

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 45-14138

Exam Date: see narrative

1. Current Owner: UNITED STATES OF AMERICA ACTING THROUGH
USDI BUREAU OF LAND MANAGEMENT
IDAHO STATE OFFICE
1387 S VINNELL WAY
BOISE ID 83709-1657
(208)373-4000
2. Accompanied by: see narrative
- Phone No:
- Address:
- Relationship to Permit Holder:

- | 3. <u>SOURCE</u> | <u>TRIBUTARY</u> |
|--------------------|------------------|
| SPRING | BIRCH CREEK |
| UNNAMED STREAM | BIRCH CREEK |
| WORTHINGTON SPRING | SINKS |

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 45-12924 (on stream storage right for same pond)
2. Other water rights with the same point of diversion: 45-2810A, 45-2810B, and 45-10491 (all from Worthington Spring), 45-13402 from same "unnamed stream" diversion, and pending application for permit 45-14234 from same "spring" diversion.

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

SPRING	SW1/4SE1/4SW1/4	Sec. 28,	Twp 16S,	Rge 22E, B.M.
CASSIA County				
WORTHINGTON SPRING	NW1/4NE1/4NW1/4	Sec. 33,	Twp 16S,	Rge 22E, B.M.
CASSIA County				
UNNAMED STREAM	SW1/4SE1/4SW1/4	Sec. 28,	Twp 16S,	Rge 22E, B.M.
CASSIA County				

Method of Determination: Existing spatial data points in IDWR GIS database (two of which were based on GPS readings)

2.

PLACE OF USE: STOCKWATER STORAGE

[illegible]

PLACE OF USE: WILDLIFE STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
16S	22E	19	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
					X														

Method of Determination: Aerial photography and GPS

3. X Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- X Aerial Photo Attached (required for irrigation of 10+ acres).
- X Photo of Diversion and System Attached

4.

<u>Well or Diversion ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge Size</u>
N/A	N/A	N/A	N/A	N/A	N/A

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
Theoretical	Hazen-Williams	N/A	N/A	N/A	N/A	N/A

2. Measurements: Theoretical

E. FLOW CALCULATIONS Additional Computation Sheets Attached

Measured Method: Theoretical

Hazen-Williams Formula

$$V = 1.318 \times C_h \times R^{0.63} \times S^{0.54}$$

V = Velocity (ft/s)

C_h = Hazen-Williams Friction Coefficient

R = Hydraulic Radius = Cross Sectional Area / Wetted Perimeter

S = h_f/L = Slope of Energy Grade LineFor 1.25" old/plastic pipe: C_h = 130; For Delivery System: S = 0.04 w/ R = 0.026 ; => V = 3.02 ft/s & Q = 0.03 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \text{N/A}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = \text{N/A}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \text{N/A}$$

2. Volume Calculations for Other Uses: Volume of pond is approximately 0.163 ac-feet based on GPS reading of 4720 ft² and depth of about 1.5 feet. Evaporative losses off of the pond are estimated at 0.301 acre-feet per annum based on a surface area of 4720 ft² and an annual precipitation deficit of 848 mm (2.78ac-ft) for open water-small stock ponds in the Oakley area (ET_{Idaho} — Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho). Total allowable volume would then be 0.464 ac-ft (0.163 + 0.301), or the permitted amount of 0.5 ac-ft.

G. NARRATIVE/REMARKS/COMMENTS

No actual field visit was conducted for this particular licensing exam (45-14138). Information was obtained from various sources including information provided by the BLM (permit holder), the 45-13402 licensing exam report performed by Jeff Cooper, and data and information obtained by Jana Reeder and Jeff Cooper during a site visit for a pre permit exam.

The system described by 45-14138 consists of three separate sources (spring tributary to Birch Creek, unnamed stream tributary to Birch Creek, and Worthington Spring tributary to sinks) that feed a pipeline system that discharges into various stock water troughs. In addition to the various troughs, this pipeline system also can discharge into a small reservoir located on an unnamed stream tributary to Goose Creek. The storage of water from the unnamed stream in this particular reservoir is described by SRBA decreed right 45-12924. The diversion of water from the unnamed stream tributary to Birch Creek into the pipeline system to the stock troughs is described by right 45-13402 (pending licensing at state office). The diversion of water from Worthington Spring tributary to sinks into the pipeline system to the stock troughs is described by SRBA recommendation 45-2810A. Note that SRBA recommendation 45-2810B is diverted from the same Worthington Spring tributary to sinks source but is delivered to a separate independent trough. Also note that SRBA recommendation 45-10491 appears to be diverted from the same Worthington Spring tributary to sinks source and used in the same stock water system (same use as 45-2810A only claimed by individuals rather than the BLM).

