

APR 14 2004

Department of Water Resources

April 5, 2004

Tim Luke - State Water Master

Over the last several years there has been considerable friction over water matters within Water District 32 C in Clark County, such as non-functional weirs, over and under measurement of delivery water, interpretation of the courts finding of facts, and conclusion of the law. This protest directs some of these concerns.

Several devices are available for control and measuring of water flow, but each unit is only considered effective if required standards of water measurement are strictly adhered to.

This letter is a protest against Water District 32 C which I feel is in violation of requiring each water measurement device to achieve to all the standards necessary to assure an accurate measurement by the water master.

To illustrate the need for appropriate action, I enclose a copy of three water measurements:

Measurement # 1 performed by Dr. Howard Neibling of the University of Idaho, taken on 30 May, 2003 showing 32-0006 weir flow as 4.86 CFS', an over-delivery of 1.66 CFS'. Also, on the same day Howard measured the delivery to rights 32-00014, 32-00015, and 32-00016 as 3.76 CFS', a shortage of 1.61 CFS'. On that same day the water master delivery book shows 4.82 CFS'--a full delivery of the rights. (See Attachment #1)

Measurement # 2 performed by USGS on 7 July 2003, showing the discharge across 32-0006 weir as 4.05 CFS', an over-delivery of .85 CFS'. (See Attachment #2)

Measurement #3 performed by Bret Murdock, Assistant Water Master District 32 C, for the months of May and July 2003. On May 30, in reality, it is an under-delivery of 1.06 CFS' on rights 32-00014, 32-00015 and 32-00016 as recorded by the Water Master's daily record. Also on July 7 there was an under-delivery of these same rights of 4.19 CFS' by the Water Master's daily record. (See Attachment #3)

All four of these rights should have been 100% delivered, as these four rights are not junior to any other rights in the water district, and there was extra water flowing into Medicine Lodge Creek.

In addition to these examples of faulty measuring of the flow, right 32-0006 measuring facilities does not include a satisfactory weir baffle, does not calm the water energy created by the diversion design, nor reduce the water speed to standard flow, which all contribute to additional errors in measurement.

I also request clarification of the Ninth Judicial District Court ruling found in the Findings of Fact and Conclusions of Law Section which is included in attachment #4.

Post-it® Fax Note	7671	Date	6/3/04	# of pages	4
To	GREG STANTON		From	TIM LUKE	
Co./Dept			Co		
Phone #			Phone #		
Fax #	374-5696		Fax #		

(1) At what point on Indian Creek should Water Right 0006 be measured? Under paragraph #2 under conclusion of law, it appears that in 1926 the flow of 4.08 CFS' at a point immediately below the flume should guarantee the delivery in full of rights 32-0006, 32-00014, 32-00015, and 32-00016. Now, in 2004, the flow of Indian Creek immediately below the flume must be increased to 12.08 CFS' or more water to satisfy the full delivery of these four rights.

Is it fair that rights 32-00014, 32-00015, and 32-00016 should have to stand all the increase of water loss, a total of 4.0 CFS', through percolation and evaporation? Whose responsibility is it to contain the increase of loss over the years, or should each water right be responsible to sustain its own percentage of loss from a point immediately below the flume? At what point below the flume should full delivery of right 32-0006 be guaranteed?

(2) Under Conclusion of Law, it limits the authority of the water master to regulate the flow of Indian Creek if the stipulations found therein are complied with in full, which are: that the water must be diverted into the flumes and the right of Dennis Small 32-0006 be supplied in full, which apparently in 1926 8.08 CFS' of water flow immediately below the flume was ample to fully fill each of the four rights. What was the intent of the original Conclusions of Law as outlined in the Finding of Facts paragraphs # 1,2,3,4,5,6,7 8,9,10,11,12,13 and Conclusion of the Law paragraphs # 1 and 2?

(3) If, by chance, the flow of Indian Creek drops to a point that only Right 32-0006 is being filled, must the plaintiff continue to flume waters of Indian Creek through the flume to help insure the full delivery of right 32-0006 and other rights in District 32C?

(4) During the hot days of summer, evaporation rate into the atmosphere increases, and therefore stream delivery fluctuates as the evaporation increases. In this case scenario, would the water master be required to deliver the full right at the high flow time of day, or the low flow time of day, or the average of the days flow? Or would the management decision be left entirely to the discretion of the water master?

Hope to hear from you soon.

