

# Memorandum

**To:** BWCD BOARD OF DIRECTORS  
**From:** ERIC MANGEOT *ERM*  
**CC:** CHRIS GEIGER  
**Date:** MAY 11, 2016  
**File:** APPLICATION – ROARING FORK WATER & SANITATION DISTRICT (RFWSD)

**Applicant Name:** Roaring Fork Water & Sanitation District (Service of Eastbank School)

**Type of Use:** Domestic  Commercial   
 Industrial  Agricultural

**Amount:** 2.0 AF  cfs  gpm (no direct flow rights sought for this application)

**Location:** Area A A-4 Area B  Inclusion   
 County: GARFIELD Contiguous:   
 BWCD Division: 1

**Mid Valley Metro District Notice Required?** Yes  No

**Blue Creek Water Rights Applied?** Yes  No

**02CW77 Umbrella Plan Water Rights Applied?** Yes  No  **Cost:** \$3,000

This application is to cover depletions associated with the new Eastbank School (with cafeteria and gym) located near the intersection of Highway 82 and County Road 154, in Garfield County between the City of Glenwood Springs and the Town of Carbondale (Parcel No. 21853530060) as shown on Figure 1. The school is anticipated to serve up to 542 students and staff, and have a cafeteria, gym with showers, and irrigation of up to one-half acre. The school will receive its potable water supply and sanitary sewer service from the Roaring Fork Water & Sanitation District (RFWSD; Applicant) per an agreement with the Roaring Fork RE-1 School District.

Each student and staff is estimated to divert 30 gallons per person per day as estimated by the Applicant's engineer. Based on the RFWSD rules and regulations, this equates to approximately 32 EQRs. The Applicant's engineer also provided a consumptive use analysis for the proposed irrigation and a Glover analysis for the lagged irrigation return flows. Total depletions, including irrigation, are 2.0 acre-feet (AF) as shown on the attached tables.

Diversions are to be from the Aspen Glen Wells Nos. 2 – 4 as follows:

- Aspen Glen Well No. 2 (Permit Nos. 79537-F, 61405-F, and 59215-F) located in the NW1/4 NE1/4 of Section 29, Township 7 South, Range 88 West, of the 6<sup>th</sup> P.M. at a point 768 feet from the North section line and 2,200 feet from the East section line.
- Aspen Glen Well No. 3 (Permit Nos. 79538-F, 61406-F, and 46930-F) located in the NW1/4 NE1/4 of Section 29, Township 7 South, Range 88 West, of the 6<sup>th</sup> P.M. at a point 508 feet from the North section line and

1,784 feet from the East section line.

- Aspen Glen Well No. 4 (Permit Nos. 79539-F, 61407-F, and 59214-F) located in the NW1/4 NW1/4 of Section 29, Township 7 South, Range 88 West, of the 6<sup>th</sup> P.M. at a point 788 feet from the North section line and 2,462 feet from the East section line.

Thompson Glen Ditch water rights will be used to irrigate lawns and ball fields associated with the new school.

Water User :	Roaring Fork Water & San. District
Analysis Date :	May 11, 2016
District Area:	A
Source Series:	4
Maximum Demand:	--- (GPM) (CFS)

**BASALT WATER CONSERVANCY DISTRICT  
WATER REQUIREMENTS**  
(acre feet)

Month	Total Demand				Consumptive Use					(12)* TOTAL	(13) Source of Aug/Replace		
	(1) Domestic In-house	(2) Commercial or Other	(3) Irrigation	(4) Crop Irrigation	(5) Livestock	(6) TOTAL	(7) Domestic In-house	(8) Commercial or Other	(9) Delayed Irrigation			(10) Crop Irrigation	(11) Livestock
January	0.00	1.55	0.00	0.00	0.00	1.55	0.00	0.08	0.00	0.00	0.00	0.09	GNM
February	0.00	1.40	0.00	0.00	0.00	1.40	0.00	0.07	0.00	0.00	0.00	0.08	GNM
March	0.00	1.55	0.00	0.00	0.00	1.55	0.00	0.08	0.00	0.00	0.00	0.09	GNM
April	0.00	1.50	0.00	0.00	0.00	1.50	0.00	0.07	0.00	0.00	0.00	0.08	GNM
May	0.00	1.55	0.18	0.00	0.00	1.73	0.00	0.08	0.17	0.00	0.00	0.27	GNM
June	0.00	0.75	0.26	0.00	0.00	1.01	0.00	0.04	0.23	0.00	0.00	0.29	GNM
July	0.00	0.77	0.29	0.00	0.00	1.06	0.00	0.04	0.24	0.00	0.00	0.31	GNM
August	0.00	0.77	0.22	0.00	0.00	0.99	0.00	0.04	0.18	0.00	0.00	0.24	GNM
September	0.00	1.50	0.15	0.00	0.00	1.65	0.00	0.07	0.10	0.00	0.00	0.19	GNM
October	0.00	1.55	0.08	0.00	0.00	1.63	0.00	0.08	0.05	0.00	0.00	0.14	GNM
November	0.00	1.50	0.00	0.00	0.00	1.50	0.00	0.07	-0.02	0.00	0.00	0.06	GNM
December	0.00	1.55	0.00	0.00	0.00	1.55	0.00	0.08	-0.01	0.00	0.00	0.08	GNM
<b>TOTALS --&gt;</b>	<b>0.00</b>	<b>15.92</b>	<b>1.18</b>	<b>0.00</b>	<b>0.00</b>	<b>17.10</b>	<b>0.00</b>	<b>0.80</b>	<b>0.94</b>	<b>0.00</b>	<b>0.00</b>	<b>1.92</b>	

