

WATER PERMIT NO. 2674-2

Name of Applicant: Susan Hattel

Address: 3070 Kane Court, Dubuque IA 52001

Phone: 563 590-6671

Amount of Water Claimed: 74 AF

Total Acres: NA

Source of Water Supply: runoff

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

County: Jones

Type of Waste Disposal System:

Location: 1 mile northeast of Murdo

PRIORITY

Date Received: 10-4-11

Application/License Fee: \$ 700.00

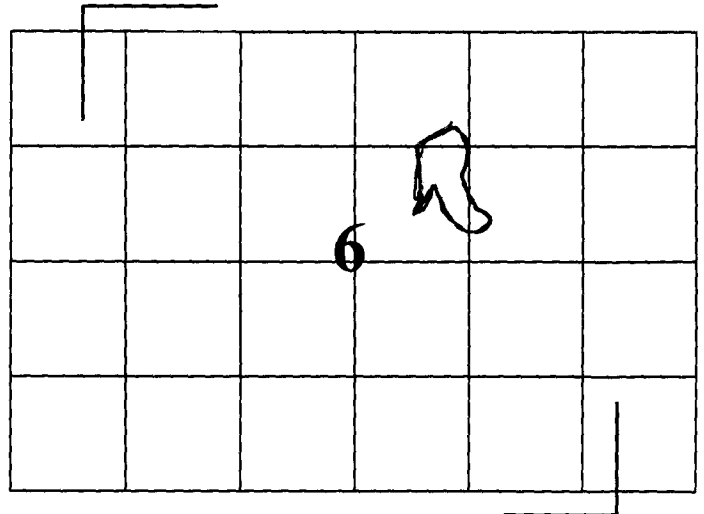
Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks: Repair and rebuild a failed dam

Diversion Point: NW ¼ NE ¼ Sec 6-T2S-R29E

Land to be Irrigated: W ½ NE ¼, SE ¼ NE ¼ Sec
6-T2S-R29E



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: plat

Prepared by: Dave F Konechne, PE

Reviewed and the Number Assigned on: 10-4-11

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

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

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2674-2</u> (office use only) Hydrologic Unit <u>10140102</u>
Basin <u>Bad River</u>	Newspaper <u>Mundo Coyote PO Box 465</u>
<u>605-669-2271</u>	<u>Mundo 57559</u>

RECEIVED
OCT - 4 2011
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

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

Type of Application:
(check one)

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

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

1. Name of Applicant Susan Hattel Phone 563-590-6671
 (check one) ☒ Owner ☐ Tenant/lessee
 Mailing Address 3070 Kane Court Dubuque IA 52001
 (Address) (City) (State) (Zip Code)
2. Amount of water claimed CFS or GPM 74 AF
 (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam dugout or annual use if applicable
3. Source of water supply Dry Draw Runoff
4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Jones NW1/4NE1/4
 The embankment is located 1,850 feet west and 1,150 south of NE1/4 of Section 6-T2S R29E. Water impounded: NW1/4NE1/4, SW1/4NE1/4, SE1/4NE1/4 Sec. 6 T2S R29E.
5. County or counties where water will be used Jones
6. Annual period during which water is to be used Jan 1 - Dec. 31
7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)
 The project will repair and rebuild a dam where an original location notice dated September 12, 1957 was filed showing a 4.9 surface acre pond capable of storing 27.4 ac./ft was created. Damage has occurred causing failure and loss of ponding. When repaired, the pond will be 12.3 surface acres in size with 74 ac./ft. of storage. Engineering plans and specs are included with this application.

STATE OF ~~SOUTH DAKOTA~~ IOWA
 County of ~~Jones~~ Dubuque SS

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

I, Susan Hattel, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature Susan HattelSubscribed and sworn to before me this 30th day of September 20 11

Marlene G. Woller
 Notary Public signature

SOUTH DAKOTA
WATER PERMIT NO. 2674-2

Date of first receipt of application October 4, 2011.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2674-2 to Susan Hattel, 3070 Kane Court, Dubuque IA 52001 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2674-2 authorizes impoundment of 74 acre-feet of water from runoff by reconstructing an existing dam located in the NW 1/4 NE 1/4 Section 6 with water impounded in the W 1/2 NE 1/4, SE 1/4 NE 1/4 Section 6; all in T2S-R29E.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation and livestock water and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 -- December 31.
4. The date of approval of Permit No. 2674-2 is November 21, 2011.
5. The date from which applicant may claim right is October 4, 2011.
6. One-fifth of the construction is to be completed on or before May 21, 2013.
7. All construction is to be completed on or before November 21, 2016.
8. Water is to be put to beneficial use on or before November 21, 2020.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

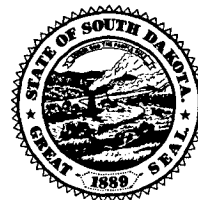
QUALIFICATIONS

1. Water Permit No. 2674-2 authorizes a dam with a storage capacity of 74 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