Sincerely,



Wahoo or BHA, Inc.
Grant Ashcraft, President
3930 E. 2000 N.
Sugar City, ID 83448

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College of Agricultural
and Life Sciences
Cooperative Extension SystemTwin Falls R&E Center
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Twin Falls ID 83303-1827Phone: 208/736-3600
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March 22, 2004

TO: Mr Grant Ashcroft
FROM: Dr. Howard Neibling, P.E.
RE: Flow measurement at diversions on Indian Creek

In response to your request, I visited the site of your flow measurement device on Indian Creek (Figure 1) and the Small diversion (Figure 2) located downstream last May 30. At that time you indicated that your water right was 4.82 cfs and the water right for the Small diversion was 3.2 cfs, for a total of 8.02 cfs. I measured head over both the Small diversion weir and your weir between 4 and 4:30 pm on the afternoon of May 30, taking great care to measure the static water level in both weir approach boxes. This assured a proper head measurement, unaffected by water surface drawdown near the weir sill. Using the USBR flow measurement manual, I converted the head measurements to flow, based on appropriate tables. My results were flow of 5.06 cfs for the Small weir, and 3.78 cfs for your weir. This is quite a discrepancy from the water rights of 3.2 and 4.78 cfs, respectively. More pictures of your diversion and weir approach are shown in Figures 3-7.

Due to the difference in location of your diversion and the Small diversion, and the fact that the Small diversion has the older water right, this is a difficult water delivery situation to manage. Because of seepage losses in the reach between the two diversions, the standard practice has been to manage your diversion rate to assure 3.2 cfs delivered to the Small weir. It would certainly be a much easier system to manage if both diversions were located at the same point so that the issue of seepage losses and who should be responsible for water lost was not an issue.

During my visit, I observed two situations that caused concern for the equitable division of the water. First, in order to reach the Small diversion structure, we had to cross a stream flowing about 1 cfs (see Figure 2). This water appeared to be leaving the main creek upstream of the Small weir, and bypassing the diversion structure. This had the effect of reducing flow to you by about 1 cfs, since this water could not be routed to Mr. Small. As a result, your diversion had to be decreased by this amount to assure delivery of Mr. Small's full water right.

Second, the baffle board upslope of the Small weir was inadequate for the flow rate, creating excessive turbulence immediately upslope of the weir (Figures 8 and 9). As a result, the measured water surface elevation was 1.0 inch higher on the downstream side of the weir crest (downstream relative to the flow in Indian Creek) than on the upstream side. This would result in a significant difference in measured flow, depending on the location of the measurement. For example, if flow were measured on the upstream side of the weir, head = 0.615 ft and flow = 4.63 cfs. In contrast, if depth was measured at the downstream side of the weir, head = 0.698 ft and flow = 5.56 cfs. In this case, averaging shallow and deep flow depths gives a flow of 5.08 cfs, while calculating flow for both depths and then averaging gives an average flow of 5.1 cfs, essentially the same. Therefore, averaging shallow and deep flow or measuring flow at the center of the weir crest with a weir stick are acceptable methods to determine head in this situation.

However, even with correct head measurement, flow may be in error by 20-50% because of the differential velocity across the weir due to inadequate baffle design and installation (page 5-3 USBR Water Measurement Manual). Therefore, it is essential to eliminate variation in water velocity from one end to the other of the weir crest by effective upstream baffles. Installation of a more aggressive baffle

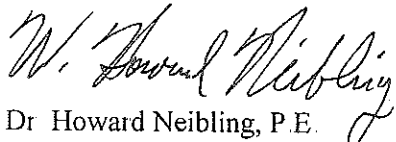
You also indicated that historically, a flow in the creek, measured at the flume just downstream from the outlet of the 24-inch conduit, of somewhat over 8 cfs (allowing for some transmission loss in the reach between your diversion and the Small diversion) would be sufficient to deliver both full water rights. You also indicated that for the last few years, a flow of nearly 12 cfs was required to deliver full water to both you and the Smalls. This would indicate a seepage loss of about 4 cfs in this short reach, a loss of 33%. This seems excessive and may be due to a number of factors, one of which might be a change in stream path which intersected more permeable streambed. It would seem that a set of water balance measurements taken within a short period of time the same day, should be conducted to characterize the seepage losses in this reach. If excessive, alternatives to reduce seepage might be explored.

In summary, my recommendations include:

- Installation of an effective baffle system in the Small diversion box upslope of the weir crest,
- Verification of effectiveness of the new baffle system,
- Installation of a flow depth recorder at the flume upstream of your diversion, and at the Small weir to determine the magnitude of morning / afternoon effects on flow in the creek,
- Streambank maintenance to assure that all water passes through the Small diversion box,

I hope this letter addresses your concerns. Please call me at (208) 736-3631 (office) or (208) 308-5192 (cell) if you have questions.

