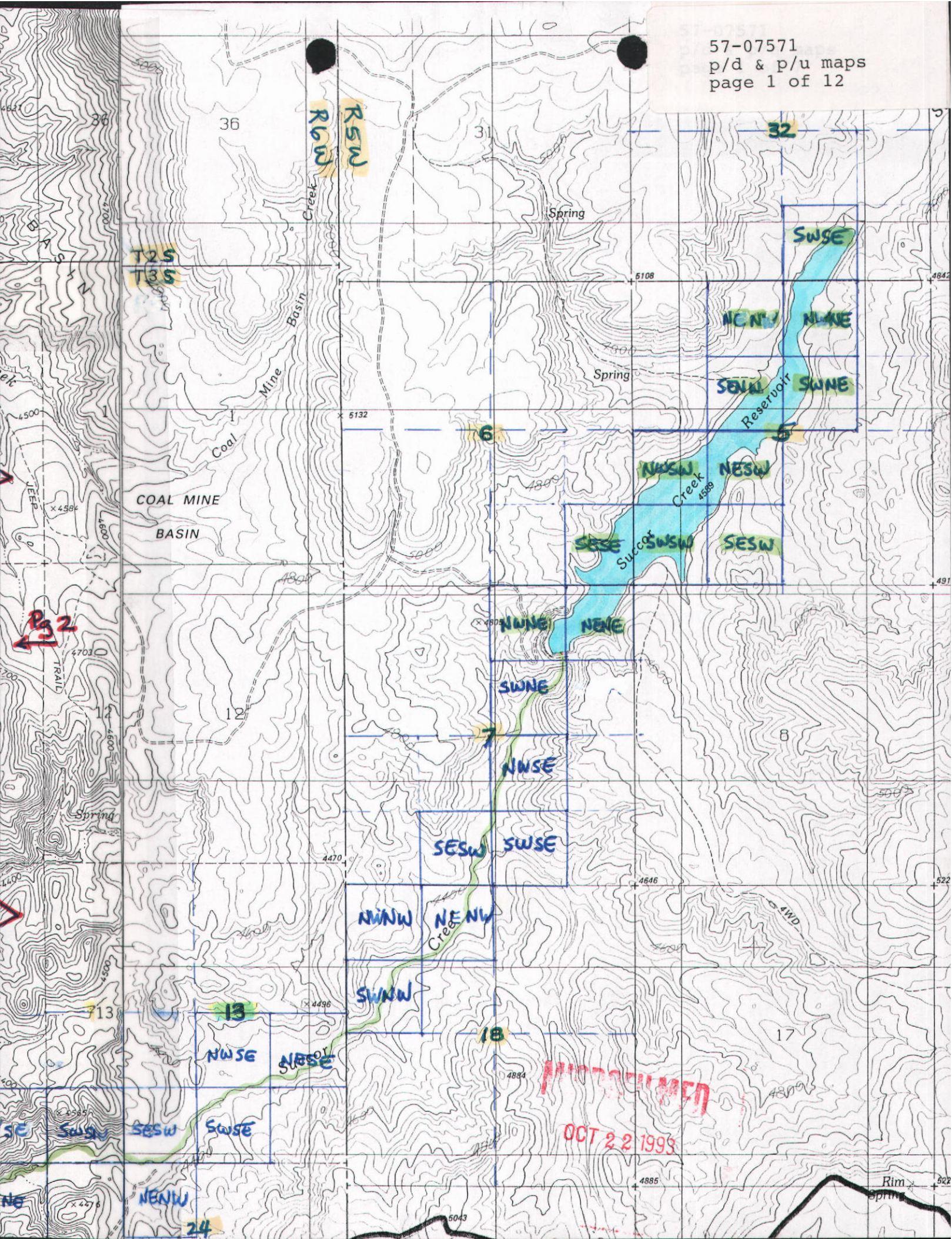
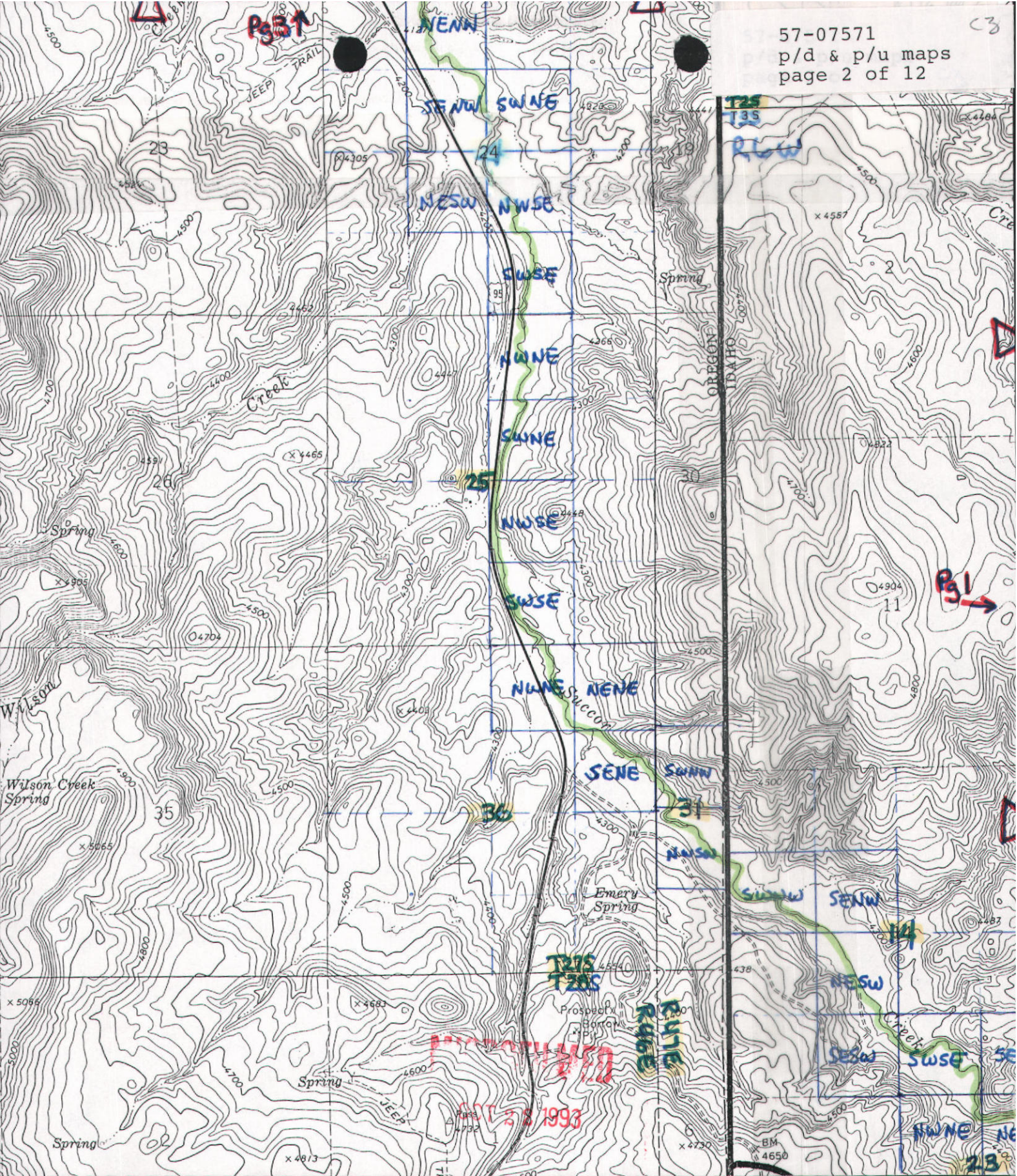
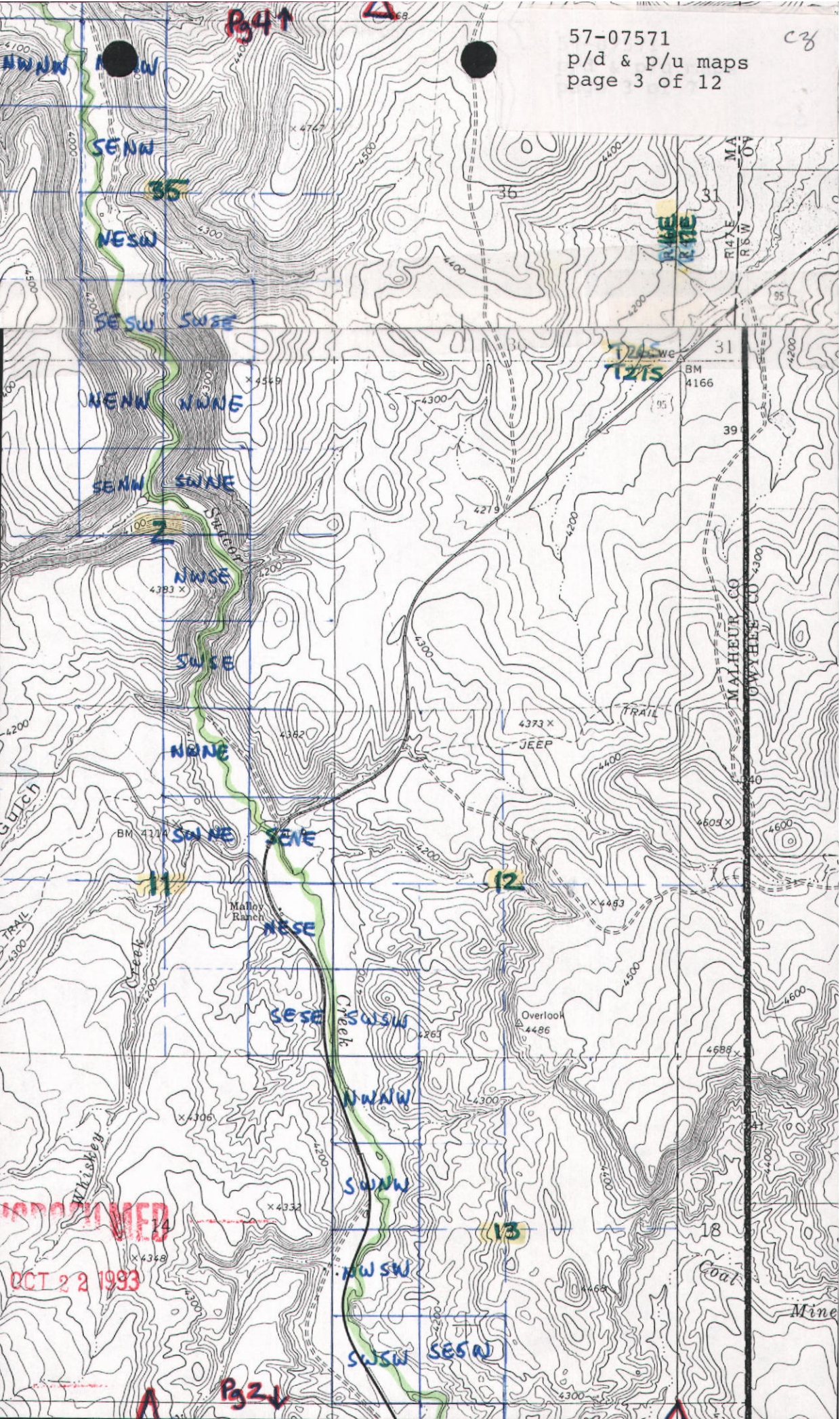
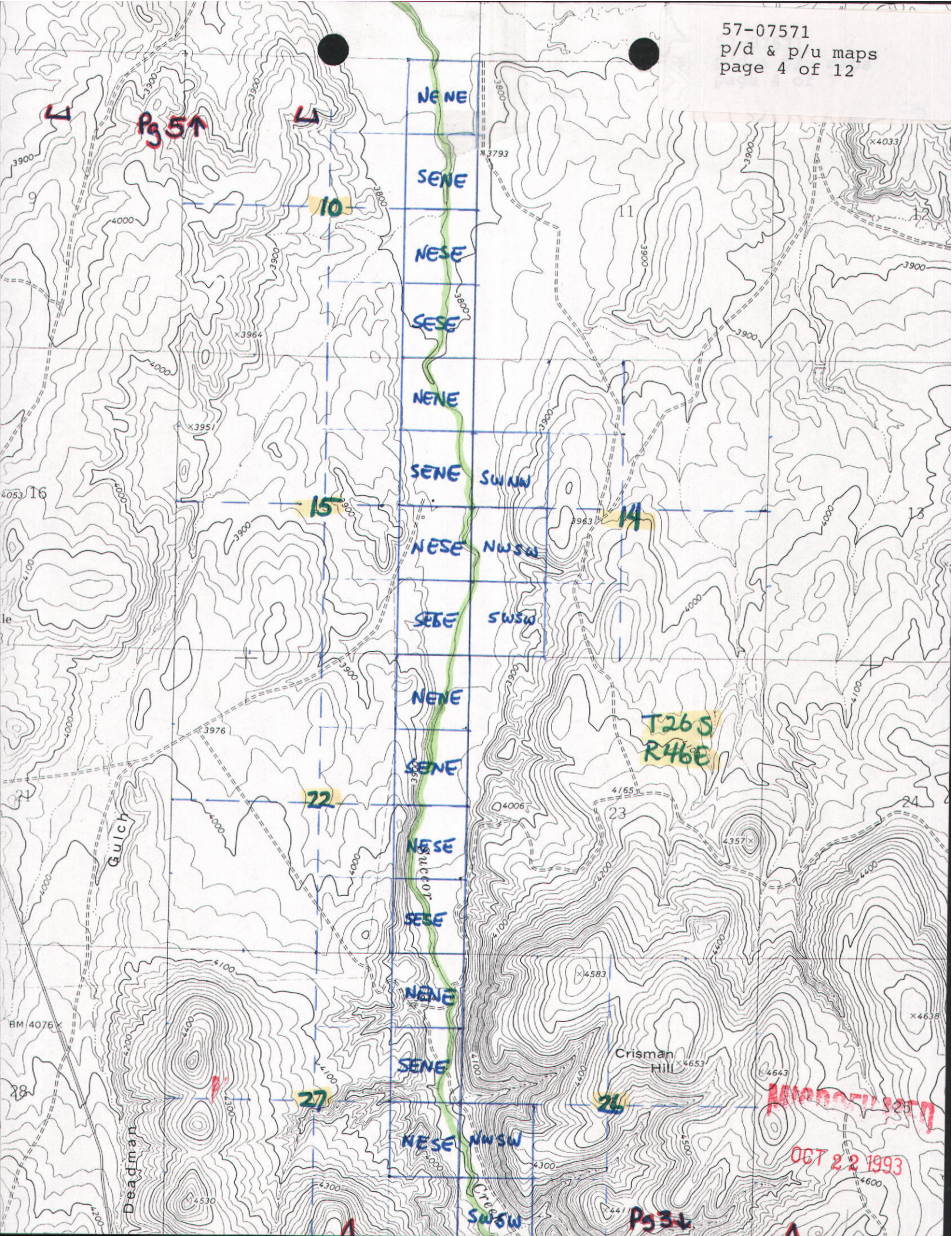


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57-07571
p/d & p/u maps
page 2 of 12
C3
Pg31
NENW
SENW
SWNE
NESW
NWSE
SWSE
NWNE
SWNE
NWSE
SWSE
NWNE
NENE
SENE
SWNW
NWSW
SENW
NESW
SESW
SWSE
NWNE
T25
T3S
R6W
Pg1
T21S
T28E
RULE
RIDGE
Wilson Creek Spring
Emery Spring
Spring
Creek
JEEP TRAIL
OREGON
IDAHO
OCT 28 1993


Pg 41
57-07571
p/d & p/u maps
page 3 of 12
CY
NWNW
SENW
35
NESW
SESW
SWSE
NENW
NWNE
SENW
SWNE
2
NWSE
SWSE
NWNE
SWNE
SENE
11
12
NESE
SESE
SWSW
NWNW
SWNW
NWSW
SWSW
SESW
13
14
18
T24S
T25S
R47E
R48E
BM 4166
BM 4114
Malloy Ranch
Overlook
JEEP TRAIL
MALHEUR CO
OWYHEE CO
Coal Mine
Gulch
Creek
Whiskey
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Pg 42


NE NE
SE NE
10
NE SE
SE SE
NE NE
SE NE
SW NW
15
14
NE SE
NW SW
SE SE
SW SW
NE NE
SE NE
T26S
R46E
22
NE SE
SE SE
NE NE
SE NE
27
26
NE SE
NW SW
SW SW
Pg 35
Pg 34
Deadman Gulch
Saucon Creek
Crisman Hill
BM 4076
UNACCEPTED
OCT 22 1993

57-07571
p/d & p/u maps
page 5 of 12

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

117°07'30"
43°22'30"

23 MI TO OREG 201

140 000 FEET (IDAHO)

4802 000m N.

620 000 FEET (IDAHO)

Pg 6 ↑

Pg 4 ↓

SWNE
NWSE
NESE
SESE
NENE
SENE
SWNW
NESE
SWSW
SWSW
NWNW
NENW
SENW
SWNE
NWSE
SWSE
SESE
NENE
NWNW
SWNW
SENW
NESW
NWSE
SWSE
SESE
NENE

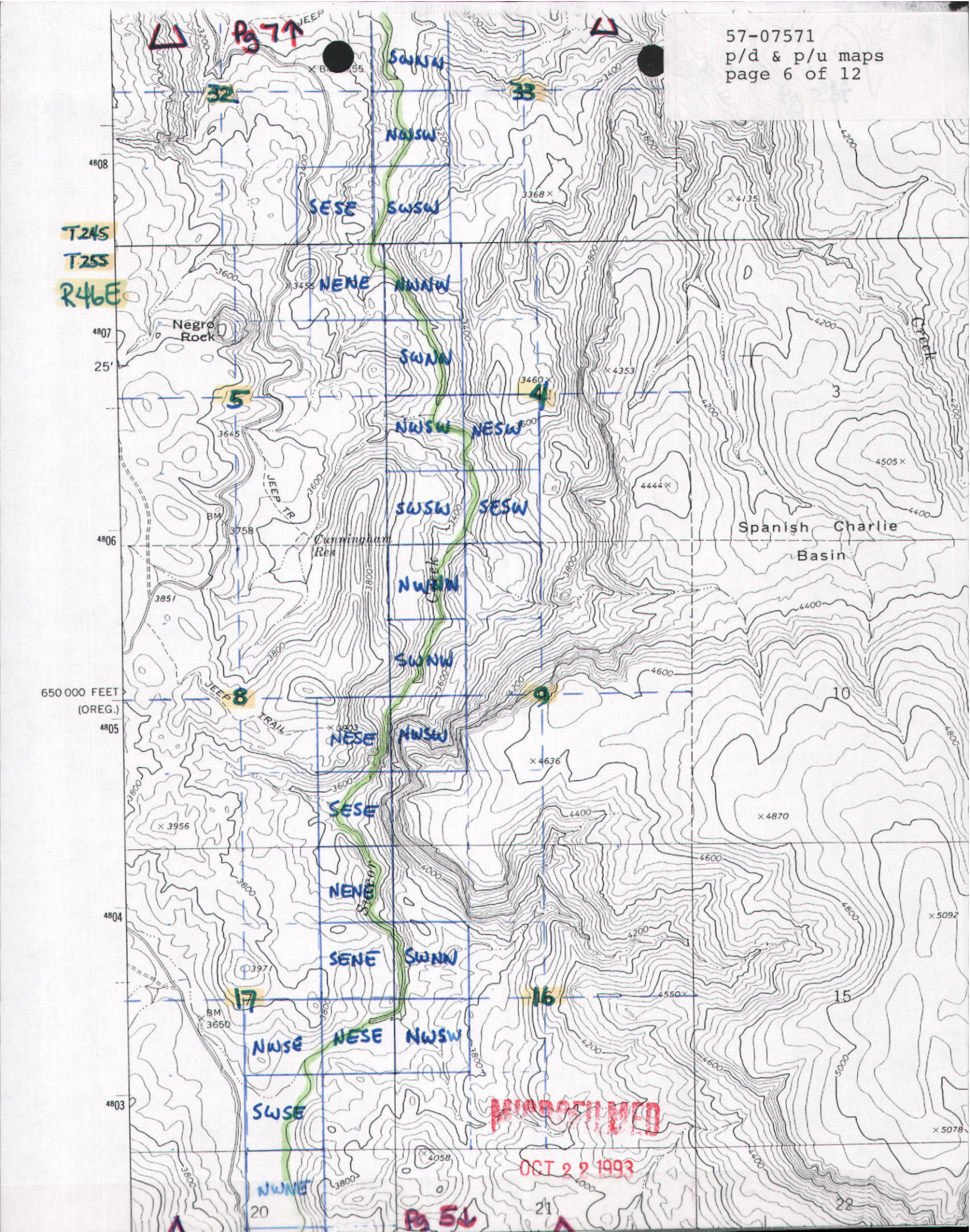
20
29
28
33
4
3

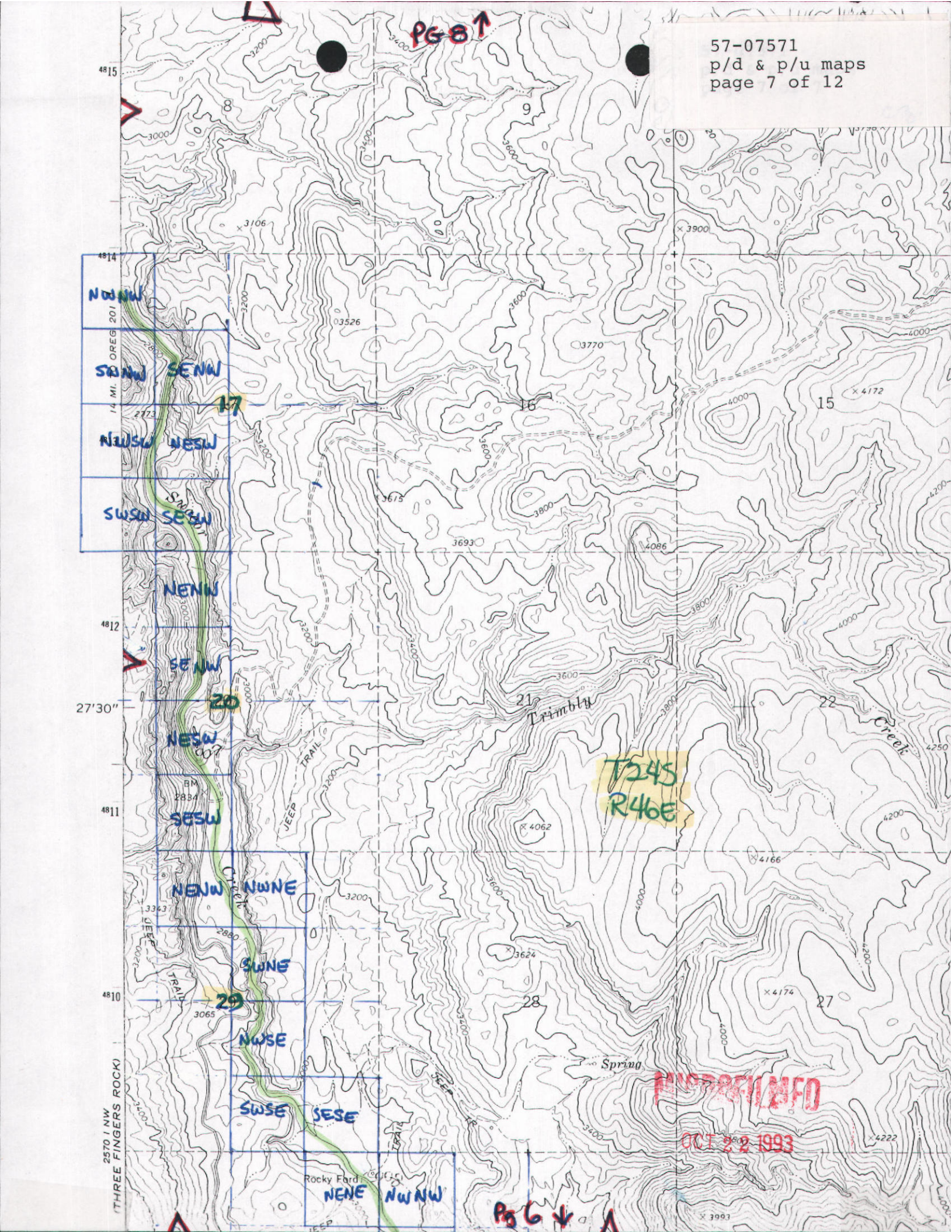
Moss Gulch
Creek
Creek
Creek
Mud Spring
JEEP TRAIL
pole
BM 3696
BM 3787
3680
4046
4628
4388
3892
4146
3749
3976
3804
3822

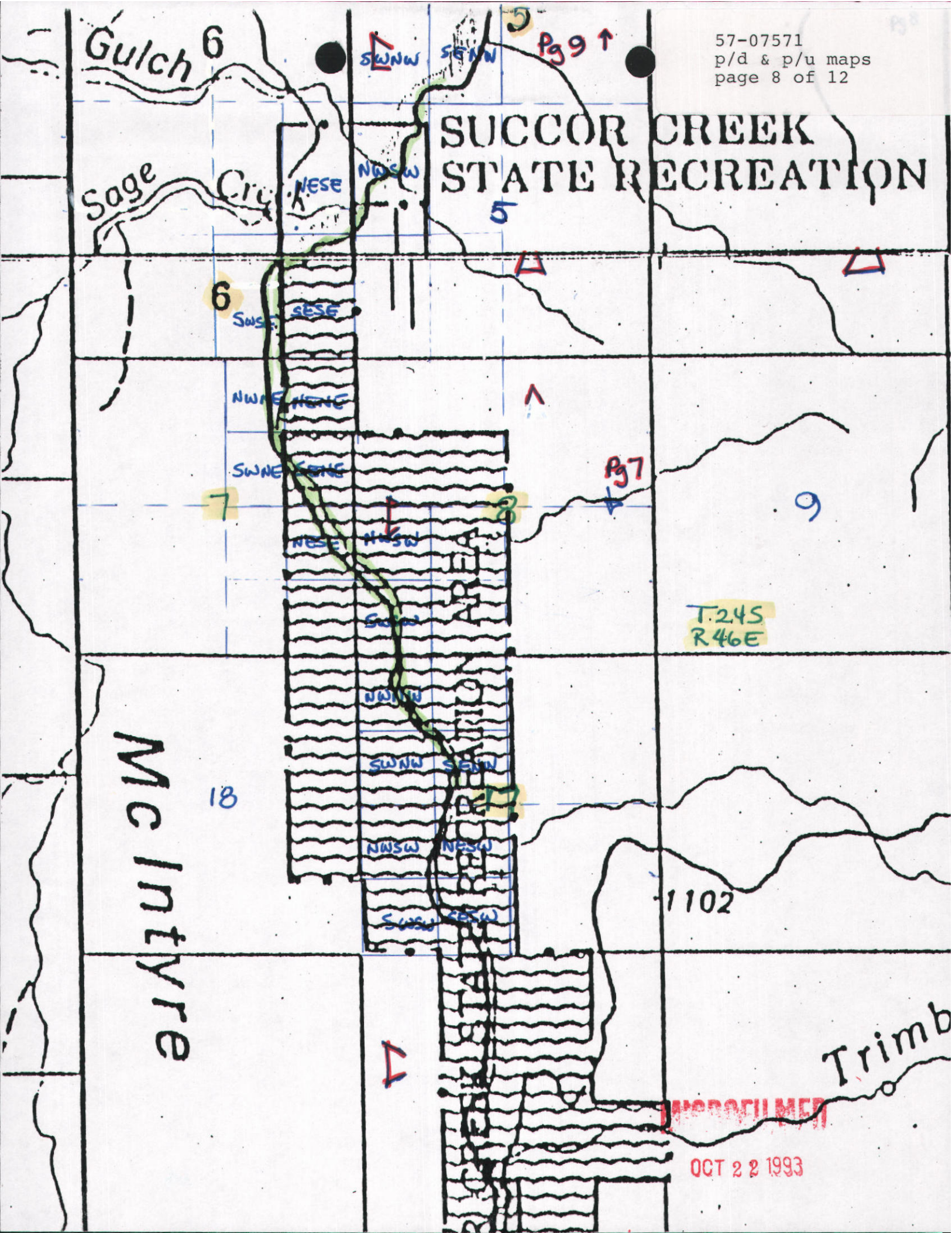
4801
4800
4799
4798
4797
4796

T25S
T26S
R46E

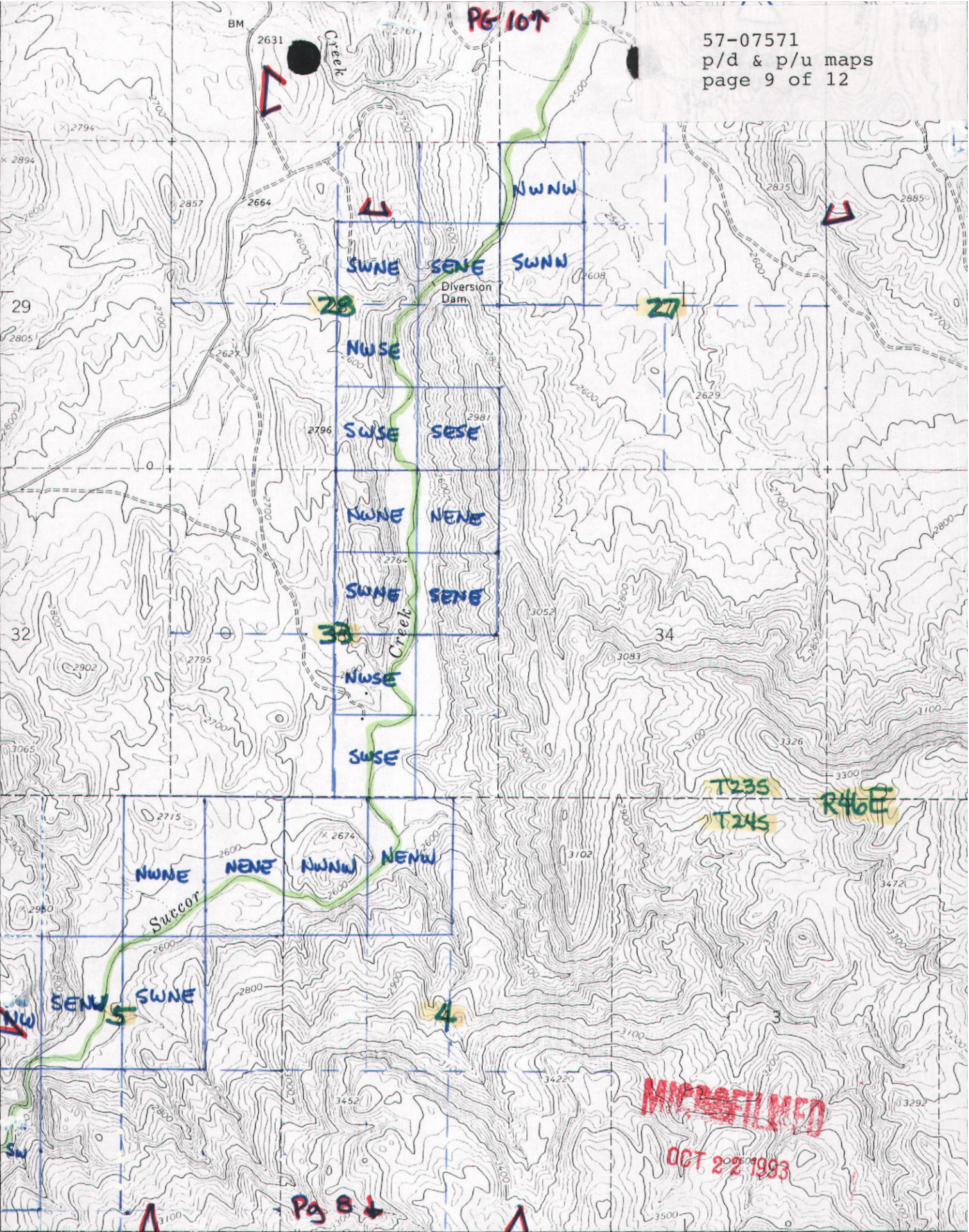
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57-07571
p/d & p/u maps
page 6 of 12
Pg 7
Pg 5
T24S
T25S
R46E
32
33
5
4
8
9
17
16
SWNW
NWSW
SESE
SWSW
NENE
NWNW
SWNW
NWSW
NESW
SWSW
SESW
NWNW
SWNW
NESE
NWSW
SESE
NENE
SENE
SWNW
NWSE
NESE
NWSW
SWSE
NWNE
Negro Rock
Cunningham Res
Spanish Charlie Basin
JEEP TR
JEEP TRAIL
650 000 FEET
(OREG.)
4808
4807
4806
4805
4804
4803
25'
BM 3758
BM 3650
3455
3368
4135
3460
4353
4505
4444
3645
3851
3903
4636
3956
4870
3971
4550
5092
4058
5078
OCT 22 1993

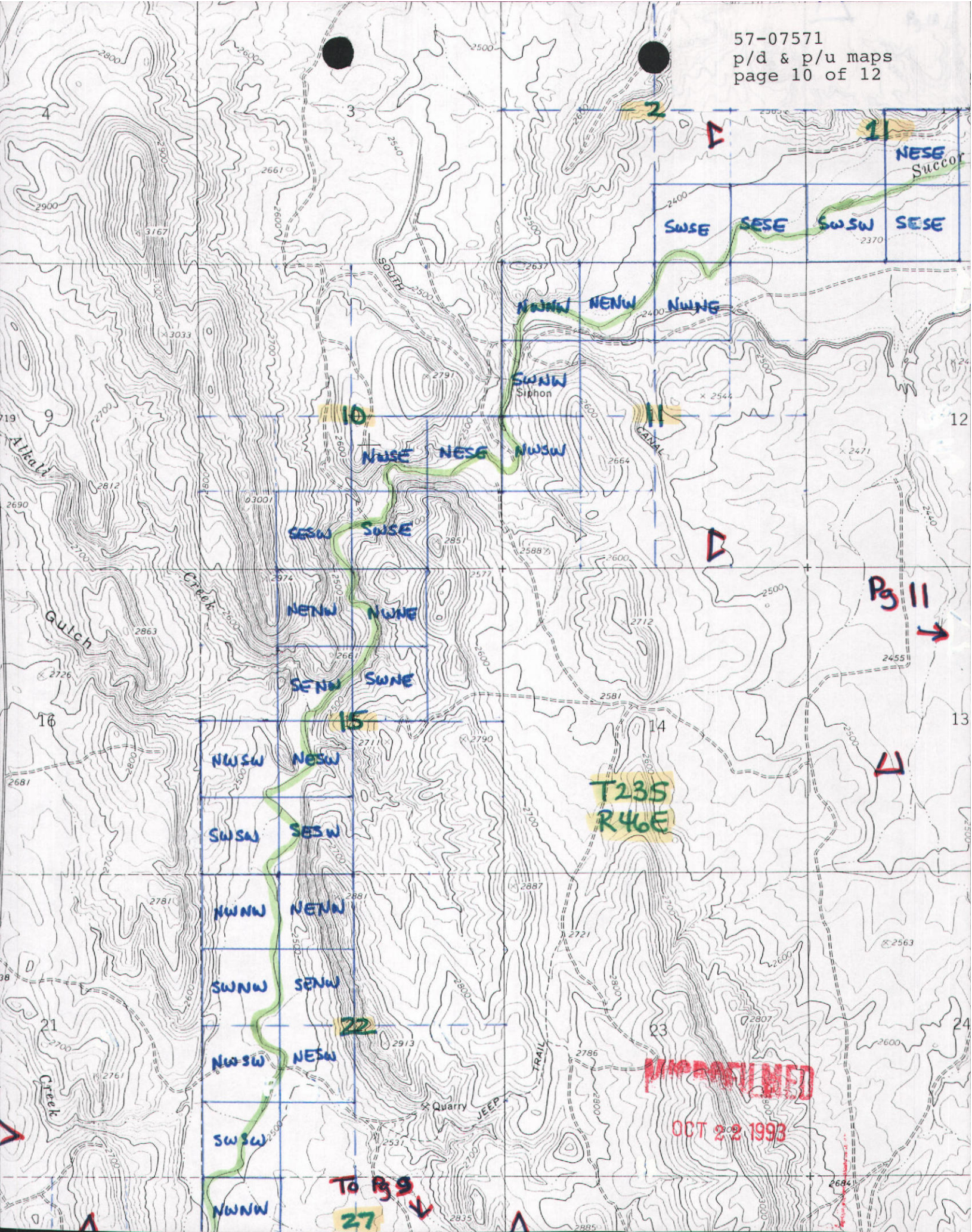

PG 8 ↑
NWNW
SWNW
SENW
17
NWSW
NESW
SWSW
SESW
NENW
SENW
20
NESW
SESW
NENW
NWNE
SWNE
29
NWSE
SWSE
SESE
NENE
NWNW
Rocky Ford
Trimbly
Creek
Spring
T24S
R46E
JEEP TRAIL
14 MI. TO OREG 201
(THREE FINGERS ROCK) 2570 I NW
PG 6 ↓
INCORRECT INFO
OCT 22 1993