WATER MANAGEMENT BOARD

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

DEC 01 2011
date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

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

2. Wastewater Disposal System Information

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

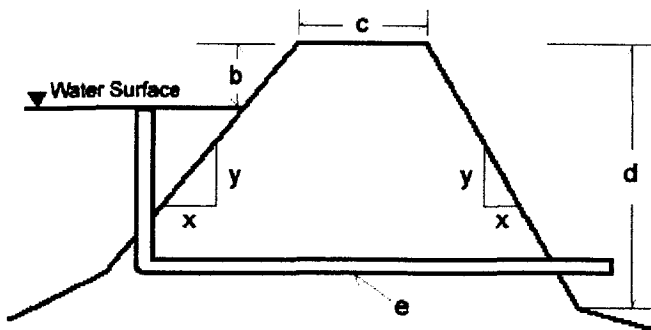
3. Dugout Information

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

4. Water Storage Dams

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

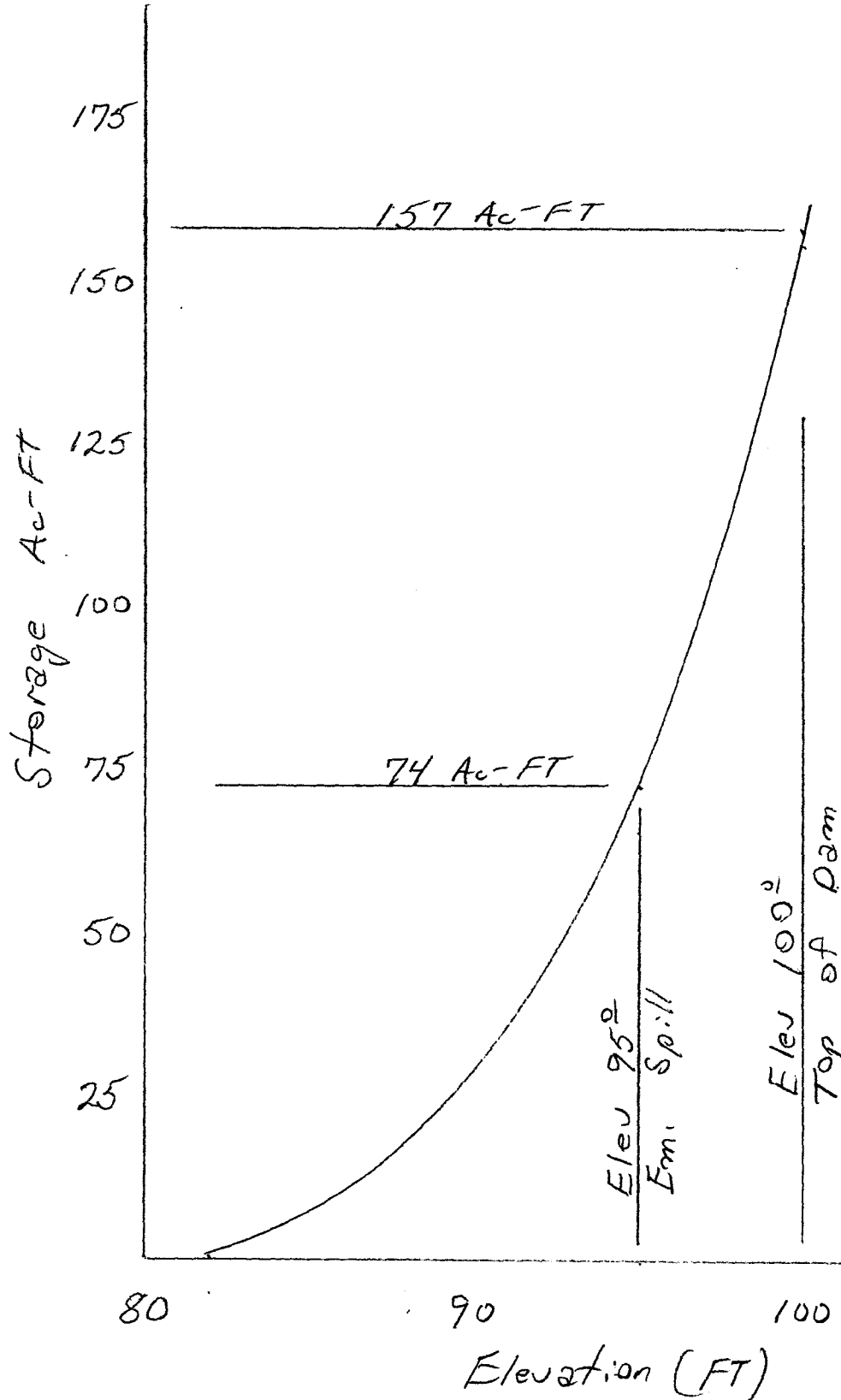
- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:
Konechne Engineering
104 Capitol Hill Drive
Pierre, SD 57501
(605) 224-7092



- b) Freeboard 5.0'
- c) Crest Width 12.0'
Crest Length _____
- d) Height 17.3'
- e) Primary Outlet Capacity _____
If pipe, diameter _____
- f) Secondary Spillway Capacity 697.5
Spillway Width 75'
- g) X & Y Slope (e.g. 3 to 1 is a typical slope)
Upstream 3:1
Downstream 2.5:1
- h) Surface Area of Impoundment 12.3
- i) Storage 74.0 Acre Feet
- j) Drainage Area Above Dam 365.0 Acres

COMPUTATION SHEET

BY	DATE	PROJECT	SHEET ____ OF ____
CHKD BY	DATE	FEATURE <i>Levi Newsam</i>	
DETAILS <i>Stage-Storage</i>			



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DENR - Water Rights
523 E Capitol Ave
Pierre SD 57501

* INVOICE *

October 4, 2011
Invoice No. JL-1004

US Fish & Wildlife Service
Attn: Sandy
Brookings SD 57006

Water Permit application for: Susan Hattel \$700.00
Water Permit application for: Travis Hendricks \$700.00

DO NOT WRITE

ABOVE THIS LINE

SANDRA J. HUBBARD

XXXX XXXX XXXX 1309

SIGN HERE

X

EXPIRATION

☒ DATE
CHECKED

10/11

↑ PLEASE DO NOT WRITE ABOVE THIS LINE ↑

1	WATER PERMIT APP.		700.00
	SUSAN HATTEL INV. JL-1004		
1	WATER PERMIT APP.		700.00
	TRAVIS HENDRICKS JL-1004		
DATE	10/04/11	AUTHORIZATION	053717
REFERENCE NO.	001	SERVER	
ID-FOLIO/CHECK NO./LIC. NO. STATE	REG./DEPT.	CLERK	TIP
			MISC.
			TOTAL
			1400.00

SALES SLIP
ORIGINAL

BANKCARD SALES SLIP 2 PT.