Sincerely,



Dr. Howard Neibling, P.E.
Extension Water Management Engineer, University of Idaho

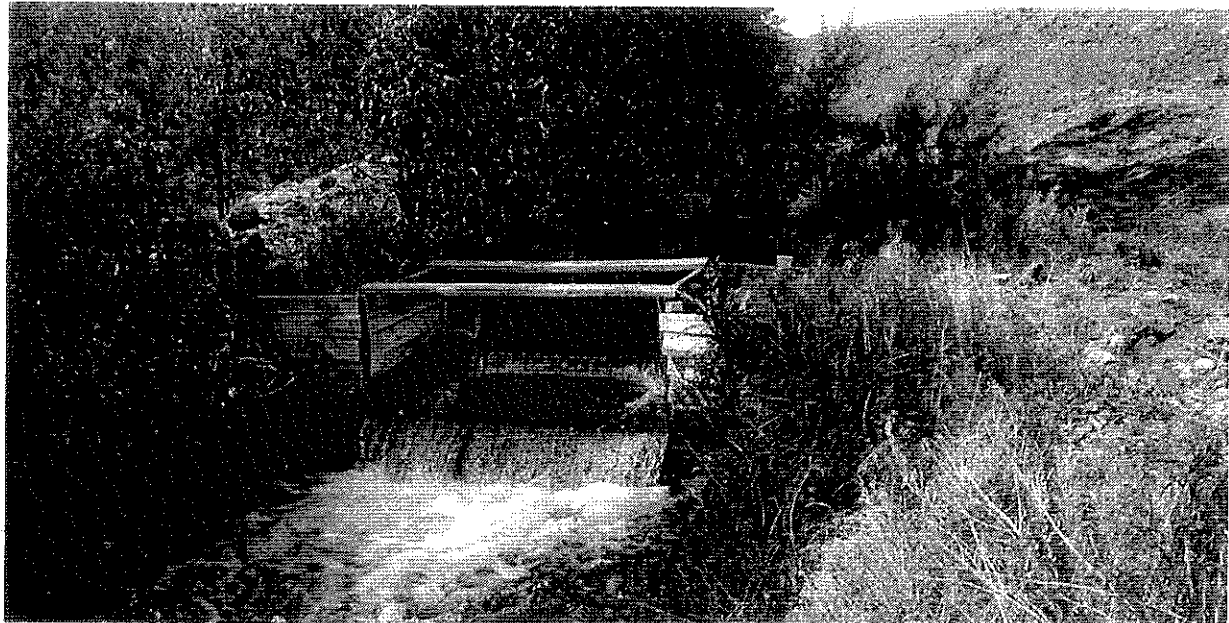


Figure 1. Ashcroft weir. Structure and flow conditions are conducive to reliable flow measurement.