The intent of Application for Permit 45-14138 was to describe the diversion of water from the spring tributary to Birch Creek source into the pipeline system that discharges into the various stock water troughs. Note that the diversion of water from this particular spring (locally known as North Worthington Spring or Fence Spring) was not covered by a water right prior to the approval of Application for Permit 45-14138. In addition, Application for Permit 45-14138 proposed to describe the potential storage of water diverted from the three sources (spring tributary to Birch Creek, unnamed stream tributary to Birch Creek, and Worthington Spring tributary to sinks) in the small reservoir located on an unnamed stream tributary to Goose Creek (same reservoir described by SRBA decreed right 45-12924). However, sometime during the various amendments of Application for Permit 45-14138 a diversion volume of 0.3 acre-feet for the stock water and wildlife use got incorporated into the application, and was subsequently processed and approved as part of permit 45-14138. These uses were intended to describe the diversion of water from the spring tributary to Birch Creek source into the pipeline system. However, assuming the permitted flow rate of 0.02 cfs, the 0.3 acre-feet would only allow for about seven and a half days of diversion of water. This particular problem was discussed with IDWR state office staff and representatives of the BLM and it was decided that Permit 45-14138 could be licensed for the storage of water diverted from the three sources (spring tributary to Birch Creek, unnamed stream tributary to Birch Creek, and Worthington Spring tributary to sinks) in the small reservoir located on an unnamed stream tributary to Goose Creek (same reservoir described by SRBA decreed right 45-12924). However, if more than 0.3 acre-feet of water for stock water and wildlife use was desired from the spring tributary to Birch Creek source an additional water right filing would be needed. The BLM has since filed pending Application for Permit 45-14234 for diversion of 0.02 cfs from the spring tributary to Birch Creek source. Therefore, the licensing exam report for permit 45-14138 represents only the storage of water diverted from the three sources (spring tributary to Birch Creek, unnamed stream tributary to Birch Creek, and Worthington Spring tributary to sinks) in the small reservoir located on an unnamed stream tributary to Goose Creek (same reservoir described by SRBA decreed right 45-12924).

The diversion to storage amount listed on permit 45-14138 of 0.05 cfs represented the summation of the 0.02 cfs from the spring locally known as North Worthington Spring (45-14138), the 0.02 cfs from the unnamed stream tributary to Birch Creek (45-13402), and the 0.01 cfs from Worthington Spring (45-2810A). However, the pipeline system capacity controls the diversion to the reservoir so a diversion to storage amount of 0.03 cfs is recommended for licensing (see Hazen-Williams calculation). The reservoir surface area is based on GPS information obtained from Jana Reeder and Jeff Cooper. Accounting for evaporation loss from the reservoir &/or possible multiple fillings of the reservoir, the permitted 0.5 acre-feet of stock water and wildlife storage can be recommended for licensing.

Permit 45-14138 had been identified as a trust water right and included a trust water condition (051). However, all of the sources described on the permit are surface water sources tributary to sources that are eventually tributary to the Snake River upstream of Milner Dam and are therefore non trust water sources. For this reason, license 45-14138 should not be identified as a trust water right, or include trust water conditions.

Have conditions of permit approval been met? ☐ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
STOCKWATER STORAGE	01/01 to 12/31		0.50 AF
WILDLIFE STORAGE	01/01 to 12/31		0.50 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.030 CFS	
	<u>Totals:</u>	0.030 CFS	0.50 AF