The issuer of the card identified on this item is authorized to pay the amount shown as TOTAL upon proper presentation. I promise to pay such TOTAL (together with any other charges due thereon) subject to and in accordance with the agreement governing the use of such card.

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WATER RIGHTS
PROGRAM

1*****
SITES XEQ 09/19/2011 WATER RESOURCE SITE ANALYSIS COMPUTER PROGRAM
VER 2005.1.04 (USER MANUAL - DATED DECEMBER 2005)
TIME 10:30:40

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

SITES 01/01/2005 Levi Newsam - Jones Co 0.5703125 H4
SAVMOV 0 101
SAVMOV 101 1 1
STRUCTURE
83 0
95 12.3
100 21.1
ENDTABLE
WSDATA 5A1 AC 82 365 6780 4.11
PDIRECT 4.00
POOLDATA ELEV 95 95 82 82 NH
ASDATA 41 100 50 2 .06 2
ASCREST ELEV 95
ASINSURF 41 .035
ASINLET 41 0.0 0.0 80 0.0 3
180 5
ENDTABLE
ASEXSURF 41 .035
.65 0
3
2 0
.02
ENDTABLE
ASEXIT 41 N 60
BTMWIDTH FEET 75
GRAPHICS I
GO, DESIGN HL TYPE2 24 TYPE2378 24
SAVMOV 2 101 1
ENDJOB

***** MESSAGE - ALTERNATE STRUCTURE ID (S 1) BEING USED
SINCE USER DID NOT INPUT AN ID.

***** MESSAGE - ALTERNATE SUBWATERSHED ID (A) BEING USED SINCE
USER DID NOT INPUT AN ID.

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

1SITES -----
XEQ 09/19/2011 Levi Newsam - Jones Co WSID=
VER 2005.1.04 SUBW= A
TIME 10:30:40 SITE = S 1 PASS= 1 PART= 1

***** BASIC DATA *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS A1 = LT 3000.

STORM DISTRIBUTION-PSH 24 HOUR TYPE II RAINFALL DISTRIBUTION

STORM DISTRIBUTION AUX. -24 HOUR TYPE II RAINFALL DISTRIBUTION

PRECIP. - Q-PS, 1-DAY	Q-PS, 10-DAY	P-SD	P-FB	
0.00	0.00	0.00	4.00	
WSDATA - CN	DA-SM	TC/L	-/H	QRF
82.00	0.57	6780.00	4.11	0.00
SITEDATA- PERM POOL	CREST PS	FP SED	VALLEY FL	378?
95.00	95.00	0.00	82.00	YES
BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE	
0.00	0.00	0.00	DESIGN	
PSDATA - NO. COND	COND L	DIA/W	-/H	
0.00	0.00	0.00	0.00	
PS N	KE	WEIR L	TW EL	
0.000	0.00	0.00	0.00	
2ND STG	ORF H	ORF L	START AUX.	
0.00	0.00	0.00	0.00	
ASCRESTS - AUX.1	AUX.2	AUX.3	AUX.4	AUX.5
95.00	0.00	0.00	0.00	0.00
AUX.DATA - REF.NO.	RETARD. Ci	TIE STATION	INLET LENGTH	
41	0.00	100.00	50	
AUX.DATA - INLET N	SIDE SLOPE	EXIT N	EXIT SLOPE	ACTUAL AUX?
0.035	2.00	0.035	0.060	NO
BTM WIDTH - BW1	BW2	BW3	BW4	BW5
ft 75.00	0.00	0.00	0.00	0.00

AUXILIARY SPILLWAY RATING DEVELOPED USING WSPVRT.

1SITES -----

XEQ 09/19/2011	Levi Newsam - Jones Co	WSID=
VER 2005.1.04		SUBW= A
TIME 10:30:40	SITE = S 1	PASS= 1
		PART= 2

PERM POOL	95.00 FT	73.8 ACFT	12.30 AC	0.0 CFS
CREST PS	95.00 FT	73.8 ACFT	12.30 AC	0.0 CFS
SED ACCUM	95.00 FT	73.8 ACFT	12.30 AC	0.0 CFS
START ELEV	95.00 FT	73.8 ACFT	12.30 AC	0.0 CFS

1SITES -----

XEQ 09/19/2011	Levi Newsam - Jones Co	WSID=
VER 2005.1.04		SUBW= A

TIME 10:30:40

SITE = S 1

PASS= 1

PART= 3

AUX. CREST 95.00 FT 73.8 ACFT 12.30 AC 0.0 CFS

PS STORAGE 0.0 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

START ELEV 95.00 FT 73.8 ACFT 12.30 AC 0.0 CFS

EFFECTIVE HEIGHT(H)= 13.0 FEET, PRODUCT= 959. (H * STORAGE AT CREST AUX.).

INPUT DESIGN CLASS = A1 = LT 3000. PRODUCT.

NRCS-FBH D= 24.00 HR P= 4.00 IN Q= 2.20 IN DA= 0.57 SM
TC= 1.13 HR CN= 82.00 VOL= 67.0 ACFT

PEAK = 405.0 CFS, AT 12.6 HRS.

***** WARNING - UPSTREAM END OF CREST 20. IS UPSTREAM OF THE
FIRST GROUND POINT 50. STATION.

RATING TABLE DEVELOPED, SITE = S 1:
BY PROGRAM FOR PS AND AUX. SPILLWAYS
AUX. RATING USED WSPVRT METHOD.