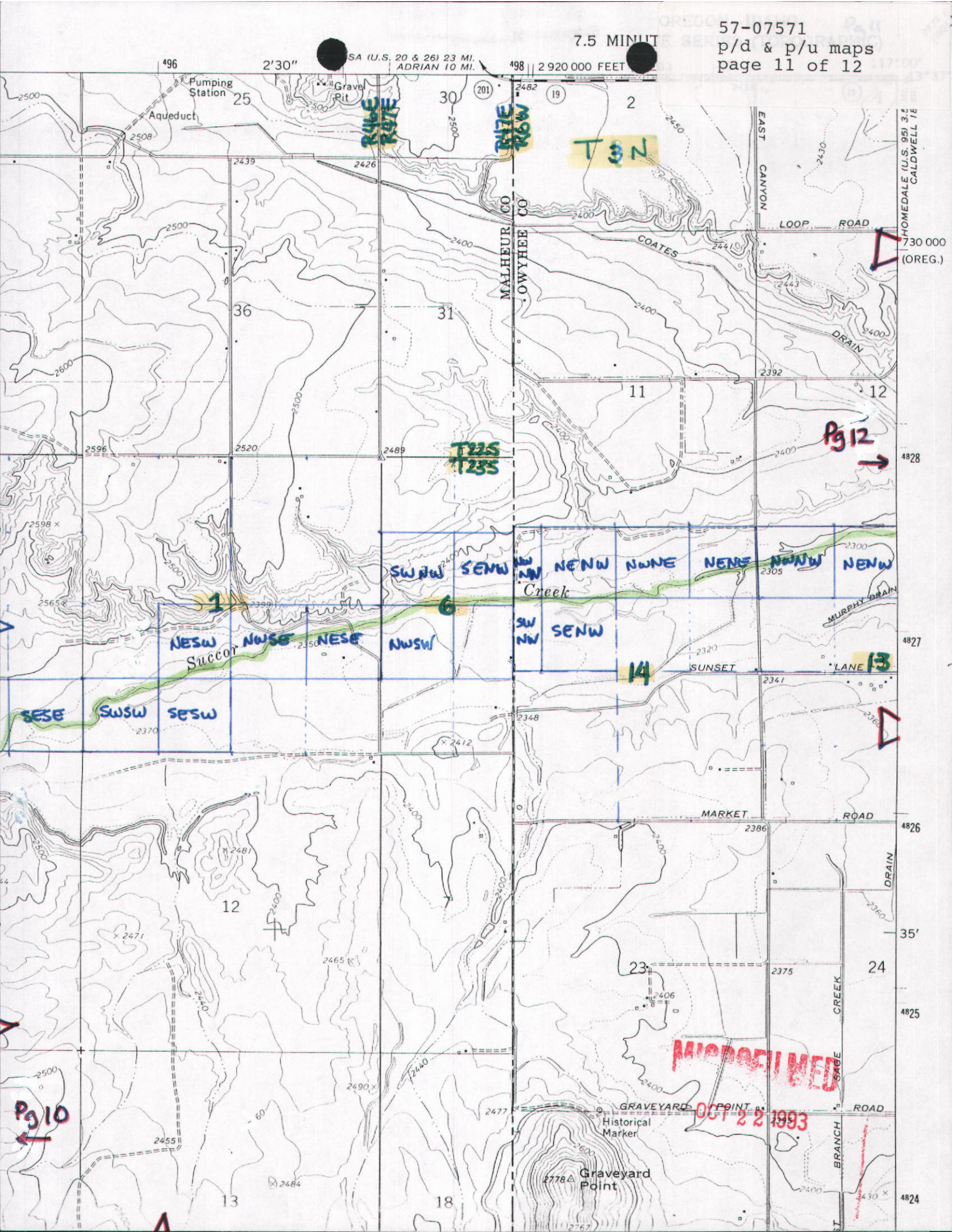


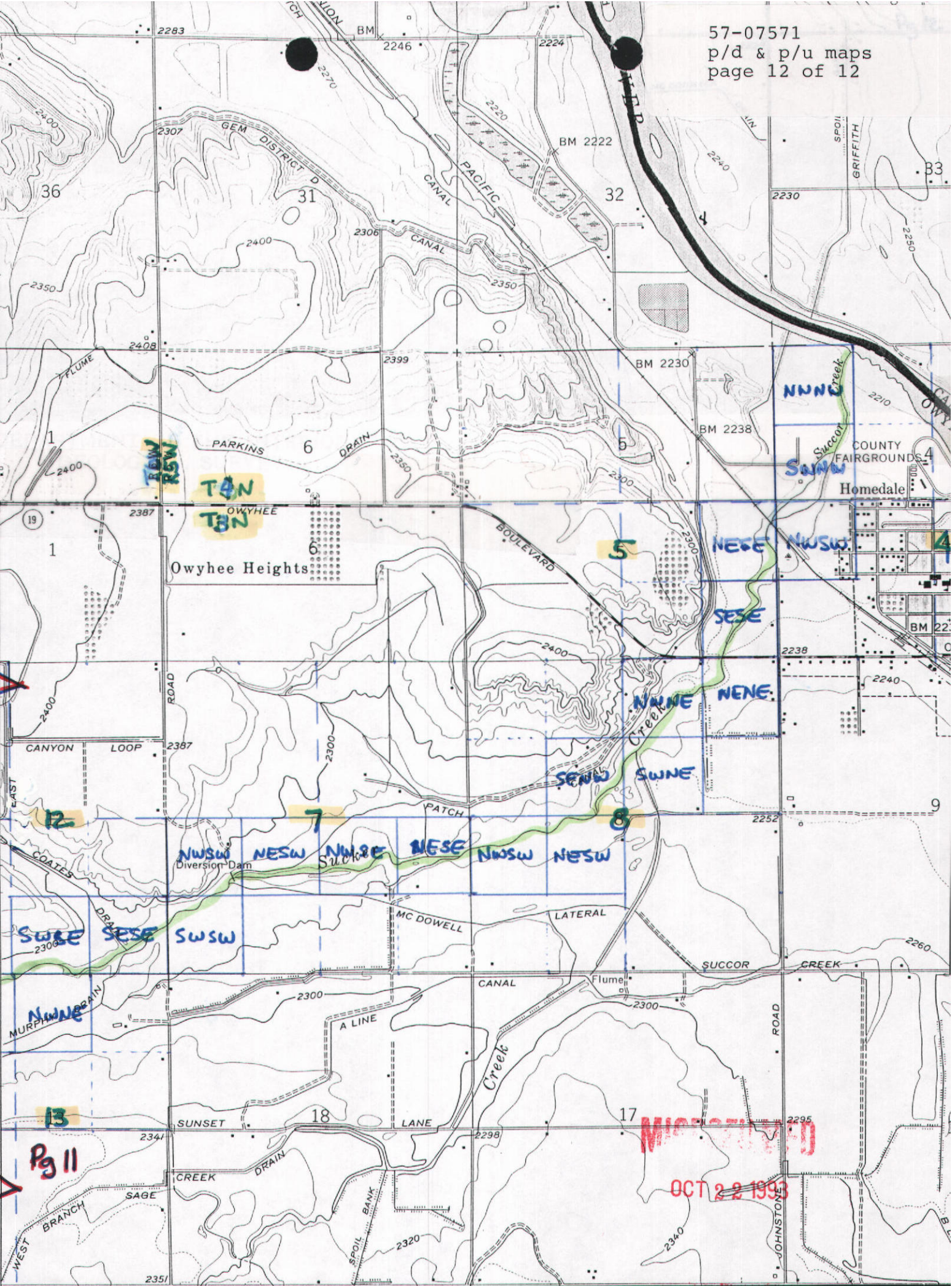
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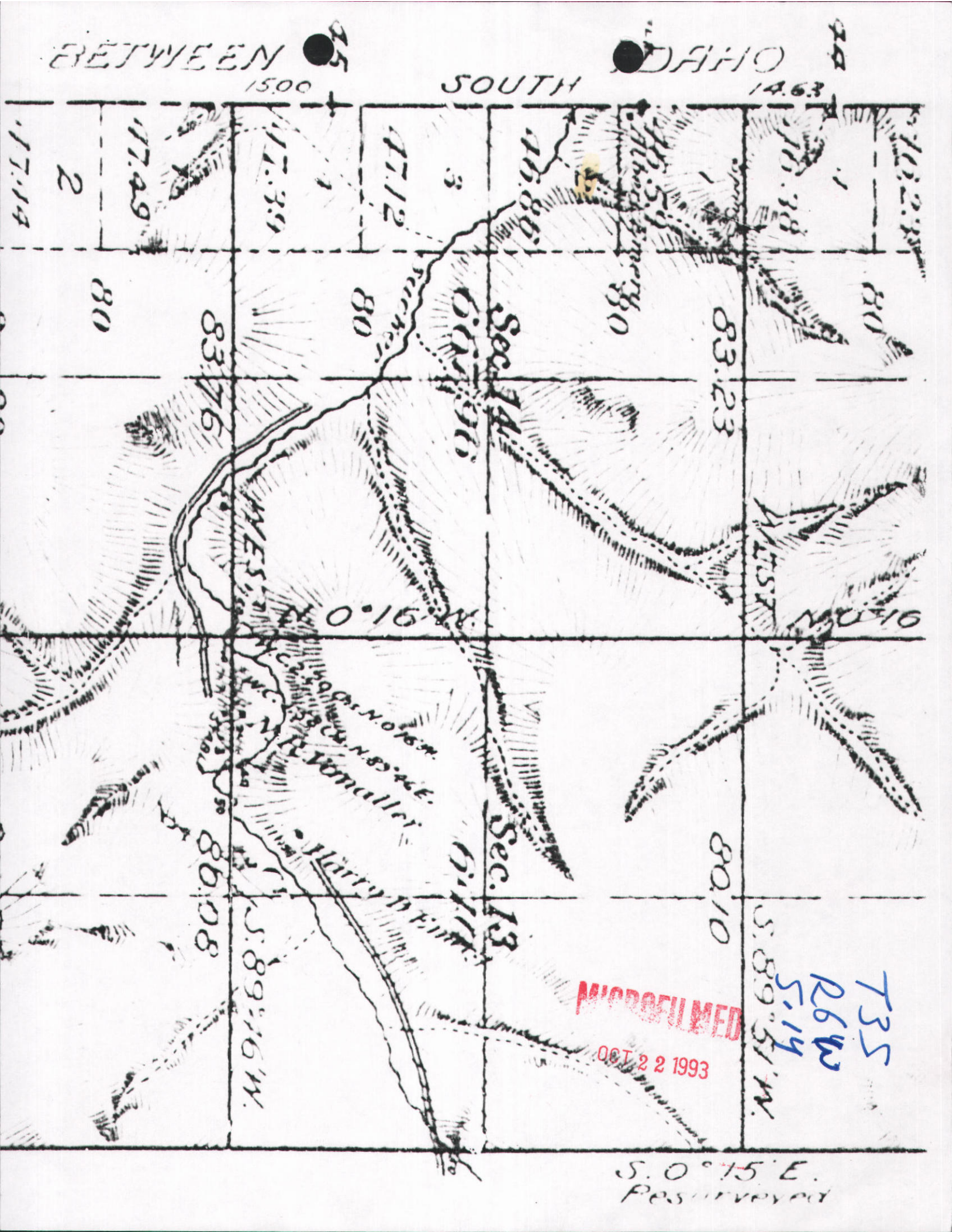


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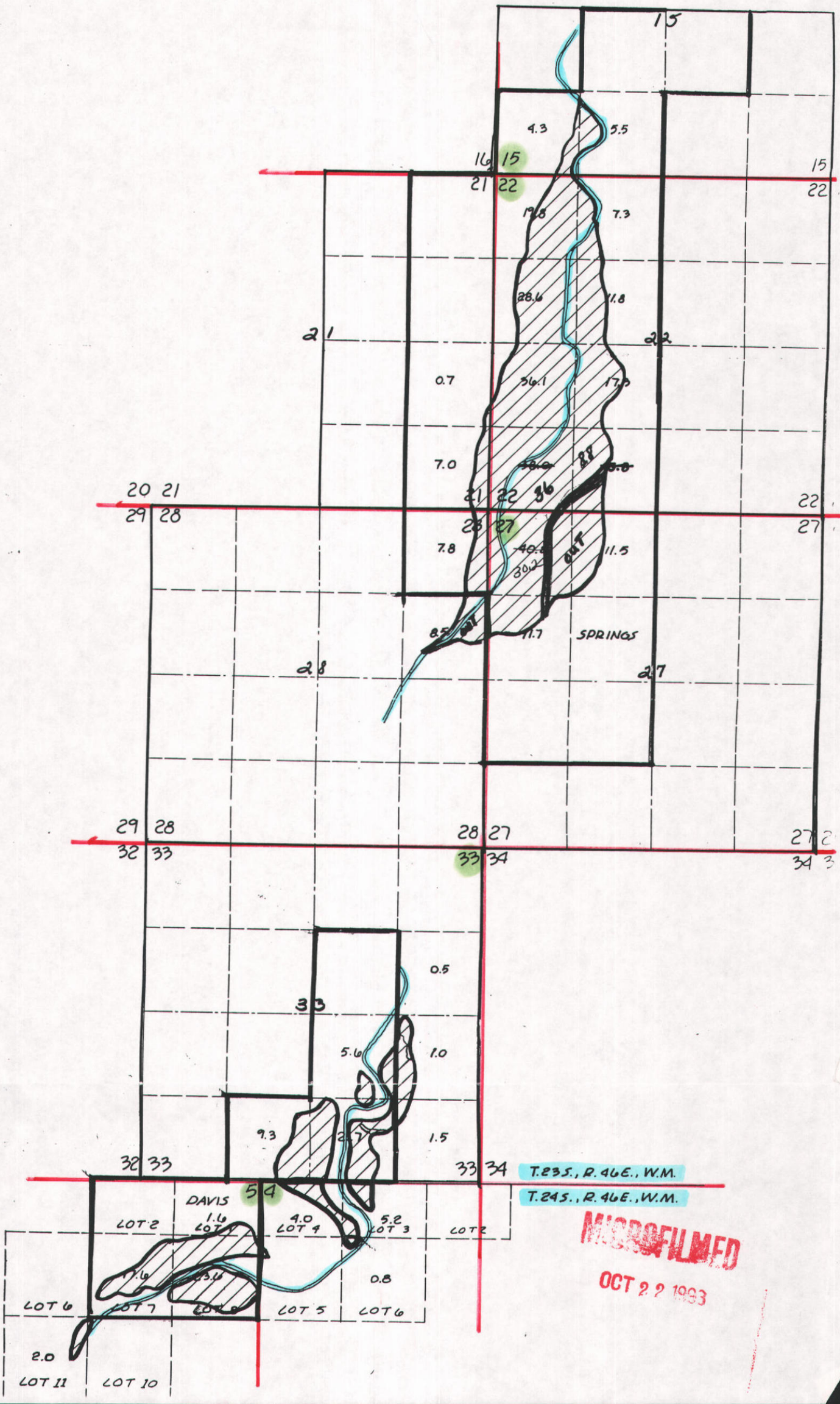

2
1
NESE
Succor
SWSE
SESE
SWSW
SESE
NWNW
NENW
NWNE
SWNW
Siphon
10
11
NWSE
NESE
NWSW
SESW
SWSE
NENW
NWNE
SENW
SWNE
15
NWSW
NESW
SWSW
SESW
NWNW
NENW
SWNW
SENW
22
NWSW
NESW
SWSW
NWNW
27
To P39
P311
T23S
R46E
UNPOSTINED
OCT 22 1993
Alkali
Creek
Gulch
Creek
SOUTH
CANAL
TRAIL
JEEP
Quarry


7.5 MINUT
2'30"
496
498
2 920 000 FEET
SA (U.S. 20 & 26) 23 MI.
ADRIAN 10 MI.
Pumping Station
Aqueduct
Gravel Pit
25
30
2
T 3 N
R 6 E
R 6 W
EAST CANYON
LOOP ROAD
COATES
DRAIN
MALHEUR CO
OWYHEE CO
36
31
11
12
T 22 S
T 23 S
Pg 12
730 000 (OREG.)
4828
SW NW
SE NW
NE NW
NW NE
NE NE
NW NW
NE NW
1
6
Succor Creek
NE SW
NW SE
NE SE
NW SW
SW NW
SE NW
MURPHY DRAIN
4827
14
13
SUNSET LANE
SE SE
SW SW
SE SW
MARKET ROAD
4826
12
7
DRAIN
35'
23
24
CREEK
SAGE
4825
GRAVEYARD POINT ROAD
Historical Marker
Graveyard Point
BRANCH
13
18
4824
Pg 10
MISSOULA MED
OCT 22 1993

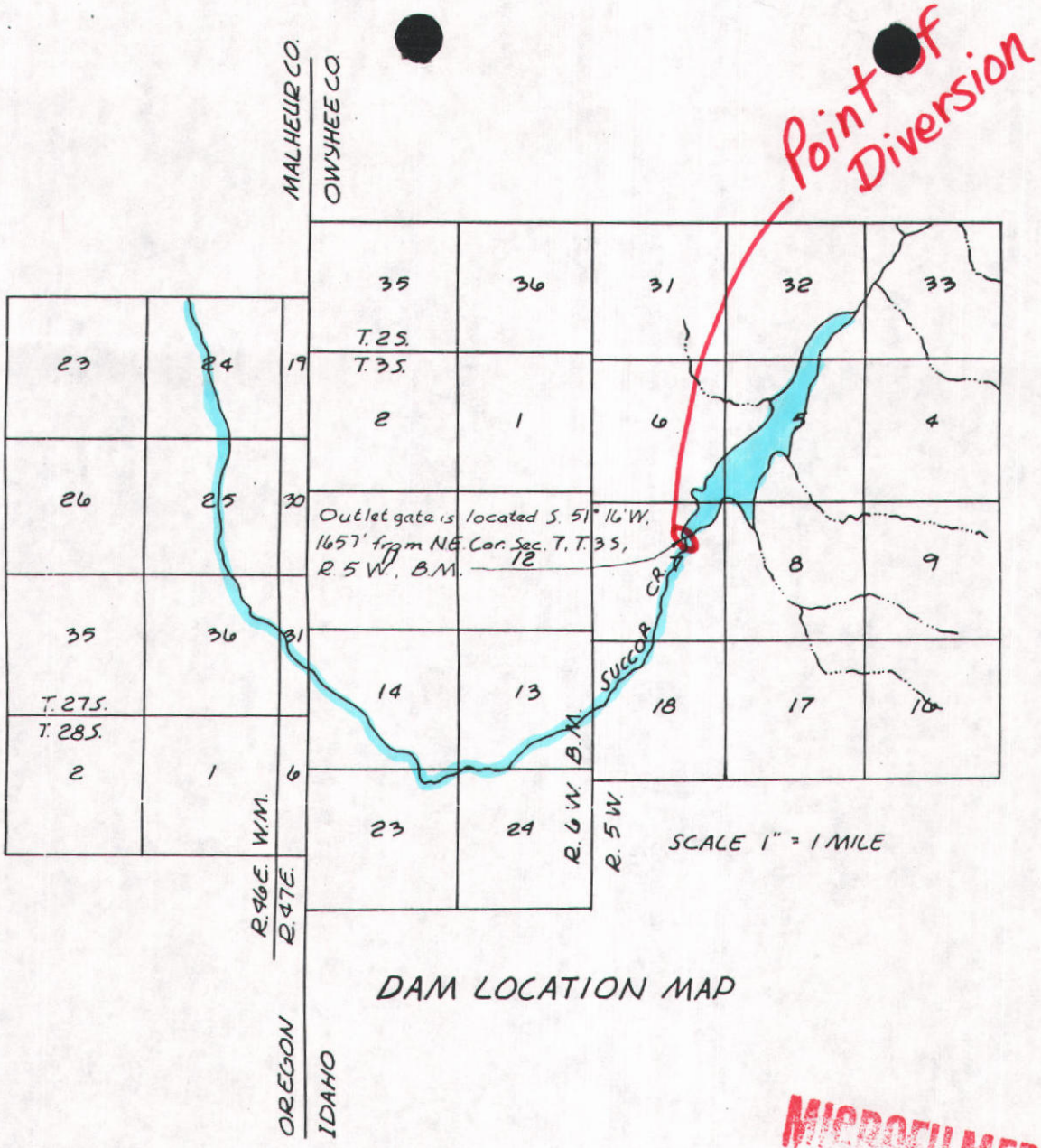

T4N
T3N
R6W
R5W
Owyhee Heights
Homedale
COUNTY FAIRGROUNDS
Diversion Dam
PACIFIC CANAL
GEM DISTRICT D
PARKINS DRAIN
BOULEVARD
CANYON LOOP
COATES DRAIN
MC DOWELL LATERAL
A LINE CANAL
SUNSET LANE
SAGE CREEK DRAIN
WEST BRANCH
SPOIL BANK
JOHNSTONE ROAD
SUCCOR CREEK
Flume
BM 2222
BM 2230
BM 2238
NWNW
NESE
NWSW
SESE
NENE
NWNE
SENW
SWNE
NWSW
NESW
NWSE
NESE
NWSW
NESW
SWSE
SESE
SWSW
NWNE
Pg 11
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BETWEEN
IDAHO
SOUTH
15.00
14.63
Sec. 14
Sec. 13
MEST
EAST
0°16' W.
S. 89°16' W.
S. 89°51' W.
S. 0°15' E.
Post Survey
T35
R6W
S.14
MICROFILMED
OCT 22 1993

Map 1 of 3



MICROFILMED
OCT 22 1993



DAM LOCATION MAP

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OCT 22 1993

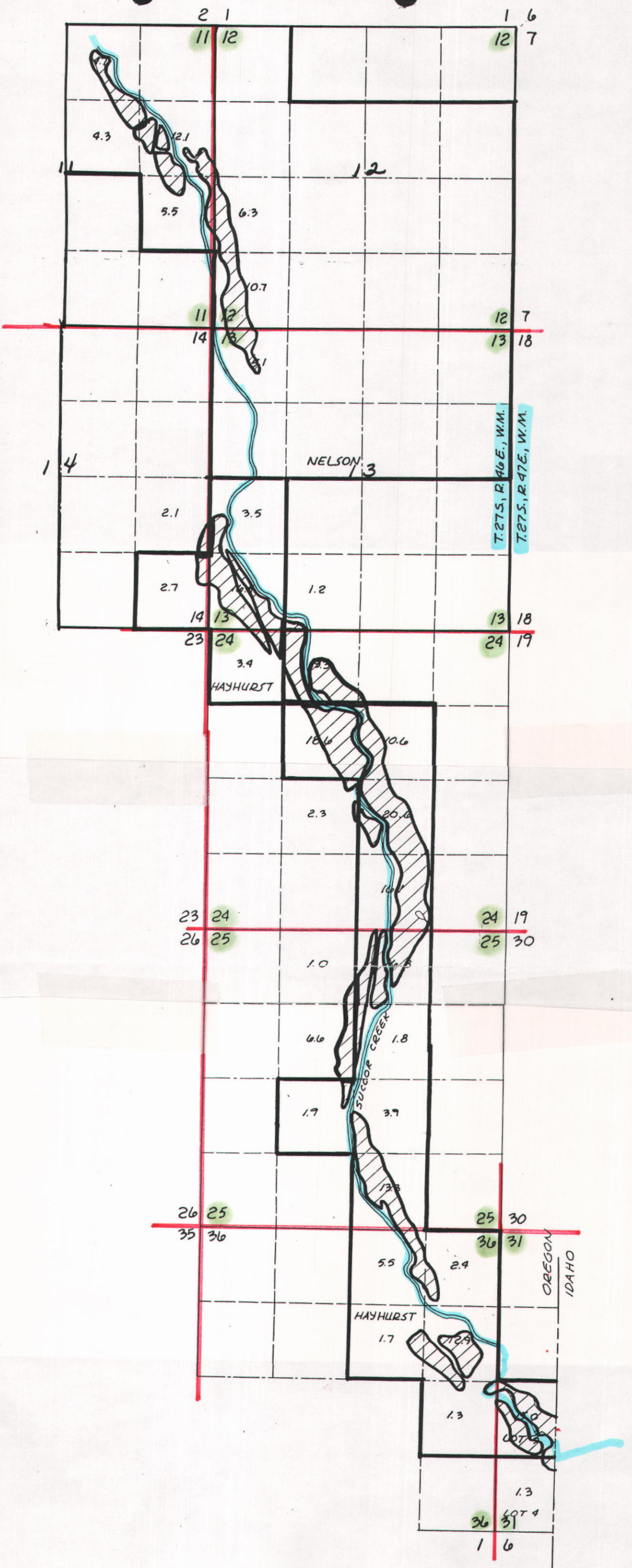
MAP TO ACCOMPANY APPLICATION
TO APPROPRIATE WATER FOR ~~IRRIGATION~~ Stockwater from Storage

APPLICANT: SUCCOR CREEK DISTRICT IMPROVEMENT COMPANY

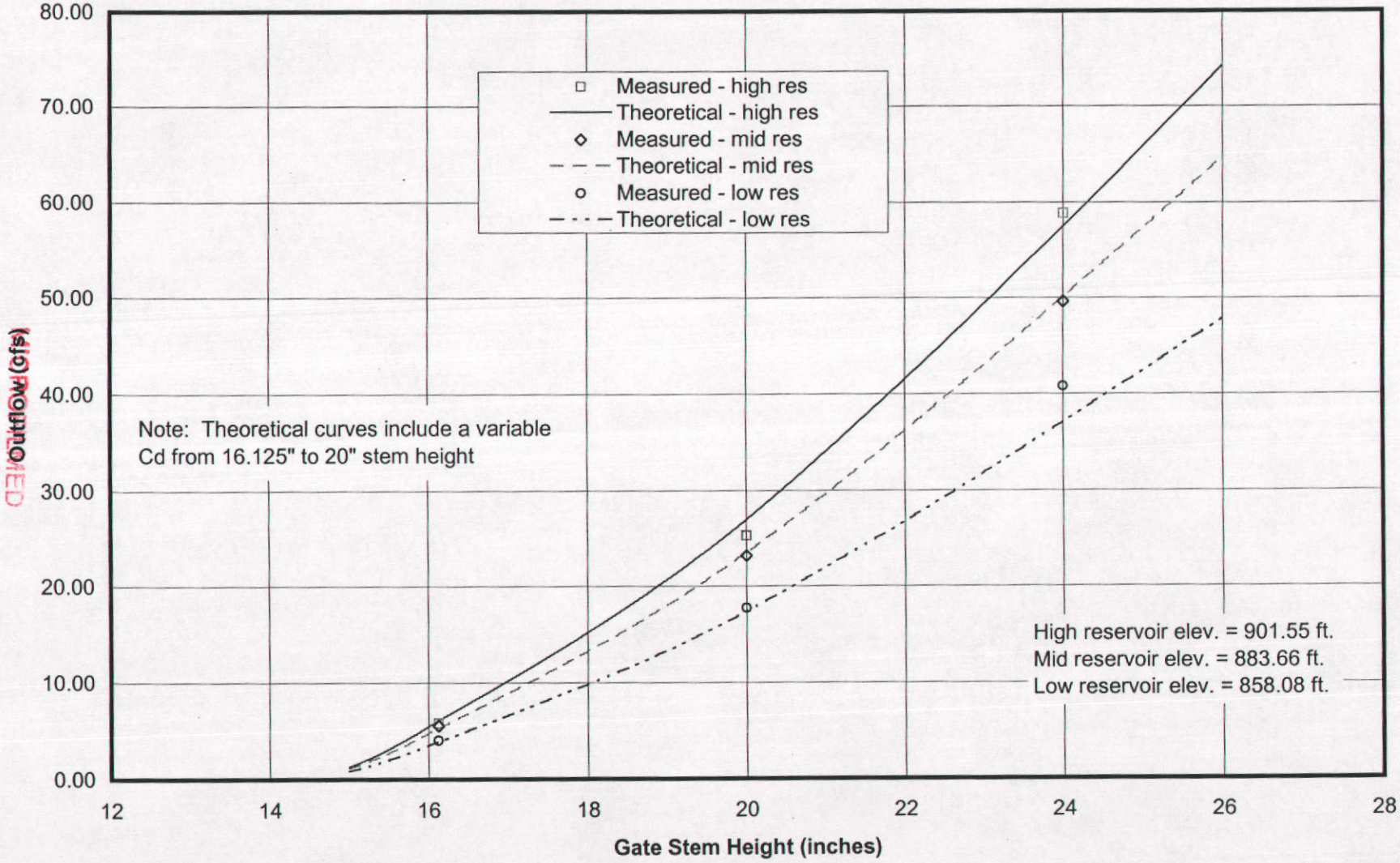
DRAWN AUGUST, 1975
REVISED MARCH 31, 1976
REVISED SEPTEMBER, 1987
REVISED SEPTEMBER, 1988

SCALE: 1" = 1320'

Map 3 of 3


NELSON
HAYHURST
HAYHURST
SUCCOR CREEK
T.27S., R.46E., W.M.
T.27S., R.47E., W.M.
OREGON
IDAHO
LOT 4
LOT 4

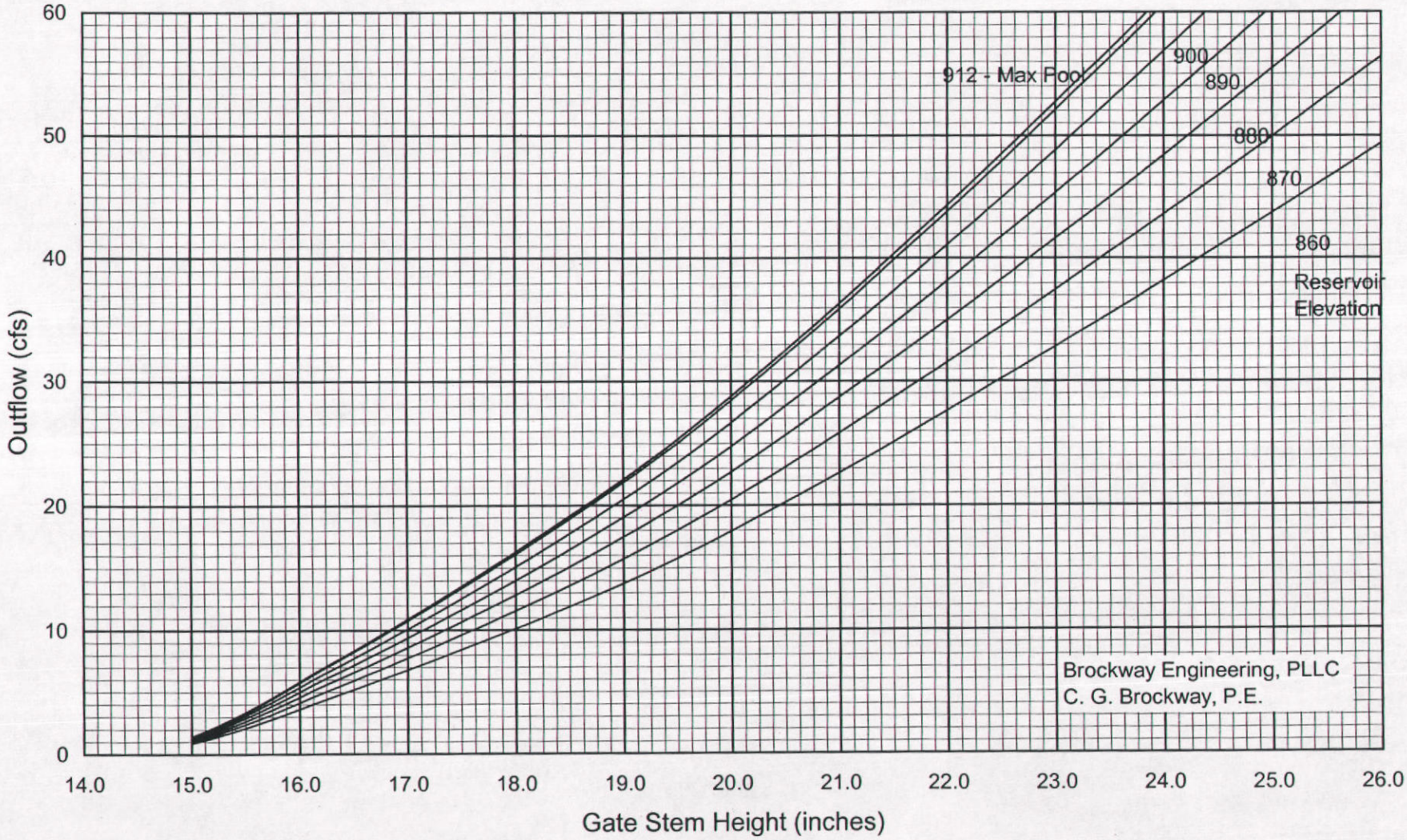
Succor Creek Dam - Outlet Pipe Rating Results



MAY 16 2002
IMPROVED

Succor Creek Reservoir Outlet Gate Rating

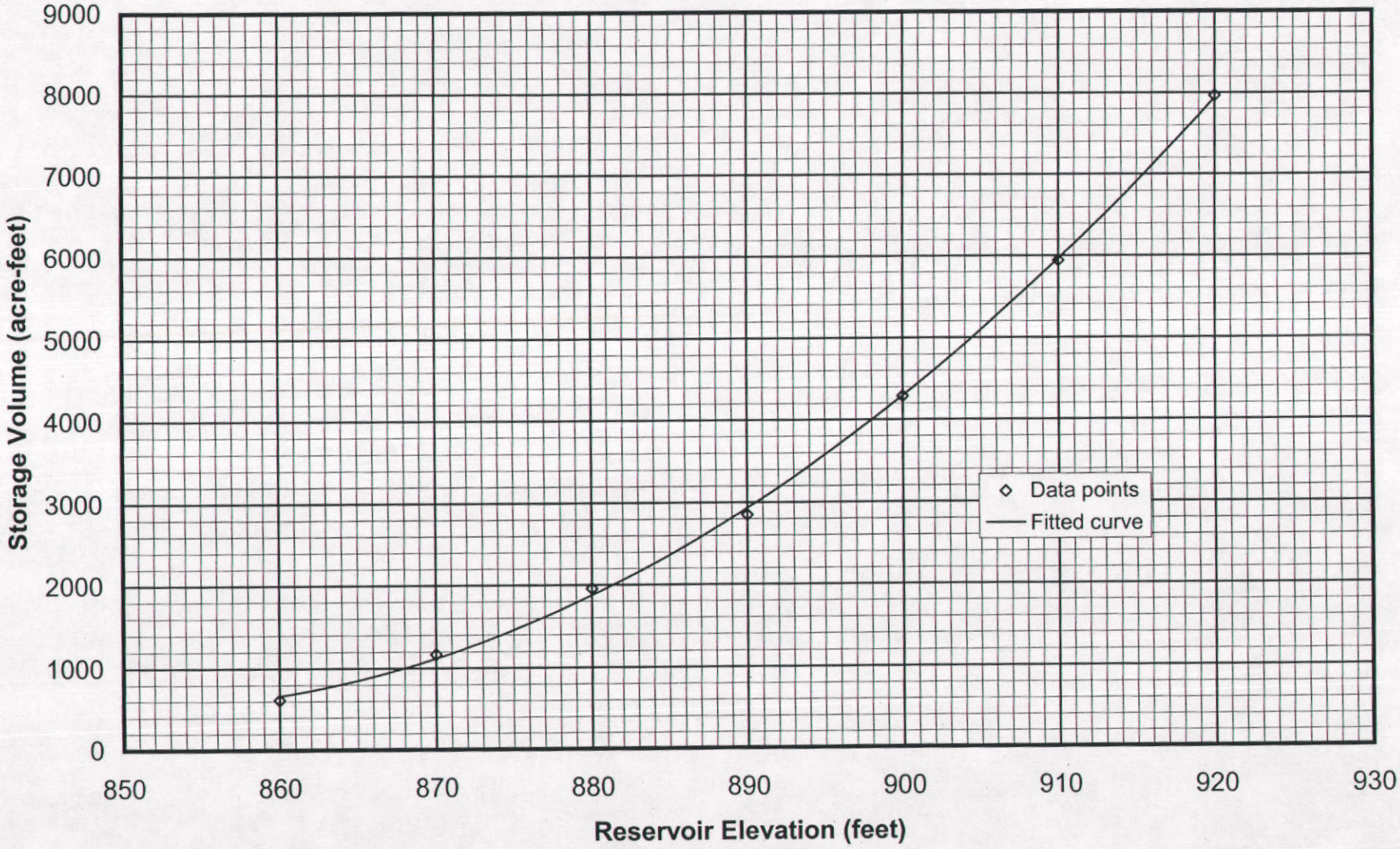
November 27, 2001



MICROFILMED
MAY 16 2002

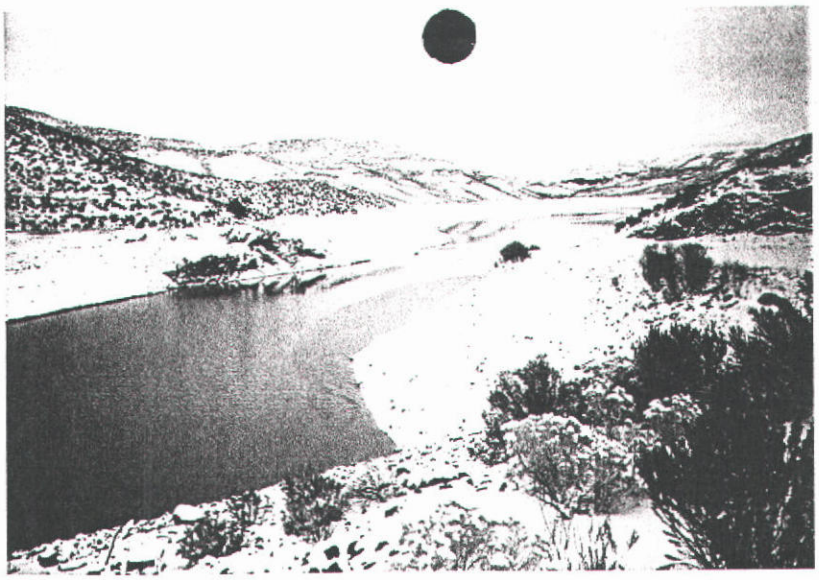
Succor Creek Reservoir Storage Curve

Prepared in 1975 for dam construction by James D. Hanley, P.E.



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MAY 16 2002

Succor Creek Reservoir from top of dam. 11/15/00





Outlet pipe. 11/15/00

Succor Creek downstream of dam, taken from top of dam. 11/15/00



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OCT 1 2 2001

Succer Creek District Improvement Comany

Flow Measurement Proposal

April 4, 2001

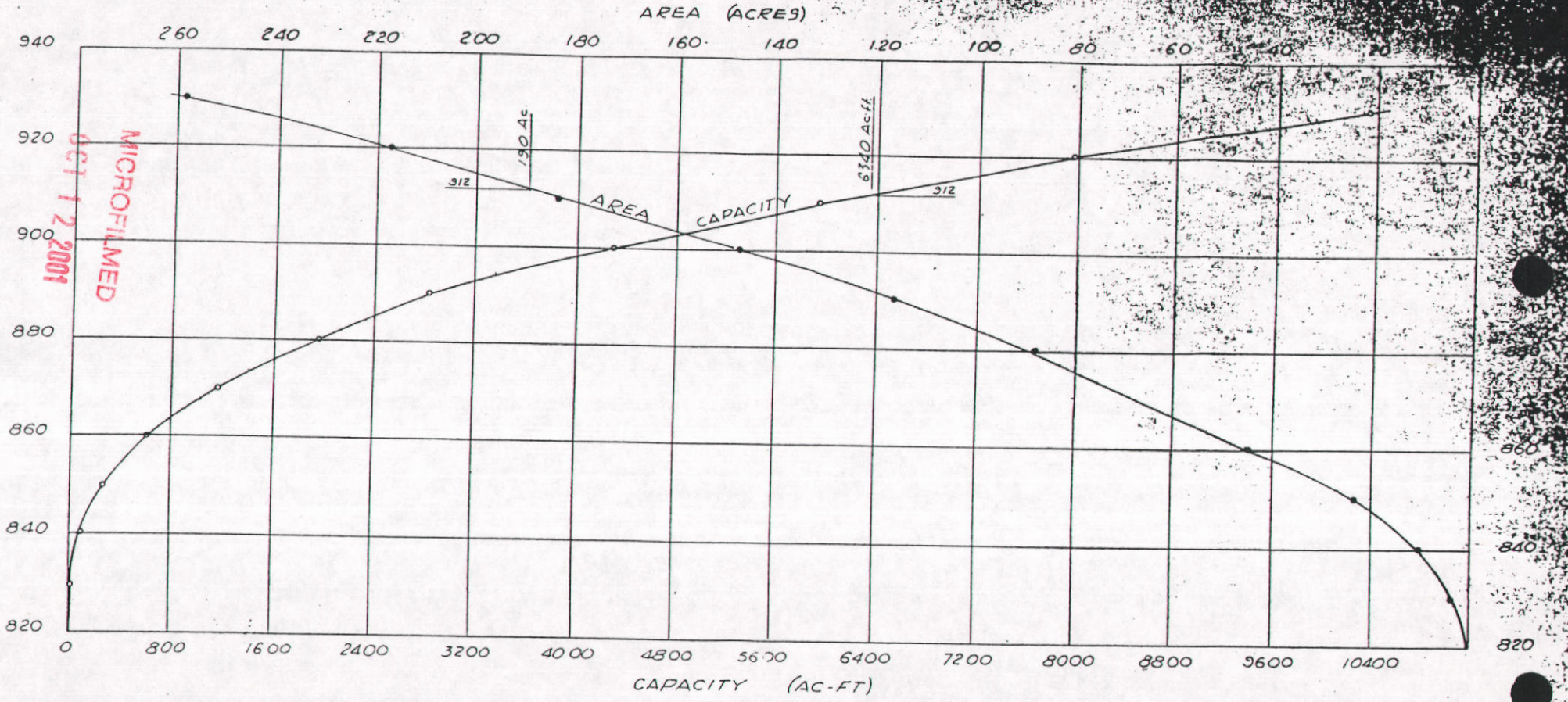
BROCKWAY ENGINEERING, PLLC.