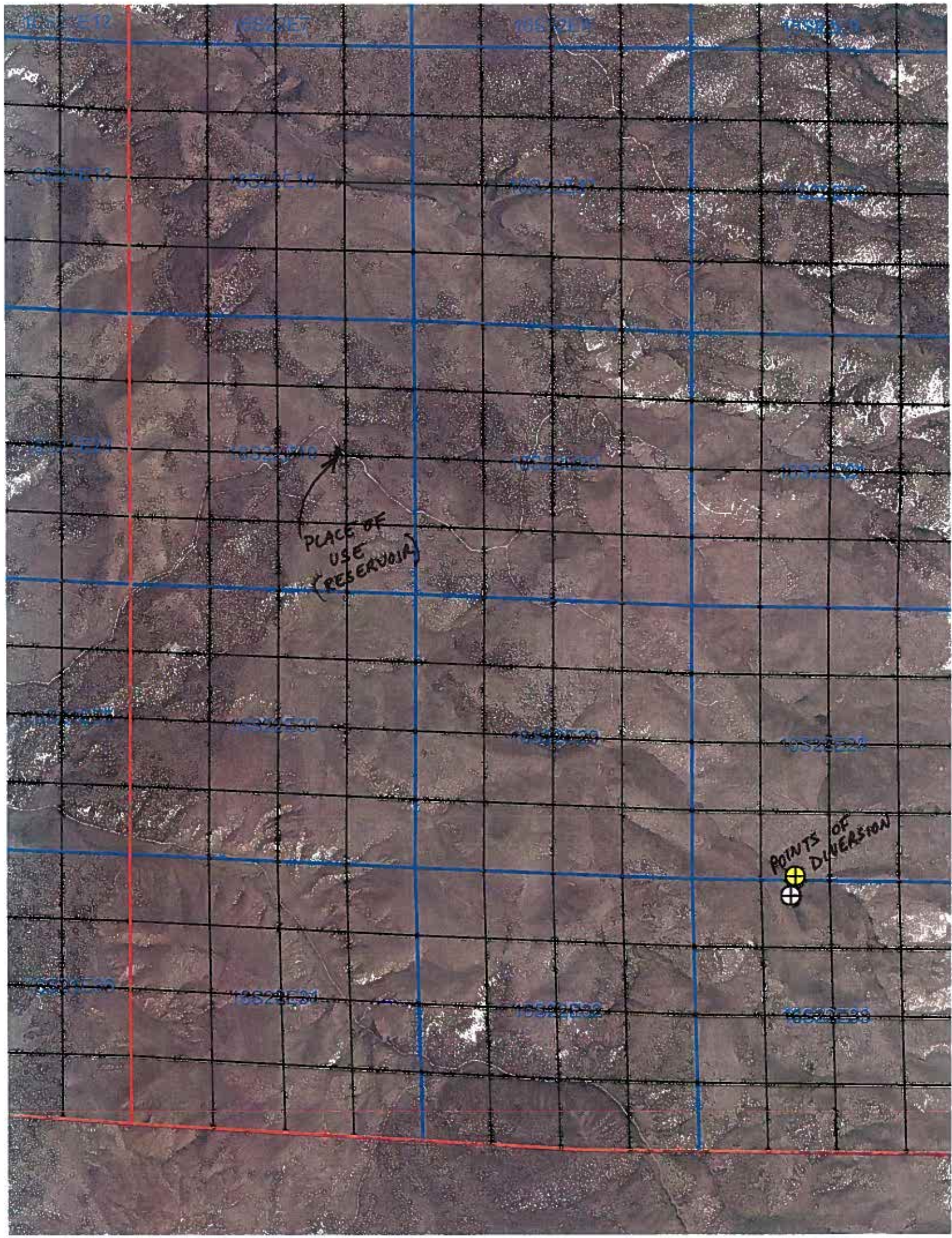
2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

