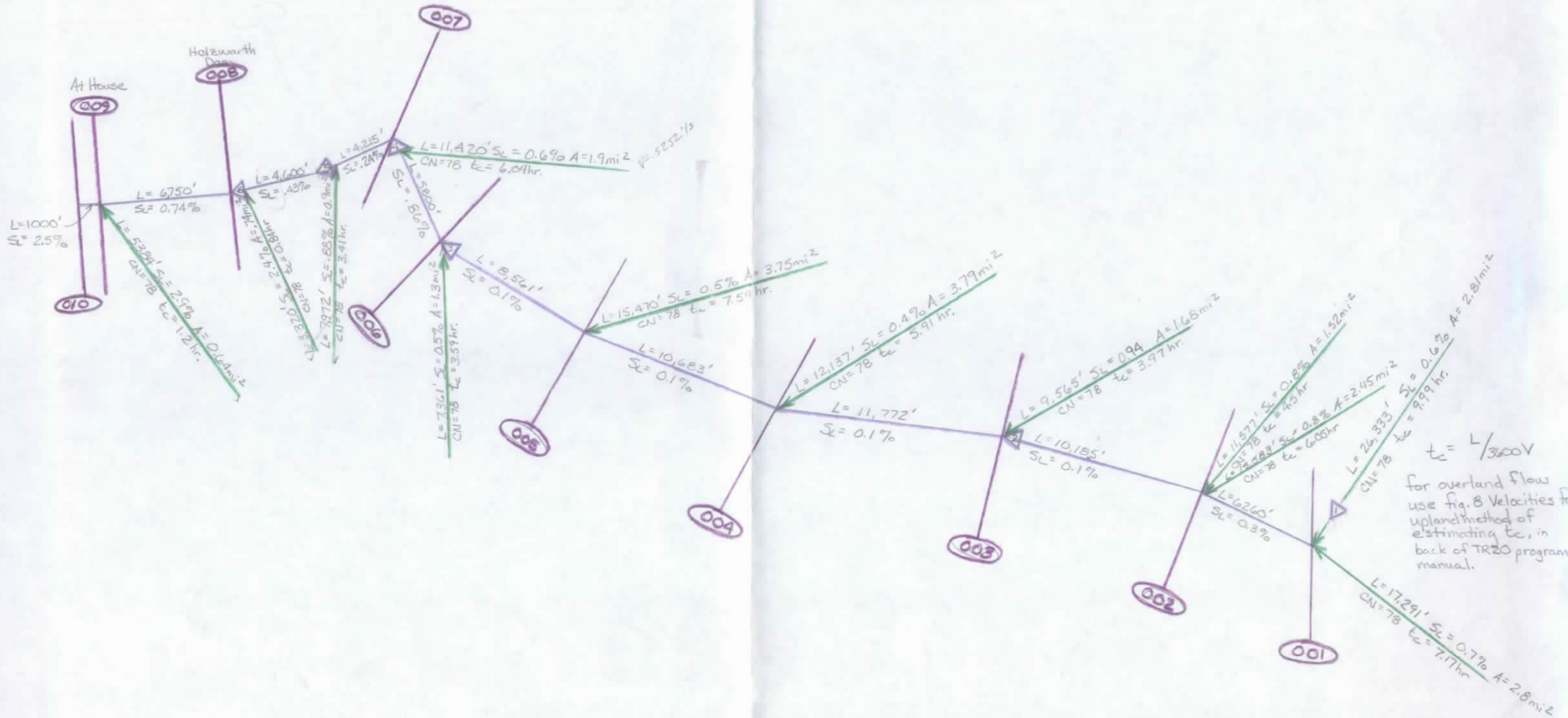
11,655cts

1735.66 tmsl

@100% PMP

11,541 cfs

1812.42 tsmi





42-281	90 SHEETS	5 SQUARE
42-282	100 SHEETS	5 SQUARE
42-283	200 SHEETS	5 SQUARE

Subarea #3 Type B soil 1% slope $15,029.4' = 2.85 \text{ mi.}$
CN = 78

Subarea #1 Type B soil 6% slope $9951.9' = 1.88 \text{ mi}$
CN=78

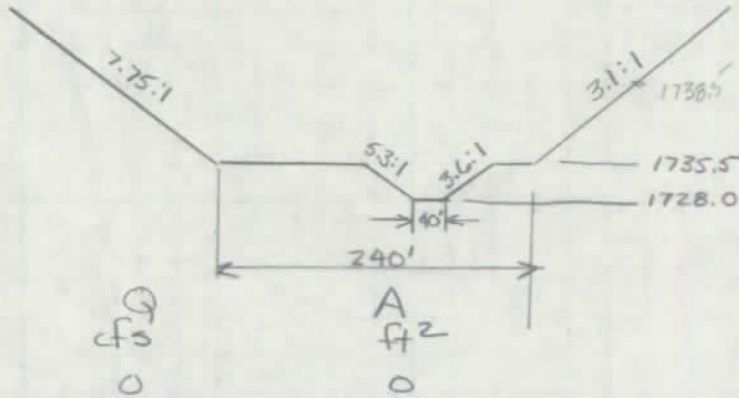
Group B - Min Infiltration 0.15-0.30 in/hr

Straight row crops $CN = 78$ $I_a = 0,25$

~~Range~~ ~~CN-59~~

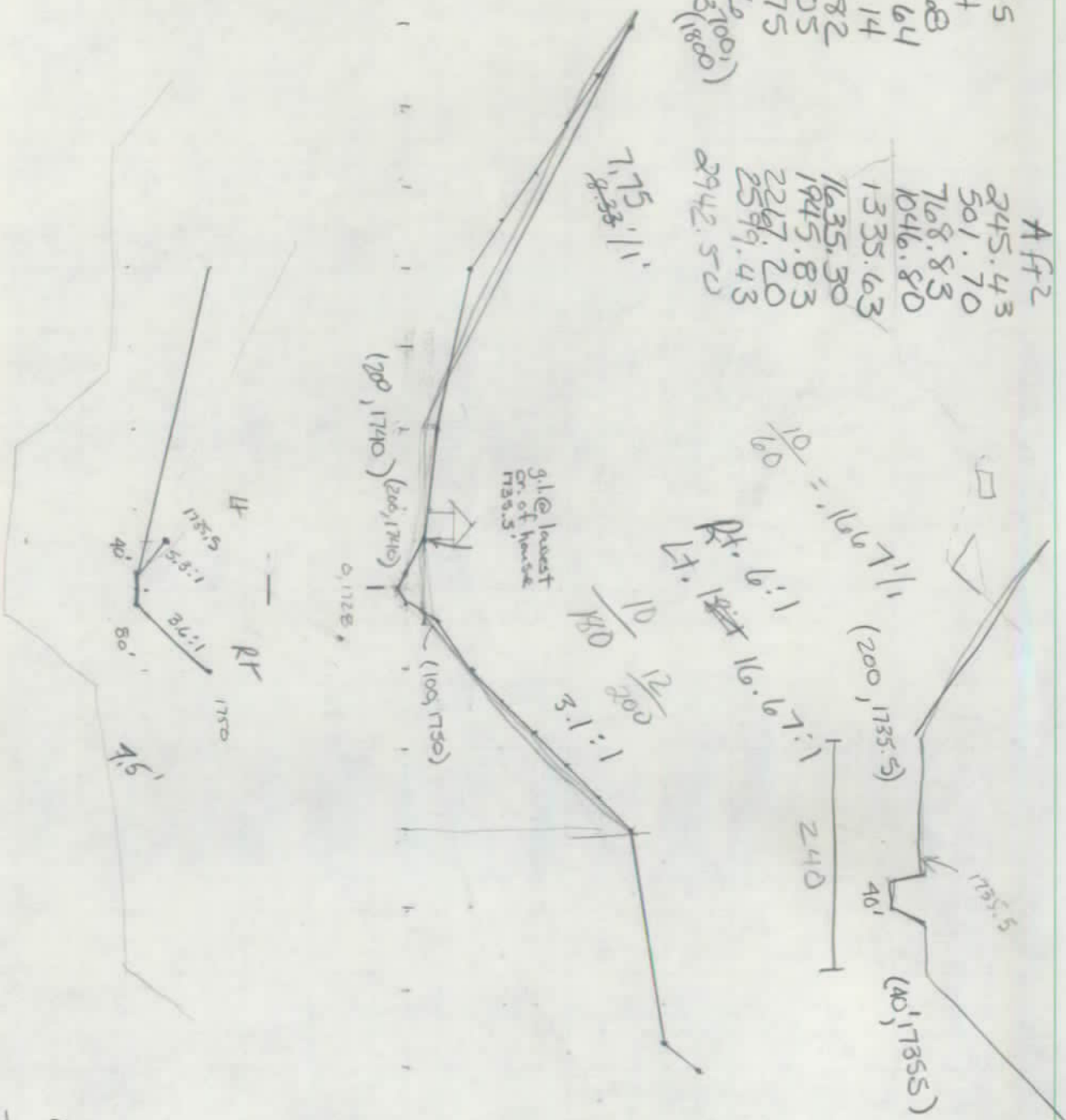
- At the house -

~~Jim Bailey mail~~



1728.0	0	0
1729.0	291.27	44.45
1730.0	967.68	97.80
1731.0	1995.77	160.05
1732.0	3384.89	231.20
1733.0	5153.63	311.25
1734.0	7323.74	400.20
1735.0	9918.20	498.05
1735.5	11,381.83	550.31
1736.5	13,075.18	795.71
1737.5	16,799.27	1052.01
1738.5	22,116.51	1319.10
1739.5	28,867.47	1597.11
1740.5	36,966.97	1885.94
1741.5	46,364.65	2185.61
1742.5	57,029.88	2496.14

1'	1693.35	245.43
2'	5117.44	501.70
3'	10734.68	768.83
4'	17485.64	1046.80
5'	25585.14	1335.63
6'	34982.82	1635.30
7'	45618.05	1945.83
8'	57502.75	2267.20
9'	70717.26	2599.43
10'	85107.93 (100)	2942.50



	cf5	A.
@ 7.5'	6829.10	550.31
55)	70	5950.92
	4	4394.25
	5	3092.18
	4	2030.94
	3	1197.46
	2	586.61
	1	174.76
		44.45
		0.03
1	291.27	44.45
2	967.68	97.80
3	1995.77	140.05
4	3384.89	231.20
5	5153.63	311.25
6	7323.74	400.20
7	9918.20	498.05
7.5	11381.83	550.31

Velocities:

Time of Concentrations:

$$V_{1s} = 0.625' / s$$

$$V_{2s} = 0.670' / s$$

$$V_{3s} = 0.715' / s$$

$$V_{3c} = 1.0' / s$$

$$V_{4s} = 0.715' / s$$

$$V_{5s} = 0.67' / s$$

$$V_{5c} = 1.0' / s$$

$$V_{6s} = 0.57' / s$$

$$V_{6c} = 2.17' / s$$

$$V_{7s} = 0.57' / s$$

$$V_{7c} = 2.17' / s$$

$$\checkmark V_{8s} = 0.57' / s$$

$$V_{8c} = 1.0' / s$$

$$V_{9As} = 0.625' / s$$

$$V_{9Ac} = 1.0' / s$$

$$V_{9Bs} = 0.90' / s$$

$$V_{9Ac} = 10.21' / s$$

$$V_{10s} = 1.075' / s$$

$$V_{10c} = 12.57' / s$$

$$V_{11s} = 9.17' / s$$

$$V_{11s} = 2.2' / s$$

$$\text{Slope} = \begin{matrix} .02' / 1000' \\ .0165' / 1300' \\ .0143' / 1400' \end{matrix}$$

$$\text{Mannings Eq. } \frac{1.49 (3.86)^{.667} (.01\%)^{.5}}{0.03'} = 9.17' / s$$

$$T_c = \frac{L}{3600 V} \quad T_{c1} = \frac{26,333'}{3600 \times .625' / s} = 11.70 \text{ hr.}$$

