



**J&K, INC.**

**EAGLE RIVER STATION  
PUD PRELIMINARY PLAN  
WATER AND SEWER IMPACT REPORT**

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May 5, 2011

I hereby certify that this report was prepared by me or under my  
Supervision and that I am a duly Registered Engineer under the laws of the  
State of Colorado.

ENGINEER  
J&K, Inc.  
P.O. Box 409  
1286 Chambers Avenue

Eagle, CO 81631

Job No. 11016  
**EAGLE RIVER STATION  
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Water and Sewer Volume Estimates

The proposed Eagle River Station Development will have approximately 732,500 sq. ft. of commercial space, approximately 550 multifamily residential units, and miscellaneous additional uses as listed below. This report also contemplates future possible development on adjacent lands. The development will also include a non-potable irrigation system. A rough estimate of domestic water and sewer volumes is summarized below.

Eagle River Station

Use Description	Average Daily Use (domestic) (gpd/unit)	Average Daily Demand, ADD (gpd)	Peak Day Demand PDD = 1.6 x ADD (gpd)
627,000 sq. ft. Retail	250	156,750	250,800
75,500 sq. ft. Restaurant	1500	113,250	181,200
30,000 sq. ft. Grocery	425	12,750	20,400
550 multifamily residential	275	151,250	242,000
<b>Total System</b>		434,000	694,400

Future Possible Development

Use Description	Average Daily Use (domestic) (gpd/unit)	Average Daily Demand, ADD (gpd)	Peak Day Demand
100 thousand sq. ft. Retail	250	25,000	40,000
58 SF residential Potable Irrigation	350	20,300	81,200
Total		45,300	121,200
Grand Total ERS Plus Future		479,300	815,600

## **Proposed Extension to the Town Water System**

A schematic design of the proposed expansion of the Eagle water and sewer systems are shown on the drawings attached to this report. The proposed Eagle River Station PUD site is located on gently sloping terrain directly east of the existing Eagle Valley Commercial Park. The 10" main in Chambers avenue will be extended into the PUD with a 12 pipe size. A new water tank will be constructed at a base elevation of 6870 ft. A Pump station will be required to boost water to the proposed water tank site. The pump station should be designed with a firm capacity (capacity with one pump not working) of approximately 810,000 gallons per day, and a total capacity of at least 1,215,000 gallons per day which requires 3 pumps operating at 282 gallons per minute.

## **Fire Protection**

Fire flows are based on the requirements of the Uniform Fire Code of 3500 gallons per minute for 3 hours. The results of a waterCAD simulation are attached to the end of this report. Hydrants should be installed at intervals of no more than 350 feet along all roads and access ways adjacent to structures. The hydraulic model accurately portrays all design elements within the ERS development upstream of pump station No. 2 as shown on the attached schematic. All ERS hydrants will comply with the minimum fire flow requirement of 3500 gpm (see the attached hydrant report).

The town's engineer is preparing a model of the overall system including an extended time step analysis to determine the impact on the overall system. Our analysis shows significant improvement to the available fire flow for the western end of Chambers Avenue can be achieved with offsite improvements along Chambers Avenue.

## **Water Storage**

The proposed storage is based on the following:

Fire Flow:	3 hours at 3500 gpm	630,000 gal
Emergency:	50% of PDD	407,800 gal
Equalization:	30% of PDD	244,680 gal
Total		1,282,480 gal

A tank volume of approximately 1.3 million gallons should be sufficient for proposed and future use. Possible Future Development accounts for 15% of the required volume or 193,000 gallons.

## **Proposed Extension of the Town of Eagle Sewer System**

A previous report for the Red Mountain Ranch Development by Nolte and Associates "Red Mountain Ranch Final Utility Study" concluded that the existing sewer mains

consisting of 8" and 10" mains from The Eagle Valley Commercial Park to the existing pump station opposite the Fairgrounds are already at or beyond design capacity. The existing mains will therefore need to be upsized or new parallel mains installed. The Town's wastewater treatment plant and pump station have been upgraded to meet future capacity.

Based on recommendation in a report by Arbor and Associates performed for the Town of Eagle, The Sewer Main through the Fairgrounds will be upsized to 18" and the Sewer Main from the connection to the Eby Creek outfall to ERS will be upsized to 15".