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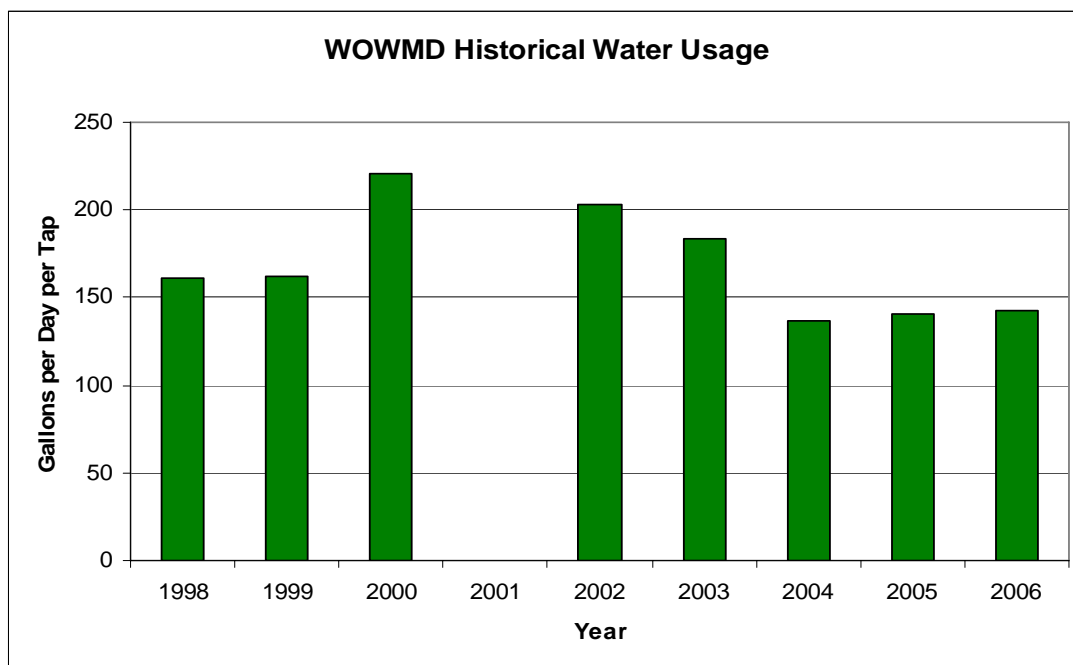
MEMORANDUM

TO	Lane Wyatt, NWCCOG	DATE	October 4, 2006
CC	Tom Eisenman, Park County Planning Steve Groome, Park County Attorney Jeff Kahn, Bernard, Lyons, Gaddis & Kahn James Culichia, Felt, Monson & Culichia, LLC	SUBJECT	WOWMD 1041 Permit Application Supplement, Part 1 - Water Quantity and Quality, Wetlands
FROM	Kelly LaValley	PROJECT NO	05-071.30

This memo serves to address questions and comments that have been raised regarding the 1041 permit application for Will-O-Wisp Metropolitan District dated June 2006.

- l) In regards to questions of water availability in Elk Creek, the following applies to **Section 2-206(5)(a)**.

The average daily demand at build out is 0.3 cfs as stated in the 1041 permit application. This number is derived from an average demand per tap of 280 gallons per day (gpd), which is a conservative number used for design purposes. With the 570 equivalent taps that Tanglewood Reserve (formerly Pine Ridge) will add to the District, the total number of taps served by the District at build-out is 689. Therefore, based on these numbers the average demand is 0.19 million gallons per day (MGD) which is equivalent to 0.3 cfs. However, historical consumption within the District is less than the 280 gpd per tap as shown in Figure 1. The actual average demand per tap in the District is 175 gpd. This equates to 0.12 MGD or 0.19 cfs at build out. The peak demand, which is 1.6 times the average demand based on historical data, is then 0.31 cfs which is a more realistic demand as opposed to the design number of 0.5 cfs.



Historical use data from 2001 is not available.

Figure 1: Historical Water Usage

It is also important to note that the average and peak daily demands as stated above correspond to build-out. At an average of 20 taps per year, it is estimated that build-out would not occur until 2035, as shown in Figure 2 below. The average and peak demands of the District, and thus depletions from Elk Creek, will increase gradually over time.