$$T_{c2} = \frac{17,291'}{3600 \times .670} = 7.17 \text{ hr. @ X-Sec. 001}$$

$$T_{c3s} = \frac{15,583'}{3600 \times .715} = 6.05 \text{ hr. @ X-Sec. 002}$$

$$T_{c3c} = \frac{6260'}{3600 \times 1} = 1.74 \text{ hr.}$$

$$T_{c4} = \frac{11,577'}{3600 \times .715} = 4.5 \text{ hr @ X-Sec 002}$$

$$T_{c5s} = \frac{9565'}{3600 \times .67} = 3.97 \text{ hr @ X-Sec. 003}$$

$$T_{c5c} = \frac{10,185'}{3600 \times 1} = 2.83 \text{ hr.}$$

$$T_{c6s} = \frac{12,137'}{3600 \times .57} = 5.91 \text{ hr @ X-Sec. 004}$$

$$T_{c6c} = \frac{11,772'}{3600 \times 2.17} = 1.51 \text{ hr.}$$

$$T_{c7s} = \frac{15,470'}{3600 \times .57} = 7.54 \text{ hr. @ X-Sec. 005}$$

$$T_{c7c} = \frac{10,683'}{3600 \times 2.17} = 1.37 \text{ hr.}$$

$$T_{c8s} = \frac{7361'}{3600 \times .57} = 3.59 \text{ hr. @ X-Sec. 006}$$

$$T_{c8c} = \frac{8561'}{3600 \times 1} = 2.38 \text{ hr. @ X-Sec. 007 thru 010 readjusted}$$

$$T_{9As} = \frac{11,545'}{3600 \times .625} = 5.13 \text{ hr}$$

$$T_{9Ac} = \frac{5778'}{3600 \times 1} = 1.60 \text{ hr}$$

$$T_{9Bs} = \frac{5617'}{3600 \times 0.9} = 1.73 \text{ hr}$$

$$T_{c9Bc} = \frac{4215'}{3600 \times 10.21} = 0.11 \text{ hr}$$

$$T_{c10s} = \frac{4436'}{3600 \times 1.07} = 1.15 \text{ hr.}$$

$$T_{c10c} = \frac{6000'}{3600 \times 12.57} = 0.13 \text{ hr.}$$

$$T_{c11s} = \frac{6154'}{3600 \times 9.17} = 0.19 \text{ hr}$$

$$\frac{6154'}{3600 \times 2.2} = .79 \text{ hr}$$

$$p = 28.02' + 40' + 40.45' = 108.47'$$

$$A @ 1735.5 = 550 \text{ ft}^2$$

$$A @ 1739.5 = 1319.10$$

$$200' + 9.77' + 23.65' = 233.42'$$

$$233.42'$$

$$341.89'$$

$$r = 3.96$$

S=.02

7 min

8 min

too high
reduced to
9.99
wind at
10

Time of Concentration (T_c)

$$T_c = \frac{L}{3600V}$$

V from Velocities for upland method of estimating T_c , figure 8

① Shallow channel slope = $0.6\% = .006'$

$$V_{\text{short grass}} = 0.55$$

$$V_{\text{cultivated}} = \frac{0.70}{1.25 \div 2} = \underline{\underline{0.625'/s}}$$

② Shallow channel slope = $0.7\% = .007'$

$$V_{\text{short grass}} = 0.59'/s$$

$$V_{\text{cultivated}} = \frac{0.75}{1.34'/s \div 2} = \underline{\underline{0.67'/s}}$$

③ Shallow channel slope = 0.8%

$$V_{\text{short grass}} = 0.63$$

$$V_{\text{cultivated}} = \frac{0.8}{1.43 \div 2} = \underline{\underline{0.715'/s}}$$

Channel slope = 0.3%

$$V_{\text{grassed waterway for } 0.5\%} = \underline{\underline{1.0'/s}}$$

④ Shallow channel slope = 0.8%

$$V = \underline{\underline{0.715'/s}}$$

⑤ Shallow channel slope = 0.7%

$$V = 0.67'/s$$

Channel slope = 0.2%

$$V_{\text{grassed waterway for } 0.5\%} = \underline{\underline{1.0'/s}}$$

t_c for X-sec. 007 thru 009

t_c for X-sec. 007 overland

$$\begin{aligned} L &= 11,420' \\ S &= 0.006\% = 0.6\% \\ V &= 0.525'/s \end{aligned} \quad t_c = L / 3600 \times V = \frac{11,420'}{3600 \times 0.525} = \underline{\underline{6.0423 \text{ hr.}}}$$

t_c for X-sec. 008 overland

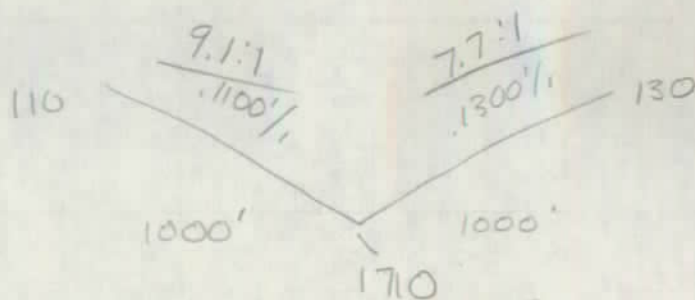
$$\begin{aligned} L &= 7,972' \\ S &= 0.0088\% = 0.88\% \\ V &= 0.65'/s \end{aligned} \quad t_c = \frac{7,972'}{3600 \times 0.65} = \underline{\underline{3.4068 \text{ hr.}}}$$

t_c for X-sec. 008 overland

$$\begin{aligned} L &= 3,320' \\ S &= 2.4\% \\ V &= 1.1'/s \end{aligned} \quad t_c = \frac{3,320'}{3600 \times 1.1} = \underline{\underline{0.8384 \text{ hr}}}$$

t_c for X-sec. 008 overland

$$\begin{aligned} L &= 5384' \\ S &= 2.23\% \rightarrow 2.9\% \\ V &= 1.05'/s \rightarrow 1.25'/s \end{aligned} \quad t_c = \frac{5384'}{3600 \times 1.05} = 1.4243 \text{ hr} \quad \underline{\underline{1.1964 \text{ hr}}}$$



$$S_L = \frac{25}{1000} = 0.025 \quad 2.5\%$$

$$V =$$

LAST level

@ n = 0.2

X-Sec.	Elev.	Lt. Slope S:1	Rt. Slope S:1	Channel Slope 1/1	Discharge cfs	Area	V FPS
005	1870				0		
	74	20	30	0.001	149.11	400.00	0.37
	78				946.76	1600.00	0.59
	82				2791.37	3600	0.78
	86				6011.57	6400	0.94
	1890				10,899.70	10,000	1.09
006	1860				0		
	65	40	30	0.001	378.59	875	0.43
	70				2403.90	3500	0.69
	75				7087.50	7875	0.90
	1880				15,263.81	14,000	1.09
007	1820						
	26	20	24	0.004	773.61	792.0	0.98
	32				4912.13	3168	1.55
	38				14,482.61	7128	2.03
	44				31,190.11	12,672	2.46
	1850				56,551.43	19,800	2.86
008	1800						
	6	20	40	0.003	913.85	1080	0.85
	12				5802.56	4320	1.34
	18				17,107.89	9720	1.76
to 1850	24				36,843.98	17,280	2.13
	30				66,802.58	27,000	2.47
	36				108,628.36	38,880	2.79
	42				163,858.13	52,920	3.10
	48				233,944.69	69,120	3.38
	1850				260,849.43	75,000	3.48

X-Sec. 005 thru 008,
not used in TR20, others
developed.

750

50

2/7/95 Use ✓
HOLZDAMI.DAT
HOLZDAMI.OUT
50% PMP

1

*****80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****

JOB	TR-20	HOLZDAM1	ECON	SUMMARY
TITLE ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN				
TITLE X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994				
2	XSECTN	001	1.0	1932.1
8			1930.	0.0 0.0
8			1932.	230. 400.
8			1934.	1564. 1712.
8			1936.	4848. 4050.
8			1938.	10534. 7264.
8			1940.	19604. 11650.
9	ENDTBL			
2	XSECTN	002	1.0	1909.1
8			1908.	0.0 0.0
8			1909.	88. 342.
8			1910.	557. 1370.
8			1911.	1644. 3082.
8			1912.	3540. 5480.
8			1913.	6418. 8562.
9	ENDTBL			
2	XSECTN	003	1.	1899.1
8			1897.	0.0 0.0
8			1899.	312. 1330.
8			1901.	1984. 5320.
8			1903.	5850. 11970.
8			1904.	8824. 16292.
8			1906.	12000. 25000.
9	ENDTBL			
2	XSECTN	004	1.	1894.1
8			1890.	0.0 0.0
8			1894.	596. 1600.
8			1898.	3789. 6400.
8			1902.	11171. 14400.
8			1906.	24058. 25600.
9	ENDTBL			
2	XSECTN	005	1.	1882.1
8			1878.	0.0 0.0
8			1882.	149. 400.
8			1886.	946. 1600.
8			1890.	2791. 3600.
8			1894.	6011. 6400.
8			1898.	10900. 10000.
9	ENDTBL			
2	XSECTN	006	1.	1875.1
8			1870.	0.0 0.0
8			1875.	379. 875.
8			1880.	2403. 3500.
8			1885.	7088. 7875.
8			1890.	15263. 14000.
9	ENDTBL			
2	XSECTN	007	1.	1856.1

1

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

8	1850.	0.0	0.0
8	1856.	625.	810.
8	1862.	3971.	3240.
8	1868.	11709.	7290.
8	1874.	25217.	12960.
8	1880.	45721.	20250.

9 ENDTBL

2 XSECTN 008

8	1.	1812.1	
8	1808.	0.0	0.0
8	1808.1	19.2	15.0
8	1809.	897.	153.
8	1810.	2863.	312.
8	1811.	5663.	477.
8	1812.	9208.	648.
8	1812.1	9343.	753.
8	1813.	15453.	1701.
8	1816.	48243.	3825.

$$Q = A \frac{1.49}{.03} (P)^{2/3} (.0142)^{1/2}$$

- Halesworth River

9 ENDTBL

2 XSECTN 009

8	1.	1735.5	
8	1728.	0.0	0.0
8	1729.	291.3	44.5
8	1730.	967.7	97.8
8	1731.	1995.8	161.
8	1732.	3384.9	231.
8	1733.	5153.6	311.
8	1734.	7323.7	400.
8	1735.	9918.2	498.
8	1735.5	11382.	550.
8	1736.5	13075.	796.
8	1737.5	16799.	1052.
8	1738.5	22117.	1319.
8	1739.5	28867.	1597.
8	1740.5	36967.	1886.
8	1741.5	46365.	2186.
8	1742.5	57030.	2496.

- House

9 ENDTBL

2 XSECTN 010

8	1.0	1720.1	
8	1710.	0.0	0.0
8	1715.	3996.	260.
8	1720.	22226.	940.
8	1725.	62480.	2040.

9 ENDTBL

6 RUNOFF 1 001	7 2.8	78.	9.99
6 RESVOR 2 01 7	6 1935.		
6 RUNOFF 1 001	5 2.8	78.	7.17
6 ADDHYD 4 001	5 6 7		
6 REACH 3 002	7 6 6260.		
6 RUNOFF 1 002	7 2.45	78.	6.05
6 ADDHYD 4 002	6 7 5		
6 RUNOFF 1 002	4 1.52	78.	4.5

1

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

6 ADDHYD 4 002	4 5 7		
6 REACH 3 003	7 6 10185.		

6	RUNOFF	1	003	5	1.68	78.	3.97
6	ADDHYD	4	003	5	6	4	
6	RESVOR	2	02	4	6	1897.	
6	REACH	3	004	6	7	11772.	
6	RUNOFF	1	004	6	3.79	78.	5.91
6	ADDHYD	4	004	6	7	5	
6	REACH	3	005	5	7	10683.	
6	RUNOFF	1	005	6	3.75	78.	7.54
6	ADDHYD	4	005	6	7	5	
6	REACH	3	006	5	7	8561.	
6	RUNOFF	1	006	6	1.3	78.	3.59
6	ADDHYD	4	006	6	7	4	
6	RESVOR	2	03	4	5	1860.	
6	REACH	3	007	5	7	5778.	
6	RUNOFF	1	007	6	1.9	78.	6.04
6	ADDHYD	4	007	6	7	4	
6	RESVOR	2	04	4	5	1850.	
6	REACH	3	007	5	7	4215.	
6	RUNOFF	1	008	6	0.90	78.	3.41
6	ADDHYD	4	008	6	7	4	
6	RESVOR	2	05	4	5	1820.	
6	REACH	3	008	5	7	4600.	
6	RUNOFF	1	008	6	0.74	78.	0.84
6	ADDHYD	4	008	6	7	5	
6	RESVOR	2	06	5	6	1808.	
6	REACH	3	008	6	5	100.	
6	REACH	3	009	5	7	6750.	
6	RUNOFF	1	009	6	0.64	78.	1.20
6	ADDHYD	4	009	6	7	5	
6	REACH	3	010	5	7	1000.	
ENDATA							
7	INCREM	6			0.12		
7	COMPUT	7	001	010	0.0	11.0	1.0 2 1
ENDCMP 1							
ENDJOB 2							