26 mm

20'

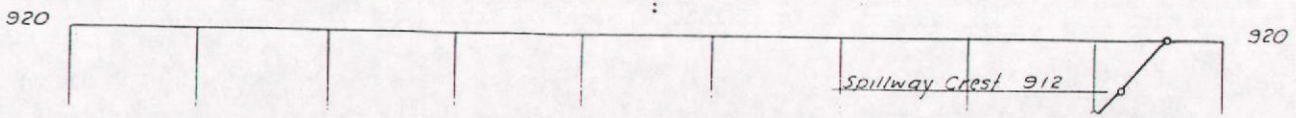
800 A.F.

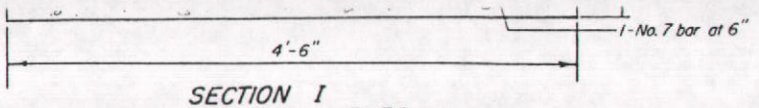
AREA - CAPACITY CURVES



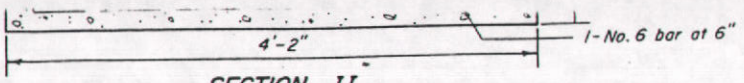
MICROFILMED
OCT 12 2001

CONDUIT DISCHARGE CURVE



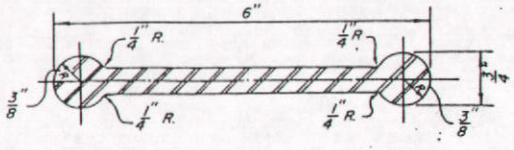


SECTION I
Sta. 1+50 to Sta. 3+30



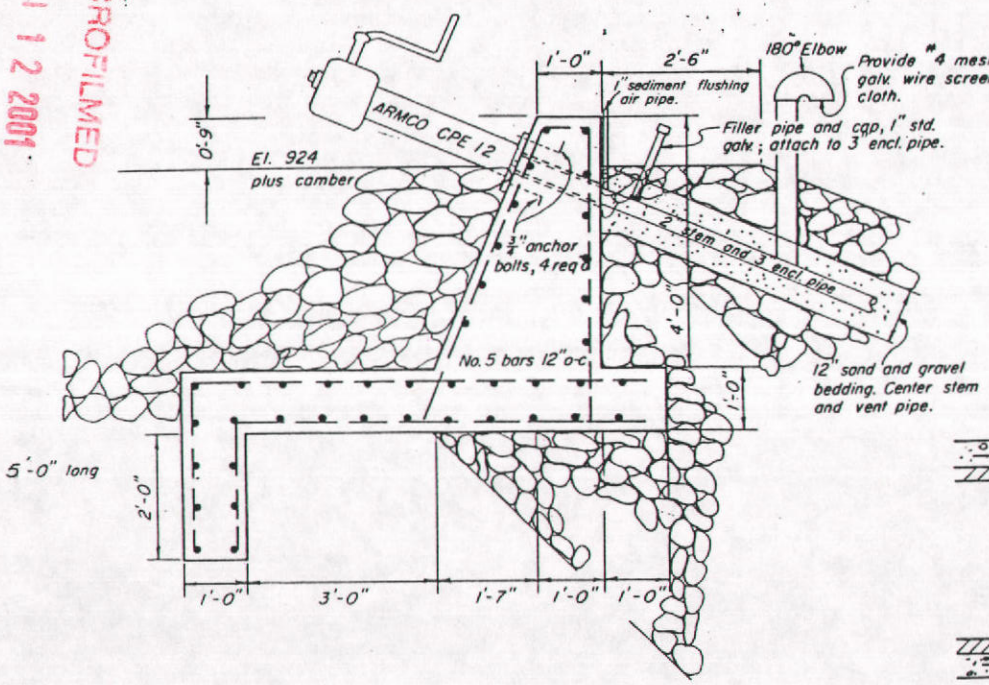
SECTION II
Sta. 0+90 to Sta. 1+50
and
Sta. 3+30 to Sta. 4+20

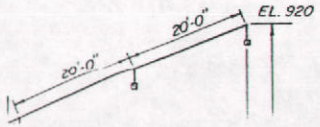
SE
Sta. 0+
Sta. 4+



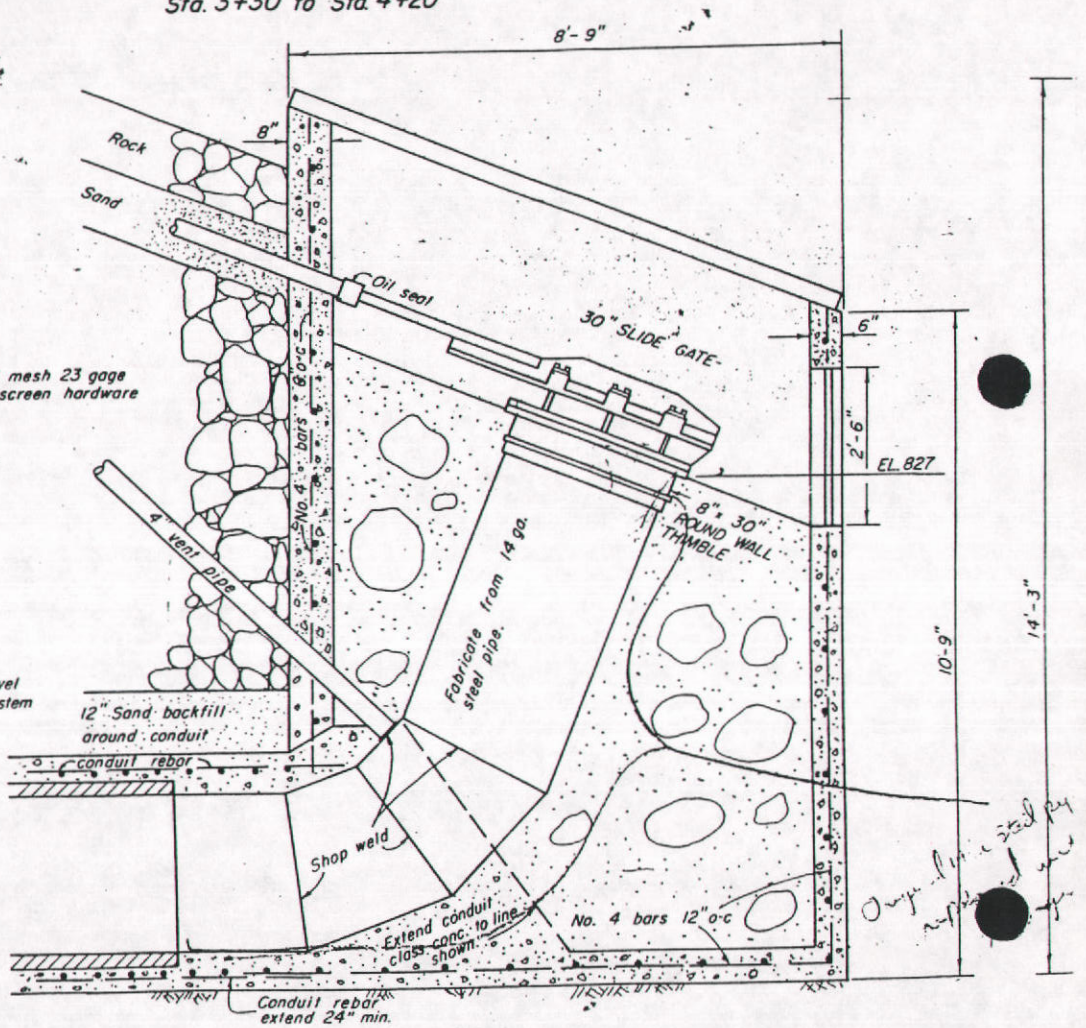
RUBBER WATERSTOP
1/2" = 1"

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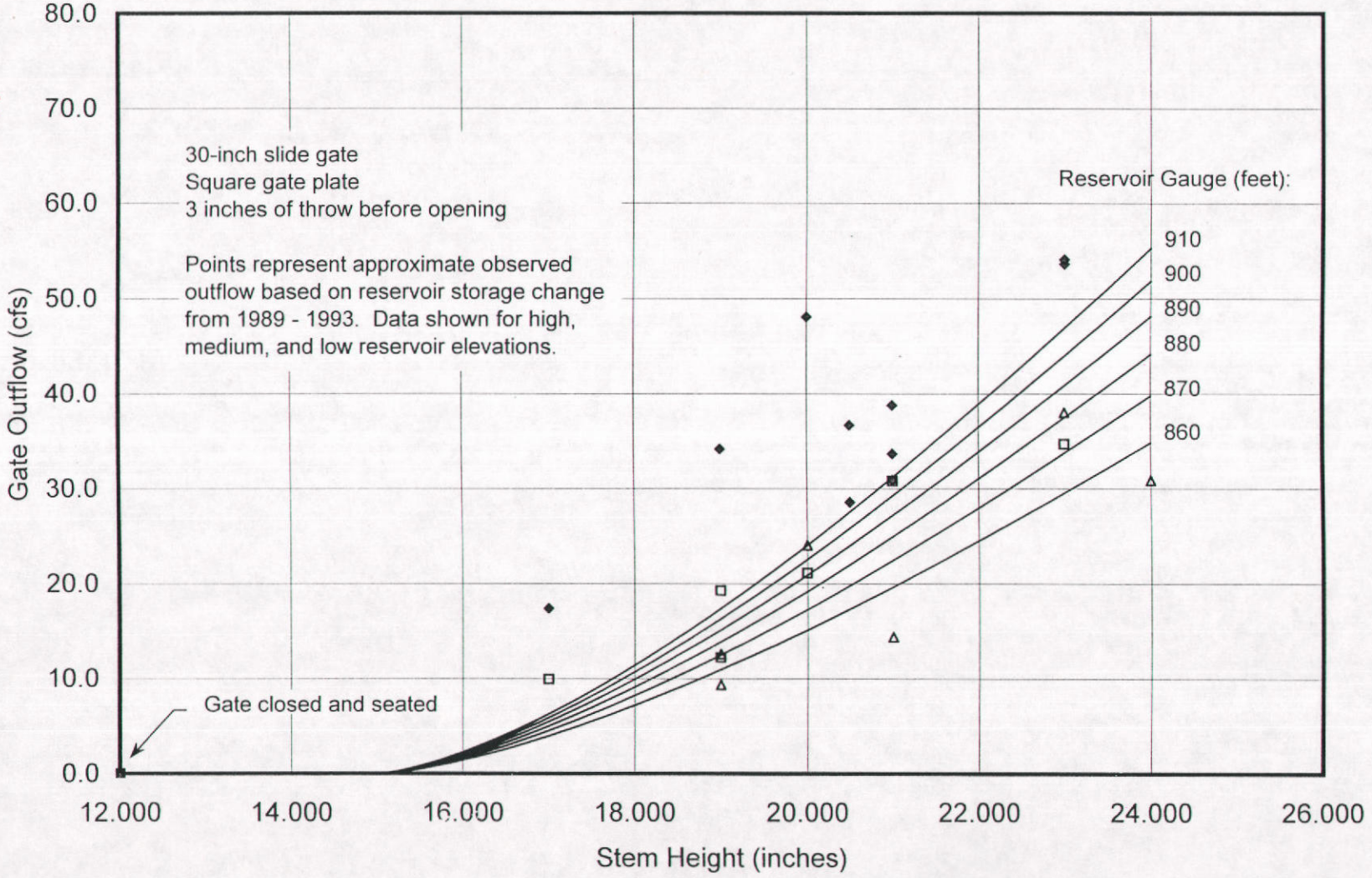




GATE STRUCTURE
1/2" = 1'-0"

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Succor Creek Reservoir
Theoretical Gate Outflow vs. Opening

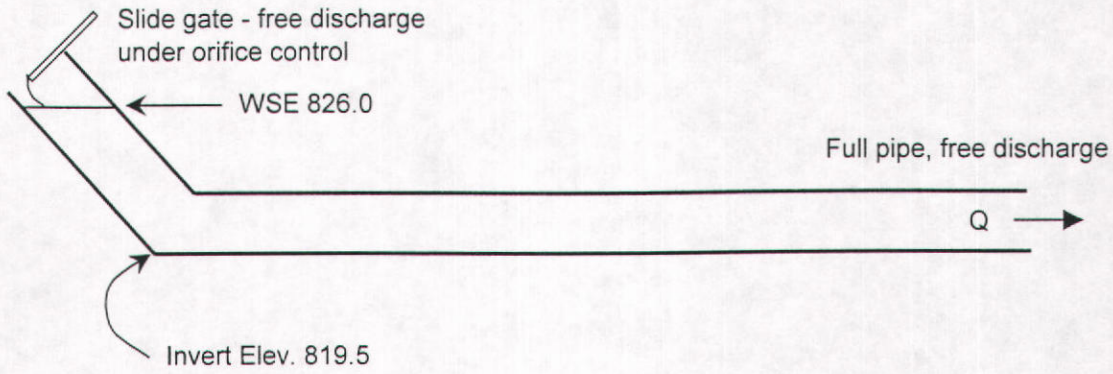


SUCCOR CREEK OUTLET PIPE - FULL FLOW HYDRAULIC ANALYSIS

C. G. Brockway, P.E. 3/28/01

Determine minimum flow that will submerge the slide gate.
At low flows, the gate will operate under free discharge and the pipe will flow partially-full under open-channel conditions. At higher flows, the pipe will flow full.

Condition just before gate submerges:



Use energy equation with Darcy-Weisbach friction to determine flow under this condition:

Pipe diameter	2.5	feet
Absolute roughness (k) for concrete in fair condition	0.005	feet
k / D	0.00200	
Friction factor	0.023	
Loss coeffs:		
45-deg med radius	0.30	
Abrupt expansion	0.13	
Exit	1.0	
Pipe area	4.91	sq. ft.
Pipe length	490	feet
Elevation drop	0	feet
Total head	7.75	feet
Velocity	9.16	ft/s
Discharge	45.0	cfs

Check friction factor:

Re	1.88E+06	
f	0.023	OK

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					GABICA	C				SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NW	NW	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		SW	SW	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NE	SE	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NW	SE	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
	22	SW	NW	04	57-04070	GABICA	C	S	06/01/1904	SPRING
						GABICA	C			SPRING
		NE	SW	01	57-04044	GABICA	C	S	04/15/1952	SUCCOR CREEK
		NE	SW	04	57-04070	GABICA	C	S	06/01/1904	SPRING
						GABICA	C			SPRING
	28	NW	NW	04	57-07130	STATE OF IDAHO	C	L	12/11/1974	SPRING
		SE	SE	01,04	57-04043	GABICA	C	S	08/04/1909	SUCCOR CREEK
		SE	SE	01	57-04044	GABICA	C	S	04/15/1952	SUCCOR CREEK
	30	NE	SW	04	55-07077	STATE OF IDAHO	C	L	08/02/1974	SPRING
05W	1	SW	SE	01	57-02057	BAILEY	C	L	09/12/1913	MULE CREEK
										WILLOW SPRING
										MARSH SPRING
	3	NE	NW	04,16	57-04078	U.S. DEPT. OF INTE	C	S	10/14/1968	UNNAMED STREAM
		NE	NW	04,16	57-07350	U.S. DEPT. OF INTE	C	L	02/25/1983	SPRING
		SE	SW	04,16	57-04084	U.S. DEPT. OF INTE	C	S	10/14/1968	EDDY CABIN SPRING
		SE	SW	04,16	57-07365	U.S. DEPT. OF INTE	C	L	02/25/1983	EDDY CABIN SPRING
	7	NE	NE	02,03	57-07153	SUCCOR CREEK WATER	C	P	11/24/1975	SUCCOR CREEK
	9	SW	SE	04,16	57-07091	U.S. DEPT. OF INTE	C	L	11/08/1972	JEFF SPRING
	10	SE	NE	01,43	57-02120	MASSIE	C	L	08/23/1919	SPRINGS
		NW	NW	04,16	57-07384	U.S. DEPT. OF INTE	C	L	02/25/1983	BALTZOR SPRING
		SW	SE	01,43	57-02120	MASSIE	C	L	08/23/1919	SPRINGS
	12	SE	NE	01	57-02057	BAILEY	C	L	09/12/1913	MULE CREEK
										WILLOW SPRING
										MARSH SPRING
		NW	NW	01,43	57-02077	JACOBS	O	L	08/28/1914	LITTLE SUCKER CREEK
						MASSIE	C			SPRING

Transfer Basin Res. 6340 a.f. } per 057-07153 File

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WR4002NP
(OD-22)

IDAHO DEPARTMENT OF WATER RESOURCES
WATER RIGHTS BY POINT OF DIVERSION

DATE: 01/12/92
PAGE: 1732

TWP	RNG	SECT	TRACT 1\4	1\4	LOT	WATER USE CODE	WATER RIGHT NO.	LAST NAME	O C	STG	PRIORITY DATE	POD FLAG	WATER SOURCE
03S	05W	12	NW	SE	01		57-02057	BAILEY	C	L	09/12/1913		MULE CREEK
													WILLOW SPRING
													MARSH SPRING
		13	SW	NW	01,43		57-02075	JACOBS	O	L	08/28/1914		LITTLE SUCKER CREEK
								MASSIE	C				SPRING

THE OWYHEE AVALANCHE

P.O. BOX 97 • HOMEDALE, ID 83628 • 208/337-4681

AFFIDAVIT OF PUBLICATION

STATE OF IDAHO)
)ss
COUNTY OF OWYHEE)

I, Joe E. Aman, being first duly sworn, depose and say:

1. That I am a citizen of the United States of America, and at all times hereinafter mentioned was and now over the age of twenty-one years, not a party to nor interested in the proceedings hereinafter mentioned.

2. That during the time of the publication of the notice hereinafter mentioned, I was and now am the publisher of **The Owyhee Avalanche**, a newspaper of general circulation printed and published weekly, on Wednesday of each and every week, in the City of Homedale, County of Owyhee and State of Idaho.

3. That the said **The Owyhee Avalanche** has been printed and published continuously and uninterruptedly in said County during a period of more than seventy-eight weeks prior to the first publication of the attached notice.

4. That said notice of which a printed copy, taken from said newspaper, is hereto affixed, was published in the regular issue thereof, and not a supplement thereto, in said newspaper, in two (2) (consecutive) calendar weekly issue(s) of said newspaper, in the following date(s):

March 3, 1993
March 10, 1993

Signed Joe E Aman

Subscribed and sworn to before me this 10th day of March A.D., 1993

Notary Public in and for the State of Idaho
Residing at Homedale, Idaho
Commission expires October 1997

NOTICE OF APPLICATION FOR WATER RIGHT

The Following application(s) have been filed to appropriate the public waters for the State of Idaho:

57-07571 ✓ St

SUCCOR CREEK WATER CONTROL DISTRICT
ROCKVILLE RT
JORDAN VALLEY, OR 97910
Source: SUCCOR CREEK
Tributary: SNAKE RIVER
Diversion Pt: SWNENE Sec 7 T 03S R 05W in OWYHEE County.
SENWNE Sec 7 T 03S R 05W in OWYHEE County.
Use: STOCKWATER STORAGE (400.00 AF)
STOCKWATER FROM STORAGE (400.00 AF)
Total Diversion: (400.00 Af)
Date File: 9/ 4/1992
Place of use includes Succor Creek within Oregon.

The permit will be subject to all prior water rights. Protests must be filed with the Director, Dept. of Water Resources, Western Region, 2735 Airport Way, Boise, Idaho 83705 on or before March 22, 1993.

R. Keith Higginson, Director

Publish March 3 & 10, 1993

and Idaho. (Not fatal - dam description shows Idaho use in part)

Dar 5/20/93

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APR 1 1993
Department of Water Resources
Western Regional Office

YTURRI, ROSE, BURNHAM, BENTZ & HELFRICH
ATTORNEYS AT LAW

ANTHONY YTURRI
CARL BURNHAM, JR.
CLIFF BENTZ *
TIM J. HELFRICH *
BRUNO J. JAGELSKI *
MICHAEL B. BENNETT

GENE C. ROSE, OF COUNSEL
EMIL R. BERG, OF COUNSEL

* LICENSED IN OREGON AND IDAHO

89 S.W. THIRD AVENUE
P.O. BOX "S"
ONTARIO, OREGON 97914

TELEPHONE
(503) 889-5368

DOCUMENT TRANSMISSION
(503)889-2432 (ONTARIO)

PORTLAND OFFICE
RIVIERA PLAZA
SUITE 403
1618 S.W. FIRST AVENUE
PORTLAND, OREGON 97201
(503) 222-4634

DOCUMENT TRANSMISSION
(503)222-2868 (PORTLAND)

IDAHO OFFICE
P.O. BOX 450
FRUITLAND, IDAHO 83619
(208) 452-3209

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Department of Water Resources
Western Regional Office

March 8, 1993

Steve Lester
DEPARTMENT OF WATER RESOURCES
Western Region
2735 Airport Way
Boise ID 83705-5082

Re: Succor Creek District Improvement Company
Our File No. 8559

Dear Mr. Lester:

I noticed in reviewing the Owhyee County Newspaper that the name used for the District is incorrect. The correct name for the District:

"Succor Creek District Improvement Company".

The name that appears in the advertisement is the old name.

Could you please make whatever changes might be necessary so that the notice is appropriately given.

Thank you very much for your assistance.

Very truly yours,

YTURRI,ROSE,BURNHAM,BENTZ & HELFRICH

Cliff S. Bentz

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CSB/tdm

already advertised ID Name given on Appl.,
does not appear should re-advertise just to show
corrected name.
Suggest change name in database per this letter.
SR 3/10/93

Form 217
11/91

OFFICE USE ONLY
Amt. of Fee $ 175.00
Date 3/7/94
Receipt No. C029738
Receipt by DW

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Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

PROOF OF BENEFICIAL USE

The Idaho Department of Water Resources considers this form a statement that the permit holder(s) has/have completed all development that will occur under this permit and that water has been applied according to the provisions of the permit for the beneficial use(s) described below. This form must be accompanied by a license examination fee, when necessary, or a completed field examination report prepared by a certified water right examiner who has been appointed by the department.

1. Permit No. 57-07571 Telephone No. 503-339-3403
2. Name(s) of Permit Holder(s): Succor Creek District Improvement Co.
3. Mailing Address: Rockville Rt Jordan Valley, OR 97910
4. Source of Water: Succor Creek Tributary of Snake River

   If **GROUNDWATER**, Well Driller's Name: _____ Date Drilled: _____

   OPTIONAL:
   Pump horsepower: _____ Pressure (psi): _____ Dynamic pumping level (ft.): _____

5. Extent of Use (as authorized by the permit):

   Domestic _____ (No. of households) Stockwater 2500 CATTLE + HORSES (No. and type of stock)

   Irrigation _____ (No. of acres) Other _____

6. Total rate and/or volume for which proof is submitted _____ cfs **OR** 400 acre/feet

7. Refer to the approval conditions on your permit and respond accordingly:

   Measuring device: Required? X Yes ___ No Installed? ___ Yes X No See Attached Explanation

   OR

   Flow Measurement Port: Required? ___ Yes X No Installed? ___ Yes X No

8. Fee Enclosed: $ 175.00 (See License Fee Schedule on back of Instruction Sheet)

9. Person to contact to accompany the Department representative during field examination of the water system.

   Ronald Cunningham 503-339-3403
   Name Telephone No.

   502 Succor Creek Rd Jordan Valley, OR 97910
   Address

10. The above information is my true statement of the extent to which the above numbered permit has been developed and I relinquish any undeveloped portion of the permit to the state of Idaho.

3/3/94 Ronald Cunningham, President
Date Signature (and title, if on behalf of a company or organization)

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2001

State of Idaho
Department of Water Resources

Permit To Appropriate Water

NO. 57-07571

Proposed Priority: September 4, 1992 **Maximum Storage Volume:** 400.0 AF

This is to certify, that **SUCCOR CREEK DISTRICT IMPROVEMENT COMPANY**
ROCKVILLE RT
JORDAN VALLEY OR 97910
has applied for a permit to appropriate water from:

SUCCOR CREEK tributary of **SNAKE RIVER**

and a permit is **APPROVED** for development of water as follows:

BENEFICIAL USE	PERIOD OF USE	RATE OF DIVERSION	ANNUAL VOLUME
STOCKWATER STORAGE	01/01 to 12/31		400.0 AF
STOCKWATER FROM STORAGE	01/01 to 12/31		400.0 AF
	Totals		400.0 AF

LOCATION OF POINT(S) OF DIVERSION: SWNENE , Sec. 7, Township 03S, Range 05W
SENWNE , Sec. 7, Township 03S, Range 05W
OWYHEE County

PLACE OF USE: STOCKWATER STORAGE

TWN	RGE	SEC			
02S	05W	32	SWSE		
03S	05W	5	NWNE	SWNE	NENW
			SENW	NESW	NWSW
			SWSW	SESW	
		6	SESE		
		7	NENE	NWNE	

PLACE OF USE: STOCKWATER FROM STORAGE

TWN	RGE	SEC			
IN IDAHO:					
03N	05W	4	NWNW	SWNW	NWSW
		5	NESE	SESE	
		7	NWNE	SWNE	NESW
			NWSW	SWSW	NESE
			NWSE		
		8	NENE	NWNE	SWNE
			SENW	NESW	NWSW
	06W	12	SWSE	SESE	
		13	NWNE	NENW	NWNW
		14	NENE	NWNE	NENW
			NWNW	SWNW	SENW

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OCT 2 2 1993

State of Idaho
Department of Water Resources

Permit To Appropriate Water

NO. 57-07571

PLACE OF USE: STOCKWATER FROM STORAGE

TWN	RGE	SEC			
03S	05W	7	NWNE	SWNE	SESW
			NWSE	SWSE	
		18	NENW	NWNW	SWNW
03S	06W	13	SESW	NESE	NWSE
			SWSE		
		14	SWNW	SENW	NESW
			SESW	SWSE	SESE
		23	NENE	NWNE	
		24	NENW		
IN OREGON:					
23S	46E	1	NESW	SWSW	SESW
			NESE	NWSE	
		2	SWSE	SESE	
		10	SESW	NESE	NWSE
			SWSE		
		11	NWNE	NENW	NWNW
			SWNW	NWSW	
		15	NWNE	SWNE	NENW
			SENW	NESW	NWSW
			SWSW	SESW	
		22	NENW	NWNW	SWNW
			SENW	NESW	NWSW
			SWSW		
		27	NWNW	SWNW	
		28	SWNE	SENE	NWSE
			SWSE	SESE	
		33	NENE	NWNE	SWNE
			SENE	NWSE	SWSE
23S	47E	6	SWNW	SENW	NWSW
24S	46E	4	NENW	NWNW	
		5	NENE	NWNE	SWNE
			SWNW	SENW	NWSW
		6	NESE	SWSE	SESE
		7	NENE	NWNE	SWNE
			SENE		
		8	NWSW	SWSW	
		17	NWNW	SWNW	SENW
			NESW	NWSW	SWSW
			SESW		
		20	NENW	SENW	NESW
			SESW		
		29	NENW	NWNW	SWNW
			NWSE	SWSE	SESE
		32	NENE	SESE	
		33	NWNW	SWNW	NWSW
			SWSW		

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State of Idaho
Department of Water Resources

Permit To Appropriate Water

NO. 57-07571

PLACE OF USE: STOCKWATER FROM STORAGE

TWN	RGE	SEC			
25S	46E	4	NWNW	SWNW	NESW
			NWSW	SWSW	SESW
		5	NENE		
		8	NESE	SESE	
		9	NWNW	SWNW	SWNW
		16	SWNW	NWSW	
		17	NENE	SENE	NESE
			NWSE	SWSE	
		20	NWNE	SWNE	NESE
			NWSE	SESE	
		28	SWNW	NWSW	SWSW
		29	NENE	SENE	NESE
		33	SWNE	NENW	NWNW
			SENW	NWSE	SWSE
			SESE		
26S	46E	3	NWNW	SWNW	SENW
			NESW	NWSE	SWSE
			SESE		
		4	NENE		
		10	NENE	SENE	NESE
			SESE		
		14	SWNW	NWSW	SWSW
		15	NENE	SENE	NESE
			SESE		
		22	NENE	SENE	NESE
			SESE		
		26	NWSW	SWSW	
		27	NENE	SENE	NESE
		35	NENW	NWNW	SENW
			NESW	SESW	SWSE
27S	46E	2	NWNE	SWNE	NENW
			SENW	NWSE	SWSE
		11	NWNE	SWNE	SENE
			NESE	SESE	
		12	SWSW		
		13	NWNW	SWNW	NWSW
			SWSW	SESW	
		24	SWNE	NENW	SENW
			NESW	NWSE	SWSE
		25	NWNE	SWNE	NWSE
			SWSE		
		36	NENE	NWNE	SENE
27S	47E	31	SWNW	NWSW	

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State of Idaho
Department of Water Resources

Permit To Appropriate Water

NO. 57-07571

CONDITIONS/REMARKS:

1. Proof of construction of works and application of water to beneficial use shall be submitted on or before **July 1, 1994.**
2. Subject to all prior water rights.
3. Permanent measuring devices must be installed in such a manner that the amount of water entering the reservoir and the amount of water released from the reservoir can be measured.
4. The issuance of this right in no way grants any right-of-way or easement across the land of another.
5. The storage of water under this right is contingent upon the certification of the dam and authorization of storage per the dam safety provisions of the Idaho Code.
6. Single point of diversion is located on or near the line between SWNENE and SENWNE, S07, T03N, R05W.
7. Place of use is Succor Creek within Idaho and Oregon.
8. Stockwater from storage is for 2,500 range cattle and horses.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this

8th day of September, 1993.

R. Keith Higginson, Director

for

MICROFILMED

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Department of Water Resources

Form 202
6/85

Ident No 57-07571

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

APPLICATION FOR PERMIT

To appropriate the public waters of the State of Idaho

1. Name of applicant Succor Creek ~~Water Control District~~ District Improvement Company Phone (503)339-3026
   Post office address Rockville Rt., Jordan Valley, OR 97910
2. Source of water supply Succor Creek which is a tributary of Snake River
3. Location of point of diversion is SW ¼ of NE ¼ of NE ¼, Govt Lot —
   Sec. 7 Township 35 Range 5W B.M. Owyhee County, additional points of diversion if any SENWNE, S7, T35, R5W
4. Water will be used for the following purposes:
   Amount 400 (~~cfs or~~ acre-feet per annum) for Storage for Stockwater purposes from 1-1 to 12-31 (both dates inclusive)
   Amount 400 (~~cfs or~~ acre-feet per annum) for Stockwater from Storage purposes from 1-1 to 12-31 (both dates inclusive)
   Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)
   Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)
5. Total quantity to be appropriated is (a) _____ cubic feet per second and/or (b) 400.0 acre feet per annum
6. Proposed diverting works:
   a Description of ditches, flumes, pumps, headgates, etc Earth dam across Succor Creek AKA ~~Owyhee~~ Texas Basin Dam. Stock to drink from creek after release of dead pool from storage.
   b Height of storage dam 104 feet; active reservoir capacity 5940 acre-feet, total reservoir capacity 6340 acre-feet, period of year when water will be diverted to storage. 1-1 to 12-31 inclusive.
   c Proposed well diameter is _____ inches, proposed depth of well is _____ feet.
   d. Is ground water with a temperature of greater than 90°F being sought? _____
7. Time required for the completion of the works and application of the water to the proposed beneficial use is 1 years (*minimum 1 year*).

APPROVED
OCT 22 1993

8 Description of proposed uses (*if irrigation only, go to item 9*):

a. Hydropower; show total feet of head and proposed capacity in KW. _____

b. Stockwatering; list number and kind of livestock. 2500 head cattle & horses.

c. Municipal; show name of municipality. _____

d. Domestic; show number of households. _____

e. Other; describe fully. _____

9. Description of place of use:

a. If water is for irrigation, indicate acreage in each subdivision in the tabulation below.

b. If water is used for other purposes, place a symbol of the use (*example: D for Domestic*) in the corresponding place of use below. See instructions for standard symbols.

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
3S	6W	14						out S	✓ S	✓ S	✓ S	out S							
									Lot 2										
*Also use in Oregon - see attached land list.																			

Except for info about pld, rest of this should be in Comments. -SL 2/23/93

Total number of acres to be irrigated _____

10. Describe any other water rights used for the same purposes as described above. _____

OCT 22 1993

11. a. Who owns the property at the point of diversion? BLM

b. Who owns the land to be irrigated or place of use? Applicant

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing. Agreement with Idaho BLM - stipulation for right of way

12. Remarks: Want to be able to use "dead pool" water when dam is drained and water is released. ≈ Every 5-10 years.

→ One pld on 1/4 1/4 line (see standard remarks)

Board members of District:
Aaron Casper, President, 1455 HC 95 N., Jordan Valley OR 97910
Joann Cunningham, Vice President, Jordan Valley

57-7571

LAND LIST ATTACHMENT

Description and location of place of use

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
1) STORAGE FOR STOCKWATER (IN IDAHO)																			
2S	5W	32															X		
3S	5W	5		X	X		X			X	X	X	X	X					
		6																X	
		7	X	X															
2) STOCKWATER FROM STORAGE:																			
A) IN IDAHO:																			
3S	5W	7		S	S									S		S	S		
		18					S	S	S										
3S	6W	13												S	S	S	S		
		14							S	S	S			S			S	S	
		23	S	S															
		24					S												
3N	5W	4						S	S			S							
		5													S			S	
		7		S	S						S	S	S		S	S			
		8	S	S	S					S	S	S							
3N	6W	12															S	S	
		13		S			S	S											
		14	S	S			S	S	S	S									
B) IN OREGON:																			
23S	47E	6							S	S		S							
23S	46E	1									S		S	S	S	S			
		2															S	S	
		10												S	S	S	S		
		11		S			S	S	S			S							
		15		S	S		S			S	S	S	S	S					
		22					S	S	S	S	S	S	S						
		27						S	S										
		28			S	S										S	S	S	
		33	S	S	S	S										S	S		

OCT 22 1993

LAND LIST ATTACHMENT

Description and location of place of use

IN OREGON: (CONTINUED)

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
24S	46E	4					S	S											
		5	S	S	S				S	S		S							
		6													S		S	S	
		7	S	S	S	S													
		8										S	S						
		17						S	S	S	S	S	S	S					
		20					S			S	S			S					
		29					S	S	S							S	S	S	
		32	S															S	
		33						S	S			S	S						
25S	46E	4						S	S		S	S	S	S					
		5	S																
		8													S			S	
		9						S	S			S							
		16							S			S							
		17	S			S									S	S	S		
		20		S	S										S	S		S	
		28							S			S	S						
		29	S			S									S				
		33			S		S	S		S						S	S	S	
26S	46E	3						S	S	S	S					S	S	S	
		4	S																
		10	S			S									S			S	
		14							S			S	S						
		15	S			S									S			S	
		22	S			S									S			S	
		26										S	S						
		27	S			S									S				
		35					S	S		S	S			S			S		

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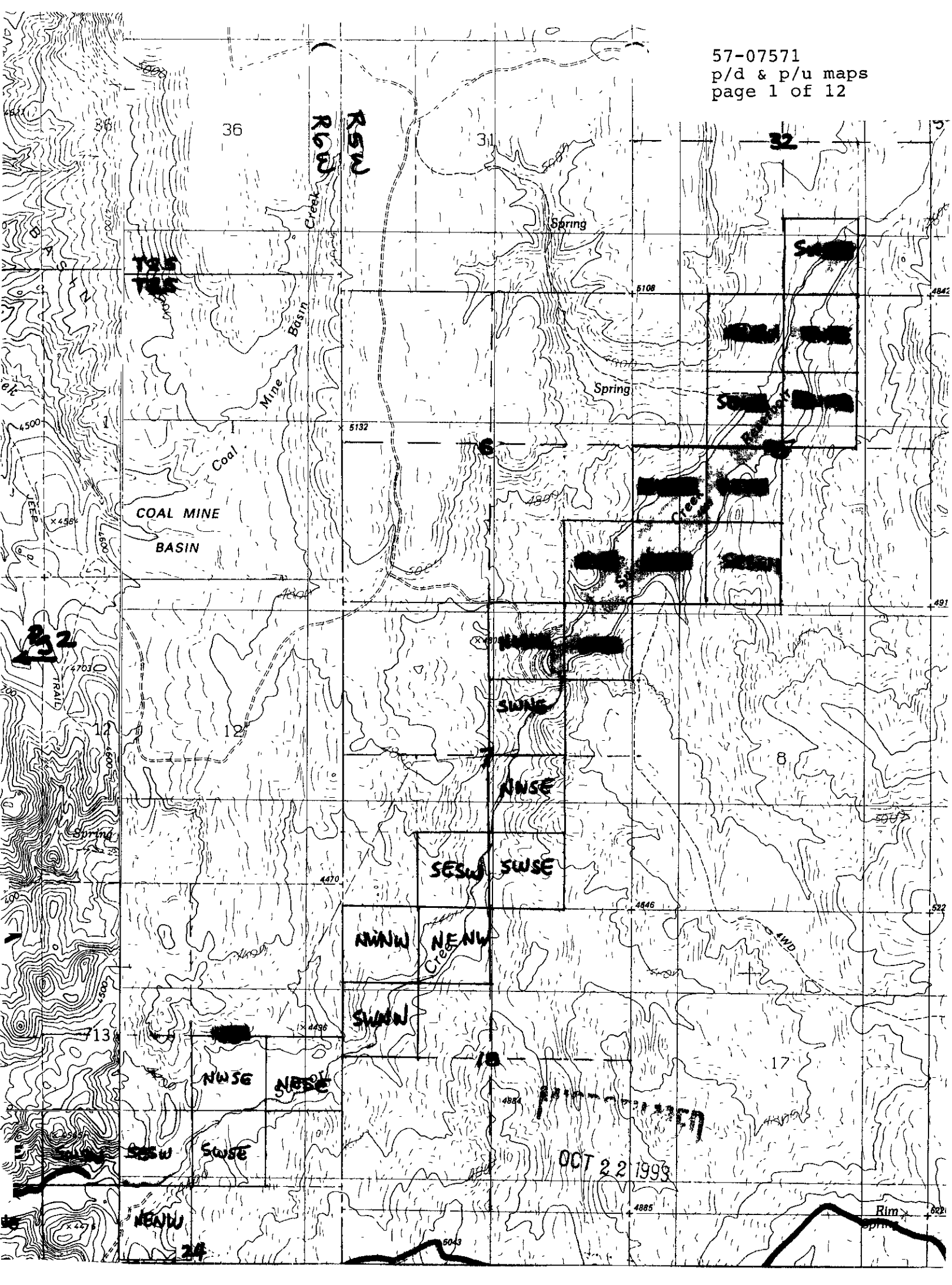
STOCKWATER FROM STORAGE