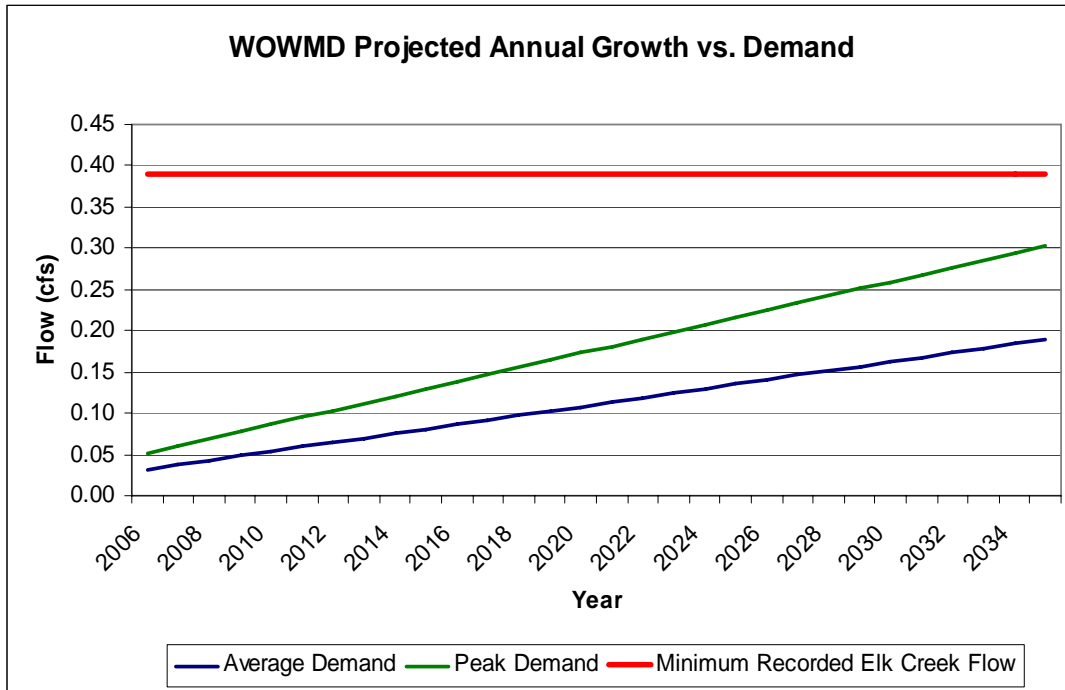


Figure 2: Growth versus Demand

Using the flow monitoring data that was obtained during 2001-2003, Figure 3 shows the remaining flow in Elk Creek after depletions from both the average daily demand and peak demand. This monitoring data is ideal to use to determine worst case scenarios for stream depletions as the year 2001-2002 saw the lowest recorded precipitation in Colorado history.