36% PMP

*****END OF 80-80 LIST*****

1

TR20 ----- SCS -
 HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
 14:38:47 PASS 1 JOB NO. 1 PAGE 1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .120 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
 STARTING TIME = .00 RAIN DEPTH = 11.00 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 1 MAIN TIME INCREMENT = .120 HOURS
 ALTERNATE NO. = 0 STORM NO. = 0 RAIN TABLE NO. = 2

*** MESSAGE - ORDER OF MAXIMUM PEAK CHANGED WHEN REACH ROUTED, XSEC. 5.
 OUTFLOW PEAK SHIFTED 9.6 HOURS.

*** WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 8. ***

*** WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 10. ***

*** WARNING - XSECTION 10, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,
UNLESS NEW RATING TABLE VALUES ARE INSERTED. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

1

TR20 ----- SCS -
HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
14:38:47 SUMMARY, JOB NO. 1 PAGE 2

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 11.00 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.
RAINTABLE NUMBER 2, ARC 1
MAIN TIME INCREMENT .120 HOURS

ALTERNATE 0 STORM 0

XSECTION	1	RUNOFF	2.80	5.72	---	18.52	984	351.4
STRUCTURE	1	RESVOR	2.80	5.72	---	18.52	984	351.4
XSECTION	1	RUNOFF	2.80	5.72	---	16.63	1277	456.1
XSECTION	1	ADDHYD	5.60	5.72	1934.36	17.31	2154	384.6
XSECTION	2	REACH	5.60	5.72	1911.07	19.53	1781	318.0
XSECTION	2	RUNOFF	2.45	5.72	---	15.87	1276	520.8
XSECTION	2	ADDHYD	8.05	5.72	1911.46	17.52	2522	313.3
XSECTION	2	RUNOFF	1.52	5.72	---	14.83	996	655.3
XSECTION	2	ADDHYD	9.57	5.72	1911.74	16.77	3054	319.1
XSECTION	3	REACH	9.57	5.71	1901.07	22.04	2125	222.0
XSECTION	3	RUNOFF	1.68	5.72	---	14.46	1211	720.8
XSECTION	3	ADDHYD	11.25	5.71	1901.16	21.42	2299	204.4
STRUCTURE	2	RESVOR	11.25	5.71	---	21.42	2299	204.4
XSECTION	4	REACH	11.25	5.66	1895.74	26.13	1981	176.1
XSECTION	4	RUNOFF	3.79	5.72	---	15.77	2010	530.3
XSECTION	4	ADDHYD	15.04	5.67	1896.61	16.44	2679	178.1
XSECTION	5	REACH	15.04	5.63	1888.87	26.09	2271	151.0
XSECTION	5	RUNOFF	3.75	5.72	---	16.88	1644	438.4
XSECTION	5	ADDHYD	18.79	5.65	1890.83	18.02	3457	184.0
XSECTION	6	REACH	18.79	5.61	1880.62	21.31	2981	158.6
XSECTION	6	RUNOFF	1.30	5.72	---	14.21	1013	779.2
XSECTION	6	ADDHYD	20.09	5.62	1880.77	20.86	3121	155.4
STRUCTURE	3	RESVOR	20.09	5.62	---	20.86	3121	155.4

XSECTION	7	REACH	20.09	5.60	1860.40	22.33	3079	153.3
XSECTION	7	RUNOFF	1.90	5.72	---	15.86	991	521.6
XSECTION	7	ADDHYD	21.99	5.61	1860.92	21.34	3370	153.3
STRUCTURE	4	RESVOR	21.99	5.61	---	21.34	3370	153.3
XSECTION	7	REACH	21.99	5.59	1860.89	22.25	3350	152.3

1

TR20 ----- SCS -
 HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
 14:38:47 SUMMARY, JOB NO. 1 PAGE 3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	0	STORM	0					
XSECTION	8	RUNOFF	.90	5.72	---	14.09	730	811.1
XSECTION	8	ADDHYD	22.89	5.60	1810.20	22.06	3429	149.8
STRUCTURE	5	RESVOR	22.89	5.60	---	22.06	3429	149.8
XSECTION	8	REACH	22.89	5.59	1810.20	22.20	3429	149.8
XSECTION	8	RUNOFF	.74	5.72	---	12.40	1629	2201.4
XSECTION	8	ADDHYD	23.63	5.60	1810.22	22.16	3482	147.4
STRUCTURE	6	RESVOR	23.63	5.60	---	22.16	3482	147.4
XSECTION	8	REACH	23.63	5.60	1810.22	22.16	3482	147.4
XSECTION	9	REACH	23.63	5.59	1732.05	22.31	3482	147.4
XSECTION	9	RUNOFF	.64	5.72	---	12.63	1115	1742.2
XSECTION	9	ADDHYD	24.27	5.60	1732.08	22.28	3528	145.4
XSECTION	10	REACH	24.27	5.60	1714.41	22.28	3528	145.4

1

TR20 ----- SCS -
 HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
 14:38:47 SUMMARY, JOB NO. 1 PAGE 4

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
 LENGTH FACTOR - VALUE K* GREATER THAN 1.0;
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC REACH	FLOOD PLAIN	HYDROGRAPH INFORMATION		ROUTING PARAMETERS		
		INFLOW	OUTFLOW	Q-A EQ.	PEAK RATIO	ATT- KIN
		-----	-----	-----	-----	-----

top of dam
1812.1
top of bank
1735.5
bot. of creek
1728.0

ID	LENGTH (FT)	LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	FACTOR (K*)	Q/I (Q*)	COEFF (C)
----	----------------	----------------	---------------	--------------	---------------	--------------	--------------	--------------	----------------	-------------	--------------

BASEFLOW IS .0 CFS

ALTERNATE 0 STORM 0

2	6260		2154	17.3	1781	19.6	.037	1.33	.217	.827	.05
3	10185		3054	16.8	2125	22.1	.021	1.33	.493	.696	.02
4	11772		2299	21.4	1981	26.2	.032	1.33	.244	.862	.03
5	10683		2679	16.4	2271	26.0	.050	1.33	.108	.848	.04
6	8561		3457	18.0	2981	21.4	.045	1.33	.087	.862	.05
7	5778		3121	20.9	3079	22.3	.083	1.33	.023	.987	.11
7	4215		3370	21.4	3350	22.2	.083	1.33	.015	.994	.15
8	4600		3429	22.1	3429	22.2	.24	1.63	.000	1.000	.86?
8	100		3482	22.2	3482	22.2	.24	1.63	.000	1.000	1.00?
9	6750		3482	22.2	3482	22.3	1.10	1.48	.000	1.000	.82?
10	1000		3528	22.3	3528	22.3	2.38	1.34	.000	1.000	1.00?

1

TR20 ----- SCS -
HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
14:38:47 SUMMARY, JOB NO. 1 PAGE 5

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 0
------------------------------	-----------------------------	-------------------------

STRUCTURE 6 23.63

ALTERNATE 0 3482

STRUCTURE 5 22.89

ALTERNATE 0 3429

STRUCTURE 4 21.99

ALTERNATE 0 3370

STRUCTURE 3 20.09

ALTERNATE 0 3121

STRUCTURE 2 11.25

ALTERNATE 0 2299

STRUCTURE 1 2.80

ALTERNATE	0	984
XSECTION	1	5.60

ALTERNATE	0	2154
XSECTION	2	9.57

ALTERNATE	0	3054
XSECTION	3	11.25

ALTERNATE	0	2299
XSECTION	4	15.04

ALTERNATE	0	2679
XSECTION	5	18.79

ALTERNATE	0	3457
XSECTION	6	20.09

ALTERNATE	0	3121
XSECTION	7	21.99

ALTERNATE	0	3350
XSECTION	8	23.63

1

TR20	----- SCS -	
HOLZDAM1	ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN	VERSION
02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE;	LTB-MDR, 4/28/1994 2.04	TEST
14:38:47	SUMMARY, JOB NO. 1	PAGE 6

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 0
XSECTION 8	23.63	

ALTERNATE 0		3482
XSECTION 9	24.27	

ALTERNATE 0		3528
XSECTION 10	24.27	

ALTERNATE 0		3528

ECON2 DATA FILE

ECON2

TITLE ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN
 TITLE X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994

FLOW-FREQ	-6	3482.	ALT	0	1
FLOW-FREQ	-5	3429.	ALT	0	2
FLOW-FREQ	-4	3370.	ALT	0	3
FLOW-FREQ	-3	3121.	ALT	0	4
FLOW-FREQ	-2	2299.	ALT	0	5
FLOW-FREQ	-1	984.	ALT	0	6
FLOW-FREQ	1	2154.	ALT	0	7
FLOW-FREQ	2	3054.	ALT	0	8
FLOW-FREQ	3	2299.	ALT	0	9
FLOW-FREQ	4	2679.	ALT	0	10
FLOW-FREQ	5	3457.	ALT	0	11
FLOW-FREQ	6	3121.	ALT	0	12
FLOW-FREQ	7	3350.	ALT	0	13
FLOW-FREQ	8	3482.	ALT	0	14
FLOW-FREQ	9	3528.	ALT	0	15
FLOW-FREQ	10	3528.	ALT	0	16

1

TR20 ----- SCS -
 HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 02/07/95 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST

END OF 1 JOBS IN THIS RUN

*** WARNING - UNEXPECTED RECORD(S) ENCOUNTERED WHEN LOOKING FOR "JOB" RECORD.
 IMAGES OF FIRST 10 RECORDS IGNORED FOLLOW: ***

SCS TR-20, VERSION 2.04TEST
 HOLZDAM1 FILES

INPUT = H:\tr20\holzdam1.dat , GIVEN DATA FILE
 OUTPUT = h:\tr20\holzdam1.out , DATED 02/07/95,14:38:47

FILES GENERATED - DATED 02/07/95,14:38:47

FILE h:\tr20\holzdam1.TEC CONTAINS ECON2 INFORMATION

TOTAL NUMBER OF WARNINGS = 4, MESSAGES = 1

*** TR-20 RUN COMPLETED ***

TITLE ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN

TITLE X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994

2 XSECTN	001	1.0	1932.1	
8		1930.	0.0	0.0
8		1932.	230.	400.
8		1934.	1564.	1712.
8		1936.	4848.	4050.
8		1938.	10534.	7264.
8		1940.	19604.	11650.

9 ENDTBL

2 XSECTN	002	1.0	1909.1	
8		1908.	0.0	0.0
8		1909.	88.	342.
8		1910.	557.	1370.
8		1911.	1644.	3082.
8		1912.	3540.	5480.
8		1913.	6418.	8562.

9 ENDTBL

2 XSECTN	003	1.	1899.1	
8		1897.	0.0	0.0
8		1899.	312.	1330.
8		1901.	1984.	5320.
8		1903.	5850.	11970.
8		1904.	8824.	16292.
8		1906.	12000.	25000.

9 ENDTBL

2 XSECTN	004	1.	1894.1	
8		1890.	0.0	0.0
8		1894.	596.	1600.
8		1898.	3789.	6400.
8		1902.	11171.	14400.

8	1906.	24058.	25600.
9 ENDTBL			
2 XSECTN 005	1.	1882.1	
8	1878.	0.0	0.0
8	1882.	149.	400.
8	1886.	946.	1600.
8	1890.	2791.	3600.
8	1894.	6011.	6400.
8	1898.	10900.	10000.

9 ENDTBL			
2 XSECTN 006	1.	1875.1	
8	1870.	0.0	0.0
8	1875.	379.	875.
8	1880.	2403.	3500.
8	1885.	7088.	7875.
8	1890.	15263.	14000.

9 ENDTBL			
2 XSECTN 007	1.	1856.1	
8	1850.	0.0	0.0
8	1856.	625.	810.
8	1862.	3971.	3240.
8	1868.	11709.	7290.
8	1874.	25217.	12960.
8	1880.	45721.	20250.