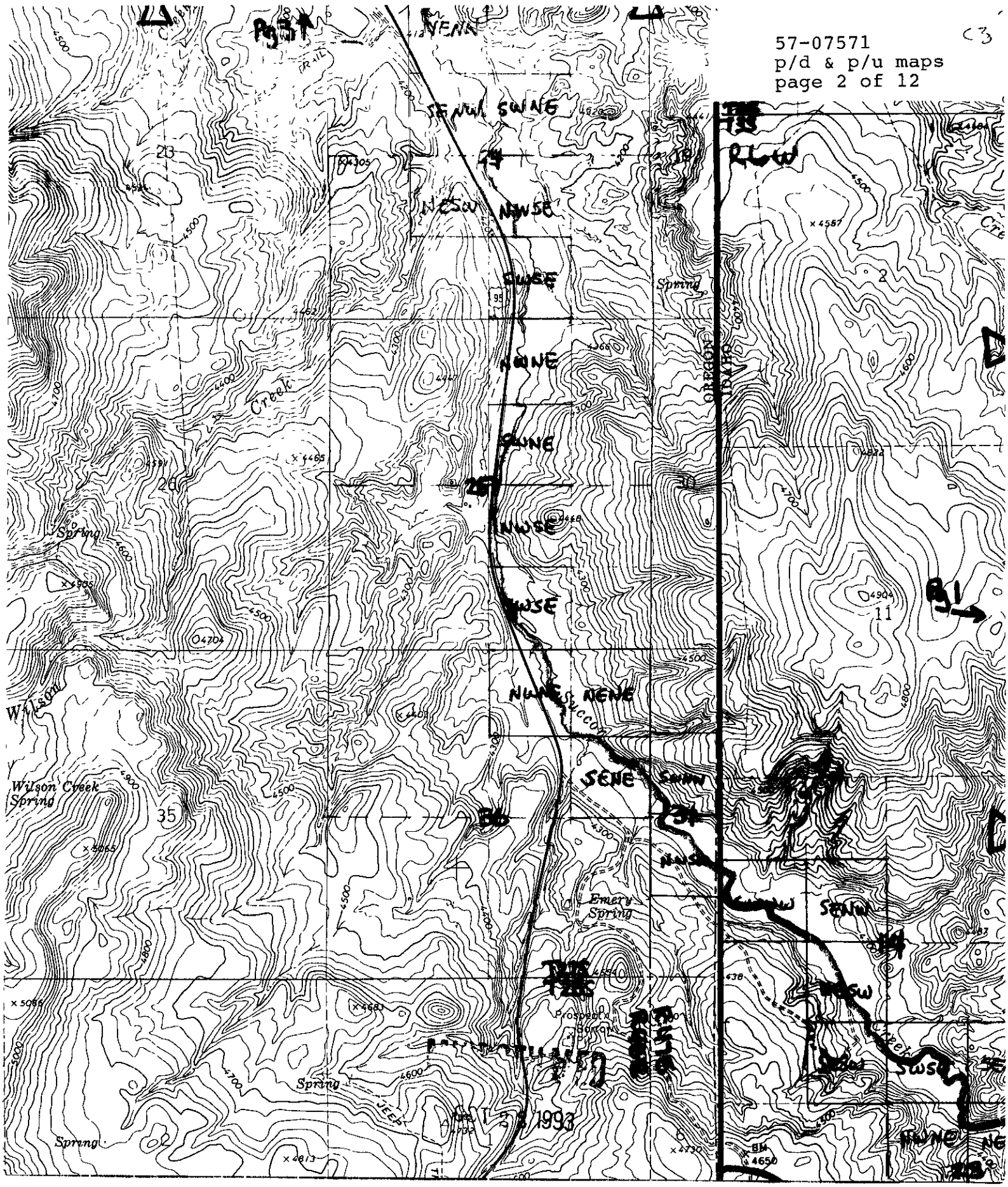
LAND LIST ATTACHMENT

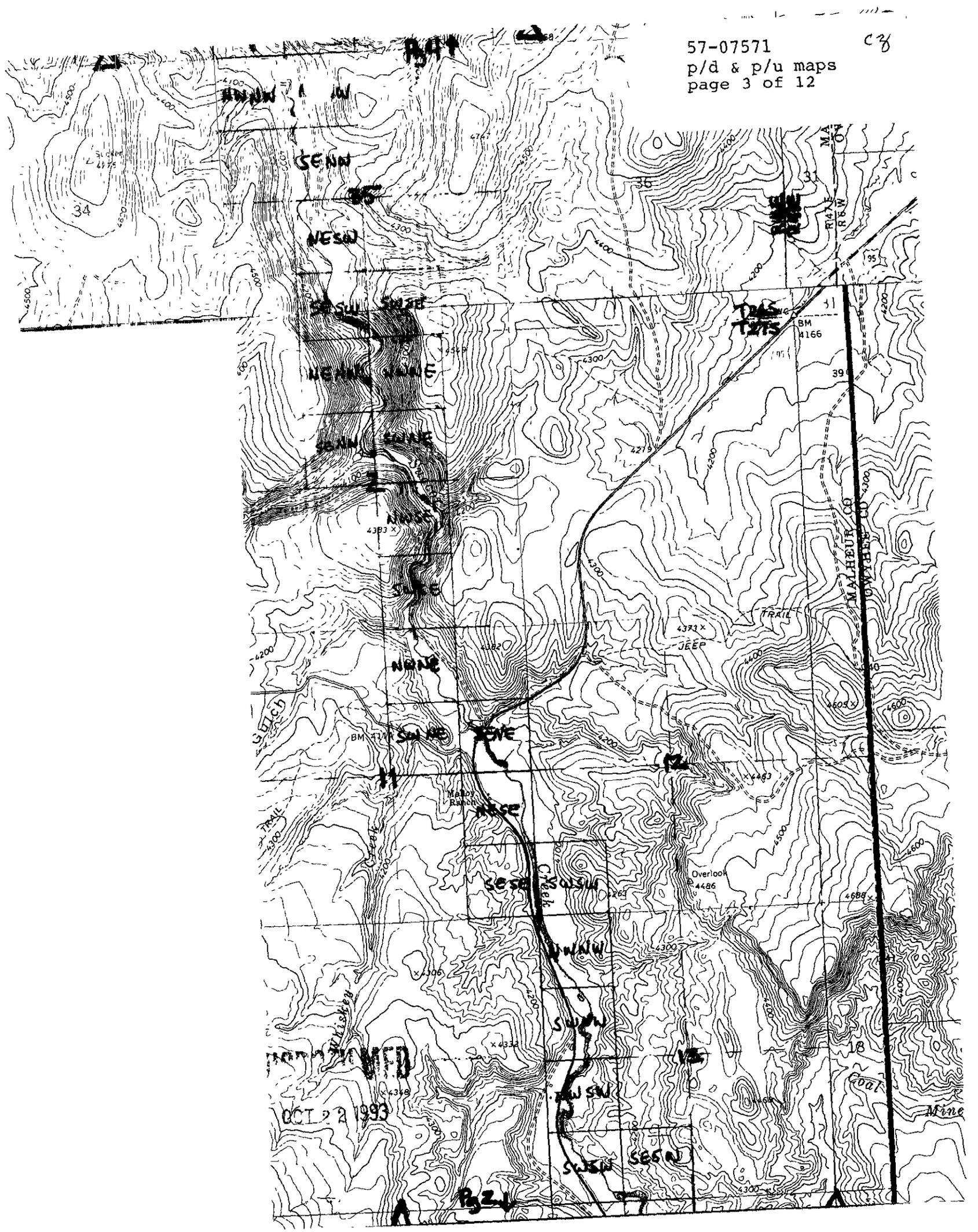
Description and location of place of use.

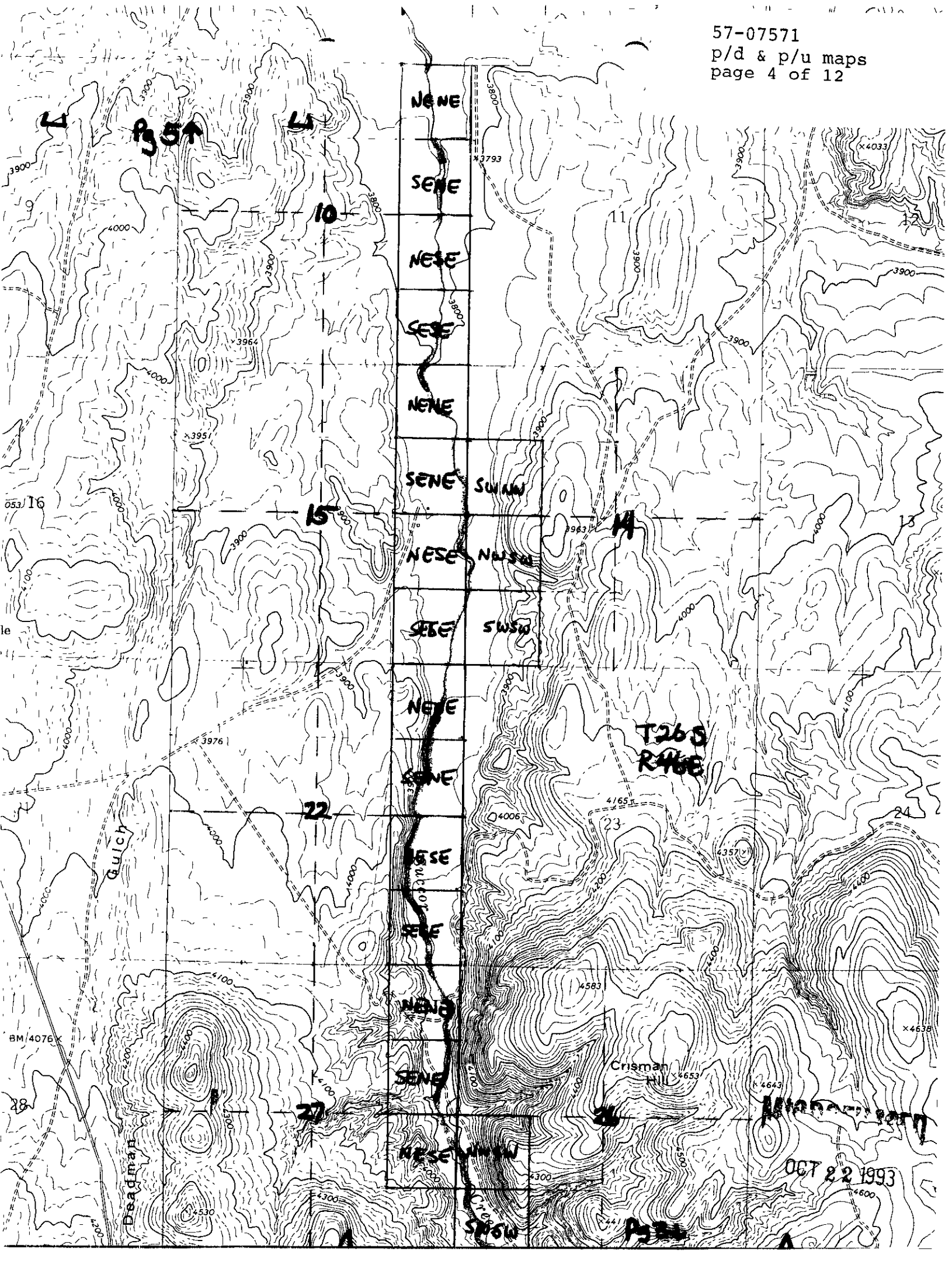
TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
27S	46E	2		S	S		S			S						S	S		
		11		S	S	S									S			S	
		12											S						
		13						S	S			S	S	S					
		24			S		S			S	S					S	S		
		25		S	S											S	S		
		36	S	S		S													
27S	47E	31							S			S							

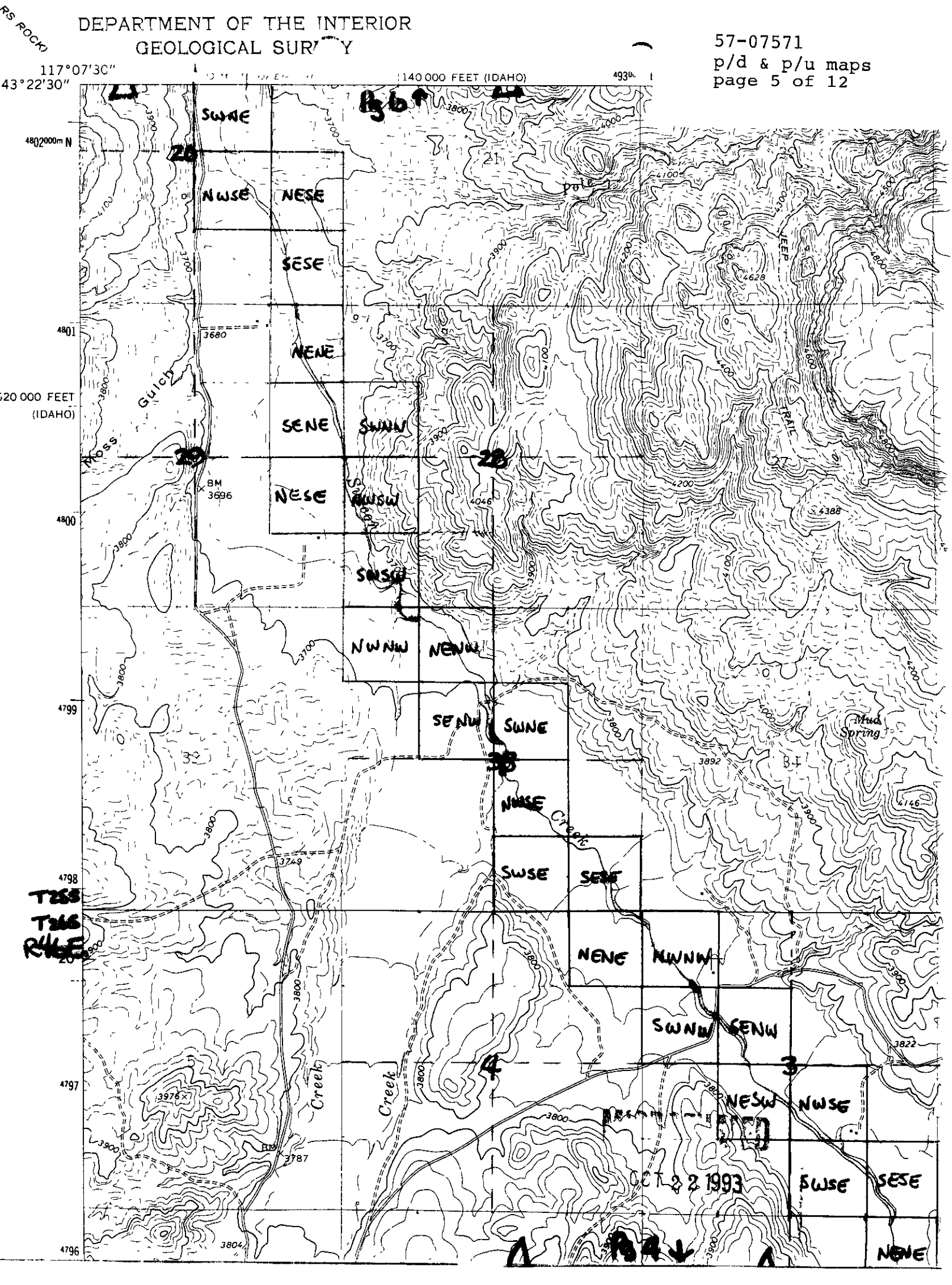
OCT 2 2 1993

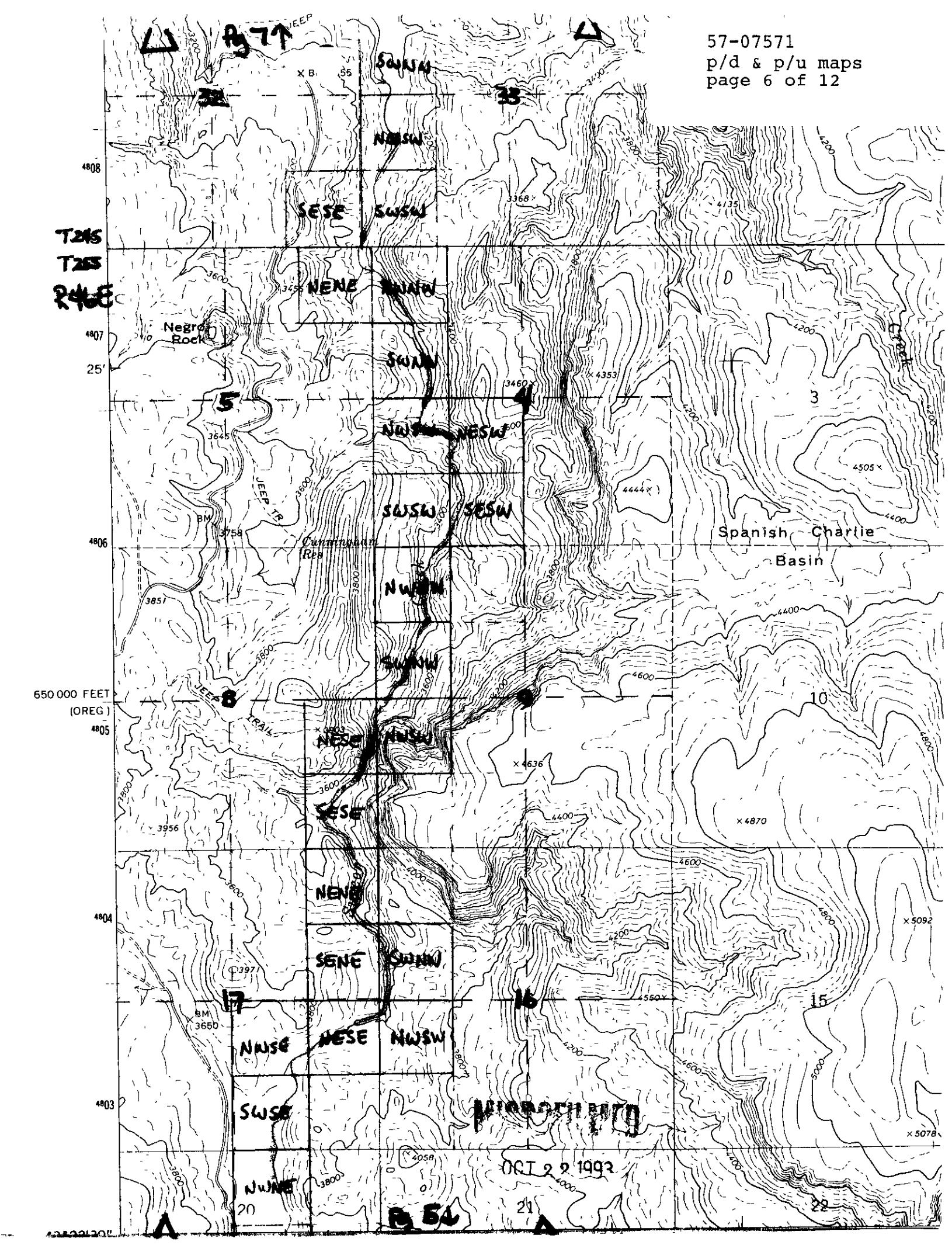

R5W
R6W
T25
T26
36
31
32
1
6
12
7
8
13
18
17
24
Spring
Creek
Mine
Basin
Coal
COAL MINE
BASIN
JEEP
TRAIL
4WD
Rim
SWNE
NWSE
SESW
SWSE
NWNW
NENW
SWNW
NWSE
NESE
SESW
SWSE
NENW
OCT 22 1993

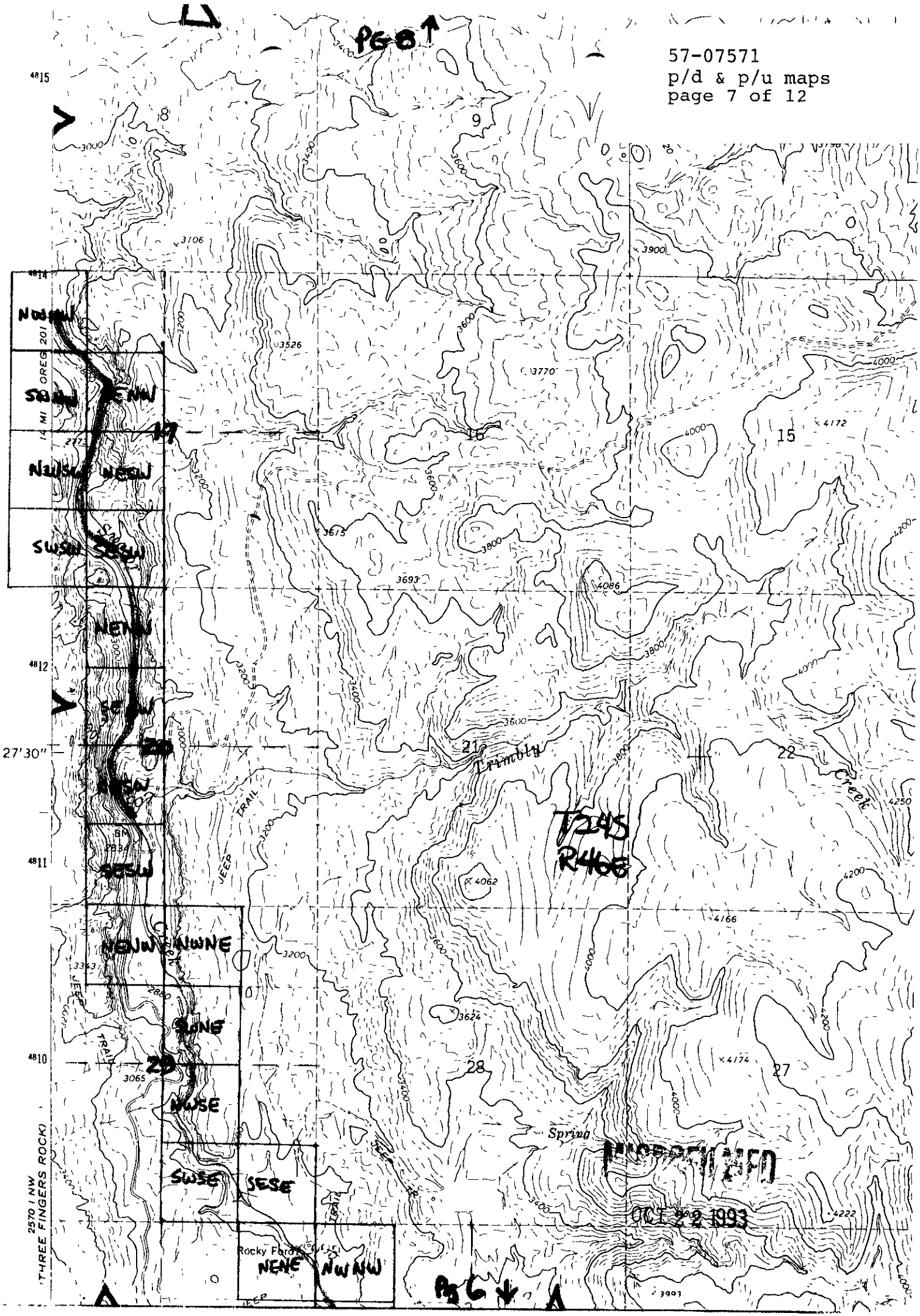

SENW SWNE
NESW NWSE
SWSE
NWNE
SWNE
NWSE
SWSE
NWNE NENE
SENE
Wilson Creek
Spring
Emery Spring
Prospect Boron
OREGON
IDAHO
Spring
Creek
JEEP TRAIL
RECEIVED
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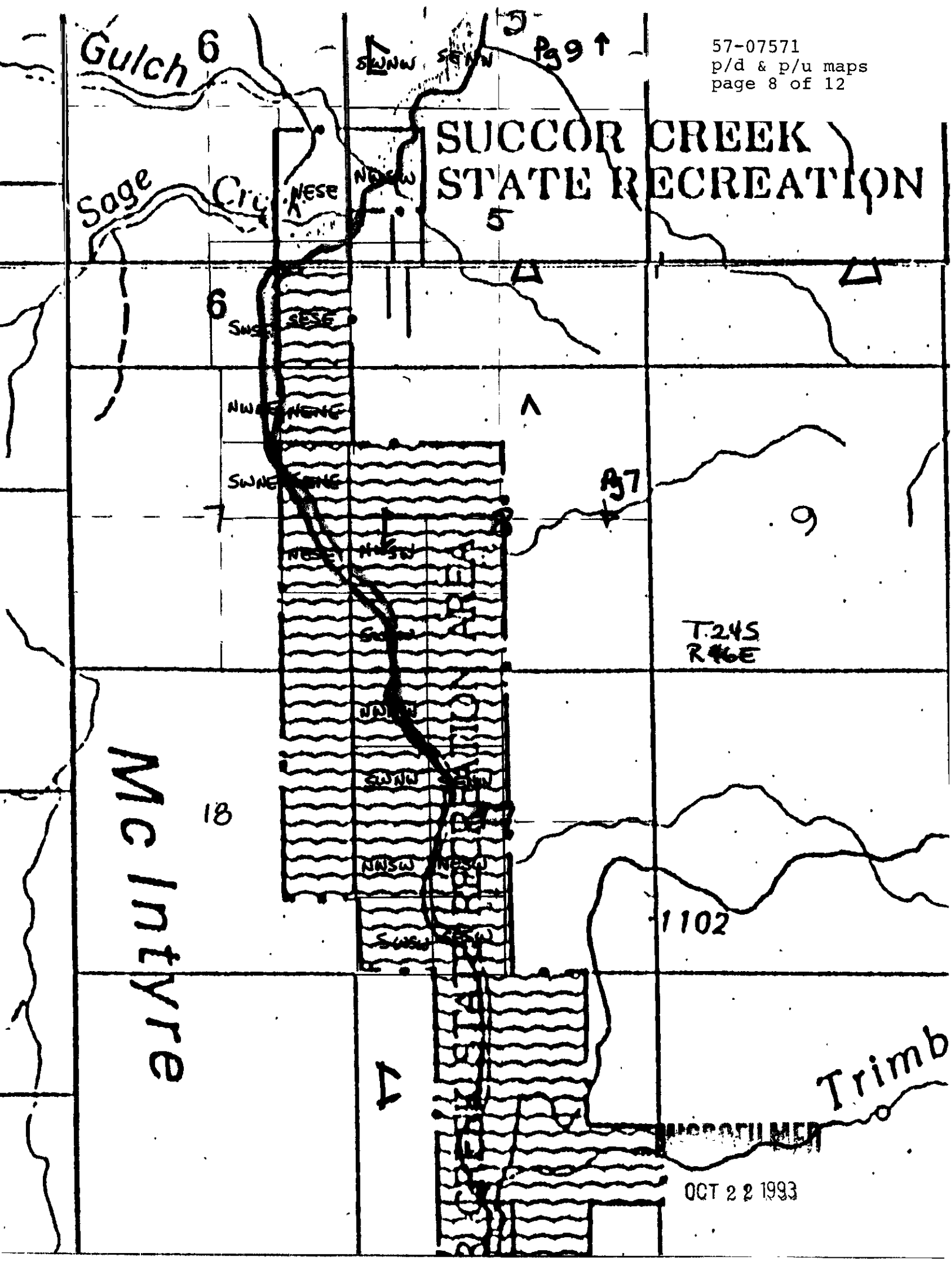

R94W
R94W
SENW
NESW
SESW
SWSE
NENW
NWNE
SENW
SWNE
NWSE
SWSE
NENE
SWNE
SENE
NESE
SESE
SWSW
NWNW
SWSW
SWSW
SESW
SWSW
T27S
T27S
R94W
R94W
BM 4166
JEEP
TRAIL
MALHEUR CO
WYOMING CO
Overlook 4486
Coal Mine
Creek
Spring
Malloy Ranch
4393
4379
4382
4605
4463
4269
4306
4332
4348
4468
4688
4219
4383
4300
4200
4400
4500
4600
OCT 2 1993

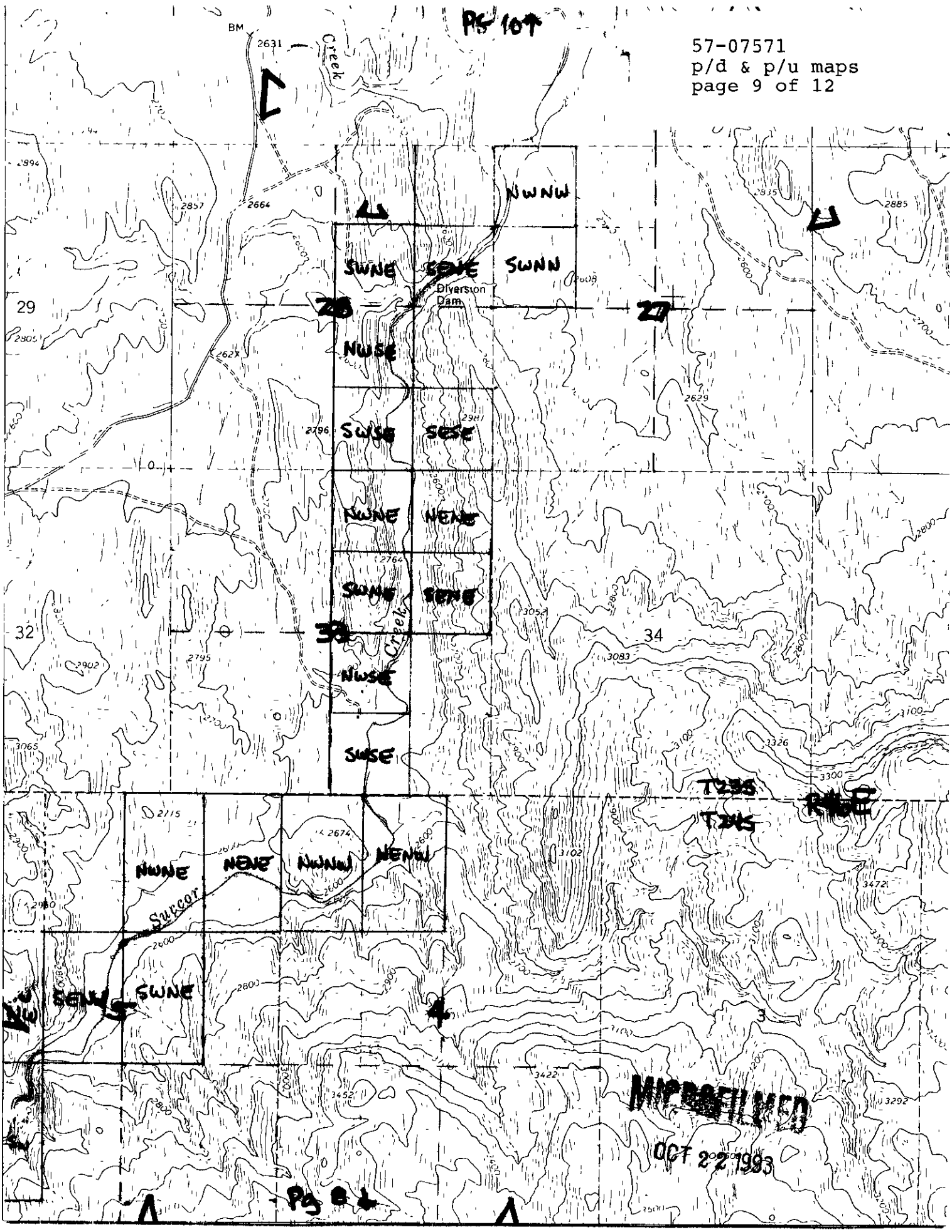

T25S R45E
T26S R46E
NENE
SENE
NESE
SESE
NENE
SENE SWNW
NESE NWSW
SESE SWSW
NENE
SENE
NESE
SESE
NENE
SENE
NESE NWSW
SESE
10
15
22
27
14
23
Gulch
Deadman
Crisman Hill
BM 4076
Creek
OCT 22 1993

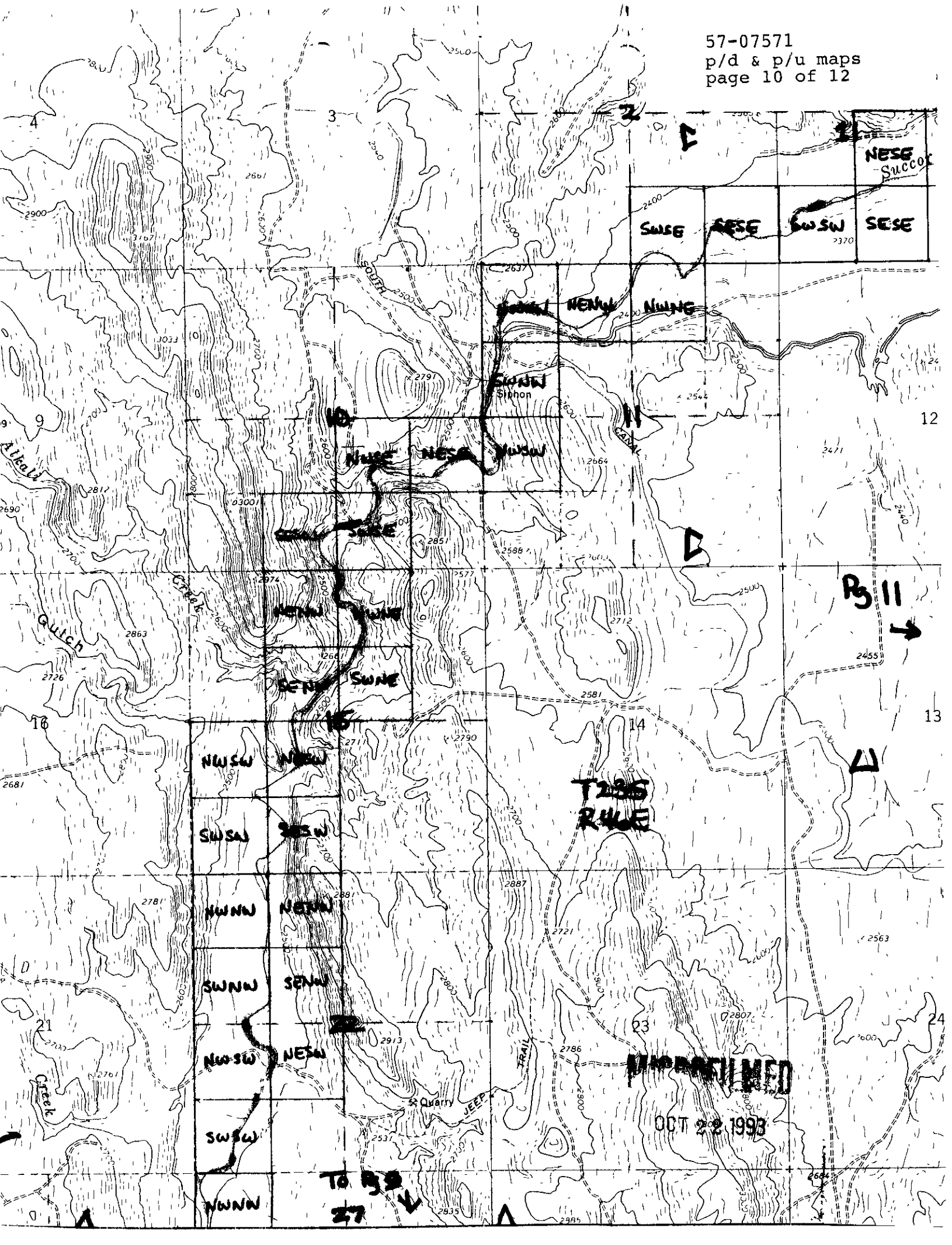

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
117°07'30"
43°22'30"
140 000 FEET (IDAHO)
4802000m N
4801
4800
4799
4798
4797
4796
520 000 FEET
(IDAHO)
T25S
T26S
R16E
SWNE
NWSE
NESE
SESE
NENE
SENE
SWNW
NESE
SWSW
SWSE
NWNW
NENW
SENW
SWNE
NWSE
SWSE
SESE
NENE
NWNW
SWNW
SENW
NESW
NWSE
SWSE
SESE
NENE
Ross Gulch
BM
3696
Creek
Creek
Mud Spring
TRAIL
pole
JEEP
RIM
3787
3976
3749
3804
3892
4046
4388
4628
OCT 22 1993

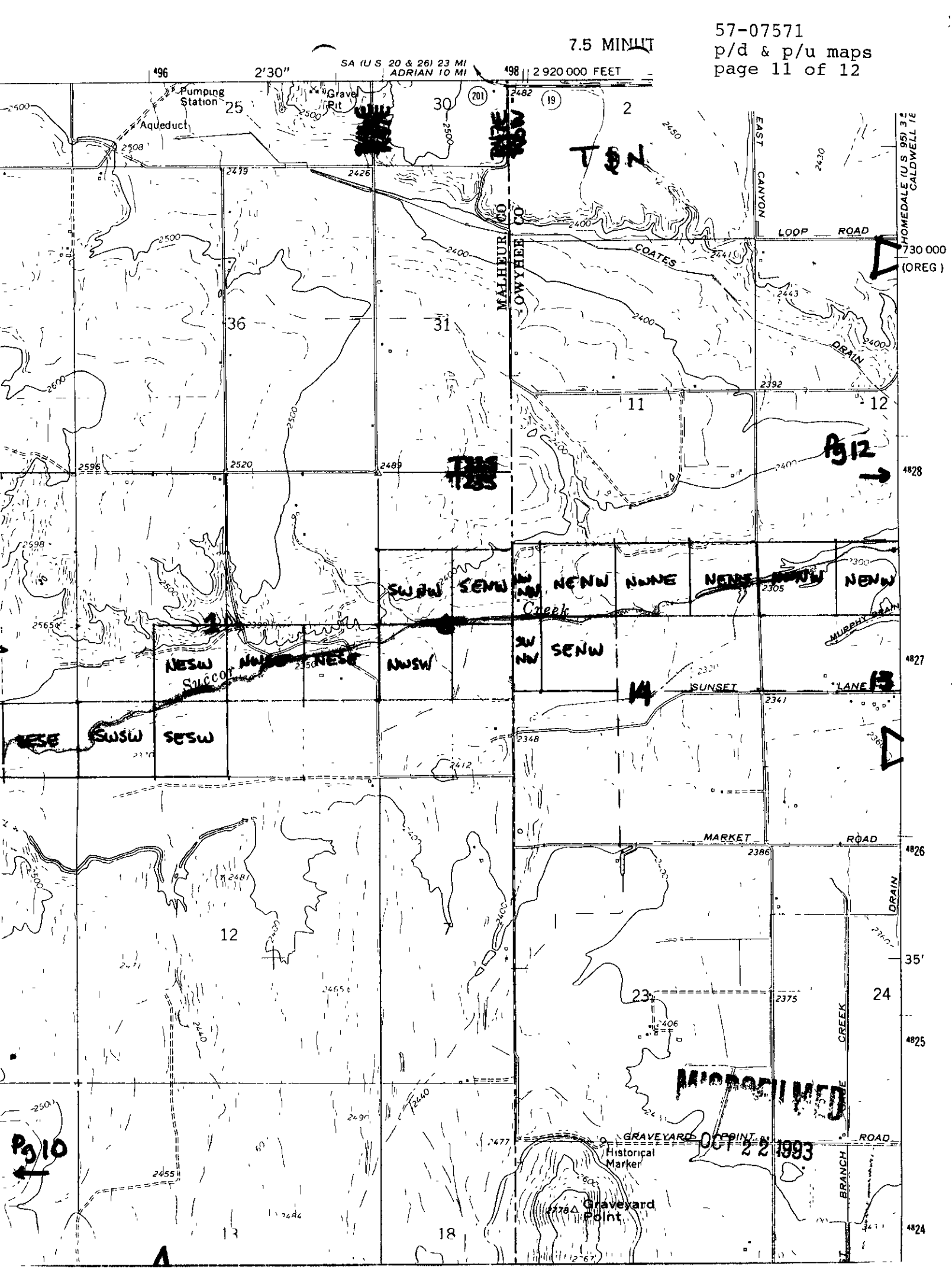

T21S
T22S
R4E
Negro Rock
Spanish Charlie Basin
Cunningham Res
JEEP TR
JEEP TRAIL
650 000 FEET (OREG)
SWSW
NWSW
SESE
SWSW
NENE
NWNW
SWSW
NWSW
NESW
SWSW
SESW
NWSW
SWNW
NESE
NWSW
SESE
NENE
SENE
SWNW
NWSE
NESE
NWSW
SWSE
NWNE
OCT 2 2 1993