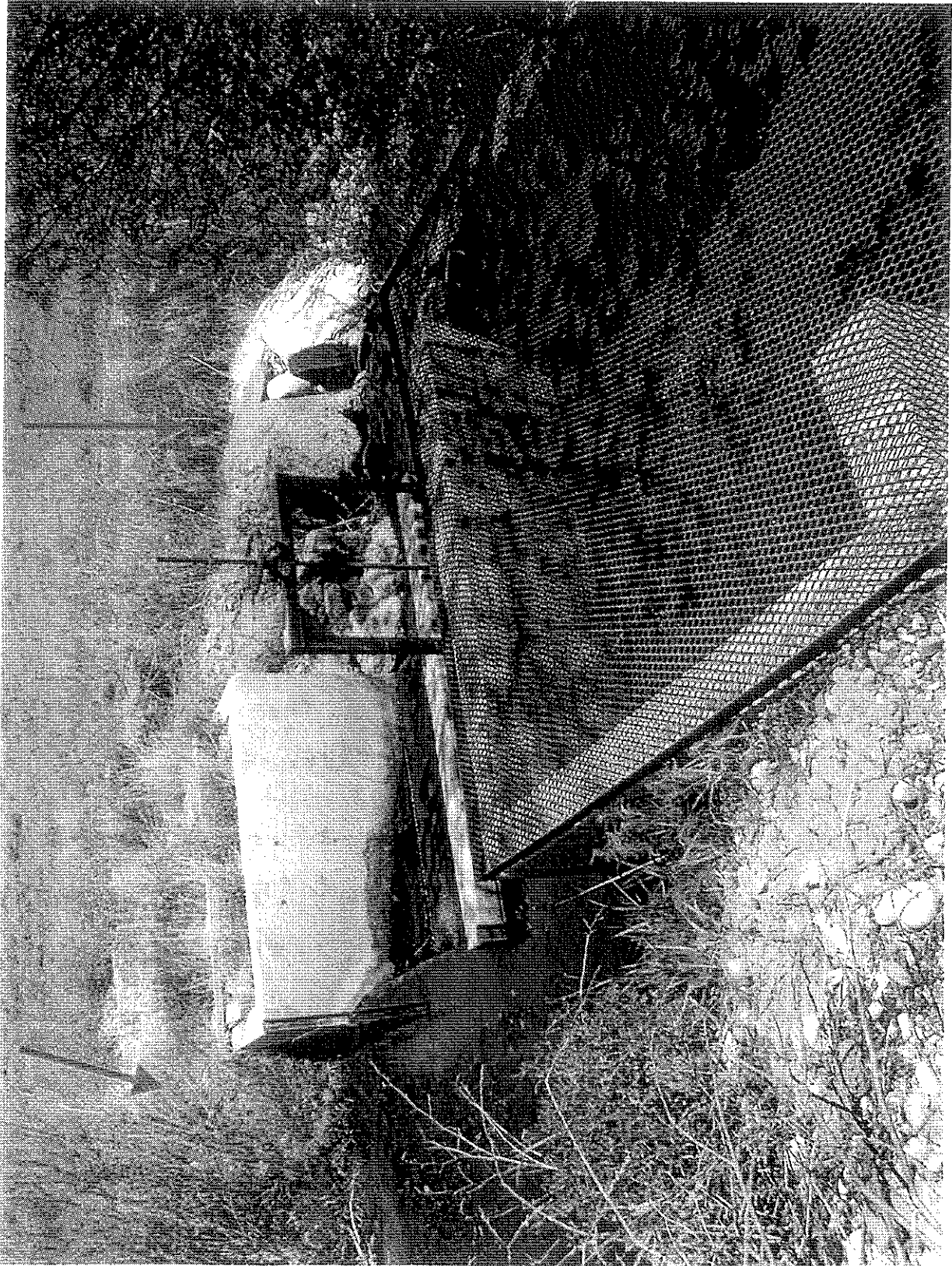


Figure 2. Small diversion box and 1 cfs natural bypass channel (red arrow)



Figure 3. Upstream of Ashcroft diversion looking at inlet to turbulent fountain trash screen.



Figure 4. Ashcroft diversion looking from inlet to turbulent fountain trash screen upstream.

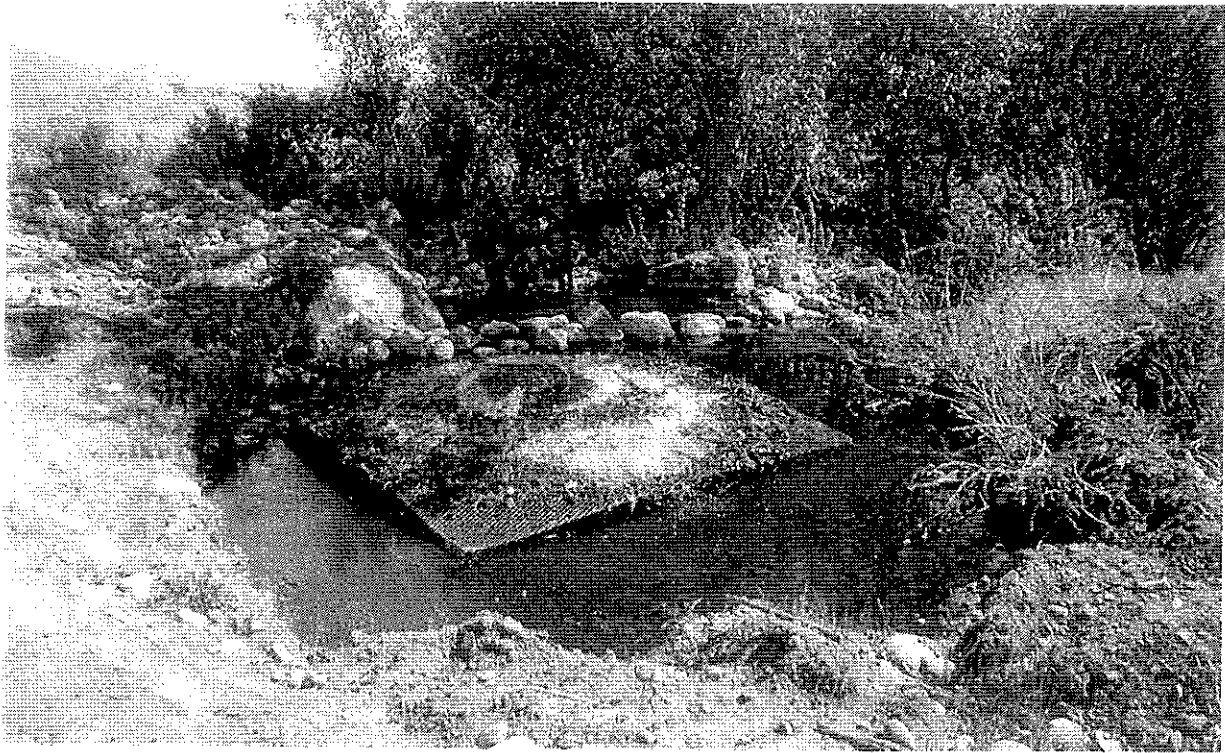


Figure 5 Ashcroft turbulent fountain trash screen. Measuring weir downslope of screen.