***** MESSAGE - THE PS RATING CONTAINS NO OR INSIGNIFICANT FLOW VALUES.

RATING TABLE NUMBER 2

	ELEV. FEET	Q-TOTAL CFS	Q-PS CFS	Q-AUX. CFS	VOLUME AC-FT	AREA ACRE
1	95.00	0.00	0.00	0.00	73.80	12.30
2	95.00	0.00	0.00	0.00	73.80	12.30
3	95.00	0.00	0.00	0.00	73.80	12.30
4	95.00	0.00	0.00	0.00	73.80	12.30
5	95.00	0.00	0.00	0.00	73.80	12.30
6	95.00	0.00	0.00	0.00	73.80	12.30
7	95.00	0.00	0.00	0.00	73.80	12.30
8	95.00	0.00	0.00	0.00	73.80	12.30
9	95.00	0.00	0.00	0.00	73.80	12.30
10	95.00	0.00	0.00	0.00	73.80	12.30
11	95.00	0.00	0.00	0.00	73.80	12.30
12	95.00	0.00	0.00	0.00	73.80	12.30
13	95.00	0.00	0.00	0.00	73.80	12.30
14	95.25	11.40	0.00	11.40	76.93	12.74
15	95.50	32.90	0.00	32.90	80.17	13.18
16	95.95	119.96	0.00	119.96	86.28	13.97
17	96.50	285.04	0.00	285.04	94.23	14.94
18	97.50	737.78	0.00	737.78	110.05	16.70
19	98.75	1477.34	0.00	1477.34	132.30	18.90
20	100.00	2411.98	0.00	2411.98	157.30	21.10

SUMMARY OF AUXILIARY SPILLWAY SURFACE CONDITIONS USED IN COMPUTATIONS BY REACH
REACH FROM TO SLOPE RETARDANCE VEGETAL MAINT. ROOTING REACH

	STA (ft)	STA (ft)	(%)	CURVE INDEX@	COVER FACTOR	CODE	DEPTH (ft)	LOCATION *
1	20.	100.	0.0	0.035	**	**	**	CREST
2	100.	160.	6.0	0.035	0.65	3	2.0	EXIT !

@ The program interprets retardance curve index entries of less than 1 as Manning's n values.

* Upper case indicates a reach of constructed spillway channel.

** The program does not use vegetal cover factor, maintenance code, and rooting depth for inlet and crest reaches in computations.

! Reach 2 used in computing exit channel velocities.

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	AUX.-HP FT	VOL-AUX. ACFT
NRCS-FBH	75.0	96.41	92.9	14.8	1.41	19.1

^^^^ NOTE -- ACTUAL Hp OF 1.41 RAISED TO MEET MIN. 378 CRITERIA.

PEAK - CFS	Q-PS	Q-AUX.	Q-TOT.
DISCHARGE =	0.0	257.6	257.6

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-Sc	25% OF Q Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY ---	0.71	4.74	0.020	0.027

EROSIONALLY EFFECTIVE STRESS FOR STABILITY ANALYSIS OF AUX. EXIT CHANNEL
(Refer to Ag. Handbook 667, Chapt. 3, for allowable stresses.)

Aux. Spillway Discharge = 258. cfs; Bottom Width = 75. ft

REACH NO.	FROM STA	TO STA	SLOPE %	MANNING'S n	VELOCITY ft/s	TOTAL STRESS lb/ft^2	EFFECTIVE STRESS lb/ft^2
2	100.	160.	6.00	0.035	6.60	1.92	1.170

AUXILIARY SPILLWAY DURATION FLOW =	26.5 HOURS
ATTACK, OE/B =	0.9 ACFT/FT

***** MESSAGE - NHCP378 CRITERIA USED BUT AUXILIARY SPILLWAY RATING NOT
BASED ON ASFILE RATINGS.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY=	6.6 FT/SEC
EXIT SLOPE =	0.060 FT/FT
FLOW DEPTH =	0.5 FT

>>>> NHCP378 RUN - MINIMUM DEPTH, CREST AUX. TO TOP OF DAM IS 2.00 FT.
NEW TOP OF DAM ELEVATION = 97.00.

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	AUX.HP FT	VOL-AUX. ACFT
MINIMUM AUX.	75.0	97.00	102.1	15.8	2.01	28.3

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGES = 0.0 511.4 511.4

	CRITICAL	CRITICAL	CRITICAL	25% OF Q
	DEPTH	VELOCITY	SLOPE-Sc	Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY ---	1.12	5.92	0.018	0.024

>>>>> NHCP378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM; 1.00 FT REQUIRED
FOR THIS PASS. NEW TOP OF DAM ELEVATION = 97.41.

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.HP	VOL-AUX.
RESULTS	FT	FT	ACFT	AC	FT	ACFT
MINIMUM AUX.	75.0	97.41	108.6	16.6	2.42	34.8

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGES = 0.0 697.5 697.5

	CRITICAL	CRITICAL	CRITICAL	25% OF Q
	DEPTH	VELOCITY	SLOPE-Sc	Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY ---	1.37	6.53	0.016	0.022

Inflow Hyd 1 FBH-Peak = 257.59 CFS at 13.21 hrs., Location Point
HYDOUT 1

1SITES....JOB NO. 1 COMPLETE.

Levi Newsam - Jones Co

0 SUBWATERSHED(S) ANALYZED.

1 STRUCTURE(S) ANALYZED.

1 HYDROGRAPHS ROUTED AT LOWEST SITE.

0 TRIALS TO OBTAIN BOTTOM WIDTH FOR SPECIFIED STRESS OR VELOCITY.

SITES.....COMPUTATIONS COMPLETE

>>>	SITE	SUBWS	SUBWS DA	CURVE	TC	TOTAL DA	TYPE	STRUC	<<<
	ID	ID	(SQ MI)	NO.	(HRS)	(SQ MI)	DESIGN	CLASS	
	---	---	---	---	---	---	---	---	
	S 1	A	0.57	82.	1.13	0.57	378CR	A1	

PASS	DIA./	AUX.CREST	BTM.	MAX.	MAX.	EMB.	INTEGR.*	EXIT*	TYPE
NO.	WIDTH	ELEV	WIDTH	HP	ELEV	VOL.	DIST.	VEL.	HYD
	(IN/FT)	(FT)	(FT)	(FT)	(FT)	(CY)	(FT)	(FT/SEC)	

1	0.0	95.0	75.0	2.4	97.4	0.	0.	6.6	MIN. AUX.
---	-----	------	------	-----	------	----	----	-----	-----------

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

SITES.....SUMMARY TABLE 1 COMPLETED.