PG 8
NWSW
SWSW
NENW
NWSW
NESW
SWSW
SESW
NENW
SENE
NWNE
SWNE
NWSE
SWSE
SESE
NENE
NWNW
T24S
R46E
Trimbly
Creek
Spring
JEEP TRAIL
14 MI OREG 201
2570 I NW
(THREE FINGERS ROCK)
PG 6
RECEIVED
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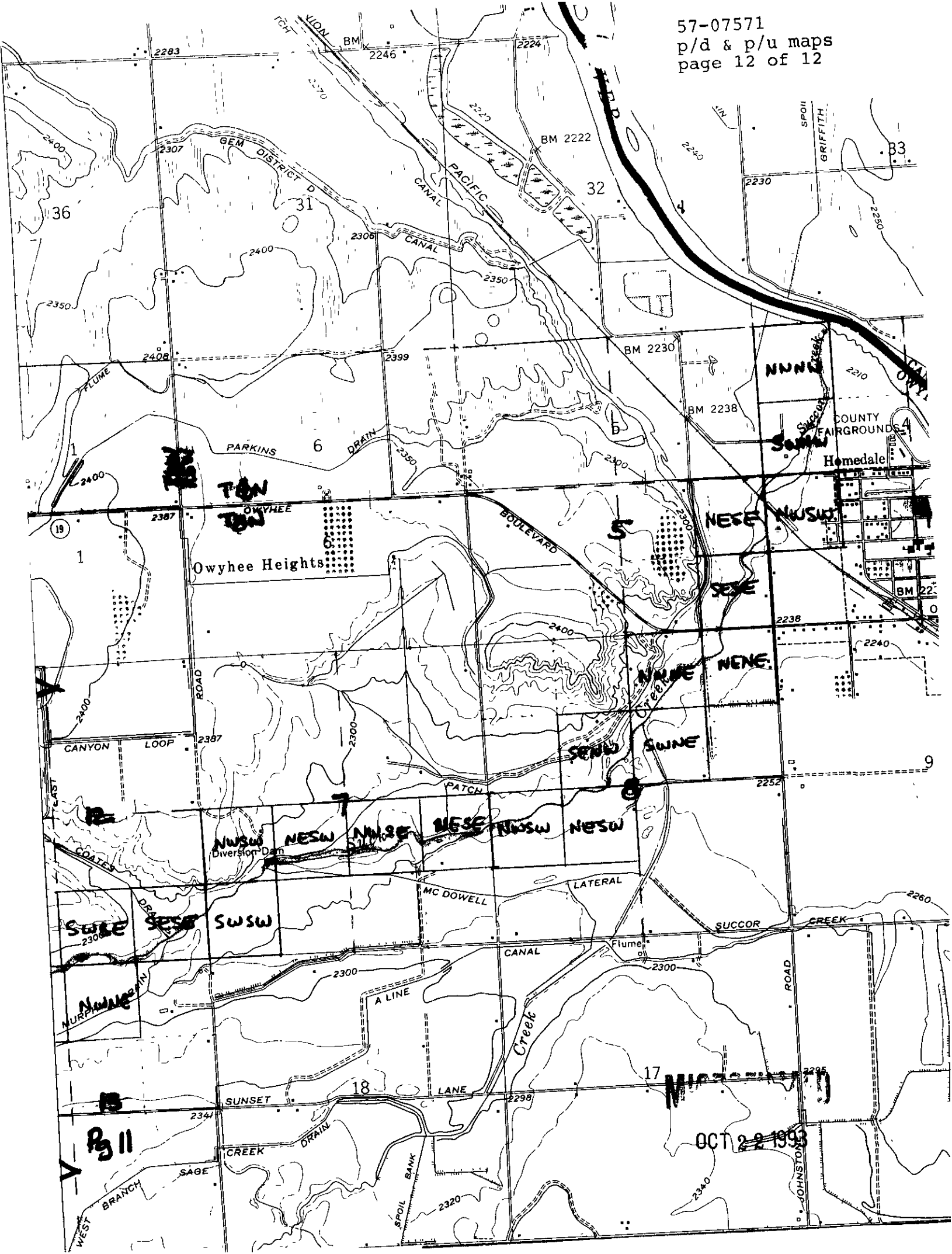

SUCCOR CREEK
STATE RECREATION
Gulch
Sage
Cr
6
5
9
7
18
1
T.24S
R.46E
Mc Intyre
Trimb
1102
OCT 2 2 1993


Pg 10
BM
2631
Creek
NWNW
SWNE
SENE
SWNW
Diversion
Dam
29
28
27
NWSE
SWSE
SESE
NWNE
NENE
SWNE
SENE
32
33
34
Creek
NWSE
SWSE
T23S
R4E
T24S
NWNE
NENE
NWNW
NENW
Sugar
SENW
SWNE
NW
4
3
MICROFILMED
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Pg 8


NESE
Succor
SWSE
SESE
SWSW
SESE
NENW
NWNE
SWNW
Siphon
NWSE
NESE
SWSW
SWSE
NENW
NWNE
SENE
SWNE
NWSW
NWSW
SWSW
SESW
NWNW
NENW
SWNW
SENW
NWSW
NESW
SWSW
NWNW
T23S
R14E
To R13E
27
CANAL
TRAIL
JEEP
Quarry
Creek
Gulch
Alkali
SOUTH
RECEIVED
OCT 22 1993

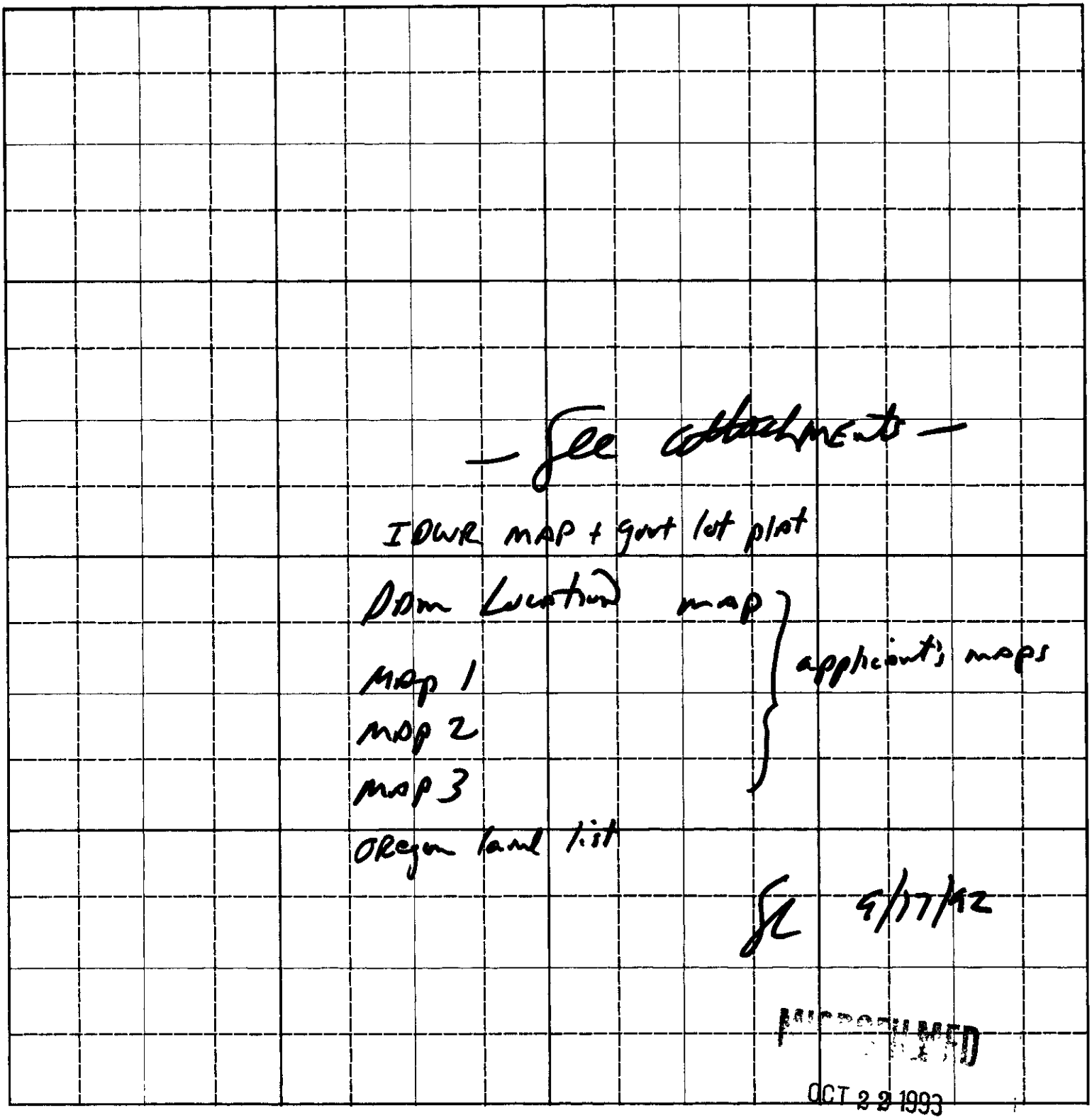


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BM 2246
BM 2222
BM 2230
BM 2238
GEM DISTRICT D CANAL
PACIFIC CANAL
PARKINS DRAIN
FLUME
OWYHEE BOULEVARD
Owyhee Heights
COUNTY FAIRGROUNDS
Homedale
ROAD
CANYON LOOP
COATES DRAIN
Diversion Dam
MC DOWELL LATERAL
SUCCOR CREEK
Flume
CANAL
A LINE
SUNSET LANE
CREEK DRAIN
SAGE BRANCH
SPOIL BANK
JOHNSTON
GRIFFITH
NWSW
NESW
NWSE
NESE
NWSW
NESW
SWSE
SESE
SWSW
NWNW
NESE
NWSW
SESE
NWNE
NENE
SENW
SWNE
NWNW
SWSE
Pg 11
OCT 22 1993

Mary Ellen Allison, Secretary, Jordan Valley

13. Map of proposed project. show clearly the proposed point of diversion, place of use, section number, township and range number.



Scale 2 inches equal 1 mile

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

X Mary Kaye (President)
(Applicant)

Received by KW Date 9/4/92 Time 1:40 pm Preliminary check by SC

Fee $ 105.00 Receipted by KW # W015353 Date 9/4/92

Publication prepared by GG Date 2/24/93 Published in Owyhee Avalanche 3/3 & 3/10/93

Publication approved pt Date 4-9-93

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No _____, and said application is hereby _____.

1. Approval of said application is subject to the following limitations and conditions:

   a. SUBJECT TO ALL PRIOR WATER RIGHTS.

   b Proof of construction of works and application of water to beneficial use shall be submitted on or before _____, 19 ____

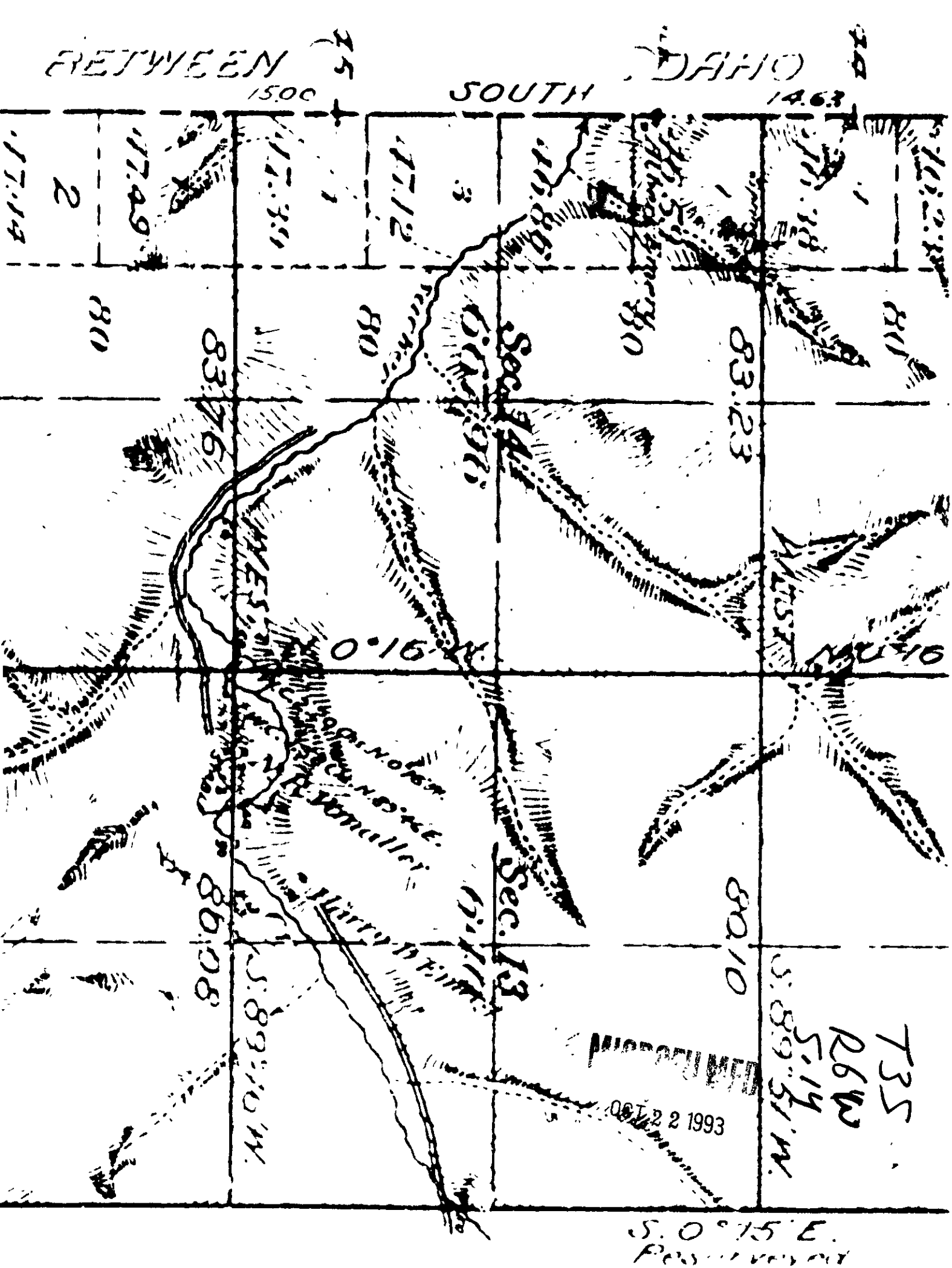
   c. The rate of diversion, if water is to be used for irrigation under this permit, when combined with all other water rights for the same land shall not exceed 0.02 cubic feet per second for each acre of land.

   d The water right acquired under this permit if for hydropower purposes shall be junior and subordinate to all rights to the use of water, other than hydropower, within the State of Idaho that are initiated later in time than the priority of this permit and shall not give rise to any right or claim against any future rights to the use of water, other than hydropower, within the State of Idaho initiated later in time than the priority of this permit

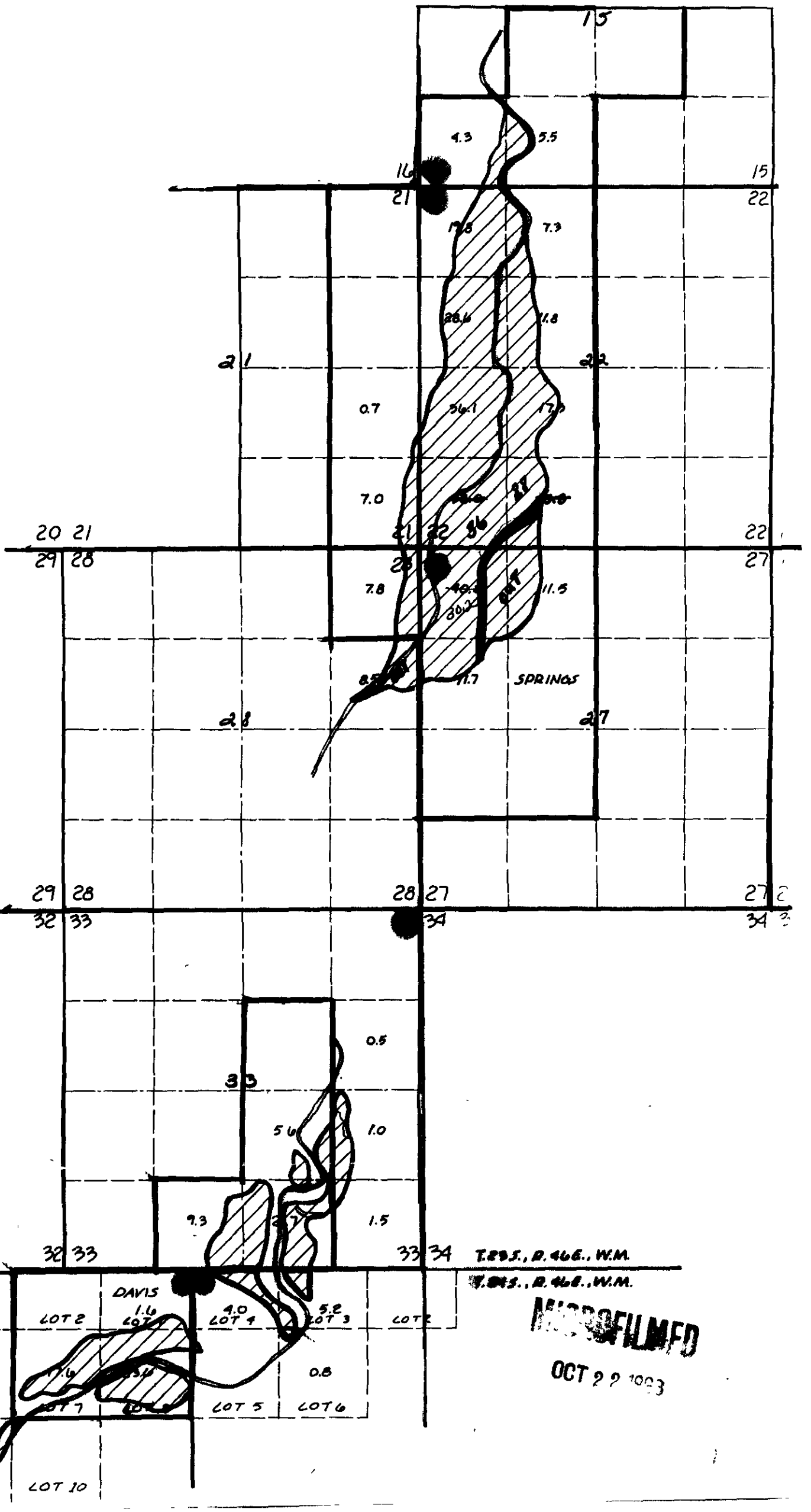
   e. Other:

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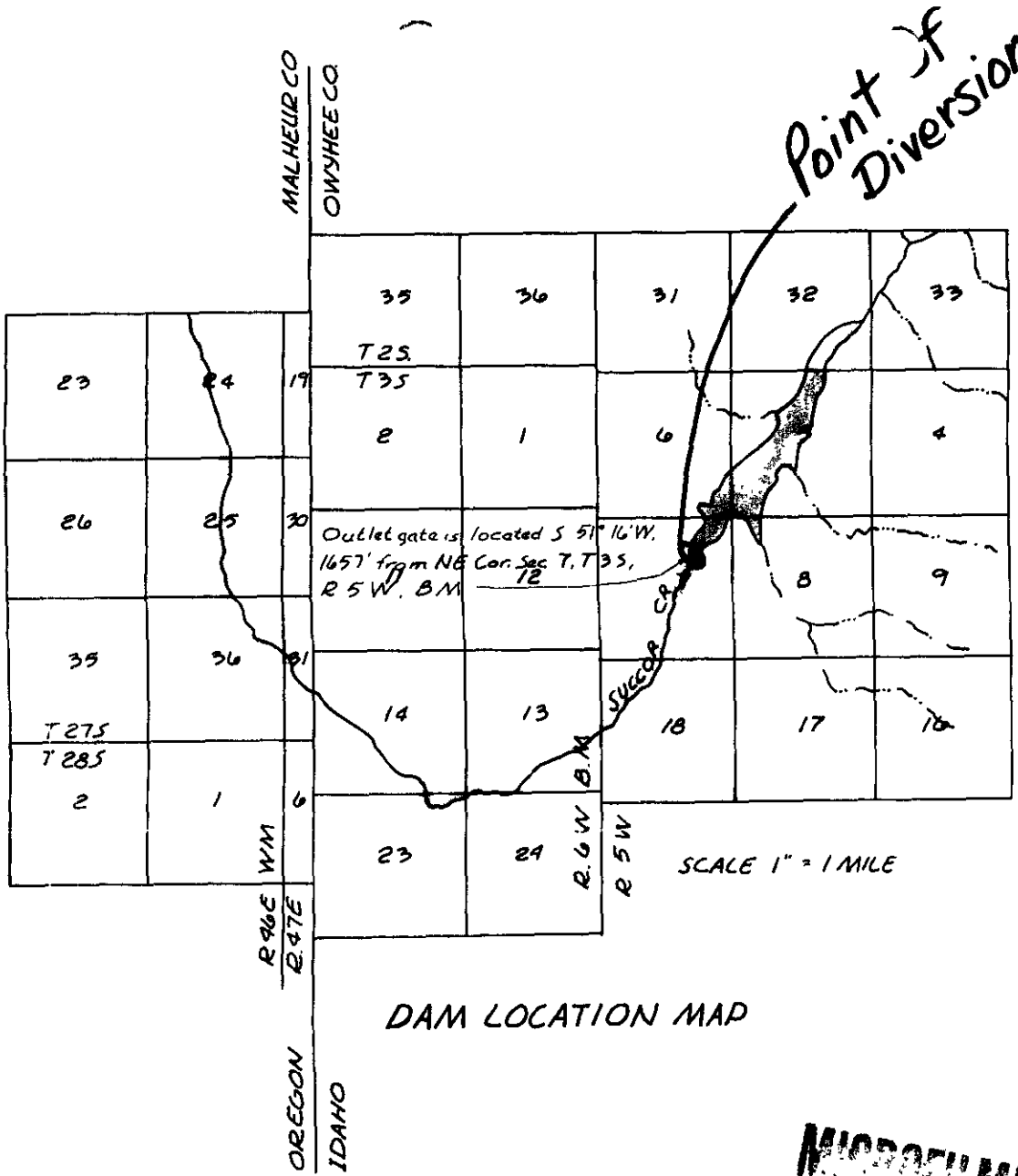
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BETWEEN
SOUTH
1500
1463
Sec. 13
Sec. 24
S. 89°51' W.
S. 0°15' E.
735
R6W
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Map 1 of 3



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DAM LOCATION MAP

OCT 22 1993

MAP TO ACCOMPANY APPLICATION

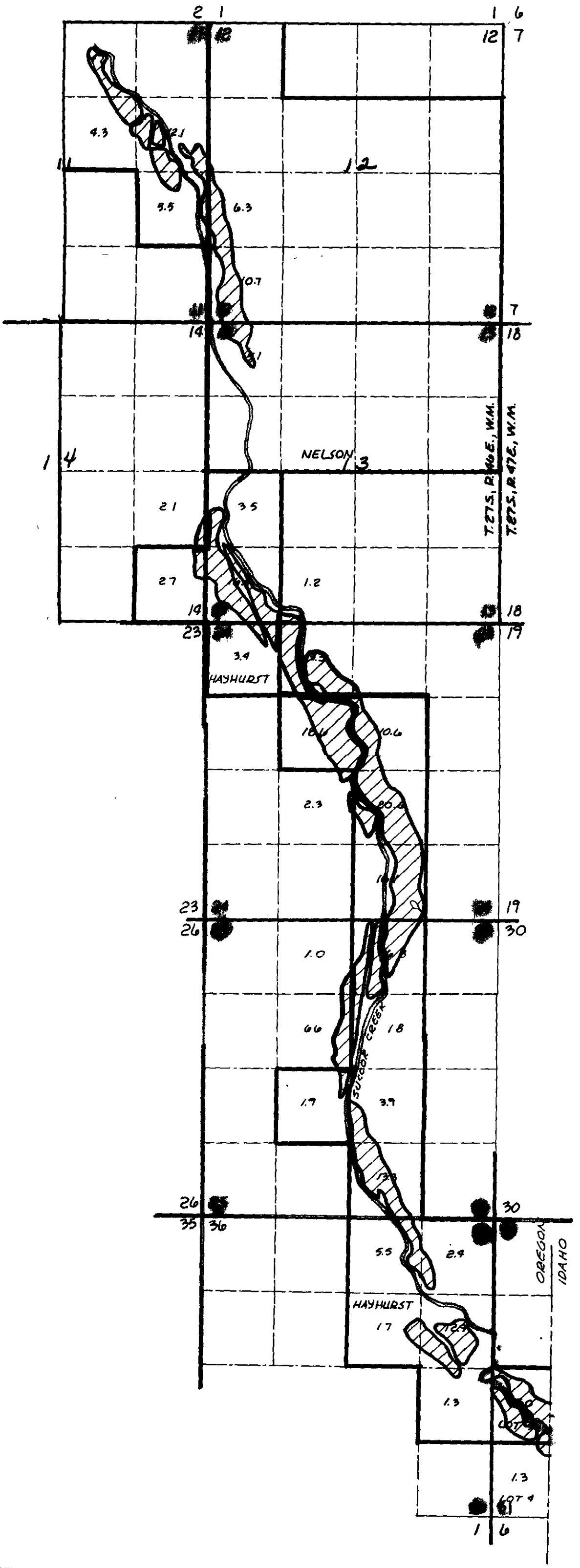
TO APPROPRIATE WATER FOR ~~IRRIGATION~~ Stockwater from Storage

APPLICANT: SUCCOR CREEK DISTRICT IMPROVEMENT COMPANY

DRAWN AUGUST, 1975
REVISED MARCH 31, 1976
REVISED SEPTEMBER, 1987
REVISED SEPTEMBER, 1988

SCALE 1" = 1320'

Map 3 of 3


T.27S., R.16E., W.M.
T.27S., R.17E., W.M.
NELSON
HAYHURST
HAYHURST
SUCCOR CREEK
OREGON
IDAHO
LOT 4
LOT 4

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FEB 22 2002
Department of Water Resources

BROCKWAY
ENGINEERING
P.L.L.C.

Hydraulics
Hydrology
Water Resources

CHARLES E. BROCKWAY, PH.D., P.E.

CHARLES G. BROCKWAY, PH.D., P.E.

2016 NORTH WASHINGTON STREET • SUITE 4

TWIN FALLS, IDAHO 83301

208•736•8543

FAX: 736•8506

February 20, 2002

L. Glen Saxton
Idaho Department of Water Resources
1301 North Orchard Street
Boise, ID 83706

Re: Succor Creek District Improvement Company
Permit No. 57-7571 and License No. 57-7153
Project No. 465-01-2000

Dear Mr. Saxton:

The development of the flow measurement plan as outlined in my letter and proposal dated April 4, 2001 has been completed.

The outlet gate was rated by current metering the discharge at three gate stem settings and at three reservoir elevations over the 2001 irrigation season. A curve fit was obtained using the orifice equation and the known geometry of the outlet gate. The attached spreadsheet shows the nine measured discharge points and the corresponding theoretical curves. The fit is excellent, with eight of the points lying very close to the theoretical curves. The only anomaly is the high-flow point at the low reservoir elevation. No reasonable modification to the theoretical curves can account for this variation and still agree with the eight other points, since the measured flow is not consistent with the orifice equation. Since the current meter measurement at this point was deemed to be less accurate than the others due to irregular flow patterns in the channel, it was decided to discard this point when developing the gate rating.

A level-measurement system was also installed, consisting of a WaterLog H-310-30 pressure transducer with a range of 0 to 69 ft and an accuracy of 0.02%. The transducer was mated to a WaterLog H-500-XL data recorder. The transducer was installed in a 3-inch PVC sheath and set approximately 10 feet vertically below the low water level in the reservoir. The system was tested and operated properly.

A document describing the operating methodology, procedures, and maintenance for the flow measurement system was prepared. This document contains the gate rating table, the reservoir storage curve, and a copy of the spreadsheet developed to automate the flow calculations. If you need

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MAY 16 2002

additional information such as current meter calculations, notes, or more details on the development of the rating curves, I would be happy to provide it.

It is the intent of the Succor Creek District Improvement Company to utilize this flow measurement procedure during the irrigation season of 2002. Please review the documentation and let me know if you have any comments or questions, if possible prior to the upcoming season.

Sincerely,

Charles G. Brockway, P.E.

Enc: Plot showing gate rating results
Operating procedures

cc. Ron Cunningham

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Operating Procedures for the Succor Creek Reservoir Discharge Measurement System

Brockway Engineering, PLLC
February 20, 2002

Methodology

Measurement of the discharge entering and the discharge exiting the Succor Creek Reservoir is accomplished by a combination of a rating table for the outlet gate and precise measurement of reservoir storage change.

The outlet gate was rated during 2001 by measuring the discharge with a current meter at three gate openings and at three reservoir elevations. The rating table or rating curves dated November 27, 2001 should be used to determine the outlet gate discharge unless future flow measurements warrant a shift in the table.

The reservoir storage measurement is accomplished using a pressure transducer which senses the elevation of the reservoir to within +/-0.014 feet. An electronic display and data recorder is located in the gate house. The elevation is translated to a storage volume in acre-feet using curves prepared for the construction of the dam. The reservoir storage curve dated November 27, 2001 should be used.

The change in volume over a certain time period during which the outlet gate setting is fixed yields the *average net reservoir inflow*, which equals the average inflow minus the average outflow:

$$\frac{S_2 - S_1}{\Delta t} = \bar{I} - \bar{Q}$$

where Δt = time-averaging period, S_i = the reservoir content at time i, $\bar{I}$ = time-averaged inflow, and $\bar{Q}$ = time-averaged outflow. The time-averaging period, in a practical sense, will be the time between operator visits to the dam.

Over the time period Δt, the average outflow can be calculated by averaging the outflow at the starting reservoir elevation and the outflow at the ending reservoir elevation, assuming the outflow vs. reservoir elevation curve is linear over the small change in storage.

$$\frac{S_2 - S_1}{\Delta t} = \bar{I} - \frac{Q_1 + Q_2}{2}$$

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Note that while the instantaneous outflow can be calculated at any time given reservoir elevation and gate setting, the inflow must be calculated as an average over a time period. Substituting the functions relating storage to elevation and outflow to gate setting and elevation, we have

$$\frac{S(z_2)-S(z_1)}{\Delta t} = \bar{I} - \frac{Q(d,z_1)+Q(d,z_2)}{2}$$

where d = the stem height setting of the outlet gate (constant over Δt) and z_i = reservoir elevation at time i. Solving for the only unknown, $\bar{I}$, yields

$$\bar{I} = \frac{S(z_2)-S(z_1)}{\Delta t} + \frac{Q(d,z_1)+Q(d,z_2)}{2}$$

This equation is used to find the average inflow over Δt given all other known or calculated values.

A spreadsheet was developed to automate this process. The operator inputs the exact time of the visit, the gate stem height set at the time of the visit, and the reservoir elevation from the digital recorder. The spreadsheet calculates outflow, storage change, and average inflow.

Procedures

1. A visit to the dam should be made at least once per week. During the visit, the operator must perform the following tasks:

   - Set the gate to the desired opening and measure the stem height to the nearest 1/8".
   - Record the time the gate was set to the nearest 5 minutes.
   - Read the display on the data recorder in the gate house and record the reservoir elevation to the hundredth of a foot.

2. Enter the data each week into the reservoir flow measurement spreadsheet. The spreadsheet will calculate average inflow for the previous time period.

3. Report the flow measurements to the Idaho Department of Water Resources as required.

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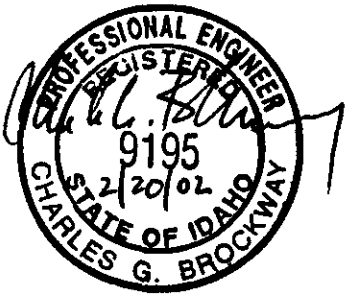
Setup and Maintenance

The perforated end of the transducer conduit must be kept free of sedimentary deposition. If it appears that deposition is impairing the transducer performance, use an air compressor connected to the conduit at the gate house to backflush the conduit.

At the beginning of each irrigation season:

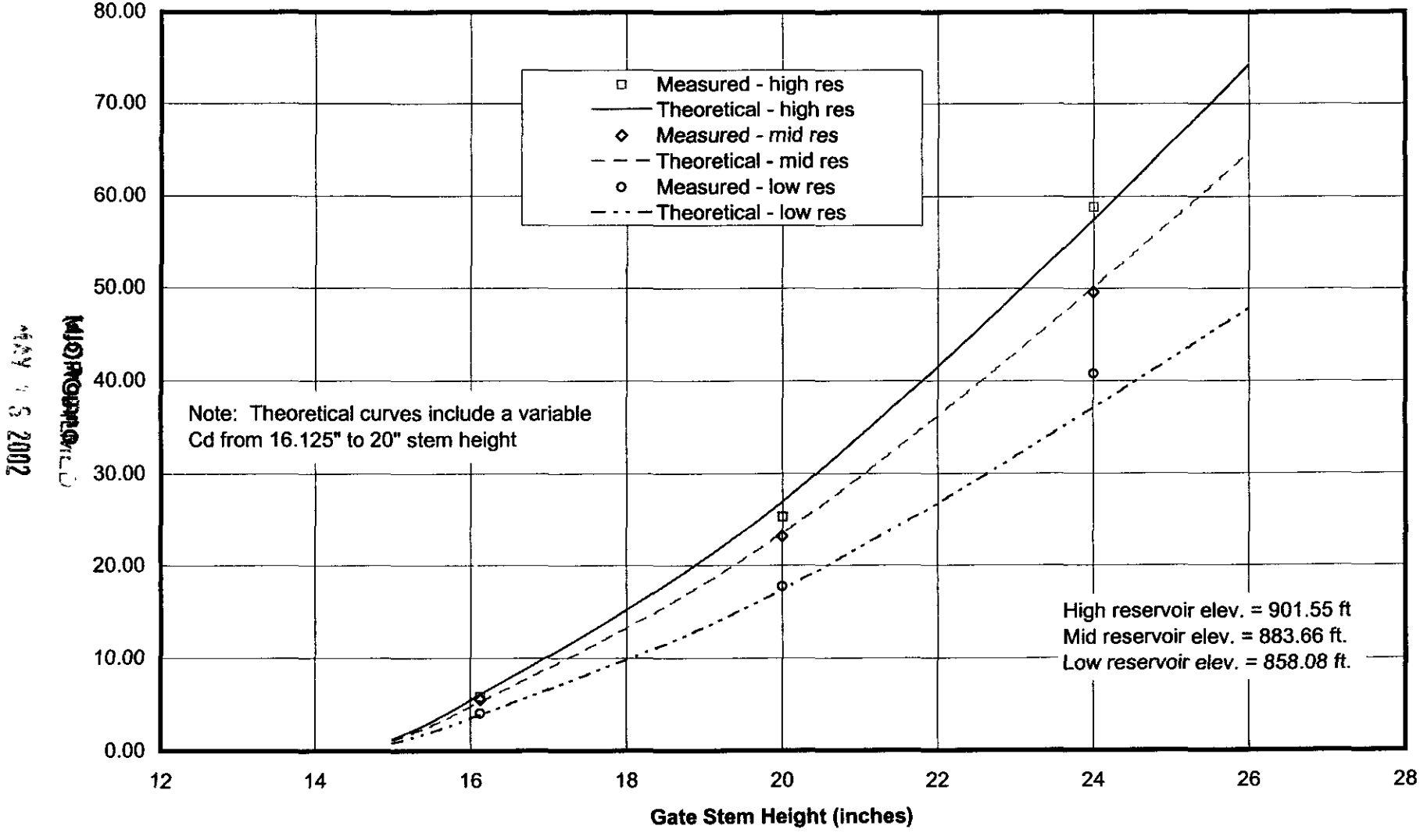
- Connect the data recorder to the transducer and the battery.
- Reset the data recorder to the exact reservoir elevation using the staff gauge near the gate house. This step is very important to keep the recorder setting in line with actual water elevation. If the water level falls below the gauge before the data recorder can be reset, the water elevation must be surveyed from the benchmark on the gate house foundation.
- Set the data recorder to log a data point every 6 hours.
- Set the gate at the desired setting, measure and record the gate stem, and record the reservoir elevation.

At the end of each irrigation season (typically in October), disconnect the battery from the data recorder and remove it from the gate house. The data recorder is rated for below-zero temperatures, so it could be left in the gate house over the winter. However, it would be better to disconnect the recorder and remove it to a warmer location.