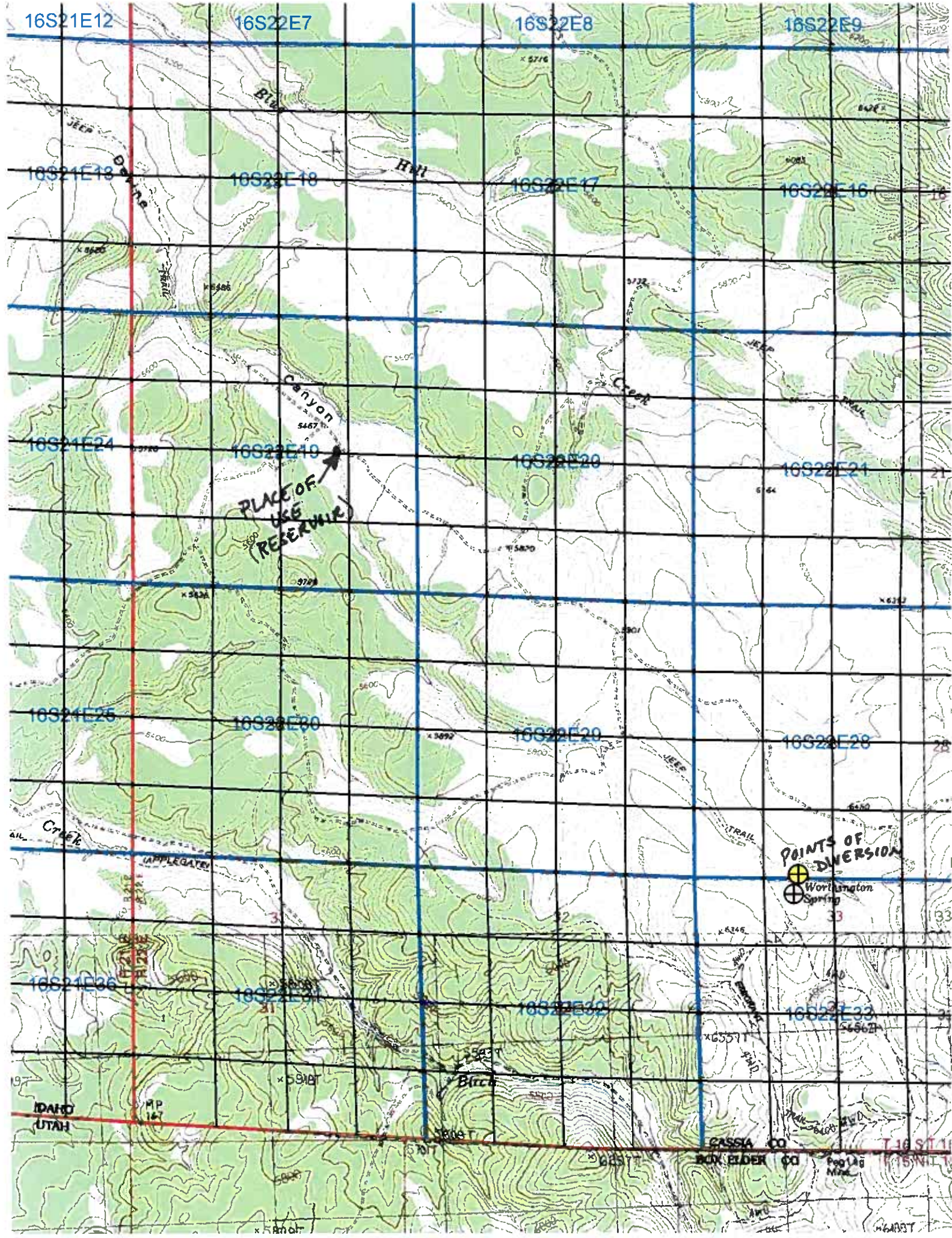
I. AUTHENTICATION

Field Examiner's Name Cory Shinn Date 7/10/2009
Reviewer _____ Date _____



PLACE OF
USE
(RESERVOIR)

