

MEMORANDUM

Date: March 3, 2009
To: Water Right File 29-8171
From: Aaron Marshall
Re: Licensing Review

On February 26, 2009, IDWR received an analysis of the City of American Falls municipal water system from Bryan Phinney of Keller Associates. The analysis utilized a WaterCAD model to evaluate the distribution system capacity based on a given demand. The model run showed that the water distribution system will support a demand greater than 14.92 cfs.

The combined capacity of all points of diversion for the City's municipal water system is 14.92 cfs. The combined flow rate for all of the City's municipal water rights totals 11.71 cfs. Permit 29-8171 authorized an additional diversion rate of 3.21 cfs. This permit should be licensed for 3.21 cfs since the City has shown that the system distribution and delivery capacity exceeds the flow rate of all rights combined.

A licensing amendment is necessary to authorize all points of diversion in the City's municipal water supply system.



KELLER
associates

412 West Center, Suite 330 • Pocatello, ID 83204
208.238.2146 phone • 208.238.2162 fax • www.kellerassociates.com

February 25, 2009

Mr. Pete Cortez
Water and Wastewater Superintendent
City of American Falls
550 N Oregon Trail
American Falls, ID 83211-1800

RECEIVED

FEB 26 2009

Department of Water Resources

**RE: Water System Demand Capacity
Water Modeling Results**

Dear Mr. Cortez,

At your request, we analyzed the American Falls potable water system utilizing Bentley WaterCAD. The focus of this analysis was to determine if the distribution piping could deliver a system wide demand of 6,697 gallons per minute (gpm). The evaluation considered the demands that are applied on the City's calibrated water model and increased them equally to produce a total demand of 6,697 gpm.

The water velocity within the distribution system was then reviewed. A velocity of 10 feet per second (fps) or greater indicates a system that is undersized in relation to the flowrate passing through it. The attached table represents the model run with the described parameters. The largest velocity within the distribution system was 4.4 fps with a demand of 6,697 gpm distributed evenly throughout the existing demands. Therefore we have concluded that the distribution and transmission system in American Falls will support in excess of a total demand of 6,697 gpm.

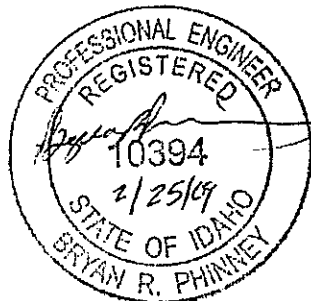
We have enclosed the model output data and system layout drawing with this letter for your files. If you have any questions please contact us at (208) 238-2146.

Respectfully,
KELLER ASSOCIATES, INC.

Bryan R. Phinney, P.E., D.WRE
Project Manager

cc: File

Enclosures



Engineering Solutions, Satisfied Clients

Idaho Falls • Meridian • Pocatello • Riverton

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
579	50003	8900	4.0	37.00	100.0	4.41
221	80	4905	12.0	130.00	120.0	4.37
413	604	613	4.0	337.00	100.0	4.30
417	612	602	4.0	333.00	100.0	4.22
122	724	603	6.0	648.00	100.0	4.17
174	9004	9101	6.0	214.00	100.0	4.03
574	1200	8802	4.0	56.00	100.0	4.02
P-1	744	J-1	10.0	548.62	140.0	3.86
48	6301	4804	12.0	356.00	100.0	3.76
50	6301	8	12.0	924.00	110.0	3.69
103	8900	9100	10.0	1,292.00	110.0	3.67
414	613	642	4.0	666.00	100.0	3.65
497	1603	20004	4.0	362.00	100.0	3.64
424	411	451	4.0	661.00	100.0	3.58
537	2204	3003	6.0	350.00	100.0	3.18
40	4202	3701	12.0	105.00	110.0	3.08
158	3202	2802	6.0	328.00	100.0	3.05
418	612	444	4.0	663.00	100.0	3.02
536	3003	3004	6.0	334.00	100.0	2.98
99	4905	4900	10.0	170.00	110.0	2.93
496	1602	1603	4.0	425.00	100.0	2.92
41	4204	4202	12.0	290.00	110.0	2.88
505	2803	3002	4.0	641.00	100.0	2.87
643	642	4260	6.0	810.00	100.0	2.85
404	782	783	4.0	656.00	100.0	2.80
405	784	781	4.0	656.00	100.0	2.79
415	642	444	4.0	341.00	100.0	2.75
98	4901	4905	10.0	295.00	110.0	2.74
42	4002	4204	12.0	308.00	110.0	2.72
64	8600	8603	12.0	69.00	110.0	2.68
513	4901	5604	4.0	339.00	100.0	2.66
425	451	612	4.0	505.00	100.0	2.63
47	4804	4800	12.0	139.00	100.0	2.62
495	1604	1603	4.0	722.00	100.0	2.57
154	3701	3601	6.0	309.00	100.0	2.55
526	5204	5201	4.0	454.00	100.0	2.54
578	50005	8902	4.0	39.00	100.0	2.54
529	5205	5203	4.0	160.00	100.0	2.53
53	7	8	12.0	987.00	110.0	2.49
157	3201	3202	6.0	418.00	100.0	2.47
410	744	582	4.0	1,324.00	100.0	2.46
407	763	541	4.0	1,324.00	100.0	2.43
409	743	561	4.0	1,324.00	100.0	2.43
408	764	562	4.0	1,324.00	100.0	2.42
411	723	581	4.0	1,324.00	100.0	2.41
498	1603	20002	4.0	718.00	100.0	2.41
522	5003	5204	4.0	393.00	100.0	2.41