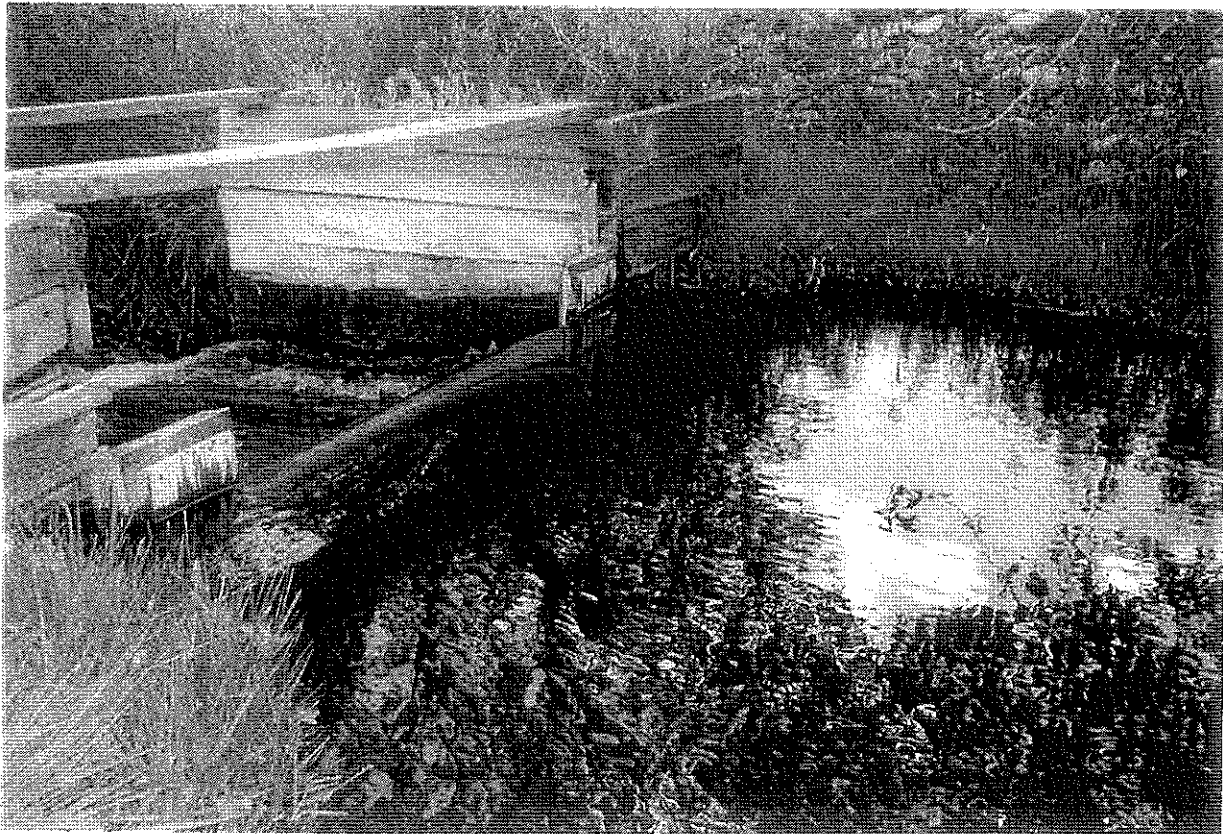


Figure 6. Approach pool, Ashcroft measuring weir. Approach conditions and weir dimensions are standard. Therefore, water measurement should be accurate.