NRCS SITES VERSION 2005.1.04 ,01/01/2005
FILES

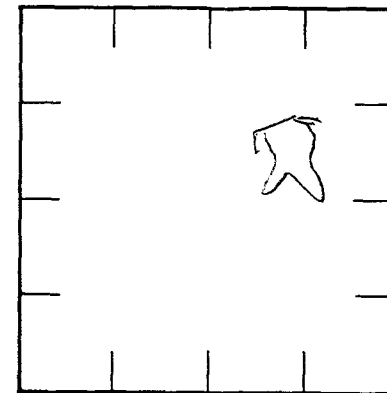
INPUT = C:\Newsam\75ft-ES.D2C
OUTPUT = C:\Newsam\75ft-ES.OUT
DATED 09/19/2011 10:30:40

GRAPHICS FILES GENERATED

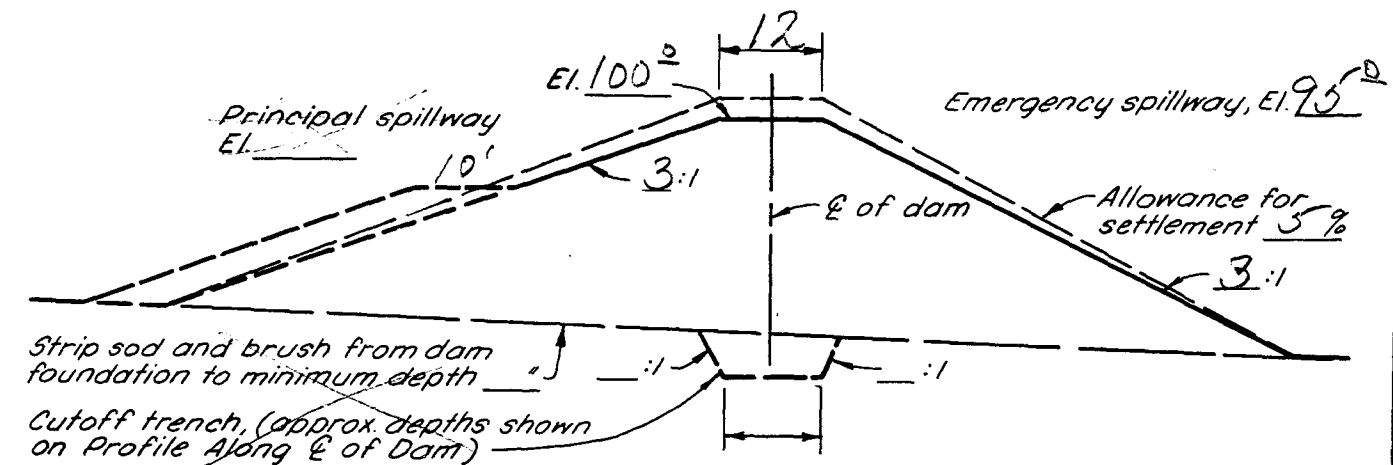
OPTION "L" = C:\Newsam\75ft-ES.DRG DATED 09/19/2011 10:30:40
OPTION "P" = C:\Newsam\75ft-ES.DHY DATED 09/19/2011 10:30:40
OPTION "E" = C:\Newsam\75ft-ES.DEM DATED 09/19/2011 10:30:40

DRAINAGE AREA	ANNUAL YIELD	PEAK RUNOFF	EMERG. SPLWY. CAPACITY	WATER DEPTH	SURFACE AREA	SEDIMENT STORAGE	TOTAL STORAGE
ACRES	50% AC. FT.	Ac-Ft 25-YR.	C. F. S.	FEET	ACRES	AC. FT.	AC. FT.
365	27	67	697	13	12.3	—	73.8

NOTE: Construct a 10ft wide berm along front side of dam at Elev 95' for wave action



LOCATION

[illegible]

