

MEMORANDUM

TO: ADJUDICATION FILES 63-28282

FROM: DANIEL A. NELSON

DATE: 8/31/06

SUBJECT: FIELD EXAMINATION

On 8/25/2006, I performed a field visit of the property associated with water right 63-28282. I discovered that the water for this claim is diverted from a spring that fills a large 32.2 acre-foot pond. The bulk of the spring flow is actually under water, but there is a small portion of the water flowing above the water surface. Boise Kuna Canal Company water and wastewater are also diverted into the pond to irrigate 34.6 acres. There are other lands associated with this farm, but the 34.6 acres are the only lands irrigated out of the pond. Another diversion pump and other water rights are used for the other acres.

Sometime between 1987 and 2004 a pivot was installed on the ground irrigated from the pond. The new pivot irrigates approximately 3.2 acres than were irrigated in 1987, but the owner could shut off the end gun to irrigate this ground when the spring water is the only water being used and come very close to the number of acres allowable under this claim. This only happens once or twice a year at the end of the season, when the canal and wastewater are no longer available, so shutting of the end gun shouldn't cause a severe problem. Either way, the owner should only be allowed to irrigate the 31.4 acres found in 1987 from the spring, and should file a transfer for the remainder of the acres.

The aerial photography shows approximately 2.1 acres of pond surface area, and the pond is 14 feet deep. Therefore, all storage components should be limited to 32.2 acre-feet. I had difficulty determining the flow rate of the spring, but I finally determined that the spring produces 0.34 cfs of water (please see attached sheet).

The owner runs approximately 120 cow/calf pairs and 1 horse on this property. Therefore, we are looking a stockwater maximum allowable diversion rate of 0.07 cfs for stockwater, which is well under the spring's capacity. The stockwater volume should be based on 12 gal per day for 241 animals for 365 days a year or 3.2 afa. The wildlife volume would be the volume of the pond or 32.2 afa. Any irrigation use should be limited to the spring capacity of 0.32 cfs, since the pump diverts more than the spring can produce. Irrigation from storage would also be the volume of the pond or 32.2 afa. The total number of acres irrigated should be 31.4 acres with the full volume of 4.5 afa per acre for a total of 141.3 afa.

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63-28282 field exam memo

The claim was not filed using current department standards for these types of storage components. Therefore, I would suggest that the claim be amended or recommended by the adjudication as follows:

Stockwater = 0.07 cfs / 3.2 afa from 1/1 to 12/31

Stockwater Storage = 3.2 afa from 1/1 to 12/31

Wildlife Storage = 32.2 afa from 1/1 to 12/31

Irrigation = 0.32 cfs / 141.3 afa from 3/1 to 11/15

Irrigation from Storage = 32.2 afa from 3/1 to 11/14

Irrigation Storage = 32.2 afa from 1/1 to 12/31

Diversion to Storage = 0.32 cfs from 1/1 to 12/31

The Stockwater, Stockwater Storage, Wildlife Storage, Irrigation Storage, and diversion from storage are located in the NWNE T1S R2W S26.

The Irrigation and Irrigation From Storage are 4.4 acres in the SESW T1S R2W S23; 9 acres in the NWNE; and 18 acres in the NENW T1S R2W S26.

The Point of Diversion is located in the NWNWNE T1S R2W S26.

NWSW

NESW

T1S R2W S

SWSW

SESW
4.4 Acres

T1S R2W S23

SWSE

SESE

1987 AERIAL PHOTO

This shape files shows the current place of use. The claimant is currently irrigating 34.6 acres instead of the 31.4 acres irrigated in 1987. Eventhough the place of use has changed only changed a little bit (11% difference from former irrigation), a transfer may be needed to properly cover the ground now irrigated.

INFLOW DITCH
FROM CANAL AND
WASTEWATER

NWNE
9 acres

NENW
18 acres

NENE

Stockwater, Wildlife and Irrigation
Storage pond. 2.1 acres surface
area and 14 feet deep, for a total
of 32.2 acre feet.