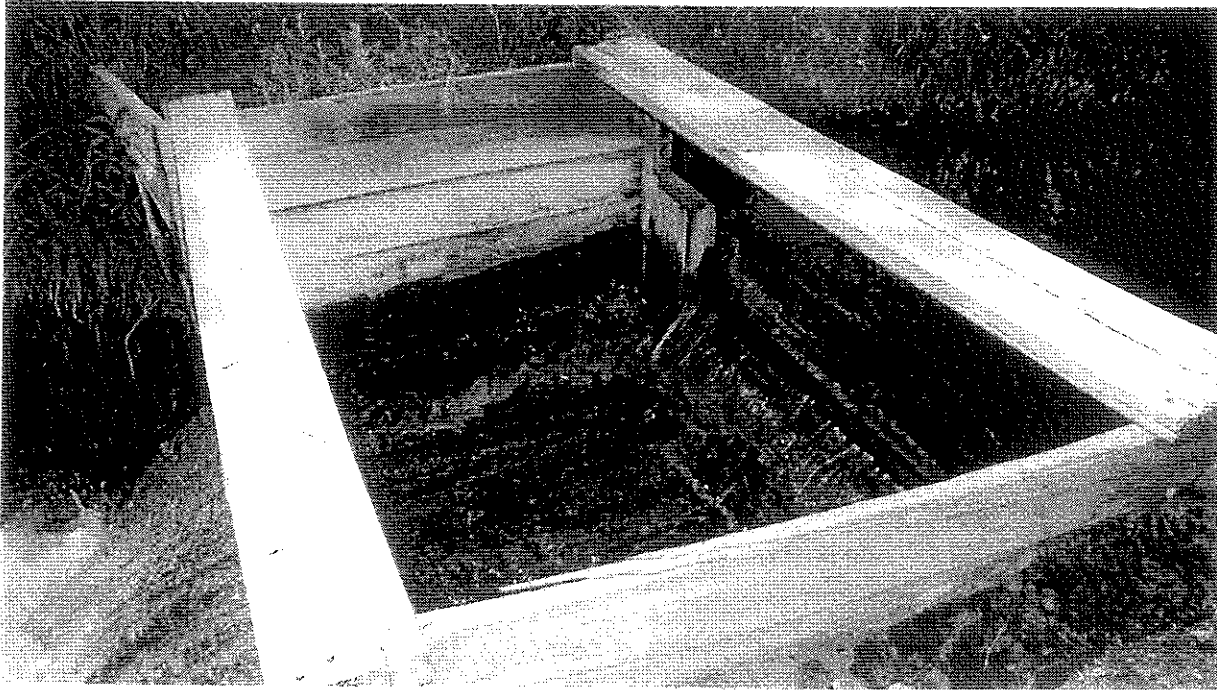


Figure 7. Ashcroft weir. Flow over weir crest meets required conditions.

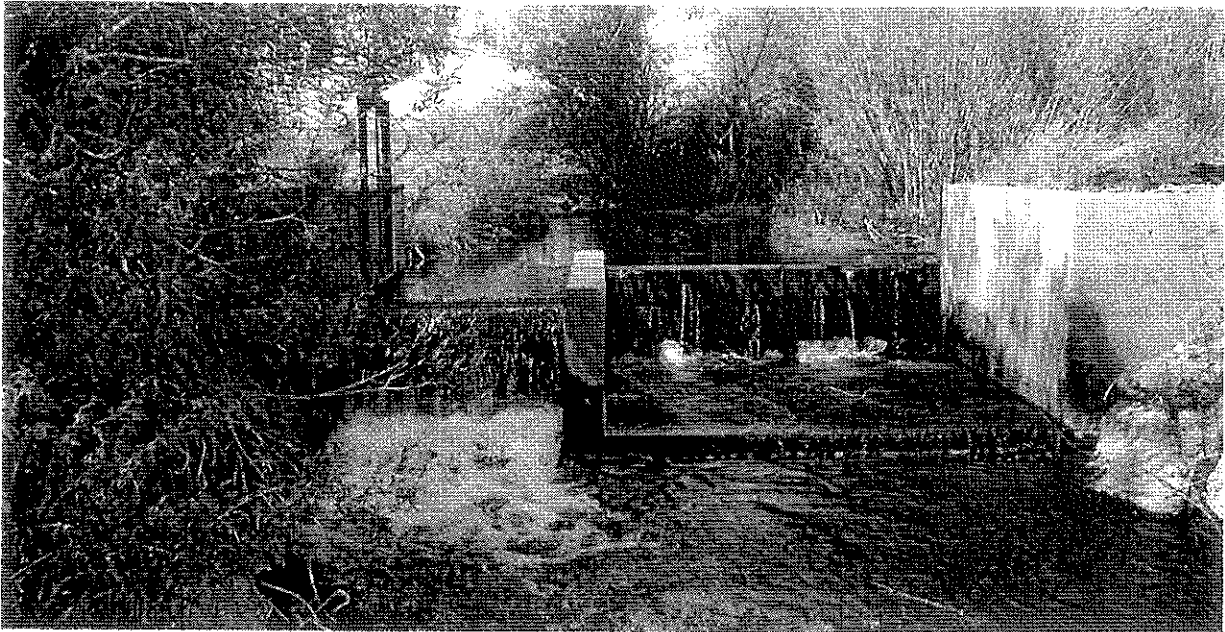


Figure 8. Small diversion structure. Approach conditions are good. Weir pool and weir to left of headgate