SKETCH PLAN OF DAM AND RESERVOIR AREA

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

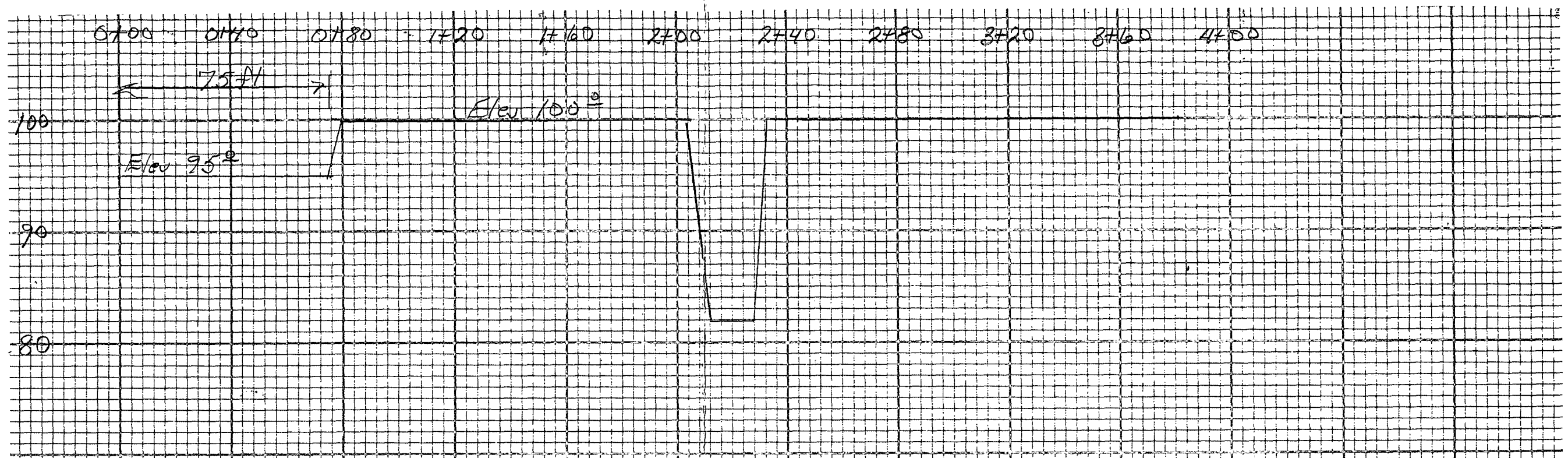
EARTH DAM

Class "A" Hazard

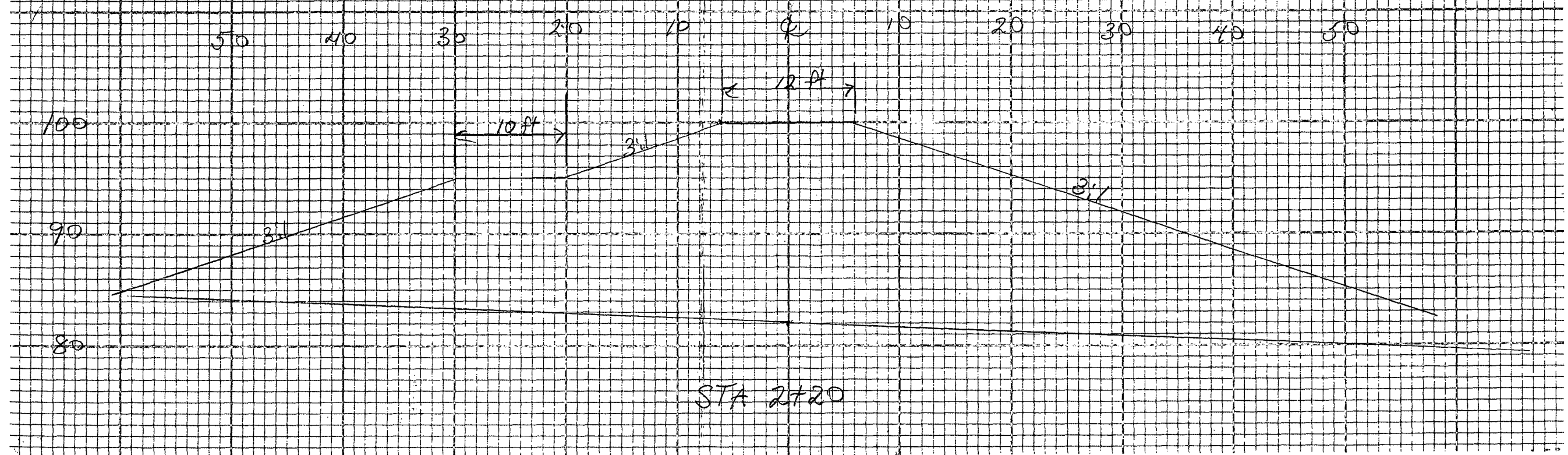
Designed	Approved by.....	
	Title.....	
Drawn	Title.....	
	Title.....	
Traced	Sheet	Drawing No.
	No	
Checked	of	

JOB PLAN NO. 1.0

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



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Water Permit Application No. 2674-2

Susan Huttel

Top of Dam Elev. - 100
 P. Spillway Elev. - 95
 DIS Emb. Top Elev. - 82.7 } Ht. 17.3 ft Cat. 3-Low Hazard Dam

Normal Storage Capacity - 74 Ac-Ft
 Max. Storage Capacity - 157

N. Capacity x Est Ht. = $74 \times 13 = 962 < 3000 \therefore 25 \text{ yr}$
Minimum Spillway Design

From USGS WRI 98-4055 "Tech. for Est Peak Flows ... in SD"
 Region C $DA = 365 \text{ Ac} = 0.57 \text{ mi}^2$

$$\begin{aligned} Q_{25} &= 207 CA^{.570} \\ &= 207 (.57)^{.57} \\ &= \underline{150 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 379 CA^{.566} \\ &= 379 (.57)^{.566} \\ &= \underline{275 \text{ cfs}} \end{aligned}$$

Spillway Capacity

$$\begin{aligned} Q &= CLH^{3/2} \quad C = 2.6 \\ &= (2.6)(75)(5)^{1.5} \quad L = 75 \\ &= \underline{2180 \text{ cfs}} \quad H = 5 \end{aligned}$$

NRCS Annual Yield

Section 74:02:08:09

$DA = 365 \text{ Ac}$ $CN = 82$ $ISO = 2$

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

$$\begin{aligned} 80\% \text{ chance} &= 0.34 \\ 0.34 \times 365^{3/2} &= \underline{10 \text{ Ac-Ft}} \\ 50\% \text{ chance} &= 0.80 \\ 0.80 \times 365^{3/2} &= \underline{25 \text{ Ac-Ft}} \\ 10\% \text{ chance} &= 3.0 \\ 3.0 \times 365^{3/2} &= \underline{91 \text{ Ac-Ft}} \end{aligned}$$



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

October 24, 2011

Susan Hattel
3070 Kane Court
Dubuque, IA 52001

Dear Ms. Hattel:

We have reviewed the plans and specifications for your dam repair project located in the NW ¼ NE¼ of Section 6-T2S-R29E, in Jones County. The plans and specifications for the project are approved. Approval of the plans and specifications does not authorize repair of the dam. The repair of the dam may not begin until Water Permit No. 2674-2 is approved.