9 ENDTBL			
2 XSECTN 008	1.	1812.1	
8	1808.	0.0	0.0
8	1808.1	19.2	15.0
8	1809.	897.	153.
8	1810.	2863.	312.
8	1811.	5663.	477.
8	1812.	9208.	648.
8	1812.1	9343.	753.

Slope = 0.01132
 $Q = A \frac{140}{n} (r)^{2/3} (S)^{1/2}$

8		1813.	15453.	1701.
8		1816.	48243.	3825.
9	ENDTRL		<i>cfs</i>	<i>Area</i>
2	XSECTN 009	1.	1735.5	
8		1728.	0.0	0.0
8		1729.	291.3	44.5
8		1730.	967.7	97.8
8		1731.	1995.8	161.
8		1732.	3384.9	231.
8		1733.	5153.6	311.
8		1734.	7323.7	400.
8		1735.	9918.2	498.
8		<u>1735.5</u>	<u>11382.</u>	<u>550.</u>
8		1736.5	13075.	796.
8		1737.5	16799.	1052.
8		1738.5	22117.	1319.
8		1739.5	28867.	1597.
8		1740.5	36967.	1886.
8		1741.5	46365.	2186.
8		1742.5	57030.	2496.
9	ENDTRL			
2	XSECTN 010	1.0	1720.1	
6		1710.	0.0	0.0
8		1715.	3996.	260.
8		1720.	22226.	940.
8		1725.	62480.	2040.
9	ENDTRL			
6	RUNOFF 1 001	7 2.8	78.	9.99
6	RESVOR 2 01 7	6 1935.		
6	RUNOFF 1 001	5 2.8	78.	7.17
6	ADDDHYD 4 001	5 6 7		
6	REACH 3 002	7 6 6260.		
6	RUNOFF 1 002	7 2.45	78.	6.05

6 ADDHYD 4 002	6 7 5		
6 RUNOFF 1 002	4 1.52	78.	4.5
6 ADDHYD 4 002	4 5 7		
6 REACH 3 003	7 6 10185.		
6 RUNOFF 1 003	5 1.68	78.	3.97
6 ADDHYD 4 003	3 6 4		
6 RESVOR 2 02 4	6 1897.		
6 REACH 3 004	6 7 11772		
6 RUNOFF 1 004	6 3.79	78.	5.91
6 ADDHYD 4 004	6 7 5		
6 REACH 3 005	5 7 10683.		
6 RUNOFF 1 005	6 3.75	78.	7.54
6 ADDHYD 4 005	6 7 5		
6 REACH 3 006	5 7 8561.		
6 RUNOFF 1 006	6 1.3	78.	3.59
6 ADDHYD 4 006	6 7 4		
6 RESVOR 2 03 4	5 1860.		
6 REACH 3 007	5 7 5778.		
6 RUNOFF 1 007	6 1.9	78.	6.04
6 ADDHYD 4 007	6 7 4		
6 RESVOR 2 04 4	5 1850.		
6 REACH 3 007	5 7 4215.		
6 RUNOFF 1 008	6 0.90	78.	3.41
6 ADDHYD 4 008	6 7 4		
6 RESVOR 2 05 4	5 1820.		
6 REACH 3 008	5 7 4600.		
6 RUNOFF 1 008	6 0.74	78.	0.84
6 ADDHYD 4 008	6 7 5		
6 RESVOR 2 06 5	6 1808.		
6 REACH 3 008	6 5 100.		
6 REACH 3 009	5 7 6750.		
6 RUNOFF 1 009	6 0.64	78.	1.20
6 ADDHYD 4 009	6 7 5		

6 REACH 3 010 5 7 1000.

ENDATA

7 INCREM 6 0.12

7 COMPUT 7 001 010 0.0 22.0 1.0 2 1

ENDCMP 1

ENDJOB 2

↑ 10.512 10.512

TR20 ----- SCS -
 HOLZDAMI ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 04/28/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
 09:49:11 PASS 1 JOB NO. 1 PAGE 1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .120 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
 STARTING TIME = .00 RAIN DEPTH = 22.00 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 1 MAIN TIME INCREMENT = .120 HOURS
 ALTERNATE NO. = 0 STORM NO. = 0 RAIN TABLE NO. = 2

*** WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 8. ***

*** WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 10. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

TR20 ----- SCS -
 HOLZDAMI ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION
 04/28/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST
 09:49:11 SUMMARY, JOB NO. 1 PAGE 2

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STANDARD		PEAK DISCHARGE					
STRUCTURE	CONTROL	DRAINAGE	RUNOFF	-----			
TO	OPERATION	AREA	AMOUNT	ELEVATION	TIME	RATE	RATE
		(SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)

RAINFALL OF 22.00 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

RAINFALL NUMBER 2, ARC 1

MAIN TIME INCREMENT 120 HOURS

ALTERNATE 0 STORM 0

XSECTION	1	RUNOFF	2.80	15.63	---	18.38	2731	975.4
STRUCTURE	1	<u>RESVOR</u>	2.80	15.63	---	18.38	2731	975.4
XSECTION	1	RUNOFF	2.80	15.62	---	16.51	3549	1267.5
XSECTION	1	ADDHYD	5.60	15.62	1936.40	17.10	5999	1071.3
XSECTION	2	REACH	5.60	15.62	1912.59	18.85	5250	937.5
XSECTION	2	RUNOFF	2.45	15.62	---	15.76	3545	1446.9
XSECTION	2	ADDHYD	8.05	15.62	1913.39	17.29	7536	936.1
XSECTION	2	RUNOFF	1.52	15.62	---	14.72	2764	1818.4
XSECTION	2	ADDHYD	9.57	15.62	1913.91	16.30	9023	942.8
XSECTION	3	REACH	9.57	15.61	1903.26	20.51	6632	693.0
XSECTION	3	RUNOFF	1.68	15.62	---	14.38	3361	2000.6
XSECTION	3	ADDHYD	11.25	15.61	1903.45	19.92	7174	637.7
STRUCTURE	2	<u>RESVOR</u>	11.25	15.61	-	19.92	7174	637.7
XSECTION	4	REACH	11.25	15.56	1899.39	23.53	6345	564.0
XSECTION	4	RUNOFF	3.79	15.62	---	15.66	5584	1473.4

XSECTION	4	ADDHYD	15.04	15.57	1900.53	16.53	8455	562.2
XSECTION	5	REACH	15.04	15.53	1895.21	22.45	7489	497.9
XSECTION	5	RUNOFF	3.75	15.62	---	16.75	4568	1218.1
XSECTION	5	ADDHYD	18.79	15.55	1898.14	17.85	11070	589.1
XSECTION	6	REACH	18.79	15.51	1886.79	20.15	10017	533.1
XSECTION	6	RUNOFF	1.30	15.62	---	14.13	2808	2160.0
XSECTION	6	ADDHYD	20.09	15.51	1887.04	19.86	10417	518.5
STRUCTURE	3	RESVOR	20.09	15.51	---	19.86	10417	518.5
XSECTION	7	REACH	20.09	15.49	1866.91	20.90	10301	512.7
XSECTION	7	RUNOFF	1.90	15.62	---	15.74	2753	1448.9
XSECTION	7	ADDHYD	21.99	15.50	1867.64	20.16	11241	511.2
STRUCTURE	4	RESVOR	21.99	15.50	---	20.16	11241	511.2
XSECTION	7	REACH	21.99	15.49	1867.59	20.85	11185	508.6

1

TR20 ----- SCS -

HOLZDAM1 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION

04/28/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST

09:49:11 SUMMARY, JOB NO. 1 PAGE 3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/	STANDARD	PEAK DISCHARGE					
STRUCTURE	CONTROL	DRAINAGE	RUNOFF	-----			
ID	OPERATION	AREA	AMOUNT	ELEVATION	TIME	RATE	RATE
		(SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)

A TERNATE 0 STORM 0

XSECTION	8	RUNOFF	.90	15.63	---	14.02	2021	2245.6
XSECTION	8	ADDHYD	22.89	15.49	1812.40	20.72	11413	498.6
STRUCTURE	5	RESVOR	22.89	15.49	---	20.72	11413	498.6
XSECTION	8	REACH	22.89	15.49	1812.40	20.86	11413	498.6
XSECTION	8	RUNOFF	.74	15.61	---	12.39	4455	6020.3
XSECTION	8	ADDHYD	23.63	15.49	1812.42	20.83	11541	488.4
STRUCTURE	6	RESVOR	23.63	15.49	---	20.83	11541	488.4
XSECTION	8	REACH	23.63	15.49	1812.42	20.83	11541	488.4
XSECTION	9	REACH	23.63	15.49	1735.59	20.96	11541	488.4
XSECTION	9	RUNOFF	.64	15.62	---	12.60	3064	4787.5
XSECTION	9	ADDHYD	24.27	15.49	1735.66	20.92	11655	480.2
XSECTION	10	REACH	24.27	15.49	1717.10	20.92	11655	480.2

1
1990 ----- SCS -

NO. 7041 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION

04/28/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST

09:40 11 SUMMARY, JOB NO. 1 PAGE 4

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

FLOOD		INFLOW		OUTFLOW		Q-A EQ.		PEAK ATT-			
XSEC	REACH	PLAIN	-----	-----	-----	LENGTH	RATIO	KIN			
ID	LENGTH	LENGTH	PEAK	TIME	PEAK	TIME	COEFF	POWER	FACTOR	Q/T	COEFF
(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(K*)	(Q*)	(C)	

BASEFLOW IS 0 CFS

ALTERNATE 0 STORM 0

2	5260		5998	17.0	5250	18.8	.037	1.33	.158	.875	.07
3	10185		9023	16.3	6632	20.5	.024	1.32	.393	.735	.03
4	11772		7174	19.9	6345	23.5	.032	1.33	.199	.884	.03
5	10683		8455	16.6	7489	22.4	.050	1.33	.088	.886	.05
6	8561		11070	17.9	10017	20.2	.045	1.33	.072	.905	.07
7	5778		10417	19.8	10301	20.9	.083	1.33	.020	.989	.14
7	4215		11241	20.2	11185	20.9	.083	1.33	.013	.995	.20
8	4600		11413	20.8	11413	20.9	.59	1.42	.001	1.000	.84?
6	100		11541	20.9	11541	20.9	.61	1.41	.000	1.000	1.00?
9	6780		11541	20.9	11541	21.0	1.55	1.40	.001	1.000	.95?
10	1000		11655	20.9	11655	20.9	2.38	1.34	.000	1.000	1.00?

TR20 ----- SCS -

HOLZMANN ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION

5/28/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST

0.49411

SUMMARY, JOB NO. 1

PAGE 5

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
70		0

STRUCTURE 6	23.63	

ALTERNATE 0		11541

STRUCTURE 5	22.89	

ALTERNATE 0		11413

STRUCTURE 4	21.99	

ALTERNATE 0		11241

STRUCTURE 3	20.09	

ALTERNATE 0		10417

STRUCTURE 2	11.25	

ALTERNATE 0		7174

STRUCTURE 1	2.80	

ALTERNATE 0		2731

XSECTION 1 8.80

ALTERNATE 0 5999

XSECTION 2 9.57

ALTERNATE 0 9023

XSECTION 3 11.25

ALTERNATE 0 7174

XSECTION 4 15.04

ALTERNATE 0 8455

XSECTION 5 18.79

ALTERNATE 0 11070

XSECTION 6 20.09

ALTERNATE 0 10417

XSECTION 7 21.99

ALTERNATE 0 11185

XSECTION 8 23.63

1

TR20 ----- SCS -

NO. 20481 ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/	DRAINAGE	
STRUCTURE	AREA	STORM NUMBERS.....
TO	(SQ MI)	

XSECTION	8	23.63
----------	---	-------

ALTERNATE	0	11541
-----------	---	-------

XSECTION	9	24.27
----------	---	-------

ALTERNATE	0	11655
-----------	---	-------

XSECTION	10	24.27
----------	----	-------

ALTERNATE	0	11655
-----------	---	-------

ECON2 DATA FILE

ECON2

TITLE ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN

TITLE X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994

FLOW-FREQ	-5	11541.	ALT	0	1
-----------	----	--------	-----	---	---

FLOW-FREQ	-5	11413.	ALT	0	2
-----------	----	--------	-----	---	---

FLOW-FREQ	-4	10241.	ALT 0 3
FLOW-FREQ	-3	10417.	ALT 0 4
FLOW-FREQ	-2	7174.	ALT 0 5
FLOW-FREQ	-1	2731.	ALT 0 6
FLOW-FREQ	1	5999.	ALT 0 7
FLOW-FREQ	2	9023.	ALT 0 8
FLOW-FREQ	3	7174.	ALT 0 9
FLOW-FREQ	4	8455.	ALT 0 10
FLOW-FREQ	5	11070.	ALT 0 11
FLOW-FREQ	6	10417.	ALT 0 12
FLOW-FREQ	7	11185.	ALT 0 13
FLOW-FREQ	8	11541.	ALT 0 14
FLOW-FREQ	9	11655.	ALT 0 15
FLOW-FREQ	10	11655.	ALT 0 16