**Assumptions**

(1)	NUMBER OF RESIDENCES	0	(5)	# of Livestock @ 11 gals/day	0	Area A-4
	# persons/residence	3.5	(7)	% CU for Domestic/Commercial	5	Multiple Type A Wells
	# gallons/person/day	100	(9)	% Lawn Irrig. Efficiency	80	(irrigation lagged)
(2)	Commercial/Other Demand (af)	0.000	(10)	% Crop Irrig. Efficiency	1.890	Roaring Fork River
	In-School Demand 542 students/staff @ 30 gppd.			Consumption of Irrig. (af/ac)		
(3)	Sq. Ft. of Lawn Irrigated	21,780	(9-10)	% Crop Irrig. Efficiency	80	
	Lawn Application Rate (af/ac)	2.363		Consumption of Irrig. (af/ac)	0.000	
(4)	Acres of Crop Irrigated	0.00		Elevation (feet)	5950	
	Crop Application Rate (af/ac)	0.000				

\* (6) (12) Total Includes 5% Transit Loss  
10% from Green Mtn.

**TABLE 1**  
**RE-1 East Bank School Proposed Water Demand Requiring Augmentation**

*All Values are in Acre-Feet*

Month	Total Demand			Consumptive Use			Delayed Depletions		
	(1) In-School	(2) Irrigation	(3) Total	(4) In-School	(5) Irrigation	(6) Total	(7) In-School	(8) Irrigation Depletions with Delayed Return Flows	(9) Total
January	1.55		1.55	0.08		0.08	0.08	0.00	0.08
February	1.40		1.40	0.07		0.07	0.07	0.00	0.08
March	1.55		1.55	0.08		0.08	0.08	0.00	0.09
April	1.50		1.50	0.07		0.07	0.07	0.00	0.08
May	1.55	0.18	1.72	0.08	0.14	0.22	0.08	0.17	0.27
June	0.75	0.26	1.01	0.04	0.21	0.25	0.04	0.23	0.30
July	0.77	0.29	1.06	0.04	0.23	0.27	0.04	0.24	0.31
August	0.77	0.22	1.00	0.04	0.18	0.22	0.04	0.18	0.24
September	1.50	0.15	1.65	0.07	0.12	0.19	0.07	0.10	0.20
October	1.55	0.08	1.63	0.08	0.07	0.14	0.08	0.05	0.14
November	1.50		1.50	0.07		0.07	0.07	-0.02	0.06
December	1.55		1.55	0.08		0.08	0.08	-0.01	0.08
<b>Totals</b>	<b>15.92</b>	<b>1.18</b>	<b>17.10</b>	<b>0.80</b>	<b>0.95</b>	<b>1.74</b>	<b>0.80</b>	<b>0.95</b>	<b>1.92</b>