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
535	5002	5001	4.0	303.00	100.0	2.39
524	5004	5001	4.0	372.00	100.0	2.36
592	310	320	4.0	329.00	100.0	2.34
173	9003	9004	6.0	618.00	100.0	2.32
100	4900	3004	10.0	320.00	110.0	2.32
538	2204	2203	6.0	340.00	100.0	2.31
422	441	411	4.0	185.00	100.0	2.30
241	100	96	16.0	293.00	120.0	2.30
215	76	9100	16.0	150.00	120.0	2.29
426	451	401	6.0	407.00	100.0	2.29
97	4803	4901	10.0	49.00	110.0	2.22
105	9100	9101	10.0	144.00	110.0	2.20
403	532	782	4.0	668.00	100.0	2.20
412	604	603	6.0	324.00	100.0	2.20
17	8303	6904	4.0	320.22	100.0	2.18
156	3602	3201	6.0	363.00	100.0	2.16
575	1103	8803	4.0	49.00	100.0	2.14
72	8603	8602	8.0	138.00	110.0	2.12
406	781	542	4.0	668.00	100.0	2.11
87	723	744	10.0	327.00	110.0	2.09
553	50004	50005	4.0	60.00	110.0	2.08
144	3001	3002	6.0	330.00	100.0	2.04
155	3601	3602	6.0	341.00	100.0	2.04
172	9002	9003	6.0	335.00	100.0	2.04
576	1105	8804	4.0	54.00	100.0	2.01
205	68	50	10.0	174.00	140.0	2.01
P-3	96	J-1	16.0	7.32	120.0	2.01
521	5004	5003	4.0	303.00	100.0	1.98
159	2802	1601	6.0	1,028.00	100.0	1.97
96	4804	4803	10.0	646.00	110.0	1.97
71	8602	8305	8.0	1,047.00	110.0	1.96
490	3202	3203	4.0	819.00	100.0	1.95
527	5203	5202	4.0	360.00	100.0	1.94
549	1103	1104	4.0	182.00	110.0	1.93
577	60004	8901	4.0	42.00	100.0	1.88
175	9101	9104	6.0	700.00	100.0	1.81
515	5602	5404	4.0	500.00	100.0	1.81
491	2802	2601	4.0	353.00	100.0	1.80
111	8305	8403	6.0	57.00	100.0	1.77
166	40003	50003	6.0	305.00	110.0	1.76
514	5604	5602	4.0	497.00	100.0	1.76
525	5003	5002	4.0	484.00	100.0	1.75
540	2003	1004	4.0	398.00	100.0	1.74
63	8902	8900	12.0	241.00	110.0	1.74
571	451	461	4.0	330.00	100.0	1.70
437	340	310	4.0	438.00	100.0	1.69
121	603	602	6.0	676.00	100.0	1.69