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Succor Creek Dam - Outlet Pipe Rating Results



DISCHARGE RATING TABLE - SUCCOR CREEK RESERVOIR OUTLET GATE

Succor Creek District Improvment Company

Prepared by C G. Brockway, P.E. November 27, 2001

DISCHARGE IN CUBIC FEET PER SECOND

GATE STEM (INCHES)	RESERVOIR ELEVATION (FEET)											
	860	865	870	875	880	885	890	895	900	905	910	912
15	0.9	0.9	1.0	1 1	1.1	1.2	1.2	1.3	1 3	1.3	1.4	1.4
15 1/8	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.8	1.8
15 1/4	1 4	1.5	1.6	1.7	1.8	1 9	2.0	2.1	2.1	2.2	2.3	2.3
15 3/8	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.8
15 1/2	2.1	2.2	2 4	2.5	2 7	2.8	2 9	3.0	3.1	3 2	3.3	3.4
15 5/8	2.4	2 6	2.8	3.0	3 1	3.2	3.4	3.5	3.6	3.8	3.9	3.9
15 3/4	2.8	3.0	3 2	3.4	3.6	3.7	3.9	4.1	4.2	4.3	4.5	4.5
15 7/8	3.2	3.4	3 7	3.9	4.1	4.3	4.4	4.6	4 8	4.9	5.1	5.2
16	3.6	3.9	4.1	4.4	4 6	4.8	5 0	5.2	5.4	5.6	5.7	5.8
16 1/8	4.0	4.3	4.6	4 9	5 1	5.4	5.6	5.8	6.0	6.2	6.4	6.5
16 1/4	4.4	4.7	5 0	5.3	5.6	5.9	6 1	6.3	6.6	6.8	7.0	7.1
16 3/8	4.8	5.2	5 5	5.8	6.1	6.4	6 6	6.9	7.1	7.4	7.6	7 7
16 1/2	5.2	5 6	5.9	6.3	6.6	6 9	7.2	7.5	7.7	8.0	8.2	8.3
16 5/8	5.6	6.0	6.4	6.7	7.1	7.4	7 7	8.0	8.3	8 6	8.9	9.0
16 3/4	6.0	6 4	6 8	7.2	7.6	7.9	8.3	8.6	8.9	9.2	9.5	9.6
16 7/8	6 4	6.8	7.3	7.7	8.1	8.5	8.8	9.2	9.5	9.8	10.1	10.2
17	6.8	7.3	7.7	8.2	8.6	9.0	9.4	9.7	10.1	10.4	10.8	10.9
17 1/8	7 2	7.7	8.2	8.7	9.1	9.5	9.9	10.3	10.7	11.1	11.4	11.5
17 1/4	7.6	8.2	8.7	9.2	9.6	10 1	10.5	10.9	11.3	11.7	12.1	12.2
17 3/8	8.0	8.6	9.1	9.7	10.2	10.6	11.1	11.5	11.9	12.3	12.7	12.9
17 1/2	8 4	9 0	9.6	10.2	10.7	11.2	11.7	12.1	12.5	13.0	13.4	13.5
17 5/8	8 8	9 5	10.1	10.7	11.2	11.7	12.2	12.7	13.2	13.6	14.0	14.2
17 3/4	9.3	9.9	10.6	11.2	11.8	12.3	12.8	13.3	13.8	14.3	14.7	14.9
17 7/8	9.7	10.4	11.1	11.7	12.3	12.9	13.4	13.9	14.4	14.9	15.4	15.6
18	10.1	10.9	11.6	12.2	12.8	13.4	14.0	14.5	15.1	15.6	16.1	16.3
18 1/8	10.6	11.3	12.1	12.7	13.4	14.0	14.6	15.2	15.7	16.3	16.8	17.0
18 1/4	11.0	11.8	12.6	13.3	14.0	14 6	15.2	15.8	16.4	16.9	17.5	17.7
18 3/8	11.4	12.3	13.1	13 8	14.5	15.2	15.8	16.4	17.0	17.6	18.2	18.4
18 1/2	11.9	12.8	13.6	14 4	15.1	15.8	16.5	17.1	17.7	18.3	18.9	19.1
18 5/8	12.4	13.3	14 1	14.9	15 7	16.4	17.1	17.7	18.4	19.0	19.6	19.8
18 3/4	12.8	13.8	14 6	15.5	16 3	17.0	17.7	18.4	19.1	19.7	20.3	20.6
18 7/8	13.3	14.3	15.2	16.0	16.8	17.6	18.4	19.1	19.8	20.4	21.1	21.3
19	13.8	14.8	15.7	16 6	17.5	18 3	19.0	19.8	20.5	21 2	21.8	22 1
19 1/8	14.2	15.3	16.3	17.2	18.1	18 9	19.7	20.5	21.2	21.9	22.6	22.9
19 1/4	14.7	15.8	16.8	17.8	18.7	19.6	20.4	21.2	21 9	22.7	23.4	23.7
19 3/8	15.2	16.4	17.4	18.4	19.3	20.2	21.1	21.9	22.7	23.5	24.2	24.5
19 1/2	15.8	16.9	18.0	19.0	20.0	20.9	21.8	22.6	23.5	24.2	25.0	25 3
19 5/8	16.3	17.5	18 6	19.6	20 6	21.6	22.5	23.4	24 2	25.1	25.8	26.2
19 3/4	16.8	18.0	19 2	20.3	21.3	22.3	23.2	24.2	25.0	25.9	26.7	27.0
19 7/8	17.4	18.6	19.8	20.9	22.0	23.0	24.0	24.9	25.8	26.7	27 6	27.9
20	17 9	19 2	20.5	21.6	22.7	23.8	24 8	25.7	26.7	27.6	28.4	28.8
20 1/8	18.5	19 8	21.1	22.3	23.4	24.5	25.6	26.6	27.5	28 4	29.3	29.7
20 1/4	19 1	20 5	21.8	23 0	24.2	25.3	26.4	27.4	28.4	29.3	30.3	30.6
20 3/8	19.6	21 1	22.4	23.7	24.9	26.1	27.2	28.2	29.2	30.2	31.2	31.6
20 1/2	20.2	21.7	23.1	24.4	25.6	26 8	28.0	29.1	30.1	31.1	32.1	32.5

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DISCHARGE RATING TABLE - SUCCOR CREEK RESERVOIR OUTLET GATE

Succor Creek District Improvment Company

Prepared by C. G. Brockway, P.E. November 27, 2001

DISCHARGE IN CUBIC FEET PER SECOND

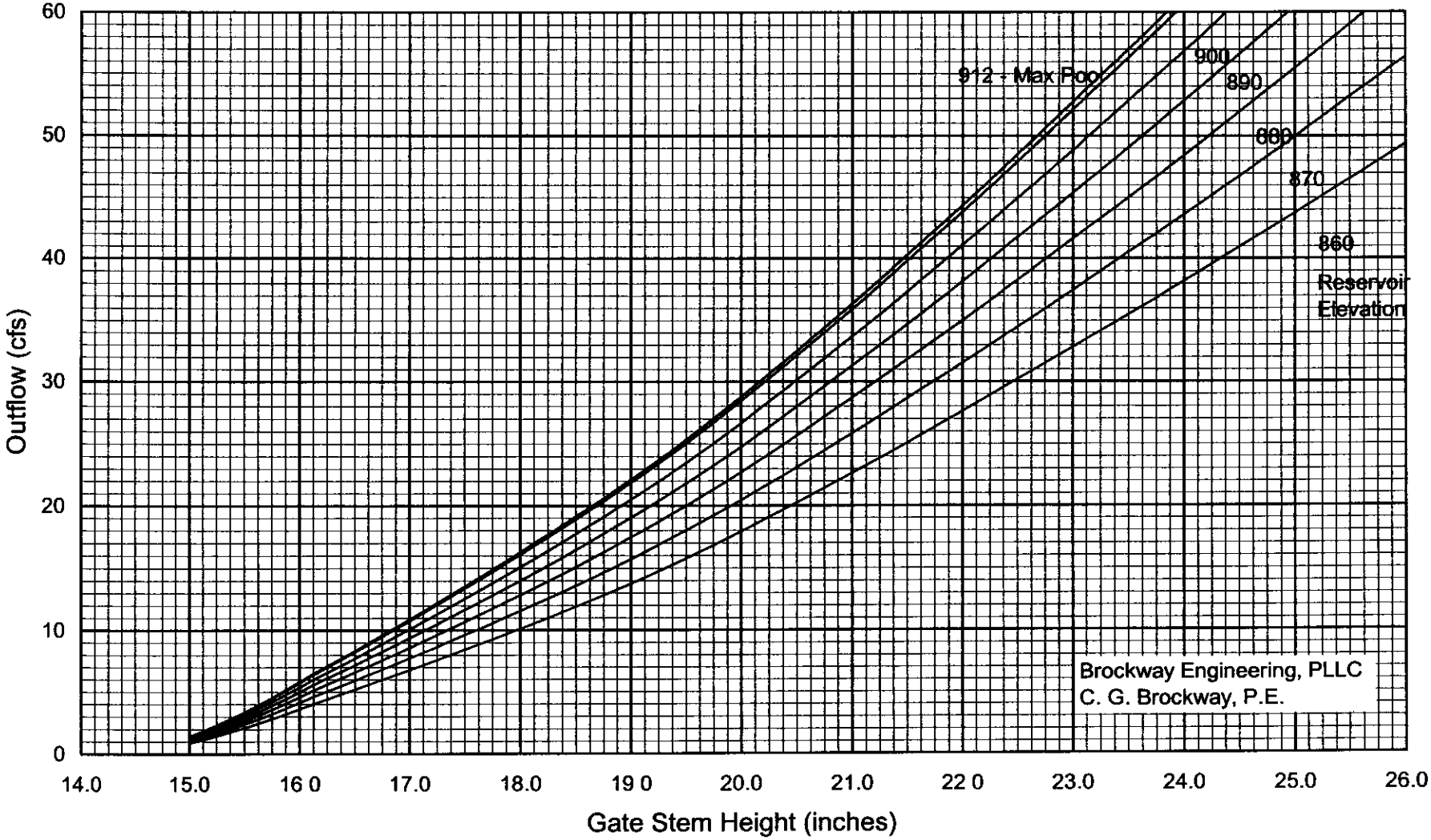
GATE STEM (INCHES)	RESERVOIR ELEVATION (FEET)											
	860	865	870	875	880	885	890	895	900	905	910	912
20 5/8	20.8	22.4	23 8	25.1	26.4	27 6	28.8	29.9	31 0	32.0	33.1	33.5
20 3/4	21.4	23.0	24.5	25.9	27.2	28.4	29.6	30.8	31.9	33.0	34.0	34.4
20 7/8	22 0	23.6	25.2	26.6	27.9	29.2	30.5	31.6	32.8	33.9	35.0	35 4
21	22.6	24.3	25.8	27.3	28.7	30.0	31.3	32.5	33.7	34.8	35.9	36.4
21 1/8	23.2	24.9	26 5	28.0	29.5	30.8	32.1	33 4	34.6	35.8	36 9	37 3
21 1/4	23.9	25.6	27.2	28.8	30 2	31.6	33.0	34.3	35.5	36.7	37.9	38.3
21 3/8	24.5	26.3	27.9	29.5	31.0	32.5	33.8	35.2	36.4	37.7	38.8	39.3
21 1/2	25.1	26.9	28.7	30.3	31.8	33.3	34.7	36.0	37.4	38.6	39.8	40.3
21 5/8	25.7	27.6	29.4	31 0	32.6	34.1	35.6	36.9	38.3	39.6	40.8	41.3
21 3/4	26.3	28.3	30.1	31.8	33.4	34.9	36.4	37.8	39.2	40.5	41.8	42.3
21 7/8	27.0	29.0	30.8	32.6	34.2	35 8	37.3	38.8	40.2	41.5	42.8	43.3
22	27.6	29.6	31.5	33.3	35.0	36 6	38.2	39.7	41.1	42.5	43.8	44.4
22 1/8	28.3	30.3	32 3	34.1	35.8	37.5	39.1	40.6	42 1	43.5	44.8	45 4
22 1/4	28.9	31.0	33.0	34.9	36.6	38.3	40.0	41.5	43 0	44.5	45.9	46.4
22 3/8	29.5	31.7	33.7	35.6	37.5	39.2	40.8	42.4	44.0	45.5	46.9	47.5
22 1/2	30 2	32.4	34.5	36 4	38 3	40.0	41.7	43.4	44.9	46.5	47 9	48.5
22 5/8	30 8	33.1	35.2	37 2	39.1	40.9	42.6	44.3	45.9	47.5	49.0	49.5
22 3/4	31.5	33.8	36.0	38.0	39.9	41.8	43.6	45.2	46.9	48.5	50.0	50.6
22 7/8	32.2	34.5	36.7	38.8	40.8	42.7	44.5	46.2	47.9	49.5	51.0	51.7
23	32.8	35.2	37.5	39.6	41 6	43.5	45.4	47.1	48.8	50.5	52.1	52.7
23 1/8	33.5	35.9	38.2	40.4	42.5	44.4	46.3	48.1	49.8	51.5	53.1	53.8
23 1/4	34.1	36.7	39.0	41.2	43.3	45.3	47.2	49.1	50.8	52.5	54.2	54.9
23 3/8	34 8	37.4	39.8	42.0	44.1	46.2	48.1	50.0	51.8	53.6	55.3	55.9
23 1/2	35.5	38.1	40.5	42 8	45.0	47.1	49 1	51.0	52.8	54.6	56.3	57.0
23 5/8	36.2	38.8	41 3	43.6	45.9	48.0	50.0	52 0	53 8	55.6	57.4	58.1
23 3/4	36.8	39.5	42.1	44 5	46.7	48.9	50.9	52.9	54.8	56.7	58.5	59.2
23 7/8	37.5	40.3	42.8	45.3	47.6	49.8	51.9	53.9	55.9	57.7	59.6	60.3
24	38.2	41.0	43.6	46.1	48.4	50.7	52.8	54.9	56.9	58 8	60.6	61.4
24 1/8	38.9	41.7	44.4	46.9	49.3	51.6	53.8	55 9	57.9	59.8	61.7	62.5
24 1/4	39.6	42.5	45.2	47 8	50.2	52.5	54.7	56.9	58.9	60.9	62.8	63.6
24 3/8	40.3	43.2	46 0	48 6	51.1	53 4	55.7	57.8	59.9	62.0	63.9	64.7
24 1/2	41 0	44.0	46.8	49.4	51.9	54.3	56.6	58.8	61.0	63 0	65.0	65.8
24 5/8	41.6	44.7	47.6	50.3	52.8	55.3	57.6	59.8	62.0	64.1	66.1	66.9
24 3/4	42.3	45.4	48.4	51.1	53.7	56.2	58.5	60.8	63.0	65.2	67.2	68.0
24 7/8	43.0	46.2	49.1	51.9	54.6	57.1	59.5	61.8	64.1	66.2	68 3	69.1
25	43 7	46.9	49.9	52.8	55.5	58.0	60.5	62.8	65.1	67.3	69.4	70.3
25 1/8	44.4	47.7	50.7	53.6	56 4	59.0	61.5	63.8	66 2	68 4	70.5	71.4
25 1/4	45 1	48.5	51.6	54 5	57.2	59.9	62 4	64.9	67.2	69.5	71.7	72.5
25 3/8	45 8	49.2	52.4	55.3	58.1	60.8	63.4	65.9	68.3	70.6	72.8	73.7
25 1/2	46 6	50.0	53 2	56 2	59.0	61.8	64.4	66.9	69.3	71.6	73.9	74.8
25 5/8	47 3	50.7	54.0	57.0	59.9	62.7	65.4	67.9	70.4	72.7	75.0	75 9
25 3/4	48 0	51.5	54 8	57.9	60.8	63.6	66.3	68.9	71.4	73.8	76.2	77.1
25 7/8	48.7	52 3	55.6	58.7	61.7	64.6	67.3	69 9	72 5	74.9	77.3	78.2
26	49.4	53.0	56 4	59.6	62.6	65.5	68.3	71.0	73.5	76.0	78.4	79.4

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MAY 16 2002

Succor Creek Reservoir Outlet Gate Rating

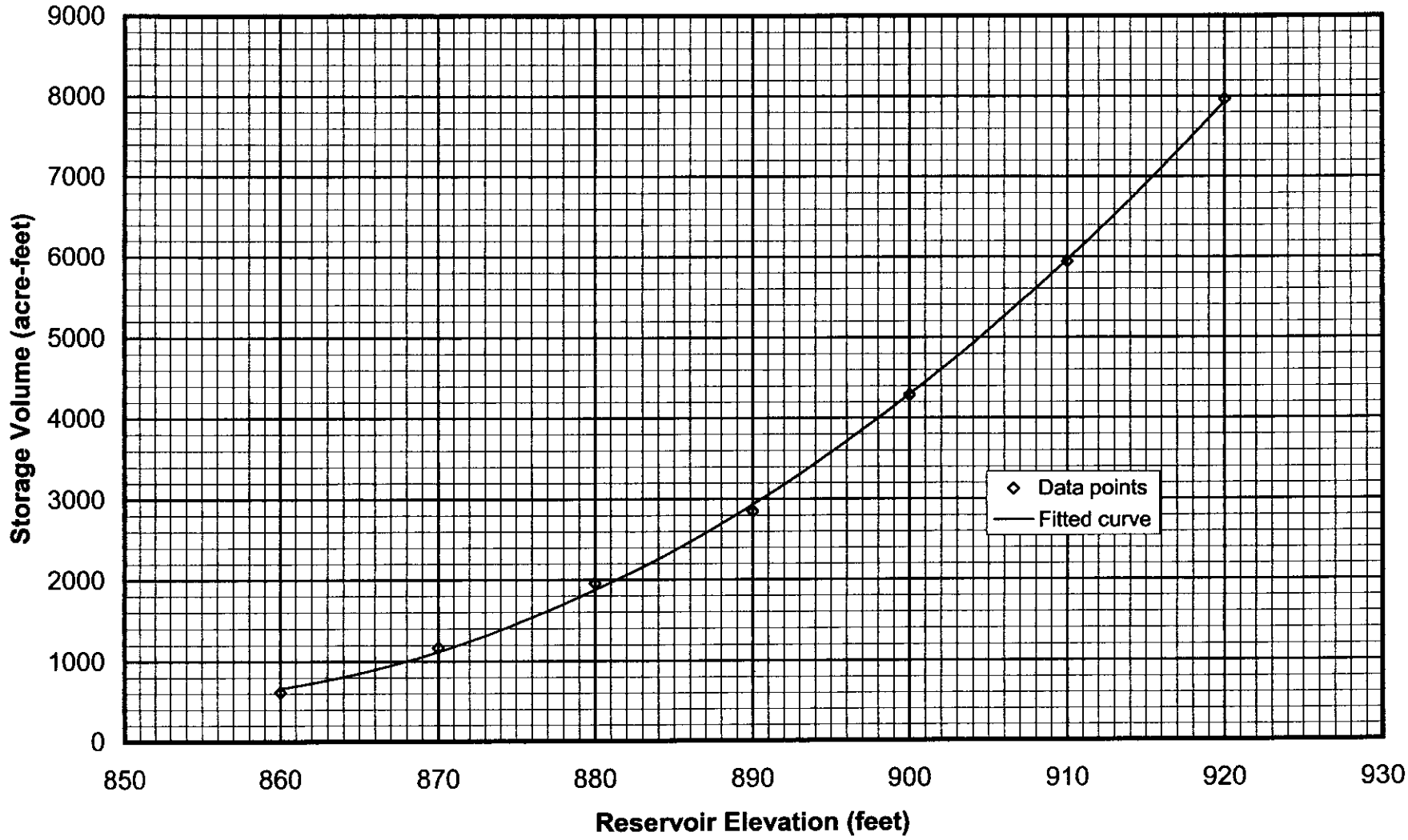
November 27, 2001



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Succor Creek Reservoir Storage Curve

Prepared in 1975 for dam construction by James D. Hanley, P.E.



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Succor Creek Reservoir Data Sheet

Succor Creek District Improvement Company
Jordan Valley, Oregon

Irrigation season: _____

- ▶ Enter date and time of operator visit to the dam to the nearest 5 minutes
- ▶ Enter the height of the gate stem set by the operator at the time of the visit - slant distance, nut to top of stem
- ▶ Enter the reservoir elevation reading from the data recorder at the time of the visit

Operator Visit Date/Time	Gate set to (nearest 1/8 inch)	Reservoir Elev (feet)	Operator initials	Remarks

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MAY 16 2002

Succor Creek Reservoir Flow Measurement

Version 1

Procedure developed by Brockway Engineering

January 16, 2002

Irrigation season 2002

- ▶ Enter date and time of operator visit to the dam to the nearest 5 minutes
- ▶ Enter the height of the gate stem set by the operator at the time of the visit - slant distance from nut to top of stem
- ▶ Enter the reservoir elevation reading from the data recorder at the time of the visit

OPERATOR INPUT		
Operator Visit Date/Time	Gate stem set to (nearest 1/8 inch)	Reservoir Elev (feet)
5/1/2002 11:05	18 1/2	901.20
5/8/2002 16 40	18 3/4	900.30
5/15/2002 16:40	19 1/4	898 90
5/26/2002 9:30	20 3/8	896 20
6/14/2002 14.30	20 3/8	888 60

AUTOMATIC CALCULATIONS					
Qout (cfs)	Qout' (cfs)	Storage (ac-ft)	Δt (days)	Avg Outflow (cfs)	Avg Inflow (cfs)
17.85	--	4480	--		--
19.12	17 75	4342	7 23	17 80	8 15
21 78	18.93	4131	7.00	19 03	3.85
28.47	21 36	3742	10 70	21 57	3 24
26.86	26.86	2766	19.21	27 66	2 04
#N/A	#N/A	#N/A	-37421.60	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0.00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A
#N/A	#N/A	#N/A	0 00	#N/A	#N/A

Qout calculated from outlet gate rating table with stem height and reservoir elevation

Storage taken from curve developed at the time of dam construction

No gate setting changes between operator visits

Qout = outflow at beginning of time period

Qout' = outflow at end of time period (before gate setting is changed)

RECEIVED

AUG 15 2001

Department of Water Resources

BROCKWAY
ENGINEERING
P.L.L.C.

Hydraulics
Hydrology
Water Resources

CHARLES E. BROCKWAY, PH.D., P.E.

CHARLES G. BROCKWAY, PH.D., P.E.

2016 NORTH WASHINGTON STREET • SUITE 4

TWIN FALLS, IDAHO 83301

208•736•8543

FAX: 736•8506

August 13, 2001

L. Glen Saxton
Idaho Department of Water Resources
1301 North Orchard Street
Boise, ID 83706

Re: Succor Creek District Improvement Company
Permit No. 57-7571 and License No. 57-7153
Project No. 465-01-2000

Dear Mr. Saxton:

I am writing to give you an update on the development of the inflow and outflow measurement procedures for the Succor Creek Reservoir.

Recall that the objectives were 1) to develop a set of accurate rating curves for the outlet gate, based on gate opening and reservoir elevation, and 2) to install equipment to accurately measure and record the level of the reservoir. The change in reservoir storage would then be utilized with the outflow measurement to compute reservoir inflow.

To date, two sets of measurements have been made on the reservoir outflow. On each day, the reservoir elevation was surveyed relative to the elevation of a known benchmark on the dam. The outflow was then measured with a current meter in the tailrace below the dam for three settings of the outlet gate. Outflow ranged from 6 cfs to 59 cfs. The first measurement, on June 7, 2001, was made at a reservoir elevation of 901.6 ft, and represents a "high" reservoir elevation. The second, on July 13, 2001, was made at an elevation of 883.7 feet, representing a "medium" reservoir elevation. The current meter measurements were rated "good" to "excellent" by USBR standards. A preliminary comparison with the theoretical gate discharge curves indicates very good agreement. Based on these results, I believe the rating curve approach will be viable.

I anticipate that the next measurement will be made near the end of August, when the reservoir is near the minimum pool elevation of 860 feet.

The District is in the process now of acquiring level-measuring equipment to be installed the same day as the last flow measurement. The equipment will likely be a high-accuracy (±0.05%) submersible pressure transducer set at

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approximately elevation 855 feet, and a data recorder in the gatehouse. The transducer cable will be protected from ice and other hazards by a conduit buried below the rock in the upstream face of the dam.

Barring unforseen circumstances, the ratings curves and operating procedures will be developed and all equipment will be installed this fall, in time for the 2002 irrigation season. Thanks again for your approval of this approach to satisfy the permit and license conditions.

Regards,

Charles G. Brockway, P.E.

cc: Ron Cunningham, Pres. - Succor Creek District Improvement Company

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OCT 12 2001

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Boise, ID 83706 - P.O. Box 83720, Boise, ID 83720-0098
Phone: (208) 327-7900 Fax: (208) 327-7866 Web Site: www.idwr.state.id.us

April 11, 2001

DIRK KEMPTHORNE
Governor
KARL J. DREHER
Director

BROCKWAY ENGINEERING
2016 NORTH WASHINGTON ST #4
TWIN FALLS ID 83301

ATTN Charles G Brockway

RE: PERMIT NO. 57-7571 AND LICENSE NO. 57-7153 – SUCCOR CREEK DISTRICT IMPROVEMENT COMPANY

Dear Mr Brockway

I have received the report you submitted titled Proposed Procedure for Inflow and Outflow Measurement – Succor Creek Reservoir In your letter you note that this proposal is being offered to satisfy the Permit and License condition requiring that permanent measuring devices be installed to monitor the inflow and outflow from the reservoir

Staff review of the water rights indicates that Permit number 57-7571 and License number 57-7153 both contain a version of the following condition "The right holder shall install/maintain permanent measuring devices in such a manner that the amount of water entering the reservoir and the amount of water released from the reservoir can be measured". Your report discusses the access constraints preventing the installation of conventional measuring devices The proposed alternative for developing a combination of rating curves for the outlet gate and reservoir level change measurements to monitor inflow appears to constitute a reasonable measurement plan to meet the intent of the permit and license conditions

Given that the theoretical rating curves and implementation methods are still being developed, you need to keep the department informed of methodology changes, field results and final operational procedures The department reserves the right to review the final measurement plan and require modifications if the methods prove to be inadequate for proper distribution of water

Please contact us if you have questions or if this office can be of further assistance

Sincerely,

L GLEN SAXTON, P E
Chief, Water Allocation Bureau

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OCT 1 2 2001

c Succor Creek District Improvement Company

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Department of Water Resources

BROCKWAY
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Hydraulics
Hydrology
Water Resources

April 4, 2001

Mr. Glen Saxton
Idaho Department of Water Resources
1301 North Orchard Street
Boise, ID 83706

VIA FEDEX – Priority Overnight

Re: Succor Creek District Improvement Company
Flow measurement requirements

Dear Mr. Saxton:

Enclosed is a proposal and supporting analysis for implementing a flow measurement program for the Succor Creek dam and reservoir. This proposal is being made pursuant to the condition on the storage water right requiring inflow and outflow measuring provisions. We have discussed by telephone the difficulties involved in constructing in-stream measuring devices in Succor Creek, and I understand you will entertain alternate plans to achieve both upstream and downstream discharge measurements. The proposal outlines a plan to utilize a field-verified theoretical rating of the reservoir outlet gate in combination with accurate reservoir water level sensing. It appears that such a plan will be feasible and will achieve a reasonable level of accuracy given the conditions.

The Succor Creek District Improvement Company is under somewhat of a time constraint. They must apply to the State of Oregon by April 15, 2001 for a grant to implement whatever flow measurement plan is selected, whether it be measuring devices or an alternate method. I realize this is extremely short notice for you to act on this proposal, but if at all possible I would greatly appreciate a quick response so that the upcoming deadline can be met.

Please do not hesitate to call if you have any questions or if I can assist in your evaluation of the proposal.

Regards,

Charles G. Brockway, P.E.

cc. Ron Cunningham

CHARLES E. BROCKWAY, PH.D., P.E

CHARLES G. BROCKWAY, PH.D, P E

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TWIN FALLS, IDAHO 83301

208•736•8543

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Proposed Procedure for Inflow and Outflow Measurement – Succor Creek Reservoir

Submitted to the Idaho Department of Water Resources

Brockway Engineering, PLLC
April 3, 2001

Background

The Succor Creek dam and reservoir were constructed in the late 1970s as an irrigation storage facility serving downstream users from the reservoir to the confluence of Succor Creek and the Snake River. The original name of the dam was Texas Basin Dam. A vicinity map showing the location of the reservoir is provided with this proposal The current organization utilizing water from the reservoir is the Succor Creek District Improvement Company, comprised of 8 water users within a service area of over 2700 irrigated acres Ron Cunningham of Jordan Valley is the current president of the company and is chiefly responsible for operation of the dam and reservoir

The reservoir is located in the Owyhee mountains, on a stream which exhibits hydrologic behavior typical of most watersheds in the Owyhees. Spring runoff peaks are of short duration and very large magnitude, and the stream discharge decreases rapidly through May and June to less than 2 cfs estimated low flow. No streamflow measurements on Succor Creek have been made, but peak flows are estimated to be as high as 4,000 cfs, based on the hydrologic response of the nearby Reynolds Creek experimental watershed data

The reservoir surface area at full stage (water surface at the spillway elevation) is 190 acres, according to engineering drawings prepared for the dam's construction. Storage at this stage is 6340 acre-feet. At the end of the irrigation season when dead pool storage of 400 acre-feet remains, the water surface area is 32 acres In a typical year, the reservoir fills and the spillway overtops in the spring. A large 75-foot spillway excavated from the east rock abutment of the dam carries flood flows. According to the District president, there have been very few years when the reservoir does not fill

Controlled releases from the reservoir are accomplished using a 30-inch slide gate operated from a gatehouse on the dam crest The gate is set parallel with the dam face, and the gate stem is in an oil-filled sheath running up to the gatehouse. The gate is a rising-stem type Water discharges into a 24-inch stainless-steel pipe which expands to a 30-inch reinforced concrete pipe. The stainless steel pipe was retrofitted after the original 30-inch steel pipe corroded beyond repair The 30-inch concrete conduit is laid through the dam and water free discharges into a small tailrace before re-entering

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Succor Creek Included with this narrative are copies of pertinent portions of the engineering drawings

Water rights for the reservoir are as follows.

57-07153
This is the original storage and irrigation right for the reservoir, allowing 6340 acre-feet of storage and irrigation of 2900 acres 70 of these acres are in Idaho, the remainder are in Oregon This right is still in the permit stage, but has been decreed in the SRBA with language subjecting it to all conditions or requirements which may be attached in the appropriations process.

57-07571
This is a permit for 400 acre feet of dead storage to be drawn as needed for stockwater uses, mainly in the non-irrigation season. Proof was filed in March 1994, but this right has not yet been licensed

A condition on the water right addresses discharge measuring requirements for reservoir inflow and outflow The condition reads: "The rightholder shall install/maintain permanent measuring devices in such a manner that the amount of water entering the reservoir and the amount of water released from the reservoir can be measured." The rationale behind this condition is not known. Water right and adjudication files obtained from IDWR provide no evidence One reason may be to protect downstream users having natural flow water rights on Succor Creek, or to administer these water rights. These rights would technically be active only when there is sufficient natural flow in Succor Creek, i.e. upstream of the reservoir In practice, however, these rights have not historically been administered in this way – the users have simply drawn water as needed even though some of this water may have been released storage, according to Ron Cunningham.

Satisfying the measuring device condition by constructing in-stream flow measuring devices poses two difficult problems. First, the location of the reservoir is extremely remote and difficult to access (impossible to access for certain types of heavy equipment). Setting a device in Succor Creek upstream of the reservoir would likely require cutting a new road to allow heavy equipment to access the site. Downstream sites are slightly easier to access, but the preferred location just downstream of the dam can be accessed only by an extremely steep roadway that would allow access only by small trucks Concrete would likely have to be conveyed to this site from the top of the dam by system of chutes See the attached photographs of potential upstream and downstream sites.

Glen Saxton of the Idaho Department of Water Resources indicated that the measuring device condition could not be waived since one of the rights has been decreed by the SRBA court However, the language of the condition appears to allow some leeway to provide for inflow and outflow measurement by means other than directly with in-stream devices Mr Saxton concurs with this interpretation A site visit made by Brockway Engineering staff on November 15, 2000 and a review of the dam construction confirmed that the only means of inflow/outflow measurement possible without in-stream weirs or

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flumes would be a combination of rating curves for the 30-inch outlet gate and very precise reservoir level change measurements

This narrative presents an analysis of this alternative approach and the estimated measurement error associated with it to determine whether this approach is feasible.

Outlet Gate and Pipe Hydraulics

As noted, the outlet gate is a 30-inch slide gate. Presumably, the gate is cast iron, but the exact manufacturer and model of the gate are unknown. As shown on the enclosed engineering drawings, the angled section of 30-inch steel pipe downstream of the gate has been replaced with 24-inch stainless steel pipe, with transitions to the 30-inch gate and the 30-inch reinforced concrete pipe

The concrete pipe is 490 feet in length and has an inside diameter of 30.0 inches (measured on November 15, 2001) The pipe is of continuous construction along its length and is set according to the following schedule of invert elevations and slopes

Station	Invert Elev.	Slope
0+00 (upstream end)	819 5	
1+50	811 1	5.60%
3+30	810 5	0 33%
4+90 (outlet)	809.3	0.75%

As the slide gate is opened from a fully-closed position, water will begin to discharge freely through the gate into the pipe, and open-channel flow will exist in the pipe initially Under these conditions, discharge through the gate was calculated for various reservoir elevations and gate openings using the orifice equation The cross-sectional area of flow was calculated from the geometry of a square gate plate overlapping a circular opening, and the discharge coefficient was assumed to be nearly equal to the theoretical value of 0 611 for a circular jet in a vertical plate where the orifice diameter is small relative to the upstream head The actual gate does not meet these ideal conditions. the gate opening is not circular, it discharges into a pipe that immediately contracts to a 24-inch pipe, and it is set on a slope (see the engineering drawing) However, this represents a reasonable first cut at the discharge coefficient. A "dead throw" of 3 inches was assumed from the fully-seated location to the point where the plate reaches the bottom of the circular opening. The attached spreadsheets and charts show the results of these calculations

A hydraulic analysis of the concrete pipe downstream of the gate was also made to determine the maximum discharge before submergence of the gate would occur. This analysis is shown on the attached spreadsheet Just prior to submergence, the water level in the sloping pipe is assumed to be 1 0 feet below the gate lip elevation (Elev 826 0 feet) Under this full-flow condition, an energy analysis was made using Darcy-Weisbach friction and typical values for minor loss coefficients. This calculated discharge is 45 0 cfs At discharges greater than this level through the gate, the gate will be submerged and the theoretical gate curves will not be valid Controlled releases from the reservoir during high runoff in the spring may exceed 45.0 cfs, but releases for

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irrigation are nearly always below this level It is assumed that the most concern for flow measurement occurs when the natural flow is low, so that the 45 0 cfs limitation is not a concern.

This set of curves represents a theoretical outlet gate rating based on the best available information about the gate. To provide a reality check on the curves, data recorded by Ron Cunningham for 1989 through 1993 on gate stem setting and the corresponding estimated outflow was used. During this period, at each visit to the dam (approximately once per week), the gauge was read and the gate setting was changed as needed and the gate stem height measured. The net outflow was estimated using the stage-storage curve and the change in gauge reading, using only data after approximately July 1 when inflow to the reservoir is typically negligible. Data was divided into high, medium, and low reservoir elevation conditions, and are shown on the same plot with the theoretical curves. These data are very approximate, and cannot be relied upon to calibrate the gate rating; however, they do indicate that the theoretical curves are reasonable

The theoretical curves can provide estimates of the sensitivity of the gate outflow to changes in reservoir elevation and to changes in gate opening, and therefore the viability of using a gate rating for outflow determination. Realistically, the operator can read the gate stem extension no more accurately than to the nearest 1/8 inch The following table shows the estimated change in outflow for a 1/8-inch change in stem height, and the percent of outflow this change represents:

	Reservoir Elevation	
Gate setting	910 feet (high condition)	860 feet (low condition)
16 inches	0 42 cfs (19%)	0.26 cfs (18%)
18 inches	0.70 cfs (6.1%)	0.44 cfs (6 1%)
20 inches	0 87 cfs (3.6%)	0 55 cfs (3 6%)
24 inches	1 07 cfs (1.9%)	0.67 cfs (1 9%)

Field Verification of Gate Rating

As noted, the theoretical curves cannot be considered acceptable ratings until checked in the field. Because of the extremely rugged nature of the site, it is not feasible to make many discharge measurements at several reservoir elevations in order to develop a complete set of empirical curves. Therefore, it is proposed to utilize the following methodology to check and modify the theoretical estimates.

1 During the 2001 season, two site visits will be made by qualified Brockway Engineering staff when the reservoir is high (end of April or beginning of May), and when it is low (probably the end of July). During each site visit, discharge measurements will be made in Succor Creek downstream of the reservoir at a high and low gate setting Stem height will be measured on the upward throw, i e. when the gate is being opened, to avoid problems will slack in the gearbox when changing directions

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2 The existing stream bed is composed of large angular cobbles which prevent an accurate current meter measurement from being made Therefore, a 30-foot section of channel will be cleaned of the large cobble and smoothed. An alternative is to current meter the water issuing from the end of the 30-inch concrete pipe Due to the high velocities and turbulent flow, this approach would be difficult but might be feasible Based on field conditions, the most accurate approach will be selected

3. Data from the discharge measurements will be compared against the theoretical curves, and modifications to the parameters of the equation made to achieve a good fit It is anticipated that changes to the assumed discharge coefficient and "dead throw" of the gate will be required to bring the curves in line with the measurements

4. The remainder of the curves for intermediate reservoir elevations and gate stem heights will be created using the orifice equation as adjusted in Step 3

Estimating Reservoir Inflow

The above procedure will allow reasonably accurate determination of outflow from the reservoir. In order to satisfy the conditions of the water rights, some means of determining reservoir inflow must also be implemented. As noted above, construction of a measuring device at the extremely remote and rugged inflow location would be cost prohibitive and should be avoided if possible. Therefore, it is proposed to accurately measure the net reservoir storage change (inflow minus outflow), which will yield reservoir inflow when combined with the outflow measurement from the gate rating. The net storage change will be determined by measuring the reservoir elevation very accurately using a bubbler device or other level-sensing device with an accuracy of 0.075% or better

Storage will be found from the stage-storage curve developed for the dam construction, which is assumed to be accurate. Assuming the water level can be read to the nearest 0 05 feet, the following table shows the potential error in inflow calculation at low, medium, and high reservoir elevations.

	Potential error	
Reservoir Gauge	Acre-feet / day	CFS
860 (min. pool)	1 51	0 76
880 (average)	4 54	2 29
912 (max pool)	9 39	4 74

Clearly, estimating inflow using storage change is less accurate than using a measuring device or a rated gate However, the need for accuracy should be measured against the rationale for the measuring device condition For example, if the purpose of the inflow-outflow measurement is to determine reservoir evaporation and seepage, very accurate measurements would be required This is not the case for Succor Creek If the goal is to administer natural flow rights, the accuracy improves at lower reservoir levels, which occur later in the season when the natural flow in Succor Creek is low and is more likely to be critical to the natural flow users

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To assist the dam operator in implementing this method, a set of curves will be developed to provide net inflow minus outflow in cubic feet per second given a differential storage change and a time period between measurements.

Operational Procedure

Operationally, the procedure for determining inflow and outflow will be as follows

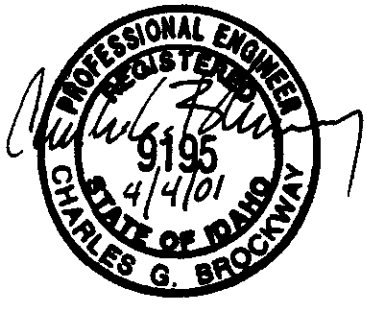
1 On each visit to the dam: read the level-sensing device, set the gate to the desired point, and measure the gate stem height to the nearest 1/8 inch

2 Use the outflow curve or table with the reservoir elevation and gate setting and determine the outflow in cubic feet per second.

