

STATE	Idaho		PROJECT	Jim Eckhardt	
BY	F.P.	DATE	CHECKED BY	DATE	JOB NO.
SUBJECT	Stock Water Pond #3				SHEET 1 OF 5

Pond #3

1. D.A. 87 ac.
2. Soil Gem HSG C
3. Precip. 50 year 24 hr. 3.4 in.
10 year " " 2.8 in.
2 year " " 2.1 in.
4. D.A. flow length 1.4" (2000) = 2800 ft.

Find:

1. Peak discharge
 - a. 50 year storm
 - b. 10 year storm
 - c. 2 year storm

Eqn. 2-6 EFM
Chap. 2 pg. 2-5

Ave. W.S. Slope (Y)

$$Y = \frac{6.75 \text{ in (2000 ft./in.) (100) (40 ft.)}}{87 \text{ ac. (43560 ft./ac.)}} = 14\%$$

Range Condition - Sage brush w/ slight
grass understory.

Table 2-3c
EFM 2 pg. 2-87

RCN 70

Centerline Fill to elev. 100.0:

Sta.	Fill	End area	5% overfill
0	0	0	0
16	0.7	711.2 = 8.4	0
35	2.4	14 + 24 = 38	0.1
60	5.1	65 + 51 = 116	0.3
78	8.1	165 + 81 = 246	0.4
86	9.8	241 + 98 = 339	0.5
94	11.7	342 + 117 = 459	0.6
96	9.7	236 + 96 = 332	0.5
109	7.4	138 + 74 = 212	0.4
115	5.4	73 + 54 = 127	0.3
126	2.0	10 + 20 = 30	0.1
136	0	0	0

Applicant's
Exhibit

19

*Pond # 3**Sheet 2 of 5*

Client : Jeckhardt
County : Washington
Practice: stock water pond

State: id

By: fp
Checked: _____

Date: 05-19-92
Date: _____

Drainage Area : 87 Acres
Curve Number : 70
Watershed Length : 2800 Feet
Watershed Slope : 14 Percent
Time of Concentration: .430 Hours
Rainfall Type : II

Storm Number	1	2	3
Frequency (yrs)	2	10	50
24-Hr Rainfall (in)	2.1	2.8	3.4
Ia/P Ratio	0.41	0.31	0.25
Runoff (in)	0.28	0.61	0.95
Unit Peak Discharge (cfs/acre/in)	0.572	0.734	0.779
Peak Discharge (cfs)	14	39	64

STATE <u>Idaho</u>		PROJECT <u>Jim. Eckhardt</u>		
BY <u>F.P.</u>	DATE <u>5/18/92</u>	CHECKED BY	DATE	JOB NO.
SUBJECT <u>Stock Water Pond #3</u>				SHEET <u>3</u> OF <u>5</u>

Contour Area: $1 \text{ in.}^2 = (30 \text{ ft})(30 \text{ ft}) = 900 \text{ ft}^2$
 $= \frac{900}{43560} = 0.0207 \text{ ac.}$

Contour	Area in ²	Ac.
99.0	33.75	0.7
98.0	26.30	0.54
97.0	20.22	0.41
96.0	15.20	0.31
95.0	11.14	0.23
94.0	6.98	0.14
93.0	3.33	0.07
92.0	1.43	0.03
91.0	0.34	0.01
89.0	0	0

Stage Storage:

Contour	Contour Area (ac.)	Contour Ave	Depth	Ac./ft. Accum.
99	0.7			
98	0.54	0.62	1	2.12
97	0.41	0.48	1	1.50
96	0.31	0.36	1	1.02
95	0.23	0.27	1	0.66
94	0.14	0.19	1	0.39
93	0.07	0.11	1	0.20
92	0.03	0.05	1	0.09
91	0.01	0.02	1	0.04
89	0	0.01	2	0.02

STATE <u>Idaho</u>	PROJECT <u>Jim Eckhardt.</u>		
BY <u>FP</u>	DATE <u>5/18/92</u>	CHECKED BY	DATE
SUBJECT <u>Stock Water Pond #3</u>			JOB NO.
			SHEET <u>4</u> OF <u>5</u>

Size Emergency Spillway:

Use earth vegetated spillway
Discharge Capacity needed 64 CFS. For 50 year storm.

Vegetate Spillway With intermediate wheat. (like Smooth Brome)

Permissible Velocity 6 ft/sec.

Retardance C

4 ft/sec/ft. [Table 3-C EFM Chap 11. 11-54h]

$L = 25 \text{ ft.}$

$H_p = 1.5 \text{ ft.}$

$$B = \frac{64 \text{ CFS}}{4 \text{ ft}^3/\text{sec}/\text{ft}} = 16 \text{ ft.}$$

2% event R.D.
14 CFS.

$$\text{Try } \frac{64 \text{ CFS} - 14 \text{ CFS}}{4 \text{ ft}^3/\text{sec}/\text{ft}} = 12.5 \text{ ft.}$$

Max H_2O Surface w/ E. spillway discharge of 50 year storm. Top of dam elev 100.0
100.0 - 1 ft min. F.B. = 99.0 elev.

Crest E. Spillway. = 99.0 - 1.5 ft depth of
Flood flow = 97.5

Static Reservoir H_2O level or principle spillway elev. = 97.5 - 1.0 ft = 96.5

Principle Spillway Conduit: $Q = 14 \text{ CFS}$

EFM Fig. 6-25
6-41

$$H = 97.5 - 88.3 = 9.2 \text{ ft.}$$

Conduit diam. (CMP) = 18"

18" diam max flow = 16.6 CFS

Riser Size:

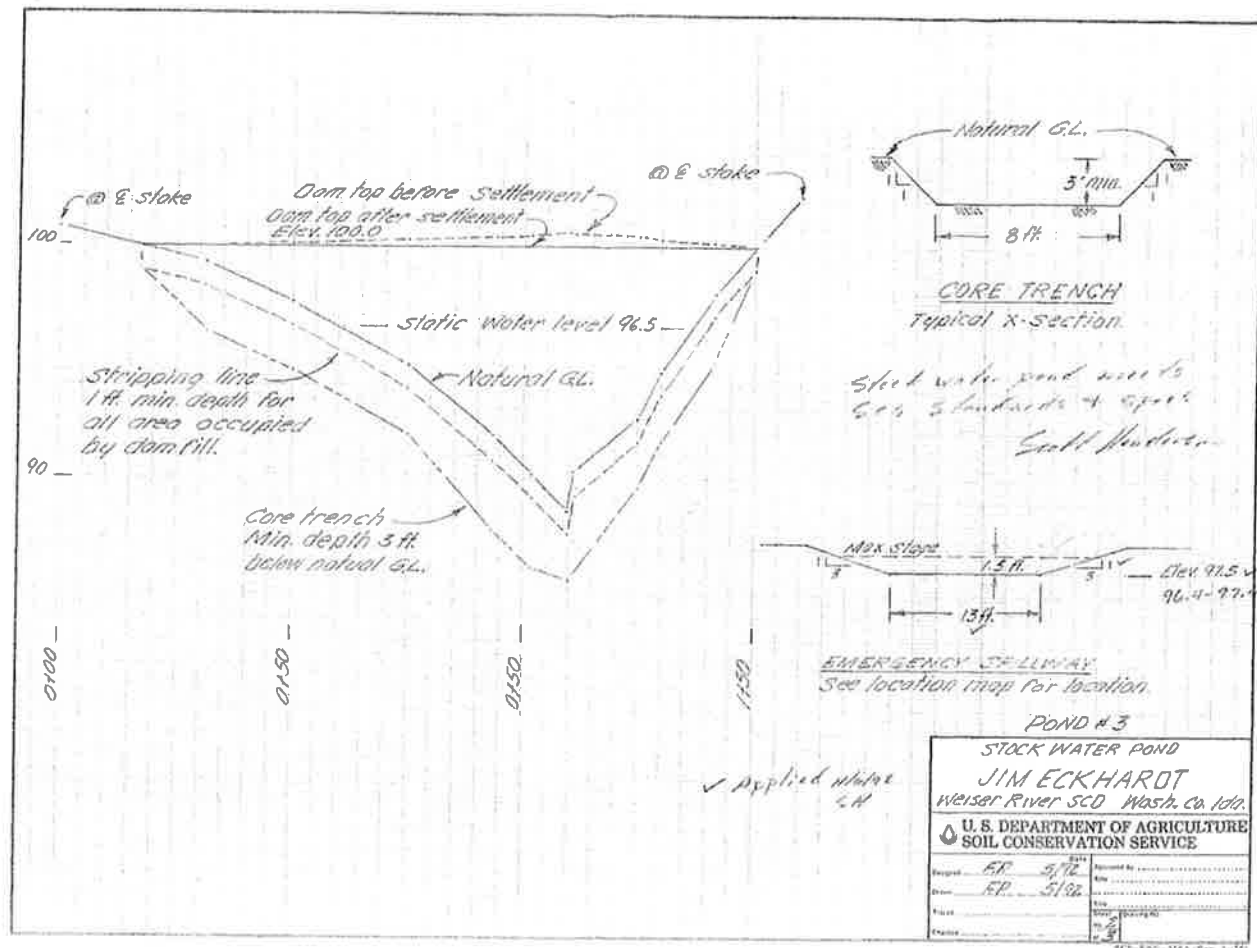
Fig. 6-27 EFM
6-43

inlet proportions - 18" diam. Conduit = 24" diam riser.
 H required - 16.6 CFS = 0.9 ft. use 1.0 ft.

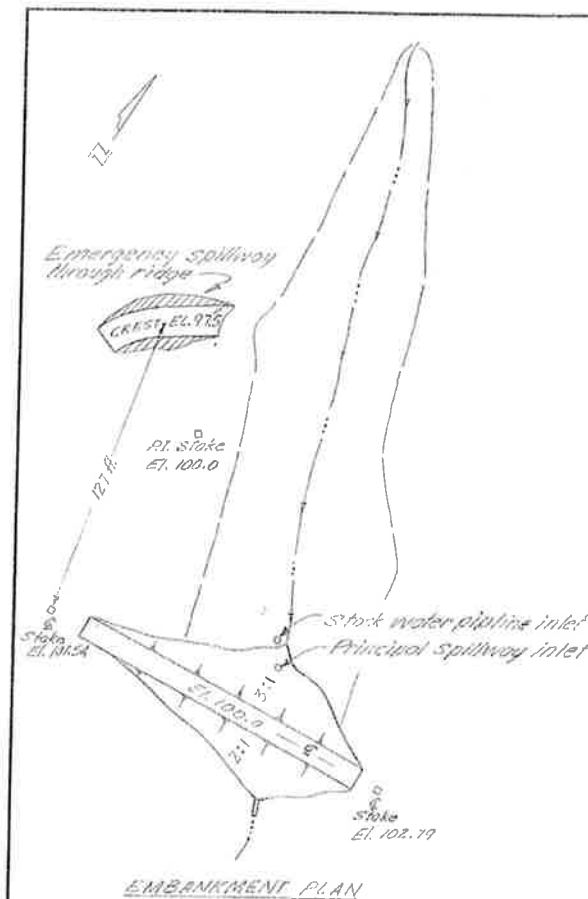
Location _____ Owner Jim Eckhardt
Watershed _____ Subwatershed _____ Site No. _____
Contractor _____ Computed by _____ Date _____
Item _____ Checked by _____ Date _____
Contract No. _____ Estimate _____ yd³ Actual _____ yd³

Sheet 5 of 5 sheets





000345



NOTES:

1. Project shall be constructed according to Soil Conservation Service Specification 10-378 and 10-537 D.
2. The spillway is designed to pass the 50 year storm flow.
3. Concrete structure foundation shall be reinforced with #4 deformed bars @ 12 in. C to C both ways.
4. Minimum earth cover over stock water pipeline will be 24 inches.
5. Anti-Seep Collars are required (2 each) on the on the principal spillway and stock water pipeline conduits. See details on sheet 3.
6. All cut or stripped areas outside the reservoir area shall be seeded with Intermediate wheat grass to the rates and specifications specified by an SCS Range Conservationist.

TBM
EL. 115.83

- Approximate reservoir storage is 0.8 ac./ft.
- Embankment and core-franch fill is 805 yd.³
- Principle Spillway Conduit 18" CMP 60 ft long
- Principle Spillway Inlet standing 24 in. diam. 1 ft. long
- Minimum Stock water pipeline diam. will be 18 in. Pipe type shall be See schedule 40 ERW. Length to be determined in the field.
- Stock water pipeline inlet is 24 in. diam. CMP 3 ft. long, pre-drilled with 1 in. diam. holes. See detail on sheet 3.

It is the landowner's or operator's responsibility to locate and protect all public utilities underground and overhead within the work area.

I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

James E. Eckhardt 5-28-83

Eng. Job Class II

Sheet #3 of 13

STOCK WATER POND

JIM ECKHARDT

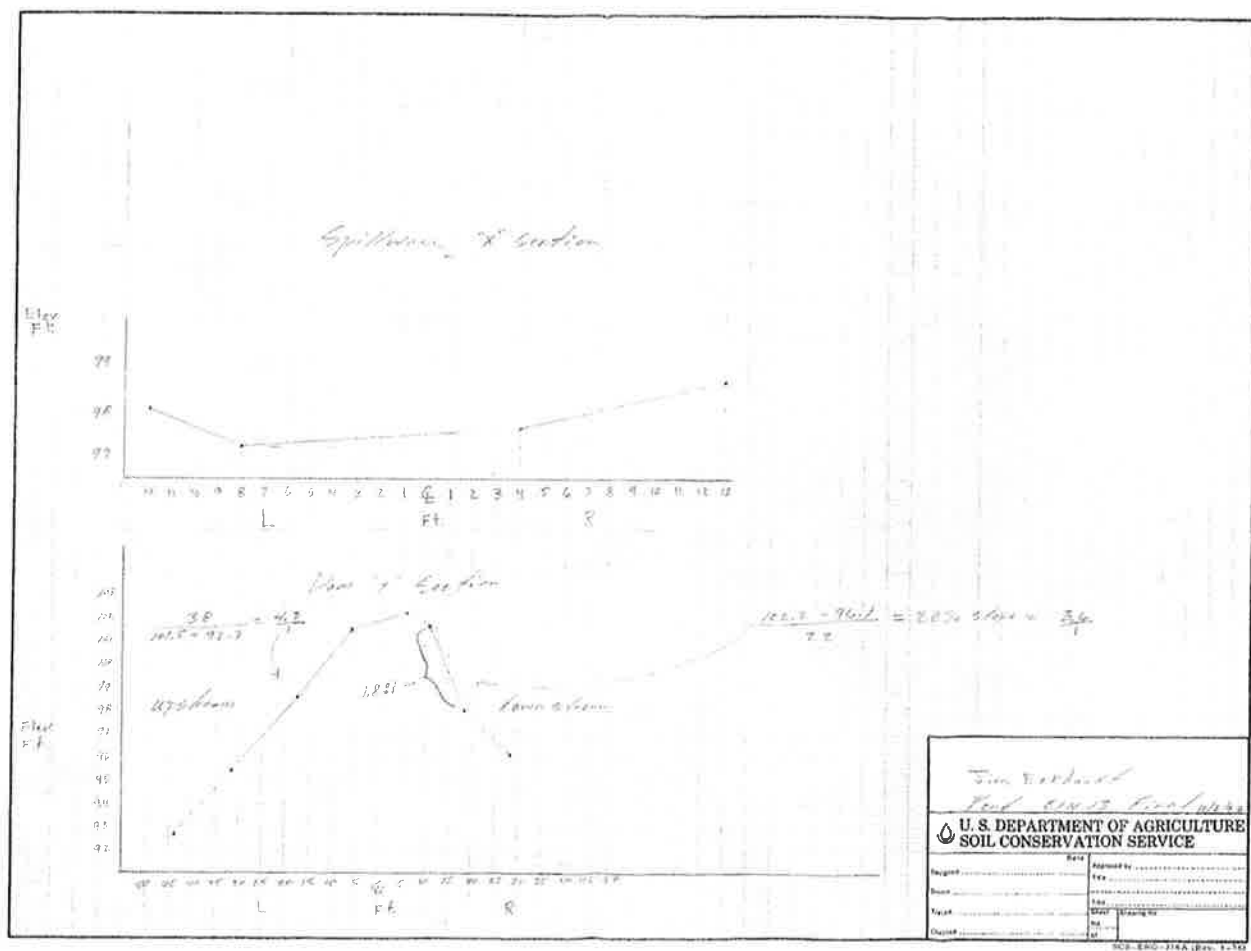
Weiler River SCD, Mod. Co. 199

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	EP	5/92	Approved	James E. Eckhardt
Drawn	EP	5/92	Checked	Jim Eckhardt
Traced			Scale	As Shown
Erased			Sheet	3 of 13

SCS ENG 313A REV 8-75

000346



000347

Jim Eckhart
Stockwater Pond
Construction Check

L. Ruiz T 2
S. Henderson Ch 2

Top of Dam Q

Top of Dam Q

Top of Dam Q

Top of Dam Q

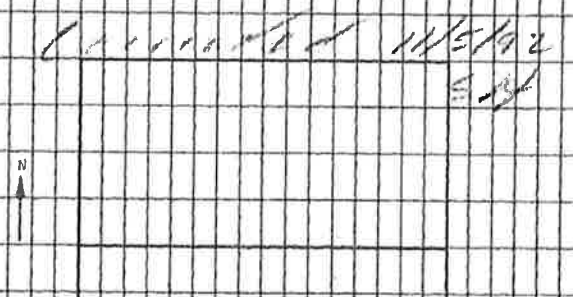
Top of Dam Q

Top of Dam Q

Top of Dam Q

Top of Dam Q

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD	Wolver River		Date	11-3-72	
Field Office	Wolver				
Name	Jim Schmitt				
Individual	Group	Unit of Govt.	(circle one)		
Job	Field CIV 13				
Design Sur.			Const. Layout		
Const. Check			Other		
Ident. No.			Field No.		
					
Scale	1" =				
Legal Description	Sec _____ T _____ R _____ or _____				
Location:					

SCS-ENG/28 REV 5-75

000349

Sta.	B.S.	M.L.	F.S. or Grade Rod	Elev. or Planned Elev.	
	6.15	106 ¹⁵		100 ⁰	
				97.2	
10+00			~~7.7~~	~~99.45~~	97.2
10+15			8.0	96.15	97.3
10+30			7.7	98.45	97.6
10+45			8.0	98.15	97.3
10+60			8.3	97.85	97.0
10+75			8.6	97.55	96.7
10+90			9.2	96.95	96

GPO: 1989 O-521-216

Top of PI stake

spillway profile

L		R	
2'	8'	4'	13'
17.3	18.1	17.7	16.7
Elev 98.9	98.1	98.5	99.5
corrected 96.0	97.2	97.6	98.6

000352

Embankment profile									
L. up				L		R. Down			
14'	14'	11'	7'	5'	3'	6'	4'		
11.6	9.2	6.3	4.8	4.5	1.9	8.0	7.3		
1'									
14.0									
E									
13'	14'	11'	6'	6'	5'	7'	10'		
14.4	11.9	8.55	5.0	4.8	5.5	7.1	11.0		
Elevations									
13.5	11.0	7.7	4.7	4.5	4.6	8.2	10.1		
92.7	95.7	98.5	101.5	102.2	101.6	98.0	96.1		
Top of pipe outlet to toe of dam									
Top of CMP truck take entrance									
8' CMP upright									
24" dia									

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD	WEISER RIVER		Date	11-5-92	
Field Office	WEISER				
Name	Jim Eckhart				
☒ Individual	☐ Group	Unit of Govt.			
(circle one)					
Job	STOCKWATER POND PIN #12				
Design Sur.			Const. Layout		
Const. Check	☒		Other		
Ident. No.			Field No.		
					
Scale					
1" =					
Legal Description					
	Sec.		T		R
	or				
Location:					

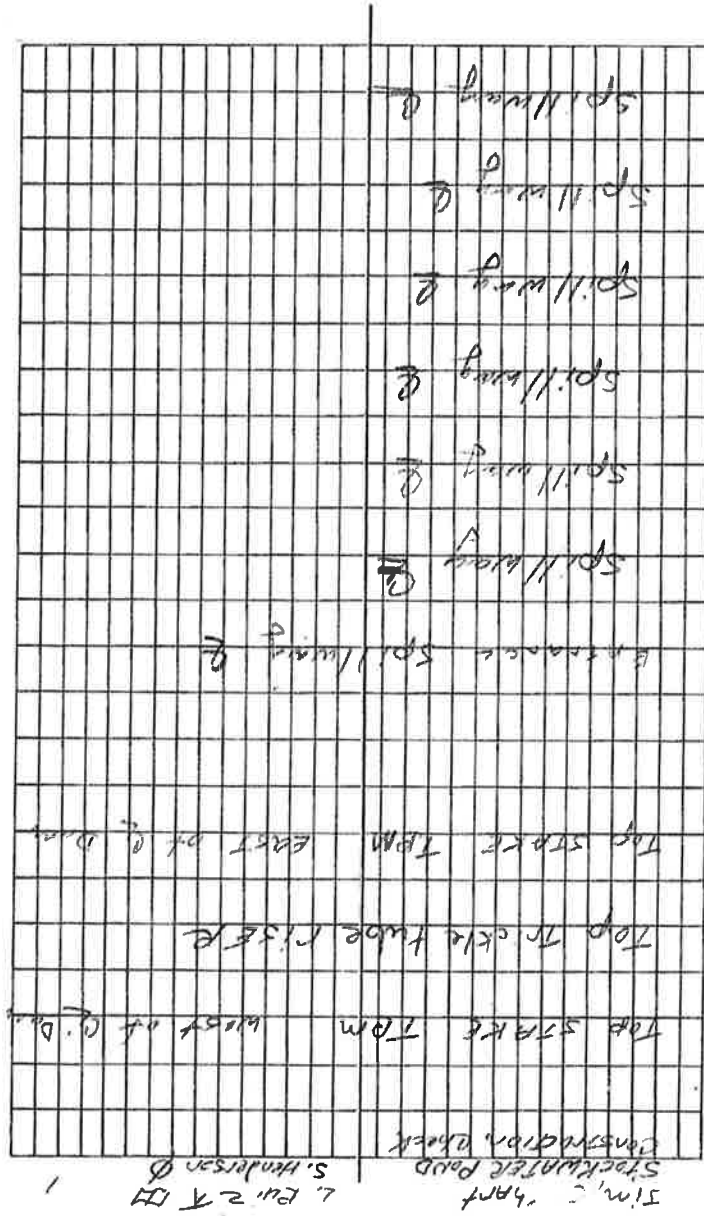
SCS-ENG-28 REV 5-75

000354

1

Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.	
	37	105 ²⁴		101.54	
			8 ^k	96 ^k	
			2 ⁵	102 ⁷⁴	
Spilling Profile					
0+00			8 ⁸	96 ⁴	
0+15			8 ⁰	97 ²	
0+30			7 ⁹	97 ³⁰	
0+45			7 ⁸	97 ⁴⁰	-
0+60			8 ⁰	97 ²⁴	
0+75			8 ²	97 ⁰⁴	
0+90			8 ⁶	96 ⁶	

GPO: 1989 O-631-216



GPO : 1988 0 - 212-723

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD	WENNER RIVER		Date	8/25/44
Field Office	WENNER		Mr. C. E. PARKER,	
Name	JIM ECKHARDT		CALVIN	
Individual	Group	Unit of Govt.		
(circle one)				
Job				
Design Sur.	EMBANKMENT POND		Const. Layout	
Const. Check			Other	
Ident. No.	479 - CEN 12		Field No.	
	CEN 11			
SEE DESIGN IN				
DOCKET.				
N				
↑				
Scale				
1" =				
Legal Description				
	Sec.	T	R	
	or			
Location				

SCS ENG-28 REV 5-75

000373

①

Sta.	B.S.	H.L.	F.S. or Grade Rod	Elev. or Planned Elev.
<u>WESTERN POND - CIN 12</u>				
1		99.9	13.3	86.6
2			11.0	88.9
3			6.1	93.8
4			3.3	96.6
5			1.3	98.6
6			13.2	86.7
7			9.0	90.9
8			3.3	96.6
9			1.3	98.6

CPO: 1989 U-621-216

000374

8/25/94
TIM BERNHARDT POUNDS

MTA HADCLER
K. MORRISON

0

CENTERLINE - INVERT WEST SIDE

$$D.S. = (12)(3) + (1) = 41 \text{ FT.}; U.S. = (12)(3) + (5) = 29 \text{ FT.}$$

CENTERLINE - INTERMEDIATE

$$D.S. = (48)(3) + (5) = 34 \text{ FT.}; U.S. = (48)(3) + (5) = 34 \text{ FT.}$$

CENTERLINE - INTERMEDIATE

$$D.S. = (48)(1) + (5) = 14 \text{ FT.}; U.S. = (48)(2) + (5) = 14 \text{ FT.}$$

HIGH WATER - WEST SIDE

$$D.S. = (2)(3) + (5) = 11 \text{ FT.}; U.S. = (2)(2) + (5) = 9 \text{ FT.}$$

TOP OF FILL AT WEST END

CENTERLINE - INVERT EAST SIDE

$$D.S. = (44)(3) + (5) = 42.7 \text{ FT.}; U.S. = (44)(2) + (5) = 23.8 \text{ FT.}$$

CENTERLINE - INTERMEDIATE

$$D.S. = (70)(3) + (5) = 23.1 \text{ FT.}; U.S. = (70)(2) + (5) = 21.4 \text{ FT.}$$

HIGH WATER - EAST SIDE

$$D.S. = (2)(3) + (5) = 11 \text{ FT.}; U.S. = (2)(2) + (5) = 9 \text{ FT.}$$

TOP OF FILL AT EAST END

(2)

[illegible]

✓ K HADELER
K. MARISUN

(2)

CENTERLINE - INVERT

$$D.S. = (12)(3) + (5) = 41 \text{ FT} ; U.S. = (12)(2) + (5) = 29 \text{ FT.}$$

TOP OF FILL - WEST END

CENTERLINE - INTERMEDIATE WEST

$$D.S. = (4.4)(3) + (5) = 18.2 \text{ FT.} ; U.S. = (4.4)(2) + (5) = 13.8 \text{ FT.}$$

CENTERLINE - INTERMEDIATE EAST

$$D.S. = (6.5)(3) + (5) = 25.5 \text{ FT.} ; U.S. = (6.5)(2) + (5) = 18.0 \text{ FT.}$$

TOP OF FILL - EAST END

Jim Eckhardt

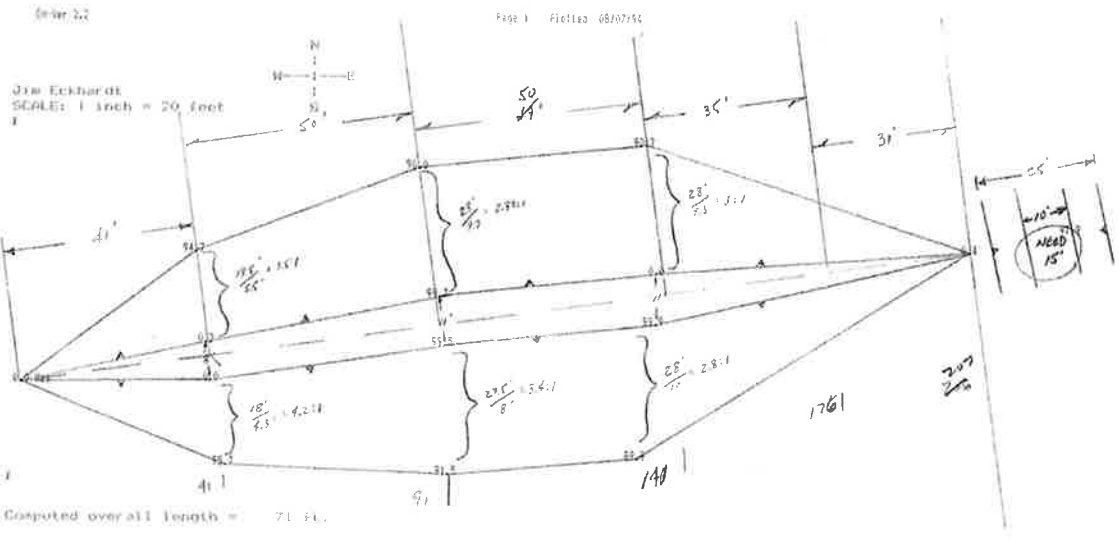
in

Washington County, Idaho

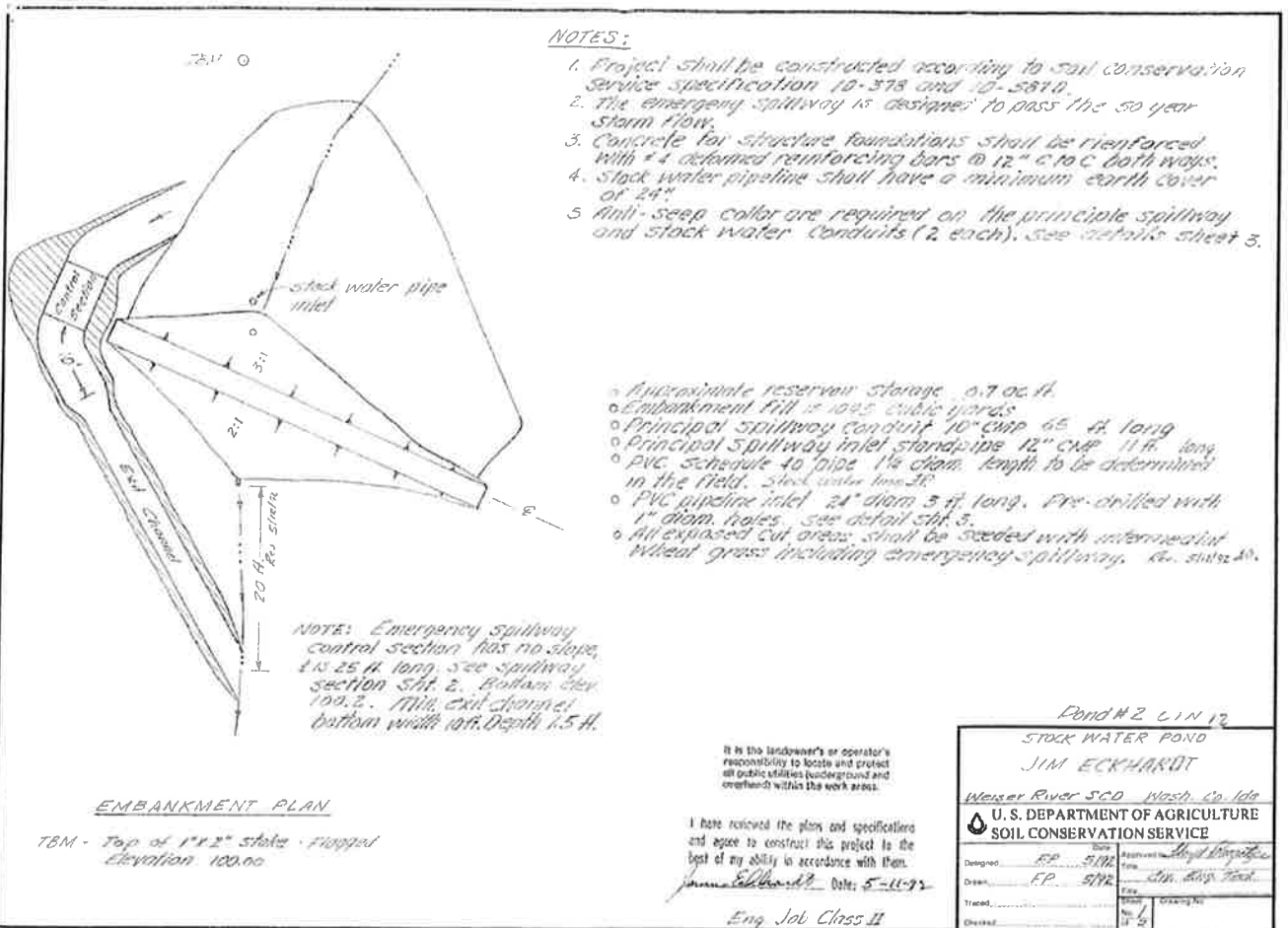
08/07/94

	BS	HI	FS	ELEV	DIST	ANGLE	COMMENTS:
1	6.67	106.67		100.00	218	248.50	West end - ctrline
2			12.00	94.7	174	253.10	
3			6.52	100.15	178	246.50	
4			6.72	99.95	180	244.15	
5			10.95	95.72	186	238.50	
6			15.17	91.50	148	228.30	
7			7.18	99.49	133	238.00	
8			6.96	99.71	128	242.00	
9			16.70	90.0	123	254.50	
10			16.00	90.7	74	248.40	
11			6.70	100.0	87	230.40	
12			6.80	99.9	94	225.30	
13			16.81	89.86	118	216.40	
14			6.24	100.43	50	179.45	
15			8.75	97.92	51	152.50	
16			4.70	102.0	59	136.50	

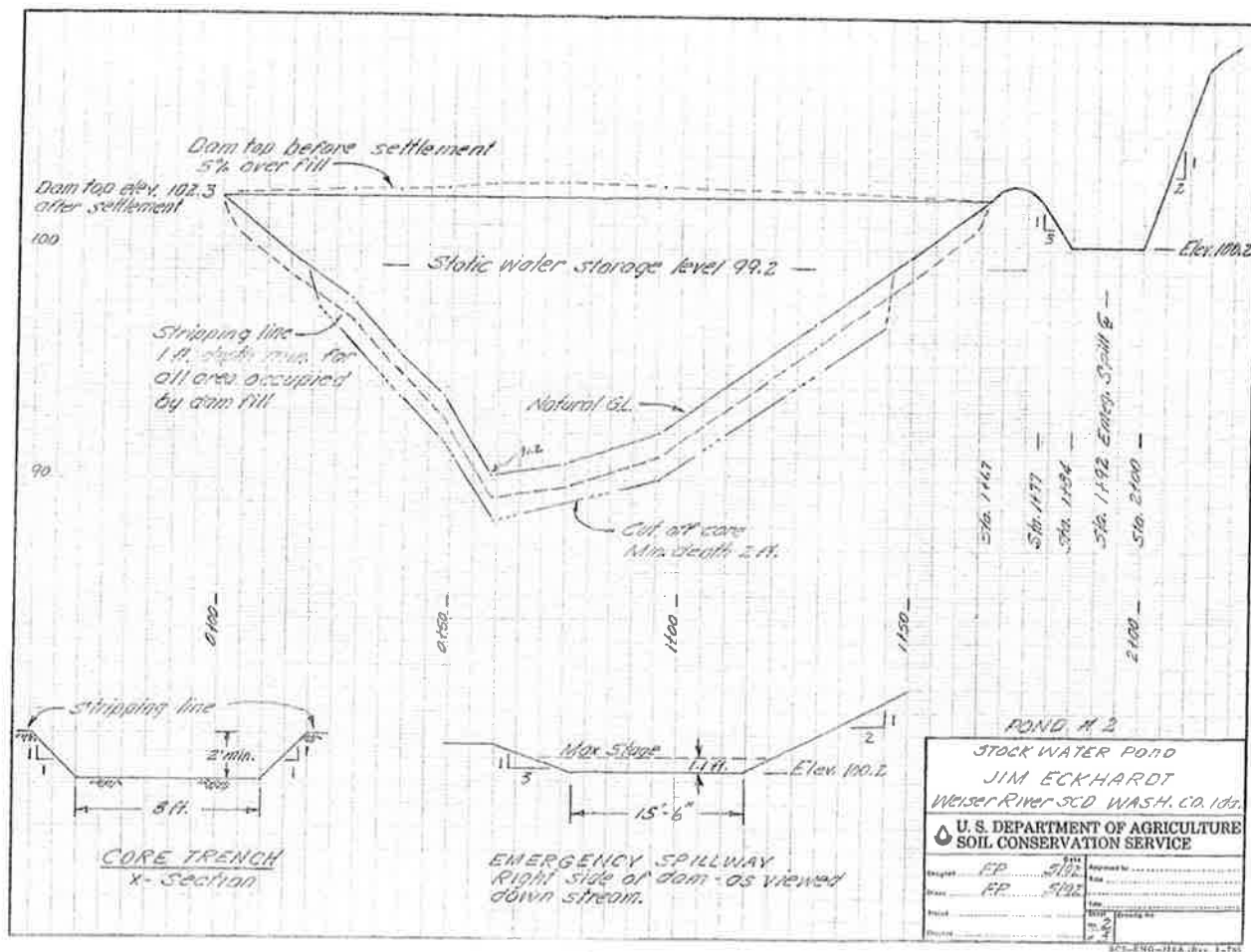
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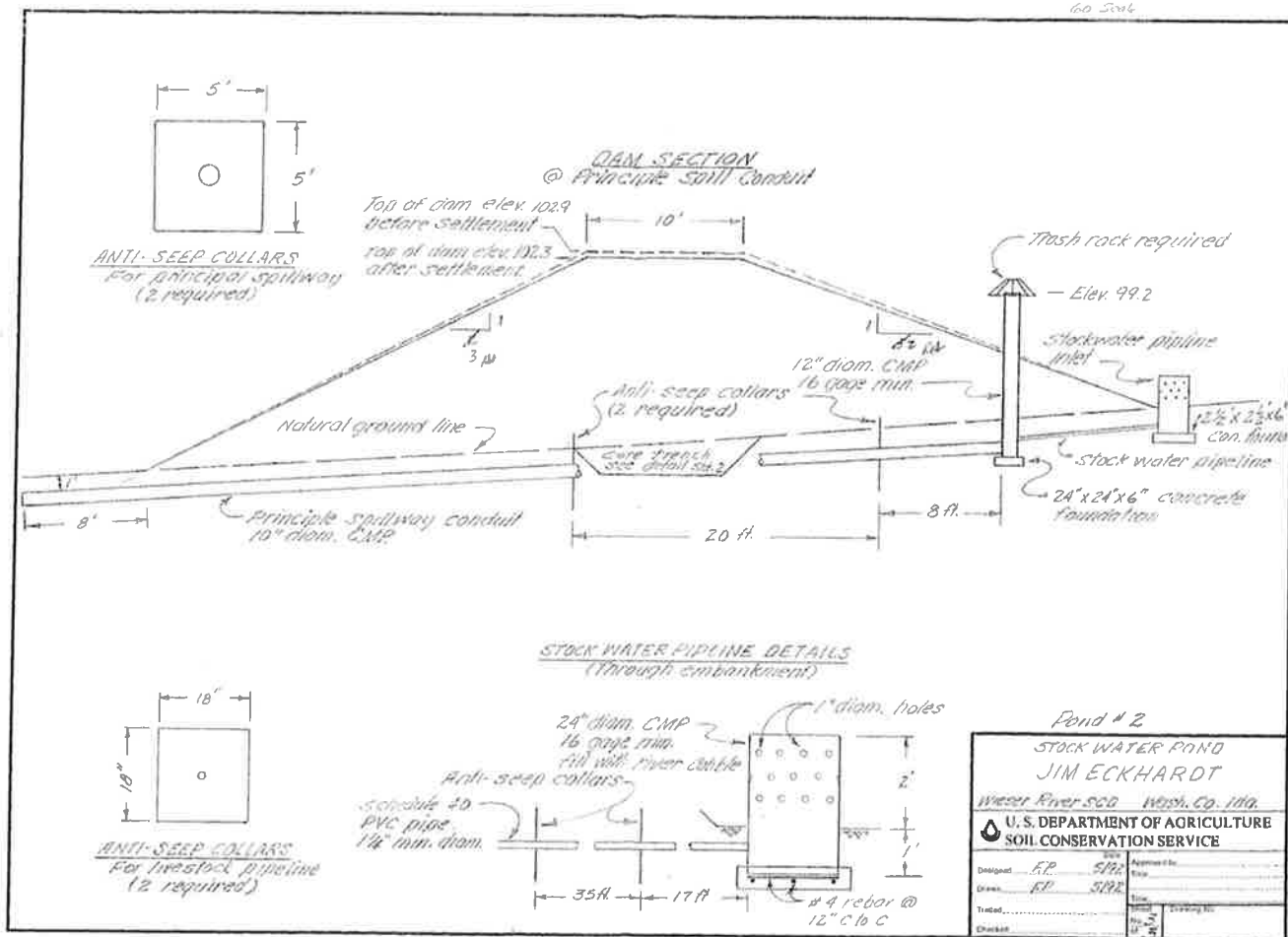


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000381

60 506



000382

STATE <u>Idaho</u>		PROJECT <u>Jim Eckhardt</u>			
BY <u>FR</u>	DATE <u>4/27/92</u>	CHECKED BY	DATE	JOB NO.	
SUBJECT <u>Stock Water pond. Hydrology.</u>					SHEET <u>1</u> OF <u>6</u>

Pond # 2 LIN 12

GIVEN:

1. D.A. 95 ac.
2. Soil - Gem HSG. C
3. Precip. 50 year 24 Hr. 3.4 in.
10 year " " 2.8 in.
2 year " " 2.1 in.
4. D.A. flow length - 3400 ft.