SENW

T1S R2W S26

SWNE

SENE

T1S R2W S26

NESE

NWSW

NESW

T1S R

T1S R2W S23

SWSW

SESW

SWSE

INFLOW DITCH
FROM CANAL AND
WASTEWATER

NWNE

NENW

T1S R2W S26

SENW

SWNE

2004 AERIAL PHOTO

This shape files shows the current place of use. The claimant is currently irrigating 34.6 acres instead of the 31.1 acres irrigated in 1987. Eventhough the place of use has changed only changed a little bit (11% difference from former irrigation), a transfer may be needed to properly cover the ground now irrigated.

SPRING FLOW CALCULATIONS

During my field exam, I discovered that the pond was actually built on the spring source. The spring seems to have different levels from which it seeps out of the ground. During my field exam I measured the upper level of this spring at a diversion rate of 0.14 cfs. The owner informed me that he generally irrigates out of the spring one time after the canal water and wastewater are no longer available. He irrigates out of the pond using a 10 Hp pump that diverts approximately 0.55 cfs (see theoretical calculation sheet). He told me that when he does this, the pond only drops 1 foot in 5 days. Taking this information into account, I realized that the spring produced more than the 0.14 cfs measured, and the bulk of the water from the spring must be under pond's water surface. Therefore, I had to determine a way to figure the actual diversion rate of the spring. I used the following calculations to determine the actual flow of the spring into the pond:

$(0.55 \text{ cfs Irrigation Pump Capacity}) \times (5 \text{ days}) \times (1.9835) = 5.5 \text{ acre feet diverted within the 5 day irrigation period.}$

$(2.1 \text{ acres Pond Surface Area}) \times (1 \text{ foot drop in 5 days}) = 2.1 \text{ acre feet of water contributed to the irrigation from pond storage}$

$(5.5 \text{ af diverted}) - (2.1 \text{ diverted from storage}) = 3.4 \text{ acre feet of water supplied by spring during 5 days of irrigation.}$

$[(3.4 \text{ af of irrigation supplied by spring}) / (5 \text{ days})] / 1.9835 = 0.34 \text{ cfs diversion rate produced by the spring.}$

The above calculations show that the spring actually produces 0.34 cfs of water that is used for stockwater, wildlife, irrigation, and diversion to storage. This diversion rate should be used instead of the 0.14 cfs measured from the upper portion of the spring.

GROUNDWATER THEORETICAL ANNALYSIS

FILE: 63-28282

DATE: 8-25-06

BY: DAN Nelson

THEORETICAL RATE OF FLOW: $Q = \frac{(8.8 \times (HP) \times (EFF.))}{TDH}$

Q = CFS

HP = Total Brake Horsepower of pumping plant (including booster)

Eff. = Pumping plant efficiency (assume 70% or 0.70)

TDH = Total dynamic head = [(LIFT) + (PSI X 2.31)]

LIFT = Depth to water in FEET from land surface to pumping water level

PSI = Pumping pressure measured in PSI near pump (if open discharge assume [0])

$$Q = \frac{(8.8 \times (10) \times (0.70))}{[(2) + (48 \times 2.31)]} = \frac{61.6}{112.88} = 0.55 \text{ cfs}$$

245 gpm

LIFT FROM:

Measurement (✓)

Owner ()

Area estimate ()

Well Logs ()

PSI FROM:

Measurement ()

Owner ()

Estimate ()

Owner Gage (✓)

Booster (Y) (N)

NOTES ON PUMP:

Motor Make, Serial or ID

Pump Make, Serial or ID, rating

REMARKS: This seems to be a
reasonable estimate of 740
pump capacity.

UPPER PORTION
OF SPRING
DIVISION
DON'T USE.