1

TR20 ----- SCS -

NO ZDAM ANALYSIS USING 100 PMP FOR THIS DRAINAGE BASIN VERSION

11/26/94 X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994 2.04TEST

END OF 1 JOBS IN THIS RUN

HOLZDAM1 FILES

INPUT = HOLZDAM1.DAT , GIVEN DATA FILE
OUTPUT = HOLZDAM1.OUT , DATED 04/28/94,09:49:11

FILES GENERATED - DATED 04/28/94,09:49:11

FILE HOLZDAM1.TEC CONTAINS ECON2 INFORMATION

TOTAL NUMBER OF WARNINGS = 2, MESSAGES = 0

*** TR-20 RUN COMPLETED ***

FORM2

TABLE ANALYSIS USING 100 PHP FOR THIS DRAINAGE BASIN

TABLE X-SEC 8 AT DAM SPILLWAY X-SEC 9 AT HOUSE; LTB-MDR, 4/28/1994

FLOW-FREQ	-4	11541.	ALT	0	1
FLOW-FREQ	-3	11413.	ALT	0	2
FLOW-FREQ	-4	11241.	ALT	0	3
FLOW-FREQ	-3	10417.	ALT	0	4
FLOW-FREQ	-2	7174.	ALT	0	5
FLOW-FREQ	-1	2731.	ALT	0	6
FLOW-FREQ	1	5999.	ALT	0	7
FLOW-FREQ	2	9023.	ALT	0	8
FLOW-FREQ	3	7174.	ALT	0	9
FLOW-FREQ	4	8455.	ALT	0	10
FLOW-FREQ	5	11070.	ALT	0	11
FLOW-FREQ	6	10417.	ALT	0	12
FLOW-FREQ	7	11185.	ALT	0	13
FLOW-FREQ	8	11541.	ALT	0	14
FLOW-FREQ	9	11655.	ALT	0	15
FLOW-FREQ	10	11655.	ALT	0	16

Department of Agriculture
WI#1
5/87

SOIL/WATER COMPATIBILITY PERMIT
Division of Conservation

Office Use Only

4729

WR#

OWNERS NAME: HOLZWARTH, ELDON

OWNERS ADDRESS: RR 3 BOX 74

GETTYSBURG, SD 57442

COUNTY LAND LOCATED IN: POTTER

PHONE: 765-9588

LEGAL DESCRIPTION:

☐ Well

☒ Surface

1. LOCATION: Storage Dam in the W1/2 of Section 23-T118N-R78W.

Depth: _____

LEGAL DESCRIPTION:

NE1/4 SW1/4 15-T118N-R78W = 24.0 A SE1/4 SW1/4 15-T118N-R78W = 24.0 A
NW1/4 SE1/4 15-T118N-R78W = 38.0 A NE1/4 SE1/4 15-T118N-R78W = 35.0 A
SW1/4 SE1/4 15-T118N-R78W = 38.0 A SE1/4 SE1/4 15-T118N-R78W = 35.0 A
NW1/4 NE1/4 22-T118N-R78W = 18.5 A NE1/4 NE1/4 22-T118N-R78W = 18.5 A
NE1/4 SW1/4 23-T118N-R78W = 3.5 A SE1/4 SW1/4 23-T118N-R78W = 3.5 A
NW1/4 SE1/4 23-T118N-R78W = 36.0 A NE1/4 SE1/4 23-T118N-R78W = 28.0 A
SW1/4 SE1/4 23-T118N-R78W = 36.0 A SE1/4 SE1/4 23-T118N-R78W = 29.0 A
366 TOTAL ACRES

2. TYPE OF IRRIGATION: GRAVITY _____ TOWLINE _____ CENTER PIVOT: XXX GUN _____ OTHER: _____ (Specify) _____

3. CROPS TO BE IRRIGATED: _____

WATER QUALITY:

4. WATER SAMPLE NUMBER: MISSOURI RIVER

7. ADJUSTED (SAR): _____

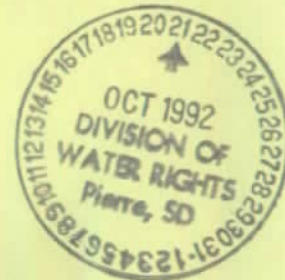
5. SALINITY (EC X 10⁶): _____

8. PERCENT SODIUM: _____

6. SODIUM (SAR): _____

Requirements:

That a water sample be taken during the irrigation season to comply with ARSD 12:08:03:08.



XXX APPROVED

DISAPPROVED

WAIVER

XXX REQUIREMENTS

Director, Division of Conservation

OCTOBER 20, 1992

Date

Soil/water permits will be recorded by the Department of Agriculture, with the County Register of Deeds.

RECEIPT

413444

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, September 25 ~~28 September 25~~ 1991

RECEIVED OF Eldore Holzworth, HCR 3 Box 74, Gettysburg, SD 57442

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 _____	250	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	250 00

By John Hatch/gml
Chief Engineer

Report on Application No. 5721-3
Eldore Holzwarth
November 5, 1992

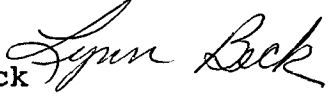
This application is to allow storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4, Section 15; N 1/2 NE 1/4 Section 22; E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River, from a diversion point located in the SE 1/4 Section 16, T118N, R78W to irrigate 1268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of the 366 acres. This application is to add the existing 285 acre-feet storage dam to this irrigation project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this application.

The dam impounds 285 acre-feet and its effective height is 21 feet. Approximately 1.45 miles downstream, an occupied house sits 11.4 feet above the stream bottom. Because of the close proximity, of the house, to the bank and elevation above the stream, further study is needed to determine the hazard category of this dam.

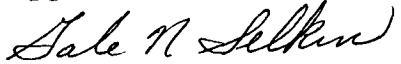
The dam is located on an unnamed drainage to the Missouri River, approximately 12.5 miles west of Gettysburg, South Dakota. There are no water rights on the drainage that are affected by the dam.

Conclusions:

- 1) Application No. 5721-3 should be deferred for further study, in order to classify the dam.


Lynn Beck
Natural Resources Engineer III

Approved by:


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

Conversation or File Documentation

NAME OF PERSON OR FILE: Eldora Holzwarth

ADDRESS: _____ COUNTY _____

DATE: 11-12-92 TELEPHONE _____

RE: _____

COMMENTS:

Old buildings near creek are going to be removed.
2-white & chicken coop on S. bank and all old
structures on N. bank.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

Report on Application No. 5721-3
Eldore Holzwarth
November 5, 1992

This application is to allow storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4, Section 15; N 1/2 NE 1/4 Section 22; E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River, from a diversion point located in the SE 1/4 Section 16, T118N, R78W to irrigate 1268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of the 366 acres. This application is to add the existing 285 acre-feet storage dam to this irrigation project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this application.

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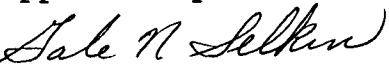
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Conclusions:

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Lynn Beck 
Natural Resources Engineer III

Approved by:

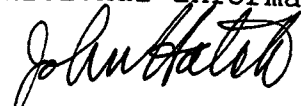
Gale N. Selken 
Gale N. Selken, P.E.
Natural Resources Engineer IV

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5721-3, Eldore Holzwarth

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 Water Permit Application No. 5721-3, Eldore Holzwarth, RR 3, Box 74, Gettysburg, SD 57442.

The Chief Engineer is recommending DEFERRAL of Application No. 5721-3 to allow time for a staff investigation to determine the hazard category of the storage dam.

See report on application for additional information.


JOHN HATCH, Chief Engineer
December 14, 1992

Supplemental Report on Application No. 5721-3
Eldore Holzwarth
February 8, 1995

Introduction:

This application is to allow storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4, Section 15; N 1/2 NE 1/4 Section 22; E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River, from a diversion point located in the SE 1/4 Section 16, T118N-R78W to irrigate 1268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of 366 acres. This application is to add the existing 285 acre-foot storage dam to this irrigation project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this application.

The dam impounds 285 acre-feet of water and its effective height is 21 feet. Approximately 1.45 miles downstream, a home owned and occupied by Eldore Holzwarth sits 11.4 feet above the stream bottom. Because of the close proximity, of the house, to the bank of the stream, the application was deferred for further study, in order to classify the dam. This report is a result of the study.

Modeling:

Two computer models were run in order to evaluate flood waters at the location of the house and the dam spillway. TR-20 is a computer program for project formulation hydrology, developed by the Soil Conservation Service. The program develops flood hydrographs from runoff and routes the flow through stream channels and reservoirs. The other computer program used was the Simplified Dam Break-Flood Forecasting Model developed by the National Weather Service. This model is a procedure for predicting downstream flooding produced by a dam failure.

A 50% Probable Maximum Precipitation (PMP) hydrograph was routed through the dam and channel at the house. The results show that the spillway will handle the resulting flow of 3482 cfs at an elevation 1.8 feet below the top of the dam. Routing the hydrograph by the house results in a flow of 3528 cfs at an elevation 4.1 feet above the channel bottom.

The hydrograph resulting from a 75 foot wide by 25 foot high, sunny day at full pool elevation, dam breach was routed to the downstream house. Floodwater from the breach would reach the foundation of the house. Worst case scenarios were used for the modeling, therefore actual water elevations at the house may be lower than those indicated by the programs.

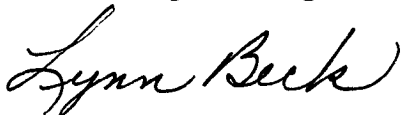
Category and size:

There are a few outbuildings and a dirt road that may be effected by a major rainfall event or a dam breach, therefore a category 2 rating is recommended for the Holzwarth dam.

According to Safety of Dams statutes the Holzwarth dam is a small size, category 2 dam. SDCL 74:02:08:06 states, that if the storage capacity of a dam falls between 50 acre-feet and 1000 acre-feet and the height of the embankment is less than 40 feet, the dam is considered a small size dam. SDCL 74:02:08:07 states, that a small size category 2 dam spillway must pass the 100-year frequency rainfall event. Since the Holzwarth dam meets the 50% PMP event, the spillway is more than adequate.

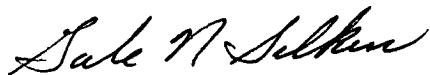
Conclusions:

1. The Holzwarth dam should be categorized as a small size, category 2 dam.
2. Water is available from the Missouri River.
3. Existing water rights will not be impaired.



Lynn Beck
Natural Resources Engineer III

Approved by:



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

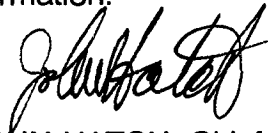
**REVISED RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5721-3, Eldore Holzwarth**

Pursuant to SDCL 46-2A-2, the following is the revised recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Water Permit Application No. 5721-3, Eldore Holzwarth, RR 3 Box 74, Gettysburg, SD 57442.

The Chief Engineer is recommending APPROVAL of Application No. 5721-3 because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) in the public interest with the following qualification:

Water Permit No. 5721-3 authorizes a dam with a storage capacity of 285 acre-feet of water. The dam may be filled one or more times per year.

See report on application for additional information.

A handwritten signature in black ink, appearing to read "John Hatch", is positioned above the printed name.

JOHN HATCH, Chief Engineer
February 14, 1995



**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.**

February 16, 1995

Eldore Holzwarth
RR 3 Box 74
Gettysburg, SD 57442

Dear Mr. Holzwarth:

Water Permit Application No. 5721-3 for irrigation 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 Potter County News printed at Gettysburg, SD (Ph # 605-765-2464). 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.

Application No. 5721-3 has been on deferred status since December 1992 to allow for a staff investigation to determine the hazard category of the storage dam.