Delayed Return Flows

Month	Percent returned
1	26%
2	38%
3	19%
4	11%
5	6%
<b>Total</b>	<b>100%</b>

(1)	# students & staff	542
	# gallons/person/day	30
	* Assumed half occupancy June-August	
(2)	Sq. Ft of Lawn Irrigated	21780
	Lawn Application Rate (af/ac)	2.36
(3)	Sum of Columns (1) & (2)	
(4)	% CU for Domestic/Commercial	5%
(5)	% Lawn Irrig. Efficiency	80%
	Consumption of Irrig (af/ac)	1.89
(6)	Sum of Columns (4) & (5)	
(7)	* No delayed depletions from Aspen Glen Wells Equals column (4)	
(8)	First Month = (2) <sub>1</sub> - [(2) <sub>1</sub> - (5) <sub>1</sub> ] * Delayed Return Flow <sub>1</sub> + (2) <sub>2</sub> - [(2) <sub>2</sub> - (5) <sub>2</sub> ] * Delayed Return Flow <sub>2</sub> + .....	
	* Negative values represent contributing return flows	
(9)	Sum of Columns (7) & (8) includes 10% Transit Loss	

**EXHIBIT A**  
**RFWSD - EastBank School**  
**Irrigation Consumptive Use Analysis**

Crop Consumptive Use Estimate, Modified Blaney-Criddle methodology (S.C.S. Technical Release 21)  
 Crop = BLUEGRASS (utilizes Pochop Borelli & Burman's temperature and growth stage coefficients and elevation factors)

Climate Data source: Glenwood Springs #2

	Month #	Day #	Date	Month	Temp (°F)	Precip. (in.)	Temp (°F)	Precip. (in.)
Start of Growing Season =	5	1	121	Jan	24.4	1.5	23.6	1.77
End of Growing Season =	10	31	304	Feb	29.7	1.3	28.9	1.52
Season Length (inclusive) =	184 days			Mar	37.9	1.4	37.1	1.72
Latitude (deg.min) =	39.29			Apr	46.4	1.6	45.6	1.97
	39.48 Decimal Degrees			May	55.2	1.4	54.5	1.72
Depth of Application (in) =	3			Jun	63.2	1.1	62.5	1.34
Elevation (ft) =	5950			Jul	69.6	1.3	68.9	1.52
Elevation Factor =	1.04 (+2.865% per 1,000 ft above 4,429 ft)			Aug	67.8	1.5	67.1	1.79
Station Elevation =	5750			Sep	60.1	1.6	59.4	1.93
Temperature Adjustment =	0.72 °F			Oct	49.2	1.5	48.4	1.76
	Temp Adj. @ 3.6 °F/1000f			Nov	36.1	1.2	35.4	1.40
				Dec	25.9	1.3	25.1	1.57
				Annual	47.1	16.6	46.4	20.00

Growing Period	Avg. Period Temp (°F)	% Daylight	(t*p)/100	Kt	Growth Stage Coefficient Kc	Consumptive Crop Demand (in.)	Period Precip. (in.)	Period Effective Precip. (in.)	Consumptive Irrigation Requirement (in.)	Consumptive Irrigation Requirement (ft.)
Jan										
Feb										
Mar										
Apr					0.97					
May	54.5	10.00	5.45	0.83	1.00	4.71	1.72	1.29	3.42	0.28
Jun	62.5	10.01	6.25	0.86	1.10	6.14	1.34	1.11	5.03	0.42
Jul	68.9	10.18	7.01	0.88	1.06	6.79	1.52	1.29	5.50	0.46
Aug	67.1	9.55	6.41	0.87	0.98	5.70	1.79	1.42	4.28	0.36
Sep	59.4	8.37	4.97	0.84	0.97	4.25	1.93	1.40	2.85	0.24
Oct	48.4	7.69	3.73	0.81	0.89	2.80	1.76	1.19	1.61	0.13
Nov										
Dec										
Annual						30.39	10.05	7.70	22.69	1.89