POINTS OF
DIVERSION



16S21E12

16S22E7

16S22E8

16S22E9

16S21E13

16S22E18

16S22E17

16S22E16

16S21E24

16S22E10

16S22E20

16S22E21

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16S22E30

16S22E20

16S22E28

16S21E36

16S22E31

16S22E32

16S22E33

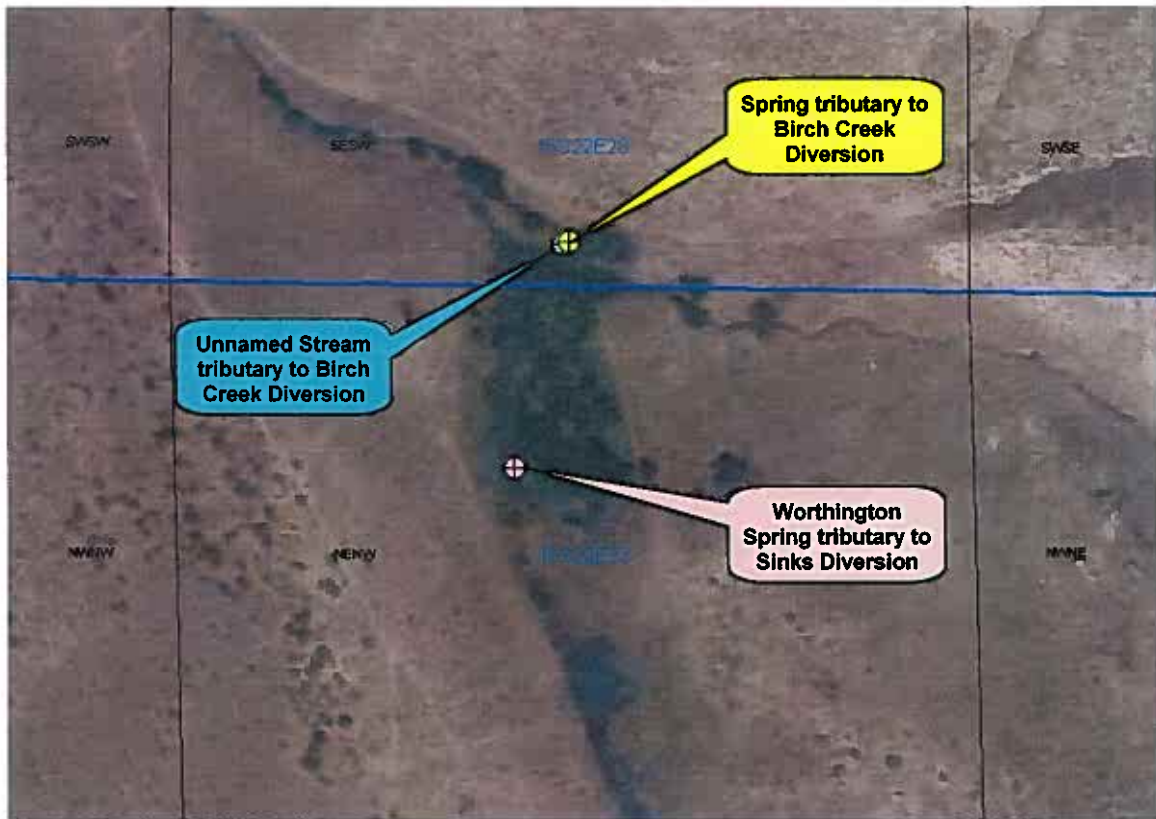
IDAHO
UTAH

CASSIA CO
BOY ELDER CO

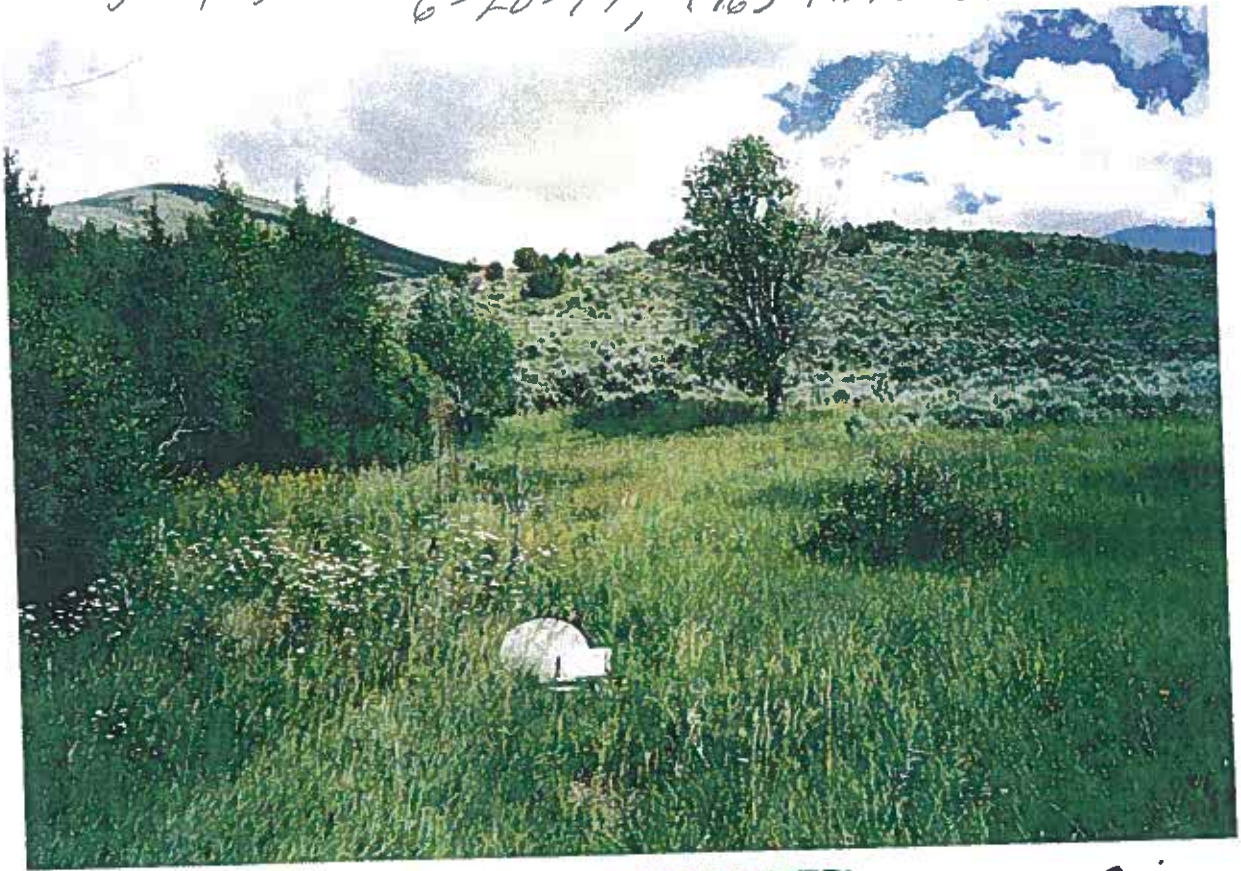
Worthington
Spring

T-10 ST-11
T-15 ST-11

47-14138 Point of Diversion Map



Worthington Spring 6-20-97; T16S R27E S23 NW NW



45-14138 & 45-2810A
& 45-2810B & 45-10491
POINT OF DIVERSION.

Headbox for Worthington
Spring (also called South
Worthington Spring)

T16S R33E S33 NW NW

North Worthington Spring (also called Fence Spring) & Headbox
T16S R22E S28 SWSESW