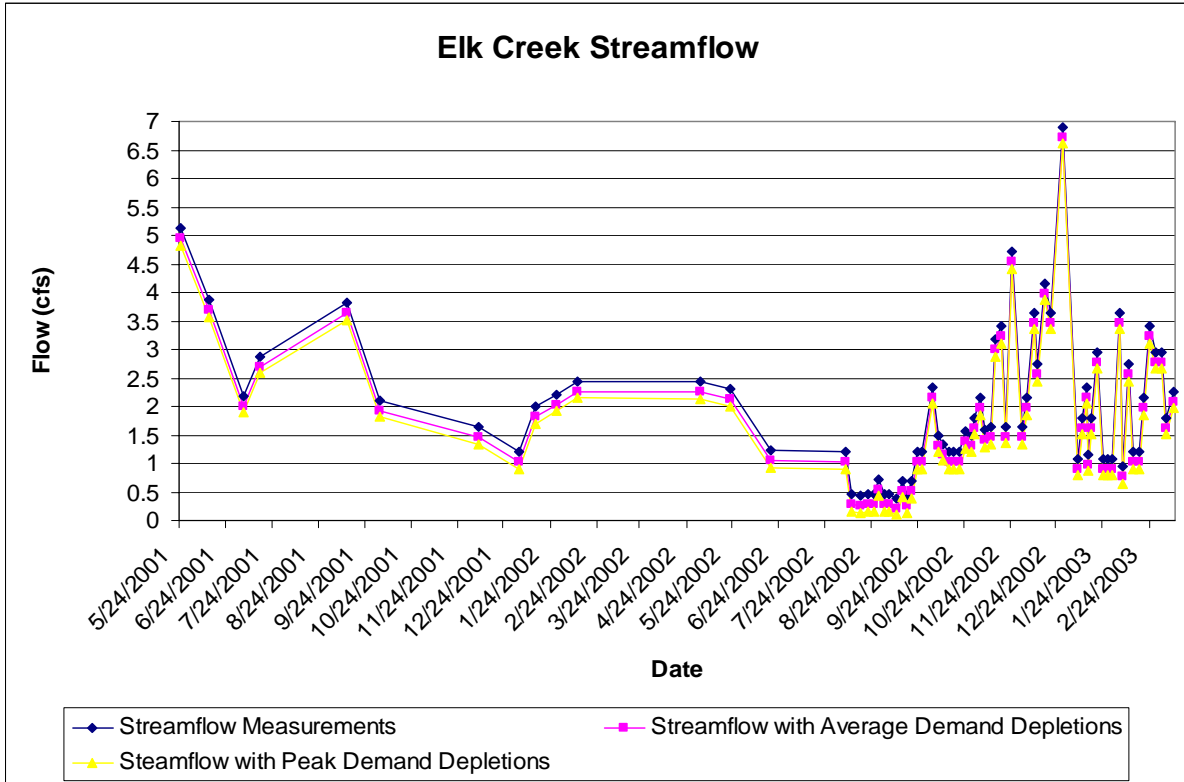


Figure 3: Elk Creek Streamflow at Build-Out (Native, with Average Demand Depletions, and with Peak Demand Depletions)

The minimum remaining streamflow in Elk Creek, if the peak demand is withdrawn, is 0.08 cfs. It is therefore unlikely that at any time the District will be drying the stream, even at build-out peak demands.

If Colorado experiences a drought that is worse than that in 2001-2002, the District can use their existing wells that to supplement the water supply. The District has a total of six wells, four of which are operational, to withdraw up to a maximum of 35 acre-feet annually over a 10 year period. A maximum of 69 acre-feet can be withdrawn in any one year. The District is currently conducting monitoring well studies to develop new well fields within the District to fully utilize their decreed right.

If the District needs to supplement the water supply with the existing and future wells, the demand can be sustained as follows in Table 1.

Demand Condition	Demand (cfs)	Available Days of Well Use @ 35 ac-ft	Available Days of Well Use @ 69 ac-ft
Average	0.19	94 Days	186 Days
Peak	0.31	59 Days	116 Days

Table 1: Available Well Supply

As shown in Table 1, at peak demand conditions, the wells can supplement the Elk Creek raw water supply for nearly two months. If applied to streamflow conditions of

August to September 2002 when Elk Creek flows were at the lowest, the wells could supplement the raw water supply to relieve the demand on Elk Creek as a result of the proposed project.

Flows within Elk Creek will be monitored upstream of the diversion point. This will provide an accurate measurement of streamflows within Elk Creek that the District can use to determine if and when wells need to be used to supplement the raw water supply.

- II) In response to water quality impacts the proposed project has on Elk Creek, the following applies to **Section 2-206(5)(a)(2)(e)**.

It is in the District's interest to protect water quality within the Elk Creek watershed as it is being used as a drinking water source. The more pristine the raw water source is the less complicated treatment methods are required to ensure high quality drinking water.

On average, only 14% of the streamflow at the diversion point will be removed from Elk Creek as shown in Table 2 below. Depletions of this magnitude will have a negligible impact on the level of pollutants in the stream. However, there may be increased levels of pollutants downstream from the diversion due to runoff, leaking leach fields, and other non-point sources during periods of low flow and peak demands.