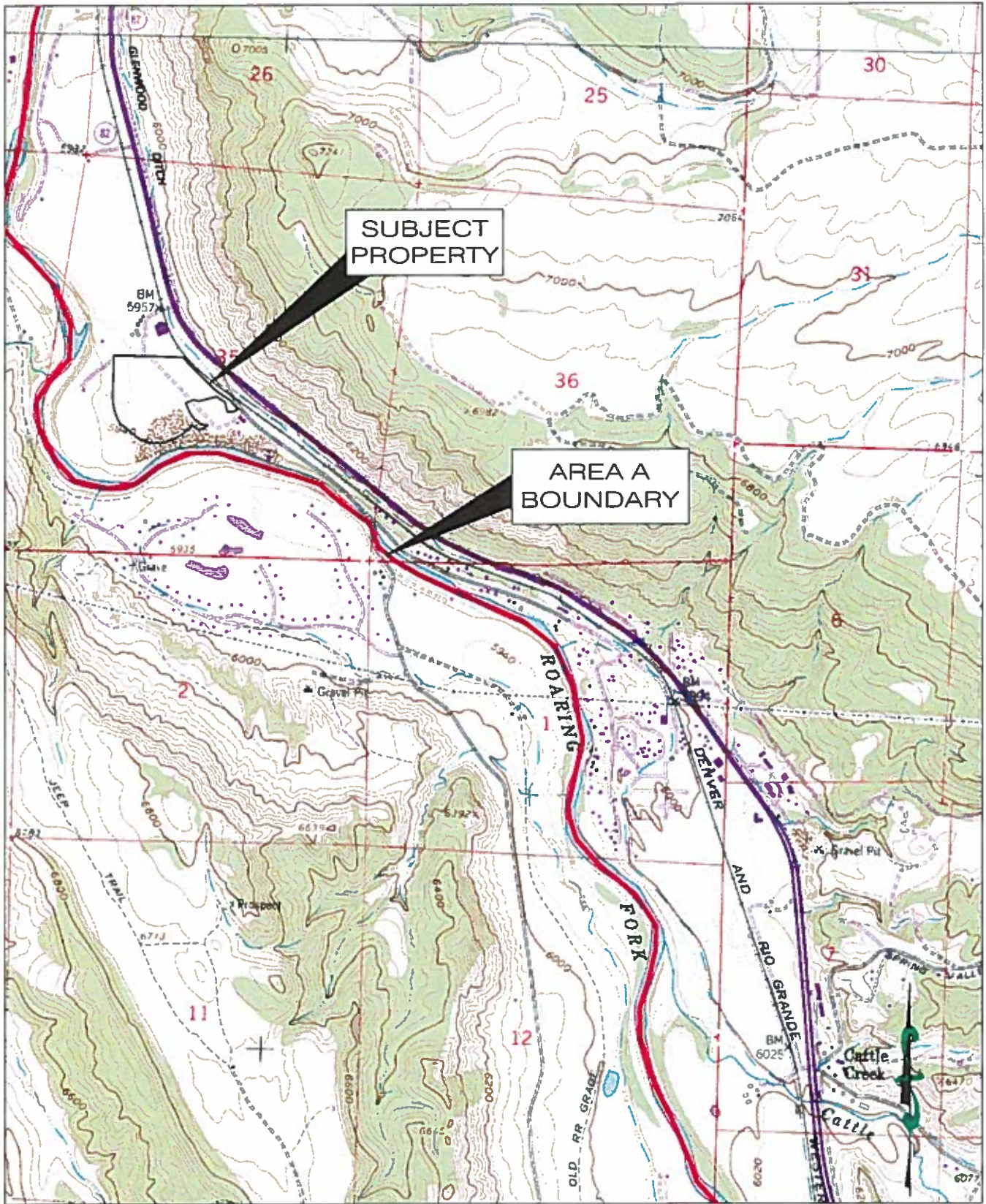


Figure 1: Roaring Fork Water & San. District  
for service of East Bank School

Basalt Water Conservancy District

File: 033-7.2  
Date: 05/02/2018



Scale: 1"=2,000'

**RESOURCE**  
ENGINEERING, INC.

908 Colorado Avenue  
Glenwood Springs, CO 81801  
(970) 945-8777 Voice 945-1137 Facsimile

**APPLICATION FOR WATER ALLOTMENT CONTRACT  
BASALT WATER CONSERVANCY DISTRICT**

1. Applicant(s) Contact Information

- a. Name: Roaring Fork Water & Sanitation District
- b. Mailing Address: P.O. Box 1002, Glenwood Springs, CO 81602
- c. Street Address: 3790 County Road 109, Carbondale, CO 81623
- d. Telephone Numbers: 970-945-2144
- e. Email Address: info@rfwsd.com
- f. If Applicant is represented by an Attorney, please provide the Attorney's contact information, including name, address, telephone, and email:

Scott Grosscup, Balcomb & Green, P.C., P.O. Drawer 790, Glenwood Springs CO, 81602, 970-945-6546

sgrosscup@balcombgreen.com

- g. Emergency Local Contact Information, including name, address, telephone, and email:

Environmental Process Control, 326 Hwy. 133, Suite 200D, Carbondale, CO 81623, 970-963-8393

alan@environmentalprocesscontrol.com

- h. Contact Information of property manager, caretaker, irrigator, system operator, or agent who should be provided a copy of this contract, including name, address, telephone, and email:

Same as 1.f., above.