Find:

1. Peak discharge
 - a. 50 year storm
 - b. 10 year storm
 - c. 2 year storm

Avg W.S. slope (Y)

$$Y = \frac{8.3 \text{ in } (2000 \text{ ft./in}) (100) (40 \text{ ft.})}{95 \text{ ac } (43560 \text{ ft}^2/\text{ac})} = 16\%$$

Flow length 3400 ft.

Range Condition - Sagebrush w/ grass
understory - fair cond.

CN = 63

eq. 2-6 EFM
Chap 2 Pg. 2-5

Table 2-3c
EFM 2 Pg. 2-87

STATE	Idaho			PROJECT	Jim Eckhardt	
BY	FR	DATE	5/4/92	CHECKED BY		JOB NO.
SUBJECT	Stockwater pond.				SHEET	2 OF 6

Stage - Storage - Pond #2. $1''^2 = (15\text{ ft.})(15\text{ ft.}) = 0.005\text{ ac}$

Contour	Area (in ²)	Ac.	Ac/Ft. (Ave)
98	38.13	0.36	0.3
97	27.51	0.19	0.17
96	17.62	0.14	0.12
95	9.96	0.09	0.07
94	4.68	0.05	0.035
93	1.36	0.02	0.015
92.3	Bottom.	0	
		Total =	0.7 ac/ft.

Size Spillway:

Spillway Slope $\frac{100.2 - 840}{(8.8\text{ in.})(15)} = 0.12\text{ ft./ft.}$

Use 12. %

Discharge Capacity 34 CFS - 3 CFS = 31 CFS.
Use Intermediate wheat grass for Spillway
Vegetation (Compare Smooth Bromegrass).
Permissible Velocity 4 ft./sec.
Spillway length 25 ft min.

Retardance C

Max. V = 4 fps.
Slope Range 1-7 %
 $q = 2\text{ ft}^3/\text{sec}/\text{ft.}$

$b = \frac{31\text{ CFS}}{2\text{ ft}^3/\text{sec}/\text{ft.}} = 15.5\text{ ft.}$

H_p for L of 25 ft = 1.1 ft.
 H_2O water Surface w/ E. spill operating
@ 50 year event = 102.3 - 1.0 = 101.3
Emergency Spillway Control Crest elev. 101.3 - 1.1
= 100.2
Static reservoir H_2O level = E.S. Control elev
minus P.S. head required 100.2 - 1.0 = 99.2

Chap. 11 EFM
Table 1 11-54a

Chap. 11 EFM
Table 2 11-54a

Chap. 11 EFM
Table 3 11-54b

STATE <u>Ida.</u>		PROJECT <u>Jim Eckhardt</u>		
BY <u>F.P.</u>	DATE <u>5/4/92</u>	CHECKED BY	DATE	JOB NO.
SUBJECT <u>Stockwater pond</u>				SHEET <u>3</u> OF <u>6</u>

Min. anti-seep Collar projection: (P.S.)

P.S. backfill length = 56 ft.
 $56 \text{ ft} (15 \frac{1}{2}) = 8.4 \text{ ft.}$



Provide 2 Collars - $\frac{8.4 \text{ ft}}{4} = 2.1 \text{ ft. projection}$

Note: The stockwater pipeline through the dam requires 2 anti-seep Collars. 18" x 18" 12 gage. min.

Dam fill yardage: U.S. 3:1 D.S. 2:1
 10 ft top width

Sta.	Fill (ft)	End area (ft ²)	Extra Fill for 5% over (ft)
0+00	0	0	
0+28	4.5	$53.5 + 45 = 98.5$	0.3
0+38	6.8	$116 + 68 = 184$	0.3
0+48	8.7	$190 + 87 = 277$	0.4
0+58	12.1	$366 + 121 = 487$	0.6
0+75	11.6	$336 + 116 = 452$	0.6
0+96	10.3	$265.5 + 103 = 368.5$	0.5
1+28	5.5	$75.5 + 55 = 130.5$	0.3
1+67	0.0	0	

Principal Spillway Size:

$Q = 16 \text{ cfs}$ Barrel length = 65 ft.
 Riser size = 24" diam CMP. Orifice flow.
 Barrel Size = 18" 7.4 ft. of head required.
 Head available = $100.2 - 88.4 = 11.8$
 18" diam CMP will work for 10 year event.

$Q = 4 \text{ cfs}$ for 2 year event.
 Riser = 12" diam CMP - Orifice flow.

Ida. Appen. # 5
 Pgs 4 EFM
 Ida. Appen. # 5
 Pg 3 EFM

Ida. Appen. # 5
 Pgs 4 EFM

000385

STATE	Idaho	PROJECT	Jim Eckhardt.		
BY	EP	DATE	5/8/92	CHECKED BY	DATE
SUBJECT	Stock Water Pond.				JOB NO.
					SHEET 4 OF 6

Principle Spillway Size: Continued

Head required 1.1 ft 1 ft available.
 Deficit 4.0 CFS - 3.75 CFS = 0.25 CFS.
 10" diam. Barrel - 9.2 ft/hd required 11.8 ft/hd avail. ok.

Earth Spillway size routing 10 year event through principle.
 Peak discharge 34 CFS
 34 CFS - 16 CFS = 18 CFS.
 Permissible Velocity 4 ft/sec.
 Increase Permissible V. by 25% for principle spillway discharging 10 year event
 4 ft/sec (0.25) = 1 ft/sec 4 ft/sec + 1 ft/sec = 5 ft/sec.

Chap 11 EFM
Table 3 11-34b

Retardance C.
 Max V. = 5 FPS.
 $Q = 3 \text{ CFS/ft.}$
 $b = \frac{18 \text{ CFS}}{3 \text{ ft/sec/ft.}} = 6 \text{ ft.}$

Slope Range max 6% - decrease in
 Slope range in alternative #1 No good-

Client : Jim eckhardt
 County : washington
 Practice: stock pond

State: id

By: fp
 Checked: _____Date: 04-29-92
 Date: _____

Drainage Area	95	Acres
Curve Number	63	
Watershed Length	3400	Feet
Watershed Slope	16	Percent
Time of Concentration	5.65	Hours
Rainfall Type	ii	

SHEET 6 of 6

Storm Number	1	2	3
Frequency (yrs)	10	50	2
24-Hr Rainfall (in)	2.8	3.4	2.1
Ia/F Ratio	0.42	0.35	0.56
Used	0.42	0.35	0.50
Runoff (in)	0.35	0.61	0.13
Unit Peak Discharge (cfs/acre/in)	0.472	0.581	0.335
Peak Discharge (cfs)	16	34	4



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD	Weiser River		Date	4/22/92
Field Office	Weiser			
Name	Jim Ebbhardt			
Individual	Group	Unit of Govt.		
(circle one)				
Job	Stockwater ponds (ATA)			
Design Sur.	✓	Const. Layout		
Const. Check		Other		
Ident. No.			Field No.	
 See plan map for location				
Scale				
1" =				
Legal Description				
	Sec.	T	R	
	or			
Location:				

SCS ENG-28 REV 5/75

000390

GPD: 1989 O 621-216

Sta.	B.S.	H.I.	F.S. or Grade Rod	Turnout Planned Elev.
2	147	154°37'	-0.85	7.13
3	147	154°40'	-1.4	7.6
4	135	153°50'	-4.0	10.2
5	124	164°51'	-6.9	13.1
6	113	173°45'	-8.2	14.4
7	105	181°05'	-8.7	14.9
8	103	187°15'	-5.3	11.5
9	98	190°54'	-3.2	9.4
10	99	198°12'	-1.8	8.08
11	99	198°18'	-1.2	7.4
12	14	227°51'	-0.1	6.3
13	38	129°31'	-1.8	8.0
14	53	121°32'	-1.5	7.7
15	69	120°57'	+0.1	6.1
16	95	120°22'	-0.2	6.4
17	107	120°50'	+2.6	3.6

Prism Height = 6.28 ft
 50 ft. Shots (Prism Height) = 6.2

①

Point # 2

TFP
4 J.E. 4/22/67 (1)

000392

[illegible]

Jim Eckhardt
Stockwater Pond

4/22/92 ②

Ground level

"	"
"	"
"	"
"	"
"	"
"	"

Channel

X-500 10.5 0

Ground level

"	"	"
"	"	"
"	"	"
"	"	"
"	"	"
"	"	"

All elev. measured with respect
from top of State.

③

Pond #1					
Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
Prism Height = 6.28					
Prism Height G.L. Shots 6.2					
	H.I. = 104.57			Eq. Elev.	
	226	130°30	-30.20	36.48	
2	226	130°32	-30.9	37.1	67.5
3	185	140°38	-35.0	41.2	63.4
4	175	156°10	-27.0	33.2	71.4
5	175	156°05	-26.52	32.80	71.8
6	128	150°32	-20.6	26.8	77.8
7	137	142°51	-23.5	29.7	74.9
8	146	137°35	-27.1	33.3	71.3
9	156	131°26	-31.7	37.9	66.7
10	161	130°25	-32.7	38.9	65.7
11	165	129°29	-31.9	38.1	66.5
12	171	127°34	-28.7	34.9	69.7
13	180	123°48	-25.5	31.7	72.9
14	189	120°21	-22.9	29.1	75.5
15	172	103°14	-15.08	21.28	83.29
16	160	103°51	-17.2	23.4	81.2
17	148	105°03	-20.7	26.9	77.7
SCS-ENG-29 (2-80)				GPO : 1988 O - 212-723	

(4)

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
					Elev.
18	144	105°35	-21.9	28.1	76.5
19	138	106°06	-23.4	29.6	75.0
20	131	107°21	-22.5	28.7	75.9
21	120	108°40	-19.7	25.9	78.7
22	96	113°45	-16.0	22.2	82.4
23	185	145°29	-33.1	39.8	65.3
24	190	143°20	-35.8	42.0	62.6
25	192	141°57	-56.2	42.4	62.2
26	196	140°21	-35.6	41.8	62.8
27	205	136°09	-34.0	40.2	64.4
28	212	142°39	-38.1	44.3	60.3
29	237	145°46	-43.9	50.1	54.5
30	246	149°07	-46.3	52.5	52.1
31	246	136°27	-58.0	44.2	60.4
32	256	138°47	-39.5	45.7	58.9
33	250	143°07	-42.2	48.4	56.2
34	251	145°23	-46.5	50.7	53.9
35	248	149°46	-45.7	51.9	52.7
36	248	152°05	-43.2	49.4	55.2

SCS-ENG-29
(2-80)

GPO : 1988 O - 212-723

Mr. Eckhardt
 Stillwater Pond
 Design Survey

4/22/92 (4)

Ground Level

"	"		
"	"		
"	"		
"	"		
"	"	E. Dam	
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"

D.S. of E. Ground Level

"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"

SCS-ENG-29
(2-80)

000399

Jim Eckhardt
Stockwater Pond
Design Survey

4/22/92 (5)

X-sec D.S. & Ground level
Channel both a Pond boundary lines

H.I. from top of side measured with tape
G.L. @ P.L.

⑥

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
	Dont #3				
	Prism Height 8.92				
	Prism Height G.L. Shot. 8.8				
	Reference - Dry British Creek				
	a. Station N.W.				
	Ht = 104.81				Equiv. R.R.
	98	220°24	+5.65	3.27	101.54
2	98	220°20	+4.8	4.0	100.8
3	98	201°20	+3.3	5.5	99.2
4	101	190°19	+1.6	7.8	97.6
5	111	178°58	-1.1	9.9	94.9
6	122	171°09	-4.1	12.9	91.9
7	126	167°28	-5.8	14.6	90.2
8	130	165°24	-6.4	15.2	89.6
9	132	164°45	-5.7	14.5	90.3
10	144	162°21	-3.4	12.2	92.6
11	149	160°30	-1.4	10.2	94.6
12	157	157°24	+2.0	6.8	98.0
13	163	154°43	+4.4	4.4	100.4
14	170	152°56	+6.2	2.6	102.2
15	170	152°55	+6.9	2.02	102.79

SCS-ENG-29
(2-80)

GPO : 1988 O - 212-723

4/23/92 (6)

© E. and S. G.

Fund # 3

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.
16	154	126.24	+9.8	-1.0
17	140	125.47	+6.6	2.2
18	124	125.30	+3.7	5.1
19	136	125.37	+0.7	8.1
20	97	125.37	+0.7	8.1
21	85	125.26	-1.1	9.9
22	74	126.00	-2.7	11.5
23	56	126.42	-4.8	13.6
24	56	128.35	-3.0	11.8
25	41	129.58	-2.5	11.3
26	30	131.47	-0.9	9.7
27	18	133.46	+0.9	7.9
P.I. 28				
P.I. 29				
29	92	170.34	5.3	5.3
30	181	170.02	16.4	2.4
31	277	170.57	+8.1	0.7
P.I. 32				
P.I. 33				
34	104.1			

GPO : 1988 O - 212-723

Pond #3					
Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	(8)
32	276	19°25	+5.6	3.2	101.6
33	277	20°29	+4.0	4.8	100.0
34	337	22°04	+5.7	3.1	101.7
	~~494~~	~~26°48~~	~~+9.4~~		
35	494	26°18	+9.4	-0.6	104.87
36	335	25°57	+6.5	2.3	102.5
37	436	25°07	+6.8	2.0	102.8
38	340	25°56	+6.9	1.9	102.9
39	252	33°27	+4.8	4.0	100.8
40	185	30°47	+2.7	6.1	98.7
41	152	64°13	+5.8	3.0	101.8
42	114	71°01	+5.3	3.5	101.3
43	159	109°27	+7.1	1.7	103.1
44	112	141°30	-0.3	9.1	95.7
45	85	95°20	+1.2	7.6	97.2
46	145	53°21	+2.9	5.9	98.9
47	220	32°58	+2.1	6.7	98.1
48	214	23°17	+3.6	5.2	99.6
SCS-ENG-29 (2-80)				GPO : 1988 O - 212-723	

Jim Eckhardt
Stockwater pond
Design Survey

4/23/92 (7)

Ground level

"

"

"

"

"

"

"

"

"

"

"

A.L. @ P.I. from state top

G.L. @ P.I.

Ground level

"

"

"

"

Channel bottom

Design Survey

4/23/92 (8)

Ground level

[illegible]

“						”
---	--	--	--	--	--	---

Chorus 2-4 inch

of pond site.

Ground level

11	11
----	----

Chapel Bt L.S.

"						"
---	--	--	--	--	--	---

11	11	11.5
----	----	------

" " " " " "

" " " " " "

11 11 11 11 11

"					"
---	--	--	--	--	---

[illegible]

11					
----	--	--	--	--	--

4							
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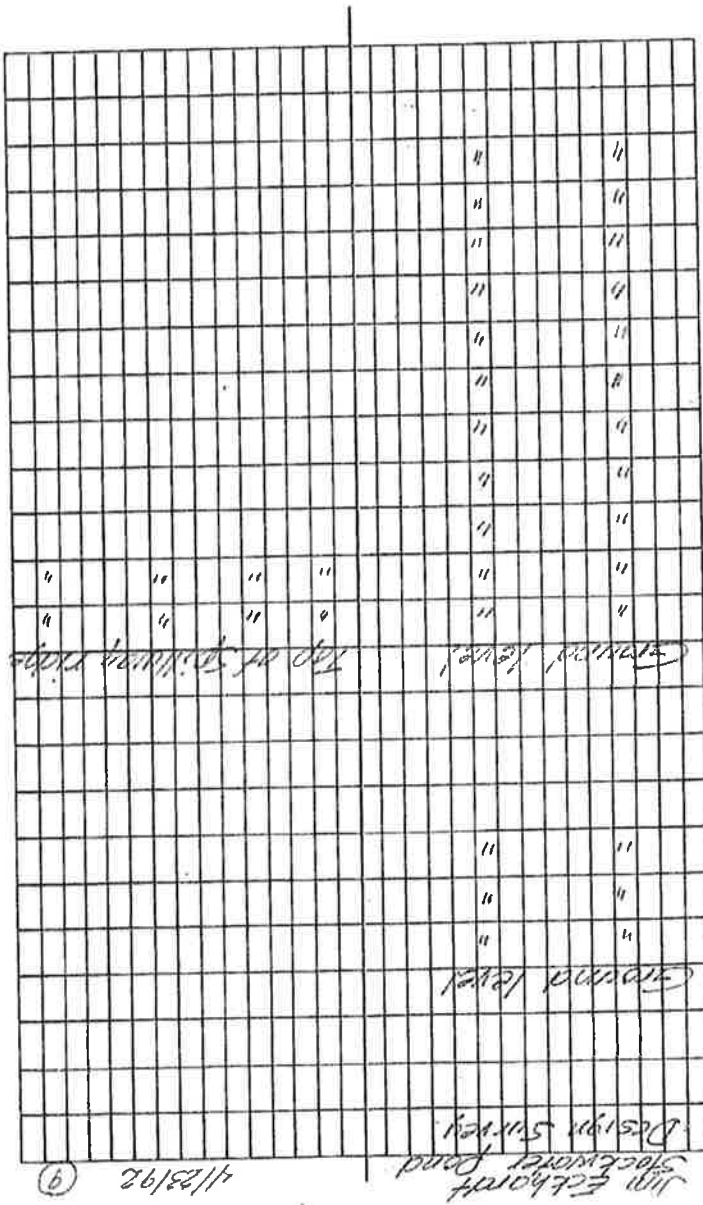
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(9)

Pond # 3					
Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
49	136	24°38	+2.6	6.2	98.6
50	51	38°01	-0.2	9.0	95.8
51	88	50°11	-3.7	12.5	92.3
52	181	29°38	+0.1	8.7	96.1
Spillway Area					
53	149	6°42	+6.8	2.0	112.8
54	52	342°04	+3.2	5.6	99.2
55	69	233°09	+4.0	4.8	100.0
56	98	246°08	+2.5	6.3	98.5
57	75	291°28	-0.2	9.0	95.8
58	114	341°33	+3.8	5.0	99.8
59	210	358°09	+7.1	1.7	103.1
* 80	198	16°12	+7.2	1.2	103.6
60	117	17°37	+4.2	4.6	100.2
61	153	270°44	-4.6	13.4	91.4
62	145	282°23	-5.8	14.6	90.2
63	145	301°04	-2.1	11.2	93.6

SCS-ENG-29
(2-80)

GPO : 1988 O - 212-723



Pond #3

(10)

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
<i>D.S. of dam area</i>					
64	308	180°06	-10.3	19.1	85.7
65	205	180°34	-7.1	15.9	88.9
66	251	175°52	-5.8	14.6	90.2
67	262	168°17	+0.1	8.7	96.1
68	273	163°52	+3.8	5.0	99.8
69	215	190°03	-2.4	11.2	93.6
70	209	206°54	+2.1	6.7	98.1
<i>Spillway area. Continued</i>					
71	190	330°56	+1.4	7.4	97.4
72	251	312°26	-4.7	13.5	91.3
73	211	295°55	-8.2	17.0	87.8
74	202	287°21	-7.5	16.3	88.5
75	200	278°00	-9.8	18.6	86.2
76	205	261°06	-6.8	15.6	89.2
77	332	278°30	-15.9	24.7	80.1
78	428	271°14	-18.4	27.2	77.6
⁷⁹ TBM	191.63	91°31	+19.94	-11.02	115.83

SCS-ENG-29
(2-80)

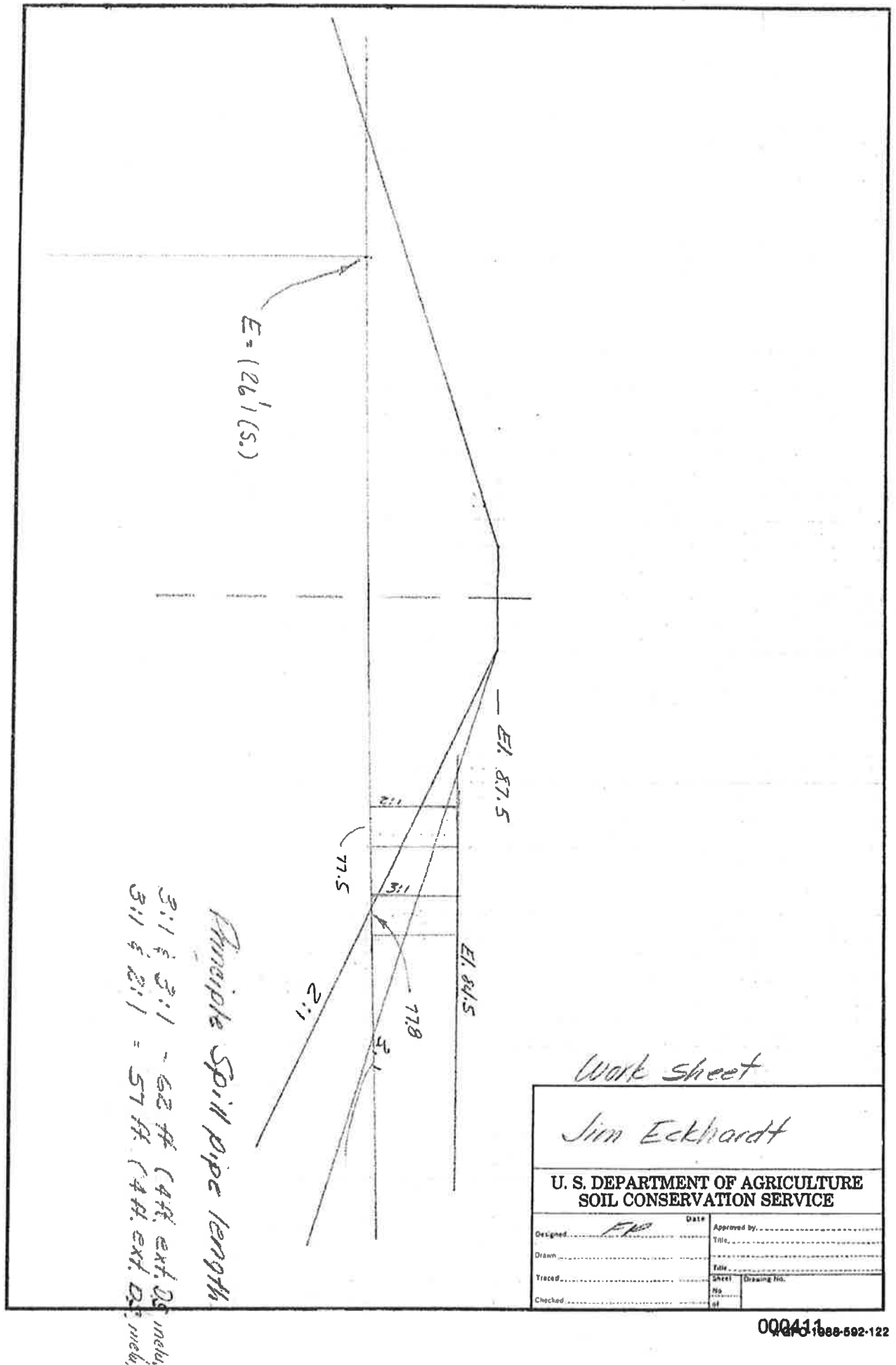
GPO : 1988 O - 212-723

10

Ground level

Wire Flag

Side res. @ red



Idaho
BDC 6/29/93
Embankment Pond

Jim Eckhardt

CIN #11
8 9

NHCP 37B
Supplement

Emergency Spillway sizing:

Size emergency spillway for 25-year event
OR $Q_{25} = 52 \text{ cfs}$

Survey

EFM 11
Table 1
pg. 11-54a

Avg. slope of exit channel $\approx$ 4.5%

For erosion resistant soil,

* $V_{\text{permissible}} = (5)(1.25) \approx 6.3 \text{ ft/sec}$

* Anticipated use not more frequent than once in 10 years. (i.e. principal spillway is sized to pass 10-yr. event).

Table 2

Table 3-C

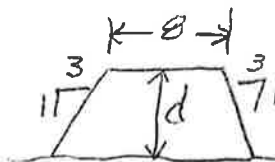
Use degree of Retardance = C

$g = 4 \text{ ft}^3/\text{s}/\text{ft}$ for Crest Length = 25 ft.

$$\Rightarrow b = \frac{Q}{g} = \frac{52 \text{ ft}^3/\text{s}}{4 \text{ ft}^3/\text{s}/\text{ft}} = \underline{13 \text{ ft.}} \text{ use } \underline{15'}$$

$$H_p \text{ for } L = 25 \text{ ft} = \underline{1.5 \text{ ft.}}$$

Fill Quantity



$$A = 8d + 3d^2$$

EARTHWORK COMPUTATION SHEET

Location Washington County Owner Jim Eckhardt
Watershed _____ Subwatershed _____ Site No. _____
Contractor _____ Computed by _____ Date _____
Item _____ Checked by _____ Date _____
Contract No. _____ Estimate _____ yd³ Actual _____ yd³

Station	End area (ft ²) <i>Fill (ft)</i>	End area (ft ²)	Sum of end areas (ft ²)	Distance (ft)	Section products (ft ³)	Volume (yd ³)	Remarks
10+00	0	0	59.1	47	2,776		
10+47	3.3	59.1	202.2	26	5,256		
10+73	5.7	143.1	371.9	15	5,578		
10+88	7.5	228.8	608.8	7	4,262		
10+95	10.0	380	695	10	6,950		
11+05	9.0	315	571	13	7,423		
11+18	8.0	256	403	9	3,630		
11+27	5.8	147.3	227.3	27	6,137		
11+54	4.0	80	80	40	3,200		
11+94	0.0	0					
					2V = 42,012 ft ³		
					V _{FILL} = 21,006 ft ³		
					= 778 yd ³		
					+ 78 yd ³		10% allowance for settlement
					V _{TOTAL} = 856 yd ³		
					FILL		
See Sheet 9A/9 for Slope = 2:1 & 3:1							

*Used for
Final Design*
EARTHWORK COMPUTATION SHEET

Location Washington Co. Owner Jim Eckhardt
Watershed _____ Subwatershed _____ Site No. _____
Contractor _____ Computed by _____ Date _____
Item Embankment Fill Checked by _____ Date _____
Contract No. _____ Estimate _____ yd³ Actual _____ yd³

Station	End area ~~(ft²)~~ Fill (ft ²)	End area (ft ²)	Sum of end areas (ft ²)	Distance (ft)	Section products (ft ³)	Volume (yd ³)	Remarks
10+00	0	0					
10+47	3.3	54	54	47		47	
10+73	5.7	126.5	180.5	26		87	
10+88	7.5	201.5	328.0	15		91	
10+95	10.0	330.0	531.5	7		69	
11+05	9.0	275.0	605.0	10		112	
11+18	8.0	224.0	499.0	13		120	
11+27	5.8	120.0	354.0	9		59	
11+54	4.0	72.0	202.0	27		101	
11+94	0.0	0	72.0	40		53	
				Don't fill =		739	
				Infl. allowance for Settlement (5%) =			
				(739)(0.05) =		37	
				Total yd ³ =		739 + 37 =	776

Sheet 4A of 9 sheets

US Department of Agriculture
Soil Conservation ServiceDESIGN WORKSHEET
for
Pipe Drop Structure

prepared for

Jim Eckhardt

in

Washington County, Idaho

Used for final design.

Designer : BDC

Date : 06/29/93

Checker _____

Date _____

CIN #11

Top Width = 8 ft.
 Upstream sideslope = 3.0 :1
 Downstream sideslope = 3.0 :1

54' storm freq. → 'n' value = 0.017
 Discharge = 20.5 cfs.
 Pipe diameter = 18 in.
 Riser diameter = 36 in.
 ? — Pipe length = 53 ft.
 (including 4 feet
 beyond the toe.)
 Riser length = 8.0 ft.

Pipe Controls

Elevation of top = 87.5
 Elevation of emergency = 85.5
 Elevation of design storm = 85.5
 Elevation of riser = 84.5
 Elevation of inlet = 77.5
 Elevation of outlet = 77.0

7/9

US Department of Agriculture
Soil Conservation ServiceDESIGN WORKSHEET
for
Pipe Drop Structure

prepared for

Jim Eckhardt

in

Washington County, Idaho

Designer : BDC
Date : 06/29/93Checker
Date 6/29/93

CIN #11

Top Width = 8 ft.
Upstream sideslope = 3.0 :1
Downstream sideslope = 3.0 :1

10 yr. storm freq.

'n' value = 0.017
Discharge = 38.6 cfs.
Pipe diameter = 24 in.
Riser diameter = 48 in.
Pipe length = 53 ft.
(including 4 feet
beyond the toe.)
Riser length = 8.0 ft.

Pipe Controls

Elevation of top	=	87.5
Elevation of emergency	=	85.5
Elevation of design storm	=	85.5
Elevation of riser	=	84.5
Elevation of inlet	=	77.5
Elevation of outlet	=	77.0

Note: See 5 yr frequency storm - See Sht. 7A/9

Idaho
BDC 6/29/93
Embankment Pond

Jim Eckhardt

CIN #11
6 9

NHCP 378
Standard
pg. 2

Principal Spillway:

Since D.A. > 20 acres, set crest elevation
1.0 ft below emergency spillway crest
OR $85.5 - 1.0 = \underline{84.5}$

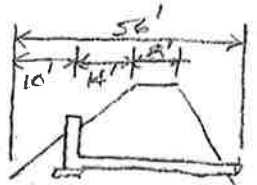
Survey

Bottom of spillway @ elev. 77.5

Use 3:1 side slopes for dam.

⇒ length of conduit = $8 + 2(24) = 56 \text{ ft}$

Use length = 50 ft.



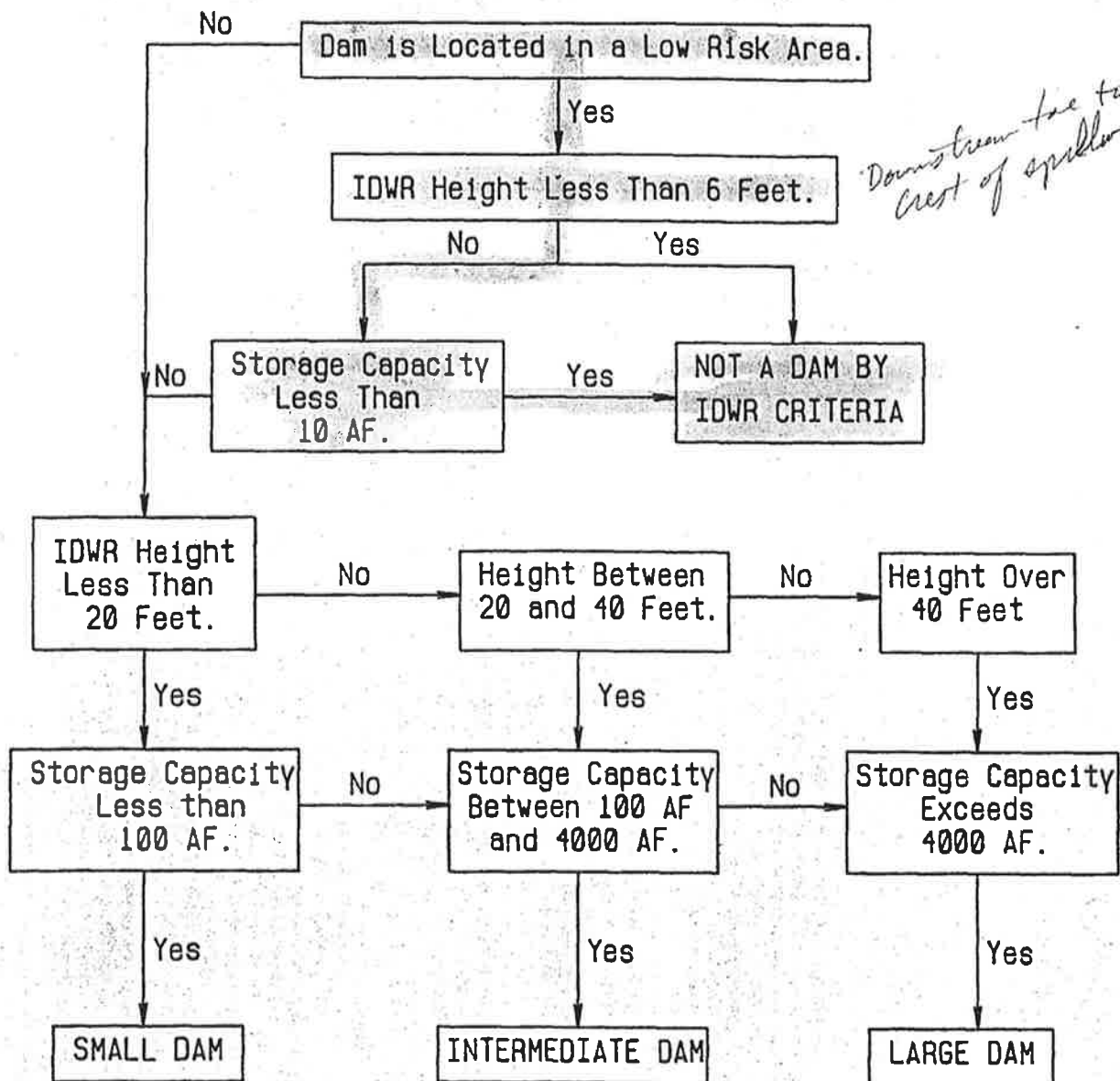
Antiseep collars: Shall increase seepage path
by 15% min. ⇒ seepage length = $50(1.15) = 58 \text{ ft}$
⇒ extend collars 2.0' beyond outside of conduit.
For 2 collars this will increase seepage length
by 8 ft.

see pg. 7
printout

Use OHIO program to size principal spill

5/9

FLOWCHART FOR FINDING
CLASSIFICATION OF DAMS
BY IDWR CRITERIA



Idaho

BDC

6/29/93

Embankment Pond

Jim Eckhardt

CIN # 11
4 9

NHCP 378
Supplement

Hazard classification = a

Storage Volume:

Since a large portion of the area behind the dam will be excavated, use the formula in EFM 11, pg. 11-9 for storage estimation.

$$\text{Vol.} = 0.4 (\text{Max. H}_2\text{O depth @ dam}) (\text{Surface Area})$$

planimetered
see topog.

$$\text{Surface Area} = 0.8 \text{ acres}$$

$$\text{Max. H}_2\text{O depth} = 85.5 - 77.4 = 8.1 \text{ ft.}$$

$$\text{Vol.} = 0.4 (8.1) (0.8) = \underline{\underline{2.6 \text{ acre-ft.}}}$$

IDWR Classification:

See flow
chart
p. 5

NOT A DAM $\Rightarrow$ NHCP 378 CONTROLS

NHCP 378
Suppl.

This is a TYPE 1 dam

3/9

Client : Jim Eckhardt
County : Washington
Practice: Embankment Pond

State: ID

By: BDC
Checked: _____

Date: 06-29-93
Date: _____

Drainage Area : 212 Acres
Curve Number : 78
Watershed Length : 7000 Feet
Watershed Slope : 9.2 Percent
Time of Concentration: .881 Hours
Rainfall Type : II

Storm Number	1	2	3	4
Frequency (yrs)	5	10	25	50
24-Hr Rainfall (in)	1.5	1.8	2.0	2.3
Ia/P Ratio	0.38	0.31	0.28	0.25
Runoff (in)	0.23	0.38	0.48	0.66
Unit Peak Discharge (cfs/acre/in)	0.415	0.480	0.503	0.523
Peak Discharge (cfs)	21	38	52	73

Idaho

Tim Eckhardt

BDC

6/28/83

CIN #11

Embankment Pond

2 9

Avg. of
Randomly
selected
watershed
slopes

Avg. Watershed Slope $\approx$ 9.2%

Watershed Length $\approx$ 7,000 ft.