Date	Year	Flow	Remaining Flow (Average Demand)	Remaining Flow (Peak Demand)	% Removed (Average)	% Removed (Peak)
24-May	2001	5.13	4.95	4.83	3.51%	5.79%
12-Jun	2001	3.86	3.68	3.56	4.67%	7.70%
5-Jul	2001	2.19	2.01	1.89	8.23%	13.57%
16-Jul	2001	2.88	2.70	2.58	6.26%	10.32%
11-Sep	2001	3.82	3.64	3.52	4.72%	7.78%
3-Oct	2001	2.11	1.93	1.81	8.54%	14.09%
7-Dec	2001	1.64	1.46	1.34	10.99%	18.13%
14-Jan	2002	2	1.82	1.70	9.01%	14.86%
28-Jan	2002	2.21	2.03	1.91	8.15%	13.45%
11-Feb	2002	2.44	2.26	2.14	7.38%	12.18%
3-May	2002	2.43	2.25	2.13	7.41%	12.23%
23-May	2002	2.31	2.13	2.01	7.80%	12.87%
18-Jun	2002	1.23	1.05	0.93	14.65%	24.17%
7-Aug	2002	1.2	1.02	0.90	15.01%	24.77%
11-Aug	2002	0.46	0.28	0.16	39.17%	64.62%
17-Aug	2002	0.43	0.25	0.13	41.90%	69.13%
22-Aug	2002	0.46	0.28	0.16	39.17%	64.62%
26-Aug	2002	0.46	0.28	0.16	39.17%	64.62%
29-Aug	2002	0.73	0.55	0.43	24.68%	40.72%
2-Sep	2002	0.46	0.28	0.16	39.17%	64.62%
5-Sep	2002	0.46	0.28	0.16	39.17%	64.62%
9-Sep	2002	0.39	0.21	0.09	46.19%	76.22%
13-Sep	2002	0.7	0.52	0.40	25.74%	42.47%
16-Sep	2002	0.43	0.25	0.13	41.90%	69.13%
19-Sep	2002	0.69	0.51	0.39	26.11%	43.08%
23-Sep	2002	1.2	1.02	0.90	15.01%	24.77%

26-Sep	2002	1.2	1.02	0.90	15.01%	24.77%
3-Oct	2002	2.34	2.16	2.04	7.70%	12.70%
7-Oct	2002	1.49	1.31	1.19	12.09%	19.95%
10-Oct	2002	1.34	1.16	1.04	13.44%	22.18%
14-Oct	2002	1.2	1.02	0.90	15.01%	24.77%
17-Oct	2002	1.2	1.02	0.90	15.01%	24.77%
21-Oct	2002	1.2	1.02	0.90	15.01%	24.77%
25-Oct	2002	1.56	1.38	1.26	11.55%	19.06%
29-Oct	2002	1.49	1.31	1.19	12.09%	19.95%
31-Oct	2002	1.8	1.62	1.50	10.01%	16.51%
4-Nov	2002	2.15	1.97	1.85	8.38%	13.83%
7-Nov	2002	1.59	1.41	1.29	11.33%	18.70%
11-Nov	2002	1.64	1.46	1.34	10.99%	18.13%
14-Nov	2002	3.18	3.00	2.88	5.67%	9.35%
18-Nov	2002	3.41	3.23	3.11	5.28%	8.72%
21-Nov	2002	1.65	1.47	1.35	10.92%	18.02%
25-Nov	2002	4.71	4.53	4.41	3.83%	6.31%
2-Dec	2002	1.64	1.46	1.34	10.99%	18.13%
5-Dec	2002	2.15	1.97	1.85	8.38%	13.83%
9-Dec	2002	3.65	3.47	3.35	4.94%	8.14%
11-Dec	2002	2.74	2.56	2.44	6.58%	10.85%
16-Dec	2002	4.16	3.98	3.86	4.33%	7.15%
20-Dec	2002	3.65	3.47	3.35	4.94%	8.14%
28-Dec	2002	6.91	6.73	6.61	2.61%	4.30%
3-Jan	2003	1.2	1.02	0.90	15.01%	24.77%
7-Jan	2003	1.08	0.90	0.78	16.68%	27.52%
10-Jan	2003	1.8	1.62	1.50	10.01%	16.51%
13-Jan	2003	2.34	2.16	2.04	7.70%	12.70%
14-Jan	2003	1.16	0.98	0.86	15.53%	25.63%
16-Jan	2003	1.8	1.62	1.50	10.01%	16.51%
20-Jan	2003	2.96	2.78	2.66	6.09%	10.04%
24-Jan	2003	1.08	0.90	0.78	16.68%	27.52%
27-Jan	2003	1.08	0.90	0.78	16.68%	27.52%
30-Jan	2003	1.08	0.90	0.78	16.68%	27.52%
4-Feb	2003	3.65	3.47	3.35	4.94%	8.14%
6-Feb	2003	0.95	0.77	0.65	18.96%	31.29%
10-Feb	2003	2.74	2.56	2.44	6.58%	10.85%
13-Feb	2003	1.2	1.02	0.90	15.01%	24.77%
17-Feb	2003	1.2	1.02	0.90	15.01%	24.77%
20-Feb	2003	2.15	1.97	1.85	8.38%	13.83%
24-Feb	2003	3.41	3.23	3.11	5.28%	8.72%
28-Feb	2003	2.96	2.78	2.66	6.09%	10.04%
4-Mar	2003	2.96	2.78	2.66	6.09%	10.04%
7-Mar	2003	1.8	1.62	1.50	10.01%	16.51%
12-Mar	2003	2.26	2.08	1.96	7.97%	13.15%
AVERAGE					14.02%	23.13%