3 Use the net inflow curves with the current and previous reservoir elevations to find inflow minus outflow

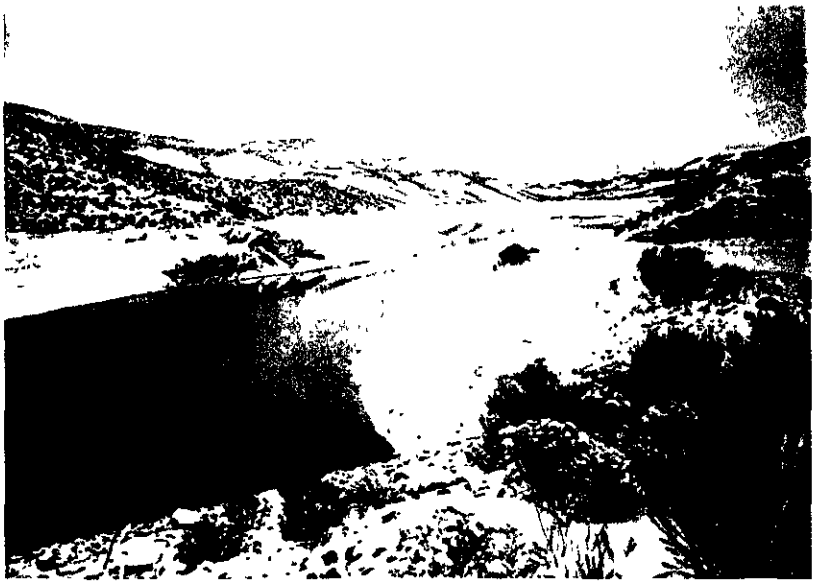
4 Reservoir Inflow = Net Inflow (Step 3) + Average Outflow (Step 2)

Depending on the wishes of the Succor Creek District Improvement Company and IDWR requirements, a spreadsheet could easily be developed to automate these calculations



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Succor Creek Reservoir from top of dam. 11/15/00





Outlet pipe. 11/15/00

Succor Creek downstream of dam, taken from top of dam. 11/15/00



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Succer Creek District Improvement Comany

Flow Measurement Proposal

April 4, 2001

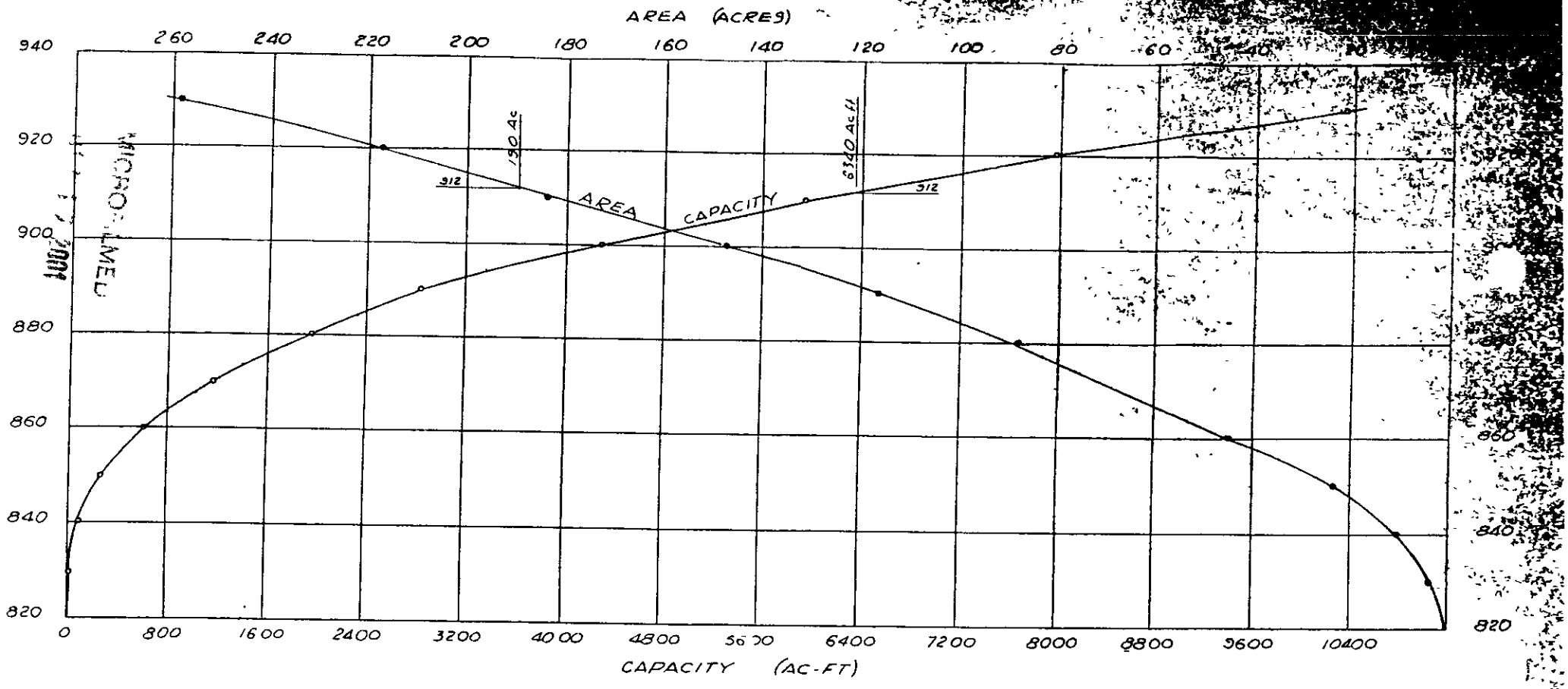
BROCKWAY ENGINEERING, PLLC.

26" min

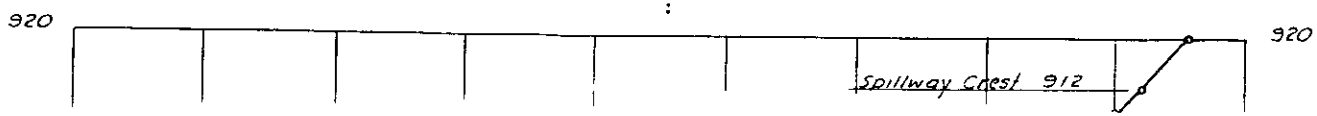
20'

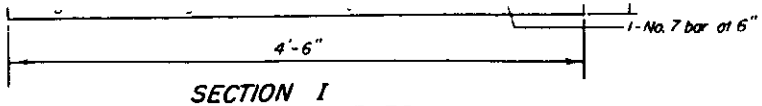
500 A.F.

AREA - CAPACITY CURVE

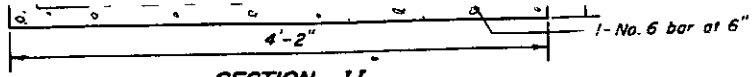


CONDUIT DISCHARGE CURVE





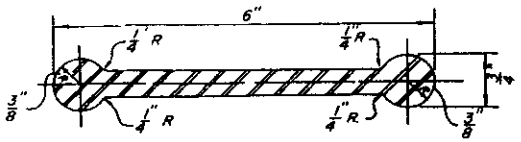
SECTION I
Sta 1+50 to Sta. 3+30



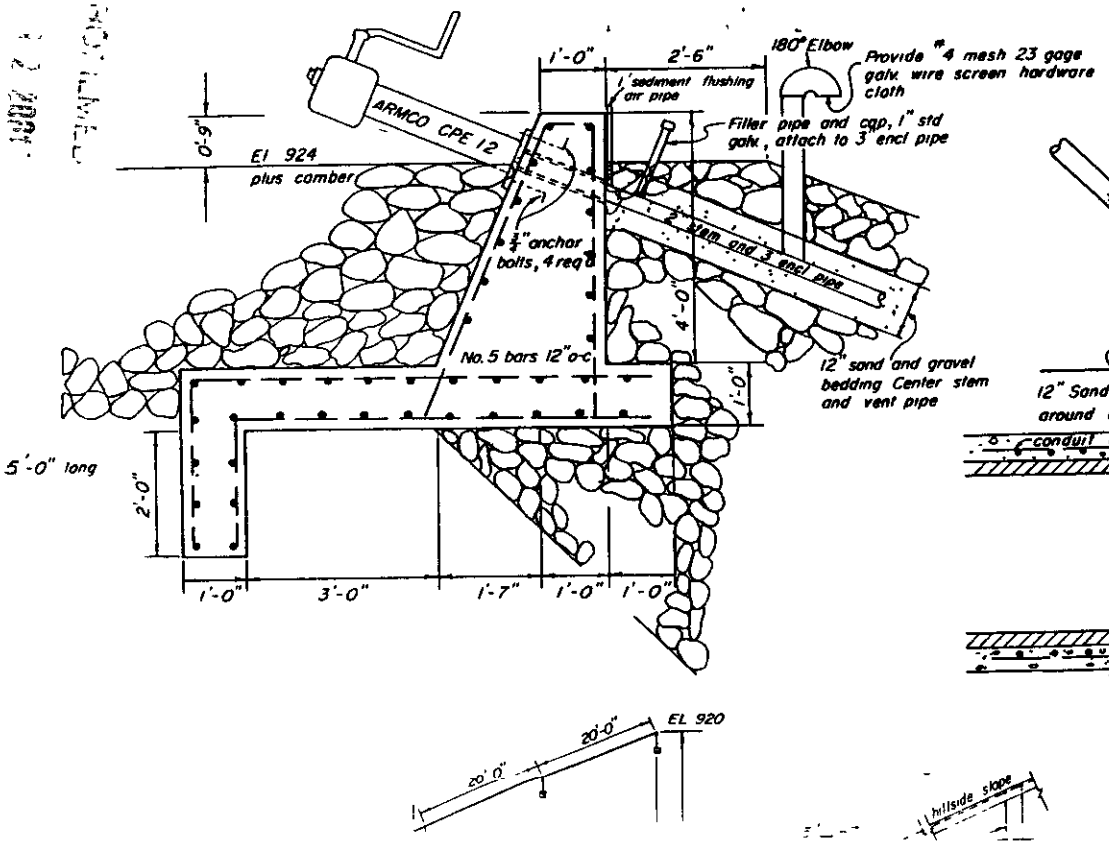
SECTION II
Sta. 0+90 to Sta. 1+50
and
Sta 3+30 to Sta. 4+20

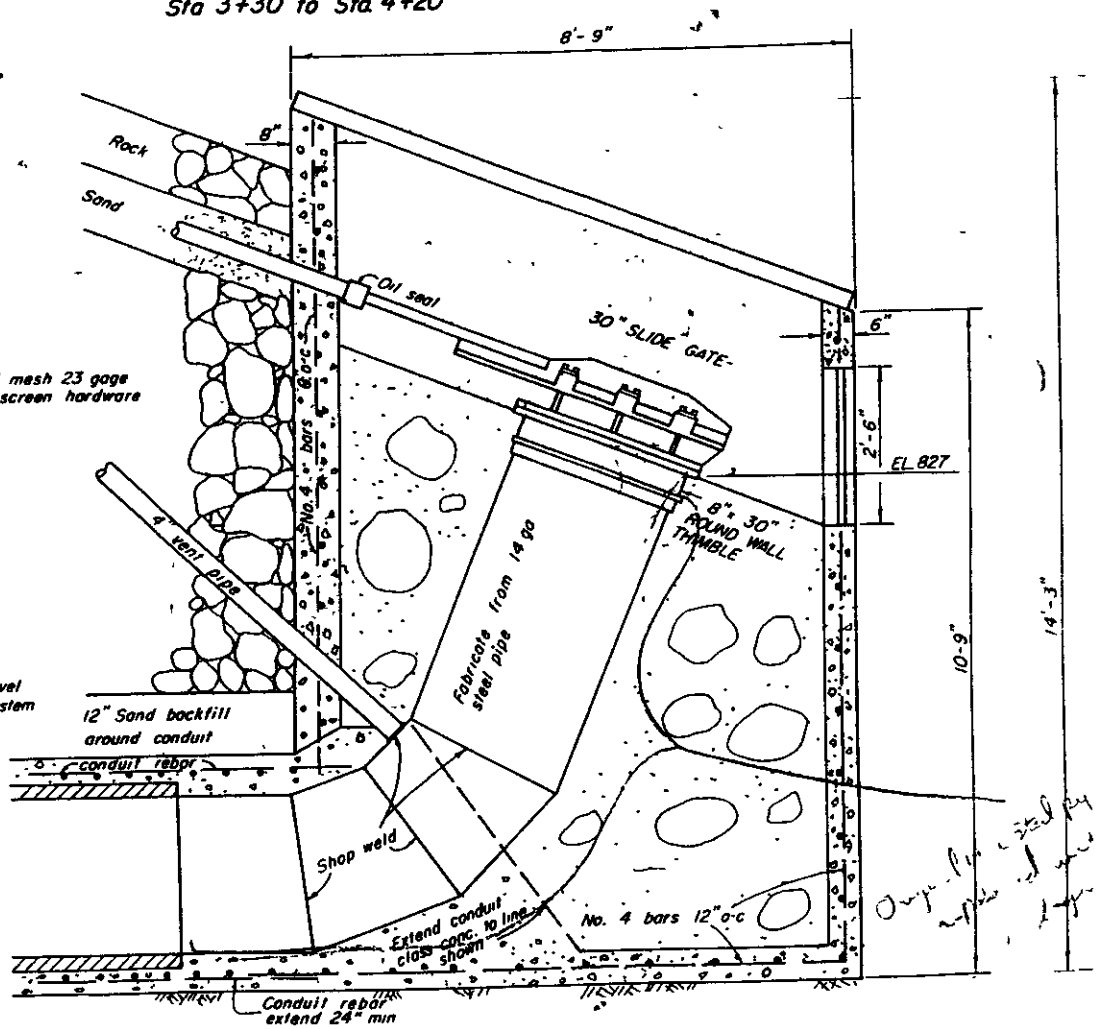
Sta 0+

Sta 4+



RUBBER WATERSTOP
1/2" = 1"





GATE STRUCTURE
1/2" = 1'-0"

THEORETICAL OUTLET GATE RATING - SUCCOR CREEK RESERVOIR

C G Brockway, P E 3/28/01

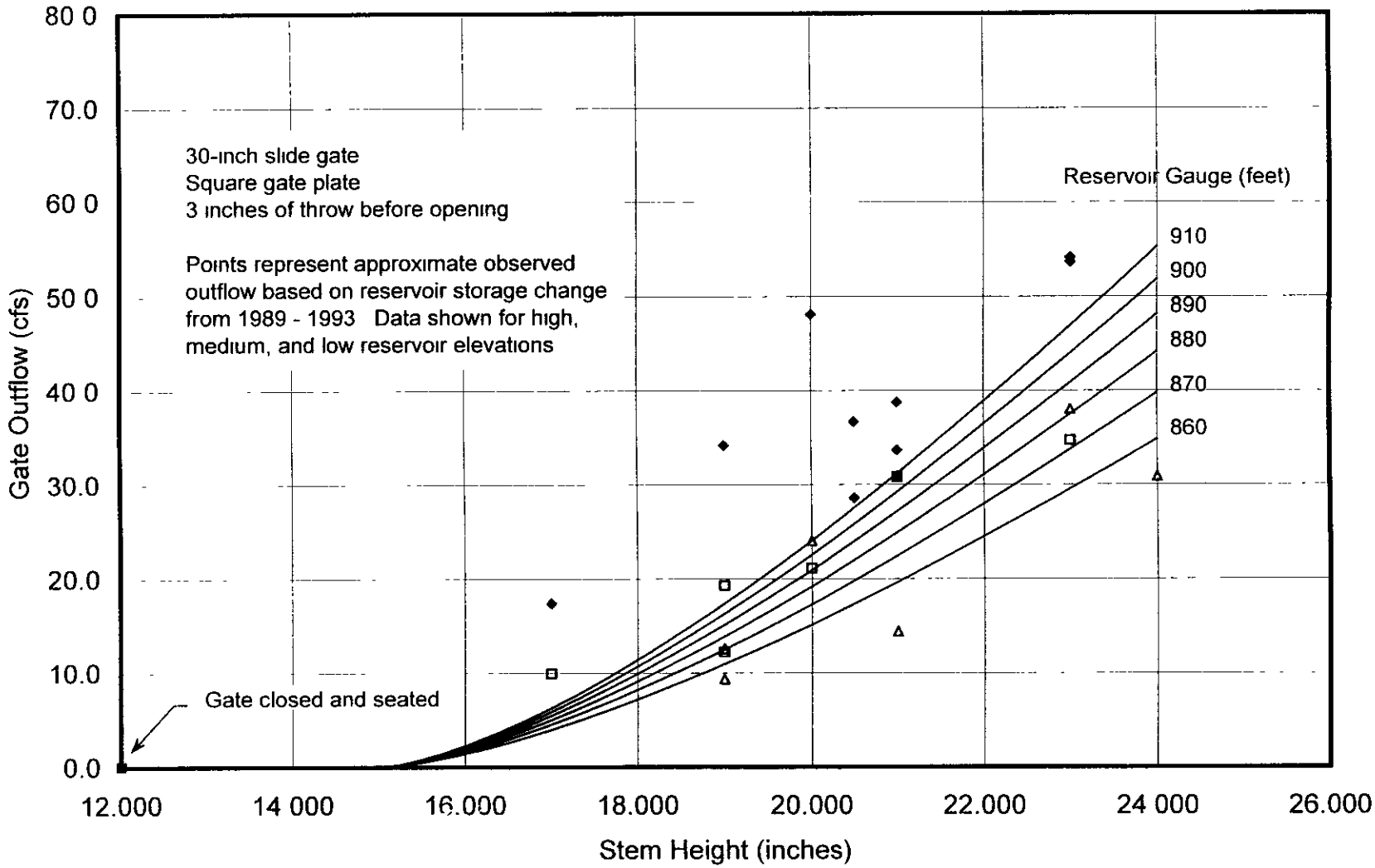
1 Rating valid for free discharge through the gate Pipe will flow full and gate will submerge at Q greater than than 45 cfs (see full pipe flow analysis)
2 Assume coefficients of contraction and discharge are constant This is nearly true if the gate opening is very small relative to the upstream head
3 Area of the gate opening found from geometry based on percent of gate opening

Gate diameter (Do)	2 5 feet	Ro =	1 25 feet
Discharge coefficient	0 611 theoretical orifice coefficient for small b / y1 where y1 = upstream head		
Full-open area (Ao)	4 909 sq ft		
Initial gate throw	3 0 inches		
Closed stem height	12 0 inches		
Gate reference elev	827 10 feet - approx centerline of gate opening		
Reservoir Elevation	**880.00 feet**		

Gate opening h (inches)	h (ft)	Stem height (inches)	d	d/R	Open area	Q (cfs)
0 000	0 000	15 000	1 25	1 00	0 000	0 0
0 125	0 010	15 125	1 24	0 99	0 002	0 1
0 250	0 021	15 250	1 23	0 98	0 006	0.2
0 375	0 031	15 375	1 22	0 98	0 012	0 4
0 500	0 042	15 500	1 21	0 97	0 018	0.6
0 625	0 052	15 625	1 20	0 96	0 025	0.9
0 750	0 063	15 750	1 19	0 95	0 033	1 2
0 875	0 073	15 875	1 18	0 94	0 041	1 5
1 000	0.083	16 000	1 17	0.93	0 050	1 8
1 125	0 094	16 125	1 16	0 93	0 060	2 1
1.250	0 104	16 250	1 15	0 92	0 070	2 5
1 375	0 115	16 375	1 14	0 91	0.081	2 9
1 500	0 125	16 500	1 13	0 90	0 092	3 3
1 625	0 135	16 625	1 11	0.89	0 103	3 7
1 750	0 146	16 750	1 10	0 88	0 115	4 1
1 875	0 156	16 875	1 09	0 88	0 128	4 6
2 000	0 167	17 000	1 08	0 87	0 141	5 0
2 125	0 177	17 125	1 07	0 86	0 154	5 5
2.250	0 188	17 250	1 06	0 85	0 167	6 0
2 375	0 198	17 375	1 05	0 84	0 181	6 5
2 500	0 208	17 500	1 04	0 83	0 195	7 0
2 625	0 219	17 625	1 03	0 83	0.210	7 5
2 750	0 229	17 750	1 02	0 82	0 225	8 0
2 875	0 240	17 875	1 01	0 81	0 240	8 6
3 000	0 250	18 000	1 00	0 80	0.255	9 1
3 125	0 260	18 125	0 99	0 79	0 271	9 7
3 250	0 271	18 250	0 98	0 78	0 287	10.2
3 375	0 281	18 375	0 97	0 78	0 304	10 8
3 500	0 292	18 500	0 96	0 77	0 320	11 4
3 625	0 302	18 625	0 95	0 76	0 337	12 0
3 750	0 313	18 750	0 94	0 75	0 354	12 6
3 875	0 323	18 875	0 93	0 74	0 371	13 2
4 000	0 333	19 000	0 92	0 73	0 389	13 9

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Succor Creek Reservoir
Theoretical Gate Outflow vs. Opening



SUCCOR CREEK RESERVOIR - THEORETICAL GATE RATING

C G Brockway, P E 4/4/01 **Not field checked - theoretical for proposal to IDWR only**

Stem Height (inches)	Discharge (CFS) for Reservoir Elevation 830	840	850	860	870	880	890	900	910
15 000	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
15 125	0 0	0 0	0 1	0 1	0 1	0 1	0 1	0 1	0 1
15 250	0 1	0 1	0 1	0 2	0 2	0 2	0 2	0 3	0 3
15 375	0 1	0 2	0 3	0 3	0 4	0 4	0 5	0 5	0 5
15 500	0 1	0 3	0 4	0 5	0 6	0 6	0 7	0 7	0 8
15 625	0 2	0 4	0 6	0 7	0 8	0 9	1 0	1 0	1 1
15 750	0 3	0 6	0 8	0 9	1 0	1.2	1 3	1 4	1 5
15 875	0 3	0 7	1 0	1 2	1 3	1 5	1 6	1 7	1 8
16 000	0 4	0 9	1 2	1 4	1 6	1 8	2.0	2 1	2 2
16 125	0 5	1 1	1 4	1 7	1.9	2 1	2 3	2 5	2 7
16 250	0 6	1 2	1 6	2 0	2 2	2 5	2 7	2 9	3 1
16 375	0 7	1 4	1 9	2 3	2 6	2.9	3 1	3 4	3 6
16 500	0 8	1 6	2 2	2 6	2 9	3 3	3 6	3 8	4 1
16 625	0 9	1 8	2 4	2 9	3 3	3 7	4 0	4 3	4 6
16 750	1 0	2 0	2 7	3 2	3 7	4 1	4 5	4 8	5 1
16 875	1 1	2 2	3 0	3.6	4 1	4 6	5 0	5 3	5 7
17 000	1 2	2 5	3 3	4 0	4 5	5 0	5 5	5 9	6 3
17 125	1 3	2 7	3 6	4.3	4 9	5 5	6 0	6 4	6 9
17 250	1 4	2.9	3 9	4 7	5 4	6 0	6 5	7 0	7 5
17 375	1 5	3 2	4 2	5 1	5 8	6 5	7 0	7 6	8 1
17 500	1 6	3 4	4 6	5.5	6 3	7 0	7 6	8 2	8 7
17 625	1 8	3 7	4 9	5 9	6 7	7 5	8 2	8 8	9 4
17 750	1 9	4 0	5 3	6 3	7 2	8 0	8 7	9 4	10 0
17 875	2 0	4 2	5 6	6 7	7 7	8 6	9 3	10 0	10 7
18 000	2 1	4 5	6 0	7 2	8 2	9 1	9 9	10 7	11 4
18 125	2 3	4 8	6 4	7 6	8 7	9 7	10 5	11 4	12 1
18.250	2 4	5 1	6 7	8 1	9 2	10 2	11 2	12 0	12 8
18 375	2 5	5 3	7 1	8 5	9 7	10 8	11 8	12 7	13 5
18 500	2 7	5 6	7 5	9 0	10 3	11 4	12 4	13 4	14 3
18 625	2 8	5 9	7 9	9 5	10 8	12 0	13 1	14 1	15 0
18 750	3 0	6 2	8 3	10 0	11 4	12 6	13 8	14 8	15 8
18 875	3 1	6 5	8 7	10 4	11 9	13 2	14 4	15 5	16 6
19 000	3 2	6 8	9 1	10 9	12.5	13 9	15 1	16 3	17 4
19 125	3 4	7 2	9 5	11 4	13 1	14 5	15 8	17 0	18 2
19 250	3 5	7 5	10 0	11 9	13 6	15 1	16 5	17 8	19 0
19 375	3 7	7 8	10 4	12 5	14 2	15 8	17 2	18 5	19 8
19 500	3 9	8 1	10 8	13 0	14 8	16 5	17 9	19 3	20 6
19 625	4 0	8 5	11 3	13 5	15 4	17 1	18 7	20 1	21 4
19 750	4 2	8 8	11 7	14 0	16 0	17 8	19 4	20 9	22 3
19 875	4 3	9 1	12 2	14 6	16 6	18 5	20.2	21 7	23 1
20 000	4 5	9 5	12 6	15 1	17 3	19 2	20 9	22 5	24 0
20 125	4 7	9 8	13 1	15 7	17 9	19 9	21 7	23 3	24 9
20 250	4 8	10 2	13 5	16 2	18 5	20 6	22 4	24 1	25 7
20 375	5 0	10 5	14 0	16 8	19 2	21 3	23 2	25 0	26 6
20 500	5 1	10 9	14 5	17 3	19 8	22 0	24 0	25 8	27 5
20 625	5 3	11 2	14 9	17 9	20 5	22 7	24 8	26 7	28 4
20 750	5 5	11 6	15 4	18 5	21 1	23 4	25 6	27 5	29 3

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Stem Height (inches)	Discharge (CFS) for Reservoir Elevation 830	840	850	860	870	880	890	900	910
20 875	5 7	11 9	15 9	19 1	21 8	24 2	26 4	28 4	30 3
21 000	5 8	12 3	16 4	19 6	22 4	24 9	27 2	29 2	31 2
21 125	6 0	12 7	16 9	20 2	23 1	25 7	28 0	30 1	32 1
21 250	6 2	13 0	17 4	20 8	23 8	26 4	28 8	31 0	33.1
21 375	6 4	13 4	17 9	21 4	24 5	27 2	29 6	31 9	34.0
21 500	6 5	13 8	18 4	22 0	25 2	27 9	30 5	32 8	35.0
21 625	6 7	14 2	18 9	22 6	25 8	28 7	31 3	33 7	35.9
21 750	6 9	14 6	19 4	23 2	26 5	29 5	32 1	34 6	36.9
21 875	7 1	14 9	19 9	23 9	27 2	30 2	33 0	35 5	37.9
22 000	7 3	15 3	20 4	24 5	27 9	31 0	33 8	36 4	38.8
22 125	7 4	15 7	20 9	25 1	28 7	31 8	34 7	37 4	39 8
22 250	7 6	16 1	21 5	25 7	29 4	32 6	35 6	38 3	40 8
22 375	7 8	16 5	22 0	26 3	30 1	33 4	36 4	39 2	41 8
22 500	8 0	16 9	22 5	27 0	30 8	34 2	37 3	40 2	42 8
22 625	8 2	17 3	23 0	27 6	31.5	35.0	38 2	41 1	43 8
22 750	8 4	17 7	23 6	28 3	32 3	35 8	39 1	42 1	44 8
22 875	8 6	18 1	24 1	28 9	33 0	36 6	40 0	43 0	45 9
23 000	8 8	18 5	24 6	29 5	33 7	37 5	40 8	44 0	46 9
23 125	9 0	18 9	25.2	30 2	34 5	38 3	41 7	44 9	47 9
23 250	9 2	19 3	25 7	30 8	35.2	39 1	42 6	45 9	49 0
23.375	9 4	19 7	26 3	31 5	36 0	39 9	43 6	46 9	50 0
23 500	9 5	20 1	26 8	32 2	36 7	40 8	44.5	47 9	51 0
23 625	9 7	20 5	27 4	32 8	37 5	41 6	45 4	48 8	52 1
23 750	9 9	21 0	27 9	33 5	38 2	42 5	46 3	49 8	53 1
23 875	10 1	21 4	28 5	34 1	39 0	43 3	47 2	50 8	54 2
24 000	10 3	21 8	29 0	34 8	39 8	44 1	48 1	51 8	55 3
24 125	10 5	22 2	29 6	35 5	40 5	45.0	49 1	52 8	56 3
24 250	10 7	22 6	30 2	36 2	41 3	45.9	50 0	53 8	57 4
24 375	10 9	23 1	30 7	36 8	42 1	46 7	50 9	54 8	58 5
24 500	11 1	23 5	31 3	37 5	42 8	47 6	51 9	55 9	59 6
24 625	11 3	23 9	31 9	38 2	43 6	48 4	52 8	56 9	60 6
24 750	11 5	24 4	32 4	38 9	44 4	49 3	53 8	57 9	61 7
24 875	11 7	24 8	33 0	39 6	45 2	50 2	54 7	58 9	62 8
25 000	12 0	25 2	33 6	40 3	46 0	51 1	55 7	59 9	63 9
25 125	12 2	25 6	34 2	41 0	46 8	51 9	56 6	61 0	65 0
25 250	12 4	26 1	34 7	41 6	47 6	52 8	57 6	62 0	66 1
25 375	12 6	26 5	35 3	42 3	48 4	53 7	58 5	63 0	67 2
25 500	12 8	27 0	35 9	43 0	49 1	54 6	59 5	64 1	68 3
25 625	13 0	27 4	36 5	43 7	49 9	55 5	60 5	65 1	69 4
25 750	13 2	27 8	37 1	44 4	50 7	56 4	61 5	66 2	70 5
25 875	13 4	28 3	37 7	45 1	51 6	57 2	62 4	67 2	71 7
26 000	13 6	28 7	38 3	45 8	52 4	58 1	63 4	68 3	72 8
26 125	13 8	29 2	38 8	46 6	53 2	59 0	64 4	69 3	73 9
26 250	14 0	29 6	39 4	47 3	54 0	59 9	65 4	70 4	75 0
26 375	14.2	30 0	40 0	48 0	54 8	60 8	66 3	71 4	76 2
26 500	14 5	30 5	40 6	48 7	55 6	61 7	67 3	72 5	77 3
26 625	14 7	30 9	41 2	49 4	56 4	62 6	68 3	73 5	78 4
26 750	14 9	31 4	41 8	50 1	57 2	63 5	69 3	74 6	79 5
26 875	15 1	31 8	42 4	50 8	58 0	64 5	70 3	75 7	80 7
27 000	15 3	32 3	43 0	51 5	58 9	65 4	71 3	76 7	81 8

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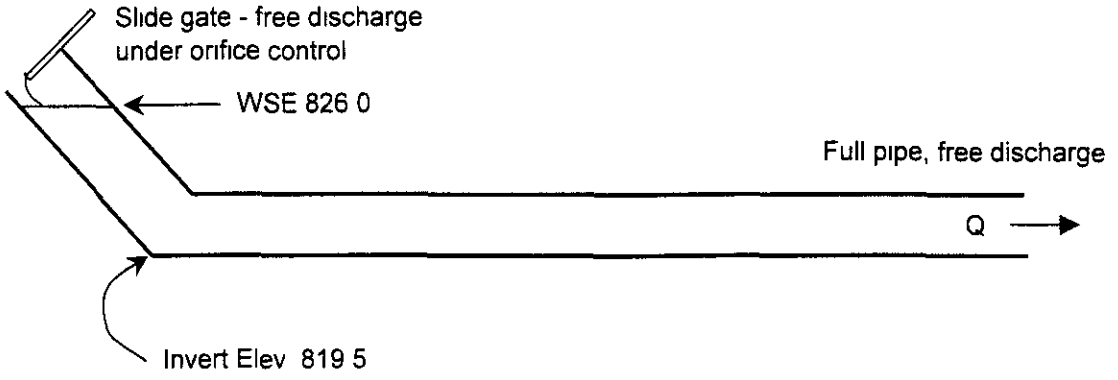
Stem Height	Discharge (CFS) for Reservoir Elevation								
(inches)	830	840	850	860	870	880	890	900	910
27 125	15.5	32 7	43 6	52 3	59 7	66 3	72 3	77.8	83 0
27 250	15 7	33 2	44 2	53 0	60 5	67 2	73 3	78 9	84 1
27 375	15 9	33 6	44 8	53 7	61 3	68 1	74 3	79 9	85 2
27 500	16 2	34 1	45 4	54 4	62 1	69 0	75.2	81 0	86 4
27 625	16 4	34 5	46 0	55 1	63 0	69 9	76.2	82 1	87 5
27 750	16 6	35 0	46 6	55 9	63 8	70 8	77 2	83.2	88 7
27 875	16 8	35 4	47 2	56 6	64 6	71 8	78.2	84 2	89 8
28 000	17 0	35 9	47 8	57 3	65 5	72 7	79 3	85 3	91 0
28 125	17 2	36 3	48 4	58 0	66 3	73 6	80.3	86 4	92 1
28 250	17 4	36 8	49 0	58 8	67 1	74 5	81 3	87.5	93 3
28 375	17 7	37 3	49 6	59 5	67 9	75 4	82 3	88 6	94 4
28 500	17 9	37 7	50 2	60 2	68 8	76 4	83 3	89 6	95 6
28 625	18 1	38 2	50 9	61 0	69 6	77 3	84 3	90 7	96 8
28 750	18 3	38 6	51 5	61 7	70 4	78 2	85 3	91 8	97 9
28 875	18 5	39 1	52 1	62 4	71 3	79 1	86 3	92 9	99 1
29 000	18 7	39 5	52 7	63 1	72 1	80 1	87 3	94 0	100.2
29 125	19 0	40 0	53 3	63 9	72 9	81 0	88 3	95 1	101 4
29 250	19 2	40 5	53 9	64 6	73 8	81 9	89 3	96 2	102 6
29 375	19 4	40 9	54 5	65 3	74 6	82 8	90 3	97 3	103 7
29 500	19 6	41 4	55 1	66 1	75 4	83 8	91 4	98 3	104 9
29 625	19 8	41 8	55 7	66 8	76 3	84 7	92 4	99 4	106 0
29 750	20 0	42 3	56 3	67 5	77 1	85 6	93 4	100 5	107 2
29 875	20 3	42 7	57 0	68 3	78 0	86 6	94 4	101 6	108 4
30 000	20 5	43 2	57 6	69 0	78 8	87 5	95 4	102 7	109 5

SUCCOR CREEK OUTLET PIPE - FULL FLOW HYDRAULIC ANALYSIS

C G Brockway, P E 3/28/01

Determine minimum flow that will submerge the slide gate
At low flows, the gate will operate under free discharge and the pipe will flow partially-full under open-channel conditions. At higher flows, the pipe will flow full

Condition just before gate submerges



Use energy equation with Darcy-Weisbach friction to determine flow under this condition

Pipe diameter	2 5 feet
Absolute roughness (k) for concrete in fair condition	0 005 feet
k / D	0.00200
Friction factor	0.023
Loss coeffs:	
45-deg med radius	0 30
Abrupt expansion	0 13
Exit	1 0
Pipe area	4 91 sq ft
Pipe length	490 feet
Elevation drop	0 feet
Total head	7 75 feet
Velocity	**9.16 ft/s**
Discharge	**45.0 cfs**

Check friction factor
Re 1 88E+06
f 0 023 OK

SUCCOR CREEK RESERVOIR - GATE SETTING AND LEVEL DATA

1989 through 1993 data
Assume negligible inflow after July 1
On date indicated, staff gauge was read and gate was set at stem height indicated.
Reservoir content from engineering drawings - J Hanley 1975
Gate stem and staff gauge readings by R Cunningham

Date	Reservoir gauge	Gate stem (inches)	Reservoir content (ac-ft)	Avg net outflow (cfs)
5/23/89	913	21	6122	-23 9
5/25/89	912 5	18 25	6028	-3 4
6/8/89	912	22	5934	-38 1
6/21/89	906 5	19	4951	-21 4
6/23/89	906	16	4866	-8 5
6/28/89	905 5	19	4782	0 0
6/29/89	905 5	21	4782	-43 0
7/11/89	899	23	3759	-54 1
7/15/89	896	17	3330	-17 4
7/17/89	895 5	21	3261	-38 7
7/23/89	892	23	2800	-53 6
8/2/89	882 5	19	1736	-12 2
8/4/89	882	21	1688	-30 8
8/15/89	874	23	1016	-38 0
8/24/89	861	12	338	OFF
4/8/90	896	18	3330	-17 3
4/12/90	895	21	3193	-17.0
4/14/90	894 5	23	3125	-19 9
4/19/90	893	24	2928	-16.1
4/23/90	892	21	2800	3 6
5/2/90	892 5	19	2863	-8 6
5/13/90	891	21	2675	-24 8
5/28/90	884 5	17	1937	26 7
5/31/90	886	12	2096	OFF
6/6/90	889	19	2434	-9 6
6/18/90	887	21	2206	-33 6
7/3/90	876 5	17	1205	-9 9
7/5/90	876	19	1166	-19 3
7/7/90	875	20	1089	-21 1
7/19/90	867	20	587	-24 0
7/21/90	865	12	492	OFF
5/5/91	891	21	2675	-20 5
5/8/91	890	24	2553	-14 8
5/16/91	888	21	2319	0 0
5/17/91	888	17	2319	101 7
5/21/91	894 5	12	3125	OFF
5/24/91	897 5	21	3541	-7 9
6/28/91	893 5	19	2993	-6 6
7/3/91	893	15	2928	0 0
7/6/91	893	20	2928	-48 1
7/8/91	891 5	21	2737	-30 9
8/2/91	876 5	23	1205	-34 7
8/13/91	864	21	449	-14 4

8/22/91	846	21	192	
4/20/92	878 5	24	1370	-31 5
4/22/92	877	28	1245	-82 9
4/26/92	867	28	587	-69 7
4/27/92	864	12	449	OFF
4/29/92	864 5	24	470	-30 8
4/30/92	863	19	409	-9 3
5/2/92	862	19	372	-12 6
5/4/92	860 5	12	322	OFF
3/30/93	913 5	20	6218	-0 5
5/30/93	913 2	23	6160	0 0
6/7/93	913 2	19 5	6160	-10 7
6/15/93	912 3	16 5	5990	7 7
6/30/93	913 5	18 5	6218	-15 9
7/9/93	912	20	5934	-41 5
7/15/93	909 3	21	5440	-33 9
7/21/93	907	21 5	5037	-42 0
7/28/93	903 5	20 5	4454	-36 6
8/18/93	893	19	2928	-34 1
8/23/93	890 3	20 5	2589	-28 6
9/12/93	879 5		1457	

MEMORANDUM

To: Files 57-07153 and 57-07571

From: L Glen Saxton LGS

RE: **TELEPHONE INQUIRY FROM THE BROCKWAYS**

Date: January 16, 2001

On January 12, 2001 Charles E Brockway and Charles G. Brockway ("the Brockways") contacted me in connection with removing the measuring device requirements from Permit Nos. 57-07153 and 57-07571 stating that installation would be difficult and expensive and that there were not water distribution problems on Succor Creek.

I reviewed the water right files and on January 16, 2001 called Charles G. Brockway. I advised that since the license and decree for 57-07153 require the installation and maintenance of measuring devices, I wasn't sure that the conditions could be waived. I did advise, however, that at one time there were rated sections above and below Texas Basin Dam and that there is an installed staff gage at the dam which needs some repair due to ice damage. I also advised that I thought the department would consider a proposal from the dam owner of other means to determine discharges to and from the reservoir other than installed devices. We briefly discussed the outlet works that perhaps could be rated to determine discharge from the reservoir.

The Brockways may review the department's water right files and dam safety files in order to offer an alternate measuring proposal than installed devices.

MICROFILMED
OCT 1 2 2001

M E M O R A N D U M

DATE: July 26, 1995

TO: Files 57-07153 and 57-07571

FROM: Shelley W. Keen SWK

RE: Confirmation of the Place of Use

==========

The place of use for these two water rights is in Oregon. The Oregon licenses have not yet been issued because Oregon has not completed it "final proof survey", which is apparently equivalent to Idaho's Beneficial Use Field Report. In order to ensure that the Idaho licenses are issued with an accurate place of use, I recommend that licensing be dalayed until the Oregon license and/or final proof survey are available for inspection.

MICROFILMED
OCT 1 2 2001

ANALYSIS SHEET
FOR
PROOF OF BENEFICIAL USE

Permit No. 57-07571 Reviewed by JW Date 3-16-94

GENERAL CONSIDERATIONS

yes Name same as permit?
yes Address same as permit?
yes Proof timely received?
If not, complete calculation below.

TYPES OF USE

stock

Correct Uses? yes

SOURCE OF WATER

✓ Surface water source
____ Ground water source

____ Drilling permit required?
____ Copy in the file? Drilling Permit No. ____
____ Amount paid for permit ____ Correct?
____ Well log in the file?

LICENSE EXAMINATION FEE

yes Required?
175.00 Amount Submitted
yes Correct?

MEASURING DEVICE

yes Required?
no Installed?
yes Waiver requested?

PRIORITY CALCULATION

Date proof received			
Date proof due		-	
No. of days late		=	
Priority Date		+	
New Priority Date			

DEFICIENCIES OR ACTION ITEMS

~~Recommend Waive measuring device condition~~

Proof acceptable - measuring device condition will not be waived

DATA ENTRY

New Address ____ Proof Made 3-7-94

May 13, 1994

SUCCOR CREEK DIST IMPROVEMENT
COMPANY
ROCKVILLE RT
JORDAN VALLEY OR 97910

PROOF ACKNOWLEDGEMENT LETTER

RE: PERMIT NO. 57-07571

Dear Permit Holder:

The department acknowledges receipt of the proof of beneficial use form submitted for the above referenced permit. The next step in the process of developing a water right is for the department to conduct a field examination to determine and confirm the use being made of the water.