See EFM 2 Computer printout, pg. 3

Idaho
BDC 6/28/93
Embankment Pond

Jim Eckhardt

CIN # 11
1 9

T12N, R5W
S 18

Survey,
Planimeter

Given: Drainage Area = 212 acres
Cover = Rangeland (Good condition)
Soil @ site = D+F = Deter Clay Loam
Soil in watershed (majority) = GrF
= Gem - Reywat Complex

Determine 1) Peak discharge for design of
principal spillway
2) Hazard classification of dam
3) Storage volume
4) IDWR classification
5) Size of principal spillway
6) Size of emergency spillway
7) Fill quantity required

Peak Discharge:

Use EFM 2 computer program

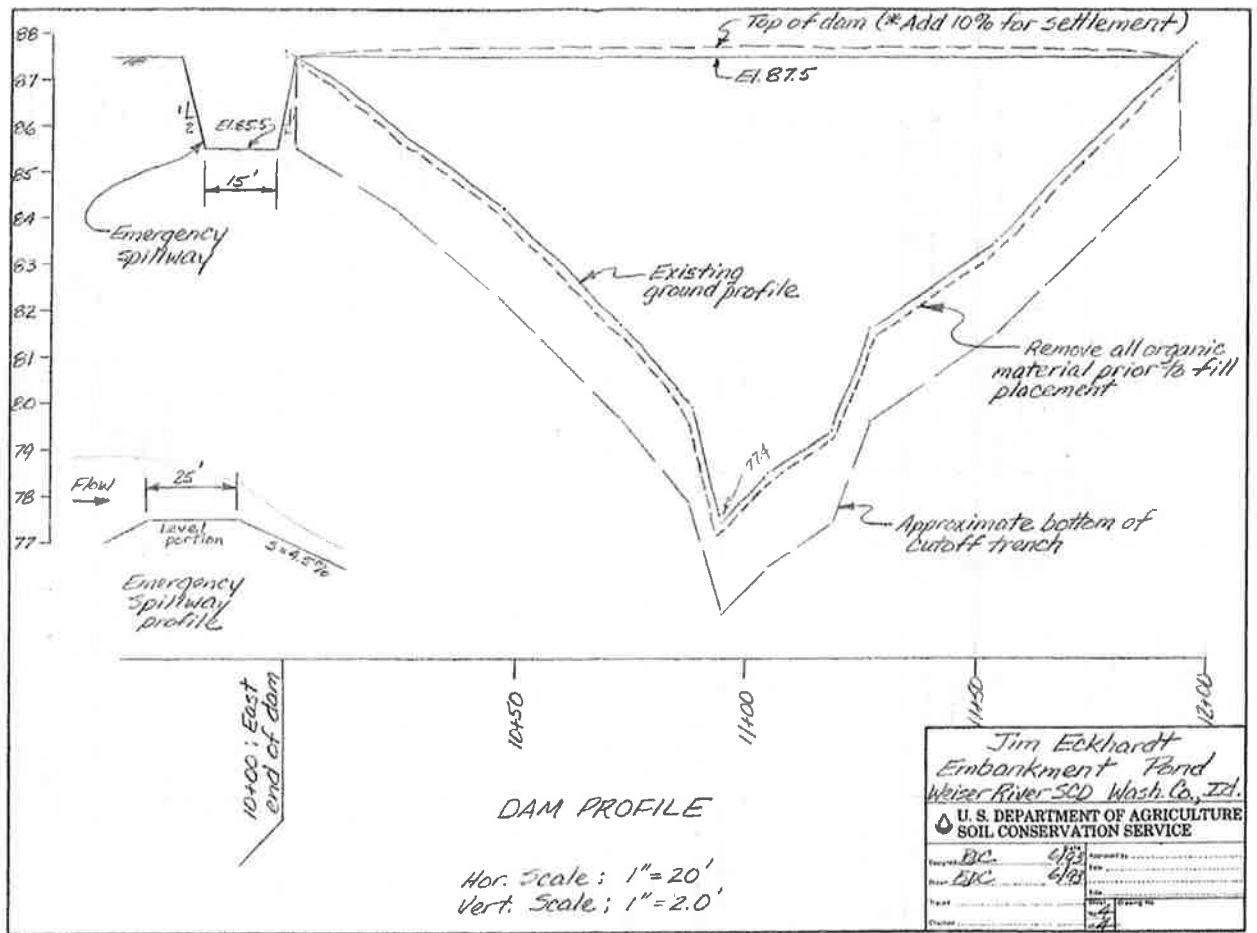
NORA
Atlas II

<u>Frequency (yrs.)</u>	<u>Precip. (in.)</u>
5	1.5
10	1.8
25	2.0
50	2.3

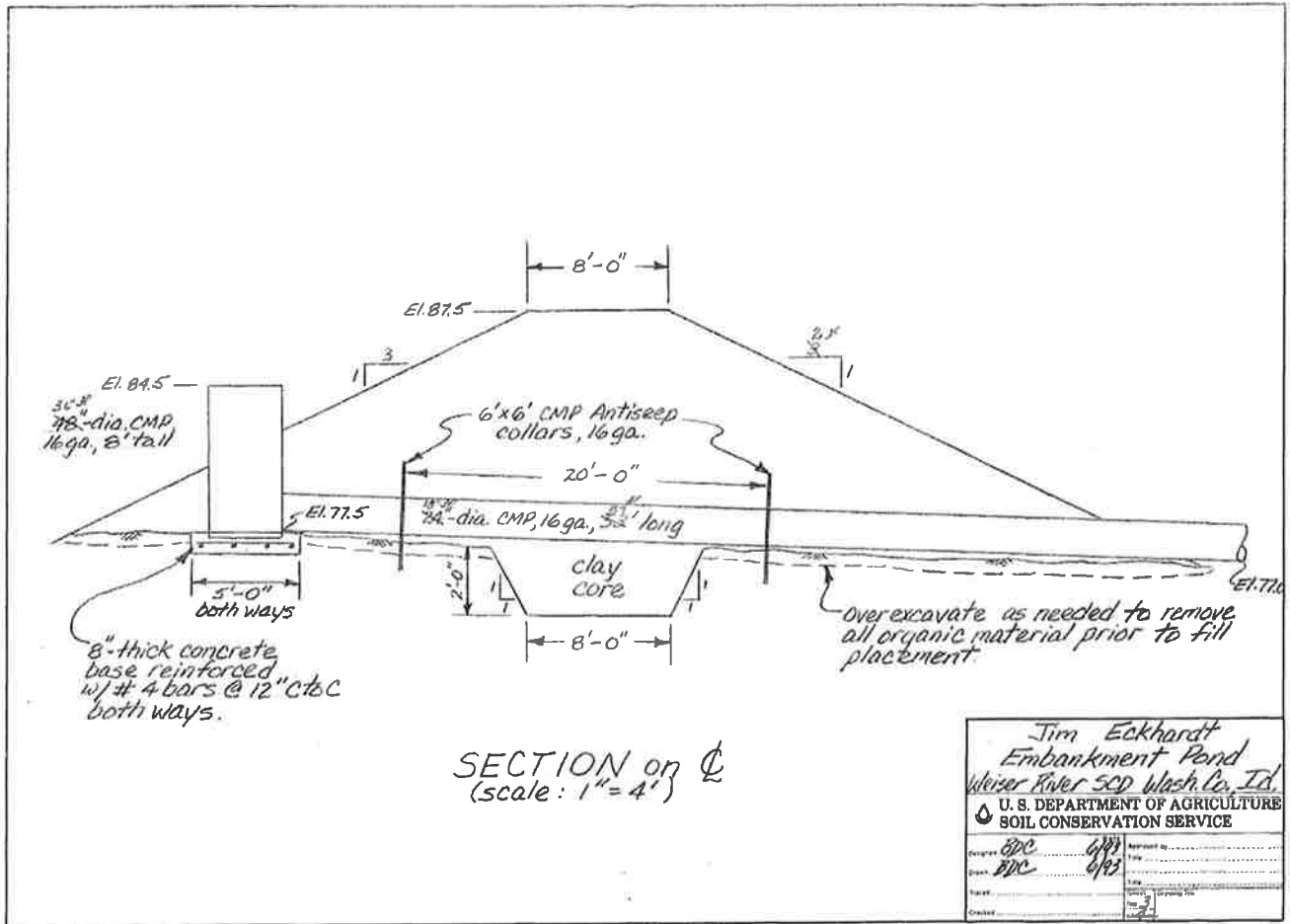
EFM 2
Table
2-30

Hyd. soil Group = C-D combination
Use RCN = 78

000427

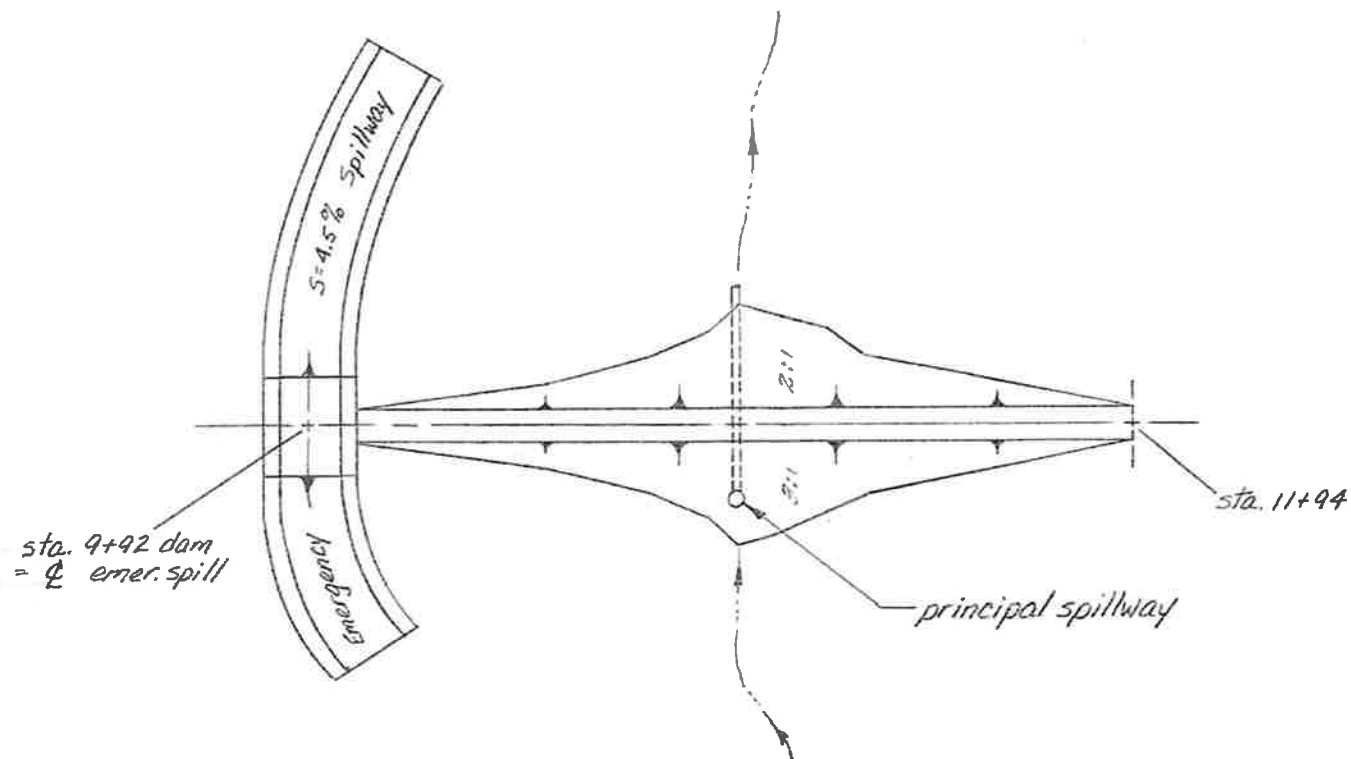


000428



SCS-ENG-313A REV 0-76

000429



PLAN VIEW
(scale; 1" = 30')

CIN #11

Jim Eckhardt		Approved by	
Embankment Pond		Title	
Kleiser River SCD Wash. Co., Id.			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	BDC	693	
Drawn	BDC	693	
Checked			

000430



PROJECT LOCATION (scale: 1"=2000')

It is the landowner's or operator's responsibility to locate and protect all public utilities (underground and overhead) within the work area.

I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

Jim Eckhardt Date: 7-21-73

Notes:

1. Construction shall be in accordance with construction specifications ID-376, 587-D, and 430-II.
2. Fill quantity = $776.38^{3.3}$ 856 yd.^3
3. It is the landowner's responsibility to obtain all necessary permits prior to construction.

CIN #11

Jim Eckhardt	
Embankment Pond	
Weiser River SCD, Blaine Co, Id.	
U. S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
Project: BDC	6/83
Drawn: BDC	6/93
Check: [Signature]	7/93
Job Class = II	

SCS-ENG 313A REV 8/75

000431

Jim Eckhardt
Embankment Pond
Design Survey
J. Christopher
3/13/93

Emer. Spill - downstream

"

"

"

Channel downstream dam

"

"

Sia.	B.S.	H.L.	F.S. or Grade Rod	Elev. or Planned Elev.	
	Hor. $\angle$	RR	stadia	Dist	Elev.
	0°00'	8.04	~~5.46~~ 7.63	83	80.00
	22°10'	0.4	~~2.07~~ 0.4	60	87.6
	23°00'	3.8	~~3.87~~ 3.72	15	84.2
	36°00'	6.3	~~6.34~~ 6.21	13	81.7
	42°30'	8.1	~~8.22~~ 7.95	27	79.9
	44°10'	10.6	~~10.75~~ 10.4	35	77.4
	44°25'	9.55	~~9.77~~ 9.32	45	78.5
	45°55'	8.66	~~8.95~~ 8.38	57	79.4
	46°30'	6.4	~~6.77~~ 6.05	72	81.6
	47°15'	4.5	~~5.0~~ 4.06	94	83.5
	49°40'	0.2	~~0.82~~ 0.2	136	87.8

GPO: 1989 O-621-216

000433

Jim Eckhardt T Christopher 1/3
Embermont Pond & Henselsson
Beshyn Spring 6/28/83

Top of flopped stake downstream
of dam site.

East end = Emmer's Spillway

down

West end

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
	Hor. X	RR	Stadia	Dist	Elev.
50' up stream	75°55'	0.9	$\frac{1.7}{0.9}$	160	87.1
	95°35'	9.1	$\frac{9.48}{8.63}$	85	78.9
	109°55'	9.9	$\frac{10.25}{9.35}$	70	78.1
	112°40'	7.2	$\frac{7.55}{6.87}$	68	80.8
	146°35'	4.4	$\frac{4.75}{4.09}$	66	83.6
	173°25'	2.15	$\frac{2.6}{2.15}$	90	85.9
	151°10'	0.5	$\frac{1.2}{0.5}$	140	87.5
	133°35'	3.1	$\frac{3.83}{3.1}$	73	84.9
	121°30'	7.6	$\frac{8.45}{6.8}$	165	80.4
	111°35'	5.0	$\frac{5.96}{4.05}$	191	83.0
	102°10'	2.7	$\frac{3.8}{2.7}$	220	85.3
	112°40'	2.35	$\frac{3.66}{2.35}$	131	85.7
	123°10'	3.9	$\frac{5.2}{2.7}$	250	84.1
	129°30'	4.8	$\frac{6.1}{3.6}$	250	83.2
	140°50'	1.3	$\frac{2.2}{1.3}$	180	86.7

SCS-ENG-29
(2-80)

GPO : 1988 O - 212-723

Jim Eckhardt & Christopher 2/3
Embankment Pond & Henderson
Design Survey 6/28/93

G.S.



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCN	Kleiser River		Date	6/28/93					
Field Office	Kleiser								
Name	Tim Eckhardt								
☒ Individual	☐ Group	Unit of Govt.							
(circle one)									
Job	Embankment Pond								
Design Sur.	☒	Const. Layout							
Const. Check	☐	Other							
Ident. No.			Field No.						
Scale									
1" =									
Legal Description									
	Sec	18	T	12N R 5W					
	or								
Location:									

SCS-ENG 28 REV 5-75

000438

Location WASH. Co. Owner _____
 Watershed _____ Subwatershed _____ Site No. _____
 Contractor _____ Computed by _____ Date _____
 Item _____ Checked by _____ Date _____
 Contract No. _____ Estimate _____ yd³ Actual _____ yd³

[illegible]

APPLICATION EVALUATION WORKSHEET

James Eckhardt			
County: Washington	Tract # 852,1802 Farm # 675	Land Use: Grazing Range	Total Acres: 10,963

			Cost-Share Rate or Incentive Payment Level			
Conservation Practice	Practice Number	Per Unit (ac/ft/field/#)	Practice Amount	Established Rate/Level	Cost Share Rate or %	Estimated Program Cost (\$)
EX: Irrigation System (Pivot)	442	acres	62	600	0.75	\$27,900.00
Watering Facility-Rubber Tire	614	each	6	\$700.00	0.75	\$3,150.00
Fencing, 4-wire	382	foot	15,840	1.15	0.75	\$13,662.00
Pipeline-Schedule 40-1.5"	516	foot	10,560	1.43	0.75	\$11,325.60
Range Planting	550	acre	6	65	0.75	\$292.50
Channel Vegetation-Woody	322	each	150	4	0.75	\$450.00
Channel Vegetation-Herbaceous	322	acre	1.5	150	0.75	\$168.75
Pipeline-Schedule 40-1.5"	516	foot	1000	1.43	0.75	\$1,072.50
Watering Facility-Rubber Tire	614	each	2	700	0.75	\$1,050.00
Range Planting	550	acre	196	65	0.75	\$9,555.00
Spring Development	574	each	1	2500	0.75	\$1,875.00
Watering Facility-Rubber Tire	614	each	3	700	0.75	\$1,575.00
Pipeline-Schedule 40-1.5"	516	foot	3000	1.43	0.75	\$3,217.50
Pond-1	378	cuyd	1200	2.5	0.75	\$2,250.00
Pond-2	378	cuyd	1200	2.5	0.75	\$2,250.00
Pond-3	378	cuyd	1000	2.5	0.75	\$1,875.00
Pond-4	378	cuyd	1700	2.5	0.75	\$3,187.50
Pond-5	378	cuyd	1000	2.5	0.75	\$1,875.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL PROGRAM COSTS:						\$58,831.35

Designated
Conservationist
Signature: _____

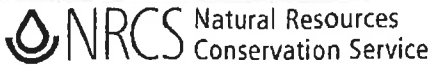
Thomas B. Gouley

Date: 4-24-2003

Applicants
Signature: _____

James Eckhardt

Date: 4-22-03



847 E. 9th Street, Weiser, ID 83672-2356
Telephone: 208-549-4280 FAX: 208-549-4229

Date: 4/4/03

Marc Munch
USDA Forest Service, Boise National Forest
Heritage Program
1249 South Vinnell Way, Suite 200
Boise, ID 83709

Dear Mr. Munch:

In accordance with directions from our state office, I am enclosing the following requests for record searches:

1. James Eckhardt-Livestock Water Pond #1
2. James Eckhardt-Livestock Water Pond #2
3. James Eckhardt-Livestock Water Pond #3
4. James Eckhardt-Livestock Water Pond #4
5. James Eckhardt-Livestock Water Pond #5
- 6.

If any additional information is needed, please contact me at (208) 549-4280. Thank you for your continued support and assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Thomas B. Yankey', is written over a horizontal line.

Thomas B. Yankey
District Conservationist
Natural Resources Conservation Service

Cc: Kent Morrison, Meridian Field Office

NRCS Project Request for Cultural Resource Assistance

Project Name: James Eckhardt Livestock Water Pond #1 EQLP		Quad Name: Mann Creek NW	Date of Request: 4/4/03	
Legal Description: SW ¼ Sec.		Sec. # 36	Township 13N	Range 5W County: Washington
NRCS Unit: Weiser FO			NRCS Contact Person: Kent Morrison, Meridian FO Phone #: 208-888-1890	
Project Description: Grazed Rangeland: Approximately 2 acres will be disturbed at the pond site to provide soil for the pond and the pond will have a depth of approximately four feet.				

FOREST SERVICE PRELIMINARY REVIEW

Date Received:	Project Number: NRCS
Sources of Information Checked:	
Are There Known Sites In The Project Area? () Yes () No If Yes, list Site Number, Name and Relationship To Project: (key to map)	
Is The NRCS Project Area Sensitive? () Yes () No If Yes, provide a brief description of where Cultural Resources are expected with respect to cultural themes, landforms, water, slope, etc.	
Is An Archaeological Field Review Recommended? () Yes () No	
Additional Comments\Recommendations:	

Professional Archaeologist _____ Date: _____

Attachments: () Maps () Site Forms () Other Attachments (List)

NRCS Project Request for Cultural Resource Assistance

Project Name: James Eckhardt Livestock Water Pond #2 EQIP		Quad Name: Mann Creek NW	Date of Request: 4/4/03
Legal Description: SW¼ Sec.	Sec. # 36	Township 13N	Range 5W County: Washington
NRCS Unit: Weiser FO		NRCS Contact Person: Kent Morrison, Meridian FO Phone #: 208-888-1890	
Project Description: Grazed Rangeland: Approximately 2 acres will be disturbed at the pond site to provide soil for the pond and the pond will have a depth of approximately four feet.			

FOREST SERVICE PRELIMINARY REVIEW

Date Received:	Project Number: NRCS
Sources of Information Checked:	
Are There Known Sites In The Project Area? () Yes () No If Yes, list Site Number, Name and Relationship To Project: (key to map)	
Is The NRCS Project Area Sensitive? () Yes () No If Yes, provide a brief description of where Cultural Resources are expected with respect to cultural themes, landforms, water, slope, etc.	
Is An Archaeological Field Review Recommended? () Yes () No	
Additional Comments/Recommendations:	

Professional Archaeologist _____ Date: _____

Attachments: () Maps () Site Forms () Other Attachments (List)

NRCS Project Request for Cultural Resource Assistance

Project Name: James Eckhardt Livestock Water Pond #3		Quad Name: Olds Ferry NE	Date of Request: 4/3/03
Legal Description NE ¼ Sec. Sec. #1		Township 12N Range 6W	
NRCS Unit: Weiser FO		NRCS Contact Person: Kent Morrison, Meridian FO Phone #:208-888-1890	
Project Description: Grazed Rangeland: Approximately 2 acres will be disturbed at the pond site to provide soil for the pond and the pond will have a depth of approximately four feet.			

FOREST SERVICE PRELIMINARY REVIEW

Date Received:	Project Number: NRCS
Sources of Information Checked:	
Are There Known Sites In The Project Area? () Yes () No If Yes, list Site Number, Name and Relationship To Project: (key to map)	
Is The NRCS Project Area Sensitive? () Yes () No If Yes, provide a brief description of where Cultural Resources are expected with respect to cultural themes, landforms, water, slope, etc.	
Is An Archaeological Field Review Recommended? () Yes () No	
Additional Comments\Recommendations:	

Professional Archaeologist _____ Date: _____

Attachments: () Maps () Site Forms () Other Attachments (List)

U.S. Department of Agriculture
Natural Resources Conservation Service

ID-420-003

NRCS Project Request for Cultural Resource Assistance

Project Name: Jim Eckhardt Livestock Water Pond #4		Quad Name: Mann Creek NW	Date of Request: 4/4/03
Legal Description: SW ¼ Sec.		Sec. # 5	Township 12N Range 5W
NRCS Unit: Weiser FO		NRCS Contact Person & Phone #: Kent Morrison Meridian FO Ph# 208-888-1890	
Project Description: Grazed Rangeland: Approximately 2 acres will be disturbed at the pond site to provide soil for the pond and the pond will have a depth of approximately four feet.			

FOREST SERVICE PRELIMINARY REVIEW

Date Received:	Project Number: NRCS
Sources of Information Checked:	
Are There Known Sites In The Project Area? () Yes () No If Yes, list Site Number, Name and Relationship To Project: (key to map)	
Is The NRCS Project Area Sensitive? () Yes () No If Yes, provide a brief description of where Cultural Resources are expected with respect to cultural themes, landforms, water, slope, etc.	
Is An Archaeological Field Review Recommended? () Yes () No	
Additional Comments/Recommendations:	

Professional Archaeologist _____ Date: _____

Attachments: () Maps () Site Forms () Other Attachments (List)

000750

U.S. Department of Agriculture
Natural Resources Conservation Service

ID-420-003

NRCS Project Request for Cultural Resource Assistance

Project Name: James Eckhardt Livestock Water Pond #5 EQIP		Quad Name: Mann Creek NW	Date of Request: 4/4/03
Legal Description: NW ¼ Sec.		Sec. # 18	Township 12N
		Range 5W	County: Washington
NRCS Unit: Weiser FO		NRCS Contact Person: Kent Morrison, Meridian FO Phone #: 208-888-1890	
Project Description: Grazed Rangeland: Approximately 2 acres will be disturbed at the pond site to provide soil for the pond and the pond will have a depth of approximately four feet.			

FOREST SERVICE PRELIMINARY REVIEW

Date Received:	Project Number: NRCS
Sources of Information Checked:	
Are There Known Sites In The Project Area? () Yes () No If Yes, list Site Number, Name and Relationship To Project: (key to map)	
Is The NRCS Project Area Sensitive? () Yes () No If Yes, provide a brief description of where Cultural Resources are expected with respect to cultural themes, landforms, water, slope, etc.	
Is An Archaeological Field Review Recommended? () Yes () No	
Additional Comments/Recommendations:	

Professional Archaeologist _____ Date: _____

Attachments: () Maps () Site Forms () Other Attachments (List)

000751

- ① 1186 ac
- ②W 1148 ac
- ②E 443 ac
- ③ 1757 ac
- ④W 1824 ac
- ④E 1356 ac
- ⑤ 1273 ac
- ⑥ 1046 ac
- ⑦ 1530 ac

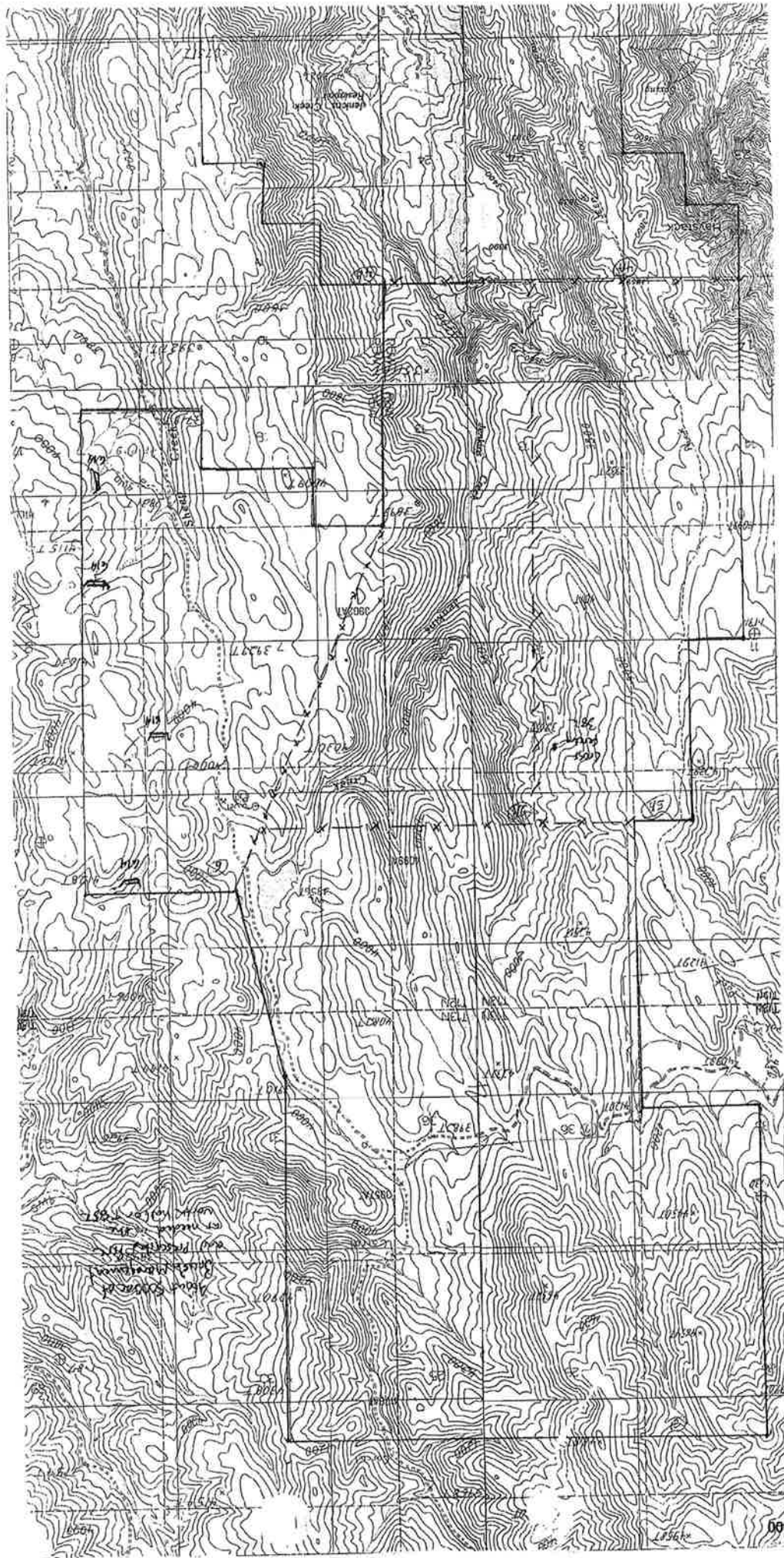
SCS-CPA-015
12-85

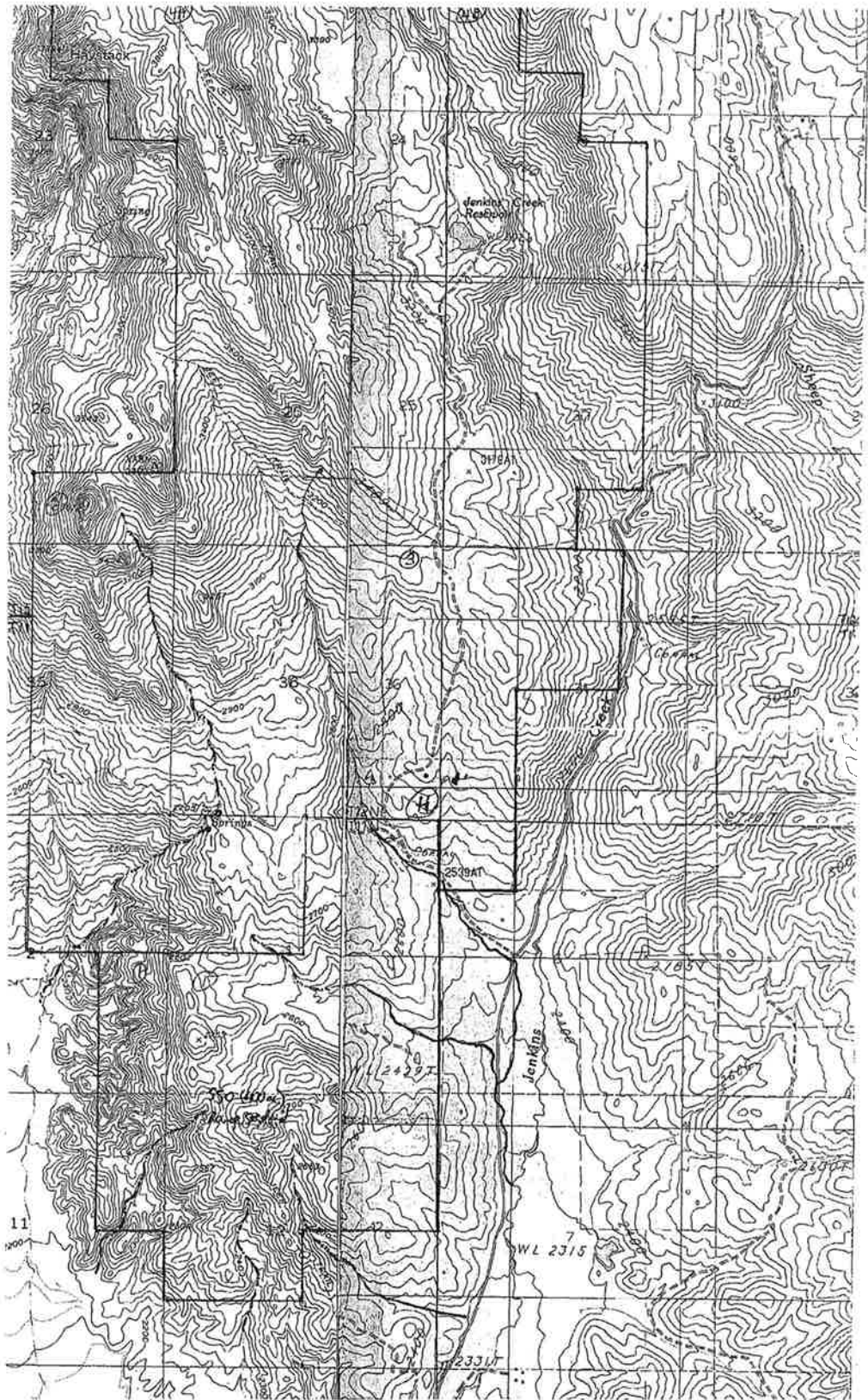
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

Owner James Eckhardt Operator James Eckhardt
County Washington State ND
Soil survey sheet(s) or code nos. 78, 79, 76, 87, 94, 95, 101, 107 Approximate scale 1:2,000
Prepared by U. S. Department of Agriculture, Soil Conservation Service cooperating
with Missouri River Conservation District 78540302
Stock water ponds proposed







