GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Water Rights

KENT L. JONES
State Engineer/Division Director

March 28, 2012

Jon Meikle, President
Logan and Northern Irrigation Company
4650 North 1000 East
Smithfield, UT 84335

Dear Mr. Meikle:

I received a letter from Lyle Thornley on February 28, 2012 requesting that Logan and Northern Irrigation Company (Company) be allowed up to two more years to complete the water-measuring device on the Logan and Northern Canal required under SEAA 1435. The reason being the NRCS is planning to replace the canal with a new pipeline with a new water meter. A suitable pipeline meter fulfills the water measurement requirements referenced in SEAA 1435. We hereby extend the due date of SEAA 1435 from April 15, 2012 to April 15, 2014, based on the water commissioner's willingness to continue estimating the flow for two years. We request the new Company meter have SDI-12 or 4-20 mA output signal to enable it to connect with our existing telemetry system, and that diversion into the new pipeline be metered.

If the water commissioner needs a reliable water measurement before the new pipeline meter is installed, the Company may be required to install a temporary weir. The Company will be notified in writing if a temporary weir is required. A temporary weir would enable a reliable water measurement without posing a major expense to the Company. I've enclosed some reference information on a temporary weir. If you have questions, please call me at (801) 538-7469 or Will Atkin at (435) 752-8755. Thank you for your continued planning efforts.

Sincerely,

Ben Anderson, P.E.
Engineer
Field Services

Enclosure
cc: Jared Manning, Assistant State Engineer
Will Atkin, Regional Engineer
Colleen Gnehm, Water Commissioner
Lyle Thornley, Logan & Northern Irr. Co.

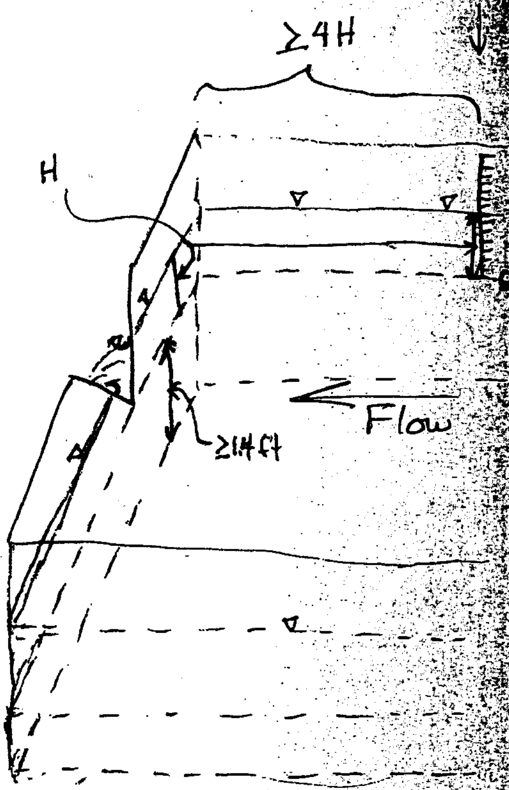

Table 11.—Discharge of 90° V-notch weirs in second-feet. Computed from the formula $Q=2.49\ H^{2.48}$. (See sec. 21.)

Head in feet	Discharge in second-feet	Head in feet	Discharge in second-feet	Head in feet	Discharge in second-feet
0.20	0.046	0.55	0.564	0.90	1.92
.21	.052	.56	.590	.91	1.97
.22	.058	.57	.617	.92	2.02
.23	.065	.58	.644	.93	2.08
.24	.072	.59	.672	.94	2.13
.25	.080	.60	.700	.95	2.19
.26	.088	.61	.730	.96	2.25
.27	.096	.62	.760	.97	2.31
.28	.106	.63	.790	.98	2.37
.29	.115	.64	.822	.99	2.43
.30	.125	.65	.854	1.00	2.49
.31	.136	.66	.887	1.01	2.55
.32	.147	.67	.921	1.02	2.61
.33	.159	.68	.955	1.03	2.68
.34	.171	.69	.991	1.04	2.74
.35	.184	* .70	1.03 *	1.05	2.81
.36	.197	.71	1.06	1.06	2.87
.37	.211	.72	1.10	1.07	2.94
.38	.226	.73	1.14	1.08	3.01
.39	.240	.74	1.18	1.09	3.08
.40	.256	.75	1.22	1.10	3.15
.41	.272	.76	1.26	1.11	3.22
.42	.289	.77	1.30	1.12	3.30
.43	.306	.78	1.34	1.13	3.37
.44	.324	.79	1.39	1.14	3.44
.45	.343	.80	1.43	1.15	3.52
.46	.362	.81	1.48	1.16	3.59
.47	.382	.82	1.52	1.17	3.67
.48	.403	.83	1.57	1.18	3.75
.49	.424	.84	1.61	1.19	3.83
.50	.445	.85	1.66	1.20	3.91
.51	.468	.86	1.71	1.21	3.99
.52	.491	.87	1.76	1.22	4.07
.53	.515	.88	1.81	1.23	4.16
.54	.539	.89	1.86	1.24	4.24
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—Discharge correction coefficient, C, for determining effect of velocity of approach to weirs. Computed from the formula $C=\frac{Q'}{Q}=\frac{D^{3/2}}{H^{3/2}}$. (See sec. 23.)