ST. Q)	,DIST	,DEPTH	,REVS	,TIME	,COS:VF	,LOC	,CLOCK	,VEL	,AREA	,FLOW(
1, 00,	0.7,	0.00,	0,	0.0,	1.00,	.6,	0:00,	0.000,	0.000,	0.00
2, 92,	1.1,	0.30,	47,	40.0,	1.00,	.6,	14:31,	1.160,	0.120,	0.13
3, 00,	1.5,	0.00,	0,	0.0,	1.00,	.6,	0:00,	0.000,	0.000,	0.00

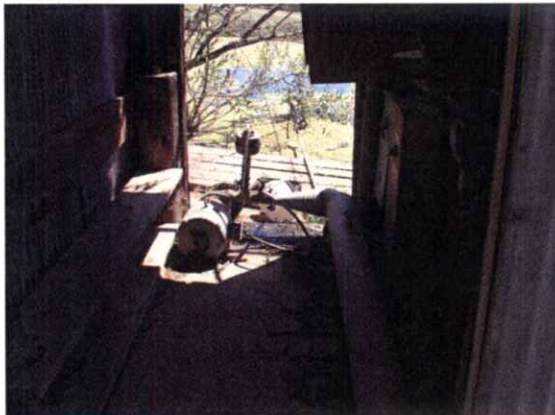
PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 8/25/2006

FILE NUMBER 63-28282



The photo to the right shows the above ground spring. It is less than 1 foot wide. It doesn't supply enough water to maintain the pond level. This is the area that water comes into the pond, because it doesn't freeze during colder weather.

The photo below shows the pond and the pump house. The pump delivers the water to a pivot and some hand lines.



The photos above show the pond pump and the mainline going to the pivots and sprinklers.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 8/25/2006

FILE NUMBER 63-28282



The above picture shows the pivot and the edge of the pond. The sprinklers are down the road to the right of the pivot.

ADDITIONAL INFORMATION NEEDED FOR IRRIGATION FIELD EXAMS

Field Examiners, please complete the following checklist. Mark "unknown" or N/A if information doesn't apply or information is unavailable.

IF CURRENT OWNER DOES NOT MATCH PROOF REPORT PLEASE GIVE NEW OWNER CHANGE OF OWNERSHIP FORM TO COMPLETE.

1.) Pump information:

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
RELIFT	CENTRAL	10HP	SC 254	UNKNOWN	2"
Dump			4CZ-KCA		
			EMI S-305687-06		

meas
0.13 CFS
APPROX
42 SPIN

2.) Lift (distance from pump to water) 2

3.) How was lift determined (well log, measurement, owner)? meas

4.) Pressure against pump (this is checked using the owner's psi gauge, your gauge, or an estimate by owner) 48 PSI - OWNER'S GAUGE

5.) Was a measurement made? NO If no can a measurement be made at a latter time? YES ON SPRING
NO ON RELIFT PUMP

6.) What type of measurement device was used? Pygmy
THEORETICAL

7.) Is there a pump curve available for pump? _____

8.) Please fill out the following:

Number of sprinklers _____

Sprinkler nozzle size _____

Number of Pivots (include gpm rating for each pivot) _____

20 FT

14 FT Deep - Pond.

9.) Please outline all acres irrigated on attached aerial photo. _____ DONE

10.) Please clearly mark all points of diversion on map and GPS. _____ DONE

11.) Please clearly mark all mainlines, ditches, and other conveyances.
_____ DONE

12.) Pictures taken of place of use and point of diversion. _____ DONE

13.) Please show where and how water from other sources are diverted into the irrigation system.

FIELD EXAMINERS NOTES (descriptions, other uses, questions, ect.)

SPRING ~~DOE~~ isn't the
only water flowing
owner told me that
he can run the pump
for 5 days. and the
pond only drops one foot
then fills back in.

The spring measure is
only the upper spring.

{ 120 pair cows
1 horse -

DATE EXAM CONDUCTED _____

FIELD EXAMINER _____



SESE

SINKER
CREEK
ROAD

GUFFY
BRIDGE.