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
43	4003	4002	12.0	323.00	100.0	1.67
450	4301	6904	4.0	1,626.00	100.0	1.67
402	8404	532	4.0	367.00	100.0	1.65
444	8403	8303	4.0	533.00	100.0	1.65
164	20002	20003	6.0	347.00	100.0	1.64
86	724	723	10.0	297.00	110.0	1.60
160	1601	1602	6.0	730.00	100.0	1.58
442	8402	332	4.0	462.00	100.0	1.58
	5	80	20.0	1.00	130.0	1.57
217	5	5	20.0	5.00	150.0	1.57
44	3804	4003	12.0	329.00	100.0	1.56
30	332	8600	12.0	222.00	100.0	1.55
539	2003	2203	6.0	339.00	100.0	1.54
148	1804	1401	6.0	340.00	100.0	1.52
435	530	320	4.0	1,306.00	100.0	1.50
225	84	4800	12.0	140.00	120.0	1.47
	7	100	20.0	1.00	130.0	1.47
239	9	7	20.0	5.00	150.0	1.47
	6	76	20.0	1.00	130.0	1.47
213	6	6	20.0	5.00	120.0	1.47
153	20003	9001	6.0	1,153.00	100.0	1.47
427	602	461	4.0	448.00	100.0	1.43
573	5205	8702	6.0	48.00	100.0	1.43
209	70	72	10.0	400.00	140.0	1.40
211	72	785	10.0	1,706.00	140.0	1.40
27	6802	4804	4.0	237.14	100.0	1.40
114	530	542	6.0	173.00	100.0	1.39
62	8901	8902	12.0	181.00	110.0	1.38
	3	90	20.0	1.00	130.0	1.37
227	3	3	20.0	5.00	150.0	1.37
231	90	3701	20.0	105.00	120.0	1.37
556	1102	1106	4.0	519.00	100.0	1.36
438	532	8501	4.0	426.00	100.0	1.36
489	3201	3204	4.0	817.00	100.0	1.35
	4	8603	20.0	1.00	130.0	1.33
233	4	4	20.0	5.00	150.0	1.33
401	8201	8404	4.0	296.00	100.0	1.33
147	2603	1804	6.0	333.00	100.0	1.32
504	2603	2204	4.0	1,283.00	100.0	1.32
45	4801	3804	12.0	348.00	100.0	1.32
545	40004	50001	4.0	184.00	100.0	1.31
533	5202	5201	4.0	277.00	100.0	1.30
93	783	785	10.0	836.00	110.0	1.30
591	302	310	4.0	180.00	100.0	1.30
P-2	J-1	68	10.0	101.38	140.0	1.28
88	744	743	10.0	321.00	110.0	1.28
446	8202	8304	4.0	501.00	100.0	1.27

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Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
29	342	332	12.0	319.00	100.0	1.26
35	4002	3603	12.0	311.00	110.0	1.25
177	9104	9105	6.0	637.00	100.0	1.24
555	50001	50004	4.0	377.00	100.0	1.24
28	340	342	12.0	156.00	100.0	1.23
46	4800	4801	12.0	142.00	100.0	1.21
54	8	6003	12.0	1,191.00	100.0	1.19
486	4201	4202	4.0	477.00	100.0	1.19
448	8201	8204	4.0	440.00	100.0	1.18
15	8303	8304	4.0	305.81	100.0	1.17
454	6801	4403	4.0	292.00	100.0	1.16
165	20003	40003	6.0	1,287.00	110.0	1.16
55	6003	8701	12.0	1,095.00	100.0	1.12
203	66	50	10.0	113.00	140.0	1.11
453	4403	4402	4.0	356.00	100.0	1.11
120	581	602	6.0	297.00	100.0	1.11
61	8804	8901	12.0	186.00	110.0	1.10
506	3002	3003	4.0	642.00	100.0	1.09
503	2203	1804	4.0	1,283.00	100.0	1.09
493	2601	1604	4.0	1,033.00	100.0	1.09
502	1401	2003	4.0	1,285.00	100.0	1.08
112	8403	8202	6.0	232.00	100.0	1.07
551	60004	1106	4.0	153.00	110.0	1.06
31	8600	4301	12.0	251.00	100.0	1.06
146	2803	2603	6.0	361.00	100.0	1.02
419	444	441	4.0	285.00	100.0	1.01
36	3603	3604	12.0	339.00	110.0	1.01
451	4004	4001	4.0	351.00	100.0	1.00
167	8900	9201	6.0	667.00	140.0	1.00
201	64	66	10.0	185.00	140.0	0.99
207	70	64	10.0	421.00	140.0	0.99
433	541	302	4.0	1,306.00	100.0	0.98
25	361	340	12.0	835.00	100.0	0.97
590	301	302	4.0	328.00	100.0	0.96
247	104	106	6.0	2,500.00	120.0	0.95
245	9105	104	6.0	2,700.00	120.0	0.95
5210	106	14	6.0	14.21	130.0	0.95
612	1106	1105	4.0	40.00	110.0	0.94
37	3604	3203	12.0	360.00	110.0	0.93
511	4802	4803	4.0	280.00	100.0	0.91
115	542	541	6.0	336.00	100.0	0.91
430	582	382	4.0	868.00	100.0	0.91
428	461	402	4.0	420.00	100.0	0.90
488	3602	3603	4.0	778.00	100.0	0.90
24	382	361	12.0	327.00	100.0	0.90
22	402	381	12.0	297.00	100.0	0.89
150	1402	20004	6.0	314.00	100.0	0.88