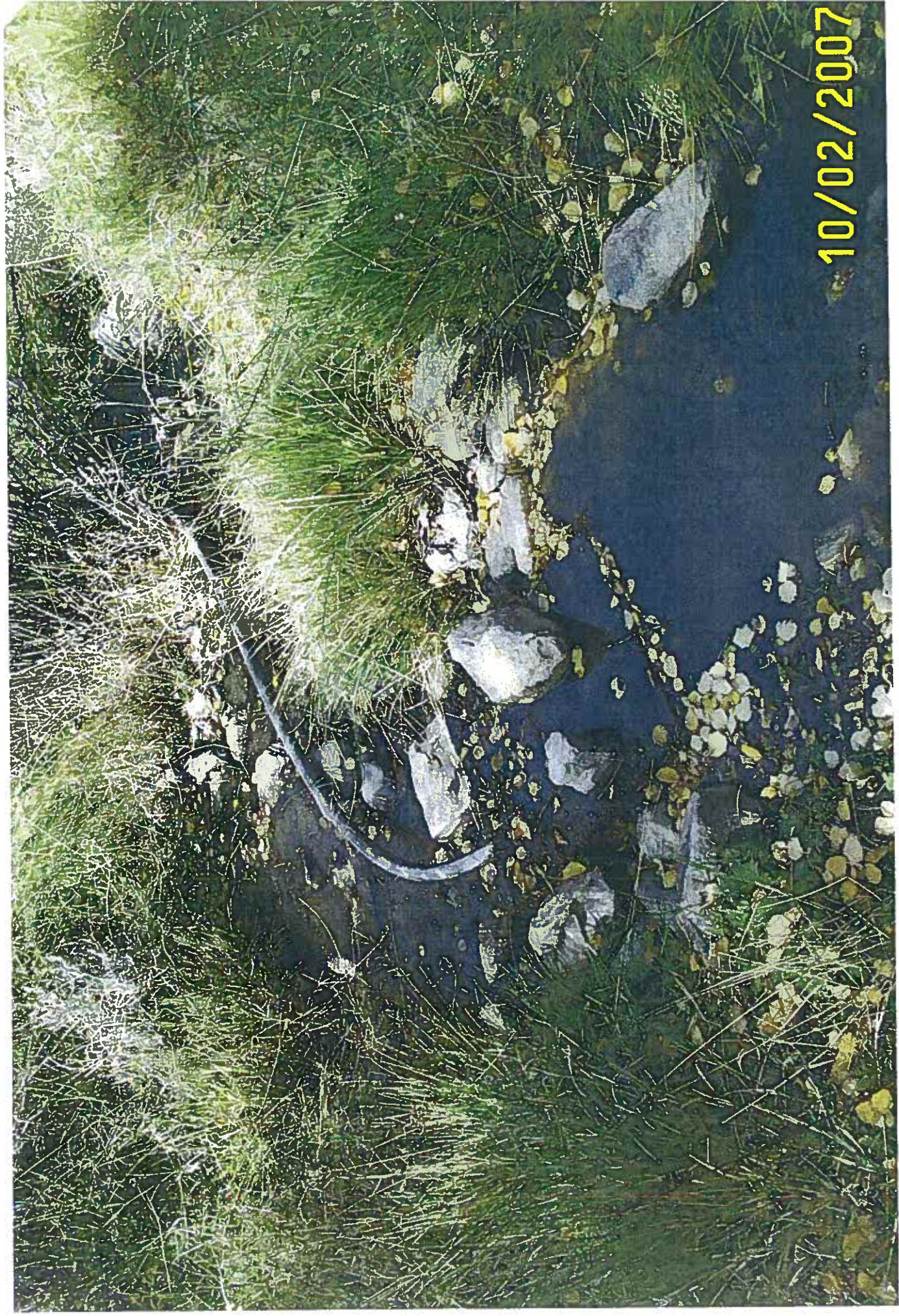


45-14138 & 45-14234 POINT OF DIVERSION



Headbox For North Worthington Spring (also called Fence Spring)
T16S R22E S28 SWSESW