U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

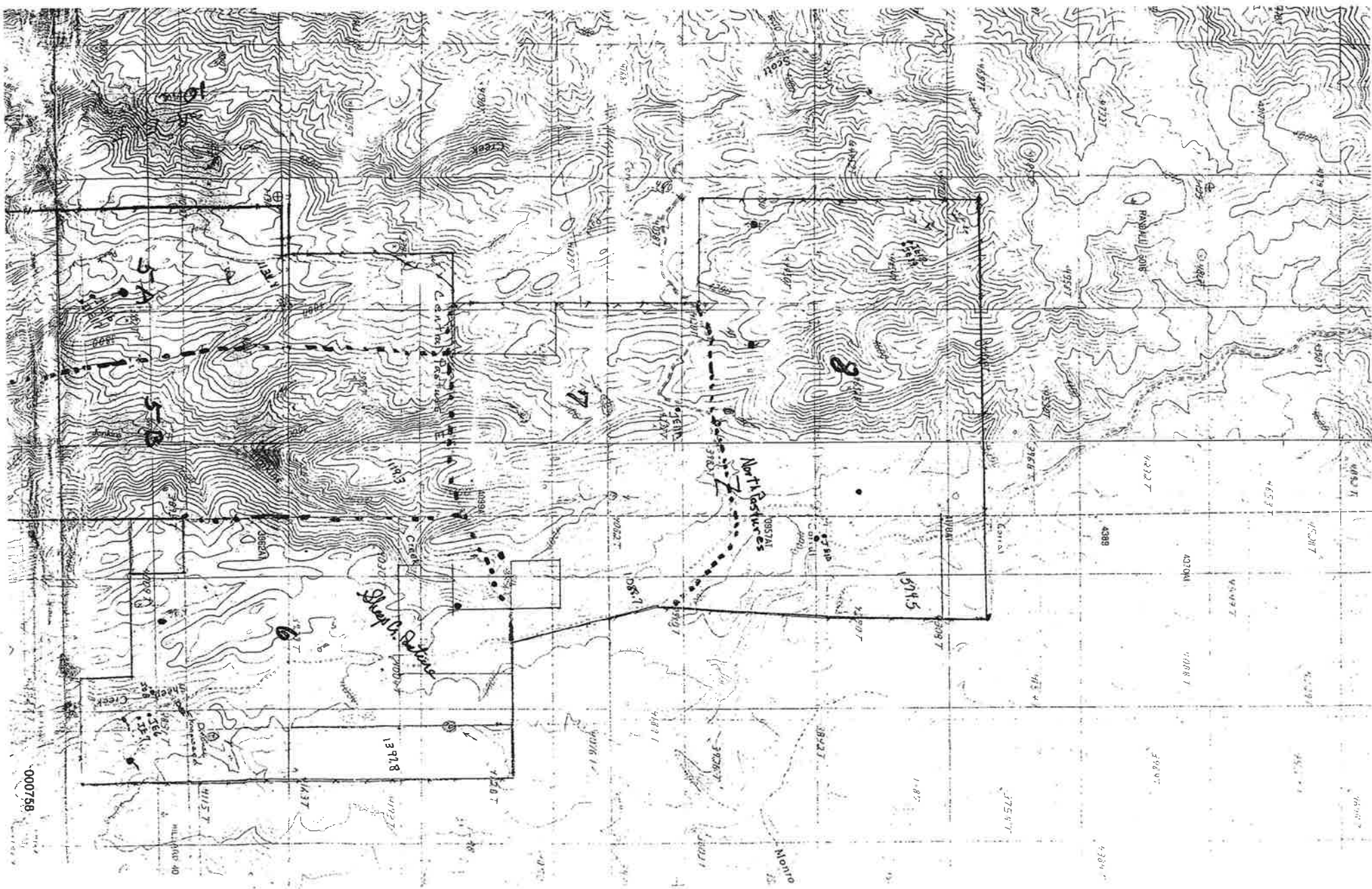
SCS-CPA-16
2-81

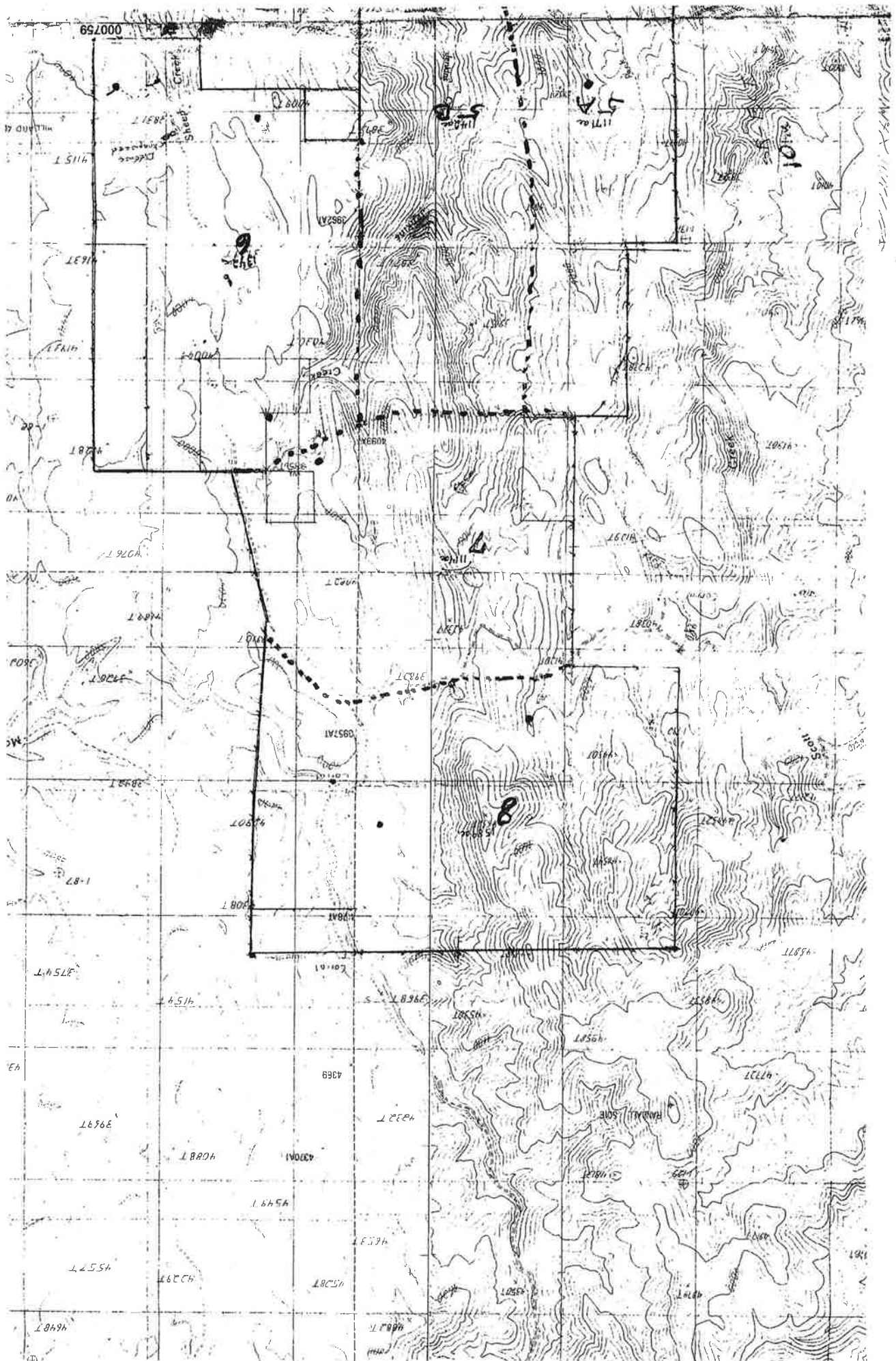
CONSERVATION PLAN MAP

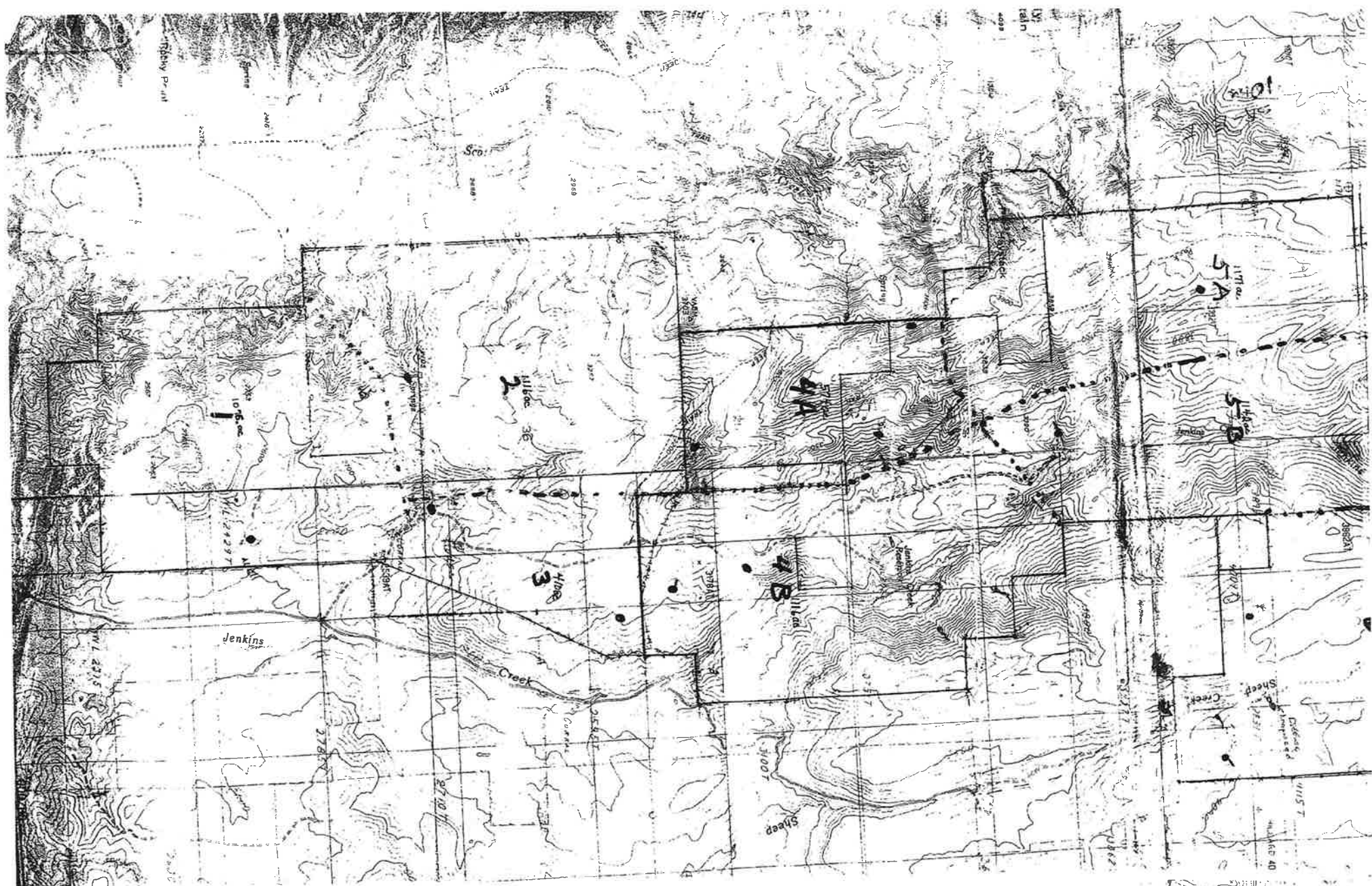
Owner James Eckhardt Operator James Eckhardt
County Washington State ID Date 2/2000
Approximate acres 11,300 Approximate scale 1:24,000
Cooperating with Weiser River Conservation District
Plan identification _____ Photo number _____
Assisted by JR Garrett USDA Soil Conservation Service

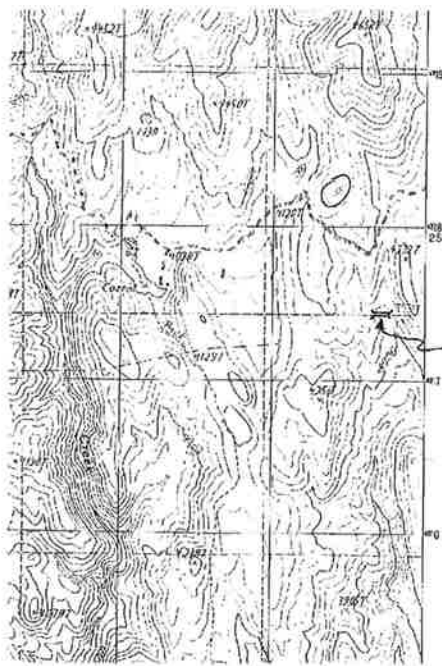
000755











PROJECT LOCATION
SECTION 24, T13N, R6W

PROJECT LOCATION
SCALE 1" = 2000'

NOTES:

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 2D 378.
2. ENGINEERING JOB CLASS III.
3. IT IS THE LANDOWNER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

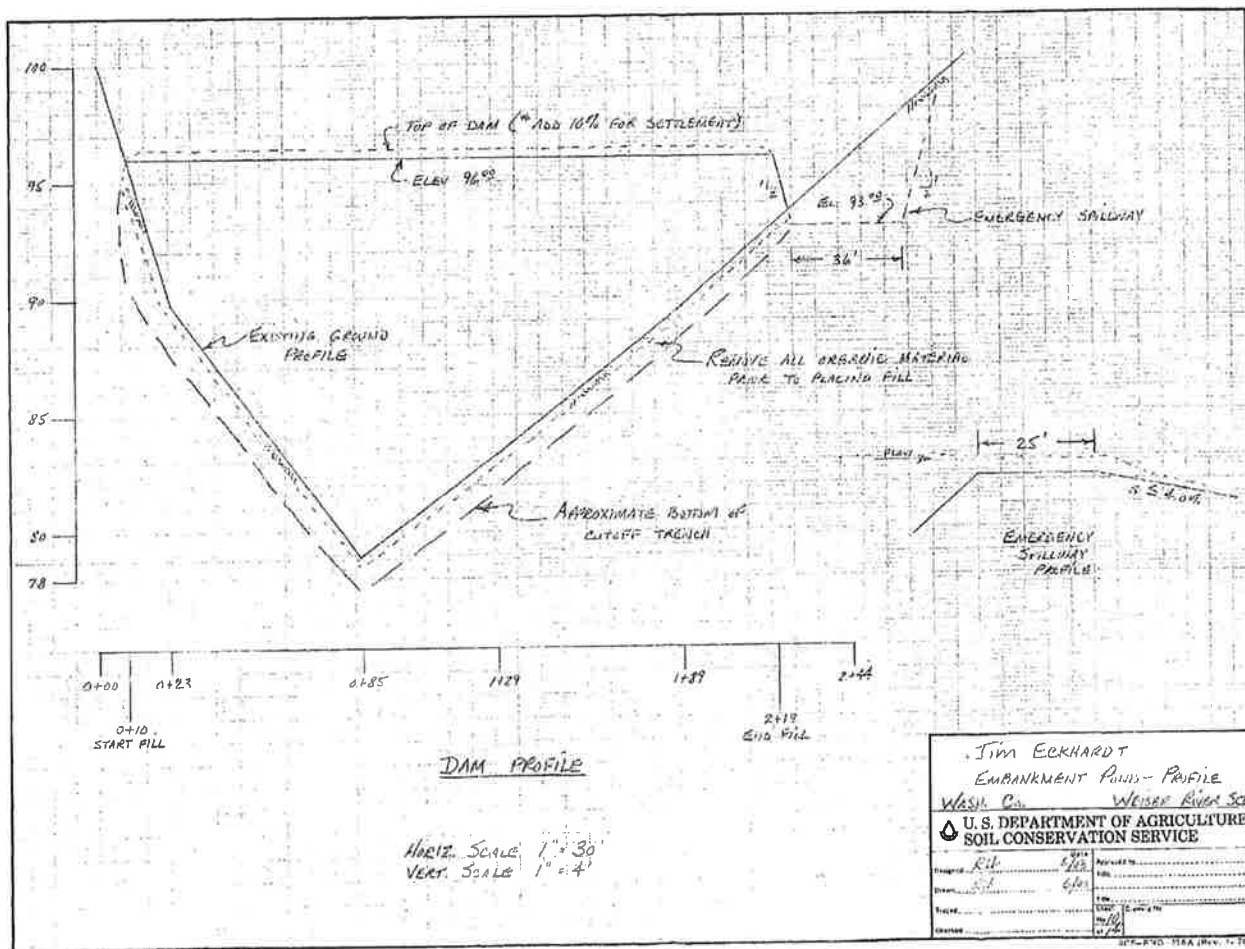
TBM (ELEV. = 100.00)

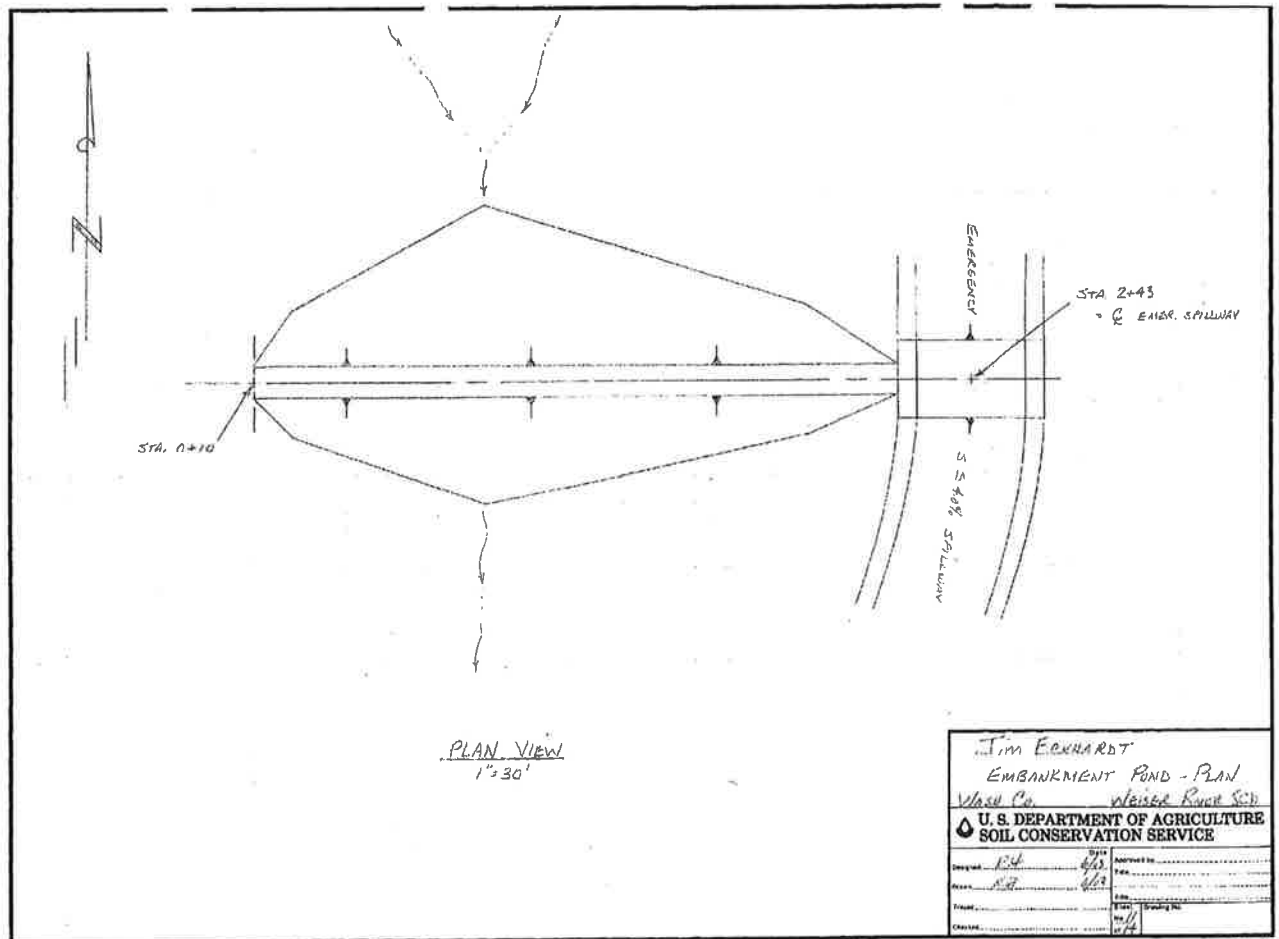
TOP OF 1" X 2" STAKE UPSTREAM OF WEST END OF DAM.

JIM ECKHARDT	
EMBANKMENT POND	
WESLEY RIVER, SD WASH. CO.	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed <u>R.H.</u>	Approved <u>[Signature]</u>
Drawn <u>[Signature]</u>	Title <u>651</u>
Project <u>[Signature]</u>	Date <u>6/33</u>
Checked <u>[Signature]</u>	Scale <u>1" = 2000'</u>

SCS-ENG-313A REV 9-75

000933

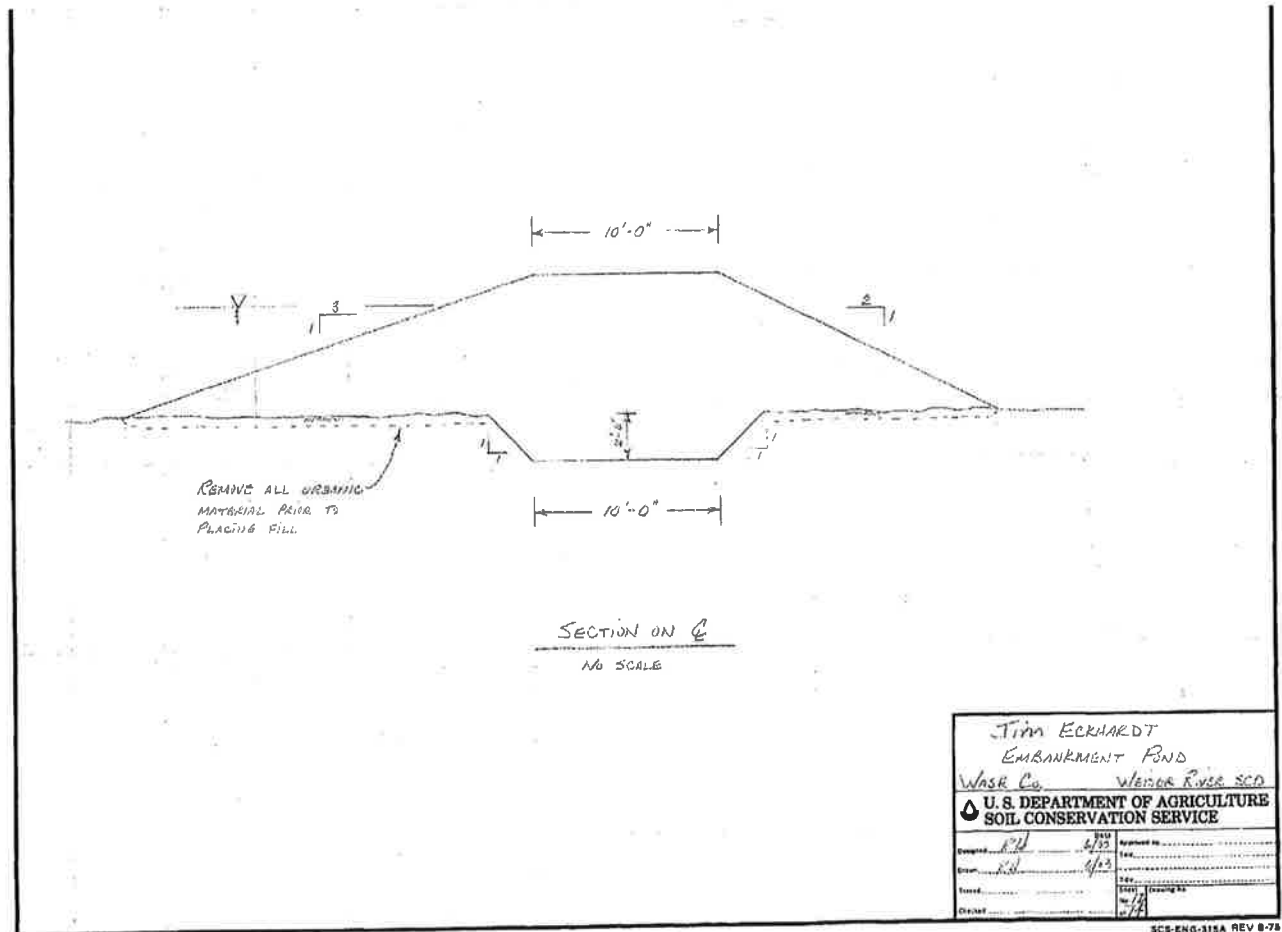




ONLY REPRODUCED BY PRINTING OFFICE: 1988 832 500

SCS ENG-312A REV 8-75

000935



U.S. GOVERNMENT PRINTING OFFICE: 1968-002-500

SCS-ENG-315A REV 8-78

000938

13/17

98/92/70

except "Anybody who's been in the

417

 I_{π}

COMMENTS:

95 41 55 ELEV 1510 DIST ANGLE

58.901 23.8

19, 10	99.8	143	142.57
--------	------	-----	--------

29.92 78.93 79.2 123.47

29' 59"	773	29' 59"	65' 07"
60' 11"	817	03' 38"	65' 07"

19.22	87.83	7.01	108.07
17.01	85.91	7.02	107.16

13.11	15.14	304	101.10
13.12	101.15	320	75.05

12-99	102	73 06	88 81
10-99	102	73 06	88 81

92-59	251	93-06	58-21
92-59	251	93-06	58-21

13.02 95.83 108 58.18

13.21 44.88 98.48 98 50.20

7.02 101.83 67 356.16

10.52	98.33	141	4.15
-------	-------	-----	------

-0.07 106.42 201 14.15

2.76 106.09 734 78.38

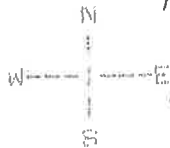
11.35	97.50	275	40.54
-------	-------	-----	-------

SH-Gr 2.2

Plotted 04/25/83

14/1

POND ±1



Jim Eckhardt
SCALE: 1 inch = 50 feet

6.1

97.5

8.9

8.3

1.8

89.9

95.8

95.0

90.4

3.4

EST. H₂O MAX
93°

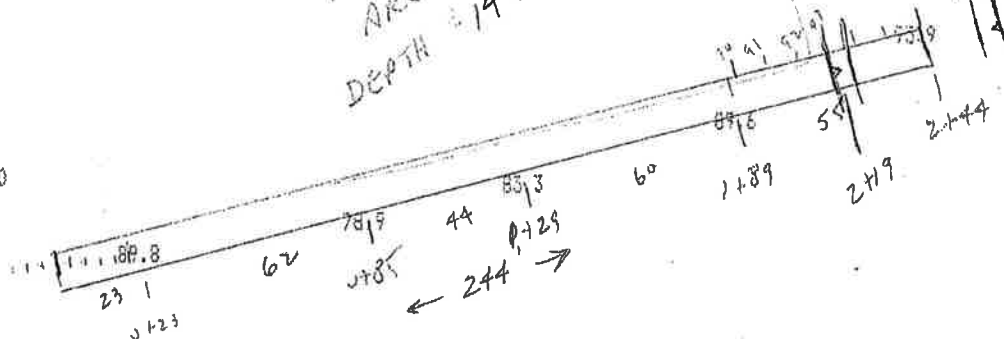
APPROX.
POND
AREA = 0.6 ac.
DEPTH = 14 FT.

TOP @

SPILLWAY
@ 93

H₂O @ 93

0.0



Computed overall length = 320 ft.

6-13-05

Jim Eckhardt - Survey Data

Pond Number 1 - BIG POND

Volume of Fill w/ 30% compaction	1662 (CY)
Appx top width	8-14 (ft)
Upstream sideslopes	— 3.8 (xx:1)
Downstream sideslopes	— 1.9 (xx:1)
Lowest Spillway elevation	98.38 (ft)
Lowest Top elevation	98.42 (ft)
Spillway width	12.0 (ft) — 36 ft.
Spillway Slope	0.02 (ft/ft)

Pond Number 2 - NO. SIDE ROAD

Volume of Fill w/ 30% compaction	413 (CY)
Appx top width	9-13 (ft)
Upstream sideslopes	— 3.6 (xx:1)
Downstream sideslopes	— 1.8 (xx:1)
Lowest Spillway elevation	97.4 (ft)
Lowest Top elevation	97.57 (ft)
Spillway width	12.0 (ft) ← 24'

Pond Number 3 - So. SIDE ROAD

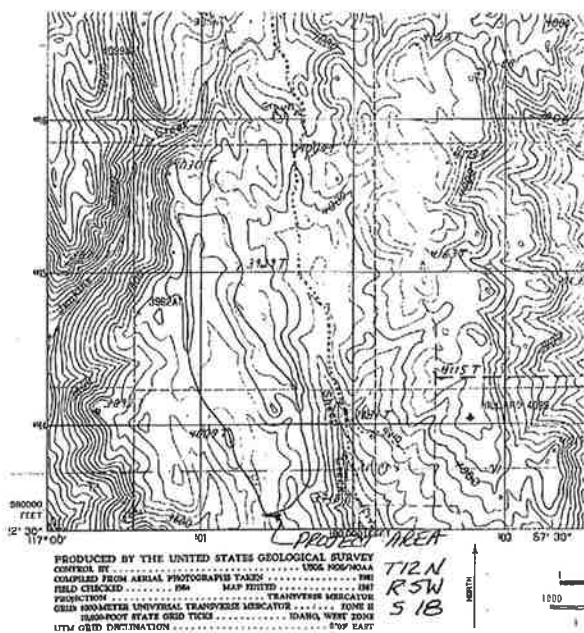
Volume of Fill w/ 30% compaction	328 (CY)
Appx top width	10-12 (ft)
Upstream sideslopes	2.15-3.37 (xx:1)
Downstream sideslopes	1.86-2.75 (xx:1)
Lowest Spillway elevation	98 (ft)
Lowest Top elevation	99.8 (ft)
Spillway width	11.3 (ft) OK

Pond Number 4 - So.

Volume of Fill w/ 30% compaction	537 (CY)
Appx top width	8.8-10 (ft)
Upstream sideslopes	— 1.7 (xx:1)
Downstream sideslopes	— 1.8 (xx:1)
Lowest Spillway elevation	97.4 (ft)
Lowest Top elevation	99.8 (ft)
Spillway width	→ 15.9 (ft) — 20'

Pond Number 5 EAST OF RESERVOIR

Volume of Fill w/ 30% compaction	309 (CY)
Appx top width	8-13 (ft)
Upstream sideslopes	2.1 (xx:1)
Downstream sideslopes	1.8 (xx:1) increase
Lowest Spillway elevation	95.9 (ft)
Lowest Top elevation	99.3 (ft)
Spillway width	12.8 (ft) — OK



PROJECT LOCATION (scale: 1"=2000')

It is the landowner's or operator's responsibility to locate and protect all public utilities (underground and overhead) within the work areas.

I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

Date: _____

Notes:

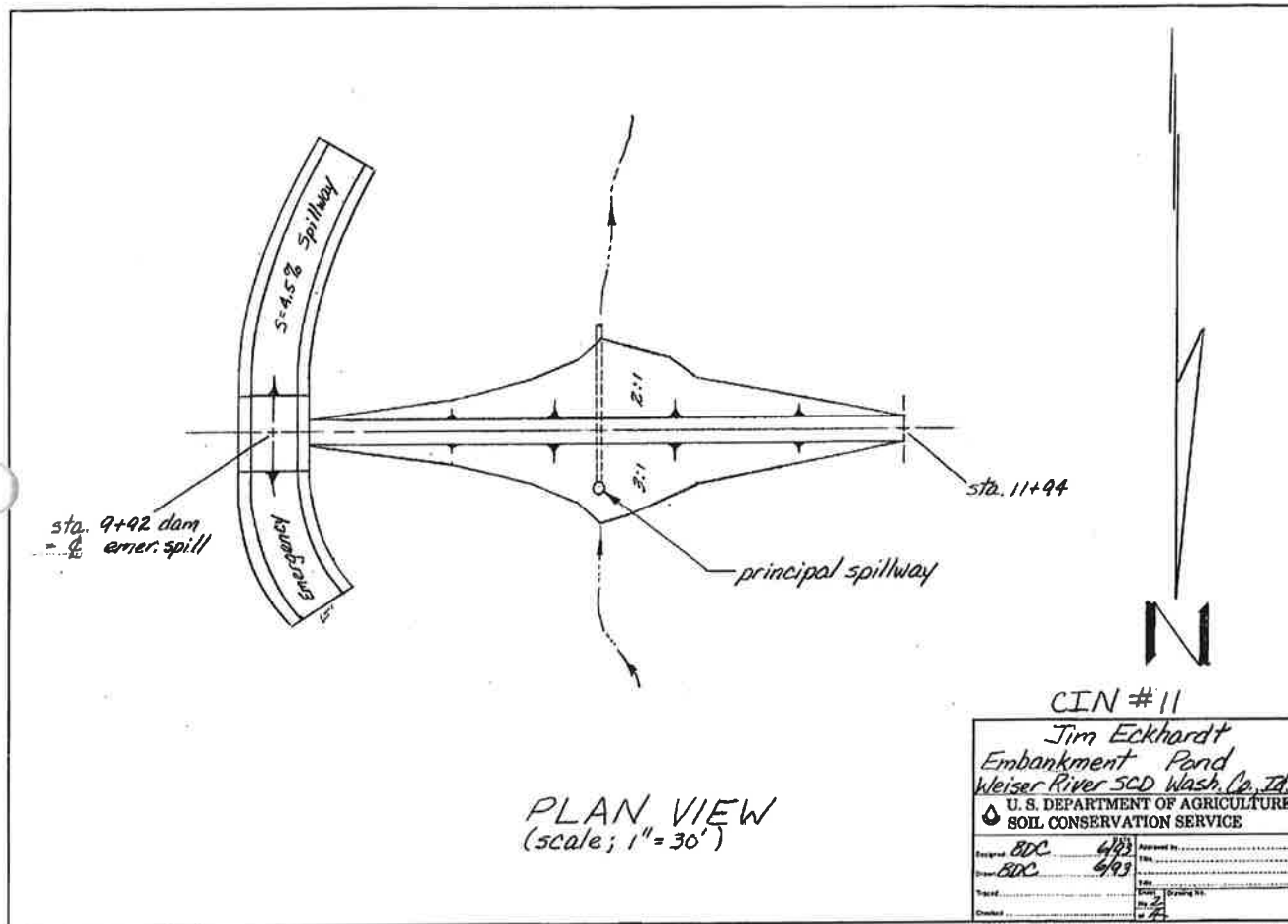
1. Construction shall be in accordance with construction specifications ID-378, 587-D, and 430-II.
2. Fill quantity $\approx 776^{38} 856^{38} \text{ yd}^3$
3. It is the landowner's responsibility to obtain all necessary permits prior to construction.

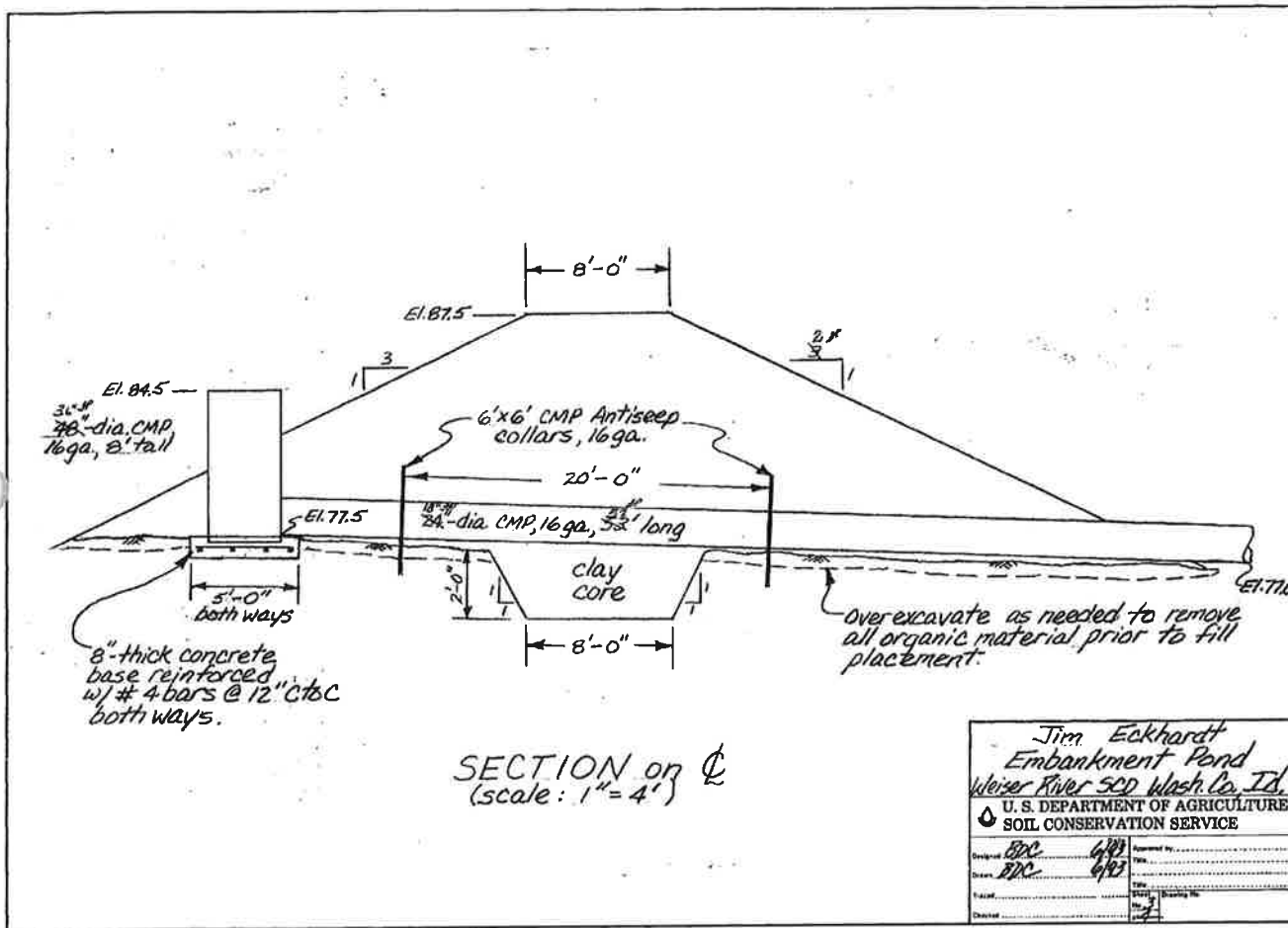
TBM (Elev. = 80.00):
Top of "flagged" stake
downstream of dam
location on west side
of creek.

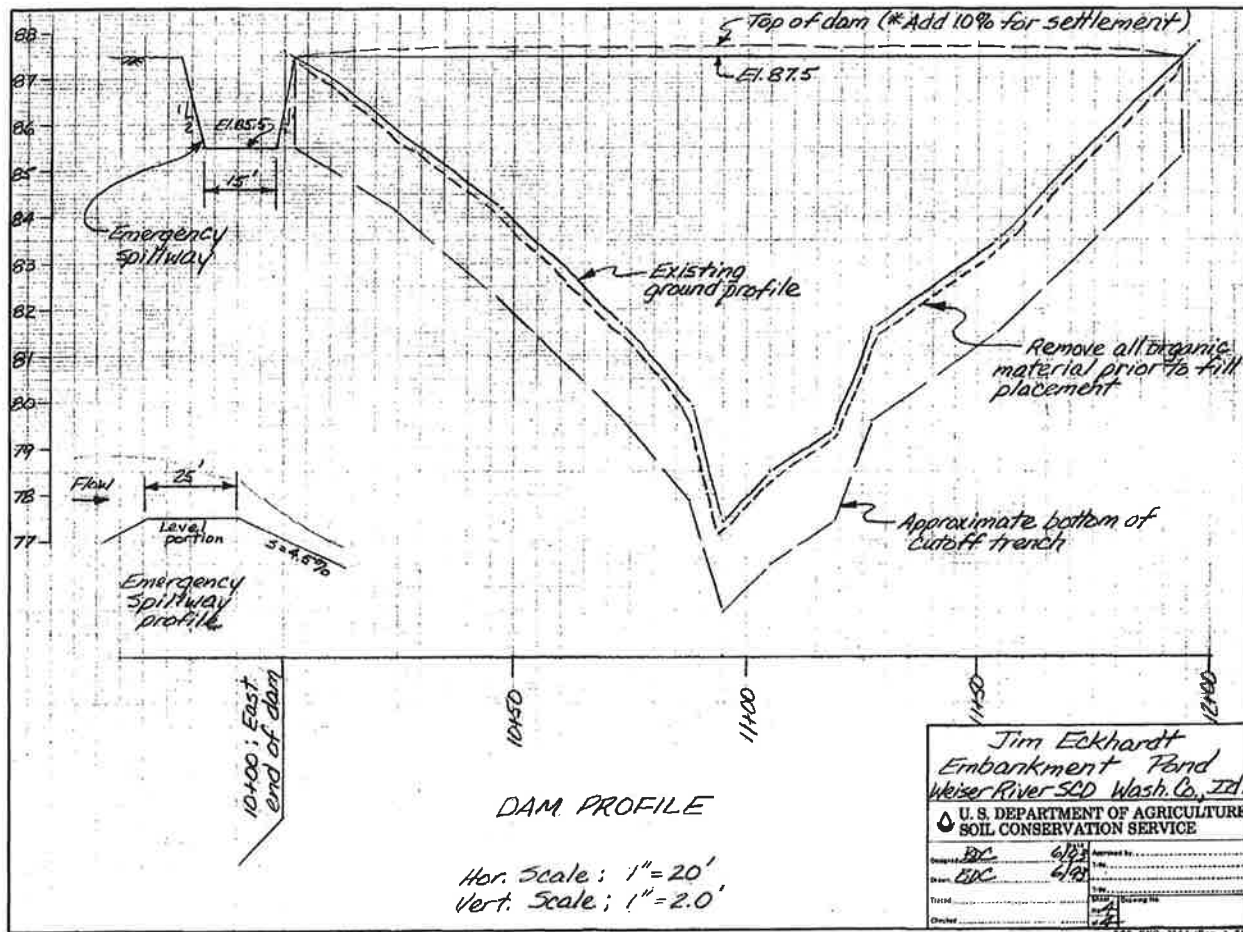
CIN #11

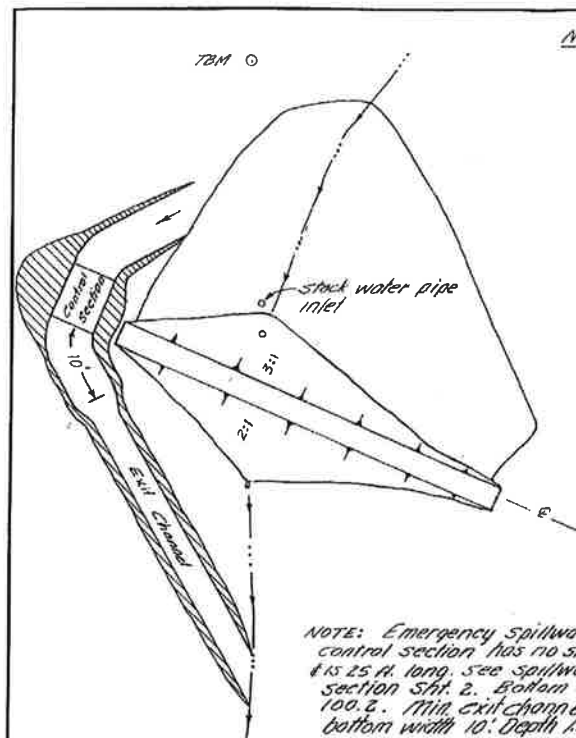
Jim Eckhardt	
Embankment Pond	
Weiser River SCD, Wash. Co., Id.	
U. S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
Designed by BDC	6/83
Drawn by BDC	6/83
Checked by	
Approved by	
Feb Class - II	

SCS-ENG-313A REV 8-75









NOTE: Emergency spillway control section has no slope, it is 25 ft. long. See spillway section Sht. 2. Bottom elev. 100.2. (Min. exit channel bottom width 10'. Depth 1.5 ft.)