Table 2: Streamflow Depletions

In situations where streamflows are low and depletions to Elk Creek have a greater impact on the levels of pollutants downstream of the diversion, the stream will be sampled both upstream and downstream of the diversion to monitor water quality. Typical water quality parameters of interest for drinking water treatment will be tested for. These include: turbidity, total suspended solids, total dissolved solids, alkalinity, pH, temperature, and color. These parameters are routinely monitored at the diversion for operation of the water treatment plant and will be monitored downstream of the diversion as necessary in low flow conditions.

The results of the water quality monitoring will dictate if any mitigation is necessary to protect the Elk Creek watershed. If it is deemed that the proposed project is negatively impacting the water quality, the following mitigation measures may be implemented to protect the watershed.

- Improving riparian areas
- Reducing erosion and sedimentation
- Channel restoration
- Streambank stabilization

The exact method for mitigation will be determined by the pollutants of concern and the feasibility of each method at the required locations.

III) In response to questions about wetlands mitigation, the following applies to **Section 2-206(5)(c)(3)**.

Wetlands surrounding Elk Creek will be impacted by the proposed project as described in Section 2-206(5)(c)(3). In addition to the proposed mitigation recommended by the Army Corps of Engineers, additional measures will be implemented to comply with Park County land use codes.

At the diversion and pumping station site, there is little room to create additional wetlands to make up for the minimal loss of wetlands due to the proposed project. Potential mitigation areas on site either are existing wetlands or are areas in which water does not exist thereby preventing the existence of wetlands.

The District does have several ponds along Wisp Creek, upstream of the existing wastewater treatment plant, that are within District boundaries which are suitable for wetlands. The exact location will be determined based on which site has the best potential to support wetlands. Wetlands will improve water quality in Wisp Creek, create additional wildlife habitats, and improve the visual quality of the area.

The creation of a fish habitat was examined to improve the quality of Elk Creek. This will also aid in minimizing the impacts of low flows on aquatic species in the creek. This option will require the cooperation of adjacent property owners. If agreeable to adjacent property owners, riffles and pools will be created in Elk Creek downstream of the diversion. Several methods can be used to create pools including a log wedge, check dam, and bank cover.

If adjacent property owners are not agreeable to creating a fish habitat in Elk Creek, another potential mitigation method is to improve fish habitat within Park County through the Tarryall Creek Fish Habitat Improvement project. Funds will be donated to the project which has been working with private and public land owners over the past four years to restore areas of Tarryall Creek, Four-Mile Creek, and the Middle Fork of the South Platte River. An exact donation amount would be agreed upon by both the District and the improvement project coordinators based on the magnitude of degradation of the proposed diversion.