Please be advised that the department will not waive the permanent measuring devise condition on the permit. This condition must be complied with before the license exam.

If you have questions concerning this matter, please feel free to contact the WESTERN Regional Office in Boise, at (208)334-2190.

Sincerely,

JULIE L. YARBROUGH
Senior Secretary

c: IDWR - Region

MICROFILMED
OCT 1 2 2001

Explanation of Item #7

Succor Creek District Improvement Company has filed an appropriation for water to water livestock. This filing is to insure District members are allowed to use water for livestock watering purposes in addition to irrigation when storage water from the Texas Basin Dam is being released. This use is primarily simultaneous with irrigation use, and is basically incidental and not the primary purpose of the facility, though of some concern, hence the filing.

We therefore do not deem it a necessary requirement to have a permanent measuring device at inflow and outflow of the reservoir to facilitate this use. Permanent stuctures have little chance of remaining permanent due to the instability of the creek channel, and money spent in such construction would very likely be wasted. We thus feel it is an uneconomical requirement.

Currently outflows are measured, and reservoir water level recorded when storage water is being released, for use in filling Oregon Water Use Reports. These two measurements enable calculation of inflow on an overtime type arrangement (as opposed to an instant in time measurement), which would probabaly be more accurate anyhow because of the variability of creek flows.

We do not see the necessity of measurement, and especially expensive measurement devises to use the water in this way. We therefore request elimination of measurement as a condition of approval of the water right.

Sincerely,

Ronald Cunningham

Ronald Cunningham, President
Succor Creek District Improvement Company

MICROFILMED
OCT 12 2001

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

September 10, 1993

SUCCOR CREEK WATER CONTROL DISTRICT
ROCKVILLE RT
JORDAN VALLEY OR 97910

PERMIT APPROVAL NOTICE

RE: PERMIT NO. 57-07571

Dear Permit Holder(s):

Enclosed is a copy of your approved application for permit. Please be sure to thoroughly review the "CONDITIONS/REMARKS:" listing on the permit.

Enclosed is a form entitled "Instructions for Proof of Beneficial Use". Please read the instructions carefully since you must take further action to develop this permit. Also enclosed is a form entitled "Proof of Beneficial Use". If your project is already completed you should complete and submit this form immediately.

If the diversion dam is 10 feet or more in height, or has an impounding capacity of 50 acre-feet or more, certain dam safety requirements must be met. Please contact the regional office nearest you for details.

Sincerely,

JIM JOHNSON
Water Rights Supervisor

JJ:dc

Enclosure

MICROFILMED

OCT 22 1993

YTURRI, ROSE, BURNHAM, BENTZ & HELFRICH
ATTORNEYS AT LAW

ANTHONY YTURRI
CARL BURNHAM, JR.
CLIFF BENTZ *
TIM J. HELFRICH *
BRUNO J. JAGELSKI *

GENE C. ROSE, OF COUNSEL
EMIL R. BERG, OF COUNSEL

* LICENSED IN OREGON AND IDAHO

89 S.W. THIRD AVENUE
P.O. BOX "S"
ONTARIO, OREGON 97914

TELEPHONE
(503) 889-5368

DOCUMENT TRANSMISSION
(503)889-2452 (ONTARIO)

PORTLAND OFFICE
RIVIERA PLAZA
SUITE 400
1618 S.W. FIRST AVENUE
PORTLAND, OREGON 97201
(503) 222-4654

DOCUMENT TRANSMISSION
(503)222-3868 (PORTLAND)

IDAHO OFFICE
P.O. BOX 450
FRUITLAND, IDAHO 83619
(208) 452-3209

July 19, 1993

L. Glen Saxton
State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street
Statehouse Mail
Boise ID 83720-9000

Re: Succor Creek, Permit No. 57-07571
Our File No. 85-59

Dear Mr. Saxton:

In response to your letter of July 14, 1993, we submit the following:

1. Supply and sources of water available to the applicant in the state where the applicant intends to use the water.

The primary supply of water available to the applicant in Oregon is Succor Creek. There are numerous small springs and small stock watering reservoirs located on each side of Succor Creek. In addition, there are some small stock watering wells available to the ranches that lie along Succor Creek. If a map reflecting the location of each of those sources is necessary, please let us know and it will be supplied.

2. The demands placed on applicant's supply in the state where the applicant intends to use the water.

The basic demands for the water arise from stock water use and irrigated agricultural use. Wildlife, of course, has access to the water as it makes its way from the storage project down to the lower ranches.

3. The applicant shall designate an agent in the State of Idaho for reception of service of process and other legal notices.

The agent designated by the Succor Creek Water Control District, in the State of Idaho, is:

RECEIVED
OCT 22 1993

4. Response to issues reflected in Section 42-203(a)(5).

A. Will the proposed use reduce the quantity of water under existing water rights? No. The request is for stock water use and the impact on existing uses will be diminuous.

B. Is the water supply itself insufficient for the purpose of stock water? No. The impact of using the water for stock watering purposes is extremely small.

C. Is the application made in good faith or for delay or for speculative purposes? No. The application is made in good faith since the members of the Succor Creek Water Control District want to be sure that they have the right to use stored water for stock watering purposes.

D. Does the applicant have sufficient financial resources with which to complete the work involved herein? This question is really not applicable since there is no need to do any additional financial work.

E. Will the use conflict with local public interest? No. The use of the stored water for livestock watering purposes is in the public interest.

F. Is the use contrary to conservation of water resources within the State of Idaho? No. The water will very probably be released for irrigation purposes and thus would be available for stock watering purposes as an incidental use.

I believe this answers those questions reflected in your letter. If further information is necessary, or if the form of this information is not correct, please let me know. We would be happy to respond further.

Very truly yours,

YTURRI,ROSE,BURNHAM,BENTZ & HELFRICH

Cliff S. Bentz

tm

OCT 22 1993

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

July 14, 1993

Cliff S. Bentz
Yturri, Rose, Burnham et. al.
89 S.W. Third Avenue
P.O. Box "S"
Ontario, Oregon 97914

RE: APPLICATION FOR PERMIT NO. 57-07571 - SUCCOR CREEK WATER CONTROL DISTRICT

Dear Mr. Bentz:

The Western Regional office of the Department of Water Resources has forwarded the above referenced application for final review to this office. My review shows that you need to submit some additional information before the department can take final action on the application.

More specifically, Section 42-401, Idaho Code, requires the Director of the department to make certain findings in connection with applications which propose the use of water outside the state of Idaho. Enclosed for your information and use is a copy of Sections 42-203A and 42-401, Idaho Code. Please provide information to the department to address factors described in paragraph (3), and subparagraphs (e) and (f) which I have highlighted.

Upon your submittal of sufficient information to address the factors, the department will further consider the application.

If you have questions, please feel free to contact the department.

Sincerely,

L. Glen Saxton

L. GLEN SAXTON, Chief
Water Allocation Bureau

Encl: 2

c: IDWR - W. Region

FILED
OCT 22 1993

APPLICATION FOR PERMIT STATE OFFICE REVIEW

Application #: 57-7571 Date: 7/7/93 Reviewer: *Cindy Zimmerman*

AREA OF CONCERN? - No/Yes _____
SYSTEM COMPLETED:
No - 26A-**P17**
Complete in 1 year - **P16**
Yes
Proof not submitted - **P16**
Proof submitted - N/A
GROUNDWATER:
+ 0.2 cfs <flo-ch> - 01G-**P03**, 01C-**P03** (existing), NMR
- 0.2 cfs - NMR <flow chart>
Drilling Permit:
Included w/permit - **P99** Permit No. _____
Existing well - N/A (if drilled before 7/1/87)
No WD permit? - 046-46B-**P23** (if drilled after 7/1/87)
SURFACE WATER: not in WD - 01C-**P03** (+.2 w/pump), **NMR** <flow chart>
LOCATION:
Water District - WD No._____
Surface water - 005 or 005-01J-**P08**(+.2)
or 005-01H-**P01**(-.2 w/pump); NMR
Groundwater - **P05** (if well has not been drilled)
Irrigation Dist. - 023
Canal Co. Areas - 023
Drainage Districts - 024
Flood Control Dist. - 063
Boise Front (63) - 058 (Groundwater temperature)
Swan Falls Flag - _____ (1, Blank or Other)
Trust - 051-052-053-**P74**(Consumptive Uses)
Non Trust <1> - 048-049
RIVER BASINS (Surface): *Water District Control Condition (005) &....*
Boise (63) - 05A (req), 11E (non-domestic use)
Payette (65) - 047-**P04**, _____-**P**___
Snake (01, 02 & 03) - 11A-**P04**(01), 061-**P07**(*02/03 No W.D.Cond.*)
USE:
Fish Propagation - 06A, 09E-**P10** (*WQ/Choose One*) & 010
042 (*req*), 002-**P06**(MD), 07A(Special), 044(Policy 5G)
Power - 08A,17K,025,027 (*req*); 01F-**P19**; 09E-**P10**; +25 cfs-**P18**; 17G or 17M; 18B-**P09**
Mining - 06A, 010, or 09E-**P10** & 054 (~~req~~)
Storage(✓ 3 compo.) - 18A-for multi MD in WD, 18B-**P09** (+10'Size)
Rec/Wildlf/Aes - 027-if +½ A. pond (Non-Consumptive)
Domestic (*surface restricted areas*) - 021 - Boise River upstream from L Peak
27A - Payette River & main tributaries
OWNERSHIP:
Non land owner - 004
PROTESTED:
Hearing agreement - 020
REMARKS: - 3) WC 2 (2500) 2) P/D AKA TEXAS BASIN DAM
1) Single P/D located on/near SWNENE & SENWNE
OTHER CONDITIONS: -
BENEFICIAL USE DUE: - 7-1-1994
COMMENTS: - 1) PD ownership - BLM 2) Corp officers - 3) ~~One Pt~~

WR0749NP
No. P57-07571

IDAHO DEPARTMENT OF WATER RESOURCES
WATER RIGHT PROFILE REPORT
(REGIONAL)

DATE: 07/12/93
PAGE: 1

OWNER CODE	NAME & ADDRESS	PRIORITY DATE	WATER USE	USE PERIOD FROM	USE PERIOD TO	DIVERSION RATE	DIVERSION VOLUME
C	SUCCOR CREEK WATER CONTROL DISTRICT ROCKVILLE RT JORDAN VALLEY OR 97910 (503) 339-3026	09/04/1992	STOCKWATER STORAGE STOCKWATER FROM STORAGE	01-01 01-01	12-31 12-31		400.0 AFA 400.0 AFA
				TOTAL DIVERSION:			400.0 AFA

Water Source: SUCCOR CREEK Tributary to: SNAKE RIVER Stage: PERMIT

Point(s) of Diversion: T03S R05W S07 SW NE NE SE NW NE

Place of use Legal Description for: STOCKWATER STORAGE

			NE				NW				SW				SE			
			NENE	NWNE	SWNE	SENE	NENW	NWNW	SWNW	SENW	NESW	NWSW	SWSW	SESW	NESE	NWSE	SWSE	SESE
T	R	S	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac
02S	05W	32															S	
03S	05W	5		S	S		S			S	S	S	S	S				
03S	05W	6																S
03S	05W	7	S	S														

Place of use Legal Description for: STOCKWATER FROM STORAGE

			NE				NW				SW				SE			
			NENE	NWNE	SWNE	SENE	NENW	NWNW	SWNW	SENW	NESW	NWSW	SWSW	SESW	NESE	NWSE	SWSE	SESE
T	R	S	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac	Lt Ac
03N	05W	4						S	S			S						
03N	05W	5														S		S
03N	05W	7		S	S						S	S	S		S	S		
03N	05W	8	S	S	S					S	S	S						
03N	06W	12															S	S
03N	06W	13		S			S	S										
03N	06W	14	S	S			S	S	S	S								
03S	05W	7		S	S									S		S	S	
03S	05W	18					S	S	S									
03S	06W	13												S	S	S	S	
03S	06W	14							S	S	S			S			S	S
03S	06W	23	S	S														
03S	06W	24					S											

Pou County: OWYHEE

Other Water Rights Listing Overlapping Place(s) of use:
02-02014 02-02276 57-00003 57-00004 57-02118 57-02167 57-02196 57-02232 57-04002 57-04006
57-04014 57-04023 57-04059 57-04091 57-07046 57-07271 57-07533 57-07543

Conditions of Approval:

18A - Permanent measuring devices must be installed in such a manner
- that the amount of water entering the reservoir and the amount of
- water released from the reservoir can be measured.

004 - The issuance of this right in no way grants any right-of-way
- or easement across the land of another.

Conditions of Approval:

188 - The storage of water under this right is contingent upon the
- certification of the dam and authorization of storage per the dam
- safety provisions of the Idaho Code.

Remarks: Stockwater from storage is for 2,500 range cattle and horses.
Single point of diversion is located on or near the line between SWNENE and SENWNE, S07, T03N, R05W.
Place of use is Succor Creek within Idaho and Oregon.
Places of use in Oregon are SWNW, SENW, NWSW, S06, T23S, R47E; NESW, SWSW, SESW, NESE, NWSE, S01, T23S, R46E; SWSE, SESE, S02, T23S, R46E; SESW, NESE, NWSE, SWSE, S10, T23S, R46E; NWNE, NENW, NWNW, SWNW, NWSW, S11, T23S, R46E; NWNE, SWNE, NENW, SENW, NESW, NWSW, SWSW, SESW, S15, T23S, R46E; NENW, NWNW, SWNW, SENW, NESW, NWSW, SWSW, S22, T23S, R46E; NWNW, SWNW, S27, T23S, R46E; SWNE, SENE, NWSE, SWSE, SESE, S28, T23S, R46E; NENE, NWNE, SWNE, SENE, NWSE, SWSE, S33, T23S, R46E; NENW, NWNW, S04, T24S, R46E; NENE, NWNE, SWNE, SWNW, SENW, NWSW, S05, T24S, R46E; NESE, SWSE, SESE, S06, T24S, R46E; NENE, NWNE, SWNE, SENE, S07, T24S, R46E; NWSW, SWSW, S08, T24S, R46E; NWNW, SWNW, SENW, NESW, NWSW, SWSW, SESW, S17, T24S, R46E; NENW, SENW, NESW, SESW, S20, T24S, R46E; NWNE, SWNE, NENW, NWSE, SWSE, SESE, S29, T24S, R46E; NENE, SESE, S32, T24S, R46E; NWNW, SWNW, NWSW, SWSW, S33, T24S, R46E; NWNW, SWNW, NESW, NWSW, SWSW, SESW, S04, T25S, R46E; NENE, S05, T25S, R46E; NESE, SESE, S08, T25S, R46E; NWNW, SWNW, NWSW, S09, T25S, R46E; SWNW, NWSW, S16, T25S, R46E; NENE, SENE, NESE, NWSE, SWSE, S17, T25S, R46E; NWNE, SWNE, NESE, NWSE, SESE, S20, T25S, R46E; SWNW, NWSW, SWSW, S28, T25S, R46E; NENE, SENE, NESE, S29, T25S, R46E; SWNE, NENW, NWNW, SWNW, NWSE, SWSE, SESE, S33, T25S, R46E; NWNW, SWNW, SENW, NESW, NWSE, SWSE, SESE, S03, T26S, R46E; NENE, S04, T26S, R46E; NENE, SENE, NESE, SESE, S10, T26S, R46E; SWNW, NWSW, SWSW, S14, T26S, R46E; NENE, SENE, NESE, SESE, S15, T26S, R46E; NENE, SENE, NESE, SESE, S22, T26S, R46E; NWSW, SWSW, S26, T26S, R46E; NENE, SENE, NESE, S27, T26S, R46E; NENW, NWNW, SENW, NESW, SESW, SWSE, S35, T26S, R46E; NWNE, SWNE, NENW, SENW, NWSE, SWSE, S02, T27S, R46E; NWNE, SWNE, SENE, NESE, SESE, S11, T27S, R46E; SWSW, S12, T27S, R46E; NWNW, SWNW, NWSW, SWSW, SESW, S13, T27S, R46E; SWNE, NENW, SENW, NESW, NWSE, SWSE, S24, T27S, R46E; NWNE, SWNE, NWSE, SWSE, S25, T27S, R46E; NENE, NWNE, SENE, S36, T27S, R46E; SWNW, NWSW, S31, T27S, R47E.

Dates: App. Received: 09/04/1992 Priority Date: 09/04/1992
Proof Due Date: 07/01/1994 Proof Made Date:
Exam Made Date: Exam Sent to S.O.:
Licensed Date:

Misc: Water District Number: Field Exam Fee:

Comments: Date: 07/09/1993 User-ID: ZIMMERMA Subject: P/D OWNERSHIP
The point of diversion is located on property owned by Bureau of Reclamation. The application states that Succor Creek Water Control District has a right-of-way agreement with BLM.

Date: 07/09/1993 User-ID: ZIMMERMA Subject: CORPORATE OFFICERS
The officers of Succor Creek Water Control District are Aaron Kasper, president; Joann Cunningham, vice president; and Mary Ellen Allison, secretary.

Audit: 07/12/93 ZIMMERMA

Form No. 202a.
10/90

RECEIVED
JUN 03 1993
Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPROPRIATION APPLICATION ANALYSIS SHEET

INITIAL REVIEW BY: SC DATE: 2/23/93 APPLICATION: 57-07571

REQUIRED INFORMATION

/ See comments in right hand

- / Name: (If applicant is a corporation or partnership, names and addresses for the director, officers, and other partners must be included.)
- / Address:
- / Source: (See USGS Quad for names of water sources)
- / Point of Diversion: (10 acres for spring, lot & block descriptions for Subdivisions, local name)
- / County:
- / Quantity: (flow and/or volume)
- / Period of use:
- / Nature of proposed use: (Include description of use)
- / Description of diverting works:
- / Time required for beneficial use of water:
- / Place of use or acres irrigated:
- / Map:
- / Signature: (If applicant is corp., partnership, or municipality, title of signatory is required)
- / Fee:
- / Yes ____ No* In form to receipt:

Gov't. Lots:
N P/D
Y P/U

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JUN 03 1993
Department of Water Resources

ADDITIONAL INFORMATION

YES	NO	
✓		Overlapping place of use: (Describe source & relationship to present application on the back.)
✓		Overlapping point of diversion:
		Field check required: Field check by:
		Field report attached:
		Critical groundwater area:
		Groundwater management area:
	*	1992 moratorium
		Diversion within interim protected river area
		Send dam safety information: - N/A already covered by 057-7153 - not increasing size of reservoir
		Send power requirement letter:
		Send fish farm requirement letter:
		Power residency affidavit:
		Power efficiency form:
		Within trust water boundary: (If yes, attach Trust Water Supplementary Analysis Sheet.)
		Diversion greater than 5 cfs or 500 af or irrigation greater than 200 acres: (If yes, attach Large Diversion supplementary analysis sheet.)
		*REQUEST ADDITIONAL INFORMATION FROM THE APPLICANT

DATE REQUESTED:

✓		Additional information on reverse side:

* Advertise but Not sure if approvable under moratorium. Release of decl prod water for stock use. 5/25cfs = 12 gpd/ac = 30,000 gpd max. use; this exceeds 13,000 gpd Exclusion per moratorium

Not aware in conv. use since utilizing decl. prod water that has been subject to evaporative loss?

PROCESSING APPLICATION NO. 57-07571

YES NO

✓ — In form for advertising:
— ✓ Statewide advertising:
✓ — Fee amount, receipt number and date recorded on application:

SEND COPIES TO

YES NO

— ✓ I.D. Health and Welfare
— ✓ I.D. Fish and Game
— ✓ I.D. Lands
— ✓ Adjudication Bureau

YES NO

✓ — U.S. BLM
— ✓ U.S. Forest Svc.
— ✓ Water Dist. #
? — Other OWRD Water Resources Dept

Code DRT C this - if yes, I have address. -Steve

FINAL REGIONAL PROCESSING REVIEW

YES NO

✓ — Affidavit of publication received:
✓ — Application published correctly: If not, record action taken.

— ✓ Publication dates and paper recorded on application:
— ✓ Protests received. Final date for protest March 22, 1992.
— ✓ Protest dates, resolution of protest recorded on application:
— ✓ Recommendations attached: Approve, DRT
— ✓ Measuring device required:
— ✓ Measuring port required:
— — Water delivered by water master? District #
✓ — Special conditions of approval or cover letter:
18B

— ✓ See below for additional information

Recommended Date or Priority 9/4/1992

Recommended by: DRT Date 5/26/1993

STATE OFFICE REVIEW

— See below for additional information. By Date

ADDITIONAL INFORMATION

Same dam as 57-07153 (irrigation). No increase in reservoir just want to use deed well sometimes. Plan limited to 3 yrs where irrig. occurs with Ibeck (per 57-07153).

Per 2/8/93 letter from ATH for applicant, want to proceed with appl despite my letter of 11/3/92 where concluded appl not needed.

Other overlap: 57-04002 & 04059 same source but five flow irrig & stock use.

NOTE - NAME CHANGE for D'Base? See 3/8/93 letter from Attorney C.S. BENTZ

					GABICA	C				SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NW	NW	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		SW	SW	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NE	SE	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
		NW	SE	04	57-04069	GABICA	C	S	06/01/1904	LANGORD SPRINGS
						GABICA	C			SPRING
										SUCCOR CREEK
										BUCK SPRINGS
	22	SW	NW	04	57-04070	GABICA	C	S	06/01/1904	SPRING
						GABICA	C			SPRING
		NE	SW	01	57-04044	GABICA	C	S	04/15/1952	SUCCOR CREEK
		NE	SW	04	57-04070	GABICA	C	S	06/01/1904	SPRING
						GABICA	C			SPRING
	28	NW	NW	04	57-07130	STATE OF IDAHO	C	L	12/11/1974	SPRING
		SE	SE	01,04	57-04043	GABICA	C	S	08/04/1909	SUCCOR CREEK
		SE	SE	01	57-04044	GABICA	C	S	04/15/1952	SUCCOR CREEK
	30	NE	SW	04	55-07077	STATE OF IDAHO	C	L	08/02/1974	SPRING
05W	1	SW	SE	01	57-02057	BAILEY	C	L	09/12/1913	MULE CREEK
										WILLOW SPRING
										MARSH SPRING
	3	NE	NW	04,16	57-04078	U.S. DEPT. OF INTE	C	S	10/14/1968	UNNAMED STREAM
		NE	NW	04,16	57-07350	U.S. DEPT. OF INTE	C	L	02/25/1983	SPRING
		SE	SW	04,16	57-04084	U.S. DEPT. OF INTE	C	S	10/14/1968	EDDY CABIN SPRING
		SE	SW	04,16	57-07365	U.S. DEPT. OF INTE	C	L	02/25/1983	EDDY CABIN SPRING
	7	NE	NE	02,03	57-07153	SUCCOR CREEK WATER	C	P	11/24/1975	SUCCOR CREEK
	9	SW	SE	04,16	57-07091	U.S. DEPT. OF INTE	C	L	11/08/1972	JEFF SPRING
	10	SE	NE	01,43	57-02120	MASSIE	C	L	08/23/1919	SPRINGS
		NW	NW	04,16	57-07384	U.S. DEPT. OF INTE	C	L	02/25/1983	BALTZOR SPRING
		SW	SE	01,43	57-02120	MASSIE	C	L	08/23/1919	SPRINGS
	12	SE	NE	01	57-02057	BAILEY	C	L	09/12/1913	MULE CREEK
										WILLOW SPRING
										MARSH SPRING
		NW	NW	01,43	57-02077	JACOBS	O	L	08/28/1914	LITTLE SUCKER CREEK
						MASSIE	C			SPRING

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OCT 22 1993

Texas Basin Rem. for 57-07153 File
6340 a.f.

L 08

WR4002NP
(OD-22)

IDAHO DEPARTMENT OF WATER RESOURCES
WATER RIGHTS BY POINT OF DIVERSION

DATE: 01/12/92
PAGE: 1732

TWP	RNG	SECT	TRACT 1\4	1\4	1\4	LOT	WATER USE CODE	WATER RIGHT NO.	LAST NAME	O/C	STG	PRIORITY DATE	POD FLAG	WATER SOURCE
05W	05W	12	NW	SE	01			57-02057	BAILEY	C	L	09/12/1913		MULE CREEK
														WILLOW SPRING
														MARSH SPRING
		13			01,43			57-02075	JAC S	O	L	08/28/1914		LITTLE SUCKER CREEK

State of Idaho
DEPARTMENT OF WATER RESOURCES
Western Region, 2735 Airport Way, Boise Idaho 83705-5082 - (208) 334-2190
FAX (208) 334-2348

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

May 5, 1993

TO: WATER RIGHT APPLICANT(S)

RE: WATER RIGHT APPLICATION(S) BEING HELD DUE TO MORATORIUM

Dear Interested Party:

An Application(s) for Permit for a water right(s) in your name has been held due to a moratorium declared by the director of this department on May 15, 1992. The moratorium was established because of limited water supplies caused by another year of drought.

The water supply situation in your area has improved this year. The director rescinded the moratorium in your area on April 30, 1993. Processing of your application(s) can now proceed. I will assume that you want to proceed with the application unless this office hears from you by May 14, 1993. You can contact me or other staff by calling (334-2190) or writing to the above address.

Sincerely,

Steve Lester

Steve Lester
Water Rights Supervisor

PROCESSED
OCT 22 1993

THE OWYHEE AVALANCHE

P.O. BOX 97 • HOMEDALE, ID 83628 • 208/337-4681

AFFIDAVIT OF PUBLICATION

STATE OF IDAHO)
)ss
COUNTY OF OWYHEE)

I, Joe E. Aman, being first duly sworn, depose and say:

1. That I am a citizen of the United States of America, and at all times hereinafter mentioned was and now over the age of twenty-one years, not a party to nor interested in the proceedings hereinafter mentioned.

2. That during the time of the publication of the notice hereinafter mentioned, I was and now am the publisher of **The Owyhee Avalanche**, a newspaper of general circulation printed and published weekly, on Wednesday of each and every week, in the City of Homedale, County of Owyhee and State of Idaho.

3. That the said **The Owyhee Avalanche** has been printed and published continuously and uninterruptedly in said County during a period of more than seventy-eight weeks prior to the first publication of the attached notice.

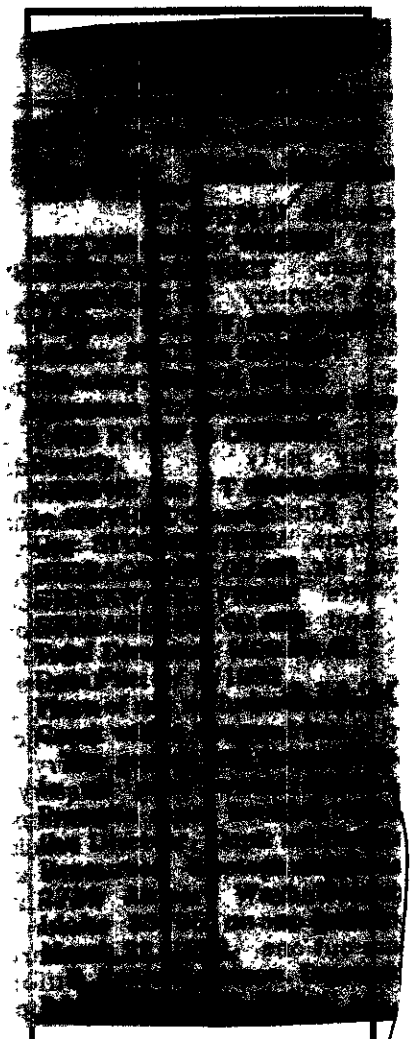
4. That said notice of which a printed copy, taken from said newspaper, is hereto affixed, was published in the regular issue thereof, and not a supplement thereto, in said newspaper, in two (2) (consecutive) calendar weekly issue(s) of said newspaper, in the following date(s):

March 3, 1993
March 10, 1993

Signed Joe E. Aman

Subscribed and sworn to before me this 10th day of March A.D., 1993

Notary Public in and for the State of Idaho
Residing at Homedale, Idaho
Commission expires October 1997



and Idaho.
(Not fatal - dam description shows Idaho use in part)
DWR 5/20/93

PROCESSED
OCT 22 1993

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APR 1 1993
Department of Water Resources
Western Regional Office

YTURRI, ROSE, BURNHAM, BENTZ & HELFRICH
ATTORNEYS AT LAW

ANTHONY YTURRI
CARL BURNHAM, JR.
CLIFF BENTZ *
TIM J. HELFRICH *
BRUNO J. JAGELSKI *
MICHAEL B. BENNETT

GENE C. ROSE, OF COUNSEL
EMIL R. BERG, OF COUNSEL

* LICENSED IN OREGON AND IDAHO

89 S.W. THIRD AVENUE
P.O. BOX "S"
ONTARIO, OREGON 97914

TELEPHONE
(503) 889-5368

DOCUMENT TRANSMISSION
(503)889-2432 (ONTARIO)

PORTLAND OFFICE
RIVIERA PLAZA
SUITE 403
1618 S.W. FIRST AVENUE
PORTLAND, OREGON 97201
(503) 222-4634

DOCUMENT TRANSMISSION
(503)222-2868 (PORTLAND)

IDAHO OFFICE
P.O. BOX 450
FRUITLAND, IDAHO 83619
(208) 452-3209

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MAR 9 1993
Department of Water Resources
Western Regional Office

March 8, 1993

Steve Lester
DEPARTMENT OF WATER RESOURCES
Western Region
2735 Airport Way
Boise ID 83705-5082

Re: Succor Creek District Improvement Company
Our File No. 8559

Dear Mr. Lester:

I noticed in reviewing the Owhyee County Newspaper that the name used for the District is incorrect. The correct name for the District:

"Succor Creek District Improvement Company".

The name that appears in the advertisement is the old name.

Could you please make whatever changes might be necessary so that the notice is appropriately given.

Thank you very much for your assistance.

Very truly yours,

YTURRI,ROSE,BURNHAM,BENTZ & HELFRICH

Cliff S. Bentz

OCT 22 1993

CSB/tdm

already advertised ID name given on appl., ...
does not appear should re-advertise just to show
corrected name.
Suggest change name in database per this letter.
SR 3/10/93

State of Idaho
DEPARTMENT OF WATER RESOURCES
Western Region, 2735 Airport Way, Boise, Idaho 83705-5082 - (208) 334-2190
FAX (208) 334-2348

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

March 9, 1993

V KENT SEARLESS MGR
OREGON WATER RESOURCES DEPT
EASTERN REGION
1995 3RD ST
BAKER CITY OR 97814

Re: Application for Permit No. 57-7571 in the name of Succor Creek Water Control District

Dear Sir:

Enclosed is a copy(s) of the above-referenced application(s) for permit which may be of interest to your agency. Please review the application(s) and submit any comments you may have.

This office normally completes the processing of an application within a six-week period and is required to take final action shortly thereafter, however, if your agency desires to file a formal protest against the approval of this application(s), your written protest must be received in this office by March 25, 1993.

If you have any questions regarding the application, please contact this office.

Sincerely,

David R. Tuthill, Jr.

DAVID R. TUTHILL, JR., P. E.
Manager, Western Regional Office

DRT:st

Enclosure(s):

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OCT 22 1993

State of Idaho
DEPARTMENT OF WATER RESOURCES
Western Region, 2735 Airport Way, Boise, Idaho 83705-5082 - (208) 334-2190
FAX (208) 334-2348

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

March 3, 1993

Mr. Cliff S. Bentz
Yturri, Rose, et al
PO Box S
Ontario, OR. 97914

RE: Application for Permit No. 57-07571 in the Name of Succor Creek Water Control District

Dear Mr. Bentz:

I am responding to your letter dated 2/8/93 and addressed to David R. Tuthill, Jr. concerning the above-referenced application for permit. Based on the continued interest expressed by the district via your letter, the application for permit will be advertised and considered for approval.

The application will be advertised in the "Owyhee Avalanche" on March 3 and March 10, 1993. The protest deadline will be March 22, 1993. Please let me know if you need additional information concerning the application.

Sincerely,

Steve Lester
Water Rights Supervisor

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OCT 22 1993

Steve

YTURRI, ROSE, BURNHAM, BENTZ & HELFRICH
ATTORNEYS AT LAW

ANTHONY YTURRI
CARL BURNHAM, JR.
CLIFF BENTZ *
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IDAHO OFFICE
P.O. BOX 450
FRUITLAND, IDAHO 83619
(208) 452-3209

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FEB 9 1993
Department of Water Resources
Western Regional Office

February 8, 1993

David R. Tuthill, JR.
Department of Water Resources
Western Region
2735 Airport Way
Boise ID 83705-5082

Re: Succor Creek Water Control District - Application for Permit of Water Right
Our File No. 8559

Dear Mr. Tuthill:

Pursuant to our telephone conversation of February 5, 1993, I am writing to explain why the District filed its application for stock water use.

As you know, the water stored in the Texas Basin Dam under right number 57-07153 eventually makes its way down Succor Creek into the State of Oregon. That water is primarily used for irrigation during the irrigation season. However, water is also used, sometimes after the irrigation season, for stock water purposes. The District wants to make sure that it has the legal right to utilize and divert that stored water for the purpose of watering livestock. Because of the involvement of two (2) jurisdictions (Idaho and Oregon) and because of the use of the water for stock watering purposes after the end of irrigation season (October 1) we thought it best that the District apply for a permit to utilize the water in this fashion.

If further information or explanation is necessary, please let me know.

Very truly yours,

YTURRI,ROSE,BURNHAM,BENTZ & HELFRICH

Cliff S. Bentz

CSB/tdm
pc: Ron Cunningham

MICROFILMED
OCT 22 1993

State of Idaho
DEPARTMENT OF WATER RESOURCES
Western Region, 2735 Airport Way, Boise, Idaho 83705-5082 - (208) 334-2190

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

January 5, 1993

SUCCOR CREEK WATER CONTROL DISTRICT
ROCKVILLE RT
JORDAN VALLEY OR 97910

Re: Application for Permit of Water Right

Dear Applicant:

NOTICE OF PENDING ORDER REJECTING APPLICATION FOR PERMIT

On September 4, 1992, you filed with the Department of Water Resources an application for permit of water right to provide water for stockwater for storage and stockwater from storage located within Sec. 7, T3S, R5W, B.M.

On November 3, 1992, the Department corresponded with you stating that Department administrators feel that an additional stockwater right for use of this water via the creek is unnecessary during the irrigation season.

The purpose of this letter is to request that you withdraw your application or explain why the Department should not reject your application. Enclosed is a withdrawal form that should be signed and returned to me, unless you have an explanation that would prevent the Department from rejecting your application.

If you fail to respond to this inquiry within thirty (30) days from the date of this letter, the Department will act to reject your application.

Sincerely,

David R. Tuthill

DAVID R. TUTHILL, JR., P.E.
Manager, Western Regional Office

DRT:st

Enclosure

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OCT 22 1993

I hereby certify that on this _____ day of _____, 1993, I sent the original copy of this letter, postage prepaid, to the person and address listed above.

Sincerely,

Sue Taylor
Secretary

OCT 22 1993

IDAHO DEPARTMENT OF WATER RESOURCES

MEMO-REPLY	Date 12/21/92

To SUE

From STEVE

- [x] Take Appropriate Action
- [ ] Draft A Reply
- [ ] Action Required By _____
- [ ] See Me
- [ ] Call Me
- [ ] Return To Me
- [ ] For Your Information
- [ ] For Your Approval
- [ ] For Your Comments
- [ ] As You Requested
- [ ] Copy (_____ Copies)
- [ ] File

Comments PLEASE PREPARE A LETTER OF INTENT TO VOID APPLICATION (NO # ASSIGNED). I SENT LETTER 11/3 ASKING FOR RESPONSE IN 30 DAYS. NO RESPONSE RECEIVED.

FOR DAVE'S SIGNATURE

THANKS, SL

Reply

Signed _____ Date _____

State of Idaho
DEPARTMENT OF WATER RESOURCES
Western Region, 2735 Airport Way, Boise, Idaho 83705-5082 - (208) 334-2190

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

November 3, 1992

Mr. Aaron Casper
President, Succor Creek Water Control District
Rockville Rt.
Jordan Valley, OR. 97910

RE: Application for Permit

Dear Mr. Casper:

The application for permit for releasing dead pool water from Texas Basin Reservoir has been considered by department administrators. According to the application, the reservoir is totally emptied about once every five to ten years. Your application proposes to establish a water right from 1/1 through 12/31 for stockwater use of dead pool water released to and flowing in Succor Creek in Idaho and Oregon.

Department administrators do not see a need for such a water right. Water right no. 57-07153 allows storage of the entire reservoir all year and use from storage of the same water from 4/1 through 11/1 each year. An additional stockwater right for use of this water via the creek is unnecessary during the irrigation season.

While the right allows you to store 6,340 acre-feet each year, it does not preclude the release of dead pool water during the non-irrigation season once every five to ten years. It may be necessary to totally drain the reservoir from time to time to work on the dam and conduct other routine maintenance. Nothing in the water right, department regulations, or Idaho law would prevent the reservoir from being totally emptied in some controlled manner to make room for storage water for the next season.

The use of water during the irrigation season and the flexibility allowed during the non-irrigation season cover all of the intended uses proposed in the current application. The department also recognizes a significant problem in licensing such a right in the future based on sporadic beneficial use (should use water benefically at least once every five years to maintain right) and the assumed condition that stock already use the creek without such a water right. Idaho law does not require a water right for instream stock use.

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OCT 22 1993

Therefore, the application appears to serve no purpose. Please consider using the attached withdrawal form to withdraw the application. Upon receiving the completed form, this office will process a refund of the $105 fee paid on 9/4/92.

Please contact me if you have any questions about this situation. A reply within 30 days would be appreciated.

Sincerely,

Steve Lester
Water Rights Supervisor

Enclosure: Withdrawal Form

RECEIVED
OCT 22 1993

S T A T E O F I D A H
DEPARTMENT OF WATER RESOURCES
Western Region
2735 AIRPORT WAY

Boise, Idaho 83705
(208) 334-2190

FEBRUARY 24, 1993

Owyhee Avalanche
P.O. Box 97
Homedale, ID 83628

Dear Legal Dept.:

Enclosed you will find a legal notice which we wish to have published on the dates indicated (once a week for two consecutive weekly issues) in your newspaper. If you cannot publish the notice on the proposed dates, please contact us immediately.

An affidavit of publication must be submitted to the Department along with the publication bill. Your cooperation is appreciated.

Please send the affidavit of publication and publication billing to this office before MARCH 22, 1993.

Yours truly,

GAIL GARRETT
Secretary

Encl.

RECEIVED
OCT 22 1993

57-07571

SUCCOR CREEK WATER CONTROL DISTRICT
ROCKVILLE RT
JORDAN VALLEY, OR 97910

Source: SUCCOR CREEK Tributary: SNAKE RIVER

Diversion Pt: SWNENE Sec 7 T 03S R 05W in OWYHEE County.
SENWNE Sec 7 T 03S R 05W in OWYHEE County.

Use:		
	STOCKWATER STORAGE	(400.00 AF)
	STOCKWATER FROM STORAGE	(400.00 AF)
	Total Diversion:	(400.00 AF)

Date Filed: 9/ 4/1992

Place of use includes Succor Creek within Oregon.

OCT 22 1993