EMBANKMENT PLAN

TBM - Top of 1"x2" stake - Flagged.
Elevation 100.00

NOTES:

1. Project shall be constructed according to Soil Conservation Service specification 10-578 and 10-587D.
2. The emergency spillway is designed to pass the 50 year storm flow.
3. Concrete for structure foundations shall be reinforced with #4 deformed reinforcing bars @ 12" C to C both ways.
4. Stock water pipeline shall have a minimum earth cover of 24".
5. Anti-seep collar are required on the principle spillway and stock water conduits (2 each). See details sheet 3.

- Approximate reservoir storage 0.7 ac. ft.
- Embankment fill is 1095 cubic yards
- Principal spillway conduit 10" CMP 65 ft. long
- Principal spillway inlet standpipe 12" CMP 11 ft. long
- PVC schedule 40 pipe 1 1/4 diam. length to be determined in the field.
- PVC pipeline inlet 24" diam 3 ft. long. Pre-drilled with 1" diam. holes. See detail sht. 3.

It is the landowner's or operator's responsibility to locate and protect all public utilities (underground and overhead) within the work area.

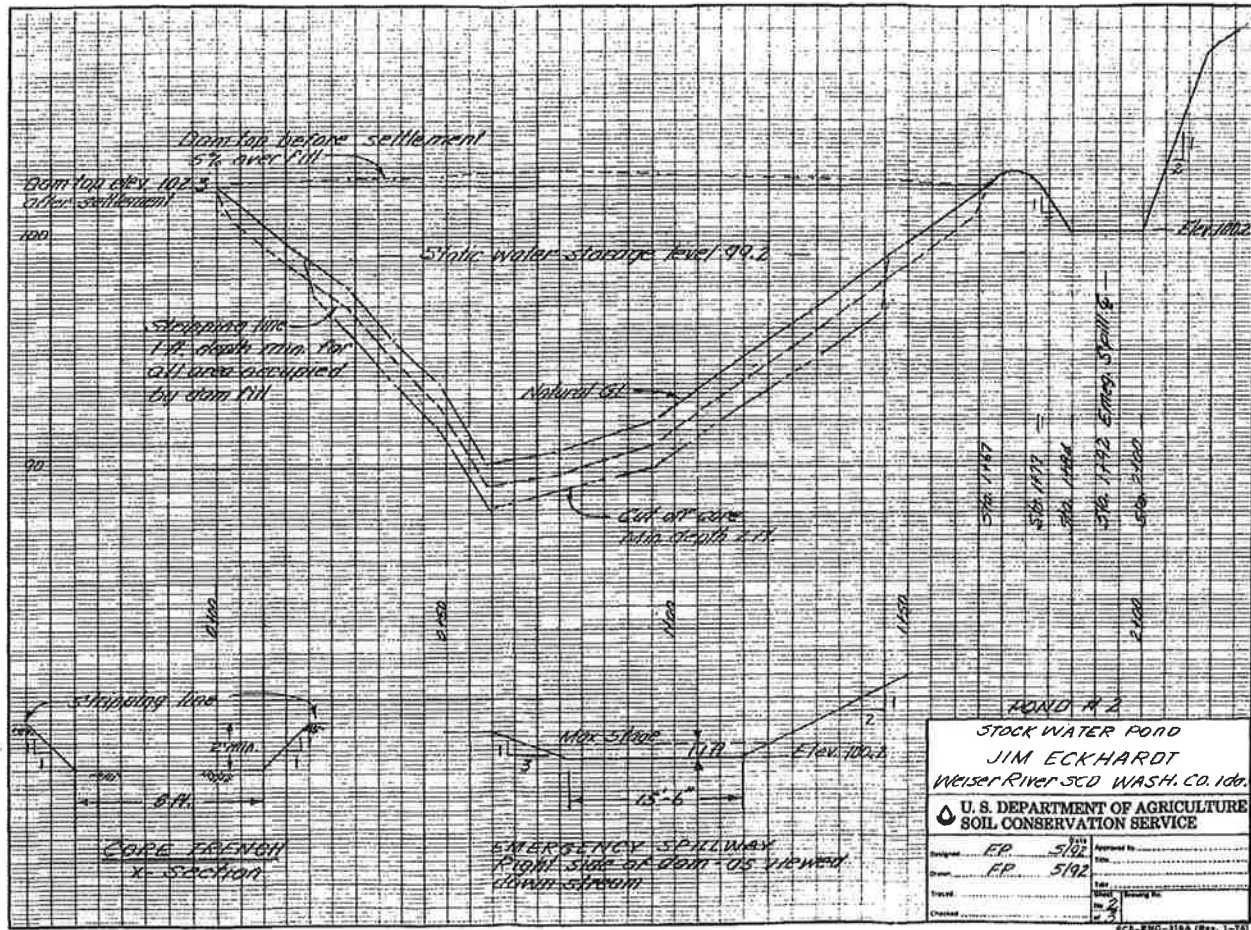
I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

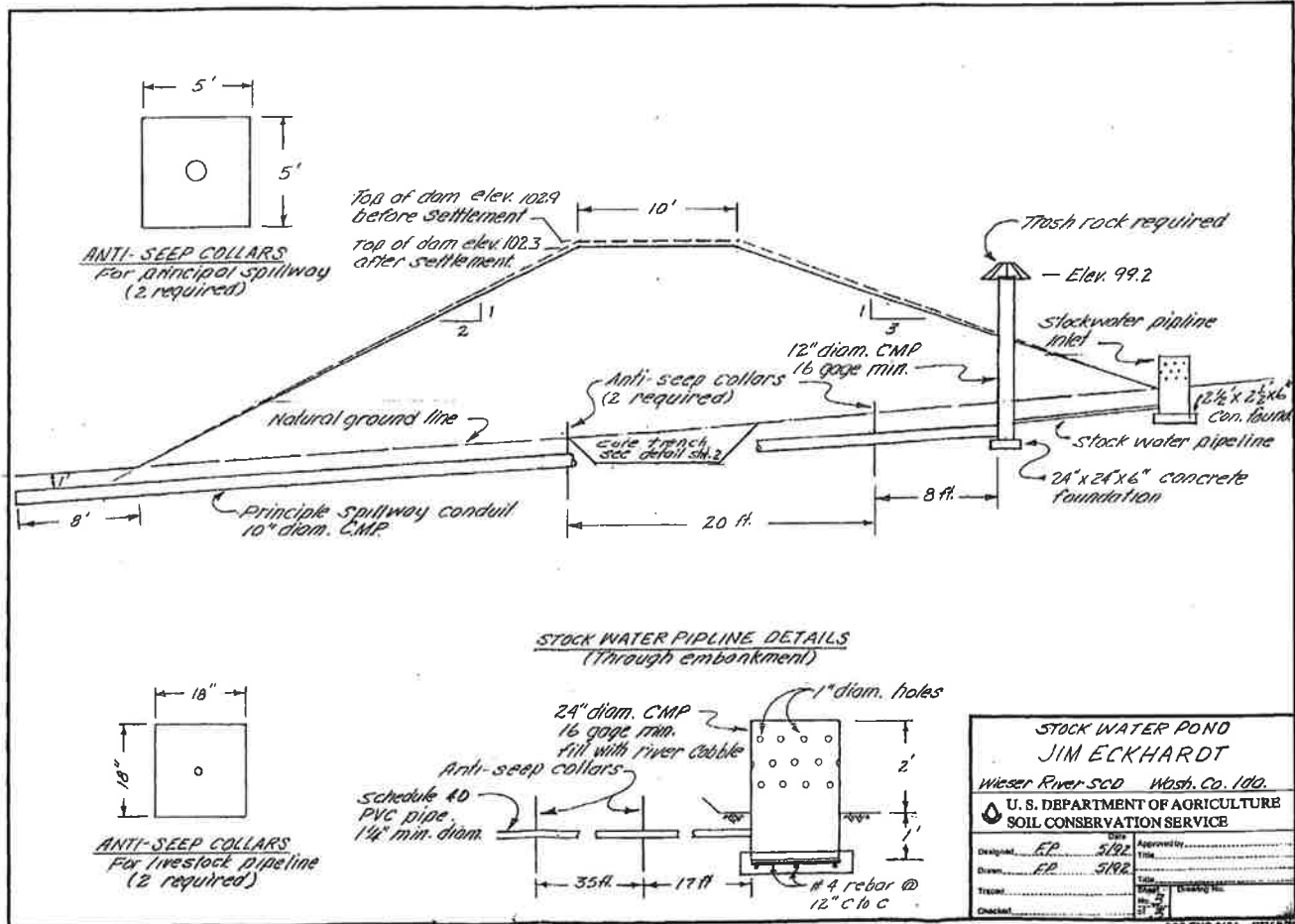
Date: _____
Eng. Job Class II

STOCK WATER POND	
JIM ECKHARDT	
Weiser River SCD, Wash. Co. Idaho	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Original: FP 5192	Approved: <i>Ray B. Bopp</i>
Drawn: FP 5192	Title: <i>Embankment</i>
Taped: _____	Date: _____
Checked: _____	Drawn by: _____

SOS-ENG-313A REV 876

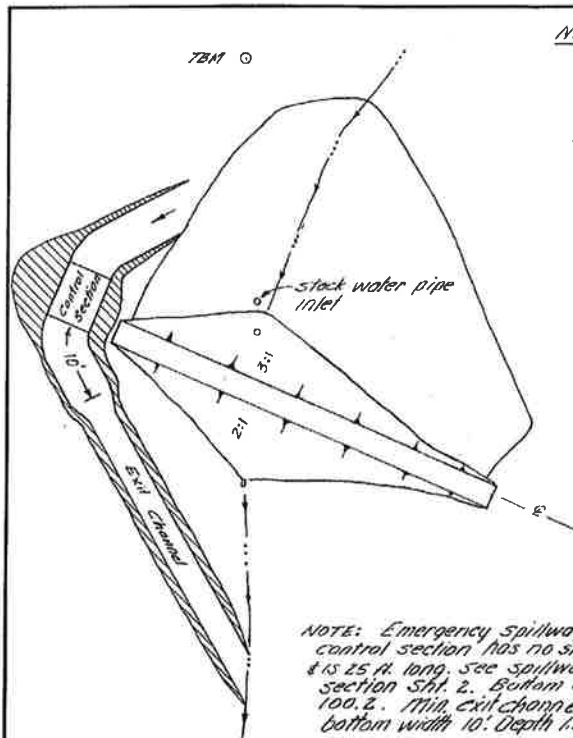
000944





805-ENG-313A REV 8/70

000948



NOTE: Emergency Spillway control section has no slope, & is 25 ft. long. See spillway section Sht. 2. Bottom elev. 100.2. 17in. exit channel bottom width 10'. Depth 1.5 ft.

EMBANKMENT PLAN

TBM - Top of 1"x2" stake - Flipped
Elevation 100.00

NOTES:

1. Project shall be constructed according to soil conservation service specification 10-378 and 10-5870.
2. The emergency spillway is designed to pass the 50 year storm flow.
3. Concrete for structure foundations shall be reinforced with #4 deformed reinforcing bars @ 12" C to C both ways.
4. Stock water pipeline shall have a minimum earth cover of 24".
5. Anti-seep collar are required on the principle spillway and stock water conduits (2 each). See details sheet 3.

- o Approximate reservoir storage 0.7 ac. ft.
- o Embankment fill is 1095 cubic yards
- o Principal spillway conduit 10" CMP 65 ft. long
- o Principal spillway inlet standpipe 12" CMP 11 ft. long
- o PVC schedule 40 pipe 1 1/4 diam. length to be determined in the field.
- o PVC pipeline inlet 24" diam 3 ft. long. Pre-drilled with 1" diam. holes. see detail sht. 3.

It is the landowner's or operator's responsibility to locate and protect all public utilities (underground and overhead) within the work area.

I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

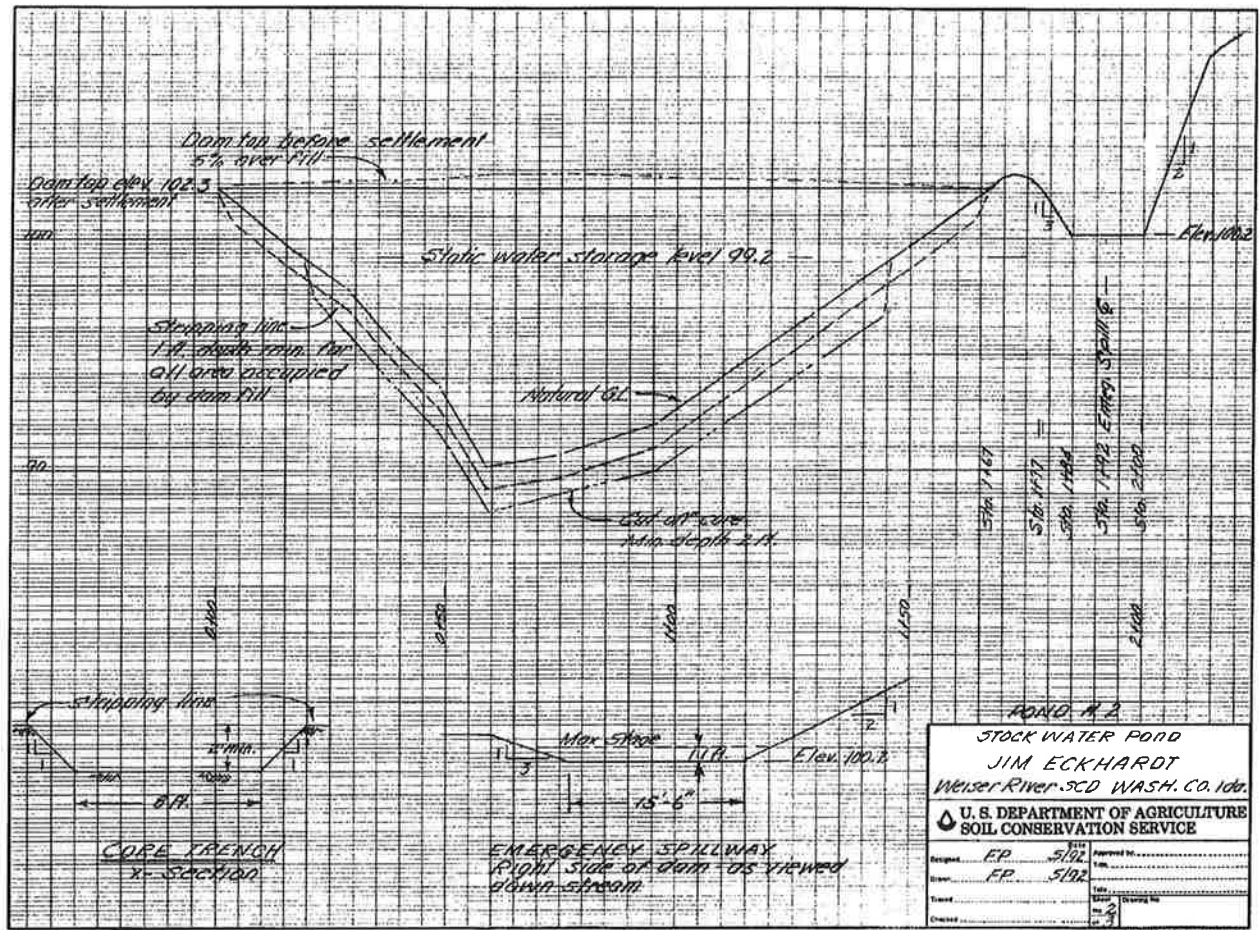
Date: _____

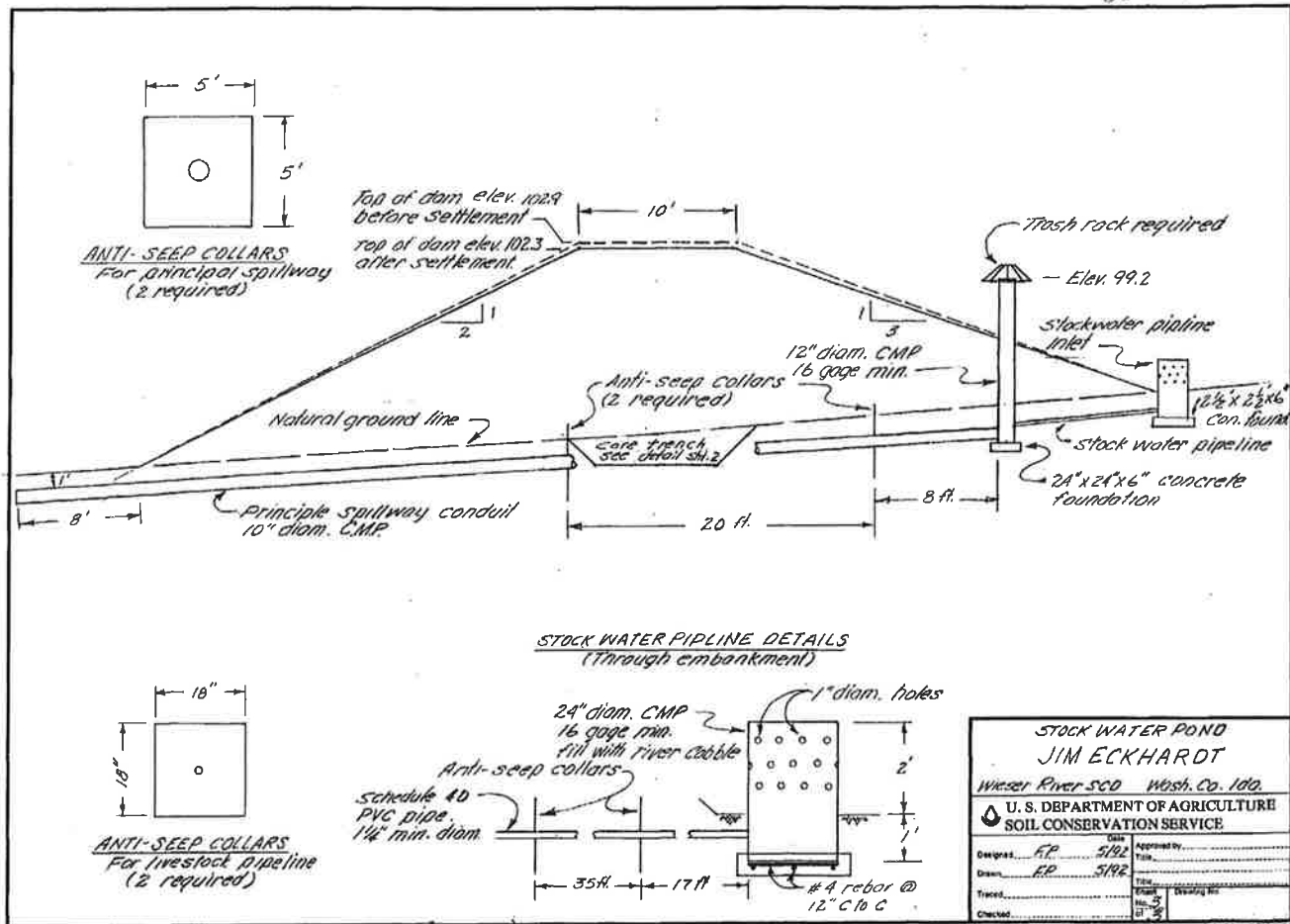
Eng. Job Class II

STOCK WATER POND	
JIM ECKHARDT	
Weiser River SCD Wash. Co. 100	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed	EP 5182
Drawn	EP 5182
Traced	EP 5182
Checked	EP 5182
Scale	1" = 20'
Sheet	1 of 1
Project No.	100

605-ENG-313A REV 875

000947





STOCK WATER POND	
JIM ECKHARDT	
Wieser River SCD Wash. Co. 100.	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed <u>EP</u>	Date <u>5/92</u>
Drawn <u>EP</u>	Approved by <u>EP</u>
Traced <u>EP</u>	Check <u>EP</u>
Checked <u>EP</u>	Drawn by <u>EP</u>

SCS-ENG-313A REV 8-76

000949

SOIL CONSERVATION SERVICE
IdahoCONSTRUCTION SPECIFICATIONS
FOR
STRUCTURES FOR WATER CONTROL
(PIPE STAND)

(Owner/Operator)

(Project Title)**.1 GENERAL**

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein shall be considered as part of this specification.

.2 FOUNDATION PREPARATION

The foundation area of the structures shall be cleared of all trees, roots, stumps, brush, boulders, sod, and debris.

.3 EXCAVATION

Excavation will be to the lines and grades shown on the plans or as staked in the field. Any over-excavation will be backfilled with selected material and compacted to the density of surrounding undisturbed earth.

.4 STRUCTURAL CONSTRUCTION

The structure will be placed on a firm foundation to the lines and grades as shown in the plans or as staked in the field.

.5 MATERIALS**.5.1 Pipe**

a. Corrugated metal pipe shall be zinc coated, meeting the requirements of Federal Specification WW-P-405 or be aluminum corrugated pipe meeting the requirements of Federal Specification WW-P-402.

b. Concrete pipe shall conform to the requirements of ASTM Specification C-505, C-118, C-76 or C-14 unless otherwise shown on the drawings or in Section .15, Special Specifications.

c. Other pipe materials shall meet the requirements as listed in Section .15, Special Specifications.

.5.2 Coatings

All metal items, with the exception of aluminum or galvanized metal, shall be painted with two coats of synthetic primer paint and one coat of aluminum paint or an approved equal coating.

Any damage to zinc coatings shall be repaired by thoroughly wire brushing the damaged area and painting.

.6 CONCRETE

Concrete used with pipe structures shall have a consistency such that it can be worked readily into corners and angles of forms and around reinforcements, but without permitting the materials to segregate or excess free water to collect.

.6.1 Cement used shall be low alkali Portland Cement, Type II or Type IIA, unless otherwise specified for the job.

.6.2 Air-entrainment of six percent plus or minus one percent conforming to the requirements of ASTM C-260 shall be required. If Type IIA air-entraining

cement is used, any additional air-entraining admixture shall be of the same type as that in the original cement.

.6.3 Water used in mixing concrete shall be clean and free of harmful amounts of acid, alkali, oil, salt or organic matter.

.6.4 Aggregates shall conform to the specifications for concrete aggregates ASTM Designation C-33, Size numbers 57, 67 or 7. Pit run aggregates may be used provided they are tested for impurities, gradation determined, and approved prior to use.

.6.5 The concrete strength shall be 3000 psi at 28 days. Concrete shall have the following proportions or the contractor may submit a proposed mix for approval prior to placement.

a. The concrete shall be proportioned to include not more than 6 gallons of water per sack of cement nor less than 6 sacks of cement per cubic yard of concrete.

b. The concrete shall be proportioned to include not more than 5.4 gallons of water per sack of cement nor less than 5.5 sacks of cement per cubic yard of concrete and use a Type "A" water-reducing admixture as defined in ASTM Specification C-494.

.6.6 Most ready-mixed concrete suppliers have pre-certified their 3000 psi mix and have designated an SCS mix number. When available, a pre-certified mix shall be used and the mix number shall be shown on the delivery ticket. Non certified ready mix suppliers shall submit a proposed mix design to the engineer for approval prior to placement.

The concrete shall be mixed and delivered in accordance with ASTM Designation C-94. The cement and aggregate

must conform to the requirements shown above.

Ready mix concrete should be discharged from the truck mixer within 1-1/2 hours after introduction of water to the cement. When air temperatures exceed 90 degrees, the discharge time should be reduced to 45 minutes.

.6.7 All concrete shall be mixed in a mechanical mixer until there is a uniform distribution of the materials. Slump test conducted in accordance with ASTM C-143 shall be in the range of 3 inches $\pm$ 1 inch.

.7 REINFORCING STEEL

Reinforcing steel shall be of deformed bars, billeted steel grade and placed as shown in the plans. Mesh reinforcement may be used if it conforms to size and spacing required for the job. The minimum length of splice for bars will be 30 diameters and for mesh, 6 inches or meshes, whichever is greater. All reinforcing steel or mesh shall be secured in place by use of approved concrete or metal supports, spacers, and ties so that it will remain in place during all concreting operations.

.8 FORMS

Forms shall conform to the shapes, lines, and dimensions as shown on the drawings. They shall be braced and/or tied together so as to maintain position and shape and be sufficiently tight to prevent leakage of mortar.

Forms shall be thoroughly oiled or wetted and cleaned of debris prior to placement of concrete.

.9 CONCRETE PLACEMENT

The concrete shall be deposited as closely as possible to its final position and shall be worked into it

corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance.

Consolidation of concrete may be accomplished by means of internal type mechanical vibrators, rodding, spading or hand tamping.

.10 CONCRETE FINISHING

After the concrete has been consolidated, the unformed surface shall be given a wood float finish.

Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively repaired.

All snap ties shall be removed and their holes mortared.

.11 PROTECTION AND CURING

Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. Moisture shall be maintained by sprinkling, flooding or fog spraying, or covering with continuously moistened canvas, cloth mats, straw, earth or other approved material. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period.

In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compound shall be applied in an approved manner as soon as practicable after the concrete is finished. All surfaces shall be kept moist until the compound is applied.

.12 CONCRETING IN COLD WEATHER

Before any concrete is placed, all ice, snow, and frost shall be completely

removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to as close as practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials.

Concrete shall not be mixed or placed when the daily minimum atmospheric temperature is less than 40°F, unless facilities are provided to ensure the adequate protection of the concrete.

The temperature of the concrete at the time of placing shall not be less than 50°F nor more than 90°F. The temperature of all aggregates and mixing water shall be not more than 100°F when introduced into the mixer.

When the daily minimum temperature is less than 40°F, the structures must be insulated or housed and heated for the placement and curing period, and the temperature of the concrete and air within the enclosure shall be maintained at not less than 50°F nor more than 90°F.

The use of accelerators or antifreeze compounds will not be allowed.

.13 BACKFILL

.13.1 Materials - Backfill material shall be free from rocks, stones, roots, sod, and other deleterious materials. The maximum particle size within 1 foot of the structure shall be 3 inches. The excavated materials shall be used for backfill to the extent that they are suitable.

.13.2 Placement - The fill shall be placed so that the distribution of materials will be to the limits shown on the drawings and shall be free from

lenses, pockets, streaks or layers of material differing substantially in texture or gradation from the surrounding material. No fill shall be placed on a frozen surface nor shall snow, ice or frozen material be incorporated in the fill.

The fill shall be placed in a manner adequate to prevent damage to the structure and allow the structure to gradually and uniformly assume the backfill loads. The fill shall be placed in not more than 4 inch layers.

.13.3 Moisture Content - The soil moisture of the fill material shall be sufficient to hold a ball shape when squeezed in the hand, unless otherwise stated and shown on the drawings.

.13.4 Compaction - The fill material shall be compacted to a density equal to that of the adjacent materials. Compaction shall be accomplished by hand tampers or other acceptable means excluding heavy equipment. Heavy equipment shall not be operated within 2 feet of any structure.

The passage of heavy equipment will not be allowed over any type of conduit until the backfill has been placed above the top surface of the structure to a height equal to one half the clear span width of the structure or pipe or 2 feet, whichever is greater.

.14 PROTECTION AND MAINTENANCE

All structures will be properly protected and maintained.

The structures shall be inspected periodically and any needed maintenance or additional protection be made in time to prevent functional or physical failure.

.15 SPECIAL SPECIFICATIONS

.16 OPERATION AND MAINTENANCE GUIDE

Maintain all materials used in construction of the structure by:

(1) Painting or replacing wood products. Wood preservatives should be used on structural components.

(2) Repair cracks or spalling concrete with appropriate epoxy mortar.

(3) Paint metal material with appropriate paint.

Maintain all backfill around structures and over pipelines.

Remove all sediment and debris by periodic cleaning.

Lubricate and maintain water control gates.

Repair erosion up and down stream of structure as required.

Clean any trash guards or screens periodically.

SOIL CONSERVATION SERVICE
IdahoCONSTRUCTION SPECIFICATIONS
FOR
IRRIGATION WATER CONVEYANCE
CORRUGATED METAL PIPELINE

(Owner/Operator)

(Project Title)**.1 GENERAL**

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein shall be considered as part of this specification.

.2 INSTALLATION

The pipe shall be of the diameter, length, gage or thickness, and type and coated as specified on the drawings or in Section .11, Special Specifications.

All pipe shall be inspected prior to installation. Any damaged pipe shall be repaired or replaced. Surfaces of pipe joints shall be clean before making joint connections. The pipe shall be handled so as to prevent damage to the pipe and abrasion of the coating. The pipe shall not be rolled or dragged on the ground.

Pipe shall be laid to the lines and grades as shown on the drawings.

.3 BURIED PIPELINES

.3.1 The trench at any point below the top of the pipe shall be only wide enough to permit the pipe to be easily placed and joined and to allow the initial backfill material to be uniformly placed under the haunches and along the side of the pipe. In no case shall the trench width be less than the pipe diameter plus 18 inches.

Where rock, hardpan, boulders or any other material which might damage the pipe are encountered, the trench shall be over excavated a minimum of 4 inches and then backfilled to grade with sand or fine graded stable soil.

The trench bottom shall be uniformly excavated or backfilled so that the full length of pipe contacts the ground without bridging. Uneven spots that can cause nonuniform support shall be removed.

Trench banks that are more than 5 feet high shall be shored, laid back to a stable slope, or equivalent protection provided.

.3.2 The depth of cover for buried pipe shall be 1 foot, unless a greater depth is shown on the drawings or required in Section .11, Special Specifications.

.3.3 Initial backfill material shall be placed from the bottom of the trench to a depth of 70 percent of the pipe diameter for circular pipe and to the depth shown in Table 1 for arch pipe.

TABLE 1
DEPTH OF INITIAL BACKFILL
FOR ARCH PIPE (feet)

Steel Pipe Span (inches)	Aluminum Pipe Span (inches)	Corrugations	
		2-2/3"x1/2"	3"x1"
18	17	0.4	-
22	21	0.4	-
25	24	0.4	-
29	28	0.5	-
36	35	0.5	-
43	42	0.6	0.8
50	49	0.7	0.9
58	57	0.9	1.0

The initial backfill materials shall meet the definition of either Class A or Class B unless otherwise limited in Section .11, Special Specifications.

Class A. Backfill materials in this group include: graded crushed rock and gravels with a maximum particle size of 1 inch; coarse sands (70.5 mm); and fine sands, silty sands, silty gravels, and gravel-sand-silt mixtures with non-cohesive fines. This class is comprised of the Unified Soil Classes of GW, GP, GM, SW, SP, and SM.

Class B. Backfill materials in this group include: Clayey gravels, clayey sands and gravel-sand-clay mixtures; silts, silty clays, and clays. This class is comprised of the Unified Soil Classes of GC, SC, ML, and CL.

Compaction of the Class A initial backfill materials shall be by hand or mechanical tamper or water packing methods. Compaction of Class B initial backfill materials shall be by hand or mechanical tamper.

Initial backfill materials shall be free from rocks, sod, frozen material, and earth clods larger than 3 inches in diameter. Backfill materials shall be placed so that the pipe is not displaced, deformed or damaged.

When the backfill is compacted by hand or mechanical tamper, the fill shall be placed and compacted in 4 to 6 inch lifts around the pipe. Compacted backfill shall be placed between the pipe and the side of the trench to fill all voids and provide uniform soil bearing under the haunches of the pipe. The moisture content of the backfill material shall be in the range of 3 percent $\pm$ of optimum. Class B backfill materials shall be compacted to a density equal to or greater than the surrounding soil material.

When the backfill is compacted by water packing methods, the pipeline shall be first filled with water. Water packing shall be accomplished by adding water to diked reaches of the trench in sufficient quantity to thoroughly saturate the initial backfill.

The backfill shall then be mechanically vibrated to fill all voids under and around the pipe. The quantity of water used for consolidation shall be controlled to insure no pooling of excess water. The initial backfill shall be allowed to dry until firm before beginning the final backfill.

.3.4 The final backfill materials shall be free of large rocks, frozen clods or other debris greater than 3 inches in diameter except that from the initial backfill height and to a depth 6 inches over the top of the pipe the rock particle or clod size is limited to 1 inch.

The backfill materials shall be placed and spread in uniform layers so that there are no unfilled voids within the trench. The backfill shall be placed to the level of the natural ground or to the design grade required to provide minimum cover after settlement.

Rolling equipment shall not be used to consolidate the final backfill until a minimum depth of 1 foot of cover has been placed. All special backfilling requirements of the pipe manufacturer shall be met.

.4 ABOVE GROUND PIPELINES

Concrete, timber or other pipe supports, and anchor and thrust blocks shall be constructed at the locations and to the dimensions shown on the drawings. Above ground pipe shall be supported to provide a minimum of 8 inches of clearance between the ground surface and the entire length of pipe. Supports shall be set on a firm, stable, uniform base. When timber supports are used, the timber shall be treated.

.5 ONGROUND PIPELINES

The ground shall be shaped so as to provide continuous support along the bottom 1/4 to 1/3 of the pipe circumference. Where rock, hardpan or any other material which might damage the pipe are encountered, the ground will be over excavated a minimum of 4 inches and then backfilled to grade with sand or fine graded soil.

Anchor and thrust blocks shall be constructed at the locations and to the dimensions shown on the drawings.

.6 JOINTS AND CONNECTIONS

All joints and connections shall be capable of withstanding the design maximum working pressure of the pipeline without leakage and shall leave the inside of the pipe free of any obstruction. Gaskets shall be installed according to the recommendations of the pipe manufacturer. All fittings, such as couplings, reducers, bends, and tees shall be installed according to the recommendations of the pipe manufacturer.

All fittings shall be covered with a coating equal in quality to that specified for the pipe.

Dielectric couplers (insulator) shall be installed between pipes with different coatings, different materials, different ages.

All field welds and bare metal shall be thoroughly cleaned and painted with two coats of Zinc Dust-Zinc Oxide primer Type III paint meeting the requirements of Federal Specification TT-P-641G. Any damaged polymer coatings shall be thoroughly cleaned and painted with a polymer paint compatible with the pipe polymer coating in accordance with the recommendations of the manufacturer.

.7 CATHODIC PROTECTION

Buried and onground pipelines shall be protected with sacrificial galvanic anodes when specified. The anodes shall be of the kind and number as shown on the drawings.

Anodes will be commercially made magnesium or zinc. Materials and workmanship shall be equal to ASTM Specification B-418 for zinc. Each anode shall have a full length core with a single strand of insulated copper wire solidly attached to it. The wire shall be No. 12 or larger. If a header wire is used, the gage must be sufficient to carry the design current with no more than a 20 millivolt I-R drop.

All anodes shall be commercially packaged and the packaged backfill mix shall be of the following proportions by weight.

Zinc - 20 to 30% bentonite
70 to 80% gypsum

Magnesium - 20 to 25% bentonite
70 to 80% gypsum
5% sodium sulphate

Anodes may be placed either horizontally or vertically. When placed horizontally, they shall be at or below the bottom elevation of the pipeline. Vertically placed anodes shall have a minimum distance of 3 feet between the ground surface and the top of the anode. Anodes shall not be placed in fill areas, and magnesium anodes must be placed a minimum distance of 10 feet from the pipeline.

Anodes shall be bedded in moist fine clay, clay loam, silt or silt loam materials. In sand and gravelly areas, fine material must be imported for bedding and for covering the anodes to a depth of 6 inches. The packaged anodes and the fine textured soil used for bedding and backfill shall be thoroughly wetted.

The lead wire from the anode, or the header wire for multiple anode installation, shall be attached to the pipeline by cad welding, thermowelding or other process of equal ability. The area of damaged pipe coating and the weld shall then be covered with a coating equal in quality to the specified original pipe coating.

Cathodic protection testing station facilities shall be located and installed as specified on the drawings or as per requirements of Section .11, Special Specifications. Wires at testing stations shall be attached to the pipe as specified above for anode lead wires.

.8 TESTING

Underground pipelines should be water tested before placing the backfill over the joints. On all pipelines, any joints that are leaking shall be repaired.

.9 APPURTENANCES

The pipeline appurtenances shall be of the size and type as shown on the drawings or as listed in Section .11,

Special Specifications. Valves shall be installed in accordance with the manufacturer's recommendations.

.10 PIPE MATERIALS

Pipe shall equal or exceed the requirements specified in one of the following standards:

ASTM A-760 Pipe, Corrugated Steel, Zinc Coated

Federal Specification WW-P-402C Pipe, Corrugated (Aluminum Alloy Amend. 1)

Federal Specification WW-P-405B Pipe, Corrugated, Iron or Steel, Zinc Coated (Amend. 1)

AASHTO M 36 Zinc Coated (Galvanized) Corrugated Iron or Steel Culverts and Underdrains

AASHTO M 196 Corrugated Aluminum Alloy Culverts and Underdrains (Amend.

AASHTO M 196)

AASHTO M 245 Precoated, Galvanized Steel Culverts and Underdrains

AASHTO M 247 Steel Sheet, Aluminum Coated (Aluminized Type II) by the Hot Dip Process for Sewer & Drainage Pipe

Pipe bands or couplers shall either meet the requirements of the applicable pipe specifications except that no flange (channel), smooth slab or dimpled band shall be used. Gaskets shall meet the requirements of ASTM C-443-79, Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

.11 SPECIAL SPECIFICATIONS

.12 OPERATION AND MAINTENANCE GUIDE

.12.1 Keep pipe inlets free of debris by periodic cleaning of screens or trash racks.

.12.2 Maintain all air vents, pressure release, and vacuum valves to insure proper operation against surges and pipe collapsing.

.12.3 Operate the pipeline control features (butterfly valves, etc.) to provide adequate capacity while maintaining velocities within design range and minimum surge.

.12.4 Maintain minimum cover over pipeline and control erosion at inlet and outlet structures.

.12.5 For steel pipelines, take annual readings of cathodic protection adequacy.

.12.6 When starting pumps connected to pipelines, always start the pump against a closed valve and then open valve slowly.

.12.7 Prior to freezing weather, drain all pipelines. After draining, close all valves, gates, etc. to avoid animals and foreign water entering the pipeline.

Caution, always refill the pipelines slowly to avoid surges which will break the pipeline.