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
429	581	381	4.0	868.00	100.0	0.88
149	1401	1402	6.0	398.00	100.0	0.88
432	562	301	4.0	1,306.00	100.0	0.87
101	3004	5001	10.0	305.00	110.0	0.86
23	381	382	12.0	327.00	100.0	0.86
162	1604	1401	6.0	347.00	100.0	0.84
74	3203	3001	8.0	776.00	110.0	0.83
60	8803	8804	12.0	178.00	110.0	0.81
557	1101	1104	4.0	666.00	100.0	0.79
89	743	764	10.0	333.00	110.0	0.78
431	561	282	4.0	1,306.00	100.0	0.78
187	50	52	10.0	185.00	140.0	0.78
189	52	54	10.0	123.00	140.0	0.78
570	4203	4204	4.0	472.00	100.0	0.77
530	54000	5402	4.0	143.00	100.0	0.77
56	8701	8702	12.0	243.00	100.0	0.75
92	784	783	10.0	319.00	110.0	0.74
452	4402	4004	4.0	335.00	100.0	0.74
580	282	301	4.0	333.00	100.0	0.73
237	96	68	10.0	325.00	140.0	0.73
543	1003	1102	4.0	178.00	100.0	0.73
439	8501	8401	4.0	224.00	100.0	0.72
151	20004	20000	6.0	365.00	100.0	0.72
546	50001	40003	4.0	179.00	100.0	0.72
21	401	402	12.0	330.00	100.0	0.72
119	582	581	6.0	327.00	100.0	0.71
168	9201	9202	6.0	205.00	140.0	0.71
455	6801	6804	4.0	339.00	100.0	0.70
152	20000	20003	6.0	362.00	100.0	0.70
443	8402	8403	4.0	689.00	100.0	0.70
482	4403	4801	4.0	719.00	100.0	0.69
547	1200	5303	4.0	484.00	110.0	0.69
518	5602	5003	4.0	575.00	100.0	0.69
484	4104	4203	4.0	305.00	100.0	0.68
500	1003	20004	4.0	1,269.00	100.0	0.68
508	3603	3404	4.0	733.00	100.0	0.67
171	9204	28	6.0	358.70	130.0	0.67
499	40004	20000	4.0	1,278.00	100.0	0.67
572	54000	8701	6.0	33.00	100.0	0.66
193	56	58	10.0	349.00	140.0	0.65
191	54	56	10.0	118.00	140.0	0.65
501	1402	1004	4.0	1,271.00	100.0	0.65
423	411	422	4.0	154.00	100.0	0.64
421	424	441	4.0	200.00	100.0	0.64
104	9001	9002	10.0	314.00	110.0	0.63
519	5404	5204	4.0	540.00	100.0	0.61
542	1101	1003	4.0	192.00	100.0	0.59