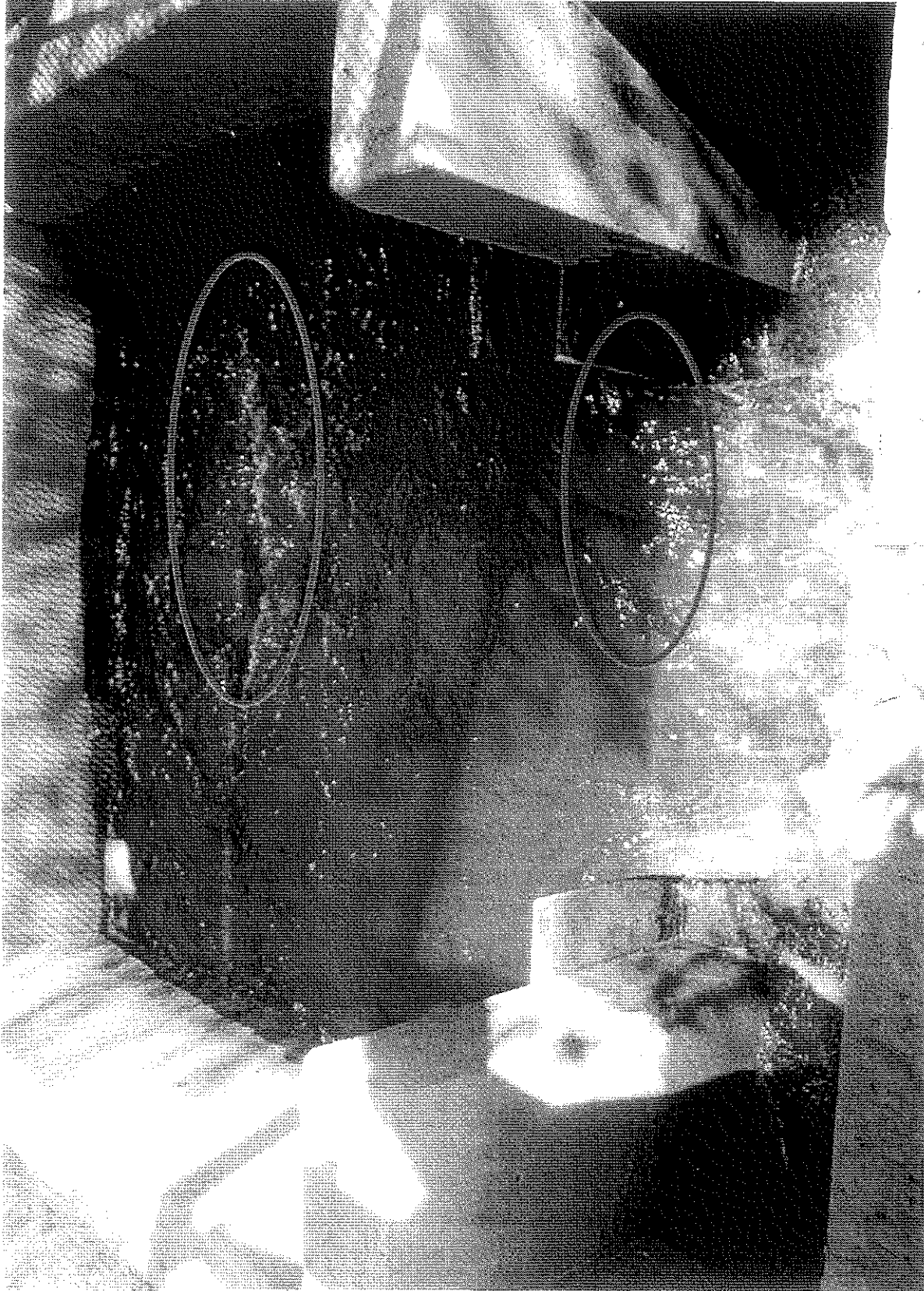


Figure 9. Small diversion box and weir. Note turbulence downstream of baffle board. Asymmetric flow results in higher velocity and greater water depth over right – hand side of weir. Direction of flow in stream is from left to right.

DISCHARGE MEASUREMENT AND
GAGE INSPECTION NOTES

Sta. No. 13-116490
Sta. Name Indian Ck nr Small, Id. (The Small Diversion)
Date July 7, 2003 Party S. Landon
Width 4.5 Area 2.88 Vel. 1.41 G.H. _____ Disch. 4.05
Method _____ No. sects. 16 G.H. change .00 in 0.3 hrs.
Method coef. 1.0 Horiz. angle coef. 1.0 Susp. rod Tags checked _____
Meter Type Pygmy Meter No. N 287038 Meter _____ ft. above bottom of wt.
Rating used 6-99 Spin test before meas. 50 after ok
Meas. plots _____ % diff. from rating no. _____ indicated shift _____

GAGE READINGS		Inside	Outside
Time			
<u>0840</u>	<u>St</u>		
	<u>Start</u>		
<u>0856</u>	<u>St</u>		
<u>0912</u>	<u>St</u>		
	<u>Finish</u>		
<u>0919</u>	<u>St</u>		
Weighted MGH			
GH correction			
Correct MGH			

Samples collected: water quality, sediment, biological/other _____
Measurements documented on separate sheets: water quality, aux./base gage, other _____
Rain gage serviced/calibrated _____
Weather: Clear - riel
Air Temp. 17.0 °C at 0904
Water Temp. 3.3 °C at 0904
Check bar/chain found _____
Changed to _____ at _____
Correct _____ Wier

Wading, cable, ice, boat, upstr., downstr., side bridge, 50 (ft. upstr.) downstr. of gage.
Measurement rated excellent (2%), good (5%), fair (8%), poor (> 8%); based on following conditions: Flow: over full
Cross section: 1 ft. wide
Gage operating: _____ Record Removed _____
Battery voltage: _____ Intake/Orifice cleaned/purged: _____
Bubble-gage pressure, psi: Tank _____, Line _____; Bubble-rate _____ /min.
Extreme-GH indicators: max _____, min _____
CSG checked: _____ HWM height on stick _____ Ret. elev. _____ HWM elev. _____
HWM inside/outside: _____
Control: 54 on Rec. regular
Remarks: Lat/Ling N 44 17 14 W 112 24 23

GH of zero flow = GH _____ - depth at control _____ = _____ ft., rated _____
Sheet No. _____ of _____ sheets

Miscellaneous measurement
to document drought conditions.

Meas. No. _____
Comp. by _____
Checked by dy

DISCHARGE MEASUREMENT AND
GAGE INSPECTION NOTES

Sta. No. 13-116490
Sta Name Indian Ck nr Small Id (The Small Diversion)
Date July 7, 2003 Party S. Landon
Width 7.5 Area 2.88 Vel. 1.41 G.H. _____ Disch 4.05
Method _____ No. secs. 16 G.H. change .00 in 0.3 hrs.
Method coef. 1.0 Horiz. angle coef. 1.0 Susp. rod Tags checked _____
Meter Type pygmy Meter No. W 287038 Meter _____ ft. above bottom of wt.
Rating used 6-99 Spin test before meas. .50 ; after ok
Meas. plots _____ % diff. from rating no. _____ indicated shift _____

GAGE READINGS

Time	Inside	Outside
0840	SC	
0856	A ₂	
0912	ST	measured flow looking through headgate
0919	Finish	
Weighted MGH		
GH correction		
Correct MGH		

Samples collected: water quality, sediment, biological-other _____
Measurements documented on separate sheets: water quality, aux./base gage, other _____
Rain gage serviced/calibrated _____
Weather: Clear - ried
Air Temp. 17.0 °C at 0904
Water Temp. 3.0 °C at 0904
Check bar/chain found _____
Changed to _____ at _____
Correct _____ Wier

Wading, cable, ice, boat, upstr., downstr., side bridge, 50 (ft. upstr, downstr. of gage).
Measurement rated excellent (2%), good (5%), fair (8%), poor (> 8%); based on following conditions: Flow: irregular
Cross section: irregular

Gage operating: _____ Record Removed _____
Battery voltage: _____ Intake/Orifice cleaned/purged: _____
Bubble-gage pressure, psi: Tank _____, Line _____; Bubble-rate _____ /min.
Extreme-GH indicators: max _____, min _____
CSG checked: _____ HWM height on stick _____ Ref. elev. _____ HWM elev. _____
HWM inside/outside: _____
Control: .54 on Red in gular
Remarks: Lat/Ling N 44 17 14 W 112 24 23

GH of zero flow = GH _____ - depth at control _____ = _____ ft., rated _____ of _____ sheets

off R

Miscellaneous measurement to document drought conditions.

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MEDICINE LODGE DAILY RECORD BOOK																																			
MONTH	MAY	2003	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL	
NAME	WATER RIGHT #		C.F.S.																																
LEE SMALL			3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	99.20
TODD, KYLE, JOHN			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	31.00
MIDDLE CREEK RANCH			3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.60
GRANT ASHCRAFT			4.82	0.00	1.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	3.50	3.50	3.50	4.18	4.18	4.82	4.82	4.82	4.82	130.62
THOMAS EDEN			2.50	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	40.30	
DEAN SHENTON			9.00	7.58	7.58	7.58	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	7.58	7.58	7.58	5.00	4.12	4.12	4.12	3.06	3.06	3.06	3.06	3.06	3.06	3.06	6.00	7.58	7.58	201.58
GERALD HOLMES			3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	2.00	2.50	2.50	17.00		
BRION EGAN			3.50	3.50	3.50	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	
JACK MCGARRY			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	30.00	
JACK MCGARRY			3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	104.16	
JACK WEBSTER			5.14	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	3.18	3.18	3.54	3.54	2.84	1.50	1.50	1.50	1.50	1.50	1.50	1.50	5.14	5.14	5.14	5.14	85.66	
JACK WEBSTER			9.48	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	4.32	4.32	9.00	9.00	9.00	8.14	8.14	8.14	8.14	8.14	8.14	8.14	8.14	7.74	7.74	7.74	164.50	
BRION EGAN			3.50	3.12	3.12	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.10	
HOGGAN BROTHERS			3.36	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	46.50	
ELMAN WOODFIELD			9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	9.13	9.13	266.52
THOMAS EDEN			3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	109.74	
BRION EGAN			5.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
DON & SANDY KEY			0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
GEORGE WHITTAKER			2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MEDICINE LODGE RANCHES			4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	
MEDICINE LODGE RANCHES			3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
HOGGAN BROTHERS			16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
DEAN SHENTON			3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
LEE SMALL			1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MEDICINE LODGE RANCHES			3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
																															TOTAL	1494.48			