SOIL CONSERVATION SERVICE
Idaho
CONSTRUCTION SPECIFICATIONS
FOR
POND
(Embankment)

(Owner/Operator)

(Project Title)

.1 GENERAL

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification.

.2 SITE PREPARATION

Clearing and Stripping -- Area to be occupied by the embankment ponded area and borrow areas must be cleared of all trees, brush, logs, and sod and removed from the site.

Embankment Foundation -- All channel banks and sharp breaks shall be sloped to no steeper than 1:1. All topsoil containing excessive amounts of organic matter shall be removed. Loose earth shall not be left on the foundation area to a depth in excess of six (6) inches above undisturbed foundation material. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.

.3 EXCAVATION

Cutoff Trench -- The cutoff trench shall be excavated to the lines and grades shown on the drawings or as staked in the field. The trench shall be kept free of standing water during backfill operations.

Spillway -- The completed spillway excavation shall conform to the grades, bottom width and side slopes shown on the drawings.

Outlet Conduit -- Trench excavation for installation of an outlet conduit shall

be made in original ground or in compacted fill provided the bottom of the trench is in undisturbed foundation material.

Use of Excavated Material -- Excavated material suitable for the fill embankment shall be placed as shown on the drawings and/or staked in the field. Each layer shall be compacted by one of the methods in Section 4 of this specification.

Excavated material excess to construction requirements may be hauled from the site or placed and smoothed at sites shown on the drawings and/or staked in the field.

.4 COMPACTED EARTHFILL AND BACKFILL

Material -- All fill materials shall be obtained from approved borrow areas and from excavations required for other parts of the work. The selection, blending, routing, and disposition of materials within the embankment shall be subject to the approval of the technician. Fill materials shall contain no sod, brush, roots, or other perishable or unsuitable material. Cobbles and rock fragments having a maximum dimension of more than six (6) inches shall be removed from the materials prior to compaction.

Placement -- The placing and spreading of the fill material shall be started at the lowest point of the foundation. The fill shall be brought up in approximately horizontal layers parallel to the axis of the dam and of such thickness that the required compaction can be

obtained with the equipment used.

Fill placed around structures will be brought up at approximately uniform height on all sides of the structure.

Moisture -- The moisture content of fill material shall be maintained within the limits required, prevent the adherence of the fill material to the treads and tracks of equipment, and ensure the crushing and blending of the soil clods.

As far as practicable the material shall be brought to the proper water content in the borrow pit before excavation. Supplemental water, when required, may be applied by sprinkling the materials on the fill. Uniform distribution of the moisture shall be obtained by discing, blading, or other approved method prior to compaction.

Compaction Methods -- Compaction shall meet the requirements of the method designated and described below:

a. Sheepsfoot roller - The maximum layer thickness shall be eight (8) inches before compaction. The roller shall have staggered, uniformly spaced tamping feet and be equipped with suitable cleaners. The weight of the roller shall be not less than 2,500 pounds per foot of width. The maximum speed of the compaction equipment shall be 3 miles per hour. The entire surface of each layer placed should receive six passes of this equipment to attain the necessary compaction. Adjustment in the number of passes may be necessary during construction.

b. Pneumatic tired equipment - The maximum layer thickness before compaction shall be six (6) inches. The hauling and spreading equipment shall be routed over the fill area so the wheels of this equipment must pass over all of the surface of each lift before a new lift is placed.

c. Track laying equipment (Bulldozer) - The maximum layer thickness before compaction shall be four (4) inches. The tracks of the equipment must pass over all of the surface of each lift before a new lift is placed.

Compaction Checking -- Compliance with compaction requirements will be determined by observation of performance for methods a, b, and c.

Fill not meeting the specified requirements shall be reworked or removed and replaced with acceptable fill.

.5 EQUIPMENT OPERATION

Heavy compaction equipment shall not be operated within two (2) feet of any structure. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment and within two (2) feet of any structure. Fills compacted in this manner shall be placed in layers not greater than four (4) inches in thickness before compaction and shall meet the same density requirements as for adjacent areas.

The passage of heavy equipment will not be allowed over any type of conduit until the compacted backfill has been placed over the top surface of the structure equal to one-half the clear span width of the structure or pipe, or two (2) feet, whichever is greater.

Compaction of backfill adjacent to structures shall not be started until after the expiration of the following minimum time interval after placement of concrete:

Walls and Counterforts	10 days
Antiseep collars, conduits, and cantilever outlet bents	3 days

.6 CONCRETE

Concrete work under these specifications shall be constructed to the dimensions,

lines, and grades as shown on the drawings. The subgrade for concrete shall be prepared as shown on the drawings or as directed by the technician. Concrete strength shall be 4,000 pounds per square inch at 28 days. Proportioning given below will be accepted as meeting this strength requirement.

.6.1 Materials

Cement shall be low alkali Type II Portland Cement and shall be free of lumps and partially set masses.

Water shall be free from acid, alkali, oils, or organic matter. The average temperature of mixing water shall be not more than 150°F and the maximum water temperature shall not exceed 200°F when introduced into the mixer.

Aggregate shall be clean, hard, strong and durable, and free from dirt and other substances deleterious to concrete. The maximum size of aggregate shall not exceed 1-1/2 inches and shall conform to the requirements of ASTM C-33.

Entrained Air shall be used. The air content shall be 5 to 7 percent. Air entrainment shall conform to the requirements of ASTM C-260.

Proportioning - Concrete shall be proportioned to include not less than six sacks of cement per cubic yard of concrete.

Mixing - Concrete shall be uniform and thoroughly mixed when delivered to the work. Variations in slump of more than one (1) inch within a batch will be considered evidence of inadequate mixing and shall be corrected by changing batching procedures, increasing mixing time, changing mixers or other means. For concrete mixed at the site of the work with paving mixers or stationary construction mixers, the time of mixing

after all cement and aggregates are in the mixer drum shall be not less than 1-1/2 minutes.

.6.2 Forms

Forms shall conform to the shapes, lines, and dimensions as shown on the drawings. They shall be braced and/or tied together so as to maintain position and shape and be sufficiently tight to prevent leakage of mortar. Forms shall be thoroughly oiled or wetted and cleaned of debris prior to placement of concrete.

.6.3 Reinforcing Steel

All reinforcing bars shall be deformed bars and be free from rust, oil, grease, paint, or other deleterious matter.

Items to be embedded in the concrete shall be positioned accurately and firmly anchored to prevent displacement during placement of concrete.

.6.4 Placement

The concrete shall be deposited as closely as possible to its final position and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance.

Consolidation of concrete may be accomplished by means of internal type mechanical vibrators, rodding, spading, or hand tamping.

.6.5 Finishing

After the concrete has been consolidated, the unformed surfaces shall be given a wood float finish.

Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively

repaired. Snap ties shall be removed and the holes mortared.

.6.7 Protection and Curing

Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, earth, or other approved material. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period.

In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied in an approved manner as soon as practicable after the concrete is finished. All surfaces shall be kept moist until the compound is applied.

.6.8 Concreting in Cold Weather

Before any concrete is placed, all ice, snow, and frost shall be completely removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to as close as may be practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials.

Concrete shall not be mixed or placed when the daily minimum atmospheric temperature is less than 40°F, unless facilities are provided to ensure the adequate protection of the concrete.

Temperature of the concrete at the time of the placing shall not be less than 50°F nor more than 90°F. The temperature of all aggregates and mixing water

shall be not more than 100°F when introduced into the mixer.

When the daily minimum temperature is less than 40°F, the structures must be insulated or housed and heated for the placement and curing period, and the temperature of the concrete and air within the enclosure shall be maintained at not less than 50°F nor more than 90°F. When dry heat is used, an ambient humidity of at least 40 percent shall be provided unless the exposed concrete is coated with curing compound.

The use of accelerators or antifreeze compounds will not be allowed.

.7 CONDUITS

Conduits shall be of the type and size shown on the drawings. Pipe shall be new. Any damage to protective coatings shall be repaired prior to backfilling.

The pipe shall be firmly and uniformly bedded throughout its length and shall be installed to the lines and grades shown on the drawings.

Cutoff collars shall be installed to the dimensions and at the locations shown on the drawings.

Metal cutoff collars, when specified, shall be a minimum of 12 gage, be galvanized or have a coating consisting of one coat of coal-tar primer followed by hot coat of coal-tar enamel, and finished with Kraft paper or coat of water resistant whitewash. Plastic tape suitable for coating buried steel pipe may also be used. Any welds shall be cleaned and coated as above.

.8 FENCING

Posts may be galvanized steel or wood. Steel posts should be a minimum of 6.5 feet long and wood posts a minimum of 7.5 feet long. Wood posts shall be cedar, redwood, or other decay resistant

wood or treated with pentachlorophenol or creosote. Minimum top diameter for wood posts is four (4) inches.

All posts shall be firmly set into the ground, braced at all corners and turns, and spaced as shown on the drawings, but not to exceed 20 feet apart.

Barbed wire shall be a minimum of two strands of 12-1/2 gage, galvanized wire.

Woven wire shall be galvanized, aluminum or plastic coated. Top and bottom wires shall be a minimum of 11 gage and intermediate line and stay wires shall be a minimum of 14-1/2 gage.

Wire ties, clamps, staples, and related fence hardware shall have equivalent coating to the fencing being installed.

Pole or timber fence equivalent to standard barbed wire fence in usefulness and durability may be used as an alternate when authorized by the responsible technician.

.9 SEEDING

Area -- Seed the embankment, borrow areas, spillway, other disturbed areas, and a minimum of 12 foot border around the ponded area. Seedbed preparation, seed mixture, fertilizer, mulch, and application rates shall be in accordance with the attached special specification for "Seeding."

.10 RIPRAP

Rock for riprap shall be angular, dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering.

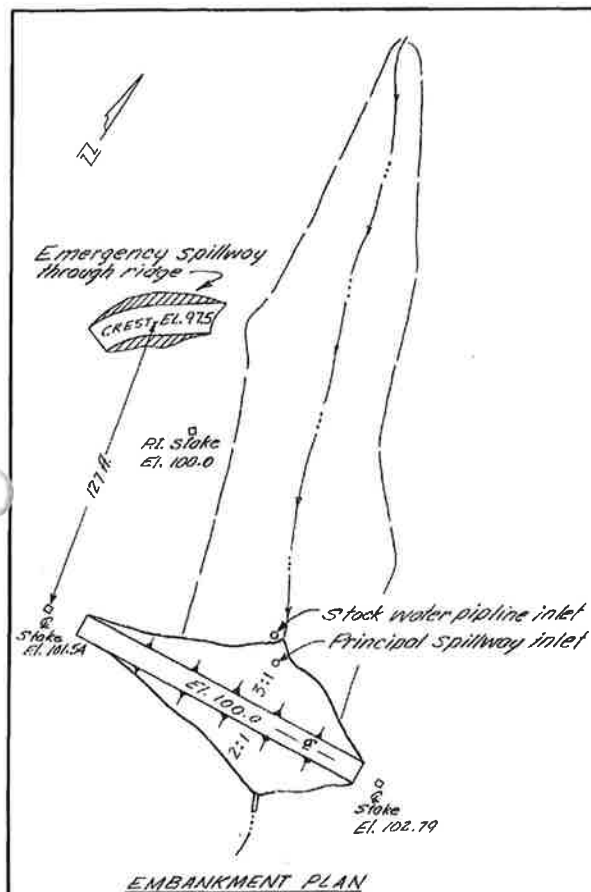
The rock shall be well graded so that the installed riprap will consist of a dense layer of interlocked rock.

Bedding material shall consist of a sand-gravel mixture such as would be used in a concrete mix.

.11 CLEANUP

Cleared material, sod, and unsuitable soil shall be removed from the construction site or otherwise disposed of so that runoff water will not carry it into the reservoir or spillway area. Waste earth material shall be smoothed and seeded.

.12 SPECIAL SPECIFICATIONS



NOTES:

1. Project shall be constructed according to Soil Conservation Service Specification 10-378 and 10-587 D.
2. The spillway is designed to pass the 50 year storm flow.
3. concrete structure foundation shall be reinforced with #4 deformed bars @ 12 in. C to C both ways.
4. Minimum earth cover over stock water pipeline will be 24 inches.
5. Anti-Seep Collars are required (2 each) on the on the principal spillway and stock water pipeline conduits. See details on sheet 3.
6. All cut or stripped areas outside the reservoir area shall be seeded with Intermediate wheat grass to the rules and specifications specified by an SCS Range conservationist.

TBM
El. 115.83

- Approximate reservoir storage is 0.8 ac./ft.
- Embankment and core-french fill is 805 yd.³
- Principle spillway Conduit 18" CMP 60 ft. long.
- Principle Spillway inlet standpipe 24 in. diam 11 ft. long.
- Minimum Stock water pipeline diam. will be 1 1/2 in. Pipe type shall be Schedule 40 PVC. Length to be determined in the field.
- Stock water pipeline inlet is 24 in. diam CMP 3 ft. long, pre-drilled with 1 in. diam. holes. See detail on sheet 3.

It is the landowner's or operator's responsibility to locate and protect all public utilities underground and overhead within the work area.

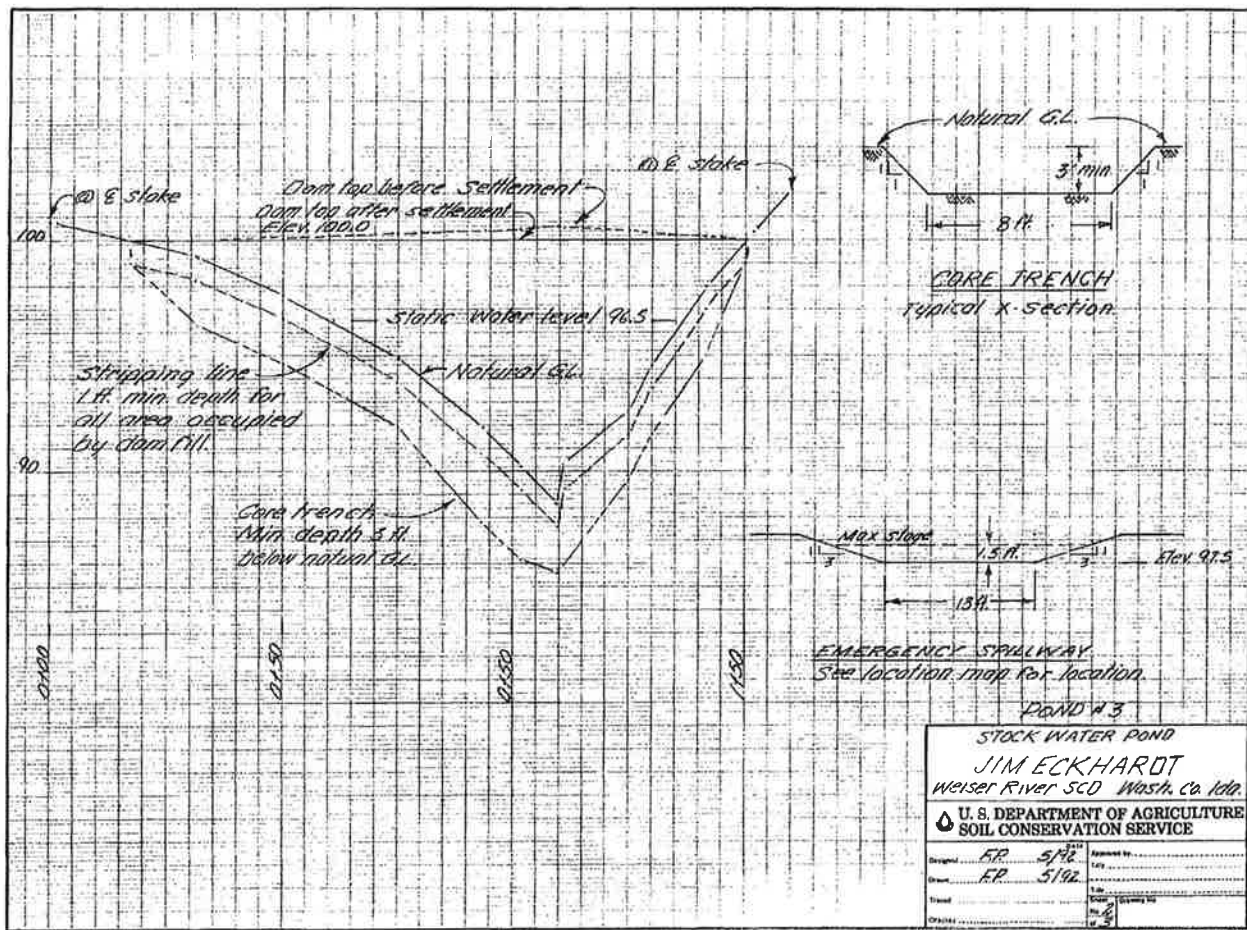
I have reviewed the plans and specifications and agree to construct this project to the best of my ability in accordance with them.

Date: _____

Eng. Job Class II

Point # 3	
STOCK WATER POND	
JIM ECKHARDT	
Wesley River SCD Wash. Co. Ida.	
U. S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
Designed <u>EP</u> Date <u>5/92</u>	Approved by <u>Paul H. H. H.</u> Title <u>Civil Eng. 1005</u>
Drawn <u>EP</u> Date <u>5/92</u>	
Checked _____	Drawn No. _____

SCS-ENG-313A REV 8-76



U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IDAHO

CONSTRUCTION REQUIREMENTS WORKSHEET
POND
CODE 378

Landowner/Operator JIM ECKHARDT

Job Location Northwest of Weiser - Section 36, T12N, R6W

County Washington SWCD Weiser River Farm/Tract No.

Referral No. Prepared By R. Haderer Date June 2003

IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO OBTAIN ALL NECESSARY PERMITS AND/OR RIGHTS, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THIS INSTALLATION.

Installation shall be in accordance with the following drawings, specifications and special requirements. NO CHANGES ARE TO BE MADE IN THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF NRCS.

1. Drawings, Pgs. 9 - 12
2. Practice Specifications ID 378
3. Special Requirements: All construction to be in accordance with attached specifications.

PRACTICE APPROVAL:

Job Classification: (Ref: Section 501 NEM)

Show the limiting elements for this job. This job is classified as, Class III

Limiting elements:	Units
<u>Effective Height</u>	< 15 feet
<u>Drainage Area</u>	< 10 sq. mi.
<u>Storage</u>	< 50 ac. ft.

Design Approved by: _____ Date: _____

LANDOWNER'S/OPERATOR'S ACKNOWLEDGEMENT:

The landowner/operator acknowledges that:

- He/she has received a copy of the construction drawings and specifications, and that he/she has an understanding of the contents, and the requirements. The project will be constructed according to the plans and specifications.
- He/she understands that NRCS makes no representation as to the existence or non-existence of utilities. It is the responsibility of landowners, operators and contractors to comply with the provisions of Idaho state law. Landowners, operators, and contractors will be liable for any damage resulting from disruption of service caused by construction activities. The phone number for the utility location service in Idaho is 1-800-342-1585.
- Maintenance of the installed work is necessary for proper performance during the project life.
- He/she understands that if any cultural resources are encountered during the course of the installation of this project, all work will cease until a NRCS representative is contacted and approves continuation of the work.

Accepted by: _____ Date: _____

PRACTICE COMPLETION:

I have made an on site inspection of the site (or I am accepting owner/contractor documentation), and have determined that the job as installed does conform to the drawing plan and practice specifications,

Construction Certification by:

/s/ _____ Date _____

Job title: _____

NATURAL RESOURCES CONSERVATION SERVICE
Idaho
CONSTRUCTION SPECIFICATIONS
FOR
POND (Embankment)

JIM ECKHARDT
 (Owner/Operator)

STOCKWATER POND
 (Project Title)

GENERAL

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.

SITE PREPARATION

Clearing and Stripping. Area to be occupied by the embankment and borrow areas must be cleared of all trees, brush, logs, and sod. The ponded area shall be cleared as noted on the drawings.

Embankment Foundation. All channel banks and sharp breaks shall be sloped to no steeper than 1 horizontal to 1 vertical. All topsoil containing excessive amounts of organic matter shall be removed. Loose earth shall not be left on the foundation area to a depth in excess of 6 inches above undisturbed foundation material. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.

EXCAVATION

Cutoff Trench. The cutoff trench shall be excavated to the lines and grades shown on the drawings or as staked in the field. The trench shall be kept free of standing water during backfill operations.

Spillway. The completed spillway excavation shall conform to the grades, bottom width and side slopes shown on the drawings.

Outlet Conduit. Trench excavation for installation of an outlet conduit shall be made in

original ground or in compacted fill provided the bottom of the trench is at or near undisturbed foundation.

Excess Material. Excavated material excess to construction requirements may be hauled from the site or placed and shaped behind a berm width equal to the pond depth, but not less than 12 feet from the edge of the excavation.

COMPACTED EARTHFILL AND BACKFILL

Fill Material. All fill materials shall be obtained from approved borrow areas and from excavations required for other parts of the work. The selection, blending, routing, and disposition of materials within the embankment shall be subject to the approval of the technician. Fill materials shall contain no sod, brush, roots, or other perishable or unsuitable material. Cobbles and rock fragments having a maximum dimension of more than six inches shall be removed from the materials prior to compaction.

Placement. The placing and spreading of the fill material shall start at the lowest point of the foundation. The fill shall be brought up in approximately horizontal layers parallel to the axis of the dam and of such thickness that the required compaction can be obtained with the equipment used. Fill placed around structures will be brought up at approximately uniform height on all sides of the structure.

Moisture. The moisture content of fill material shall be maintained within the limits required to prevent the adherence of the fill material to the treads/tracks of equipment and ensure the crushing and blending of the soil clods.

Generally when soil material is squeezed in the hand it will retain a ball shape, but there will not

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IDAHO

OPERATION AND MAINTENANCE WORKSHEET
POND
CODE 378

Landowner/Operator JIM ECKHARDT

Job Location Northwest of Weiser – Section 36, T12N, R6W

County Washington SWCD Weiser River Farm/Tract No.

Referral No. Prepared By R. Haderler Date June 2003

OPERATION AND MAINTENANCE ITEMS

A properly operated and maintained Pond is an asset to your farm. This structure was designed and installed to provide storage to runoff water for beneficial use. The estimated life span of this installation is at least 10 years. The life of this installation can be assured and usually increased by developing and carrying out a good operation and maintenance program.

This practice will require you to perform periodic operation to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program:

- ⇒ Periodically inspect the spillways and control gates for proper functioning for their ability to maintain the water level to design elevations. Immediately remove any blockage or obstructions in spillways.
- ⇒ Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization, and application of herbicides when necessary. Fertilize the established stand with at least 200 lbs of 21-0-0 per acre or equivalent annually or as needed to maintain a uniform vigorous stand. Periodic mowing may also be needed to control height.
- ⇒ If fences are installed, they shall be maintained to prevent unauthorized or livestock entry.
- ⇒ Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
- ⇒ Removal of debris that may accumulate at the Pond and immediately upstream or downstream from the basin.
- ⇒ Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
- ⇒ Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.

IDAHO
RH

6/03

JIM ECKHARDT

EMBANKMENT POND - POND #1

1

14

ARCVIEW

- GIVEN:
1. DRAINAGE AREA IS 102.6 ACRES; AVERAGE SLOPE IS 21%; DRAINAGE LENGTH IS 3485 FEET
 2. COVER IS RANGELAND - GOOD CONDITION.
 3. SOILS ARE HYDROLOGIC GROUP C & D

- DETERMINE:
1. PEAK DISCHARGE FOR SPILLWAY SIZING.
 2. HAZARD CLASSIFICATION
 3. STORAGE VOLUME.
 4. IDWR CLASSIFICATION
 5. SIZE OF EMERGENCY SPILLWAY
 6. FILL QUANTITY

SOLUTION:

1. PEAK DISCHARGE - USE EFM 2 COMPUTER PROGRAM

NOAH
ATLAS II

<u>FREQUENCY (YRS.)</u>	<u>PRECIP. (IN.)</u>
2	1.6
5	2.0
10	2.2
25	2.4

HYDROLOGIC SOIL GROUP C & D (SEE PG. 4 FOR ACRES)

AVERAGE WATERSHED SLOPE $\cong$ 21%

WATERSHED LENGTH $\cong$ 3485 FEET

SEE EFM 2 COMPUTER PRINTOUT - PGS. 2 & 3

NRCS
Febru

000980

3/14

EFM-2 - ESTIMATING RUNOFF AND PEAK DISCHARGE
Curve Number Computation

VERSION 1.10

Client : Jim Eckhardt - Pond #1
County : Washington
Practice: Stockwater Pond

State: ID

By: RH
Checked: _____

Date: _____
Date: _____

COVER DESCRIPTION	A	Hydrologic Soil Group		D
		B	C	
		Acres (CN)		

OTHER AGRICULTURAL LANDS				
Pasture, grassland or range	good	-	-	41.4 (74) 61.2 (80)
Total Area (by Hydrologic Soil Group)			41.4	61.2
			=====	=====

TOTAL DRAINAGE AREA: 102.6 Acres

WEIGHTED CURVE NUMBER: 78

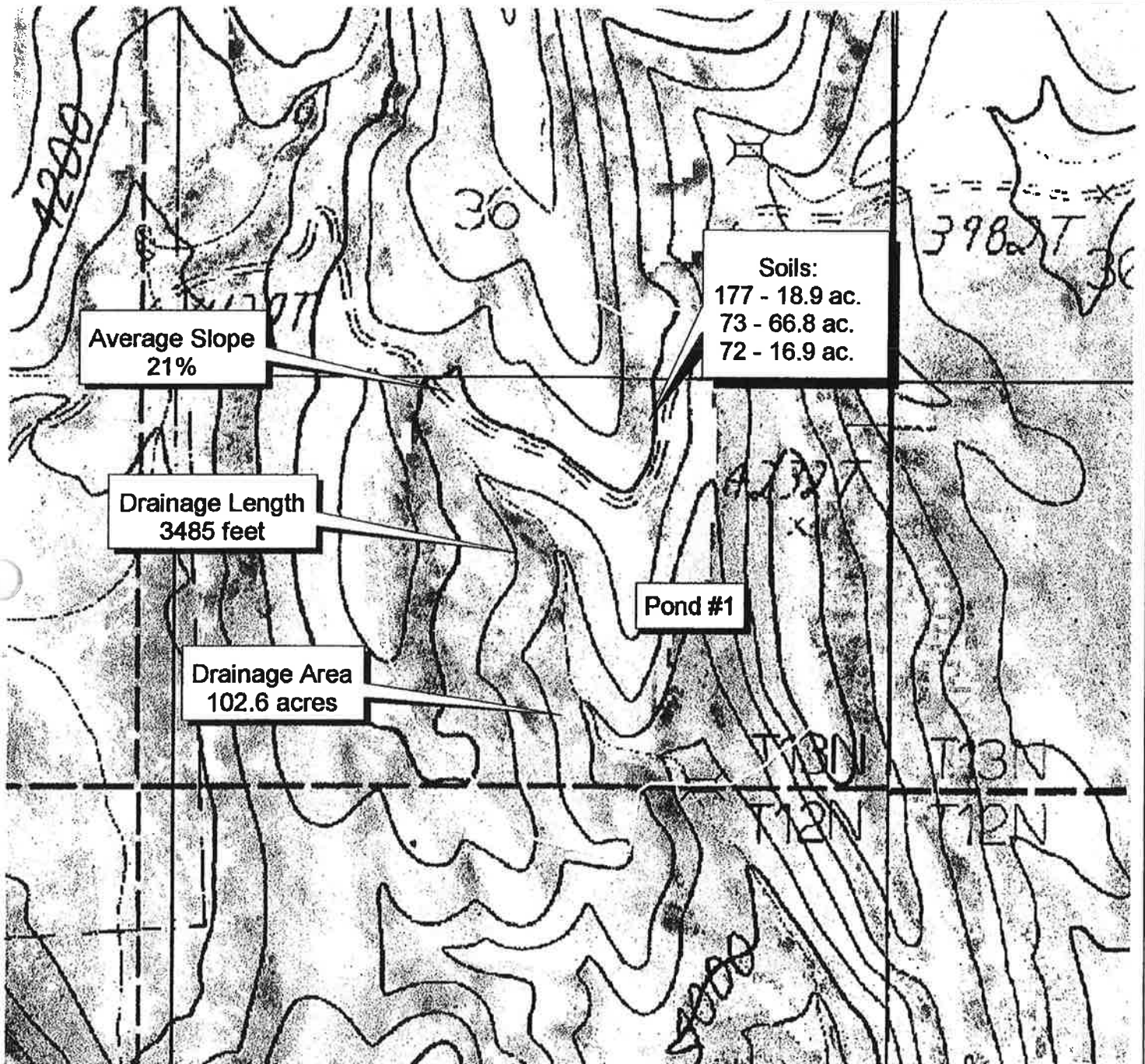
Drainage Area Map

Jim Eckhardt - Pond #1

4/14

Weiser River SCD
Date: 06/13/2003

Natural Resources Conservation Service
R. Haderl



1000 0 1000 2000 Feet



000982

IDAHO
RH

6/03

JIM ECKHARDT

EMBANKMENT POND - POND #1

5

14

NHCP 378

2. HAZARD CLASSIFICATION = Q

3. STORAGE VOLUME - SINCE A PORTION OF THE AREA BEHIND THE DAM WILL BE EXCAVATED, USE THE FORMULA IN EFM 11, PG. 11-9 FOR STORAGE ESTIMATION.

$$VOL. = 0.4 (\text{MAX. H}_2\text{O DEPTH @ DAM}) (\text{SURFACE AREA})$$

$$\text{SURFACE AREA} \approx 0.6 \text{ AC.}$$

MAX. H₂O DEPTH IS 14 FEET.

$$\therefore VOL. = (0.4)(14 \text{ FT.})(0.6 \text{ AC.}) = \underline{3.36 \text{ AC. FT.}}$$

4. IDWR CLASSIFICATION

FLOW CHART
PG. 6

NOT A DAM $\Rightarrow$ NHCP 378 CONTROLS

NHCP 378
PG 1

THIS IS A TYPE 1 DAM - < 20 FT. HIGH; < 10 AC. FT.

5. SIZE OF EMERGENCY SPILLWAY

NHCP 378
TABLE 4

SIZE EMERGENCY SPILLWAY FOR 25 YEAR EVENT
OR $Q_{25} = 71 \text{ CFS}$

ASSUMED

AVERAGE SLOPE OF EXIT CHANNEL $\leq 4.0\%$

EFM 11
TABLE 1
PG. 11-54a.

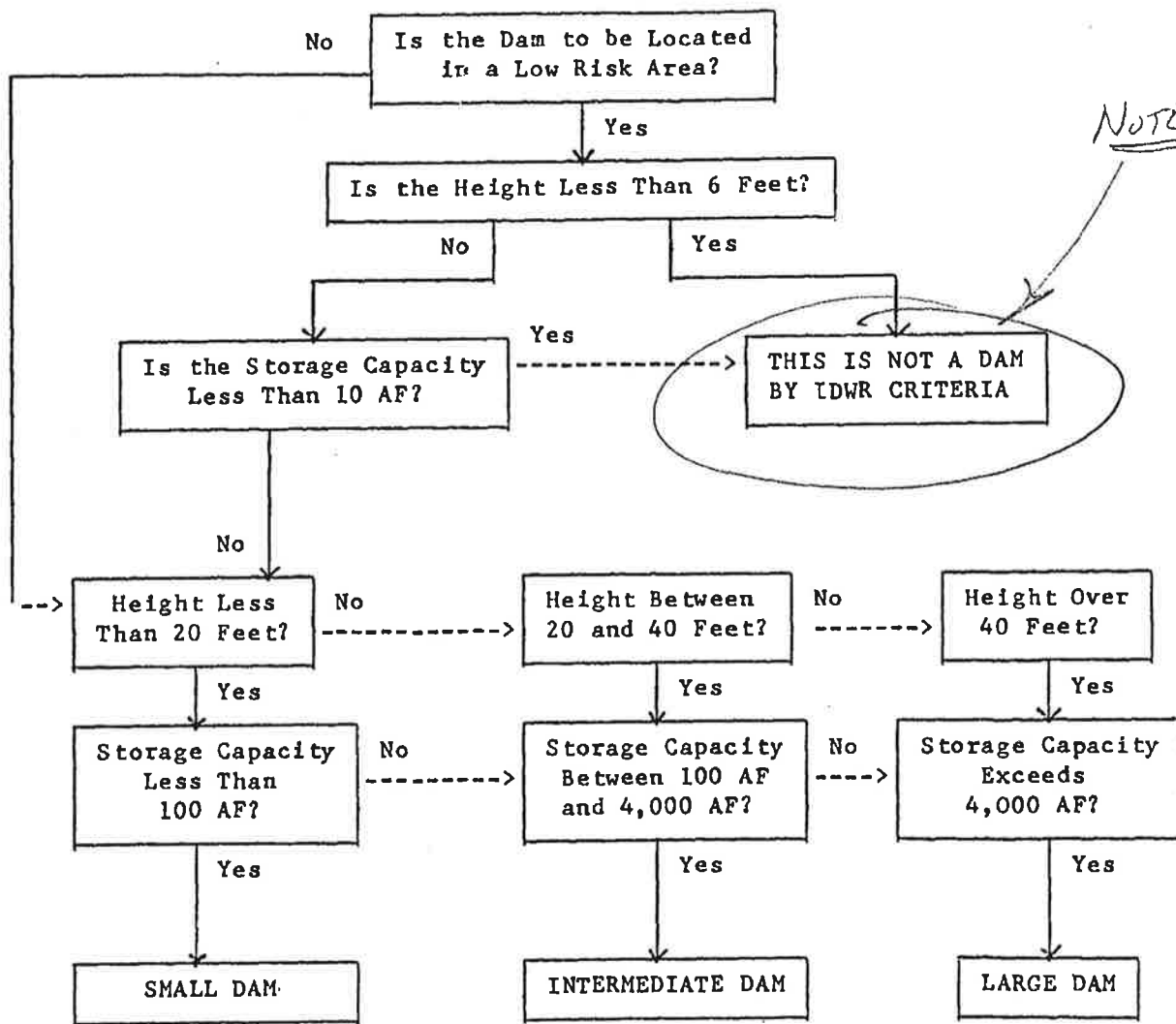
FOR EASILY ERODIBLE SOILS & GRASS LEGUME MIX

$$V_{\text{permissible}} = 4.0 \text{ FPS}$$

000983

6/14

JIM ECKHARDT - POND #1
How to Determine the Classification of Dams
by IDWR Criteria



IDAHO
RH

6/03

JIM ECKHARDT

EMBANKMENT POND - POND #1

7

14

EFM 11
TABLE 2
PG. 11-54a

USE DEGREE OF RETARDANCE = D

TABLE 3-D

$q = 2 \text{ ft}^3/\text{s}/\text{ft}$ - USE CREST LENGTH = 25 FT.

$$\therefore b = \frac{Q}{q} = \frac{71 \text{ CFS}}{2 \text{ CFS}/\text{ft}} = 35.5 \text{ FT. } \underline{\underline{\text{USE 36 FEET}}}$$

$H_p \text{ FOR } L = 25 \text{ FEET} = \underline{\underline{1.0 \text{ FOOT}}}$

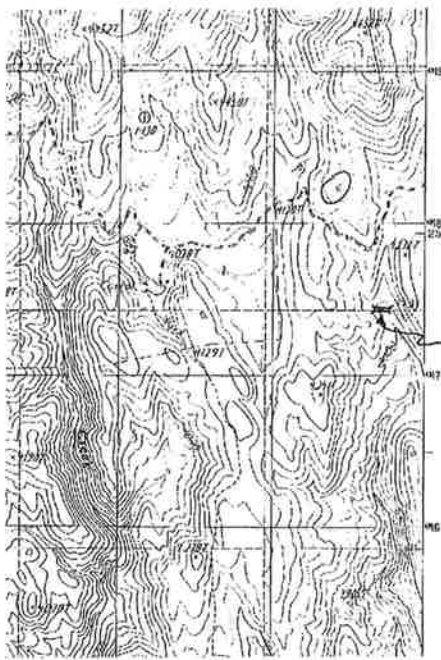
NOTE: WITH $H_p = 1.0 \text{ FT.}$ AND FREEBOARD OF 2.0 FT., TOP OF EMBANKMENT WILL BE 3.0 FEET ABOVE SPILLWAY CREST.

6. FILL QUANTITY

SEE "EARTHWORK COMPUTATION SHEET," PG. 8

$$A = 10D + \frac{3D^2}{2} + D^2$$
[illegible]

000986



PROJECT LOCATION
SECTION 26, T13N, R6W

NOTES:

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS 1D.578.
2. ENGINEER'S JOB CLASS III.
3. IT IS THE LANDOWNER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

TBM (ELEV. = 100.00)

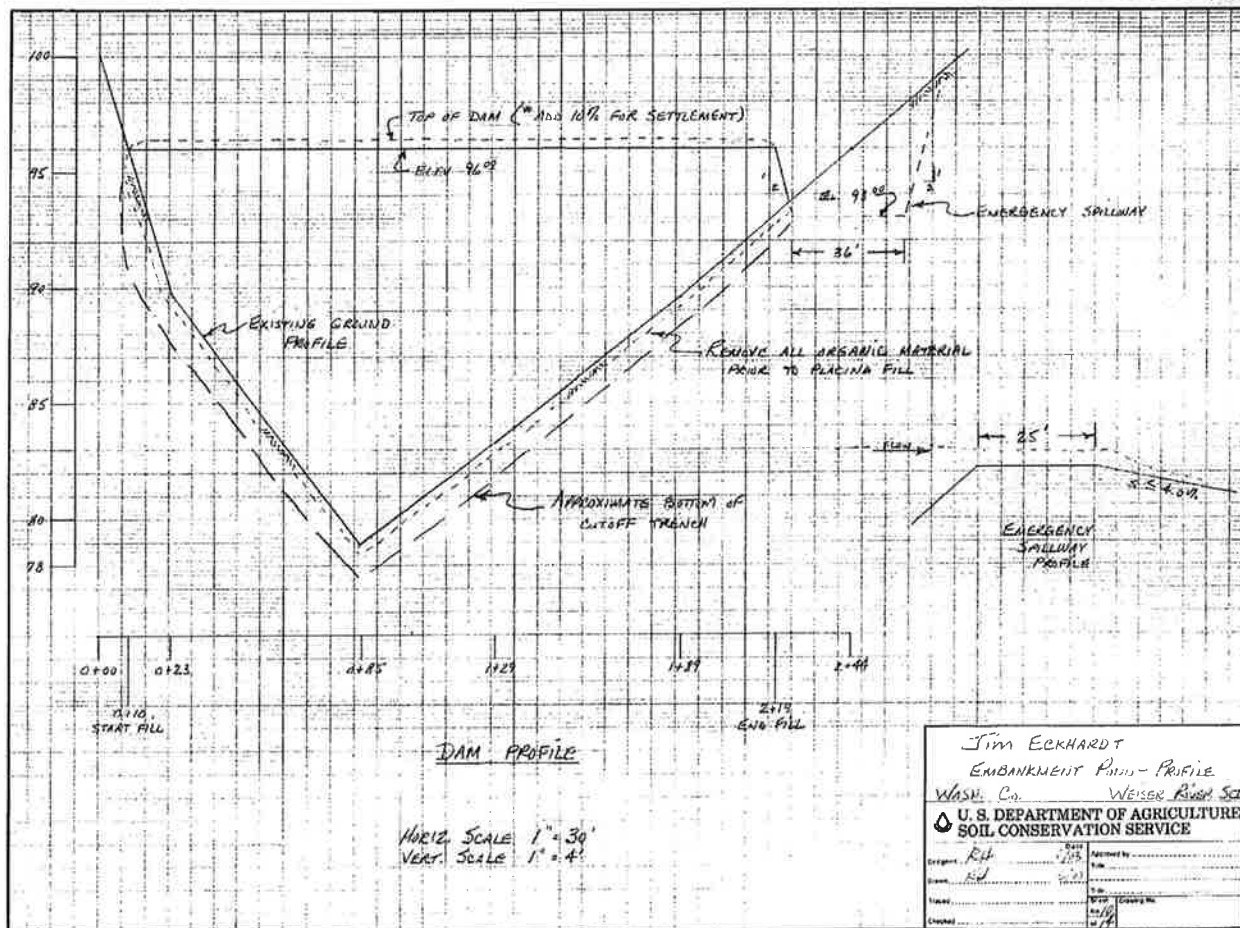
TOP OF 1'x2" STAKE UPSTREAM OF WEST END OF DAM.