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

The Hattel Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 17 feet and a normal storage capacity of 74 acre-feet and a maximum storage capacity of 157 acre-feet.

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

Sincerely,

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

c: Dave Konechne, Pierre



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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2674-2, Susan Hattel**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2674-2, Susan Hattel, 3070 Kane Court, Dubuque IA 52001.

The Chief Engineer is recommending APPROVAL of Application No. 2674-2 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Water Permit No. 2674-2 authorizes a dam with a storage capacity of 74 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.

Garland Erbele, Chief Engineer
October 21, 2011

REPORT ON
WATER PERMIT APPLICATION NO. 2674-2
Susan Hattel
October 18, 2011

Water Permit Application No. 2674-2 has been filed by Susan Hattel to impound 74 acre-feet of water from runoff by reconstructing an existing dam located in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 6-T2S-R29E, in Jones County. The application also requests impoundment of sufficient water to maintain water to the outlet elevation. The water will be used for fish and wildlife production and livestock water purposes.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. The dam has been designed by Konechne Engineering. The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 2674-2 is approved.

The dam will be 17 feet high with a normal storage capacity of 74 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 157 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 25-year frequency event.

The dam has a drainage area of 365 acres or 0.57 square miles. The dam is designed to have a 75 foot wide earthcut spillway with 5.0 feet of freeboard. A 25 year frequency event produces a peak runoff of approximately 150 cfs and a 100 year frequency event produces a peak runoff of approximately 275 cfs. The earthcut spillway will have a capacity of approximately 2180 cfs.

The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years is expected to be 10 acre-feet; the annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 25 acre-feet; and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 91 acre-feet.

Water Permit Application No. 2674-2 has been filed to impound 74 acre-feet of water from runoff by reconstructing an existing dam located in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 6-T2S-R29E. The existing dam was authorized under Location Notice No. 6698, which was filed in 1957. The dam is located on the upper reaches of White Clay Creek, about one and one-half miles upstream of the Murdo Dam. The City of Murdo holds Vested Water Right No. 536-2, which has a priority date of 1932 for storage of 1456 acre-feet of water in Murdo Dam. Murdo Dam has a drainage area of approximately 6.8 square miles. Another dam is located between the Murdo Dam and the Hattel Dam and is located in the NW $\frac{1}{4}$ of Sec. 6-T2S-R29E, about one-half mile downstream of the proposed repaired dam. This dam has a surface area of about 5 acres, and has an additional 100 acres of drainage area. There are no Water Rights or Location Notices filed for this dam; however, all 3 dams have existed together for a number of years. The approval of Water Permit Application No. 2674-2 should not have any adverse effects on the Murdo Dam or the smaller dam located between the Hattel Dam and Murdo Dam.

Page 2

Application No. 2674-2

Susan Hattel

October 18, 2011

Conclusions:

1. Water Permit Application No. 2674-2 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for domestic use should be a qualification on Water Permit Application No. 2674-2.

A handwritten signature in black ink, reading "Timothy G. Schaal". The signature is fluid and cursive, with the first name "Timothy" and last name "Schaal" clearly legible.

Timothy G. Schaal, P.E.

Natural Resources Engineering Specialist

RECEIVED

NOV 03 2011

WATER RIGHTS
PROGRAM

PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

)ss

OK

COUNTY OF JONES

Pam Daum, of said County and State, being duly sworn, on oath says: THE MURDO COYOTE is a weekly newspaper of general circulation, printed and published in MURDO, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said THE MURDO COYOTE is a legal newspaper and has been in existence for more than one year immediately preceding the first publication herein mentioned; and has more than 200 bonified subscribers; that I, the undersigned am Legal Advertising Manager of said newspaper, and in charge of the advertising department thereof, and have personal knowledge of all facts stated in this affidavit; and that the advertisement headed

Notice of Application #2674-2 to Appropriate Water
Susan Hattel

a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive issues, the first publication being on the 3rd day of November, 2011, and the last publication on the 10th day of November, 2011, that \$ 46.14 being the full amount of the fee for publication of the annexed notice solely to the benefit of the publishers of the said newspaper, that no arrangement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.



Subscribed and sworn to before me this 10th day of November, 2011.


Notary
My
Jan

Notice of Application
No. 2674-2 to
Appropriate Water

Notice is given that Susan Hattel, 3070 Kane Court, Dubuque, IA 52001 has filed

an application for a water permit to impound 74 acre-feet of water from runoff by reconstructing an existing dam located in the NW 1/4 NE 1/4 Section 6 with water impounded in the W 1/2 NE 1/4, SE 1/4 NE 1/4 Section 6; all in T2S-R29E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2674-2 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre, SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 21, 2011.

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

Published November 3 & 10, 2011, at the total approximate cost of \$46.14.



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

October 25, 2011

Murdo Coyote
PO Box 456
Murdo SD 57559

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2674-2 to Appropriate Water to be published twice. Please publish the first notice on November 3, 2011 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Susan Hattel, 3070 Kane Court, Dubuque IA 52001 (Ph # 563-590-6671).

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

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

No. 2674-2

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

Date _____

We are in receipt of your letter of October 25, 2011 enclosing Notice to Appropriate Water by Application No. 2674-2 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

October 25, 2011

Susan Hattel
3070 Kane Court
Dubuque IA 52001

Dear Ms. Hattel:

Water Permit Application No. 2674-2 for fish & wildlife & livestock watering use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Murdo Coyote printed at Murdo SD (Ph # 605-669-2271). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352
eric.gronlund@state.sd.us

enclosures

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

Instruction to Newspaper - Publish first Notice on November 3, 2011 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 2674-2 to Appropriate Water

Notice is given that Susan Hattel, 3070 Kane Court, Dubuque IA 52001 has filed an application for a water permit to impound 74 acre-feet of water from runoff by reconstructing an existing dam located in the NW ¼ NE1/4 Section 6 with water impounded in the W ½ NE ¼, SE ¼ NE ¼ Section 6; all in T2S-R29E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2674-2 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 21, 2011.