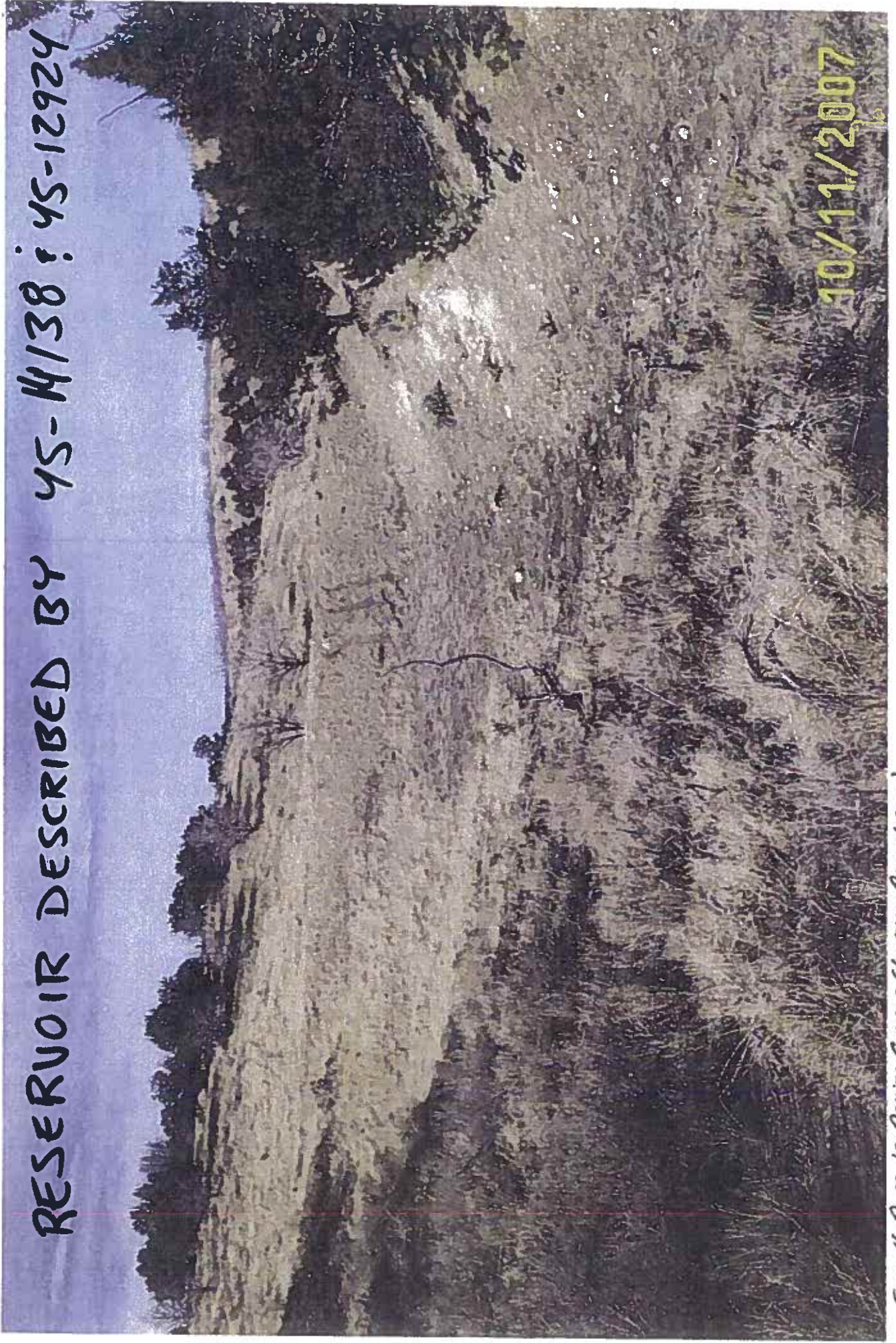
Diversion From Unnamed Stream at T16S R22E S28 SWSESW



10/02/2007

45-14138 & 45-13402 POINT OF DIVERSION

RESERVOIR DESCRIBED BY 4S-4138 ; 4S-12924



10/11/2007

Small Dam in Dewine Canyon (looking downstream)
T16 S R22E S19 SW1/4

RESERVOIR DESCRIBED BY 45-14138 & 45-12924



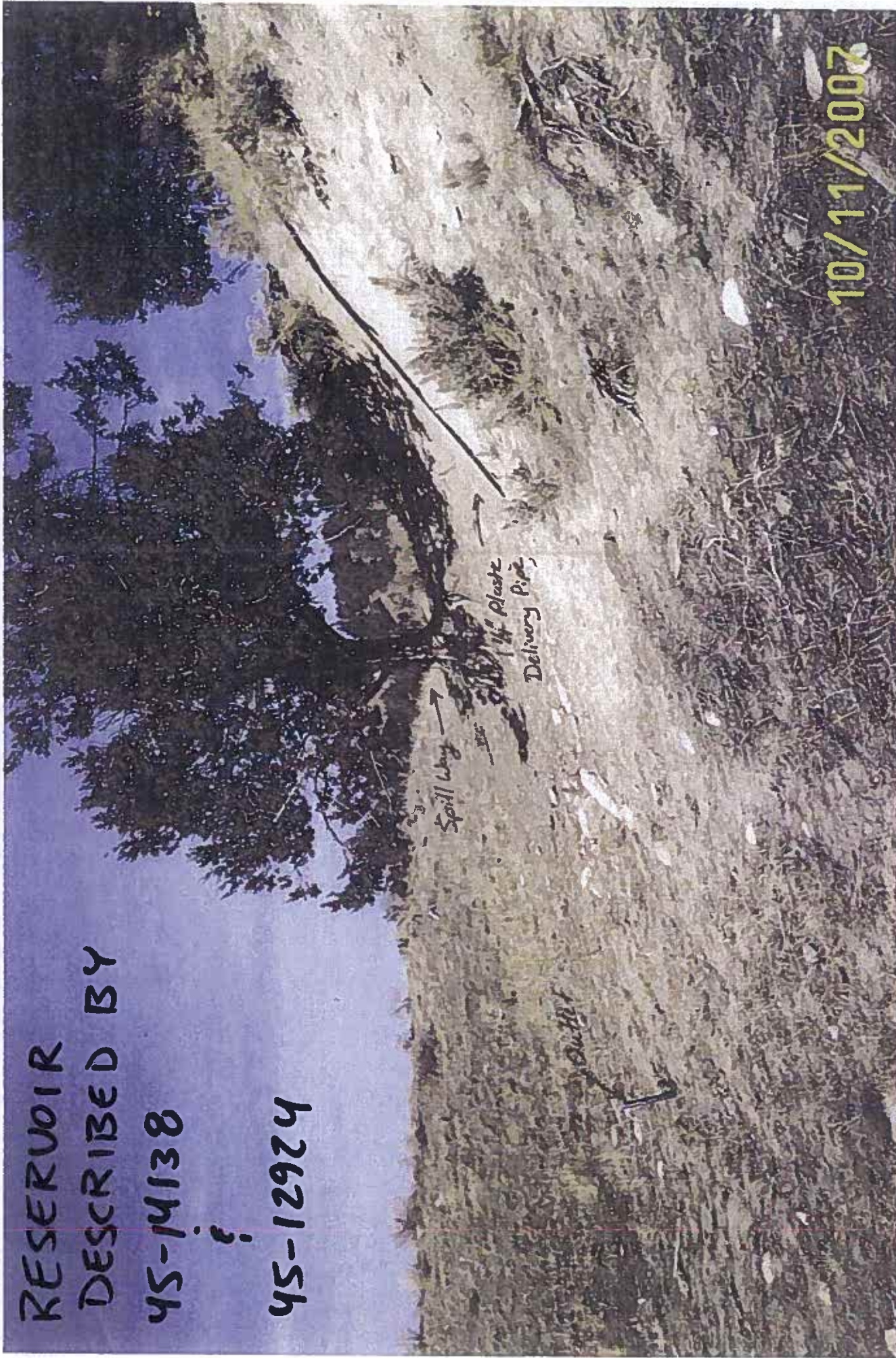
Small Dam in Devine Canyon (looking upstream)
T165 R22E S19 T4NE