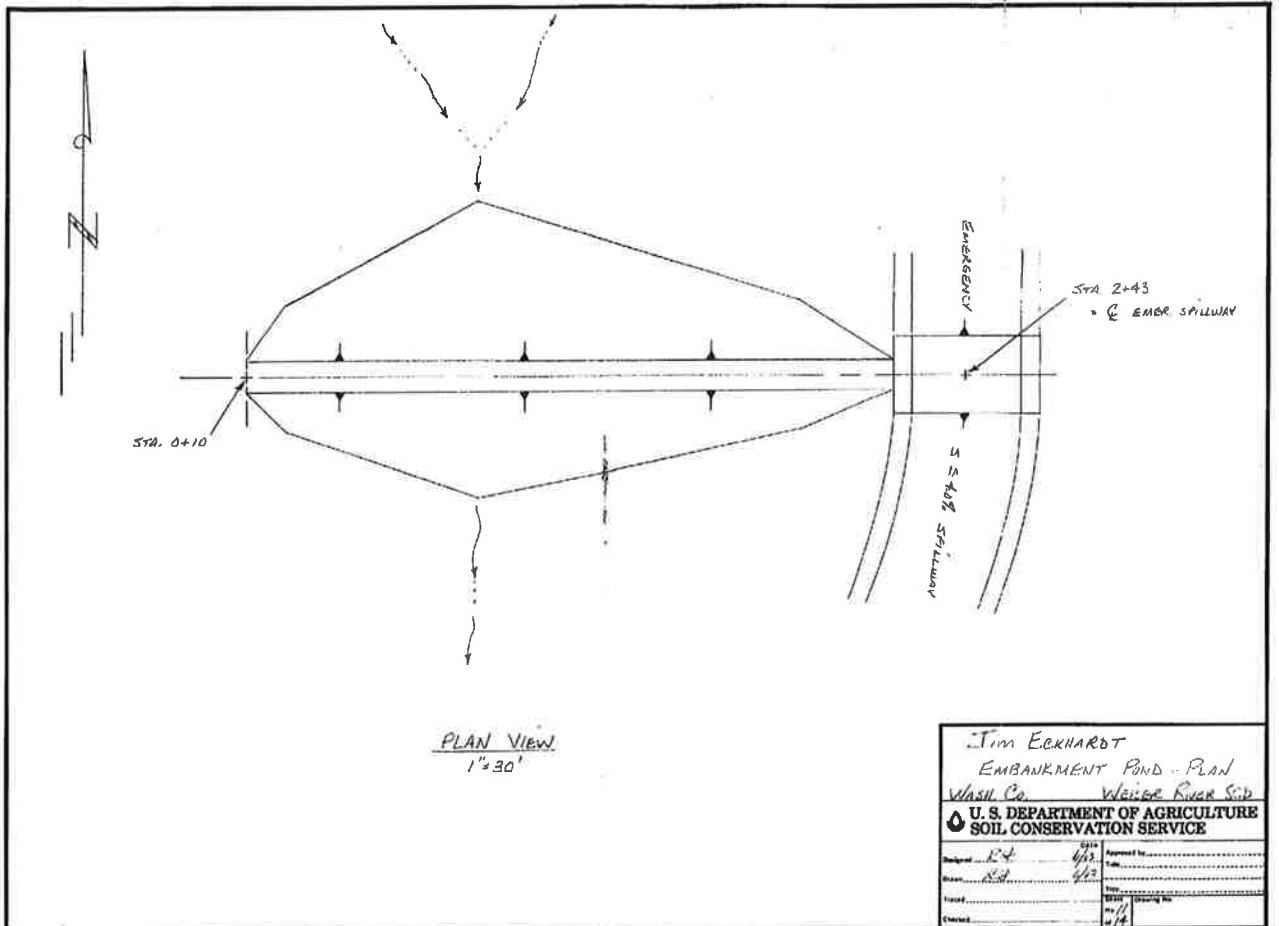
PROJECT LOCATION
SCALE 1" = 2000'

JIM ECKHARDT	
EMBANKMENT POND	
WATER RIVER SCD	WASH. CO.
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designer: JWH	Date: 8/13
Drawn: JWH	Date: 8/13
Traced: JWH	Date: 8/13
Checked: JWH	Date: 8/13

SCS ENG-313A REV 5-75

000887

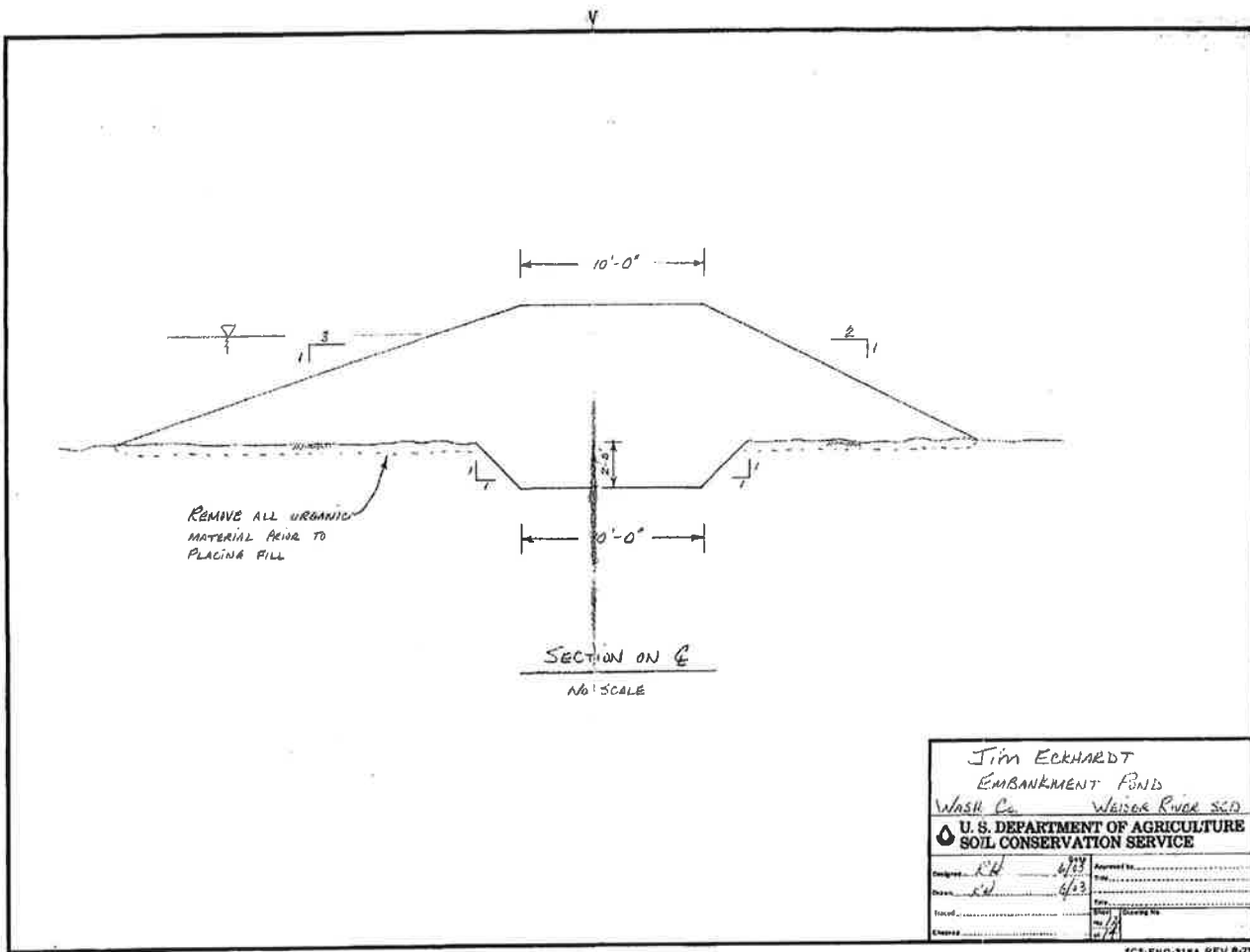




U.S. GOVERNMENT PRINTING OFFICE: 1989-4-87-508

SCS-ENG-315A REV 8-78

000989



JIM ECKHARDT	
EMBANKMENT POND	
WASH. Co.	WASLER RIVER SCD
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed by <u>RE</u>	6/53
Drawn by <u>RE</u>	6/53
Checked by <u>RE</u>	6/53
Approved by <u>RE</u>	6/53
Project No. <u>11</u>	Sheet No. <u>1</u>

Jim Eckhardt - Pond #1

in

Washington County, Idaho

04/25/83

	BS	HI	FS	ELEV	DIST	ANGLE	COMMENTS:
1	8.85	108.85		100.00	103	154.18	
2			19.10	89.8	143	142.57	
3			29.92	78.93	182	125.47	
4			25.55	83.30	213	117.09	
5			19.22	89.63	261	108.07	
6			12.91	95.94	304	101.10	
7			5.47	103.38	259	71.09	
8			18.48	90.37	201	66.21	
9			13.85	95.00	153	63.36	
10			13.02	95.83	108	58.18	
11			18.99	89.86	86	50.20	
12			7.02	101.83	62	350.16	
13			10.52	98.33	141	4.15	
14			-0.07	108.92	201	14.15	
15			2.76	106.09	234	28.38	
16			11.35	97.50	273	40.54	

14/14

POWD #1



SCALE: 1 inch = 50 feet

6.1

97.5

8.9

96.3

1.30

69.9

95.8

95.0

90.4

3.4

EST. H₂O MAX
93⁰⁰

APPROX.
POND
AREA = 0.6 ac.
DEPTH = 14 ft.

TOP @ 96³⁰

Spillway
@ 93.00

$$H_2O @ 93^{\circ}$$

0.0

23 1

62

0+35

44

0-29

60

89/6
1439

 2×19
$$2+44$$

Computed overall length = 320 ft.

DRAWINGS AND DESIGN

PROJECT: STOCK WATER POND #3

PREPARED FOR: JIM ECKHARDT



NATURAL RESOURCES
CONSERVATION SERVICE

000993

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IDAHO

OPERATION AND MAINTENANCE WORKSHEET
POND
CODE 378

Landowner/Operator JIM ECKHARDT
Job Location Northwest of Weiser, ID -
County Washington SWCD Weiser River Farm/Tract No.
Referral No. Prepared By A. Becker Date 6/23/03

OPERATION AND MAINTENANCE ITEMS

A properly operated and maintained Pond is an asset to your farm. This structure was designed and installed to provide storage to runoff water for beneficial use. The estimated life span of this installation is at least 10 years. The life of this installation can be assured and usually increased by developing and carrying out a good operation and maintenance program.

This practice will require you to perform periodic operation to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program:

- ⇒ Periodically inspect the spillways and control gates for proper functioning for their ability to maintain the water level to design elevations. Immediately remove any blockage or obstructions in spillways.
- ⇒ Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization, and application of herbicides when necessary. Fertilize the established stand with at least 200 lbs of 21-0-0 per acre or equivalent annually or as needed to maintain a uniform vigorous stand. Periodic mowing may also be needed to control height.
- ⇒ If fences are installed, they shall be maintained to prevent unauthorized or livestock entry.
- ⇒ Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
- ⇒ Removal of debris that may accumulate at the Pond and immediately upstream or downstream from the basin.
- ⇒ Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
- ⇒ Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.

NRCS, ID
February, 2000

000994

NATURAL RESOURCES CONSERVATION SERVICE
Idaho
CONSTRUCTION SPECIFICATIONS
FOR
POND (Embankment)

JIM ECKHARDT
 (Owner/Operator)

STOCKWATER POND #3
 (Project Title)

GENERAL

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.

SITE PREPARATION

Clearing and Stripping. Area to be occupied by the embankment and borrow areas must be cleared of all trees, brush, logs, and sod. The ponded area shall be cleared as noted on the drawings.

Embankment Foundation. All channel banks and sharp breaks shall be sloped to no steeper than 1 horizontal to 1 vertical. All topsoil containing excessive amounts of organic matter shall be removed. Loose earth shall not be left on the foundation area to a depth in excess of 6 inches above undisturbed foundation material. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.

EXCAVATION

Cutoff Trench. The cutoff trench shall be excavated to the lines and grades shown on the drawings or as staked in the field. The trench shall be kept free of standing water during backfill operations.

Spillway. The completed spillway excavation shall conform to the grades, bottom width and side slopes shown on the drawings.

Outlet Conduit. Trench excavation for installation of an outlet conduit shall be made in original ground or in compacted fill provided the

bottom of the trench is at or near undisturbed foundation.

Excess Material. Excavated material excess to construction requirements may be hauled from the site or placed and shaped behind a berm width equal to the pond depth, but not less than 12 feet from the edge of the excavation.

COMPACTED EARTHFILL AND BACKFILL

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Generally when soil material is squeezed in the hand it will retain a ball shape, but there will not be free water on the surface. As far as practicable the material shall be brought to the

proper water content in the borrow pit before excavation. Supplemental water, when required, may be applied by sprinkling the materials on the fill. Uniform distribution of the moisture shall be obtained by discing, blading or other approved method prior to compaction.

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Compaction shall meet the requirements of the method designated and described below:

1. Sheepsfoot roller - The maximum layer thickness shall be 8 inches before compaction. The roller shall have staggered, uniformly spaced tamping feet and be equipped with suitable cleaners. The weight of the roller shall be not less than 2,500 pounds per foot of width. The maximum speed of the compaction equipment shall be 3 miles per hour. The entire surface of each layer placed shall receive six passes of this equipment to attain the necessary compaction. Adjustment in the number of passes may be necessary during construction.
2. Pneumatic tired equipment - The maximum layer thickness before compaction shall be six inches. A loaded scraper or wheel tractor maybe considered a pneumatic roller. The wheels of this equipment must pass over 95 percent of the surface of each lift before a new lift is placed.
3. Track laying equipment (Bulldozer) - The maximum layer thickness compaction shall be 4 inches. The tracks of the equipment must pass over 95 percent of the surface of each lift before a new lift is placed.

Compliance with compaction requirements will be determined by observation of performance for methods 1, 2, and 3. Fill not meeting the specified requirements shall be reworked or removed and replaced with acceptable fill.

EQUIPMENT OPERATION

Heavy compaction equipment shall not be operated within 2 feet of any structure. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment and within 2 feet of any structure.

Fills compacted in this manner shall be placed in layers not greater than 4 inches in thickness before compaction and shall meet the same density requirements as for adjacent areas.

The passage of heavy equipment will not be allowed over any type of conduit until the compacted backfill has been placed a minimum of two feet over the top of the pipe.

Compaction of backfill adjacent to structures shall not be started for at least the following minimum time interval after placement of concrete:

Walls & Counterforts	10 days
Antiseep collars, conduits, and cantilever outlet bents	3 days

CONCRETE

Concrete work under these specifications shall be constructed to the dimensions, lines, and grades as shown on the drawings. The subgrade for concrete shall be prepared as shown on the drawings or as directed by the technician.

Concrete compressive strength shall be at least 4000 psi at 28 days. The mix shall be in accordance with ASTM C 94 and this specification. When requested by the Technician the supplier shall furnish design mix and cylinder break test data.

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Reinforcing steel shall be deformed bars and be free from rust, oil, grease, paint or other

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Placement. The concrete shall be deposited as closely as possible to its final position and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Consolidation of concrete may be accomplished by means of internal type mechanical vibrators, rodding, spading, or hand tamping.

Construction joints shall be provided as shown in the plans or as approved by the engineer. Joints shall be thoroughly cleaned and laitance removed before a new pour is made. Each joint shall be wetted immediately before the placing of new concrete.

Finishing. After the concrete has been consolidated, the unformed surfaces shall be given a wood float finish. Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively repaired. Snap ties shall be removed and the holes mortared.

Protection and Curing. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, earth, or other approved material. In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied as soon as practicable after the concrete is finished. All surfaces shall be kept moist until the compound is applied.

Concreting in Cold Weather. Before any concrete is placed, all ice, snow and frost shall be completely removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to

as close as may be practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials. Concrete shall not be mixed or placed when daily minimum atmospheric temperature is less than 40 degrees F., unless facilities are provided to ensure the adequate protection of the concrete. Temperature of the concrete at the time of placing shall not be less than 50 degrees F. nor more than 90 degrees F. The temperature of all aggregates and mixing water shall be not more than 100 degrees F. when introduced into the mixer. The use of accelerators or antifreeze compounds will not be allowed.

CONDUITS

Conduits shall be of the type and size as shown on the drawings. Pipe shall be new. Any damage to protective coatings shall be repaired prior to backfilling. Repairs shall be in accordance with manufactures recommendations. Conduits shall be firmly and uniformly bedded throughout its length and shall be installed to the lines and grades shown on the drawings and/or staked in the field.

Cutoff collars or a filter diaphragm shall be installed at the locations, to the dimensions and of the materials as shown on the drawings. Metal cutoff collars, when specified, shall be of at least 12 gage or thicker metal, be galvanized or have a coating consisting of one coat of coal-tar primer followed by hot coat of coal-tar enamel and finished with Kraft paper or coat of water resistant whitewash. Plastic tape suitable for coating buried steel pipe may also be used. All welds shall be cleaned and coated as above.

FENCING

Posts may be galvanized steel or wood. Steel posts should be a minimum of 6.5 feet long and wood posts a minimum of 7.5 feet long. Wood posts shall be cedar, redwood, or other decay resistant wood or treated with Dentachlorophenol or creosote. Minimum top diameter for wood posts is 4 inches. All posts shall be firmly set into the ground, braced at all corners and

turns, and spaced as shown on the drawings, but not to exceed 20 feet.

Wire. Barbed wire shall be a minimum of two strands of 12-1/2 gage, galvanized wire. Woven wire shall be galvanized, aluminum or plastic coated. Top and bottom wires shall be a minimum of 11-gage and intermediate line and stay wires shall be a minimum of 14-1/2 gage.

Hardware. Wire ties, clamps, staples, and related fence hardware shall have equivalent coating to the fencing being installed.

Pole or timber fence equivalent to standard barbed wire fence in usefulness and durability may be used as an alternate when authorized by the responsible technician.

SEEDING

Seed the embankment, borrow areas, spillway and other disturbed areas, and a minimum 12 foot border around the ponded area, unless suitable vegetation already exists. Seedbed preparation, seed mixture, fertilizer, mulch, and application rates shall be in accordance with the attached ADDITIONAL SPECIFICATION for "Seeding".

RIPRAP

Rock for riprap shall be angular, dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. The rock shall be well graded so that the installed riprap will consist of a dense layer of interlocked rock.

Bedding material when specified shall consist of a sand-gravel mixture such as would be used in a concrete mix.

CLEAN-UP

Cleared material, sod, and unsuitable soil shall be removed from the construction site or otherwise disposed of so that runoff water will not carry it into the reservoir or spillway area. Waste earth material shall be smoothed and seeded.

ADDITIONAL SPECIFICATIONS

Idaho

Jim ECKHARDT

A. Becker

6/23/03

Stockwater Embankment Pond #3

Arc View

- Given:
1. Drainage Area above proposed embankment is 49.5 AC. Drainage Length is 2870 feet
 2. Soil Cover is Rangeland - good cond.
 3. Soils Are Hydrologic group C+D

- Determine:
1. Peak discharge for spillway sizing
 2. Hazard classification
 3. Storage Volume
 4. IDWR Classification
 5. Size of emergency spillway
 6. Fill Quantity

- Solution:
1. Peak discharge - Use EFM 2 Computer Program

<u>Frequency</u>	<u>Precip (in)</u>
2	1.6
5	2.0
10	2.2
25	2.4

NOAH ATLAS II

Hydrologic Soil Group C+D - pg 4 for ac.

Average watershed slope = 28%

Watershed length $\approx$ 2870 feet

See EFM computer printout
pages 213

Client : Jim Eckhardt - Pond #3
County : Washington State: ID
Practice: Stockwater Pond

By: RH
Checked: _____

Date: _____
Date: _____

Drainage Area : 49.5 * Acres
Curve Number : 79 *
Watershed Length : 2870 Feet
Watershed Slope : 17 Percent
Time of Concentration: .308 Hours
Rainfall Type : II

Storm Number	1	2	3	4
Frequency (yrs)	2	5	10	25
24-Hr Rainfall (in)	1.6	2	2.2	2.4
Ia/P Ratio	0.33	0.27	0.24	0.22
Runoff (in)	0.31	0.52	0.64	0.77
Unit Peak Discharge (cfs/acre/in)	0.832	0.912	0.931	0.947
Peak Discharge (cfs)	13	24	30	36

* - Value(s) provided by CN subroutine (F9)

EFM-2 ESTIMATING RUNOFF AND PEAK DISCHARGE
Curve Number Computation

VERSION 1.10

Client : Jim Eckhardt - Pond #3
County : Washington State: ID
Practice: Stockwater Pond

By: RH Date:
Checked: Date:

COVER DESCRIPTION		A	Hydrologic Soil Group		D
			B	C	
			Acres (CN)		

OTHER AGRICULTURAL LANDS					
Pasture, grassland or range	good	-	-	12 (74)	37.5 (80)
Total Area (by Hydrologic Soil Group)			12	37.5	
			=====	=====	

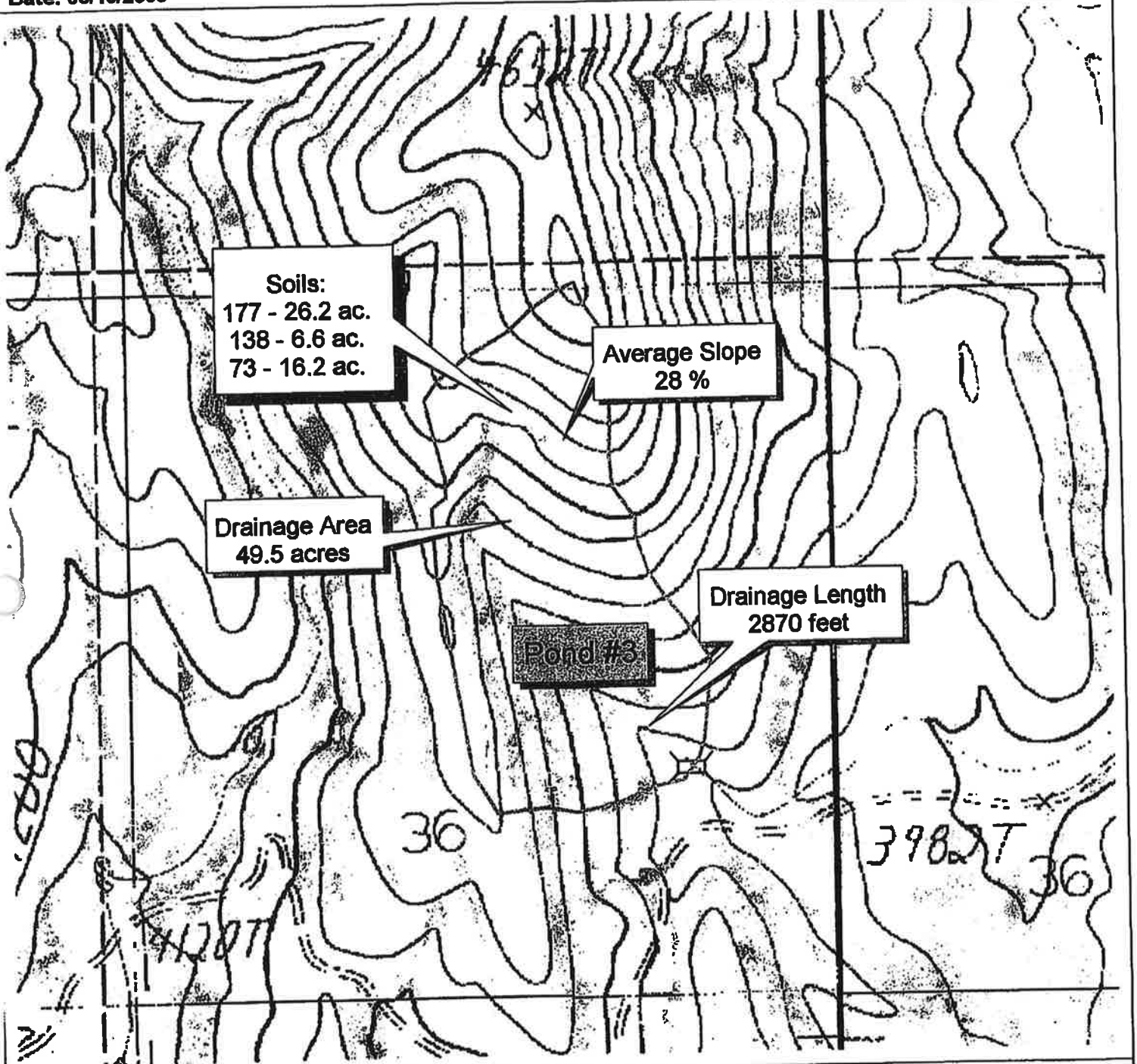
TOTAL DRAINAGE AREA: 49.5 Acres WEIGHTED CURVE NUMBER: 79

Drainage Area Map

Jim Eckhardt - Pond #3

Meiser River SCD
Date: 06/13/2003

Natural Resources Conservation Service
R. Hadeler



001002

Idaho

A. Becker

Stockwater

6/23/03

Pond design #3

Jim ECKHARDT

NHCP 378

2. Hazard Classification = a
effective height $\leq 35'$

3. Storage Volume - Since a portion of the Area behind the dam will be excavated use following formula in EFM 11, pg 11-9 for calculation

$$Vol = (.4)(\text{MAX } H_2O \text{ depth @ dam})(\text{Surface Area})$$

AutoCAD

$$\text{MAX water surface Area} = .75 \text{ ac}$$

$$\text{MAX water depth} = 8 \text{ feet}$$

$$\text{Volume} = (.4)(8 \text{ feet})(.75 \text{ ac}) = \underline{\underline{2.4 \text{ AC-FT}}}$$

4. IDWR CLASSIFICATION

Flow chart
page 6

Not a DAM $\Rightarrow$ NHCP 378

NHCP pg 1

Type 1 dam - ≤ 20 ft high, ≤ 10 AC-FT

5. Size of emergency spillway

NHCP table 4
378 Assume

Sized for 25 yr 24hr event $Q = 36 \text{ cfs}$
Avg. slope exit channel $\geq 40\%$

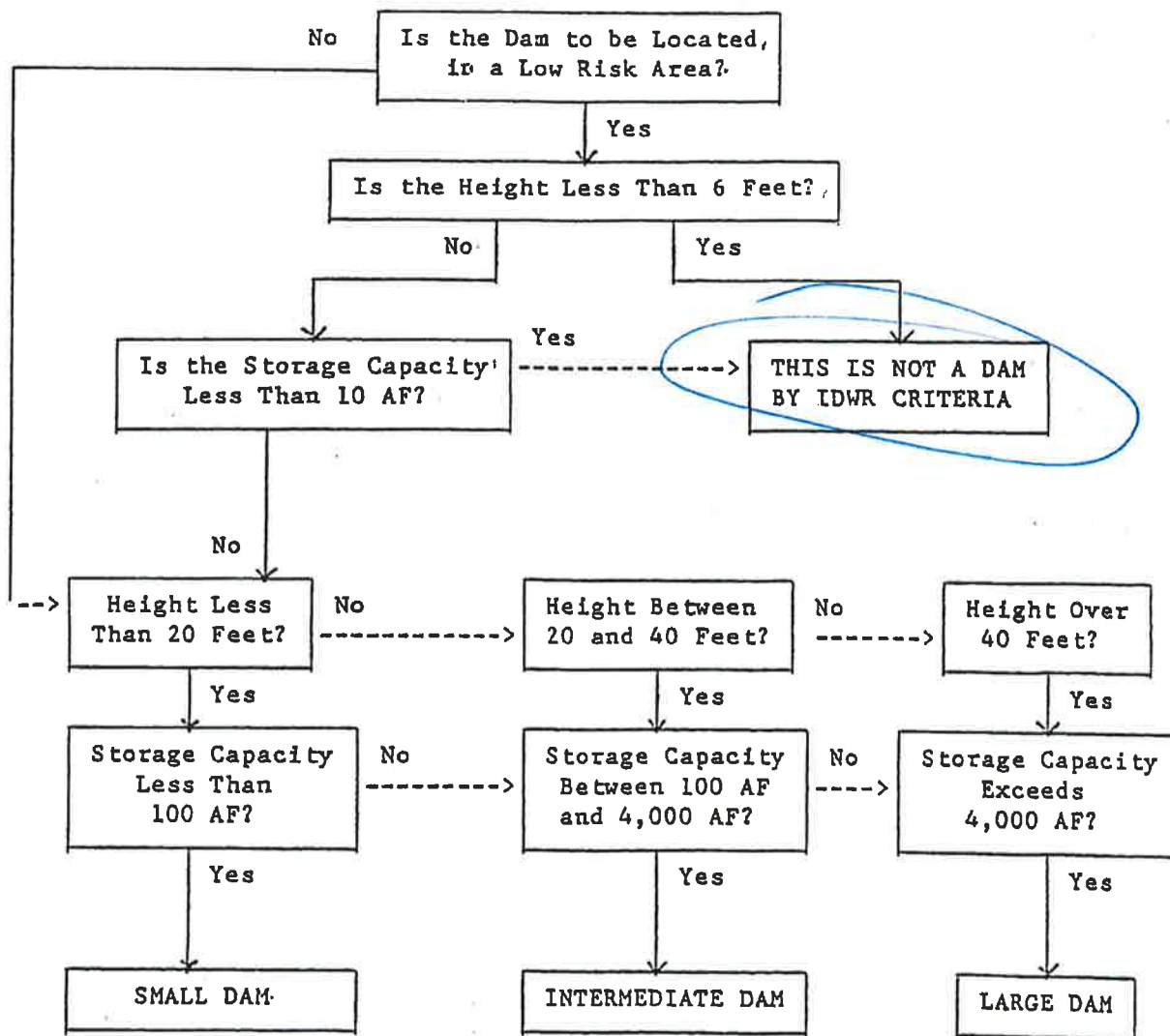
EFM 11 Table 1

For easily erodible soils/Grass+ Legumes

pg 11-54a

$$V_{\text{permissible}} = 4.0 \text{ fps}$$

Jim ECKHARDT Pond #3
How to Determine the Classification of Dams
by IDWR Criteria



Idaho

Jim Eckhardt

A. Becker

Stockwater Embankment Pond #3

EFM II
Table 2
pg 11-54a

Table 3-D

Use degree of retardance D
Avg. veg length (2-6")

$q = 2.0 \text{ ft}^3/\text{s}/\text{ft}$ - Use crest length 25'

$$\therefore b = \frac{Q}{q} = \frac{36 \text{ ft}^3/\text{s}}{2.0 \text{ ft}^3/\text{s}/\text{ft}} = \underline{18 \text{ feet}}$$

H_p for $L = 25' = \underline{1.0 \text{ foot deep}}$

Note: With $H_p = 1.0'$ And freeboard of 2.0 feet, top of embankment will be 3.0 above spillway crest.