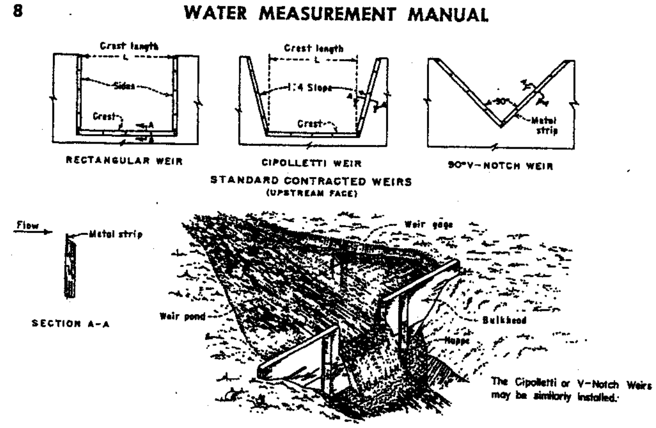
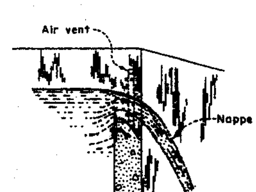


Figure 2.—Standard contracted weirs, and temporary bulkhead with contracted rectangular weir discharging at free flow. 103–D–858.



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All conditions for accuracy stated for the standard contracted rectangular weir apply to the Cipolletti weir. The height of the weir crest above the bottom of the approach channel should be at least twice the head over the crest, and the distances from the sides of the notch to the sides of the channel should also be at least twice the head. The weir should not be used for heads less than about 0.2 foot, nor for heads greater than one-third the crest length. A Cipolletti weir is illustrated in figure 7.

(d) *Standard 90° V-Notch Weir.*—The triangular or V-notch thin-plate weir is an accurate flow measuring device particularly suited for small flows. The V-notch usually used by the Bureau is the 90° V-notch shown in figure 2.

The crest of the standard 90° V-notch weir consists of a thin plate, the sides of the notch being inclined 45° from the vertical. This weir operates as a contracted weir and all conditions for accuracy stated for the standard contracted rectangular weir apply. The minimum distances of the sides of the weir from the channel banks should be at least twice the head on the weir, and should be measured from the intersection points of the maximum water surface with the edges of the

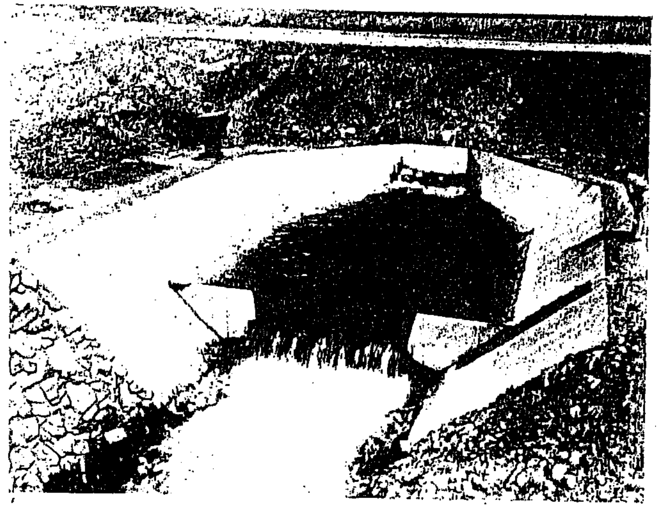

Figure 7.—Cipolletti weir with a well-type head-measuring station. PX-D-53011.

weir. The minimum distance from the crest to the pool bottom should be at least twice the head on the weir, and should be measured from the point of the notch to the channel floor.

Because the V-notch weir has no crest length, the head required for a small flow through it is greater than that required with the other types of weirs. This is an advantage for small discharges in that the nappe will spring free of the crest, whereas it would cling to the crest of another type of weir and make the measurement worthless. Although Cipolletti and rectangular weirs in the order of 6 inches in crest length are sometimes used for measuring small flows, they are not as accurate or as sensitive as the V-notch weir for such flows and are not recommended where the V-notch weir can be used.

10. Selection of Weirs.—Each of the weirs used by the Bureau of Reclamation has characteristics that fit it for particular operating conditions. In general, for best accuracy, a rectangular suppressed weir or a 90° V-notch weir should be used. Cipolletti weirs and contracted rectangular weirs have end contractions and have not been investigated experimentally as thoroughly as the suppressed rectangular and V-notch weirs. They are, however, very useful weirs for many applications.

Usually the range of flows to be measured by a weir can be fairly well estimated in advance. With this range in mind, the following points should be considered:

(1) The minimum head should be at least 0.2 foot to prevent the nappe from clinging to the crest, and because at smaller depths it is difficult to get sufficiently accurate gage readings to calculate reliable flow quantities.

(2) The length of rectangular and Cipolletti weirs should be at least three times the head.

(3) The 90° V-notch weir is the best type for measuring discharges less than 1 second-foot. It is as accurate as the other types for flows from 1 to 10 second-feet. Thus it is well suited for discharges up to and a little beyond 10 second-feet if sufficient head is available.

(4) The crests, if possible, should be placed high enough so the water flowing over them will fall freely, leaving an airspace under and around the jets. If submergence is permitted, special computations and reduced flow measuring accuracy may be expected.