RESERVOIR
DESCRIBED BY

45-14138

!

45-12924



10/11/2007

Small Dam in Devine Canyon showing delivery system (as on map) and outlet
T165 R22E S19'SWNE

ET *Idaho* --- Evapotranspiration and Consumptive Irrigation

Water Requirements for Idaho

Please send suggestions for improving this site to robison@kimberly.uidaho.edu Copyright 2007, University of Idaho.

Oakley (NWS NOAA--106542)

Statistics based on 30 years between 1973 to 2004

For a different land cover or crop click on the above link.

You can highlight this table and copy via the clipboard to a Microsoft Excel or OpenOffice spreadsheet to plot or otherwise work with this data.

Open water - small stock ponds														
Precipitation Deficit (Click here for a graph)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season ^a	Annual
Mean	mm/day												mm	
Monthly ^b	0.27	0.70	1.45	2.65	3.01	4.33	4.68	4.22	3.26	2.35	0.69	0.18	848	848
15-Day Moving Average ^c	0.22	0.60	1.48	2.73	2.94	4.40	4.67	4.14	3.18	2.50	0.65	0.21		
7-Day Moving Average ^d	0.24	0.65	1.46	2.67	2.98	4.34	4.67	4.16	3.22	2.43	0.64	0.19		
3-Day Moving Average ^e	0.26	0.70	1.45	2.68	2.99	4.33	4.68	4.21	3.24	2.37	0.67	0.17		
Standard Deviation	mm/day												mm	
Monthly	0.67	0.56	1.22	1.13	1.58	1.07	1.03	0.96	0.98	0.96	0.57	0.98	113	113
15-Day Moving Average	0.74	0.78	1.12	1.25	1.62	1.23	0.96	0.92	1.36	0.96	0.77	0.78		
7-Day Moving Average	0.96	1.05	1.39	1.80	2.22	1.81	1.39	1.35	1.88	1.38	1.02	1.03		
3-Day Moving Average	1.25	1.39	2.00	2.39	2.98	2.40	1.97	1.94	2.65	1.89	1.38	1.45		
20% Exceedance	mm/day												mm	
Monthly	0.69	1.19	2.08	3.24	3.95	5.24	5.35	4.84	4.16	2.98	1.03	0.67	940	940
15-Day Moving Average	1.06	1.53	2.81	4.62	5.13	5.84	5.90	5.31	4.62	3.74	1.67	0.91		
7-Day Moving Average	1.37	2.23	3.49	5.24	5.93	6.31	6.14	5.66	5.10	4.27	2.23	1.22		
3-Day Moving Average	1.85	2.65	4.34	6.27	6.71	6.92	6.74	6.18	5.65	4.62	2.73	1.57		
80% Exceedance	mm/day												mm	
Monthly	0.26	0.31	0.49	1.63	1.60	3.66	3.84	3.70	2.11	1.92	0.07	-0.64	727	727
15-Day Moving														

= 2.78 ac-ft