6. Fill Quantity

See "Earthwork Computation Cales"
pg 8

Earthwork Computation Calculation

Landowner Jim Eckhardt
Project Embankment Pond - Pond #2
Date 6/18/2003
Performed by Andrew Becker

Top Width of Embankment (ft) 8

Station	Fill (ft)	End area (ft ²)	Sum of End areas (ft ²)	Distance (ft)	Section Products (ft ³)
0	0	0	0		
83	11.2	403	403	83	33466
166	7.5	201	604	83	50117
249	3.5	59	259	83	21518

2V	105100.825	ft ³
V	52550.4125	ft ³
V	1946.3	yd ³
add 10% settle	2141	yd ³

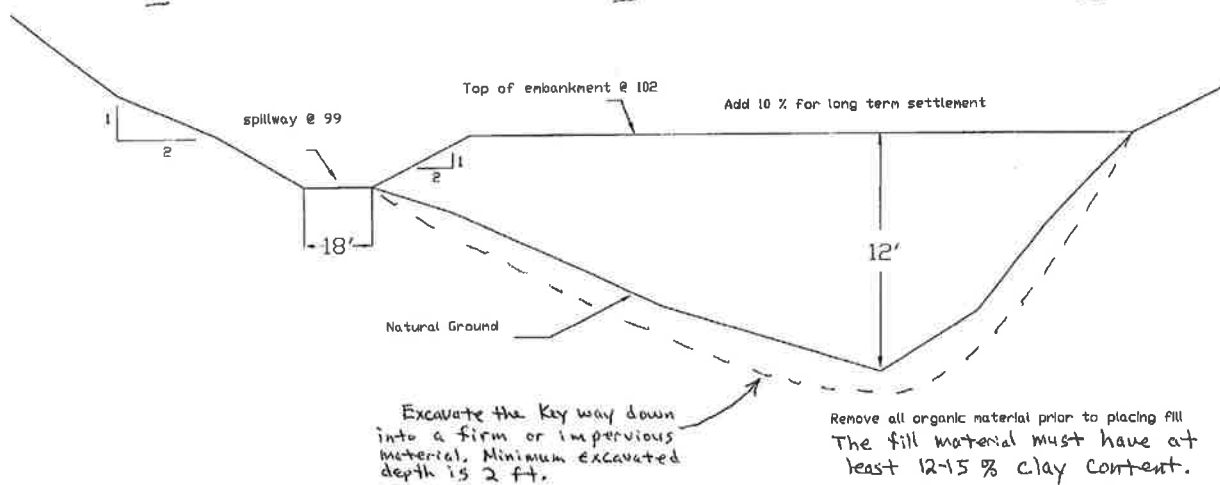
Earthwork required for cutoff collar

Bottom Width (ft) 8
Avg depth (ft) 2
Length (ft) 220
End Area (ft²) 20
Volume (ft³) 4400
Volume (yd³) 163

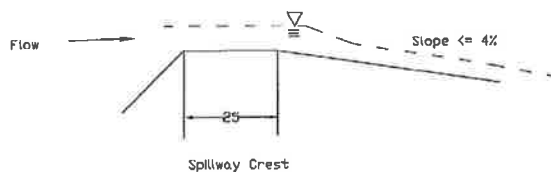
Total Volume of Earthwork required (dam + cutoff collar)

2,304	(yd ³)
-------	--------------------

Profile



Emergency Spillway



Job Class	II
Date	4/03
Designed	AB
Drawn	AB
Checked	WELSH
Approved by	7-27-03
Project	Jim Eckhardt Stock Water Pond Design Pond #3 Weiser River USDA US Forest Service Weiser River US Forest Service Weiser River US Forest Service

Sheet #	2
Sheet	3

001007

JIM ECKHARDT STOCK WATER POND #3

North



INDEX OF DRAWINGS

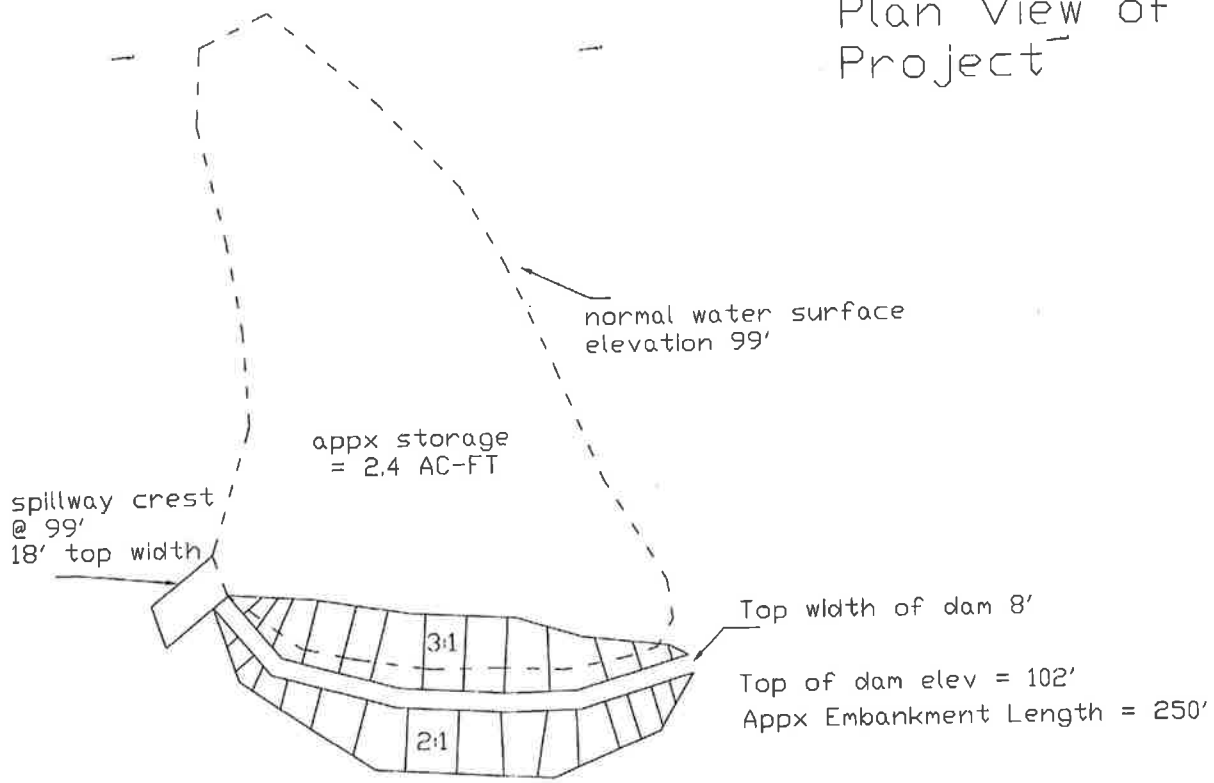
- SHEET 1 - Project Location
- SHEET 2 - Plan View of Project
- SHEET 3 - Profile of Embankment
- SHEET 4 - Cross Section of Embankment

GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND HAVING A THOROUGH KNOWLEDGE OF THE SCOPE OF WORK TO BE PERFORMED.
2. CARE SHALL BE TAKEN TO AVOID ALL UNNECESSARY DAMAGE TO VEGETATION WITHIN THE CONSTRUCTION RIGHT-OF-WAY.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 10 378.
4. ENGINEERING JOB CLASS II
5. IT IS LANDOWNER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

Jim Eckhardt Stock Water Pond Design		Job Class <u>II</u> Approved By <u> </u> Date <u> </u>
Designer: <u>Jim Eckhardt</u> Checker: <u>AB</u> Date: <u>8/03</u>	Designer: <u>Jim Eckhardt</u> Checker: <u>AB</u> Date: <u>8/03</u>	Job Class <u>II</u> Approved By <u> </u> Date <u> </u>
Weber River SCD U.S. Department of Agriculture - Natural Resources Conservation Service		

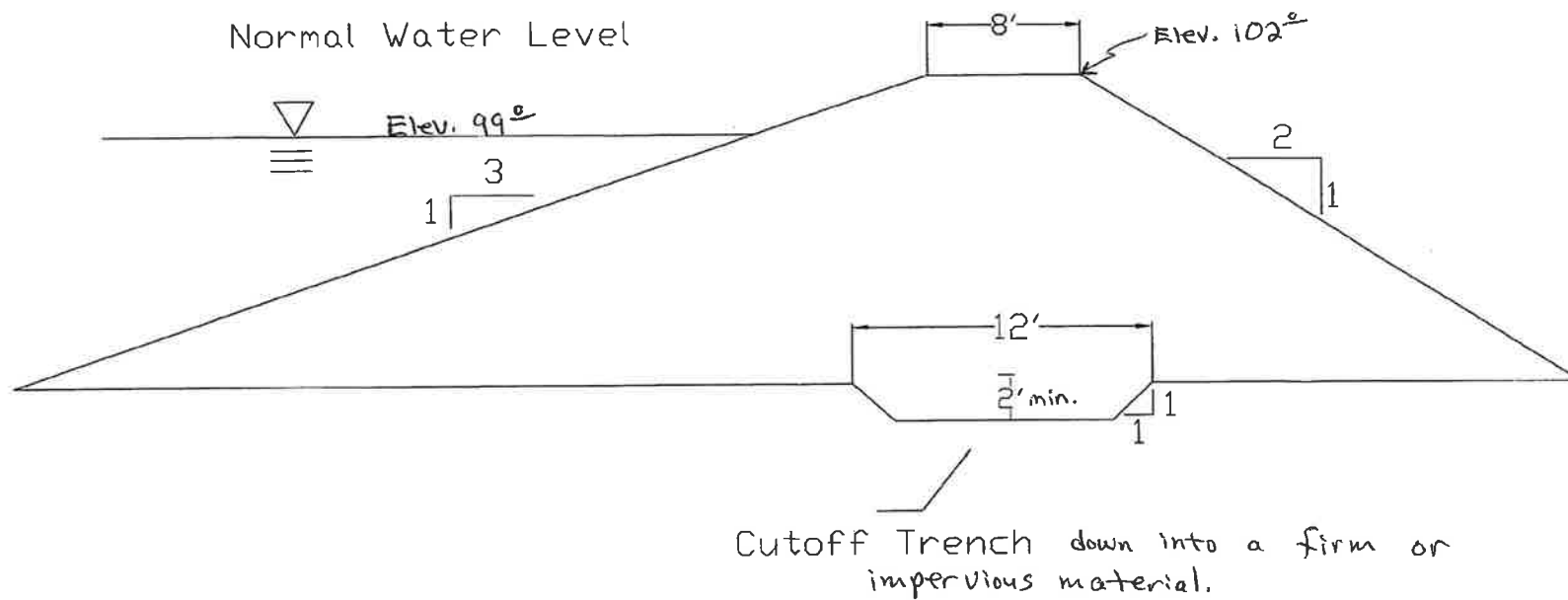
Plan View of Project



SW	Job Class	II
5/20	Approved by	Don
5/20	Designed	Jim Eckhardt
5/20	Drawn	Jim Eckhardt
5/20	Checked	Jim Eckhardt
5/20	Reviewed	Jim Eckhardt
5/20	Final	Jim Eckhardt
5/20	Project	Jim Eckhardt
5/20	Stock Water Pond Design	Pond #3
5/20	Jim Eckhardt	
5/20	U.S. Department of Agriculture - Natural Resources Conservation Service	
5/20	Sheet 1 of 3	

001009

Typical Cross Section

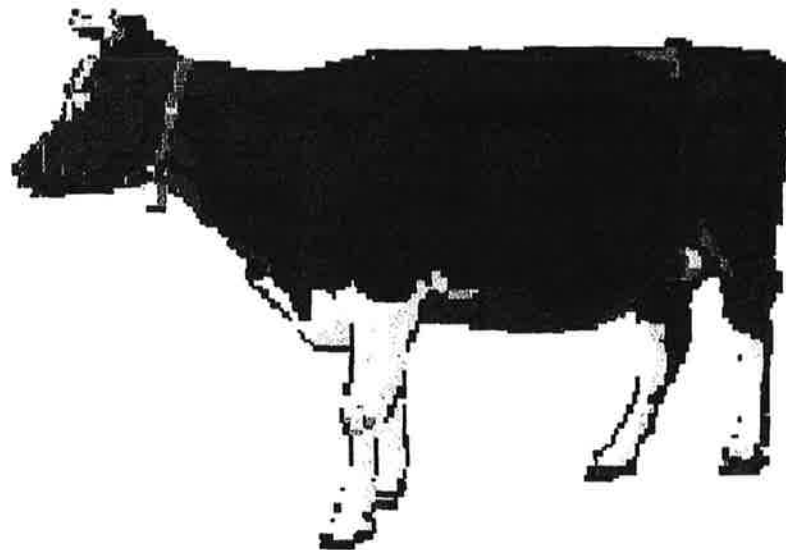


Job Class II		Approved by Date 7-23-02	
Surveyed JEB	Designed JEB	Drawn JEB	Checked CF
Date 6/03	Date 6/03	Date 6/03	Date 6/03
Jim Eckhardt		Weiser, ID	
Stock Water Pond Design Pond #3		Weiser River	
USDA		USDA	
Bureau of Reclamation		Bureau of Reclamation	
Pond #3.dwg		Sheet 3 of 3	

DRAWINGS AND DESIGN

PROJECT: STOCK WATER POND #2

PREPARED FOR: JIM ECKHARDT



NATURAL RESOURCES
CONSERVATION SERVICE

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IDAHO

CONSTRUCTION REQUIREMENTS WORKSHEET
OBSTRUCTION REMOVAL
CODE 500

Landowner/Operator JIM ECKHARDT
Job Location Northwest of Weiser – Section 36, T12N, R6W
County Washington SWCD Weiser River Farm/Tract No.
Referral No. Prepared By A. Becker Date 6/23/03

IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO OBTAIN ALL NECESSARY PERMITS AND/OR RIGHTS, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THIS INSTALLATION.

Installation shall be in accordance with the following drawings, specifications and special requirements. NO CHANGES ARE TO BE MADE IN THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF NRCS.

1. Drawings, No. 9-12
2. Practice Specifications ID 378
3. Special Requirements: All construction to be in accordance with the attached specifications.

PRACTICE APPROVAL:

Job Classification: (Ref: Section 501 NEM)

Show the limiting elements for this job. This job is classified as, Class III

Limiting elements:

Units

Effective Height

13 feet < 15 feet

Job Class III

Drainage Area

85.5 AC (.13 sq. mi.) < 3 sq. mi.

Job Class I

Storage

0.94 AC-FT < 10 AC-FT

Job Class I

Design Approved by: Milo Dunham

Date: 7-23-03

LANDOWNER'S/OPERATOR'S ACKNOWLEDGEMENT:

The landowner/operator acknowledges that:

- a. He/she has received a copy of the construction drawings and specifications, and that he/she has an understanding of the contents, and the requirements. The project will be constructed according to the plans and specifications.
- b. He/she understands that NRCS makes no representation as to the existence or non-existence of utilities. It is the responsibility of landowners, operators and contractors to comply with the provisions of Idaho state law. Landowners, operators, and contractors will be liable for any damage resulting from disruption of service caused by construction activities. The phone number for the utility location service in Idaho is 1-800-342-1585.
- c. Maintenance of the installed work is necessary for proper performance during the project life.
- d. He/she understands that if any cultural resources are encountered during the course of the installation of this project, all work will cease until a NRCS representative is contacted and approves continuation of the work.

Accepted by: _____ Date: _____

PRACTICE COMPLETION:

I have made an on site inspection of the site (or I am accepting owner/contractor documentation), and have determined that the job as installed does conform to the drawing plan and practice specifications,

Construction Certification by:

/s/ _____ Date _____

Job title: _____

NRCS, CA
September 1995

001013

NATURAL RESOURCES CONSERVATION SERVICE
Idaho
CONSTRUCTION SPECIFICATIONS
FOR
POND (Embankment)

(Owner/Operator)

(Project Title)

GENERAL

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.

SITE PREPARATION

Clearing and Stripping. Area to be occupied by the embankment and borrow areas must be cleared of all trees, brush, logs, and sod. The ponded area shall be cleared as noted on the drawings.

Embankment Foundation. All channel banks and sharp breaks shall be sloped to no steeper than 1 horizontal to 1 vertical. All topsoil containing excessive amounts of organic matter shall be removed. Loose earth shall not be left on the foundation area to a depth in excess of 6 inches above undisturbed foundation material. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.

EXCAVATION

Cutoff Trench. The cutoff trench shall be excavated to the lines and grades shown on the drawings or as staked in the field. The trench shall be kept free of standing water during backfill operations.

Spillway. The completed spillway excavation shall conform to the grades, bottom width and side slopes shown on the drawings.

Outlet Conduit. Trench excavation for installation of an outlet conduit shall be made in original ground or in compacted fill provided the

bottom of the trench is at or near undisturbed foundation.

Excess Material. Excavated material excess to construction requirements may be hauled from the site or placed and shaped behind a berm width equal to the pond depth, but not less than 12 feet from the edge of the excavation.

COMPACTED EARTHFILL AND BACKFILL

Fill Material. All fill materials shall be obtained from approved borrow areas and from excavations required for other parts of the work. The selection, blending, routing, and disposition of materials within the embankment shall be subject to the approval of the technician. Fill materials shall contain no sod, brush, roots, or other perishable or unsuitable material. Cobbles and rock fragments having a maximum dimension of more than six inches shall be removed from the materials prior to compaction.

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Protection and Curing. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, earth, or other approved material. In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied as soon as practicable after the concrete is finished. All surfaces shall be kept moist until the compound is applied.

Concreting in Cold Weather. Before any concrete is placed, all ice, snow and frost shall be completely removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to

as close as may be practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials. Concrete shall not be mixed or placed when daily minimum atmospheric temperature is less than 40 degrees F., unless facilities are provided to ensure the adequate protection of the concrete. Temperature of the concrete at the time of placing shall not be less than 50 degrees F. nor more than 90 degrees F. The temperature of all aggregates and mixing water shall be not more than 100 degrees F. when introduced into the mixer. The use of accelerators or antifreeze compounds will not be allowed.

CONDUITS

Conduits shall be of the type and size as shown on the drawings. Pipe shall be new. Any damage to protective coatings shall be repaired prior to backfilling. Repairs shall be in accordance with manufactures recommendations. Conduits shall be firmly and uniformly bedded throughout its length and shall be installed to the lines and grades shown on the drawings and/or staked in the field.

Cutoff collars or a filter diaphragm shall be installed at the locations, to the dimensions and of the materials as shown on the drawings. Metal cutoff collars, when specified, shall be of at least 12 gage or thicker metal, be galvanized or have a coating consisting of one coat of coal-tar primer followed by hot coat of coal-tar enamel and finished with Kraft paper or coat of water resistant whitewash. Plastic tape suitable for coating buried steel pipe may also be used. All welds shall be cleaned and coated as above.

FENCING

Posts may be galvanized steel or wood. Steel posts should be a minimum of 6.5 feet long and wood posts a minimum of 7.5 feet long. Wood posts shall be cedar, redwood, or other decay resistant wood or treated with Dettachlorophenol or creosote. Minimum top diameter for wood posts is 4 inches. All posts shall be firmly set into the ground, braced at all corners and

turns, and spaced as shown on the drawings, but not to exceed 20 feet.

Wire. Barbed wire shall be a minimum of two strands of 12-1/2 gage, galvanized wire. Woven wire shall be galvanized, aluminum or plastic coated. Top and bottom wires shall be a minimum of 11-gage and intermediate line and stay wires shall be a minimum of 14-1/2 gage.

Hardware. Wire ties, clamps, staples, and related fence hardware shall have equivalent coating to the fencing being installed.

Pole or timber fence equivalent to standard barbed wire fence in usefulness and durability may be used as an alternate when authorized by the responsible technician.

SEEDING

Seed the embankment, borrow areas, spillway and other disturbed areas, and a minimum 12 foot border around the ponded area, unless suitable vegetation already exists. Seedbed preparation, seed mixture, fertilizer, mulch, and application rates shall be in accordance with the attached ADDITIONAL SPECIFICATION for "Seeding".

RIPRAP

Rock for riprap shall be angular, dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. The rock shall be well graded so that the installed riprap will consist of a dense layer of interlocked rock.

Bedding material when specified shall consist of a sand-gravel mixture such as would be used in a concrete mix.

CLEAN-UP

Cleared material, sod, and unsuitable soil shall be removed from the construction site or otherwise disposed of so that runoff water will not carry it into the reservoir or spillway area. Waste ~~earth~~ material shall be smoothed and seeded.

ADDITIONAL SPECIFICATIONS

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IDAHO

OPERATION AND MAINTENANCE WORKSHEET
POND
CODE 378

Landowner/Operator JIM ECKHARDT
Job Location NORTHWEST OF WEISER - SECTION 36, T12N, R6W
County WASHINGTON SWCD WEISER RIVER Farm/Tract No.
Referral No. Prepared By A. BECKER Date JUNE 2003

OPERATION AND MAINTENANCE ITEMS

A properly operated and maintained Pond is an asset to your farm. This structure was designed and installed to provide storage to runoff water for beneficial use. The estimated life span of this installation is at least 10 years. The life of this installation can be assured and usually increased by developing and carrying out a good operation and maintenance program.

This practice will require you to perform periodic operation to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program:

- ⇒ Periodically inspect the spillways and control gates for proper functioning for their ability to maintain the water level to design elevations. Immediately remove any blockage or obstructions in spillways.
- ⇒ Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization, and application of herbicides when necessary. Fertilize the established stand with at least 200 lbs of 21-0-0 per acre or equivalent annually or as needed to maintain a uniform vigorous stand. Periodic mowing may also be needed to control height.
- ⇒ If fences are installed, they shall be maintained to prevent unauthorized or livestock entry.
- ⇒ Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
- ⇒ Removal of debris that may accumulate at the Pond and immediately upstream or downstream from the basin.
- ⇒ Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
- ⇒ Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.

NRCS, ID
February, 2000

001018

Idaho

Jim Eckhardt

AJB

6/18

Embankment Pond - Pond #2

1

14

ArcView

Given: 1. Drainage Area is 85.5 acres, Average slope is 17%, drainage length is 3,000 feet

2. Cover is Rangeland, good condition

3. Soils are hydrologic soil group C+D

Determine: 1. Peak Discharge for spillway
2. Hazard classification
3. Storage Volume
4. IDWR Classification
5. Size of Emergency Spillway
6. Fill Quantity

Solution:

1. Peak discharge - Use EFM-2 Computer Program

NOAH ATLAS II

<u>Frequency (yrs)</u>	<u>Precip (in)</u>
2	1.6
5	2.0
10	2.2
25	2.4

Hydrologic Soil Group C+D (See pg 4 for areas)

Avg. watershed slope $\approx$ 17%

Watershed length $\approx$ 3000 feet

See EFM-2 printout pages 2+3

ArcView

Client : Jim Eckhardt - Pond #2
County : Washington State: ID
Practice: Stockwater Pond

By: RH
Checked: _____

Date: _____
Date: _____

Drainage Area : 85.5 * Acres
Curve Number : 77 *
Watershed Length : 3000 Feet
Watershed Slope : 17 Percent
Time of Concentration: .339 Hours
Rainfall Type : II

Storm Number	1	2	3	4
Frequency (yrs)	2	5	10	25
24-Hr Rainfall (in)	1.6	2	2.2	2.4
Ia/P Ratio	0.37	0.30	0.27	0.25
Runoff (in)	0.25	0.45	0.56	0.68
Unit Peak Discharge (cfs/acre/in)	0.720	0.844	0.865	0.883
Peak Discharge (cfs)	16	32	41	51

* - Value(s) provided by CN subroutine (F9)

EFM-2 ESTIMATING RUNOFF AND PEAK DISCHARGE
Curve Number Computation

VERSION 1.10

Client : Jim Eckhardt - Pond #2 By: RH Date:
County : Washington State: ID Checked: Date:
Practice: Stockwater Pond

COVER DESCRIPTION		Hydrologic Soil Group			
		A	B	C	D
		Acres (CN)			

OTHER AGRICULTURAL LANDS					
Pasture, grassland or range	good	-	-	42.5 (74)	43 (80)
Total Area (by Hydrologic Soil Group)				42.5	43
				=====	=====

TOTAL DRAINAGE AREA: 85.5 Acres WEIGHTED CURVE NUMBER: 77

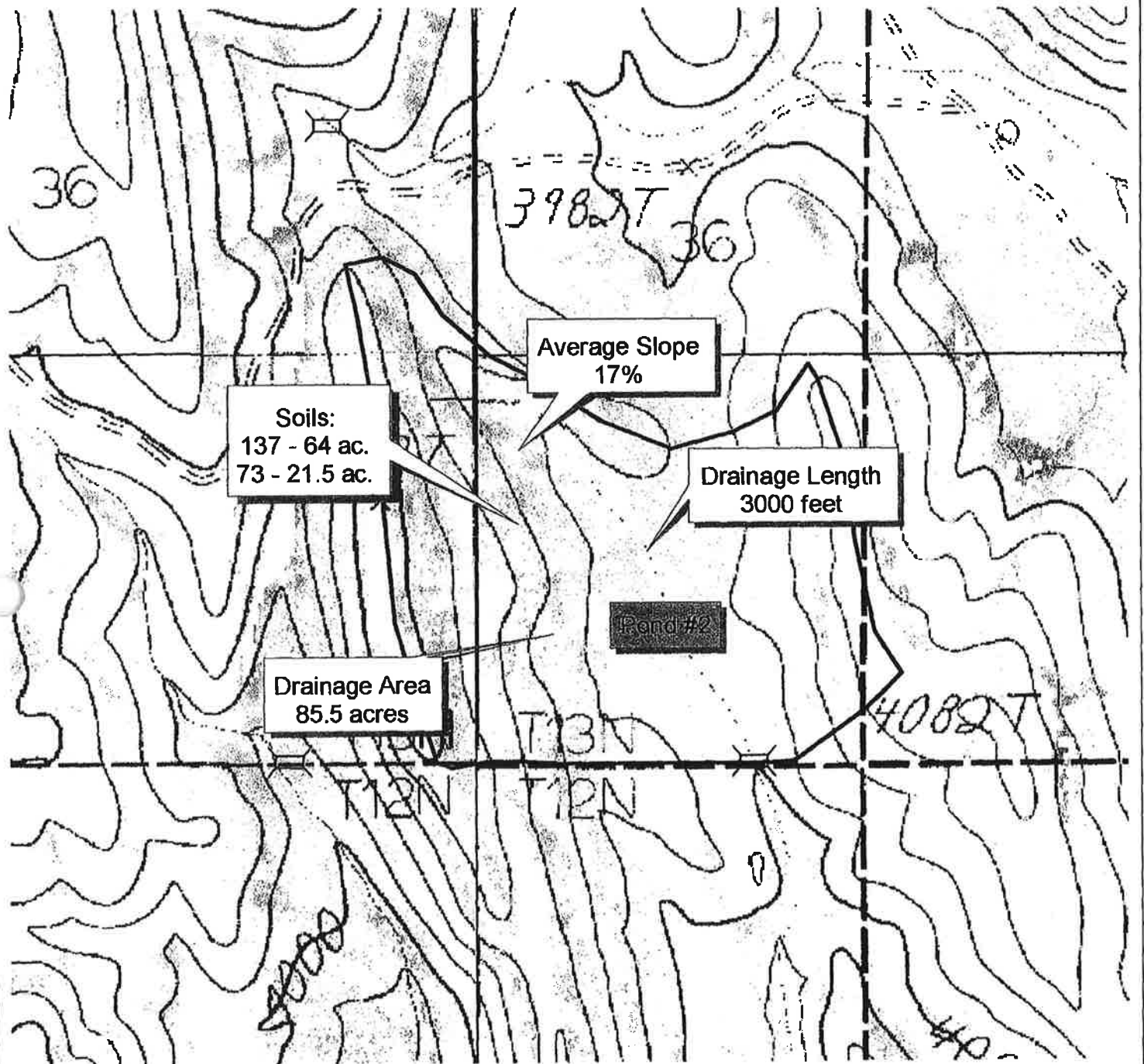
Drainage Area Map

Jim Eckhardt - Pond #2

4/14

Leiser River SCD
Date: 06/13/2003

Natural Resources Conservation Service
R. Haderl

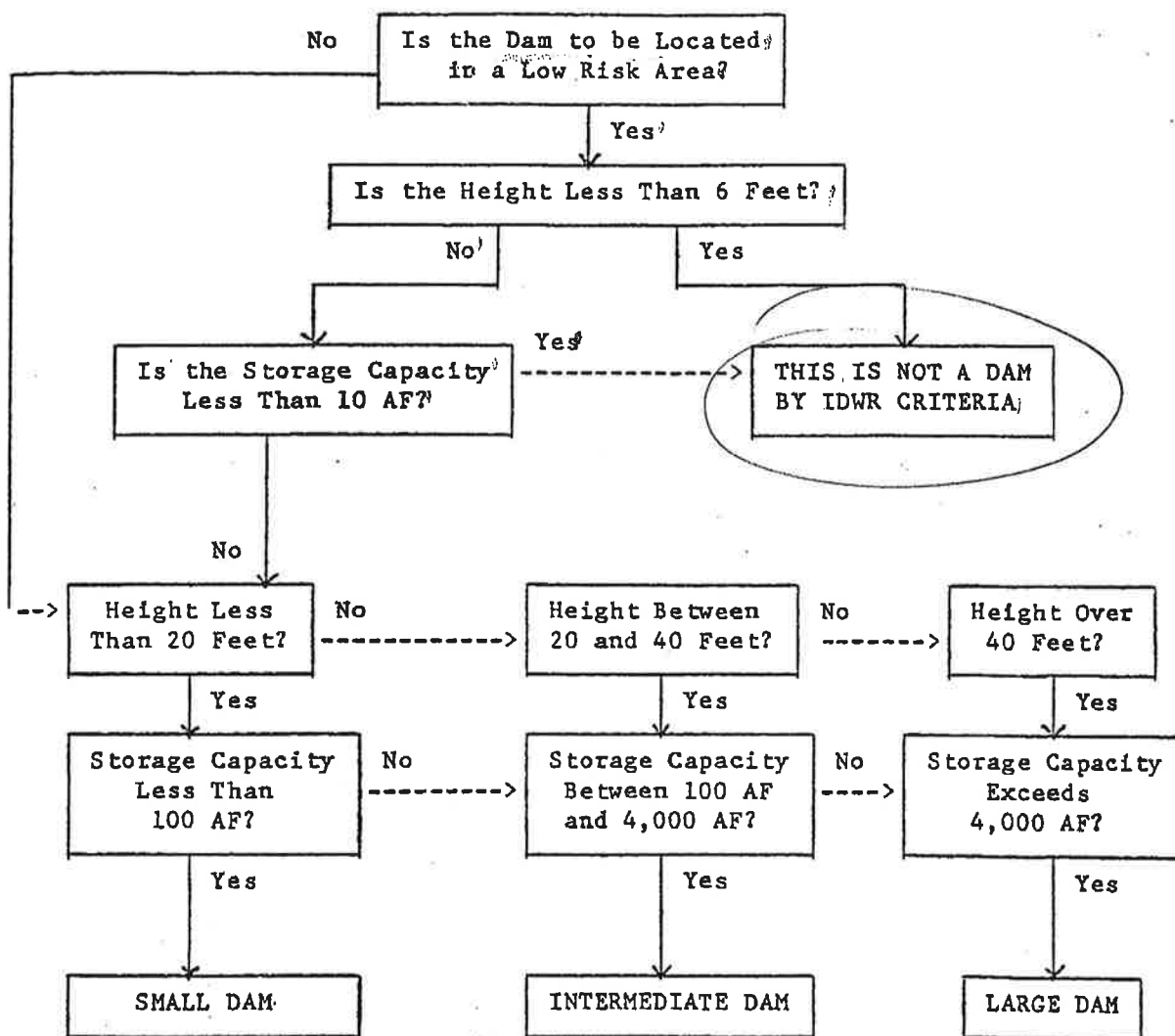


1000 0 1000 2000 Feet



001022

How to Determine the Classification of Dams
by IDWR Criteria



Idaho

JIM ECKHARDT

AJB

Embankment Pond- Pond #2

NHCP 378

2. Hazard class a - effective height < 35'

3. Storage Volume - Pond is partially excavated, use formula in EFM II, pg 11-9.

$$Vol = (.4)(\text{surface Area})(\text{MAX water depth})$$

$$Vol = (.4)(.18 \text{ Ac})(13') = \underline{.94 \text{ AC-FT}}$$

4. IDWR CLASSIFICATION

NOT A DAM -

Flow Chart

pg. 5

NHCP 378

Type 1 DAM- < 20' High ; < 10 AC-FT

5. Size of Emergency Spillway

Size for 25 yr. 24hr. event

$$\underline{Q = 51 \text{ cfs}}$$

NHCP 378

table 4.

Assumed

Average channel slope $\leq 10\%$

Easily erodible soils, grass/legume mixture

$$V_{\text{permissible}} = 4.0 \text{ fps}$$

EFM II-54a

table 2.

Assumed

$$\underline{\text{Degree of retardance} = D}$$

Aug. Length of Vegetation 2-6"

Jim Eckhardt

Embankment Pond - Pond # 2

Idaho
ATB

EFM 11-54:
table 3-D

$$q = 1.25 \text{ ft}^2/\text{s} \cdot \text{ft}$$

use crest length $L = 25'$

$$\therefore b = \frac{Q}{q} = \frac{51 \text{ cfs}}{1.25 \text{ ft}^2/\text{s} \cdot \text{ft}} = 40.8' \quad \text{Use } 41 \text{ feet}$$

$$\text{Hp for } L = 25 = \frac{1.0 \text{ ft}}{1.0 \text{ ft}}$$

Hp is water depth in spillway

Since max water depth over spillway is 1.0 ft and freeboard must be 2.0 feet above that, top of settled embankment will be 3 ft above spillway crest.

6. Fill Quantity
see "Earthwork Computation Calculations"
sheet 8.

Earthwork Computation Calculation

Landowner Jim Eckhardt
 Project Embankment Pond - Pond #2
 Date 6/18/2003
 Performed by Andrew Becker

Top Width of Embankment (ft) 8

Station	Fill (ft)	End area (ft ²)	Sum of End areas (ft ²)	Distance (ft)	Section Products (ft ³)
0	0	0	0		
25	5	103	103	25	2563
40	6	138	241	15	3608
80	8.3	239	377	40	15065
120	15.8	751	989	40	39565
150	3	47	797	30	23910
				2V	84710 ft ³
				V	42355 ft ³
				V	1568.7 yd ³
				add 10% settle	<u>1726</u> yd ³

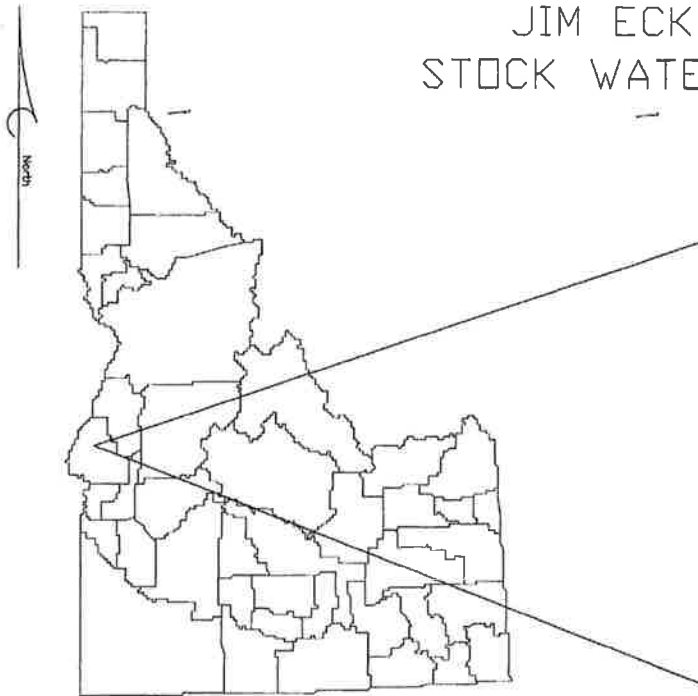
Earthwork required for cutoff collar

Bottom Width (ft) 8
 Avg depth (ft) 2
 Length (ft) 150
 End Area (ft³) 20
 Volume (ft³) 3000
 Volume (yd³) 111

Total Volume of Earthwork required (dam + cutoff collar)

1,837 (yd³)

JIM ECKHARDT STOCK WATER POND #2



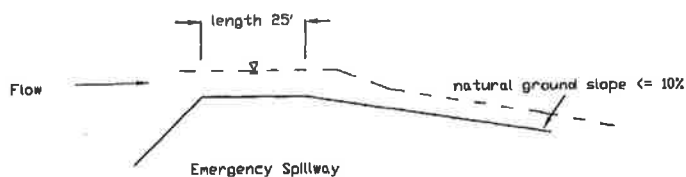
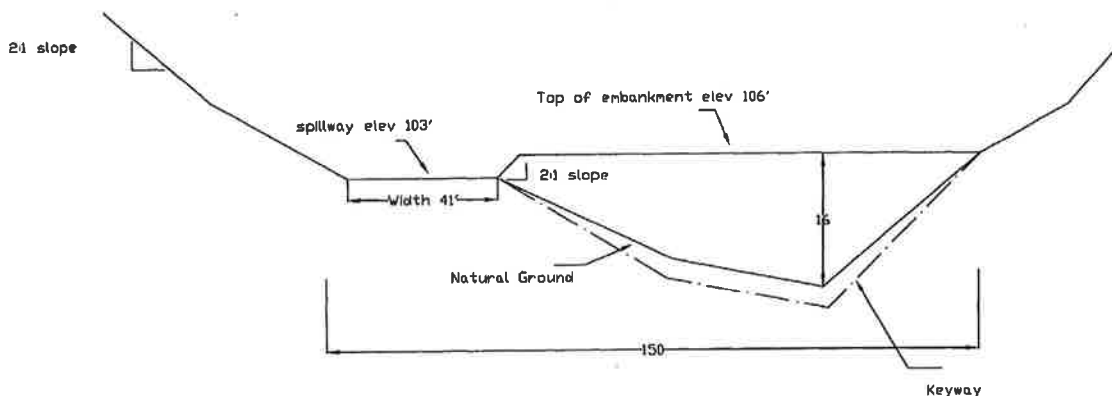
SHEET 1 - Project Location
SHEET 2 - Photo View of Project
SHEET 3 - Profile of Embankment
SHEET 4 - Cross Section of Embankment

1. THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND HAVING A THOROUGH KNOWLEDGE OF THE SCOPE OF WORK TO BE PERFORMED.
2. CARE SHALL BE TAKEN TO AVOID ALL UNNECESSARY DAMAGE TO VEGETATION WITHIN THE CONSTRUCTION RIGHT-OF-WAY.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 10.3/8.
4. ENGINEERING JOB CLASS III.
5. IT IS LANDOWNER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

Jim Eckhardt
Stock Water Pond Design
Weider River SCD
2014
IIS Department of Agriculture - Natural Resource Conservation Service

Date: 6/03
Revised: 6/03
Job Class: III
Weider, ID
2014

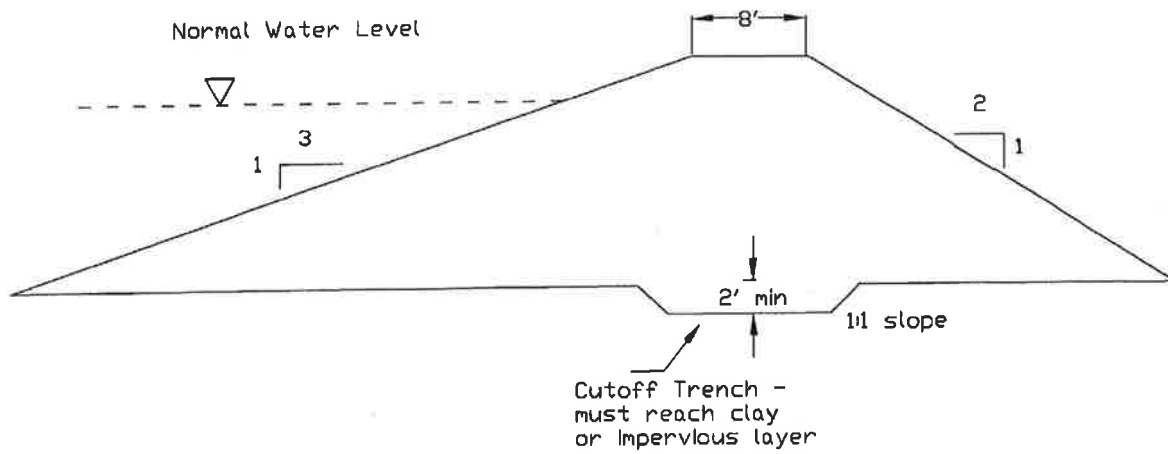
Dam Profile Spillway X-Section



Remove all organic material prior to placing fill
Add 10 % height for long term settlement
Fill material must contain at least 12-15% clay
NRCS dam height = 13'
IDWR dam height = 16'

Drawn by	Checked by	Approved by	Date
Jim Eckhardt	AB	AB	7/13/63
Project	Drawn	Checked	Approved
Stack Water Pond Design	AB	AB	AB
Weiser River SCD IDWR I.R.S. Department of Agriculture - Natural Resources Conservation Service			
3 Small v14			

Typical Cross Section



Job Class	III
Date	6/03
Surveyed	AB
Designed	AB
Drawn	AB
Checked	AB
Approved by	CE
Date	6/21/03
Jim Eckhardt Stock Water Pond Design	
Weiser River Weiser, ID	
U.S. Department of Agriculture - Natural Resources Conservation Service	
001030	

APPLICANT ECKHARDT FAMILY LLP'S PROPOSED EXHIBITS

IN THE MATTER OF APPLICATION

FOR TRANSFER NO. 82712 AND APPLICATIONS FOR PERMIT NOS. 67-15292 THROUGH 67-15298, 67-15300, AND 67-15322 ALL IN THE NAME OF ECKHARDT FAMILY LLP

Applicant's Exhibit:	Description:	Date:	Bates No.:
Exhibit 001	Application for Permit No. 67-15292	11/09/2018	
Exhibit 002	Application for Permit No. 67-15293	11/09/2018	
Exhibit 003	Application for Permit No. 67-15294	11/09/2018	
Exhibit 004	Application for Permit No. 67-15295	11/09/2018	
Exhibit 005	Application for Permit No. 67-15296	11/09/2018	
Exhibit 006	Application for Permit No. 67-15297	11/09/2018	
Exhibit 007	Application for Permit No. 67-15298	11/09/2018	
Exhibit 008	Application for Permit No. 67-15300	11/09/2018	
Exhibit 009	Application for Permit No. 67-15322	11/23/2018	
Exhibit 010	Application for Transfer No. 82712	11/09/2018	
Exhibit 011	Applicant's Expert Report	03/19/2019	
Exhibit 012	David Shaw, Expert CV		
Exhibit 013	Stock water Pond Map & List		RFP12-2018.08.01; 1379-1380
Exhibit 014	Double C&J Partial Decree, Case No. 39576; Water Right No. 67-02044, Water Right No. 67-02097A	10/16/2008	
Exhibit 015	Correspondence re Notice of Intent to Investigate; Correspondence re Complaint Regarding Unauthorized Water Diversion	11/09/2018; 09/27/2018	FOIA 0109-0110; FOIA 0179-0181
Exhibit 016	Jenkins Creek Dam Inspection	09/17/2018	RFP12-2018.12.21; 1393-1398
Exhibit 017	ASCS Contract, Notes, & Maps	05/18/1992	RFP 5-01; 5-03; 31- 33,696,734,697- 698,724,738
Exhibit 018	Idaho Department of Lands Survey Correspondence	01/9/1991	RFP12-1999.04.05; 1314-1315
Exhibit 019	Pond Specs	05/19/1992	RFP5-02; 5-03; 5-04; 5-06; 5-07; 5-08; 339-357, 373-411, 417-439, 745-760, 933-938, 939-966, 976-992, 993-1010, 1011-1030
Exhibit 020	Handwritten map		PROTESTANT000426- 427
Exhibit 021	E-mail correspondence from Duane Pearson, to Candice McHugh re: John Hoff's small pond pump hours	02/28/2019	Protestant 00612- 619