2. Type of land use (development) proposed for water allotment contract (i.e. single family home, subdivision, gravel pit, etc.):

This water allotment contract is to serve the new Eastbank School, located near the intersection of Highway 82 and County Road 154, in Garfield County between the City of Glenwood Springs and Town of Carbondale. The school is anticipated to serve up to 550 students and staff, and have a cafeteria with gymnasium with showers, and irrigation of up to one-half acre. The property will be receive potable water supply and sanitary sewer service from the Roaring Fork Water & Sanitation District. Anticipated demands and consumptive use associated with the new school are shown in Table 1, attached.

3. Legal description and address of property on which District's water rights and/or contract water will be used (attach map and vesting deed with proof of ownership)\*:

The property is located in Section 35, Township 6 South, Range 89 West of the 6<sup>th</sup> P.M. and is described by the Garfield County Assessor as parcel number 21853530060. The Roaring Fork Water & Sanitation District and Roaring Fork RE-1 School District have entered into an agreement to provide potable water and sanitary sewer services to the Eastbank School.

4. Elevation of property:   x   6-7,000 ft.,          7-8,000 ft.,          8-9,000 ft.

5. Name and legal description of water supply diversion point(s): This water allotment contract will apply to three wells owned and operated by the Roaring Fork Water & Sanitation District described as the Aspen Glen Wells No. 2, 3, and 4.

Name of Diversion. Aspen Glen Well No. 2

Type of Diversion Well

Legal Description: NW Quarter, NW Quarter, Section 29, Township 7 S, Range 88 W, of the 6<sup>th</sup> Principal Meridian, at a location 768 feet from the North Section line and 2200 feet from the East Section line.



UTM Coordinates (NAD 83):

Northing: \_\_\_\_\_.

Easting: \_\_\_\_\_.

\_\_\_\_\_ Zone 12 / \_\_\_\_\_ Zone 13.

If diversion point is a well, please provide the Well Permits No. 79537-F, 61405-F, and 59215-F.

Is the well operational/active?  Yes, \_\_\_\_\_ No

Is there currently an operating well meter?  Yes, \_\_\_\_\_ No

Name of Diversion. Aspen Glen Well No. 3

Type of Diversion Well

Legal Description: NW Quarter, NE Quarter, Section 29, Township 7 S, Range 88 W, of the 6<sup>th</sup> Principal Meridian, at a location 508 feet from the North Section line and 1784 feet from the East Section line.

UTM Coordinates (NAD 83):

Northing: \_\_\_\_\_.

Easting: \_\_\_\_\_.

\_\_\_\_\_ Zone 12 / \_\_\_\_\_ Zone 13.

If diversion point is a well, please provide the Well Permits No. 79538-F, 61406-F, and 46930-F.

Is the well operational/active?  Yes, \_\_\_\_\_ No

Is there currently an operating well meter?  Yes, \_\_\_\_\_ No

Name of Diversion. Aspen Glen Well No. 4

Type of Diversion Well

Legal Description: NW Quarter, NE Quarter, Section 29, Township 7 S, Range 88 W, of the 6<sup>th</sup> Principal Meridian, at a location 788 feet from the North Section line and 2462 feet from the East Section line.

UTM Coordinates (NAD 83):

Northing: \_\_\_\_\_.

Easting: \_\_\_\_\_.

\_\_\_\_\_ Zone 12 / \_\_\_\_\_ Zone 13.

If diversion point is a well, please provide the Well Permits No. 79539-F, 61407-F, and 59214-F.

Is the well operational/active?  Yes, \_\_\_\_\_ No

Is there currently an operating well meter?  Yes, \_\_\_\_\_ No

Notice: A valid well permit with operating well meter will be required under the contract.

6. Legal Water Supply: (please check one)

Applicant requests consideration by the District to be included in the District's Umbrella Plan for Augmentation decreed in Case No. 02CW77.\*

\*Note: Certain applicants may qualify to be included in the District's Umbrella Plan at the District's discretion. In order to be included in the District's Umbrella Plan, the Applicant's depletions must occur within the District's defined "Area A" and the Applicant must reimburse the District its *pro rata* share of the District's expenses in obtaining the Umbrella Plan decree. Costs of reimbursement are contingent upon location and intensity of the uses, and range from \$1,200 for contractees with less than 2 units (EQRs) in certain areas, to \$5,000 for more than 8 EQRs in Area A-3 (generally the Roaring Fork drainage above its confluence with the Frypan Rivers).