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
457	6803	6802	4.0	566.00	100.0	0.58
509	3604	3803	4.0	734.00	100.0	0.57
516	5404	5403	4.0	345.00	100.0	0.56
190	8705	8701	6.0	267.00	100.0	0.55
485	4203	4201	4.0	342.00	100.0	0.55
116	541	562	6.0	328.00	100.0	0.54
447	8304	8204	4.0	418.00	100.0	0.54
195	58	60	10.0	328.00	140.0	0.53
197	60	640	10.0	100.00	140.0	0.53
645	640	62	10.0	464.00	140.0	0.53
	1	84	20.0	1.00	130.0	0.53
223	1	1	20.0	5.00	150.0	0.53
487	3601	3604	4.0	780.00	100.0	0.52
39	9205	12	6.0	468.98	130.0	0.52
49	12	14	6.0	1,187.34	130.0	0.52
548	1104	1200	4.0	181.00	110.0	0.51
59	8802	8803	12.0	365.00	110.0	0.50
400	8201	8202	4.0	201.00	100.0	0.49
507	3204	3403	4.0	775.00	100.0	0.47
436	532	332	4.0	868.00	100.0	0.46
139	3804	4402	6.0	641.00	100.0	0.45
32	4301	4001	12.0	293.00	100.0	0.45
541	1004	1101	4.0	123.00	100.0	0.45
113	532	530	6.0	146.00	100.0	0.44
75	3001	3004	8.0	626.00	110.0	0.44
73	22	24	6.0	562.44	130.0	0.44
67	18	20	6.0	554.62	130.0	0.44
81	24	28	6.0	240.69	130.0	0.44
65	16	18	6.0	143.67	130.0	0.44
51	14	16	6.0	395.84	130.0	0.44
69	20	22	6.0	489.32	130.0	0.44
550	1105	1103	4.0	174.00	110.0	0.43
169	9202	9203	6.0	1,025.00	140.0	0.43
512	4802	4801	4.0	648.00	100.0	0.42
199	62	70	10.0	257.00	140.0	0.41
434	542	342	4.0	868.00	100.0	0.38
483	4004	4003	4.0	641.00	100.0	0.38
440	8404	8401	4.0	462.00	100.0	0.32
118	561	582	6.0	321.00	100.0	0.31
178	8702	8703	6.0	663.00	100.0	0.30
76	9206	9204	8.0	424.00	140.0	0.30
90	764	763	10.0	328.00	110.0	0.29
123	621	444	6.0	431.00	100.0	0.28
163	10001	20002	6.0	378.00	100.0	0.28
176	9104	9103	6.0	483.00	100.0	0.28
38	3203	3204	12.0	421.00	110.0	0.27
34	4104	4002	12.0	573.00	100.0	0.27

FlexTable: Pipe Table (AF_Water2007.wtg)

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Hazen- Williams C	Velocity (ft/s)
180	8704	8705	6.0	534.00	100.0	0.27
33	4001	4104	12.0	70.00	100.0	0.27
517	5604	5004	4.0	644.00	100.0	0.26
5204	648	382	6.0	1,300.00	100.0	0.26
5202	282	648	6.0	330.00	100.0	0.26
57	8702	8700	12.0	588.00	110.0	0.24
441	8401	8402	4.0	202.00	100.0	0.24
79	28	9205	6.0	540.31	130.0	0.23
140	3804	3803	6.0	308.00	100.0	0.22
102	8700	8805	10.0	1,576.00	110.0	0.22
554	50003	50004	4.0	195.00	110.0	0.20
91	763	784	10.0	336.00	110.0	0.20
141	3803	3404	6.0	341.00	100.0	0.19
481	6802	6801	4.0	564.00	100.0	0.18
552	50005	60004	4.0	181.00	110.0	0.18
523	5204	5402	4.0	349.00	100.0	0.17
510	3404	4802	4.0	349.00	100.0	0.15
142	3404	3403	6.0	357.00	100.0	0.14
170	9203	9204	6.0	1,178.00	140.0	0.14
117	562	561	6.0	333.00	100.0	0.14
751	8805	9206	8.0	1,574.00	110.0	0.14
161	1601	1604	6.0	357.00	100.0	0.10
520	5403	54000	4.0	346.00	100.0	0.08
492	2601	2803	4.0	346.00	100.0	0.07
20	421	401	12.0	1,144.00	110.0	0.07
143	3403	3001	6.0	425.00	100.0	0.07
456	6804	6803	4.0	414.00	100.0	0.06
531	5203	5303	4.0	418.00	100.0	0.05
528	5205	5402	4.0	74.00	100.0	0.04
611	781	782	4.0	319.00	110.0	0.04
58	8700	8802	12.0	446.00	110.0	0.02
179	8703	8704	6.0	153.00	100.0	0.02
416	613	612	4.0	295.00	100.0	0.01
544	1102	40004	4.0	180.00	100.0	0.01
249	106	108	6.0	500.00	120.0	0.00
243	102	96	10.0	657.00	140.0	0.00
647	640	644	6.0	250.00	135.0	0.00
649	644	646	6.0	750.00	135.0	0.00