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

February 16, 1995

Potter County News
Box 0
Gettysburg, SD 57442

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 5721-3 to be published twice. Please publish the first notice on February 23, 1995, 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 Eldore Holzwarth, RR 3 Box 74, Gettysburg, SD 57442 (Ph # 605-765-9588).

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

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. 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 Division
Joe Foss Building
Pierre SD 57501-3181

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

Name

Newspaper

Instruction to Newspaper - Publish first Notice on February 23, 1995, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 5721-3 to Appropriate Water

Notice is given that Eldore Holzwarth, RR 3 Box 74, Gettysburg, SD 57442 has filed an application for a water permit to allow storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4 Section 15, N 1/2 NE 1/4 Section 22, E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River from a diversion point located in the SE 1/4 Section 16-T118N-R78W to irrigate 1268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of the 366 acres. This application is to add the existing 285 acre-feet storage dam to this irrigation project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this application.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5721-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) 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 Division, 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 March 13, 1995.

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 Division address to request copies of information pertaining to this application. Steven M. Pirner, Acting Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Potter) ss



I, Jack L. Stoner
certify that the attached printed Notice was
taken from the Potter County News

printed and published in Sellysburg

County of Potter and State of

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

February 23, 1995
March 2, 1995

Cost of Printing: 47.52

Jack L. Stoner
(Signature)

Publisher
(Title)

March 7, 1995
(Date Signed)

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 Division address to request copies of information pertaining to this application. Steven M. Pirner, Acting Secretary, Department of Environment and Natural Resources.
(Published in the Potter County News, Feb. 23 and March 2, 1995.)

NOTICE OF APPLICATION NO. 5721-3 TO APPROPRIATE WATER

Notice is hereby given that El-dore Holzwarth, RR 3 Box 74, Gettysburg, SD 57442 has filed an application for a water permit to allow storage of 285 acre-feet of Missouri River water in an existing dam to irrigate 366 acres authorized by Water Permit Nos. 2302-3 and 4872-3. The dam is located in the W 1/2 Section to 23 and the irrigated acreage is located in the SE 1/4, E 1/2 SW 1/4 Section 15, N 1/2 NE 1/4 Section 22, E 1/2 SW 1/4, SE 1/4 Section 23; all in T118N-R78W. Water Permit Nos. 2302-3 and 4872-3, combined, appropriate a total of 18.2 cubic feet of water per second (cfs) from the Missouri River from a diversion point located in the SE 1/4 Section 16-T118N-R78W to irrigate 1,268 acres. An inspection of Permit Nos. 2302-3 and 4872-3 found 5.23 cfs could be pumped from the Missouri River to the dam for irrigation of the 366 acres. This application is to add the existing 285 acre-foot storage dam to this irrigation project. No increase in the developed diversion rate or number of acres being irrigated is authorized by this application.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5721-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) 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 Division, 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 March 13, 1995.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

SEP 5 1995

Eldore Holzwarth
RR 3 Box 74
Gettysburg, SD 57442

Dear Mr. Holzwarth:

Enclosed is Water Permit No. 5721-3 authorizing your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

The final inspection has been completed on this Permit, and we are ready to issue the Water License. Statutes require we charge \$50 for the inspection and issuance of the final papers. Upon receipt of this amount the Water License will be sent to you.

Very truly yours,

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

enclosures

RECEIPT

414615

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, _____ September 12, 19 95

RECEIVED OF Eldore Holzwarth, HCR 3 Box 74, Gettysburg, SD 57442

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

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use _____		
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>5721-3</u>	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	50 00

By John Hatch
Chief Engineer

NOTICE OF TRANSFER OF OWNERSHIP

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

No. 5721-3

Date: 1-2-96



I\We request that Water Right No. 5721-3

formerly owned by: Eldore Holzwarth

be transferred to: (name & address) Holzwarth Brothers, Larry & Melvin Holzwarth, Box 145, Gettysburg, SD 57442

Telephone No. _____

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

366 acres - SE¼, Section 15; N½ NE¼ Section 22; E½ SW¼, SE¼ Section 23, T118N, R78W. Property in the E½ SW¼ Section 15 is irrigated rental property (no title transfer)

I\We understand that the validity of Water Right No. 5721-3 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 at the Division of Water Rights, as evidence of the change of ownership.

A fee of Two Dollars and Fifty Cents (\$2.50) is attached to cover the filing fees as required under SDCL 46-2-13.

STATE OF SOUTH DAKOTA)

County of Potter)

I\We ELDORE HOLZWARTH being first duly sworn on my oath depose and say that my relation to the above described undertaking is that of Owner, that I have read the above foregoing statement, and that I know of my own personal knowledge that the information herein stated is true.

Eldore Holzwarth
(Signed)

Subscribed and sworn to before me this 2nd day of January, 19 96.

ROBERT D. HOUCK
Notary Public - Potter County, SD
My Commission Expires: Jan. 19, 192000

Robert D. Houck
(Notary Public)

NOTE: Water permits may be cancelled for nonconstruction within the five year construction period. 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

414861

Division of Water Rights

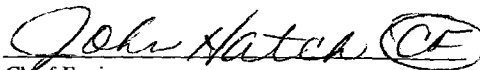
South Dakota Department of Environment and Natural Resources

Pierre, _____ March 19, 19 96

RECEIVED OF Eldore Holzwarth (Larry & Melvin Holzwarth), HCR 3, Box 74, Gettysburg, SD 57442
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use _____		
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form <u>Water Right No. 5721-3</u>	2	50
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	2 50

By John Hatcher 
Chief Engineer

Permit No. 5721-3
Missouri River - Water District

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

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

I have this day made a thorough examination of the water use system constructed by Eldore Holzwarth of RR3 Box 74, Gettysburg, SD 57442 holder of Permit No. 2302-3, 4872-3 and 5721-3, bearing the priority of June 19, 1975, Feb. 16, 1982 and authorizing the diversion of 17.2, 1.0 and not additional cu. ft. per second and/or the storage of 285 acre-feet of the waters of the Missouri River for irrigation purposes, in Potter County.

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

A. Works used to divert the water:

Missouri River: 2-General Electric motors, model no. 5K3655YK159, 100 hp; 2-Cornell pumps, model no. 4YB100-2, 9 9/16", 900 gpm each.

Booster station: Gould motor, model no. 365TY, 100 hp; Berkeley pump, model no. P5FPBM, 5 5/16", 1400 gpm; Marathon motor, model no. KC284TTDR7923AAW, 30 hp; Cornell pump, model no. 3W30-2, 7 3/32", 600 gpm.

Dam: U.S. Electric motor, model no. 404TD-RU, 100 hp; Valley pump, model no. 12HM04A, 1100 gpm.

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

6860' of 16" steel pipe, 1510' of 10" aluminum pipe, 4525' of 8" aluminum pipe and 1885' of 8" pvc pipe.

C. Works used to apply water to beneficial use:

10,560' of towline with 30' sprinkler spacing.
2-Valley center pivots, 1290' long, 10 tower, with end gun, high pressure system, 900 gpm capacity each.

The system is in the following condition fair. The point of diversion is located at the Missouri River 1580'W of the SE corner Sec. 16-T118N-R78W, at the booster pump site 950' W of the SE corner Sec. 15-T118N-R78W; at the dam 1885' E and 1620' N of the SW corner Sec. 23-T118N-R78W. The works are capable of diverting and conveying to the place of use 4.0 cfs from the Missouri River and 5.23 cfs through works cu. ft. per second of water and/or storing 285 acre-feet of water which is to be used for irrigation. Water has been put to beneficial use to the maximum extent as follows:

All in T118N-R78W:

<u>Section 15</u>	<u>NE 1/4 SW 1/4</u>	<u>24 acres</u>
	<u>SE 1/4 SW 1/4</u>	<u>24 "</u>
	<u>NW 1/4 SE 1/4</u>	<u>38 "</u>
	<u>NE 1/4 SE 1/4</u>	<u>35 "</u>
	<u>SW 1/4 SE 1/4</u>	<u>38 "</u>
	<u>SE 1/4 SE 1/4</u>	<u>35 "</u>
<u>Section 22</u>	<u>NW 1/4 NE 1/4</u>	<u>18.5 "</u>
	<u>NE 1/4 NE 1/4</u>	<u>18.5 "</u>
<u>Section 23</u>	<u>NE 1/4 (SE) 1/4</u>	<u>3.5 "</u>
	<u>SE 1/4 SW 1/4</u>	<u>3.5 "</u>

SW

REPORT ON INSPECTION OF PERMIT NO. 5721-3

DATE: 8-19-92

Other permit(s) associated with the project: 2302-3 and 4872-3

DIVERSION POINT LEGAL LOCATION: Missouri River: 1580' W of the SE cr. Sec. 16-T118N-R78W. Booster Pump: 950' W of the SE cr Sec. 15-T118N-R78W. Dam: 1885' E and 1620' N of the SW cr. Sec. 23-T118N-R78W.

At the Missouri River:

Pump:

- 1) Make 2-Cornell
- 2) Model 4YB100-2
- 3) Size 9 9/16"
- 4) Capacity 900 each GPM

Motor:

- 1) Make 2-General Electric
- 2) Model No. 5K3655YK159
- 3) Horsepower rating 100 each hp

Booster pumps and motors:

Pump:

- 1) Make Berkeley
- 2) Model P5FPBM
- 3) Size 5 5-16"
- 4) Capacity 1400 GPM

Motor:

- 1) Make Gould
- 2) Model No. 365TY
- 3) Horsepower rating 100 hp

Pump:

- 1) Make Cornell
- 2) Model 3W30-2

- 3) Size 7 3\32"
- 4) Capacity 600 GPM

Motor:

- 1) Make Marathon
- 2) Model No. KD284TTDR7923AAW
- 3) Horsepower rating 30 hp

Dam:

Pump:

- 1) Make Valley
- 2) Model 12HM04A
- 3) Size
- 4) Capacity 1100 GPM

Motor:

- 1) Make U.S. Electric
- 2) Model No. 404TD-RU
- 3) Horsepower rating 100 hp

DISTRIBUTION LINES OR CANALS:

- | | | |
|-------------------------|--------------------------|----------------------------|
| 1) Type <u>steel</u> | 2) Size <u>16</u> inches | 3) Length <u>6860</u> feet |
| 1) Type <u>aluminum</u> | 2) Size <u>10</u> inches | 3) Length <u>1510</u> feet |
| 1) Type <u>aluminum</u> | 2) Size <u>8</u> inches | 3) Length <u>4525</u> feet |
| 1) Type <u>pvc</u> | 2) Size <u>8</u> inches | 3) Length <u>1885</u> feet |

SYSTEM TYPE:

Located in Section 15-118-78

Center pivot:

- 1) Make Valley
- 2) Overall length 1290 feet
- 3) Number of towers 10

- 4) Distance between towers feet
- 5) End gun Y
- 6) High or low pressure high
- 7) Capacity 900 GPM

Located in Section 23-118-78

Center pivot:

- 1) Make Valley
- 2) Overall length 1290 feet
- 3) Number of towers 10
- 4) Distance between towers feet
- 5) End gun Y
- 6) High or low pressure high
- 7) Capacity 900 GPM

Used in Sections 15 and 22-118-78

Towline:

- 1) Length 10,560 feet
- 2) Diameter inches
- 3) Spacing of gates 30 inches

DAM INFORMATION:

- 1) Height to crest 25 feet
- 2) Height to primary spillway feet
- 3) Height to secondary spillway 21 ft
- 4) Crest width 10 feet
- 5) Crest length 1050 feet
- 6) Spillway length 300 feet
- 7) Spillway width 150 feet
- 8) Approx. storage 285 ac-ft
- 9) Approx. storage to crest ac-ft
- 10) Date constructed: enlarged in 1981

CHEMIGATION EQUIPMENT:

- 1) Does chemigate Y
- 2) Main line check valve Y
- 3) Inspection port/air relief Y
- 4) Low pressure drain N
- 5) Discharge is 20' from source N
- 6) Interlock type electric
- 7) Injection pump type piston
- 8) Injection check valve Y
- 9) Injection line check valve or positive displacement pump Y
- 10) All chemigation equipment appears to be installed in the proper position and complies with chemigation laws and rules Y
- 11) Comments : **Dam provides a barrier between water source and chemigation site.**

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Special qualifications to permit being abided by Y
- 2) All structures, wells and lands on map Y
- 3) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period Y

NOT TO SCALE

88-L

.16

Mary Ann Knudson
Tom Knudson
Marian Buckley
Debra Cronin

118-78

1580
Bernice Quamme

Eldora Holmstrom

[illegible]

Prepared by: *Lynn Beck*
Lynn Beck
Natural Resource Engineer
DENR, Division of Water Rights
8-24-92

5721-3

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 5721-3

(1) Eldore Holzwarth of Gettysburg, SD 57442 made Application No. 5721-3, September 25, 1992 for a water permit to authorize storage of 285 acre feet of water annually from the Missouri River, Potter County, South Dakota for irrigation purposes. Permit No. 5721-3, was approved March 13, 1995. The storage dam had been constructed as part of the water use system authorized under Water Permit Nos. 2302-3 and 4872-3. Water Permit No. 5721-3 did not allow for an increase in the developed diversion rate or number of acres being irrigated under Nos. 2302-3 and 4872-3.

Water Permit No. 2302-3, with a priority date of June 19, 1975, authorized diversion of 17.2 cubic feet of water per second (cfs) from the Missouri River to irrigate 1200 acres. Water Permit No. 4872-3, with a priority date of February 16, 1982, authorized diversion of 1.00 cfs from the Missouri River to irrigate 68 acres not covered under No. 2302-3. The applicable portions of Nos. 2302-3 and 4872-3 are incorporated into this Water License No. 5721-3.

On March 18, 1996, Water Permit No. 5721-3 was transferred from Eldore Holzwarth to Holzwarth Brothers, Larry and Melvin Holzwarth.

(2) It is certified that the applicant has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 4.00 cubic feet of water per second from the Missouri River for beneficial use. The permit holder diverts from the Missouri River directly for irrigation or to a 285 acre feet storage dam. The system is capable of diverting 4.00 cfs from the Missouri River and at the same time diverting 2.44 cfs from the 285 acre feet storage dam for irrigation purposes. At no time may the combined diversion rate exceed the statutory limit of one cubic foot per second for each 70 acres irrigated. The statutory limit authorized for irrigation of the 366 acres (listed below) is 5.23 cfs. The location of the diversion points are at the Missouri River - 1580'W of the SE corner of Section 16 and at the storage dam - 1885'E and 1620'N of the SW corner of Section 23, all in T118N, R78W.

(3) The applicant has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate the following: **366 acres - all in T118N, R78W**

Section 15	NE $\frac{1}{4}$ SW $\frac{1}{4}$	24 acres	Section 22	NW $\frac{1}{4}$ NE $\frac{1}{4}$	18.5 acres	Section 23	NE $\frac{1}{4}$ SW $\frac{1}{4}$	3.5 acres
	SE $\frac{1}{4}$ SW $\frac{1}{4}$	24 acres		NE $\frac{1}{4}$ NE $\frac{1}{4}$	18.5 acres		SE $\frac{1}{4}$ SW $\frac{1}{4}$	3.5 acres
	NW $\frac{1}{4}$ SE $\frac{1}{4}$	38 acres					NW $\frac{1}{4}$ SE $\frac{1}{4}$	36.0 acres
	NE $\frac{1}{4}$ SE $\frac{1}{4}$	35 acres					NE $\frac{1}{4}$ SE $\frac{1}{4}$	28.0 acres
	SW $\frac{1}{4}$ SE $\frac{1}{4}$	38 acres					SW $\frac{1}{4}$ SE $\frac{1}{4}$	36.0 acres
	SE $\frac{1}{4}$ SE $\frac{1}{4}$	35 acres					SE $\frac{1}{4}$ SE $\frac{1}{4}$	28.0 acres

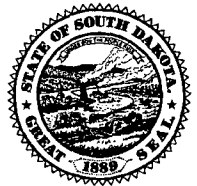
(4) Pursuant to South Dakota Water Law 46-5-30.1 Holzwarth Brothers, Larry & Melvin Holzwarth of Box 145, Gettysburg, SD 57442 the holders and/or owners of Incorporated Water Permit No. 5721-3 are issued a license to appropriate water, the right to use 4.00 cubic feet of water per second from the Missouri River with priority dates of June 19, 1975 (3.00 cfs) and February 16, 1982 (1.00 cfs) and to store 285 acre feet annually in a storage dam from the location specified in (2) of this license. The statutory application rate of water for irrigation of the 366 acres from the Missouri River and storage dam is limited to a combined rate of 5.23 cfs. This license is subject to any limitations or qualifications listed in Incorporated Water Permit No. 5721-3 and subject to South Dakota State Law.



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

APR 4 1996

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

APR 4 1996

5721-3

Holzwarth Brothers
Larry & Melvin Holzwarth
Box 145
Gettysburg, SD 57442

Dear Sirs:

Enclosed is Water License No. 5721-3 and Receipt No. 414615 for \$50.00 which was assessed for an inspection and issuance of the license. Water License No. 5721-3 is the final document which completes the process of obtaining a water right. Also enclosed is Receipt No. 414861 for the transfer of ownership of this Water License.

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

Very truly yours,

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

gm
enclosures

NOTE: The applicable portions of Nos. 2302-3 and 4872-3 are incorporated into this Water License No. 5721-3.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 4, 1997

NOTICE

TO: HOLZWARTH BROS
PO BOX 145
GETTYSBURG SD 57442

FROM: Ron Duvall, Natural Resources Engineer
for John Hatch, Chief Engineer
Water Rights Program

RE: Failure to Report Chemical Use under Water Permit No(s) 5721-3

The first notice to file chemigation report(s) for Permit No(s) 5721-3 was dated 10/24/96. Our records indicate that we have not received the 1996 chemigation report for Permits No(s) 5721-3. The Water Management Board has directed that owners of water permits who have not submitted the 1996 chemigation report(s) be given notice of violation and hearing before the board. The hearing held by the board is to determine what action is to be taken concerning violation of Administrative Rule 74:02:09:02(3). This rule requires chemigation users to report the type of chemical applied, the dates, hours and amount of chemical applied.

The hearing will be held at 2:30 PM on March 5, 1997, in the Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD and will be conducted pursuant to SDCL 34A-2A through 34A-2A-5; 46-1-12, 46-1-14, 46-2-11, 46-2-17. These are contested case hearings pursuant to chapter 1-26. According to SDCL 46-1-12, the board may suspend a permit for a period of up to one year for the first violation or up to three years for the second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s). 5721-3 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the chemigation report(s) is(are) received by this office on/or before February 28, 1997 your name will be deleted from the board agenda.

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 East Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Holzwarth Bros.
PO Box 145
Gettysburg SD 57442

4a. Article Number

P378 080 594

4b. Service Type

- | | |
|---|---|
| ☐ Registered | ☒ Certified |
| ☐ Express Mail | ☐ Insured |
| ☐ Return Receipt for Merchandise | ☐ COD |

7. Date of Delivery

2-6-97

5. Received By: (Print Name)

Melvin F Holzwarth

6. Signature: (Addressee or Agent)

X

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1994

Domestic Return Receipt

Thank you for using Return Receipt Service.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 7, 1997

HOLZWARTH BROS
PO BOX 145
GETTYSBURG SD 57442

Dear Mr. HOLZWARTH:

I am writing to acknowledge receipt of your phone call concerning the 1996 chemigation questionnaire. You may disregard the February 4, 1997 notice of "Failure To Submit Chemigation Questionnaire." I have filled out the questionnaire for your Water Permit No. 5721-3 with the information you provided over the phone and your name has been deleted from the Water Management Board agenda.

If you have any questions, please contact me at 605-773-3352.

Sincerely,

Barry A. McLaury
Water Rights Program



5721-3

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 16, 2002

NOTICE

TO: HOLZWARTH BROS, LARRY HOLZWARTH, PO BOX 145, GETTYSBURG, SD 57442
0145

FROM: Ron Duvall, Natural Resources Engineer
for Garland Erbele, Chief Engineer
Water Rights Program

SUBJECT: Reporting Requirement for 2001 Irrigation Questionnaire(s)

Our records indicate that the 2001 Irrigation Questionnaire(s) has not been submitted for Permit No(s) 5721-3. The request for the Questionnaire was dated October 12, 2001. The Water Management Board has directed that owners of water permits who have not submitted the 2001 Irrigation Questionnaire(s) be given notice of permit violation and a hearing to be held by the Board. The hearing is to determine what action is to be taken for violation of Water Permit No(s) 5721-3 qualification:

"This permit is approved subject to the Irrigation Water Use Questionnaire being submitted each year."

The hearing will be held at 10:00 am, March 13, 2002 in the Visitor Center (west side of Capitol Lake), 650 E Capitol, Pierre, SD, and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to Chapter 1-26. According to SDCL 46-1-12, the Board may suspend a permit for a period of up to one year for the first violation of a permit qualification or up to three years for a second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s) 5721-3 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is(are) received in this office on/or before March 8, 2002, you will no longer be in violation of your permit and your name will be deleted from the Board agenda. If you have questions or need assistance in completion of the irrigation questionnaire(s), please contact Genny McMath at (605) 773-3352.

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.

5721-3

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired. ■ Print your name and address on the reverse so that we can return the card to you. ■ Attach this card to the back of the mailpiece, or on the front if space permits.		A. Received by (Please Print Clearly) <u>Lana Holzwarth</u> B. Date of Delivery <u>1/17/02</u>	
1. Article Addressed to: HOLZWARTH BROS LARRY HOLZWARTH PO BOX 145 GETTYSBURG SD 57442 0145		C. Signature <u>X Lana Holzwarth</u> ☐ Agent ☐ Addressee	
		D. Is delivery address different from item 1? ☒ Yes ☐ No If YES, enter delivery address below:	
		3. Service Type ☒ Certified Mail ☐ Express Mail ☐ Registered ☐ Return Receipt for Merchandise ☐ Insured Mail ☐ C.O.D.	
		4. Restricted Delivery? (Extra Fee) ☐ Yes	
2. 7001 2510 0004 4797 4203			
PS Form 3811, July 1999		Domestic Return Receipt 102595-00-M-0952	



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 21, 2002

5721-3

Larry Holzwarth
Holzwarth Brothers
29614 164th St
Gettysburg SD 57442

Dear Mr. Holzwarth:

I am writing to acknowledge receipt of your 2001 irrigation questionnaire. You may disregard the January 16, 2002, "Notice" concerning reporting requirements for Water Right No. 5721-3.

The information was received in our office prior to the Water Management Board meeting and your name has been deleted from the agenda.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 18, 2008

NOTICE

TO: HOLZWARTH BROS, LARRY HOLZWARTH, 29614 164th ST, GETTYSBURG, SD 57442
0145

FROM: Ron Duvall, Natural Resources Engineer
for Garland Erbele, Chief Engineer
Water Rights Program

SUBJECT: Reporting Requirement for 2007 Irrigation Questionnaire(s)

Our records indicate that the 2007 Irrigation Questionnaire(s) has not been submitted for Permit No(s) 5721-3. The request for the Questionnaire was dated October 19, 2007. The Water Management Board has directed that owners of water permits who have not submitted the 2007 Irrigation Questionnaire(s) be given notice of permit violation and a hearing to be held by the Board. The hearing is to determine what action is to be taken for violation of Water Permit No(s) 5721-3 qualification:

"This permit is approved subject to the Irrigation Water Use Questionnaire being submitted each year."

The hearing will be held at **10:00 am, March 11, 2008** in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol Avenue, Pierre, SD and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to Chapter 1-26. According to SDCL 46-1-12, the Board may suspend a permit for a period of up to one year for the first violation of a permit qualification or up to three years for a second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s) 5721-3 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is(are) received in this office on/or before **March 3, 2008**, you will no longer be in violation of your permit and your name will be deleted from the Board agenda. Enclosed are additional questionnaire(s) for your use. If you have questions or need assistance, please contact Genny McMath at (605) 773-3352. If you prefer, you can complete the questionnaire on-line at the following link:

<https://www.state.sd.us/eforms/secure/eforms/E0455V6-IQ.pdf>

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.

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Track & Confirm

Search Results

Label/Receipt Number: 2303 2160 0000 0802 3004
Status: **Delivered**

Your item was delivered at 11:37 AM on January 19, 2008 in
GETTYSBURG, SD 57442. The item was signed for by L HOLZWARTH.

[Additional Details >](#)[Return to USPS.com Home >](#)

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No FEAR Act EEO Data

FOIA

Be A Top Provider
For Service, Not Just
For Service, Not JustIntroduce Your
Business to USPS

SIGNATURE CONFIRMATION NUMBER: 2303 2160 0000 0802 3004	
HOLZWARTH BROS LARRY HOLZWARTH 29614 164th ST GETTYSBURG SD 57442 0145	
Waiver of Signature	☐ YES ☐ NO
Postmark Here	
POSTAL CUSTOMER: Keep this receipt. For Inquiries: Access internet web site at www.usps.com ® or call 1-800-222-1811	
☐ Priority Mail™ Service ☐ First-Class Mail® parcel ☐ Package Services parcel	



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

February 11, 2008

5721-3

Larry or Melvin Holzwarth
Holzwarth Brothers
29614 164th St
Gettysburg SD 57442

Dear Sirs:

I am writing to acknowledge receipt of your 2007 irrigation questionnaire. You may disregard the January 18, 2008, "Notice" concerning reporting requirements for Water Right No. 5721-3. The information was received in our office prior to the Water Management Board meeting and your names have been deleted from the agenda.

Thank you for the note indicating you have discontinued irrigation. As we discussed on the phone, the water license will be reissued to remove the irrigation component and will authorize storage of water in the dam for livestock watering. The license will be sent to you under separate cover as soon as it is issued and signed by the Chief Engineer.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352

WATER RIGHTS PROGRAM -- FILE DOCUMENTATION

NAME & ADDRESS: Melvin Holzwarth, 29614 164th St, Gettysburg SD 57442

DATE: May 19, 2008

TELEPHONE: 605 765-9274

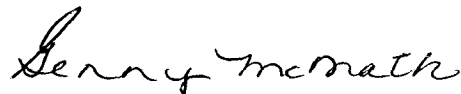
RE: Use of water from the storage dam and Missouri River

COMMENTS:

Mr. Holzwarth has indicated that they have quit irrigating and have sold the irrigation pivots. I spoke with him back in February and he indicated he still has the storage dam. He would like to keep the water right for domestic use from the dam.

Today, I contacted Mr. Holzwarth to find out if he still pumped from the Missouri River up into the storage dam. He indicated they no longer pump from the Missouri River and rely solely on runoff to fill the dam.

I explained that he would be receiving a "Notice of Cancellation" from us which effectively schedules the irrigation portion of the water right for cancellation. The notice will include language on removal of not only the irrigation portion but the authority to pump from the Missouri River to the storage dam. He said that was fine and that was what he wanted. His main concern was that he was allowed to continue using the storage dam for livestock water.



Genny McMath
Environmental Scientist



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

May 20, 2008

NOTICE OF CANCELLATION

TO: Larry & Melvin Holzarth, Holzwarth Brothers, 29614 164th St, Gettysburg, SD 57442

FROM: Ron Duvall, Natural Resources Engineer
for Garland Erbele, Chief Engineer
Water Rights Program

SUBJECT: Cancellation of portions of Water Right No. 5721-3

Water Right No. 5721-3 authorizes diversion of water from the Missouri River and a 285 acre feet storage dam for irrigation purposes. In February, 2008, a notation was made on the annual irrigation questionnaire that you have discontinued irrigation and sold the irrigation pivots. Our understanding from a follow-up conversation with Genny McMath with our program is that the storage dam, supplied by runoff water is still in place and used for domestic purposes. Based on this information, the Chief Engineer of the Water Rights Program is recommending cancellation of the irrigation portion of Water Right No. 5721-3 due to abandonment and/or forfeiture and removal of the diversion authority from the Missouri River to supply water to the storage dam.

The Water Management Board will consider cancellation of the irrigation portion of Water Right No. 5721-3, including the diversion authority from the Missouri River, at 10:00 a.m., July 2, 2008 in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol, Pierre, SD *(the agenda time is an estimate and the actual time of hearing may be later than 10:00 am)*.

The recommendation of the Chief Engineer is not final or binding upon the Board. The Board is authorized to 1) cancel, 2) cancel portions of, 3) delay action on, or 4) take no action on Water Right No. 5721-3 based upon facts presented at the public hearing. Our records show you to be the owner of property covered by this water right. If you wish to oppose the cancellation and if you intend to participate in the hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, you must file a written petition with the Chief Engineer by June 23, 2008. The petition may be informal, but it must include a statement describing the reasons for your opposition to the cancellation, and your signature and mailing address or your legal counsel if legal counsel is obtained.

The hearing will be conducted pursuant to the provisions of SDCL 46-1-1 thru 46-1-10, 46-1-14 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-5-36, 46-5-37, 46-5-37.1; 46-2A-1 thru 46-2A-7; and Board Rules ARSD 74:02:01:36 thru 74:02:01:41. These are contested cases pursuant to procedures contained in SDCL 1-26.

This hearing may be an adversarial proceeding. Any party has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

The time of the hearing will be automatically extended for at least twenty days upon your written request to the Chief Engineer after a petition has been filed to oppose the cancellation. If an extension is requested, the hearing on the cancellation will be continued until the next regular Board Meeting. Any request for extension must be filed with the Chief Engineer by June 23, 2008.

Prior to June 23, 2008, contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) if assistance is needed with the following: 1) further information on the proposed cancellation; 2) to assure access to the meeting room for the handicapped; or 3) to obtain an interpreter for the hearing impaired.

Please note:

According to SDCL 1-26-18.3, parties to a contested case may use the Office of Hearing Examiners to conduct a hearing if either a property right is being terminated or the dollar amount in controversy exceeds \$2,500.00. If you choose to use the Office of Hearing Examiners rather than the hearing procedure described above, then you need to notify the Chief Engineer (Water Rights Program, 523 E. Capitol Avenue, Pierre SD) by June 23, 2008.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

**RECOMMENDATION OF CHIEF ENGINEER
FOR WATER RIGHT NO. 5721-3, HOLZWARTH BROTHERS**

Pursuant to SDCL 46-2A-2 and 46-5-37.1, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Right No. 5721-3.

The Chief Engineer is recommending cancellation of the irrigation portion of Water Right No. 5721-3 including the diversion authority from the Missouri River due to abandonment and/or forfeiture. The water right authorizes irrigation from the Missouri River and a 285 acre feet storage dam. The water right holder has confirmed that they no longer irrigate and have sold their irrigation equipment. Use of water from the Missouri River has also been discontinued. The storage dam, supplied by runoff water, is still in place and used for domestic purposes.

RON DUVALL, Natural Resources Engineer
for Garland Erbele, Chief Engineer
May 20, 2008

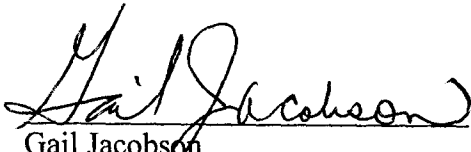
Note:

Once the irrigation component is removed by the Board, the water right will be reissued for storage of runoff water in the dam for domestic use.

CERTIFICATION

I hereby certify that on May 20, 2008, I have personally deposited with the United States mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated May 20, 2008 regarding cancellation notices addressed as stated below:

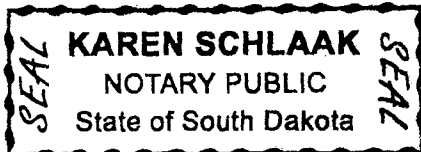
Brian Minish, SDAPV Dairy Development Inc., PO Box 66, Canton SD 57013 #6385-3
Wayne A & Astrid K Farries, 29342 192nd St, Onida SD 57564 # 4743-3
Harvey & Andrea Sheehan, 19395 288th Ave, Pierre SD 57501 # 4743-3
Ronald Steineke, 25319 464th Ave, Hartford SD 57033 # 1014-1
Larry or Melvin Holzworth, 29614 164th St, Gettysburg SD 57442 # 5721-3
Lynn Sanderson, 41017 152nd St, Conde SD 57434 # 4371-3
Tom & Lela Bowen, PO Box 187, Vale SD 57788 # 807-1


Gail Jacobson
Secretary
Water Rights

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 21st day of May, 20 08.


Karen Schlaak
Notary Public
My Commission expires April 1, 2013



NAME: Larry & Melvin Holzwarth, Holzwarth Brothers

ADDRESS: 29614 164th St, Gettysburg SD 57442

DATE: July 7, 2008 **COUNTY:** Potter

AUTHORITY

Pursuant to SDCL 46-5-31.1, if permitted irrigation use from a storage dam is abandoned or forfeited but the storage dam is used for stock watering, stock watering may be added to the license or permit upon the request of the permit or license holder.

HISTORY:

Water Right No. 5721-3 authorized diversion of water from the Missouri River to irrigate 366 acres in portions of Section 15, 22 and 23, T118N, R78W. Water could be diverted directly from the river for irrigation purposes or diverted to a storage dam (285 acre feet capacity) and diverted from the dam for irrigation.

On May 19, 2008, the water right holder confirmed the land is no longer irrigated however the storage dam catches runoff water and is used for stock watering purposes.

On July 2, 2008, the Water Management Board took action to cancel the irrigation portion of Water Right No. 5721-3 and remove the diversion authority from the Missouri River to supply water to the storage dam.

RECOMMENDED ACTION

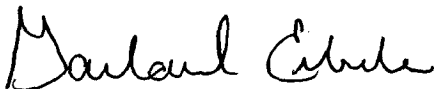
Based on the above, it is recommended that the water license be reissued for stock watering.



Eric Gronlund, Natural Resources Engineer
Water Rights Program

The Chief Engineer makes a finding pursuant to SDCL 46-5-31.1 that:

This addition of stock watering does not impair existing water rights and no diversion of water will be made from the stock dam. Licensing of the water permit for stock watering may occur without application or publication pursuant to SDCL 46-2A-4.



Garland Erbele, Chief Engineer
Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

JUL 24 2008

5721-3

Larry & Melvin Holzwarth
Holzwarth Brothers
29614 164th St
Gettysburg SD 57442

Dear Sirs:

Enclosed is your Reissued Water License No. 5721-3. The license authorizes impoundment of 285 acre feet of water annually from runoff to be used for domestic livestock watering purposes.

Water Right No. 5721-3 originally authorized diversion of water from the Missouri River for irrigation purposes with water either pumped directly from the river or to a storage dam. On July 2, 2008, the Water Management Board cancelled the irrigation portion of the water right and removed the diversion authority from the Missouri River to supply water to the storage dam.

Based on the Board's action to remove the irrigation component from the water right, the license has been reissued to allow impoundment of water for domestic purposes. 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,

A handwritten signature in black ink that reads "Garland Erbele".

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

enclosures

STATE OF SOUTH DAKOTA

REISSUED WATER LICENSE NO. 5721-3

(1) Larry & Melvin Holzwarth, Holzwarth Brothers, 29614 164th St, Gettysburg SD 57442 were issued Water License No. 5721-3, April 4, 1996 for a water right to divert 4.00 cubic feet of water per second from the Missouri River, with storage of 285 acre feet in a dam located in Potter County, South Dakota for irrigation purposes. Water License No. 5721-3, with priority dates of June 19, 1975 and February 16, 1982 (diversion of water from the river) and September 25, 1992 (storage) was issued to the permit holders for diversion of water with construction of the described water supply system and the application of water to beneficial use completed.

The water right holders have abandoned irrigation use as authorized by Water Right No. 5721-3 and sold the irrigation systems. On July 2, 2008, the Water Management Board cancelled the irrigation portion of the water right and removed the diversion authority from the Missouri River to supply water to the storage dam.

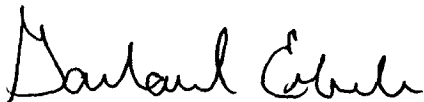
Pursuant to SDCL 46-5-31.1, stock watering may be added as a water use to a license provided no diversion is made from the dam. The Chief Engineer made a finding that the addition of stock watering does not impair existing water rights.

(2) It is certified that the water right holders have complied with the provisions of South Dakota State Law relating to the application of water to beneficial use and are entitled to impound 285 acre feet of water annually for beneficial use for domestic livestock watering purposes.

- The location of the storage dam is in the **W ½ Section 23, T118N, R78W.**

(3) Pursuant to South Dakota Water Law 46-5-30.1 Larry & Melvin Holzwarth, Holzwarth Brothers, 29614 164th St, Gettysburg SD 57442 the holders and/or owners of Water Right No. 5721-3 are issued a license to impound 285 acre feet of water annually from runoff with a priority date of September 25, 1992 from the location specified in (2) of this license for domestic livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 5721-3.



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

JUL 24 2008

date