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

Published twice at the total approximate cost of _____.



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www.state.sd.us/denr

DEC 01 2011

Susan Hattel
3070 Kane Court
Dubuque IA 52001

Dear Ms. Hattel:

Enclosed is Water Permit No. 2674-2 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

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

Sincerely,

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

enclosures

2674-2
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DEC 12 2011
WATER RIGHTS
PROGRAM

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

Date December 9, 2011

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

FROM:

Susan Hattel
(name)

3070 Kane Ct,
(address)

Dubuque, Iowa 52001
(city, state, zip)

563-556-1394
(phone)

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

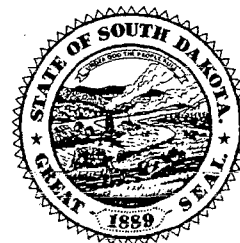
Water Permit No. 2674-2 states that the water use system is to be constructed by November 21, 2016, and water is to be put to beneficial use by November 21, 2020.
(date) (date)

The water use system was completed on December 1, 2011.
(date)

Applying the water to beneficial use was completed on December 1, 2011.
(date)

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

Susan Hattel
(signature)





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

December 12, 2011

2674-2

Susan Hattel
3070 Kane Ct
Dubuque IA 52001

Dear Mr. Hattel:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with your water use system.

The system is now ready for inspection. Inspections are done on a county-by-county basis as staff time permits. You have done everything you need to do and the intervening time between the completion of your project and the staff inspection has no bearing on your water permit.

Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

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

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

Permit No. 2674-2
Bad River - Water District

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

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

I have this day, September 26, 2012, made a thorough examination of the water use system for Susan Hattel of 3070 Kane Court, Dubuque, IA 52001 holder of Permit No. 2674-2, bearing the priority of October 4, 2011 authorizing the storage of 74 acre-feet of the waters of runoff for fish & wildlife propagation and livestock water purposes, in Lyman County.

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

A. Works used to divert the water:

A 17.3 ft. high earth dam with a normal storage capacity of 74 ac-ft.

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

N/A

C. Works used to apply water to beneficial use:

A 17.3 ft. high earth dam with a normal storage capacity of 74 ac-ft.

The system is in the following condition good. The point of diversion is located 1200 ft. south & 1950 ft. west of the NE corner of Sec. 6-T2S-R29E (NW ¼ NE ¼) (Lat. 43.90503, Long. -100.69407). The works are capable of storing 74 acre-feet of water which is to be used for fish & wildlife propagation and livestock water. Water has been put to beneficial use to the maximum extent as follows:

A 17.3 ft. high earth dam with a normal storage capacity of 74 ac-ft.

and the license should be issued for 74 acre-feet of storage.

Applicable permit qualifications have been complied with: Yes X

Exceptions to compliance are: none Date Report Completed: March 21, 2013



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

REPORT ON INSPECTION OF PERMIT NO. 2674-2

DATE OF INSPECTION: October 26, 2012

NAME & ADDRESS OF PERMIT HOLDER: Susan Hattel, 3070 Kane Court, Dubuque, IA 52001

DIVERSION POINT LEGAL LOCATION: 1200 ft. south and 1950 ft. west of the NE corner of Sec. 6-T2S-R29E (NW ¼ NE ¼) (Lat. 43.90503 & Long. -100.69407).

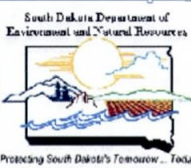
DAM INFORMATION:

- 1) Height to crest 17.3 feet
- 2) Height to primary spillway 12.3 feet
- 3) Height to secondary spillway N/A feet
- 4) Crest width 12 feet
- 5) Crest length XXX feet
- 6) Spillway length XXX feet
- 7) Spillway width 75 feet
- 8) Approx. storage (Normal) 74 acre-feet
- 9) Approx. storage (Maximum) 157 acre-feet
- 10) Date constructed: 2011

PERMIT QUALIFICATIONS AND REGULATIONS:

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

Water Permit Application No. 2674-2



Timothy G. Schaal

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

3/21/13



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denr.sd.gov

MAY 17 2013

2674-2

Susan Hattel
3070 Kane Court
Dubuque IA 52001

Dear Ms. Hattel:

Enclosed is Water License No. 2674-2. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

Sincerely,

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

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 2674-2**

(1) Susan Hattel, 3070 Kane Court, Dubuque IA 52001 made Application No. 2674-2, October 4, 2011 for a water permit to impound 74 acre feet of water from runoff by reconstructing a dam located in Lyman County, South Dakota for fish & wildlife propagation and livestock watering purposes. Permit No. 2674-2, with a priority date of October 4, 2011 was approved November 21, 2011 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before November 21, 2016 and for the application to beneficial use of said water on or before November 21, 2020.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 74 acre feet of water per second for beneficial use.

The location of the storage dam is 1,200 feet south and 1,950 feet west of the NE corner of Section 6, T2S, R29E (NW ¼ NE ¼).

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 Susan Hattel, 3070 Kane Court, Dubuque IA 52001 the holder and/or owner of Water Right No. 2674-2 is issued a license to appropriate water, the right to impound 74 acre feet of water from runoff with a priority date of October 4, 2011 from the location specified in (2) of this license for fish & wildlife propagation and livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2674-2 and subject to the following qualifications:

- Water Right No. 2674-2 authorizes a dam with a storage capacity of 74 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
- Low flows as needed for downstream domestic use, including livestock water and prior water rights must be bypassed.



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

MAY 17 2013

date