\_\_\_\_\_ Applicant will obtain its own plan for augmentation by applying to the Water Court, Water Division 5 within 2 years of this application. If Applicant

has already applied for its own change/approval of plan for augmentation, the Water Court Case Number is: \_\_\_\_\_.

7. Proposed waste water treatment system: (please check)

- Tap to central waste water treatment facility
- Septic tank/leachfield system
- Evapotranspiration system
- Other:

8. Proposed use of water (please check)

- Domestic/Municipal (single family home(s), duplex(s), condominium(s), mobile home(s), apartment). Please complete page four of this application.
- Commercial (hotel, office, warehouse, restaurant, bar, retail). Please complete page five of this application.
- Industrial (gravel pit, manufacturing). Please complete page six of this application.
- Agricultural (crop irrigation, stock watering). Please complete page seven of this application.

Date on which the county or other applicable governmental entities approved the land use for which you seek legal water service: \_\_\_\_\_. (Note: Copy of the Resolution of other documentation evidencing such approval should be submitted with application.)

9. What other water rights are associated with or used on the property?

27 shares of stock in and to the Thompson Glen Ditch Company

10. What other uses of water occur on the property?

It is anticipated that the Thomson Glen Ditch water rights will be used to irrigate lawns and ball fields associated with the new school.

Please complete the section below if you selected domestic/municipal use on Page 3,  
No. 8

DOMESTIC/MUNICIPAL WATER USES

In-House

Single family residential home(s) Number of Units: \_\_\_\_\_

Duplex(s) Number of Units: \_\_\_\_\_

Condominium(s) Number of Units: \_\_\_\_\_

Apartment(s) Number of Units/Rooms: \_\_\_\_\_

Mobile Home(s) Number of Units: \_\_\_\_\_

Irrigation (lawns, parks, open space)

Total area to be irrigated 21,780 Sq. Ft. or 0.5 Acres

Type of irrigation system (please check)

    X     Sprinkler

           Flood (irrigation ditch)

Domestic stock watering (cattle, horses)

Number of animals:     N/A    

Period of use (months):

Other domestic/municipal uses not listed:

Water will be used within a school with cafeteria and gym serving approximately 542 students and staff, each using 30 gallons per person per day. Based

on the RFWSD rules and regulations, this equals approximately 32 EQRs (3 EQRs per 50 students and staff for schools with gym and cafeteria). Wastewater treatment will be provided through the RFWSD's water treatment facility. Attached as Table 1 is the proposed calculations of water demand requiring augmentation. Exhibit A is the irrigation water demands.

Please complete this page if you selected commercial use on Page 3, No. 8

COMMERCIAL WATER USES

In-House

Hotel: \_\_\_\_\_

Office(s), square footage: \_\_\_\_\_

Warehouse/distributor, square footage: \_\_\_\_\_

Retail, square footage: \_\_\_\_\_

Restaurant, number of seats: \_\_\_\_\_

Bar, number of seats: \_\_\_\_\_

Irrigation (lawns, parks, open space)

Total area to be irrigated \_\_\_\_\_ Sq. Ft. or \_\_\_\_\_ Acres

Type of irrigation system (please check)

\_\_\_\_\_ Sprinkler

\_\_\_\_\_ Flood (irrigation ditch)

Other Commercial Uses Not Listed:

Please complete this page if you selected industrial use on Page 3, No. 8

### INDUSTRIAL WATER USES

Please describe your industrial development in some detail:

Irrigation (lawns, parks, open space)

Total area to be irrigated \_\_\_\_\_ Sq. Ft. or \_\_\_\_\_ Acres

Type of irrigation system (please check)

\_\_\_\_\_ Sprinkler  
\_\_\_\_\_ Flood (irrigation ditch)

Please complete this page if you selected agricultural use on Page 3, No. 8.

### AGRICULTURAL WATER USE

#### Irrigation

Type of crop(s) (pasture, alfalfa, beans, etc.) and irrigation system:

Crop: \_\_\_\_\_ Acres: \_\_\_\_\_ Sprinkler: \_\_\_\_\_ Flood:

Crop: \_\_\_\_\_ Acres: \_\_\_\_\_ Sprinkler: \_\_\_\_\_ Flood:

Crop: \_\_\_\_\_ Acres: \_\_\_\_\_ Sprinkler: \_\_\_\_\_ Flood:

Crop: \_\_\_\_\_ Acres: \_\_\_\_\_ Sprinkler: \_\_\_\_\_ Flood:

#### Stock Watering (cattle, horses)

Number of animals:

Months of use:

#### Other agricultural uses not listed:



