ENVIRONMENTAL ASSESSMENT

Prepared for

Baca Grande Water & Sanitation District
Saguache County, Colorado

June 30, 2009

ENVIRONMENTAL ASSESSMENT

Prepared for

Baca Grande Water & Sanitation District, Saguache County, Colorado

June 30, 2009

BROWN AND CALDWELL

1697 Cole Boulevard, Suite 200

Golden, CO 80401

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

ARRA	American Recovery and Reinvestment Act
CA/FP	Capacity Assessment/Facilities Plan
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CNHP	Colorado National Heritage Program
cfs	cubic feet per second
Cl_2	Chlorine gas
CNHP	Colorado Natural Heritage Program
Division	Water Quality Control Division
DRCOG	Denver Regional Council of Governments
DW ER	Drinking Water Projects
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
mgd	million gallons per day
NaOCl	Sodium Hypochlorite
NRHP	National Register of Historic Places
NFPA	National Fire Protection Association
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
Refuge	Baca National Wildlife Refuge
SDMSI	Special District Management Services, Inc.
SIP	State Air Quality Implementation Plan
SRF	State Revolving Fund
the District	The Baca Grande Water & Sanitation District
TIN	total inorganic nitrogen
TMDL	total maximum daily load
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WWTP	Wastewater Treatment Plant
WQCD	Water Quality Control Division
WUP	Wastewater Utility Plan
WUSA	Wastewater Utility Service Area

1. SUMMARY

1.1 Project Identification

Applicant Baca Grande Water & Sanitation District

Address 55 & 57 Baca Grant Way South , Crestone, Colorado 81131-0520

CDPHE Project Number 090005D

1.2 Contact Person

Mr. Steve Harrell – General Manager

(719) 256-4310

1.3 Abstract

The Baca Grande Water & Sanitation District (the District) provides potable water and sanitary sewer service to customers within and outside of its boundaries, consisting of primarily residential and agricultural properties near Crestone, CO in Saguache County (Figure 1-1). The Baca Grande Water & Sanitation District is approximately 14,000 acres in size (CNHP, 2005). Currently, 636 active individual water and sewer accounts are served by the district. The estimated population is approximately 1,500 residents. The District's potable water system was installed in the early 1970s. Since then, development has failed to progress along with the initial projections, resulting in lower revenues, and there has been insufficient income to properly operate and maintain the system.

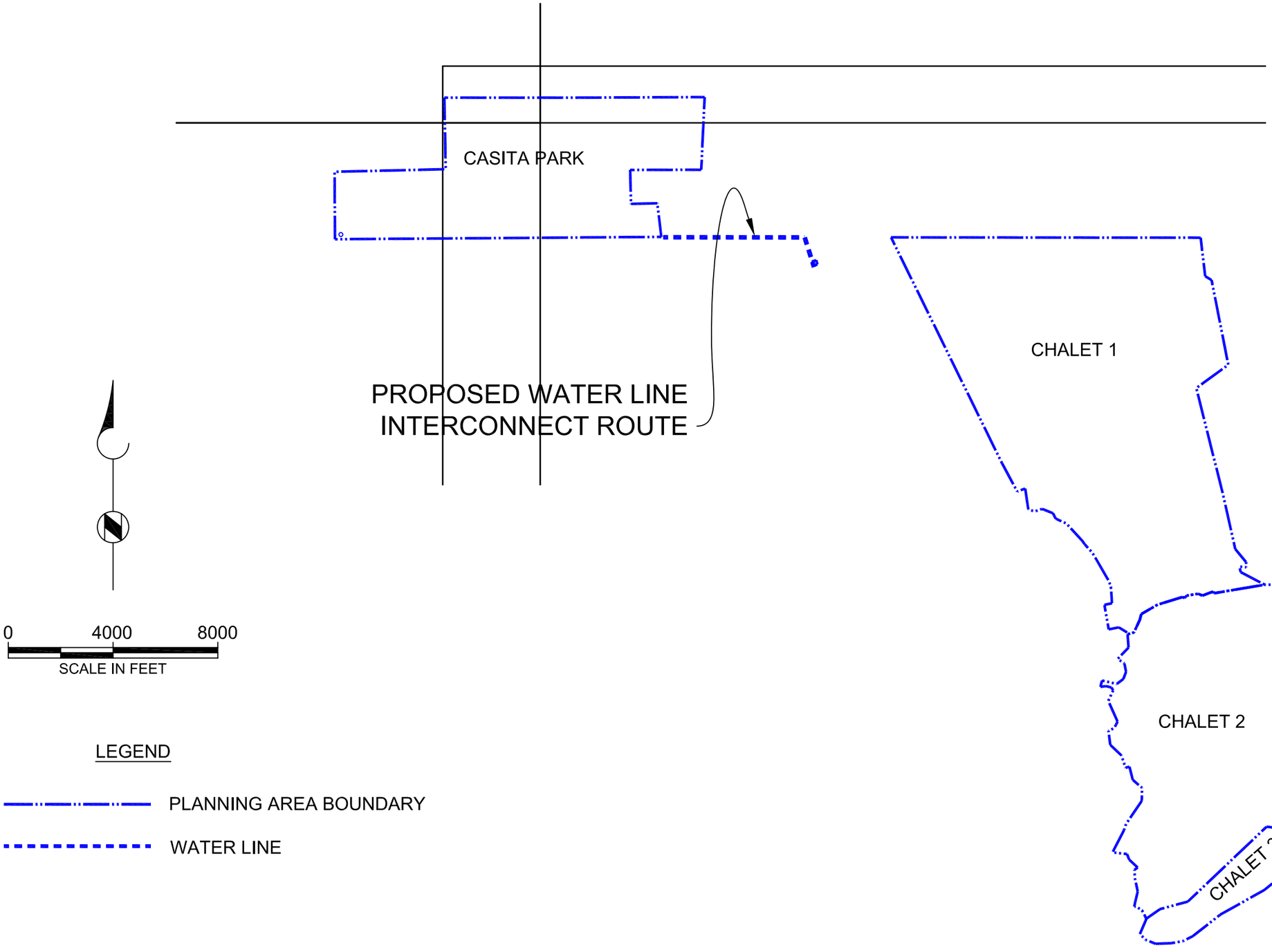
To assist the District Board in addressing management concerns, Special District Management Services, Inc. (SDMSI) was retained in 2008 to serve as the District manager. The District's entire staff resigned in August 2008. When new personnel and consultants took over the operation of the system, it was discovered that the District's financial and technical information had been poorly maintained.

The District has multiple needs for its water and wastewater systems. However, this Environmental Assessment (EA) addresses those project features that are seeking funding through the American Recovery and Reinvestment Act (ARRA) and/or the State Revolving Fund (SRF) program. Project features include the Well #18 project, Additional Storage at Well #18, Water System Interconnection, Automation & Telemetry, and Skyview Way Water Main Replacement. In June 2009, an Engineering Report for Drinking Water Projects (DW ER) was completed by Brown and Caldwell and submitted to the Colorado Department of Public Health and Environment (CDPHE) for review.

1.4 Comment Period

In conformance with the requirements of the National Environmental Policy Act and the Colorado Environmental Review Process, a Finding of No Significant Impact (FNSI) will be subject to a 30-day public review period. The FNSI will be distributed to interested persons and agencies for their review. The FNSI will be available for public review at the CDPHE. Any comments received will be given due consideration. Comments should be addressed to:

Erick Worker, Project Manager
Financial Solutions Unit
Water Quality Control Division
Colorado Department of Public Health and Environment
WQCD-OA-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530



BACA GRANDE WATER AND SANITATION DISTRICT
WATER SYSTEM IMPROVEMENTS
VICINITY MAP

FIGURE 1-1

2. PURPOSE AND NEED FOR ACTION

2.1 Existing Operations

The District provides water to the Baca Chalets via Well #18 and a network of existing pipelines and storage tanks. The District's primary water storage facility is the South Crestone Tank (Figure 2-1). There are four other storage tanks, including Moonlight Reservoir, Fallen Tree Reservoir, Cottonwood Reservoir, and Ridgeview Reservoir. Water distribution lines are located primarily along roadway rights-of-way. Four transfer pump stations convey water from the South Crestone Tank to the other storage tanks. The South Crestone Tank serves a portion of the distribution system via gravity. The remaining portion of the distribution system is divided into six pressure zones. All six pressure zones are served by pumping stations located in the adjacent lower zones. The source water is currently disinfected at the Well #18 site.

Water service to the Casita Park portion of the District is provided by the Motel Well and its treatment and storage systems located near the White Eagle Inn (Figure 2-1).

2.2 Project Elements

Following is a description of the purpose and need for each of the project elements proposed for funding under the ARRA and/or SRF (Figure 2-1).

2.2.1 Well #18 Project

The District's water supply for the Baca Chalets is Well #18 but it does not have an acceptable disinfection system. The District is currently operating under a temporary variance to the CDPHE Potable Water System Design Criteria, which allows them to feed sodium hypochlorite directly into the casing of Well #18. Historically the water has been pumped from Well #18 to the South Crestone Tank, and then disinfected at the South Crestone Tank. However, there are customers connected to the pipeline between Well #18 and the South Crestone Tank. In order to ensure that all customers are provided with disinfected water, disinfection at Well #18 is necessary. The existing temporary disinfection method being used at Well #18 does provide acceptable disinfection, but this is not an acceptable long-term solution.

2.2.2 Additional Storage Facility at Well #18

Adequate contact time is necessary to achieve effective disinfection. The contact time can be provided in the pipeline between Well #18 and the first customer tap on the line or by using a 50,000 gallon concrete tank currently existing at the Well #18 site. The 50,000 gal water storage tank currently existing at the Well #18 site can be used as a chlorine contact tank to provide sufficient detention time in conjunction with the transmission pipeline.

2.2.3 Interconnection of Water Distribution Systems

Well #18 is currently the only water source for the Baca Chalets and the Motel Well is the only water source for the Baca Casita Park area. If either the Well #18 pump or the Motel Well pump fails, there is no system currently in place to provide a backup water supply for either the Chalets or the Casita Park area. Having a single and independent source of water for these two areas creates system vulnerability and the potential for

the District to be temporarily unable to deliver water to its customers. There can be seasonally high fire danger within the planning area and temporary service disruptions are unacceptable from a fire suppression standpoint. Backup supplies and system redundancy are necessary for both the Chalets and Casita Park. A water system interconnection between the two service areas would provide much needed redundancy and improve reliability for both areas.

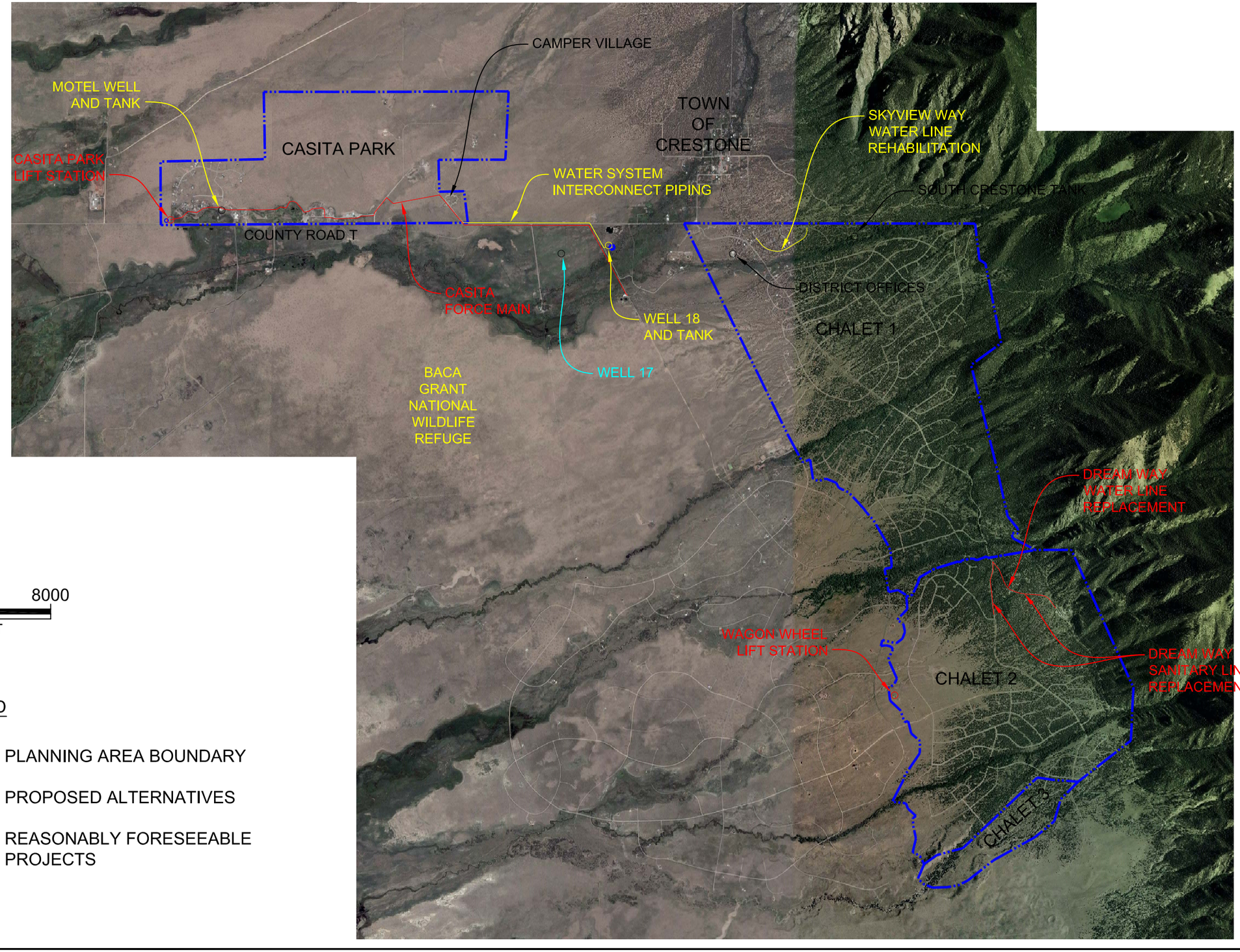
The District has also detected elevated nitrate levels in groundwater in the Casita Park service area. The nitrate contamination most likely originates from the impoundment of the Casita Park WWTF effluent along the south side of Saguache County Road T (the Motel Well is located to the north of County Road T) and/or from the reportedly failing leach field of the White Eagle Inn Individual Sewage Disposal System (ISDS). Should nitrates continue to be a problem, an alternative water source for Casita Park may be needed to alleviate potential future water quality issues.

2.2.4 Automation and Telemetry

The existing water system is manually operated. This results in long response times and a strain on the limited operations staff because the monitoring and control devices and equipment are not located in one central location. Automation and Telemetry is needed to connect all instrumentation and control devices and allow the system to be monitored and controlled from a central location. This would allow the District to more easily maintain water pressure, increase reliability, limit water loss when leaks occur, and prevent overflow when filling storage tanks.

2.2.5 Skyview Way Water Main

The District's water infrastructure was installed in 1971. Some of the pipelines, including the Skyview Way Water Main, were constructed of asbestos cement pipe and are brittle and subject to failure. Water main breaks and outages are common for certain pipelines and this poses a maintenance burden on the District. There are also water mains installed with inadequate cover that are prone to freezing in the winter.



0 4000 8000

SCALE IN FEET

LEGEND

——·——·——	PLANNING AREA BOUNDARY
YELLOW	PROPOSED ALTERNATIVES
RED	REASONABLY FORESEEABLE PROJECTS

BROWN AND CALDWELL

BACA GRANDE WATER AND SANITATION DISTRICT
WATER SYSTEM IMPROVEMENTS
PROPOSED ALTERNATIVES MAP

FIGURE 2-1

3. PROPOSED ACTION AND ALTERNATIVES

3.1 Overview of Proposed Action

The proposed action is to provide funding under the American Recovery and Reinvestment Act (ARRA) or the State Revolving Fund (SRF) for the following eligible projects. These projects are required to upgrade the existing potable water treatment and distribution system and prevent violations of the Colorado Primary Drinking Water Regulations:

- **Well #18 Project** – upgrades to the wall pumps, the disinfection systemand addition of a new booster pump station.
- **Well #18 Additional Storage** –upgrades to an existing storage tank to improve chlorine contact time
- **Automation and Telemetry** – provide new control devices and add supervisory control and data acquisition (SCADA) capability.
- **Skyview Water Main Replacement** – replacement of asbestos cement water line.
- **Interconnection of Water Systems** – install interconnect pipeline between Chalet and Casita Park service areas to improve the overall system.

3.2 Alternatives including the Proposed Action

Since the Proposed Action consists of the five project elements listed above, the discussion of Alternatives is broken out by each of the five project elements.

3.2.1 Well #18 Project

3.2.1.1 Description of Alternatives

The District's water supply, Well #18 does not have an acceptable disinfection system. Historically the water has been pumped from Well #18 to the South Crestone Tank, and then disinfected at the South Crestone Tank. However, there are customers connected to the pipeline between Well #18 and the South Crestone Tank. In order to ensure that all customers are provided with disinfected water, the District has been temporarily feeding sodium hypochlorite directly into the casing of Well #18. Direct injection of sodium hypochlorite in the casing of Well #18 does provide acceptable disinfection, however, this is a temporary solution to avoid the health issues and is not suitable as a permanent fix.

To address the inadequacy of the temporary disinfection methods, three Well #18 disinfection alternatives were evaluated:

1. No Action (maintain the historical disinfection system)
2. Provide acceptable sodium hypochlorite disinfection at Well #18
3. Provide chlorine gas disinfection at Well #18

3.2.1.1.1 Well #18 - Alternative 1

Maintaining the historical disinfection system is in violation of CDPHE potable water disinfection criteria and may present a continued health risk to customers served by the water line between Well #18 to the South Crestone Tank and therefore is unacceptable. Further, Alternative 1 is unacceptable to the CDPHE and does not meet current standards. This alternative would not meet all the requirements for disinfection as stated in the CDPHE Water Quality Control Division (WQCD) Policy State of Colorado Design Criteria for Potable Water Systems.

3.2.1.1.2 Well #18 - Alternative 2

Sodium hypochlorite disinfection at the Well #18 site would provide adequately disinfected water to all District customers. Sodium Hypochlorite (NaOCl) is a preferred chemical for water disinfection. The sodium hypochlorite disinfection system would consist of NaOCl storage tanks, chemical feed pumps and residual chlorine monitoring equipment. NaOCl is known to be a corrosive chemical thus special handling of NaOCl is required. This alternative would meet all the requirements for disinfection as stated in the WQCD Policy "State of Colorado Design Criteria for Potable Water Systems." In addition, the Well #18 Project includes pumping system upgrades and improved redundancy by connecting the existing Well #17 to Well #18 via an existing buried pipe between the two wells that is not currently connected to both wells. New well pumps would be installed for Well #18 and Well #17. A new booster pump station would also be constructed as part of the Well #18 project to pump chlorinated water from the Well #18 site to the South Crestone Tank..

Alternative 2 for the Well #18 Project would require the District to acquire the property interests for the proposed storage and booster pump station. It is estimated that the land acquisition cost would be approximately $35,000. No construction problems are anticipated with the installation of chemical storage tanks and chemical feed pumps. No additional District staff would be required for Alternative 2 operation.

3.2.1.1.3 Well #18 - Alternative 3

Chlorine gas disinfection at the Well #18 site, would also provide adequately disinfected water to all District customers. Chlorine gas (Cl_2), also known as elemental chlorine, is a powerful oxidizing and disinfecting agent that is transported and stored as a liquefied gas under pressure. Water treatment facilities typically use chlorine in 150-lb cylinders or one-ton containers. Transportation and handling of chlorine gas represents a health risk to facility operators and a potential risk to the public since chlorine is extremely volatile and hazardous. Cl_2 gas is injected into the water directly for disinfection purposes. A new Cl_2 gas storage and feed system would need to be installed for this alternative. This alternative would meet all the requirements for disinfection as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems.

Alternative 3 for the Well #18 Project would require the District to acquire the property interests for the proposed storage and pumping station. It is estimated that the land acquisition cost would be approximately $35,000. No construction problems are anticipated with the installation of chemical storage tanks and chemical feed pumps. Disinfection with Cl_2 gas would require special operator training, however no additional District staff would be required.

3.2.1.2 Advantages and Disadvantages

The advantages and disadvantages for each alternative are presented in Table 3-1.

Table 3-1. Well Project #18 Alternatives Comparison

Alternatives	Advantages	Disadvantages	Capital Cost
Alternative 1 Historical Disinfection	▪ No increased cost	▪ Public heath issues ▪ Regulatory compliance issues ▪ Limited shelf-life ▪ Byproducts formed ▪ Higher chemical costs than chlorine gas ▪ Corrosive; requires special handling	$0
Alternative 2 Disinfection with NaOCl	▪ Highly effective against most pathogens ▪ Provides "residual" protection required for drinking water ▪ Fewer training requirements than chlorine gas ▪ Fewer regulations than chlorine gas	▪ Limited shelf-life ▪ Byproducts formed ▪ Higher chemical costs than chlorine gas ▪ Corrosive; requires special handling	$310,000
Alternative 3 Disinfection with Cl_2 gas	▪ Highly effective against most pathogens ▪ Provides "residual" protection required for drinking water	▪ Byproduct formation ▪ Potential hazards from transportation and handling ▪ Special operator training needed ▪ Corrosive; requires special handling ▪ Additional regulatory requirements (EPA's Risk Management Program) ▪ Operator and community safety concerns	$550,000

3.2.2 Additional Storage Facility at Well #18

3.2.2.1 Description of Alternatives

Adequate chlorine contact time is necessary to achieve effective disinfection. The contact time can be provided in the pipeline between Well #18 and the first customer tap on the line or by using a 50,000 gallon concrete tank currently existing at the Well #18 site. Not utilizing this additional storage facility might decrease the efficacy of the disinfection and increase the required chemical amount.

Three alternatives were evaluated for this project element:

1. No action (no disinfection at the Well #18 site)
2. Use the water line between Well #18 and the first water tap on the line to provide adequate disinfection contact time
3. Use the existing 50,000 gallon tank to provide adequate disinfection contact time

3.2.2.1.1 Well #18 Additional Storage - Alternative 1

Maintaining the historical disinfection system represents a continued health risk to customers served by the water line from Well #18 to the South Crestone Tank and therefore is unacceptable. No additional contact time would be provided under this Alternative. Further, Alternative 1 is unacceptable to the CDPHE and does not meet current standards. This alternative would not meet all the requirements for disinfection as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems.

3.2.2.1.2 Well #18 Additional Storage - Alternative 2

Using the water line between Well #18 and the first water tap on the line to provide adequate disinfection contact time would meet the necessary requirements for disinfection as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. However, this alternative may decrease the efficacy of the disinfection and increase the required amount of chemical. Alternative 2 for the Well #18 Project would require the District to acquire the property interests for the proposed storage and pumping station. It is estimated that the land acquisition cost would be approximately $35,000. No construction problems are anticipated with using the water line for disinfection. No additional District staff would be required for Alternative 2 operation.

3.2.2.1.3 Well #18 Additional Storage - Alternative 3

The 50,000 gal water storage tank currently existing at the Well #18 site can be used as a chlorine contact tank to provide sufficient detention time to disinfectant the water before it is pumped to South Crestone Tank. To avoid the short circuiting and to optimize use of the existing volume to its fullest extent, some modification to the tank would be required. Use the existing 50,000 gallon tank to provide adequate disinfection contact time would meet the necessary requirements for disinfection as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. Alternative 3 for the Well #18 Project would require the District to acquire the property interests for the proposed storage and pumping station. It is estimated that the land acquisition cost would be approximately $35,000. No construction problems are anticipated with using the existing tank for disinfection. No additional District staff would be required for Alternative 3 operation.

3.2.2.2 Advantages and Disadvantages

The advantages and disadvantages for each alternative are presented in Table 3-2.

Table 3-2. Alternative Storage at Well #18 Alternatives Comparison

Alternatives	Advantages	Disadvantages	Capital Cost
Alternative 1 No Action	▪ No cost	▪ Not acceptable to CDPHE ▪ Inadequate disinfection ▪ May require higher doses of chemical	$0
Alternative 2 Use existing water line	▪ No cost	▪ Potentially large chemical dose required	$0
Alternative 3 Use existing tank	▪ Increased efficiency ▪ Utilization of an existing tank ▪ May require less chemical	▪ Some costs may be associated with the upgrades of the existing storage tank	$50,000

3.2.3 Interconnection of Water Distribution Systems

3.2.3.1 Description of Alternatives

Well #18 is the sole water source for the Chalets and if the well pump fails, there is currently no redundancy in the system to provide backup. The Motel Well currently provides potable water to the Casita Park area and it is the only source of potable water for Casita Park. If the well fails, the Casita Park area is without potable water and the ability to use water for potential fire suppression needs, which is unacceptable.

To address the limitations of the current system configuration, two alternatives have been considered for this project element:

1. No Action
2. Interconnect line between Well #18 and Motel Well

3.2.3.1.1 Interconnection - Alternative 1

Maintaining the current configuration of the water distribution system would leave Casita Park area without potable water if the Motel Well fails, and the Chalets without potable water if Well #18 fails . No land requirements are associated with Alternative 1. This alternative would meet the necessary requirements for pipeline distribution as stated in the WQCD Policy "State of Colorado Design Criteria for Potable Water Systems". Operational requirements would remain as they currently are with Alternative 1.

3.2.3.1.2 Interconnection - Alternative 2

Alternative 2 involves a pipe system to provide an interconnected system between the Well #18 system and the Casita Park "Motel Well". The main interconnect pipe will extend from the Well #18 storage tank along County Road T, west to the point where it meets with the existing water line that extends from the Motel Well to Casita Park. The new pipeline will be connected to the existing pipeline at an existing hydrant. The total length of new interconnection piping system will be approximately 6,300 linear feet. Interconnection of the water systems (Alternative 2) would provide redundancy to the distribution system and would improve the overall reliability of both the Baca-Chalet and the Baca-Casita park water systems. The pipeline would be installed within an existing right-of-way along County Road T to the intersection with the Aspen WWTF access road. From that point, the pipeline would be constructed within an easement on property owned by Jamie Ireland along the east side of the access road to Well #18. Easements are required for both construction and maintenance of the pipeline. This alternative would meet the necessary requirements for pipeline distribution as stated in the WQCD Policy "State of Colorado Design Criteria for Potable Water Systems". There are no anticipated construction issues related to Alternative 2. Operational requirements would remain as they currently are with Alternative 2.

3.2.3.2 Advantages/Disadvantages

The advantages and disadvantages for each alternative are presented in Table 3-3.

Table 3-3. Interconnection of Water System Alternatives Comparison

Alternatives	Advantages	Disadvantages	Capital Cost
Alternative 1 No Action	▪ No cost	▪ No redundancy (reduced reliability)	$0
Alternative 2 Interconnect water systems	▪ Provides redundancy (increased reliability)	▪ Construction required ▪ Costs incurred	$290,000

3.2.4 Automation and Telemetry

3.2.4.1 Description of Alternatives

The equipment and control devices in the water distribution system are currently manually operated. This puts a strain on the limited operations staff because the devices and equipment are not located in one central location and they must travel throughout the District to make required control and operational adjustments. This represents an inefficient way to operate and results in less than optimal performance of District facilities.

Two alternatives were considered to reduce the workload on the District stall and improve the quality and efficiency of District operations for this project:

1. No Action
2. Automate equipment and control devices

3.2.4.1.1 Alternative 1

Under Alternative 1 the District's water infrastructure would continue to be manually operated and no centralized control system would be installed. District Staff would continue to spend substantial amounts of time manually operating the District's system, which is an inefficient use of the District's human resources. Alternative 1 would be would meet the necessary requirements for equipment controls as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. No land easements or additional sites are required for this alternative, and there are no anticipated construction issues because no installation of equipment would occur.

3.2.4.1.2 Alternative 2 – Provide Automation and Telemetry for the System

Under Alternative 2 Automation and Telemetry equipment would be installed so the District could operate its water system from a central location. Alternative 2 would ease the burden on the operations and maintenance personnel, improve the performance and reliability of the water system, reduce water loss, and allow the operations staff to focus on improvements to the distribution system instead of manual operation and control. Alternative 2 would meet the necessary requirements for equipment controls as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. No land easements or additional sites are required for this alternative, and there are no anticipated construction issues.

3.2.4.2 Advantages/Disadvantages

The advantages and disadvantages for each alternative are presented in Table 3-4.

Table 3-4. Operational Devices and Equipment Alternatives Comparison

Alternatives	Advantages	Disadvantages	Capital Cost
Alternative 1 No Action	▪ No cost	▪ Strain on operations staff ▪ Inefficient system operation ▪ Limited response to operational issues ▪ Less than optimal system performance	$0
Alternative 2 Automation and Telemetry	▪ One central location for operation and control ▪ Less demand on operations staff ▪ More efficient operation ▪ Improved performance of District facilities	▪ Substantial Capital Cost	$350,000

3.2.5 Skyview Way Water Main Replacement

3.2.5.1 Description of Alternatives

Some of the pipelines in the water distribution system were constructed of asbestos cement pipe (ACP) and are prone to failure. The Skyview Way Water Main Line from its western end at approximately Sunset Overlook to its east end at Baca Grande Way consists of approximately 3,200 linear feet of ACP. To reduce maintenance and repair burdens on this waterline and eliminate exposing the workers to the asbestos in the pipe, replacement or rehabilitation is proposed.

Three alternatives have been considered for this project element:

1. No Action
2. Install Slip Lining - possibly Insituform®
3. Replace with new PVC pipe

3.2.5.1.1 Skyview Way Water Main - Alternative 1

Alternative 1 is the No Action Alternative. Under this alternative, the existing ACP would continue to be used as is and would not be replaced. This pipeline would continue to pose ongoing maintenance and repair issues for the District and the water in it continue to be exposed to the asbestos in the pipe material. Alternative 1 would meet the necessary requirements for equipment controls as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. No land easements or additional sites are required for this alternative, and there are no anticipated construction issues because no construction would occur.

3.2.5.1.2 Skyview Way Water Main - Alternative 2

Alternative 2 consists of installing a cure in place liner or a slip liner that would rehabilitate the existing ACP in place. This method would meet the necessary requirements for equipment controls as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. No land easements or additional sites are required for this alternative, and there are no anticipated construction issues. Excavations would be needed to access small portions of the pipe for liner installation, but a new pipeline trench would not be necessary. Rehabilitation of the asbestos cement pipeline would reduce water main breaks and outages and eliminate the water's exposure to asbestos. This, in turn, would reduce the strain on the operations staff to fix and maintain this water main.

3.2.5.1.3 Skyview Way Water Main - Alternative 3

Alternative 3 consists of constructing a new buried poly-vinyl-chloride adjacent to the existing ACP with a new buried poly-vinyl-chloride (PVC) pipe and abandonment of most of the existing pipe in place. This Alternative would meet the necessary requirements for equipment controls as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. No land easements or additional sites are required for this alternative, and there are no anticipated construction issues. Excavation of a trench to access portions of the existing pipe and to install the new PVC pipe would be required. Trench excavation would occur within Skyview Way, which would avoid land disturbances. Replacement of the asbestos cement pipeline with a new PVC pipe would reduce water main breaks and outages and result in a reliable replacement water main. This, in turn, would reduce the strain on the operations staff to fix and maintain this water main. It would also eliminate exposure of the water to asbestos.

3.2.5.2 Advantages/Disadvantages

The advantages and disadvantages for each alternative are presented in Table 3-5.

Table 3-5. Skyview Way Water Main Alternatives Comparison			
Alternatives	Advantages	Disadvantages	Capital Cost
Alternative 1 No Action	▪ No cost	▪ Potential water contamination ▪ Strain on operations staff ▪ Continued breaks and outages ▪ Continued water loss	$0
Alternative 2 Slip Lining	▪ Improved water quality ▪ Reduce outages and breaks	▪ Slightly reduced pipe diameter (and therefore capacity) ▪ Possibly continued water leakage at service connection points ▪ Relatively low cost ▪ Minimal site disruption	$250,000
Alternative 3 New PVC Water Main	▪ Improved water quality ▪ Eliminate leakage ▪ Reduce outages and breaks	▪ Relatively high cost ▪ Greatest site disruption due to trench excavation for PVC	$355,000

3.3 Justification of Selected Alternative

As described in Section 4 of the Preliminary Engineering Report prepared by Brown and Caldwell anddated April 14, 2009, the projects listed for the 2009 capital improvements have been subjected to an alternatives analysis.

Based on the analysis of alternatives and the advantages and disadvantages described in Tables 3-1 through 3-5, the following alternatives were selected to address rehabilitation issues within the distribution system and bring the District back into compliance with CDPHE regulations. The selected alternatives and justifications include:

- Well #18 Project – NaOCl disinfection was selected as the proposed alternative for the permanent disinfection system at the Well #18. NaOCl disinfection is effective, safe, and relatively economical when compared with the other alternatives considered, including Chlorine gas.
- Additional Storage Facility at Well #18 – Use of the existing 50,000 gallon tank to provide chlorine contact time at the Well #18 site is the proposed alternative. This alternative provides the greatest contact time, increases the efficiency of the disinfection process, and decreases the required disinfectant dosage as compared with using the pipeline to provide disinfectant contact time.
- Interconnection of Water Distribution Systems – Operation of two independent water sources has caused service failures in the past. By connecting the sources, the systems would be more reliable. Connecting the Casita Park and the Chalet water sources would provide system redundancy and improve the ability of the District to avoid future water service interruptions and potential inability to provide fire suppression water.
- Automation and Telemetry – Since the availability of current operations staff is limited and they are often overwhelmed with operational and control tasks, a centralized, automated control system was chosen as the proposed alternative. This will help improve operations by providing more efficient operation of the water system and allowing the operations staff to have more time in addressing maintenance issues.
- Skyview Way Water Main Replacement – Installation of a new PVC pipe was chosen as the proposed alternative because it provides a more effective, durable and long lasting solution to ensure the quality

of the potable water and reduce water loss and outages along the system. Due to ongoing maintenance and repair issues, the No Action alternative was not a viable option and slip lining was ruled out due to the technical issues associated with making water-tight connections to existing service lines.

4. AFFECTED ENVIRONMENT

The following elements were considered in this Environmental Assessment.

- Physical Aspects
- Climate
- Population
- Housing, Industrial, and Commercial Development and Utilities
- Economics and Social Profile
- Land Use
- Floodplain Development
- Wetlands
- Wild and Scenic Rivers
- Cultural Resources
- Flora and Fauna
- Recreation and Open Space
- Agricultural Lands
- Air Quality
- Water Quality and Quantity
- Public Health
- Solid Waste
- Energy
- Land Application
- Regionalization
- Public Participation
- Environmental Laws

The term planning area and project area are used throughout this document. For clarification, the planning area refers to the Baca Chalets and the Baca Casita Park boundaries including the corridor of the proposed interconnection pipeline. The project area refers to the actual sites within the planning area where proposed project elements or alternatives would occur or be constructed.

The affected environment is discussed below by element.

4.1 Physical Aspects

The planning area is located near the Baca National Wildlife Refuge (Refuge), as shown in Figure 2-1. The Refuge, located in south-central Colorado comprises 92,500 acres in Saguache and Alamosa counties in the San Luis Valley. The planning area is a high mountain desert surrounded by two 14,000-foot mountain

ranges. The planning area is located in the northeastern part of the San Luis Valley. Numerous streams, fed largely by mountain snow cross the planning area, providing habitat for a variety of wildlife in an otherwise arid landscape. (USFWS 2008)

The San Luis Valley is located within the Rio Grande Rift Zone. The Rio Grande Rift Zone extends from southern New Mexico northward through the San Luis Valley and Upper Arkansas Valley to its northern boundary near Leadville, Colorado. The San Luis Valley is bordered on the east by the Sangre de Cristo Mountains and on the west by the San Juan Mountains. The eastern edge of the valley is steeply faulted, while on the west side the Oligocene volcanic rocks of the San Juan Mountains gently descend eastward into the valley floor where they are interbedded with valley-fill deposits. Valley-fill deposits consist of sedimentary rocks which inter-finger with volcanic deposits. Quaternary deposits include pediments along the mountain fronts, alluvium, and sand dunes. (USFWS 2008)

Over 1,000 feet of elevation change occurs across the planning area, with the higher elevations in the Baca Chalets with the lower elevations in the Baca Casita Park area. The project areas for the Well #18 project elements, parts of the proposed automation and telemetry, and the water system interconnect pipeline are immediately underlain by alluvial materials (USFWS, 2008). Below the alluvium are over 10,000 feet of sedimentary deposits of the Alamosa and Santa Fe Formations (USFWS, 2008). These sediments consist of stream and lake deposits including sand, clay, and gravel. The project area for the Skyview Way Water Main Replacement and portions of the Automation and Telemetry project elements occurs at higher topographic positions and are located within the bedrock and fractured bedrock associated with the western foothills of the Sangre de Cristo Mountain Range.

4.1.1 Minerals

Crestone, Colorado has been the location of the most recent mining activities to have occurred in the general vicinity of the planning area. There have been mining operations conducted by Battle Mountain Gold Company at its San Luis Mine, located just over 50 miles southeast of Crestone in Costilla County, which ceased operations in late 1996; and, by Galactic Resources at the former Summitville Mine, located about 60 miles southwest of Crestone in Rio Grande County, which ceased operations in late 1992. The most recent recorded mining in the immediate vicinity of Crestone took place in the late 1800s. During that period, prospecting for gold and silver took place in the Sangre de Cristo Mountains, and Crestone was founded at one of the locations where there was a small producing ore body. A stamp mill was constructed at the location, but the mine resource was eventually exhausted (USFWS 2008).

In the San Luis Valley, sand and gravel are currently the most significant mineral commodities that are mined. The nearest sand and gravel pits are located a couple of miles north of the planning area in T44N, R11E. Other sand and gravel operations are located sparsely around the valley, generally concentrated around the towns of Alamosa and Del Norte. Other minerals mined in the area include gold, silver, peat, and limestone. In 2006, there were no active mine permits issued or pending mine permits in Saguache County, and 46 mining claims were recorded in the county (compared with 5,693 for all of Colorado). No minerals are produced from the National Wildlife Refuge or planning area at the present time (USFWS 2008).

A former gravel pit is located north and east of the access road to the Aspen WWTF. This former pit appears to be abandoned and no longer operational. Since most of the planning area consists of the residentially and commercially developed areas of the Baca Grande subdivisions, active operational mines and mineral processing operations do not occur.

4.1.2 Soils

The following provides a description of the soils present at the planning area. (US Department of Agriculture Natural Resources Conservation Service Custom Soil Reports June 10, 2009). The Custom Soil Reports are on file with the District.

4.1.2.1 Chalet One

The land within Chalet One is mostly Ouray-Sabe soils, with areas of Mount Home-Saguache complex soils and Uracca soils. Ouray-Sabe soils are loamy sand soils found in fan landforms with a slope ranging from 9 to 25 percent. These soils are well drained, generally have a depth to water table of greater than 80 inches, and do not flood or promote ponding. Mount Home-Saguache soils are very cobbly sand loam found in terraces, fans, and floodplains with a slope ranging from 2 to 25 percent. They are well-drained soils, generally have a depth to water table of greater than 80 inches, and do not flood or promote ponding. Uracca soils are sandy loam and sandy clay loam found on mountain slopes and alluvial fans with a slope ranging from 15 to 45 percent. They are well drained-soils, sandy loam and sandy clay loam, generally have a depth to water table of greater than 80 inches, and do not flood or promote ponding.

4.1.2.2 Chalets Two and Three

The land within Chalets Two and Three is mostly Space City soils, with areas of Mount Home-Saguache complex soils, Uracca soils, and Ouray-Sabe soils. Space City soils are loamy sand found in intermountain basins on valley floors or in mountain valleys on valley floors with a slope ranging from 0 to 6 percent. They are well-drained soils, generally have a depth to water table of greater than 80 inches, and do not flood or promote ponding.

4.1.2.3 Casita Park

The land at Casita Park is mostly Space City soils, with areas of Cotopaxi sand and Medano sand. Coto paxi sand is found on ridges or hills on valley floors with a slope ranging from 2 to 15 percent. They are well-drained soils, generally have a depth to water table of greater than 80 inches, and do not flood or promote ponding. Medano sands are fine sandy loams and loamy fine sands found on floodplains and valley floors with a slope ranging from 0 to 1 percent. They are poorly drained soils, generally have a depth to water table of 12 to 36 inches. They rarely flood and do not promote ponding.

4.1.2.4 Proposed Water System Interconnection Pipeline Route

The interconnection pipeline corridor along County Road T is mostly Space City soils, with areas of Schrader soils. Schrader soils are stratified sand to gravelly sandy loam with a slope ranging from 0 to 3 percent. Schrader soils are poorly drained soils with a depth to water table of 12 to 24 inches. They frequently flood but do not promote ponding.

4.2 Climate

The San Luis Valley (Valley) climate is typical of high mountains and valleys in Colorado. Cold air drainage from the mountains results in cool summers. The average temperature is about 62°F in the summer and 27°F in the winter. The relatively low precipitation in the Valley is caused by the San Juan Mountains to the west. Storms from the west unload moisture on the west side of the San Juan Mountains before moving east into the San Luis valley. Annual precipitation within the San Luis Valley is approximately 11 inches. (USFWS 2008)

Frequent, higher velocity winds blow from the southwest and less frequent, lighter winds blow from the northwest during both the annual and fall-winter periods. Winds are mainly out of the southwest, with secondary components out of the north and the southeast during the fall and winter. Winds are strongest in the spring and blow primarily out of the southwest. In the summer, winds vary greatly and may blow from any direction, however the easterly flow is strongest, due to the down sloping winds from the nearby mountains to the east (USFWS 2008).

4.3 Population

4.3.1 20-Year Population Projections

Currently, there are 636 active individual water and sewer accounts served by the Baca Grande Water & Sanitation District. The estimated service population is approximately 1,500 residents. In the 1999 201 Facility Plan Report, a population growth rate of 4% was assumed for the Baca Grande service area. Population projections based on this growth rate for the period from 2009 to 2029 are shown in Table 4-1:

Table 4-1. Population Projections

Year	Population
2009	1500
2014	1830
2019	2220
2024	2700
2029	3290

4.3.2 Comparison of Recent Growth Rates with Projected Growth Rates

In 1999, the population was approximately 500 in the winter season and 1000 in the summer. Using the larger summer value, the District's actual population growth rate has been 4.14 percent, closely matching the estimated growth rate of 4 percent.

4.3.3 Estimation of Increases in Equivalent Resident Units (EQR's)

The District's customers consist of single-family homes, as well as numerous religious and spiritual centers. It is not anticipated that the population equivalent for each Equivalent Resident Unit (EQR) will change significantly in the future.

4.3.4 Specific Areas of Concentrated Growth

No specific areas of concentrated growth have been identified within the Baca Grande service area.

4.4 Housing, Industrial and Commercial Development, and Utilities

The Baca Grande service areas were subdivided and the District was created in the 1970s. The District is the local provider of water and sewer service for the Baca Chalets and Baca Casita Park areas. The District serves primarily residential customers, though some commercial enterprises are also served. Commercial enterprises consist primarily of the hospitality industry (restaurants, and lodging) and the various spiritual centers of the Crestone area. Heavy industrial land uses are uncommon in the planning area and there were such uses no observed during field visits.

During the early stages of the Baca Grande development, an extensive network of roads was constructed throughout the Chalets area.

4.5 Economics and Social Profile

Nearby Crestone was platted and officially became a town on November 4, 1880. Native Americans, including the Comanche, Kiowa, Ute, and Pueblo hunted bison and camped here in Neolithic times. The Spanish were the first Europeans to explore and trade in the San Luis Valley, in the 16th century – the Baca Ranch (the Baca) is a legacy of the Spanish influence. The Baca was accessed by the Old Spanish Trail, which served as a corridor of trade through six states. To commemorate this trade route, the U.S. Congress established the Old Spanish Historic Trail in 2002, the 15th such trail to be designated in America (Saguache County, 2009a).

Gold was discovered in the Burnt Gulch area north of Crestone in the 1870s. In 1879, businesses began opening in Crestone, including five general stores, two livery stables, two feed stores, a slaughterhouse, restaurants, saloons, doctors' offices, a bakery, boarding houses, a bank, and bookstores. Because of the mining, a railroad spur was constructed from Moffat to Crestone making travel to and from the town easy. The larger Crestone District included mining camps and more towns, like Liberty and Cottonwood. Later, Crestone entered a slow decline and almost became a ghost town as the mining sites were closed. Most of the families that remained survived by working on the Baca (Saguache County, 2009).

Throughout history, people have traveled to the area seeking dreams of wealth, sanctuary, and peace. Today, the community is enjoying a revival of growth and prosperity. Shops, stores and restaurants again occupy the downtown area. Several of the world's contemplative traditions have found a safe haven here at the eastern edge of Saguache County. Travelers can view or visit the several Buddhist retreats, a Hindu Ashram, a Carmelite monastery, three Tibetan stupas and a number of healing centers. Backpackers, climbers and outdoor enthusiasts come to enjoy the Sangre de Cristos. Yearly highlights in Crestone are the Fourth of July celebration and parade, the Crestone Music Festival and Winterfest (Saguache County, 2009a).

4.6 Land Use

In 1962, the planning area was largely owned by the Colorado Land and Cattle Company and used as a cattle ranching operation (CNHP, 2005). The planning area is located on land zoned for agricultural and residential uses, according to the Saguache County Land Use Department (2009b). Mining was historically prevalent on the east side of the planning area closer to the Sangre de Cristos. The Baca Grande subdivision came about after 1971 when a portion of the original "Baca Grant" was sold. Over the ensuing years the area has developed slowly and is inhabited by a diverse mix of retirees, young environmentally minded people, various spiritual and environmental organizations, and second home buyers (CNHP, 2005).

The Baca Grande development is managed by a Property Owner's Association (POA), whose purpose is to manage development of the land and covenants of the subdivision. Sub-units of development include the Baca Chalet I, Chalet II, the Grants, and the Baca Casita Park.

4.7 Floodplain Development

The Federal Emergency Management Agency (FEMA) has not mapped any floodplains in the planning area. Due to topography and location, FEMA considers the Baca Grande area to be at low-risk for flooding. Localized flooding can occur along Crestone Creek, Spanish Creek, Willow Creek and other drainages in the planning area, but these do not have a designated floodplain associated with them. There can be significant erosion along drainage ditches and streams during heavy spring runoff and rainfall in the summer.

4.8 Wetland, Riparian, and Aquatic Habitats

According to the National Wetland Inventory (NWI) maps produced by the USFWS, there are some wetlands in the planning area (see Figures 4-1 and 4-2). Rocky mountain lower montane riparian woodlands

and shrublands occur along the various creeks that pass through the Baca Chalets area. This habitat is much less extensive in the Chalets area than upland habitats (CNHP, 2005). Riparian woodlands/shrublands and wetlands are typically more common in the "Grants" portion of the planning area where the gradient becomes less steep and water velocities in the creeks are lower (CNHP, 2005). Due to the steeper gradients and more incised stream channels the pinyon-juniper zone portions of the Chalets , riparian and wetland areas are scarce and narrow in nature in these areas (CNHP, 2005).

An ecologist from Brown and Caldwell visited the planning and project areas in May of 2009 to determine if wetlands or other waters of the U.S. were present in the project areas. During this visit it was noted that the NWI maps showed some areas as wetland that are not, and missed other areas that are wetlands. In particular, the NWI map didn't include areas of and along North and South Crestone Creeks as wetland, yet wet meadows and stream channels are present at these locationssouth of the Well #18 project area. Though some larger narrow-leaf cottonwood trees (*Populus angustifolia*) are present along North and South Crestone Creeks to the south of the Well #18 project area, there are no wetland, riparian or aquatic habitats in the construction areas for the proposed projects.

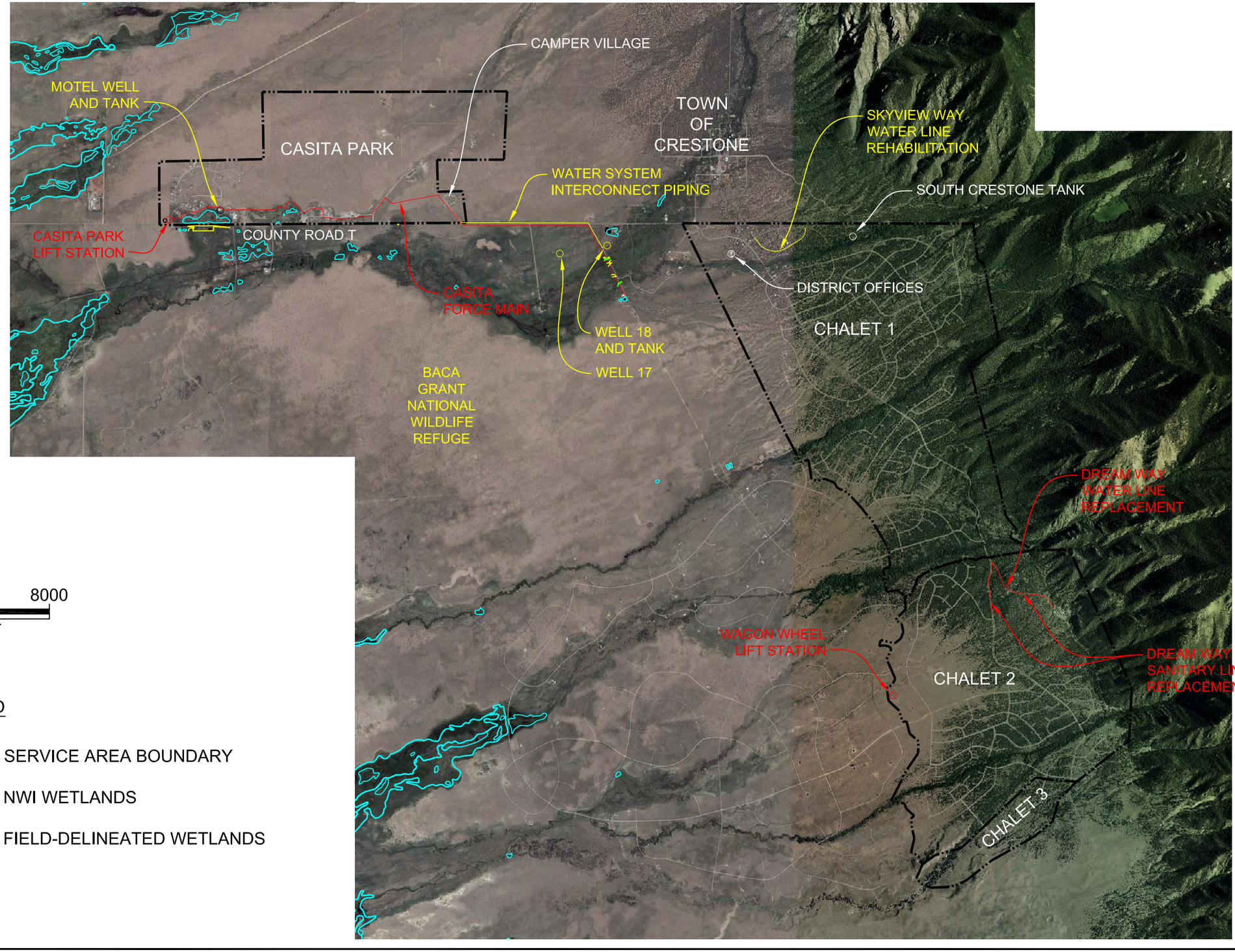
Well #18 is close to North Crestone Creek, but the proposed work area is in an existing disturbed area and no wetlands or riparian areas are located in that area. There are also no wetlands located between Well #18 and Well #17, or between Well #18 and the entrance to Camper Village, where the proposed interconnect pipeline will be constructed. There are palustrine emergent wet meadows located along the access road to the existing Aspen WWTF at North and South Crestone Creek. Typical wet meadow vegetation includes Baltic rush (*Juncus balticus*), common spikerush (*Eleocharis palustris*), redtop (*Agrostis alba*), Kentucky bluegrass (*Poa pratensis*), and threadleaf sedge (*Carex eleocharis*).

Relatively narrow wetland and/or riparian areas occur along the several streams that flow through the Chalet areas. These riparian and wetland areas occur along Spanish Creek, North/South Crestone Creek, Willow Creek, and Cottonwood Creek.

There are no streams within the Casita Park area. However, there is some remnant riparian vegetation at the west end of Casita Park where a man-made pond was once maintained adjacent to County Road T. However, there currently is no ponded water in this area and the riparian vegetation is only a remnant of past conditions. The existing Casita Park wastewater treatment plant discharges treated effluent to a palustrine emergent wetland vegetated mostly with cattails (*Typha latifolia*). However, this wetland area is on the south side of County Road T and outside of the Casita Park service area. Some wetland vegetation exists near the golf course in Casita Park, though this vegetation appears to be maintained by golf course watering rather than by the natural hydrology.

4.9 Wild and Scenic Rivers

According to the National Wild and Scenic Rivers System website (www.nps.gov/rivers) there are no designated Wild and Scenic Rivers within the planning area. The only river in Colorado currently listed as a National Wild and Scenic River is the Cache la Poudre River in northeastern Colorado. Based on information provided by the National Park System Rivers and Trails Program, no impact to nationally significant river resources will result from the proposed improvements to the Baca Grande water distribution and treatment system (Appendix B).



0 4000 8000

SCALE IN FEET

LEGEND

SERVICE AREA BOUNDARY

NWI WETLANDS

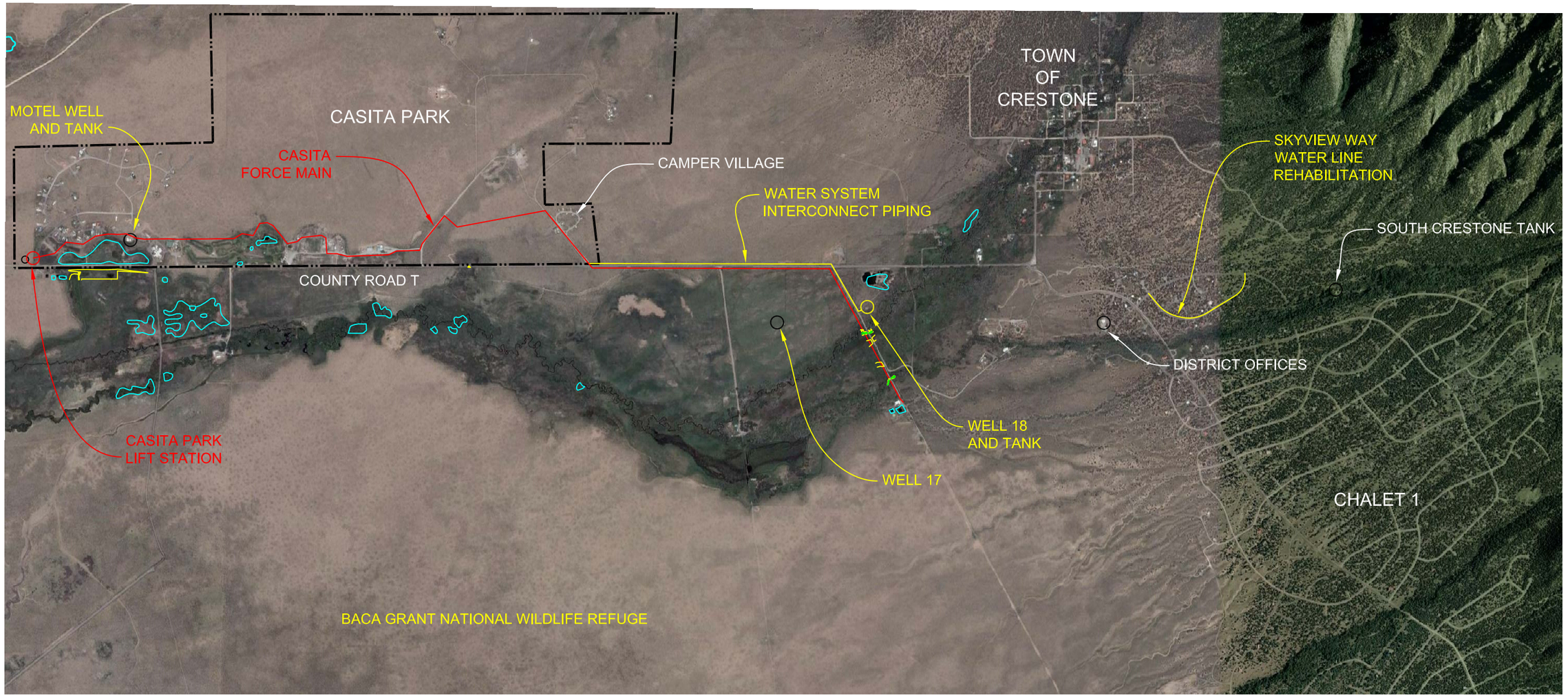
FIELD-DELINEATED WETLANDS

BROWN AND CALDWELL

BACA GRANDE WATER AND SANITATION DISTRICT
WATER SYSTEM IMPROVEMENTS
PLANNING AREA WETLANDS MAP

FIGURE 4-1

P:\CAD\0Baca Grande WSD\136853-SRF\5-Figures\FIGURE-4-1.dwg, 7/15/2009 2:40:16 PM, smccall, 1:1



LEGEND

PLANNING AREA BOUNDARY

NWI WETLANDS

FIELD-DELINEATED WETLANDS

BROWN AND CALDWELL

BACA GRANDE WATER AND SANITATION DISTRICT
WATER SYSTEM IMPROVEMENTS
PROJECT AREA WETLANDS MAP

FIGURE 4-2

P:\CAD\08Baca Grande WSD\136853-SRF\5-Figures\FIGURE-4-2.dwg, 7/15/2009 2:43:19 PM, smccall, 1:1

Figure 4-1. Baca Grande Water & Sanitation District Planning Area Wetland Map

Figure 4-2. Baca Grande Water & Sanitation District Project Area Wetland Map

4.10 Cultural Resources

Cultural resources are defined as buildings, sites, districts, structures, and objects significant to history, architecture, archaeology, culture, or science. Significant cultural resources are those that are listed in or are considered eligible for listing in the National Register of Historic Places (NRHP). A thorough literature review and a background search were conducted using Colorado's online cultural resource database (Compass) and previous survey reports to identify known cultural resources located within the planning area.

4.10.1 Cultural Setting

The prehistory in the San Luis Valley spans three major time periods: Paleoindian (12,000 to 7500 BP), Archaic (7500 to 1500 BP), Late Prehistoric (1500 BP to historic contact). Historic records of the area begin in the 1600s when Spanish explorers first visited the region.

4.10.1.1 Paleoindian

Human occupation in the San Luis Valley is generally thought to have begun approximately 12,000 years ago with the earliest evidence coming from mammoth kill sites and tools associated with the Clovis tradition. These sites are dated between 11,500 and 11,000 years ago (Jodry 1999). The primary diagnostic artifacts from this time period are large lanceolate, fluted projectile points indicating a subsistence based mainly on large-game hunting.

The Folsom tradition followed the Clovis era and is much better documented throughout the region. Evidence of Folsom occupation in the San Luis Valley from this time period includes the Linger Site which is interpreted as representing a multi-use site with bison kill, food processing, and camping locations (Brechtel 2003).

4.10.1.2 Archaic

The transition from Paleoindian to Archaic cultural traditions correlates with a climatic shift to warmer drier conditions occurring approximately 7,000 years ago (Benedict 1978). Cultural traditions during the Archaic period were more diversified and based on plant gathering and small-game hunting. The artifact assemblage from this time period consists of knives, scrapers, and a diverse set of projectile points as well as milling implements.

There are few archaeological sites recorded from this period in the San Luis Valley. One theory for the paucity of sites is that the dry weather caused inhabitants to migrate to higher elevations to find water and food (Benedict 1978). Others feel that a sampling bias may explain the low number of sites.

4.10.1.3 Late Prehistoric

The Late Prehistoric era within the San Luis Valley, unlike other areas in the Southwest, did not include agriculture which does not seem to have been achievable in prehistoric times. Ceramics are represented at sites within the valley. Ceramics such as Pueblo wares and Woodland ceramics appear to have been brought into the valley by foragers from other locations (Martorano *et al.* 1999).

4.10.1.4 Historic

When the first Spanish explorers entered the San Luis Valley, the Utes were the primary cultural group in the area. Spanish people from New Mexico raided the San Luis Valley for slaves in the 1600s. In the 1700s and early 1800s, the Spanish did not allocate many resources to settling the San Luis Valley. Traders used the valley, usually making agreements with the Ute, who still controlled the region (Cassells 1983). In 1821, Mexico won its independence from Spain and made a stronger effort to colonize the area by giving away land

grants. Political wrangling involving some of these grants eventually led to the descendants of Cabeza de Vaca (or Baca) being authorized to receive five 100,000 acre land grants by the U.S. government in 1860. One of these, Baca Grant Number 4, encompasses much of the current planning area. This grant was given by the Baca descendants to their lawyer, John Watts, as payment for services rendered. In 1863, the grant was purchased by William Gilpin, a former governor of the territory, who then sold it to George Adams. In the late 1800s, prospectors were active on the grant, and in 1896, a strike was made on Cottonwood Creek. A mine was established and the town of Crestone grew up near the mine.

4.10.2 Records Review

A records search and a literature review were conducted for the planning area and an area of 1000 feet surrounding the planning area. The Colorado Office of Archaeology and Historic Preservation online Compass records were consulted during the records search.

Three archaeological surveys have been completed within the planning area boundaries. A total of 60 archaeological sites have been identified within the planning area and the 1000 foot buffer. Many of these sites (20) are recorded as isolated finds (containing up to 3 artifacts or one feature). Another seventeen of these sites are mining related. Sixteen sites are identified as prehistoric campsites. The remainder of the sites is a mixture of isolated prehistoric features, various historic structures, and one stone enclosure attributed to a prehistoric time period. Of the 60 sites identified during the records search, 13 are potentially eligible for inclusion on the NRHP and are recommended for further archaeological investigation. All of these are prehistoric camp sites. The prehistoric camp sites recorded within the project area a range in size from a few meters to the largest measuring 30 by 11 meters. The camp sites also vary in time period of occupation with at least one being described as a multi-component site. Three of these sites are dated to the Paleoindian and early Archaic time periods.

One National Register Property is recorded near but not within the planning vicinity area. This property is the Crestone School within Crestone, Colorado which dates to approximately 1880.

4.11 Flora and Fauna

The Baca Land Trust commissioned the Colorado Natural Heritage Program (CNHP) to perform a Biological Assessment (BA) of a substantial portion of the District's service area (CNHP, 2005). This Biological Assessment did not include the Casita Park area, though much of the BA is also pertinent and applicable to the Casita Park area based on ecological field investigations performed by Brown and Caldwell. An Environmental Assessment was also performed for a potential energy development project on the Baca National Wildlife Refuge, which is immediately adjacent to portions of the planning and project areas. Therefore, much of the information for this section was obtained from the CNHP Biological Assessment (2005) and the USFWS EA for the Lexam Project (2008). Since the CNHP BA was performed on the Chalets area, this document is incorporated by reference. Supplemental information collected during ecological field investigations by Brown and Caldwell for this project is also included in this section.

4.11.1 Vegetation Communities

The planning area is located in the Southern Rocky Mountains ecoregion and includes the Upper Montane and Lower Montane-Foothills ecological zones. The Upper Montane zone includes aspen forest, mixed conifer forests, montane grasslands, mountain sagebrush, montane riparian woodlands and shrublands, and high montane lakes and streams. The Lower Montane-Foothill zone includes pinyon pine, juniper, Douglas fir (*Pseuedotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*), shrublands, intermontane-foothill grasslands, wetlands, and foothill riparian woodland and shrublands. Various streams are also present. Though not specifically covered by the CNHP BA (2005), the Casita Park area is consistent with the intermontane-foothill grasslands subdivision of the Lower Montane-Foothill zone.

4.11.1.1 Upland Habitats

The Baca Chalets consist primarily of Pinyon-juniper woodlands at elevations above 7,800 feet, with inter-mountain basin semi-desert shrub steppe and semi-desert grasslands being the next most common upland habitat types of the Chalets area. The Casita Park area is consistent with the semi-desert grassland type. Typical woody plant species of the pinyon-juniper woodlands include pinyon pine (*Pinus edulis*), Rocky Mountain Juniper (*Juniperus scopulorum*), Douglas fir, Rocky mountain maple (*Acer glabrum*), rabbitbrush (*Ericamerica nauseosa*), sagebrush (*Artemisia spp*), and quaking aspen (*Populus tremuloides*). Herbaceous species observed during Brown and Caldwell's field review in the woodland understory and in semi-desert grassland areas near Casita Park include western wheatgrass (*Pascopyrum smithii*), ricegrass (*Achnatherum hymenoides*), needle-and-thread grass (*Hesperstipa comata*), blue grama (*Bouteloa gracilis*), and prickly pear (*Opuntia polyacantha*).

4.11.1.2 Special Status Plant Species

There are no plant species listed as endangered, threatened, candidate or proposed that are known to occur in Saguache County, CO (USFWS, 2009). Slender spiderflower (*Cleome malticaulis*) is a CNHP species of concern which has the potential to occur in the planning area, though this is not a special status species according to Federal or State agencies (CNHP, 2005). Slender spiderflower was reported by a local resident but was not observed by CNHP during their 2005 field surveys. Brown and Caldwell did not observe slender spiderflower during the field visit to the planning and project areas.

CNHP (2005) identified 6 Potential Conservation Areas (PCA) in and near the Chalets portion of the planning area, based on their significant and biological importance. These areas include: the South Crestone Creek riparian corridor, Willow Creek riparian corridor, Cottonwood Creek riparian corridor, Spanish Creek wetlands (located near but outside the planning area), and the Baca Grande and Reserve (located near but outside the planning area).

4.11.1.3 Invasive and Noxious Weeds

Some of the non-native plant species found in the Chalet and Casita Park areas include whitetop (*Cardaria draba*), Canada thistle (*Cirsium arvense*), Kentucky bluegrass (*Poa pratensis*), and smooth brome (*Bromus inermis*) (CNHP, 2005). Kentucky bluegrass and smooth brome are commonly seeded for either pasture or residential/commercial lawns. Kochia (*Kochia scoparia*) is another introduced, but not noxious, plant species that was observed in the planning area during field reviews for this project.

4.11.2 Wildlife and Fisheries

Much of the information for this section was obtained from the CNHP BA, which is therefore incorporated by reference. Supplemental information collected during ecological field investigations by Brown and Caldwell for this project is also included.

4.11.2.1 Big Game

Elk, mule deer, and pronghorn are the primary big game species within the planning area (USFWS, 2008; CNHP, 2005). Elk use a variety of habitat types within the planning area but are primarily found in wet meadows and shrub-dominated habitats. Elk populations in the area usually peak during winter months (November-March), with populations highest during severe winters. Mule deer are typically found in riparian areas and abandoned agricultural areas. Pronghorn occur throughout the planning area year-round. Use of the planning area by pronghorn is highly dependent on water and forage availability. Big game population numbers fluctuate slightly from year-to-year based on weather and habitat conditions. Water availability and the amount of quality winter habitat are the limiting factors. Water availability, forage quality, cover, and weather patterns typically determine the level of use and movement of big game species through the area. (USFWS 2008)

The Chalets portion of the planning area contains severe winter range for elk and winter range for pronghorn, which the Casita Park portion of the planning area contains pronghorn winter range (CNHP, 2005). CNHP observed evidence of elk and pronghorn use of the Chalets area during their 2005 surveys.

Mountain lion and black bear, fairly common in south-central Colorado, also are classified as big game species. These species occupy the higher elevations of the Sangre de Cristo mountain range, but also likely exist in the planning area due to the presence of preferred habitat (i.e., canyons, mesas, brushy hillsides (USFWS 2008)) especially in the Chalets area.

4.11.2.2 Small Game and Furbearers

Small game species, including mourning dove, cottontail, and white-tailed jackrabbit occur within the planning area. Mourning doves, found in a diversity of habitats close to water, are most likely to be found within the planning area during spring, summer, and early fall. Coyote, badger, red fox, bobcat, beaver, muskrat, skunk, and raccoon are furbearers that may be found within the planning area. (USFWS 2008)

Waterfowl nesting habitat and staging habitats utilized during migration may also be located in the planning area. Common species of waterfowl in appropriate habitats such as wetlands, ponds, wet meadows, and riparian areas of the project vicinity include Canada goose, mallard, Northern pintail, gadwall, American wigeon, cinnamon, green-winged and blue-winged teal. (USFWS 2008)

4.11.2.3 Nongame Species

An abundance of nongame species (e.g., small mammals, passerines, raptors, and reptiles) can be found in trophic areas and habitat types typical of the planning area. Nongame mammals in the planning area may include deer mouse, silky pocket mouse, meadow vole, Ord's kangaroo rat, thirteen-lined ground squirrel, Gunnison's prairie dog, and northern pocket gopher. Rare, the Gunnison's prairie dog is only found in small colonies in the San Luis Valley and south-central Colorado. The USFWS is currently preparing a 12-month finding on a petition to list the Gunnison's prairie dog as threatened or endangered under the Endangered Species Act of 1973. The northern pocket gopher is a Colorado species of concern and is discussed in detail in the section on Special Status Animals. The area predators, including mammals (coyote, badger, skunk), raptors (eagles, hawks, falcons, owls), and reptile species, find prey in small mammals.

Several bat species may be found within the planning area including Brazilian free-tailed bat, western small-footed myotis, long-eared myotis, long-legged myotis, hoary bat, and Townsend's big-eared bat. The Townsend's big-eared bat is a Colorado species of concern.

Nesting habitat and staging habitats used during migration for shorebirds and waterbirds can be found in the planning area. Species that occur within the project area in appropriate habitats such as wetlands, ponds, wet meadows, and riparian areas may include greater sandhill crane, greater and lesser yellowlegs, American avocet, white-faced ibis, Wilson's phalarope, snipe, sora, and Virginia rail (USFWS, 2008).

Other nongame species that may occur within the planning area include several species of reptiles and amphibians, including the short-horned lizard, bull snake, western garter snake, tiger salamander, chorus frog, Great Plains toad, woodhouse's toad, Plains spadefoot toad, and northern leopard frog. The northern leopard frog is a Colorado species of concern.

4.11.2.4 Migratory Birds

Nongame birds within the planning area vicinity may include a variety of migratory bird species, including neotropical migrants. Neotropical birds breed in North America and winter in the neotropical region of South America. Neotropical migrants and other bird species breeding in the planning area may include yellow warbler, song sparrow, western wood pewee, black-billed magpie, American crow, western meadowlark, and a

number of raptor species. Migratory birds are protected under the MBTA (16 USC 703 711) and EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (66 Federal Register 3853).

The San Luis Valley is home to a wide range of hawks, falcons, owls, and eagles during all seasons. Plentiful food is found throughout the planning area. Prairie falcons may occur throughout the year within the planning area and utilize the various habitats for feeding and resting. Red-tailed hawks, Swainson's hawks, and American kestrels may also occur. Potential nesting in the dense vegetation of wet meadows and marshes are northern harriers and short-eared owls. Great horned and long-eared owls may nest in deciduous trees found along riparian areas and on the banks of incised creeks and ditches. Ferruginous hawk, rough-legged hawk, northern harrier, short-eared owl, and golden and bald eagles live in the planning area during winter months. Hawks, owls, and golden eagles scavenge for rodents, small mammals, and other prey where cover is plentiful, including riparian areas, uplands, and short-emergent wetlands. Sensitive species include the bald eagle, peregrine falcon, and ferruginous hawk.

Found throughout the variety of habitats occurring in the planning area are passerine or songbird species. Because of increased plant diversity and structure, plentiful nesting sites and food base, the riparian areas and wetlands harbor the greatest diversity of bird species within the area.

4.11.2.5 Fisheries

Four native fish species inhabit Crestone Creek: Rio Grande sucker (*Catostomus plebeius*), Rio Grande chub (*Gila pandora*), fathead minnow (*Pimephales promelas*), and longnose dace (*Rhinichthys cataractae*) (USFWS, 2008). Seining surveys on Cottonwood, Spanish and Willow Creeks by CNHP (2005) only recorded fathead minnow (*Pinephales promelas*). In 2005 the Colorado Division of Wildlife (CDOW) recorded a new population of the Rio Grande sucker and Rio Grande chub, which are discussed further in the following section (CNHP, 2005).

4.11.2.6 Special Status Animals

The U.S. Fish and Wildlife Service maintains a list of threatened, endangered and candidate species that potentially occur in appropriate habitats in Saguache County. Table 4-2 provides this list and Brown and Caldwell's assessment regarding whether they are known to occur or have suitable potential habitat in the planning area.

Table 4-2. ESA-Listed and Proposed Species Potentially Occurring in Saguache County, Colorado[1]

Common Name	Scientific Name	Listing Status	Known to occur or suitable habitat in Planning Area
Black-footed ferret	*Mustela nigripes*	Endangered	No – Species inhabits large prairie dog towns typically over 80 acres and usually in remote areas lacking human presence. Large prairie dog towns were not observed within the planning area.
bonytail chub	*Gila elegans*	Endangered	No – Species inhabits the Colorado River Basin. Planning area is located within a closed basin within the Rio Grande watershed. Creeks in the planning area do not provide suitable habitat for this species.
Canada lynx	*Lynx canadensis*	Threatened	No – Species requires consistent snow cover and is typically found at higher elevations in areas with reliable winter snow pack which limits access by coyotes and supports populations of snowshoe hare prey base. The planning area is primarily a pinion pine/juniper woodlands or interbasin desert grasslands which are not suitable as Canada lynx habitat.
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered	No – Species inhabits the Colorado River Basin. Planning area is within a closed basin within the Rio Grande watershed. Creeks in the planning area do not provide suitable habitat for this species.

Table 4-2. ESA-Listed and Proposed Species Potentially Occurring in Saguache County, Colorado[1]

Common Name	Scientific Name	Listing Status	Known to occur or suitable habitat in Planning Area
humpback chub	*Gila cypha*	Endangered	No – Species inhabits the Colorado River Basin. Planning area is within a closed basin within the Rio Grande watershed. Creeks in the planning area do not provide suitable habitat for this species.
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	No – Uneven age closed canopy forested areas and rocky canyons provide suitable potential habitat. Portions of the Planning Area are forested but are not closed canopy and in general rocky canyons are located further east of the planning area at higher elevations towards the Sangre de Cristos. Species typically inhabits Douglas fir and ponderosa pine forests and the Planning Area is typically grasslands, shrublands or pinion pine/juniper forest. The Colorado Natural Diversity Information Source indicates that the species is not known to occur in Saguache County so the species is not known to inhabit the Planning Area.
razorback sucker	*Xyrauchen texanus*	Endangered	No – Species inhabits the Colorado River Basin. Planning area is within a closed basin within the Rio Grande watershed. Creeks in the planning area do not provide suitable habitat for this species.
southwestern willow flycatcher	*Epidonax traillii extimus*	Endangered	No – species requires dense riparian willow or other shrub habitat in close proximity to water and saturated soils. Cottonwood/juniper habitats are typical along the creeks in the Chalet area but dense willow shrub is not common and was not observed in the planning area to a substantial degree. Dense willow habitat was observed on the Baca NWR, but outside the planning area and distant from the project areas. Planning area is at the northern limits of this species breeding season range, so presence in the planning area is unlikely.
Uncompahgre fritillary butterfly	*Boloria acrocnema*	Endangered	No – found above tree line in patches of its larval host plant, snow willow. Often found on north and east facing slopes. The planning area is not above tree line and snow willow is not likely to be present in the planning area.

[1]Source: U.S. Fish and Wildlife Service on line species list for Saguache County, available at: http://www.fws.gov/mountain-prairie/endspp/CountyLists/Colorado.pdf , accessed March 16, 2009.

The CNHP (2005) identified the following animal (excluding insects) species of concern that could occur in the Baca Chalets portion of the planning area. These species are also potentially found in or near the Casita Park area in appropriate habitats. None of these species are listed as threatened, endangered, candidate or proposed species under the federal Endangered Species Act of 1973 (USFWS, 2009). The bald eagle was de-listed in 2007.

- Northern leopard frog (*Rana pipiens*)
- Northern goshawk (*Accipiter gentiles*)
- Sage sparrow (*Amphispiza belli*)
- Golden eagle (*Aquila cheysacros*)
- Snowy egret (*Egretta thula*)
- Northern pygmy-owl (*Glaucidium gnoma*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Black-necked stilt (*Himantopus mexicanus*)
- White-faced ibis (*Plegadis chihi*)
- Rio Grande chub (*Gila pandora*)
- Rio Grande sucker (*Catostomus plebeius*)

- Plains pocket mouse subspecies (*Perognathus flavescens relictus*)
- Silky pocket mouse subspecies (*Perognathus flavus sanluisi*)
- Thirteen-lined ground squirrel subspecies (*Spermophilus tridecemlineatus blanca*)
- Brazilian free-tailed bat (*Tadarida brasiliensis*)
- Northern pocket gopher subspecies (*Thomomys talpoides agrestis*)

During field surveys in the Chalets and Grants (outside but near the planning area) in 2005, CNHP collected northern pocket gopher subspecies *agrestis*, and observed four other rare animals including: northern goshawk, mountain plover, Wilson's phalarope, Brazillian free-tailed bat.

Brazillian free-tailed bat, mountain plover, and Wilson's phalarope were observed near the Spanish Creek wetlands PCA (located near but outside the Planning Area). Northern goshawk was observed to nest along South Crestone Creek near the eastern side of the planning area.

Rio Grande chub and sucker were recorded by CDOW in a ditch associated with South Crestone Creek within the Baca National Wildlife Refuge.

Bald Eagles are known to occur in the San Luis Valley, especially during winter. The Colorado Natural Diversity Information Source (NDIS) indicates a known bald eagle roost site along Crestone Creek on the Baca NWR, south of County Road T, and indicates this area is also a winter concentration area for eagles (CDOW, 2009). However, no known bald eagle nests are mapped by the NDIS in the planning area so it is expected that eagle activity in and near the planning area would be primarily during winter.

None of the above listed special status species were observed in the project areas during field surveys by Brown and Caldwell May of 2009.

4.12 Recreation and Open Space

Recreation activities in the planning area include hiking, hunting, fishing, mountain and road biking, climbing, horseback riding, bird watching, skiing, and snow shoeing. Saguache County is a wilderness hub due to its remote location and large percentage of public lands (CNHP, 2005). Roughly three quarters of the over two million acres that make up Saguache County is publicly owned, including the Rio Grande and Gunnison National Forests, as well as the majority of the Great Sand Dunes National Park and Preserve. Recreational opportunities and access to federally owned open space lands is a major attraction of the Baca Grande and Crestone areas.

Within the project area, the Baca Grande Camper Village offers RV accommodations. At camper village, there are a shower house and laundry facilities.

4.13 Agricultural Lands

The planning area is located on land zoned for agricultural and residential uses. The planning area does not contain any environmentally significant agricultural lands (prime, unique, statewide importance, local importance, etc.) as defined in the EPA Policy to Protect Environmentally Significant Agricultural Lands dated September 8, 1978. The planning area is located within a primarily residential subdivision, though past agricultural uses such as ranching have occured.

4.14 Air Quality

According to the CDPHE Air Pollution Control Division, all Colorado communities are currently in attainment of all National Ambient Air Quality Standards, with the exception of the Front Range ozone control area, which is nonattainment for the 8-hour ozone standard.

The San Luis Valley, approximately 50 kilometers wide and located at an elevation of approximately 7,600 feet above sea level, is bound by the San Juan mountain range on the west and by the Sangre De Cristo range to the east. Grasslands and shrublands are the prevailing land cover in the valley, with agricultural uses in the southern and western portions. Great Sand Dunes National Park and Preserve (GSDNPP) and Baca National Wildlife Refuge are areas designated for natural resource management and protection in the San Luis Valley, and are located near the planning area. (USFWS 2008)

4.14.1 Special Air Quality Protection Area

Since its designation by Herbert Hoover as Great Sand Dunes National Monument in 1932, the protection of GSDNPP has been important to local citizens. GSDNPP is located south of the Baca National Wildlife Refuge and includes an air quality protection area that requires specific attention. (USFWS 2008)

The Wilderness Act of 1964 defined wilderness as "untrammeled by man, where man himself is a visitor who does not remain." Subsequently, portions of the Great Sand Dunes National Monument were designated wilderness, and on November 22, 2000, Congress passed the Great Sand Dunes National Park and Preserve Act of 2000, authorizing the expansion of the national monument to over 33,000 acres and designating it as a national park. The wilderness portion of the original Great Sand Dunes National Monument is designated as a mandatory Class I Federal area, as defined in the 1977 Clean Air Act. Mandatory Class I areas are identified as national parks (over 6,000 acres), wilderness areas (over 5,000 acres), national memorial parks (over 5,000 acres), and international parks that were in existence as of August 1977. Federal Land Managers (FLM) were given an "affirmative responsibility" to protect air quality related values (AQRVs inside mandatory Class I lands. (USFWS 2008)

4.14.2 Air Quality

The existing air pollutant concentrations in the local vicinity of the planning area are relatively low, except for ozone. There are few air pollution emission sources (limited industrial facilities and few residential emissions, primarily from smaller communities and isolated ranches). There will be some local, naturally-generated particulate matter (windblown dust), in part due to the dry climate.

4.15 Water Quality and Quantity

4.15.1 Surface Water

Within Chalet One of the planning area, as shown on Figure 2-1, South Crestone Creek, Willow Creek, Spanish Creek, and South Spanish Creek all flow east to west. Within Chalets Two and Three, South Spanish Creek and Cottonwood Creek both flow east to west. All of these waterways are perennial and are driven by snowmelt in the Sangre de Cristo Mountains and periodic summer rains. The Casita Park planning area is located north of North Crestone Ditch, as is the interconnection pipeline project area. The Well #18 project area and interconnect pipeline are near North Crestone Creek, which joins with South Crestone Creek west of the access road to the Aspen WWTF.

Flows in these creeks typically peaks in June at about 18 cubic feet per second (cfs) and decline by August to about 15 cfs. After August, rainfall typically declines and by the end of October these creek flows can drop to about 1 cfs until April or May when spring runoff begins again (CNHP, 2005). Flow in these surface

waterways terminate on the San Luis Valley floor rather than joining larger streams and rivers to the west of the planning area.

4.15.2 Groundwater

The San Luis Valley is part of the Rio Grande Aquifer System, and is the northernmost portion of the aquifer system that extends from Saguache County, Colorado, to West Texas. Groundwater quality in the San Luis Valley, as measured by total dissolved solids (TDS) concentration, ranges from less than 500 milligrams per liter (mg/L) along the edges to over 3,000 mg/L in the center of the basin. Other San Luis Valley groundwater quality concerns include bacteria, toxic metals, and nitrate, which have been detected in private domestic drinking water wells. In response to these concerns, the San Luis Valley Drinking Water Well Project was initiated in April 2007. It provides free testing of water from private wells and information on various water treatment techniques. (USFWS 2008)

4.16 Public Health

The District's water supply is currently being disinfected with liquid sodium hypochlorite under a temporary variance to the CDPHE Potable Water System Design Criteria. The District's sole water supply is Well #18, and there are customers connected to the pipeline between Well #18 and the South Crestone Tank that were receiving un-disinfected water prior to implementation of the temporary sodium hypochlorite disinfection system. In order to ensure that all customers were provided with disinfected water, the District has been feeding sodium hypochlorite directly into the casing of Well #18. The Well #18 Project includes a new disinfection system that will comply with CDPHE design criteria.

The District has also detected elevated nitrate levels in the Casita Park service area. The nitrate contamination may originate from the impoundment of the Casita Park WWTF effluent along the south side of Saguache County Road T (the Casita Park well is located to the north of County Road T) and/or from the leach field of the White Eagle Inn ISDS.

The Skyview Way water line is constructed of Asbestos Cement Pipe (ACP) (aka Transite). This pipe material was regularly used for decades as water distribution piping. There are many miles of this type of pipe currently in service throughout the United States. Since its introduction, the United States Environmental Protection Agency (EPA) determined that asbestos, in an airborne condition, is a hazardous material and established laws and guidelines for the handling and disposal of the material. Additionally, the Occupational Safety and Health Administration (OSHA) has adopted safety standards for work involving asbestos. In the State of Colorado, the Air Quality Control Commission (AQCC) has established emissions standards for asbestos.

4.17 Energy

Energy is provided to the planning area and the project areas by the San Luis Valley Rural Electric Coop, Inc.

4.18 Regionalization

The project area is located within the Baca Grande Water & Sanitation District.

4.19 Public Participation

The proposed project elements analyzed in this EA have been discussed on multiple occasions at District Board Meetings, which are open to the public. The public generally supports the proposed improvements to their water system.

A public meeting is scheduled for July 17, 2009 at the District's regularly scheduled Board meeting. A copy of the public notice for this meeting is included in Appendix A.

4.20 Environmental Laws

4.20.1 Federal Regulations

The project does not threaten to violate Federal laws or requirements imposed to protect the environment. Required federal environmental permits will be obtained prior to initiation of construction of the proposed project.

Preparation of this EA will assist the CDPHE in compliance with the National Environmental Policy Act (NEPA).

4.20.2 State Regulations

The project does not threaten to violate State laws or requirements imposed to protect the environment and is designed to improve the ability of the District to comply with drinking water regulations.

Through consultation with the Colorado State Engineers Office, the District learned that there may be some limitations on the location of use for water from the Motel Well, which is proposed to be connected to the Well #18 water distribution system (Appendix B). The District is currently in discussions with the State Engineer to develop a resolution to this issue, which is expected to be reached during July of 2009.

Construction disturbances over 1 acre of land require the preparation of a Stormwater Pollution Prevention Plan and submittal of a Notice of Intent to the CDPHE prior to construction. The construction contractor for the proposed project would prepare these documents and complete the required forms prior to the start of construction activities. Implementation of Construction Best Management Practices would be required in conjunction with all construction activities.

5. ENVIRONMENTAL CONSEQUENCES

Construction of the proposed alternatives may have direct environmental impacts from facility construction and secondary and cumulative impacts from future development within the service area. Secondary impacts are those spawned, induced, or stimulated by the proposed action. These can include cumulative social and land use impacts, among others. Cumulative impacts are the collective incremental impacts of the proposed action regardless of the entity undertaking the action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Based on the characteristics of the proposed project, and the descriptive elements of the environmental setting, both direct and/or secondary impacts are probable.

The following projects are eligible for funding under American Recovery and Reinvestment Act (ARRA) or State Revolving Fund:

- **Well #18 Project** – upgrades to disinfection system
- **Well #18 Additional Storage** –upgrades to an existing storage tank
- **Automation and Telemetry** – interconnection of all control devices and addition of automated central control.
- **Skyview Water Main Replacement** – replacement of asbestos cement water line.
- **Interconnection of Water Systems** – strengthening the efficiency and reliability of the overall system.

These projects are required to upgrade the potable water treatment and distribution system and prevent violations of Colorado Primary Drinking Water Regulations.

The National Environmental Policy Act defines cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. The District is pursuing several other projects within the planning area that are not included in the above list of proposed projects, but could be considered reasonably foreseeable because planning and final design of these other projects is currently underway. Following is a list of reasonably foreseeable future projects that are not part of the proposed project analyzed in this EA, but are discussed in this document in the context of cumulative impacts.

- **Water Line Improvements in East Dream Way –** This project involves replacing approximately 5,500 feet of existing water line in East Dream Way from the Shumei Institute to Baca Grande Way. The new water line will run approximately parallel to the existing pipe to allow for continuous water service, except for short shutdown(s) when the service connection lines are switched over to the new main. New isolation valves will be installed on the new water line and new fire hydrants to replace or supplement existing appurtenances will be included.
- **Lift Station/Force Main – Casita Park to Aspen WWTP** –This project involves constructing a new wastewater lift station and yard piping upstream of the existing wastewater lagoon system serving the Casita Park development. It will also include construction of approximately 21,000 linear feet of a force main pipeline to convey wastewater from the new lift station to the District's existing Aspen Wastewater Treatment Plant (WWTP). The project also involves improvements to the Aspen WWTP including addition of chemical storage and feed equipment and a new mechanical screening device.

- **Dream Way Sewer Line Replacement –** This project involves replacing approximately 5,500 linear feet of existing gravity sanitary sewer line in East Dream Way. The existing line is typically not functional during part of the year due to freezing. The sewer line to be replaced is in the same section of Dream Way as the existing water line that is also to be replaced as discussed above. The sewer line is located in Dream Way from the Shumei Institute to Baca Grande Way, and then in Baca Grande Way from Dream Way south approximately 2,200 feet.
- **Wagon Wheel Lift Station** –This project involves replacing the existing Wagon Wheel Lift Station (a converted mechanical wastewater treatment plant) with a new lift station.

A discussion of Cumulative impacts is only necessary when a proposed project element or elements would substantively impact a particular resource area and the reasonably foreseeable projects would also impact that same resource. Therefore, Cumulative Impacts are not discussed for all resources and/or all project elements.

5.1 Physical Aspects

5.1.1 Well #18 Project

5.1.1.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to physical aspects such as soils, minerals, or geology would occur because no construction activities would occur.

5.1.1.2 Proposed Alternative

The Well #18 Project would require the District to acquire the property interests for the proposed storage and pumping station. There are no physical conditions or hazardous areas (slides, faults, etc.) that might affect new construction on site. However, construction of the proposed Well #18 project would result in some excavation and earthmoving activities at the existing Well #18 site. There would be minor disturbances to soil and sub-soil during construction. However, the Well #18 project area is already disturbed so these impacts would be minor. The Well #18 project would not result in measurable impacts on geology, or minerals due to the minor nature of the proposed construction. Since the pipeline from Well #17 already exists, only a minimal amount of excavation would be necessary to connect Wells #17 and #18. Construction equipment and activity would be visible to the public from the existing Aspen WWTF access road, but would not be directly visible from County Road T. There are no physical conditions or hazardous areas (slides, faults, etc.) that might affect new construction on site.

5.1.2 Well #18 Additional Storage

5.1.2.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to physical aspects such as soils, minerals or geology would occur because no construction activities would occur.

5.1.2.2 Proposed Alternative

Construction of the necessary infrastructure to use the existing Well #18 tank for improved disinfection contact time would be done at the same time as the other Well #18 site improvements listed above. This project element would not substantially increase the above-mentioned minor impacts on soil and would not have substantive impacts on geology or minerals due to the minor nature of the earthwork involved. Visibility of this project element would be the same as described for the Well #18 project above. There are no physical conditions or hazardous areas (slides, faults, etc.) that might affect new construction on site.

Secondary and cumulative impacts to visual resources could include an increased number of structures associated with development.

5.1.3 Automation and Telemetry

5.1.3.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to physical aspects such as soils, minerals or geology would occur because no construction activities would occur.

5.1.3.2 Proposed Alternative

Installation of automation and telemetry equipment would occur on the District's existing infrastructure. Installing this equipment would occur at locations that are already disturbed by past construction of water infrastructure and no substantial earthmoving would be necessary. Therefore, the proposed automation and telemetry would have no impacts on physical aspects such as soil, minerals or geology. No land easements or additional sites are required for this project alternative. The proposed equipment would be visible, but is expected to blend in visually with the existing water infrastructure upon which the telemetry equipment would be installed. No large antennae or dishes are proposed, therefore visual impacts associated with this proposed project element would be minimal.

5.1.4 Skyview Water Main Replacement

5.1.4.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to physical aspects such as soils, minerals or geology would occur because no construction activities would occur.

5.1.4.2 Proposed Alternative

Replacement of the ACP water line on Skyview Way would occur along the same route as the existing pipe and would occur within the footprint of the existing paved road. Cutting of the existing pavement and trench excavation would temporarily disturb soil and subsoil that was already disturbed by construction of the road and the original ACP. No land easements or additional sites are required for this project element because construction would occur within an existing road. Trench excavation would not affect minerals or geology due to the previously disturbed nature of the area and the relatively shallow nature of the excavations that would be necessary. There are no physical conditions or hazardous areas (slides, faults, etc.) that could affect new construction along Skyview Way.

5.1.4.2.1 Cumulative Impacts

The District is also planning to construct other water and wastewater pipelines along East Dream Way, and between the Casita Park lagoon system and the Aspen WWTF. These other projects are not included as Proposed Alternatives. The cumulative amount of earth disturbance, trench excavation and presence of construction crews would be greater than would occur only from the Skyview Way water main replacement. There would be a greater amount of construction activity in the planning area and/or the activity would occur over a longer period of time than would occur solely with the Skyview Way project. However, these cumulative impacts are expected to be minor and temporary. The proposed Skyview Way project and reasonably foreseeable other water and wastewater infrastructure would all occur along or within existing roads or existing treatment plant sites, which minimizes the cumulative impact on undisturbed lands within the planning area.

5.1.5 Interconnection of Water Systems

5.1.5.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to physical aspects such as soils, minerals or geology would occur because no construction activities would occur.

5.1.5.2 Proposed Alternative

The pipeline will be placed within an easement along County Road T to the intersection with the Aspen WWTF access road. South of County Road T, the pipeline will be placed within an easement on the Ireland property along the east side of the access road to Well #18. Easements are required for both construction and maintenance of the pipeline. There are no physical conditions or hazardous areas (slides, faults, etc.) that might affect new construction along the proposed route. Trench excavation would temporarily disturb the soil and subsoil along the route until the trench is backfilled. To facilitate re-vegetation efforts the contractor would be required to separate the topsoil from the subsoil such that the seed bank and organic material present in the topsoil will not be intermixed with the sub-soil. Due to the shallow nature of the proposed excavation (less than 10 feet), the project would not impact minerals or geology. During construction of the pipeline, the trench, temporary spoil piles and various construction equipment and piping will be visible to the public especially along County Road T. However, the visual impact of this project element would be mitigated since it follows existing roadways.

5.1.5.2.1 Cumulative Impacts

The discussion of cumulative impacts above in Section 5.1.4 also applies to the proposed Interconnection Project. Please refer to this section for analysis on how the proposed projects interact with other reasonably foreseeable projects in the planning area.

5.2 Climate

5.2.1.1 No Action Alternative

The No Action Alternative maintains the status quo. No construction and resultant equipment emissions would occur, but District staff would continue to manually operate the water system, which would require constant driving through the planning area. However, the climate impacts of the No Action Alternative would be minimal and difficult to detect or measure.

5.2.1.2 Proposed Alternative

None of the proposed project elements are expected to substantially impact climate individually or cumulatively. It would be difficult to detect or measure changes on climatic variables caused by the proposed construction projects or operational changes to the existing water system. Construction activities would result in temporary combustion emissions from equipment. However, the proposed automation and telemetry system would over the long term reduce the amount of driving by District staff because they would no longer need to manually operate the water system.

5.3 Population

The need for the proposed projects is not being driven by growth or new development expected in the planning area, but rather by an inadequate and aging system. The planning area was subdivided in the 1970s and development and build-out of the existing subdivisions would occur similarly under No Action and the Proposed Alternative. The proposed project would not induce or increase population growth or development in the planning area.

5.4 Housing, Industrial and Commercial Development, and Utilities

As indicated in Section 5.3, the proposed project is not in response to growth or planned development. The proposed projects would not impact housing, industrial or commercial development in the planning area.

5.5 Economics and Social Profile

As indicated in Section 5.3 and reiterated in Section 5.4, the proposed project is not in response to growth or planned development. The proposed projects would not impact the economic or social profile within the planning area. Baca Grande and Casita Park would continue to have a similar economic and social makeup with the proposed projects or with the No Action alternative. The proposed projects would benefit all of the District's customers and the impacts would not disproportionately fall on disadvantaged or minority populations (Environmental Justice).

5.6 Land Use

Land uses within the planning area are established and managed by the POA. This would continue to be the case under either the No Action Alternative or the Proposed Alternative. The proposed projects would not result in or cause changes to land use in the planning area.

5.7 Floodplain Development

There are no FEMA-designated floodplains in the planning area. The Well #18 projects are the closest of the proposed projects to a perennial waterway, which is North Crestone Creek. However, the Well #18 project occurs at the existing location of Well #18 and proposed infrastructure for this project element is largely sub-surface. There would be no impacts on floodplains from the Proposed Alternatives.

5.8 Wetland, Riparian, and Aquatic Habitats

5.8.1 Well #18 Project

5.8.1.1 No Action Alternative

The No Action Alternative would not directly affect wetlands, riparian or aquatic habitats because no construction would occur. The existing Well #18 disinfection methods do not impact wetland, riparian, or aquatic habitats.

5.8.1.2 Proposed Alternative

The Proposed Well #18 Alternative would not directly or indirectly impact wetland, riparian or aquatic habitats because these habitat types are not present at the existing Well #18 site and would therefore not be impacted by construction activities. Further, water disinfection for potable water delivery is not a type of activity that should impact these habitats.

Connection of the existing Well #17 to Well #18 would not cause an increase in groundwater pumping or water use in the planning area. Thus, the Proposed Alternative would not result in additional groundwater withdrawal, which can indirectly impact wetland, riparian or aquatic habitats. There are no wetland, riparian or aquatic habitats near Well #17 to be directly or indirectly impacted and North Crestone Creek is located at an adequate distance from the proposed earthwork at Well #18 to avoid impacts to riparian or wetlands located along this creek.

5.8.2 Well #18 Additional Storage

5.8.2.1 No Action Alternative

The No Action Alternative would not directly affect wetlands, riparian or aquatic habitats because no construction of additional storage would occur. The existing Well #18 facility disinfection method is not a type of activity that would impact wetland, riparian, or aquatic habitats.

5.8.2.2 Proposed Alternative

The Proposed Alternative of using the existing tank for disinfection contact time would not impact wetland, riparian or aquatic habitats because construction necessary to use the tank would occur in an existing disturbed area at the Well #18 site.

5.8.3 Automation and Telemetry

5.8.3.1 No Action Alternative

The No Action Alternative would not directly affect wetlands, riparian or aquatic habitats because no construction would occur. However, manual system operation, and frequent water main leaks result in the inefficient use of water by the District.

5.8.3.2 Proposed Alternative

Installation and operation of automation and telemetry equipment would not require earth moving activities so direct impacts to wetland, riparian or aquatic habitats would not occur. Centralized control and the ability to monitor and operate the District's water system remotely would decrease the potential to overfill storage tanks, and would allow the District to better monitor water use and more quickly remedy problems in its water system. This could result in a small increase in the system efficiency, which could have a small benefit on wetland, riparian or aquatic habitats that could be adversely impacted by use of the District's water supply wells.

5.8.4 Skyview Water Main Replacement

5.8.4.1 No Action Alternative

The No Action Alternative would not directly impact wetland, riparian or aquatic habitats because no construction would occur. Continued water main breaks into the future would be likely, which results in water leaks and inefficient use of water resources.

5.8.4.2 Proposed Alternative

Replacement of the ACP Skyview Way water main with a new PVC pipeline would reduce the likelihood of future pipeline breaks and water loss from the system, which would represent an increase in water delivery efficiency. Since construction of the new PVC water line would occur within the paved area of Skyview Way, and wetland, riparian or aquatic habitats do not occur in the area of the proposed construction activities, direct or indirect impacts on wetland, riparian or aquatic habitats would not occur.

5.8.5 Interconnection of Water Systems

5.8.5.1 No Action Alternative

The No Action Alternative would not directly impact wetland, riparian or aquatic habitats because no construction would occur.

5.8.5.2 Proposed Alternative

Construction of the interconnection pipeline between Well #18 and the Motel Well in Casita Park would not directly or indirectly impact wetland, riparian or aquatic habitats. During Brown and Caldwell's field review of the proposed pipeline route, no wetland, riparian or aquatic habitats were observed in this area. The proposed pipeline passes primarily through dry grassland areas along the Aspen WWTF access road and County Road T to the end of the existing pipeline at the Camper Village entrance road.

5.9 Wild and Scenic Rivers

Since Wild and Scenic Rivers do not exist at the project areas, the Proposed Alternatives would not impact Wild and Scenic Rivers.

5.10 Cultural Resources

5.10.1 No Action Alternative

Since the No Action Alternative would maintain the status quo, no indirect effects to cultural resources would occur with this alternative. The No Action Alternative may result in direct effects to cultural resources as a higher rate of unplanned maintenance activities on the aging infrastructure could result in inadvertent impact to known or unknown cultural resources in the area. As the population in the Baca Grande area increases in the future, there is the potential for residential and commercial construction projects to result in cumulative adverse effects to known or unknown cultural resources in the planning area.

5.10.2 Proposed Project and Action Alternatives

The environmental consequences of the proposed alternatives were considered as a whole rather than separately because the potential impacts on cultural resources would be similar.

Direct impacts

Construction planned for the Proposed Project and the Action Alternatives would not impact any previously recorded archaeological sites based on our review of past survey results for the vicinity of the planning area.

Unknown archaeological sites may be present in the planning area or project areas, which could be disturbed during earthmoving activities. Should previously unidentified cultural resources be discovered during project construction, all construction activity will cease in the immediate vicinity of the find. Appropriately qualified experts, in consultation with the State Historic Preservation Officer, will determine the NRHP eligibility of the find. If the find is eligible for inclusion in the NRHP, the Secretary of the Interior will be notified as specified in the Code of Federal Regulations Title 36, Part 800.7 (36 CFR 800.7), Advisory Council on Historic Preservation, Regulations for the Protection of Historic and Cultural Properties.

Indirect impacts

Indirect impacts on Cultural Resources are not anticipated.

Cumulative impacts

As indicated earlier, the District is proposing several other construction projects that are not part of the Proposed Alternative, including the Dream Way sewer and water pipelines, and the force main sewer from Casita Park to the Aspen WWTF. The Proposed Alternatives combined with these other reasonably foreseeable projects increases the potential for disturbance of previously undocumented archaeological sites

in the project areas. However, since no known cultural sites occur in the planning area, cumulative impacts on known cultural resources are not anticipated.

5.11 Flora and Fauna

5.11.1 Well #18 Project

5.11.1.1 No Action Alternative

The No Action Alternative would not directly or indirectly impact flora and fauna because no construction would occur.

5.11.1.2 Proposed Alternative

Since the Proposed Alternative would occur at the existing Well #18 site, which has already been disturbed, construction activities are expected to have minimal impact on flora and fauna. Flora at the Well #18 site is lacking in the areas of bare ground and mostly western wheatgrass, a very common plant species, in other areas. No removal of the cottonwood trees south of the Well #18 site would occur. Clearing of grassland vegetation would be required to construct the Well #18 project. Earth disturbance over approximately 1 acre of partially vegetated land would occur at the Well #18 site. No special status plants are known to occur at the Well #18 site and none were observed during field evaluations. Thus, no impacts to special status plants are anticipated. Earth moving activities create conditions that are ideal for the growth of invasive and noxious weeds. Noxious weeds did not appear to be problematic at the Well #18 site during field evaluations.

Construction activities would occur in areas that could be used by elk, mule deer and pronghorn. Big game would likely chose not to inhabit the Well #18 site during construction activities, but there are ample areas of suitable habitat for big game to occupy and forage in the vicinity of the Well #18 site which would likely be favored during construction activities. No long term or permanent impacts to big game would occur because of the Well #18 project due to its small footprint, the temporary nature of construction activity, and the abundance of high quality big game habitat in other portions of the planning area and on the Baca NWR which is immediately west of the Well #18 site.

The disturbed nature of the Well #18 site and the small project size make it unlikely that there would be substantial impacts on non-game wildlife, small game, or migratory birds.

No direct or indirect impact to fisheries, including the Rio Grande chub or Rio Grande sucker, or the special status northern leopard frog would occur because the project is adequately set back from North Crestone Creek, and there are no wetlands near the project area. The contractor would employ applicable erosion control BMPs, and no increase in groundwater use would result from this project.

No impacts to ESA-listed, proposed, or candidate animal species are anticipated because, as described in Table 4-1, none of those species potentially occurring in Saguache County are known or likely to occur in the planning area or the project area.

Direct impacts to other special status animal species identified by CNHP as possibly occurring in the planning area are not expected because of the small project footprint and the temporary nature of the construction disturbances. The special status bird species white-faced ibis, snowy egret and black-necked stilt are waterbirds and inhabit aquatic habitats or wetlands which are not present at the Well #18 site. Sage sparrows prefer sagebrush habitats which are also not present at the Well #18 site. Therefore, the Proposed Well #18 Alternative would not substantially impact these four special status bird species.

Goshawks tend to inhabit forested areas and are more likely to occur in wooded portions of the planning area. However, they may forage in and near the Well #18 site. Given the large amount of open habitats and the lack of forested areas at the Well #18 site, the proposed Well #18 alternative would not impact goshawk.

Golden eagles prefer open country for foraging. Golden eagle nesting and breeding activity would not be occurring at the time proposed for construction. Given the small project footprint and the large amount of open foraging habitats in and near the planning area, the projects potential impact on golden eagles would be difficult to detect.

It is known that bald eagles congregate in the San Luis valley in the winter. There is a known roost site on the Baca NWR, which is over 1 mile to the west of the Well #18 site. Construction during the fall winter months at the Well #18 site could bother wintering bald eagles that use the Crestone Creek corridor and cause them not to roost or forage in and near the immediate construction areas. However, there are ample potential alternative roosting and foraging habitats in the planning area and on the Baca NWR. Removal of cottonwood trees along Crestone Creek would not occur so there would be no reduction in potential bald eagle roost trees in the planning area. Since bald eagles are no longer protected under the Endangered Species Act, and the project would not be expected to physically harm bald eagles or their nests, the proposed Well #18 alternative would be compliant with the Bald and Golden Eagle protection act.

The CNHP-identified special status mammals including plains pocket mouse subspecies, silky pocket mouse subspecies, Brazillian free-tailed bat, and northern pocket gopher subspecies may occur at the Well #18 site, but would not be substantially impacted due to the small project size and disturbed nature of the site.

5.11.2 Well #18 Additional Storage

5.11.2.1 No Action Alternative

The No Action Alternative would not directly or indirectly impact flora and fauna because no construction would occur.

5.11.2.2 Proposed Alternative

Disturbance to flora and fauna would be the same as described in Section 5.11.1.2 since construction of this project element would occur simultaneously with other Well #18 improvements.

5.11.3 Automation and Telemetry

5.11.3.1 No Action Alternative

The No Action Alternative would not directly or indirectly impact flora and fauna because no automation and telemetry equipment would be installed.

5.11.3.2 Proposed Alternative

Installation of automation and telemetry equipment involves no earthmoving activities and would occur at the sites of existing water system infrastructure. Therefore, the Proposed Alternative would not impact flora or fauna.

5.11.4 Skyview Water Main Replacement

5.11.4.1 No Action Alternative

The No Action Alternative would not directly or indirectly impact flora and fauna because no construction would occur.

5.11.4.2 Proposed Alternative

Since construction of the proposed PVC water main replacement would occur within the existing paved areas of Skyview Way, there would be no impacts on flora from the Proposed Alternative. Potential impacts to fauna would be minor because the project occurs within an existing residential area and the work would occur in an existing road. Construction activity may temporarily disturb wildlife such as deer or elk that may pass through the project area, but the Proposed Alternative would have no short-term or permanent impacts on wildlife habitats since it would occur within and along an existing paved roadway through a residential area. Since the project area is distant from the known bald eagle roost site and the winter concentration zone, impacts on bald eagles from this project are not anticipated. Similarly, impacts on other special status plants or animals are not anticipated due to the location of the Proposed Alternative and the habitats it passes through.

5.11.5 Interconnection of Water Systems

5.11.5.1 No Action Alternative

The No Action Alternative would not directly or indirectly impact flora and fauna because no construction would occur.

5.11.5.2 Proposed Alternative

Of all the proposed project elements, the Proposed Interconnection Alternative would have the greatest impact on flora because it would pass through approximately 6,300 linear feet of grassland between the Well #18 project site and the entrance road to Camper Village. Assuming an approximate disturbance width of 50 feet, this project would temporarily disturb approximately 7 acres of grassland vegetation. Since no special status plants are known or expected along this pipeline route, no impacts to special status plants are anticipated.

Disturbances to grassland areas would be re-vegetated once pipeline construction is complete. To aid in re-vegetation efforts, the contractor would be require to separate the top 8 inches of soil from the sub-soil. By separating topsoil and placing topsoil back on the reclaimed corridor surface, re-vegetation efforts should be more successful. The disturbed pipeline corridor would be seeded with a native seed mix at a rate of 20 pounds per acre. The seed mix in Table 5-1 or an ecologically appropriate alternative native mix would be used. Introduced pasture grasses (such as smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), or others) would not be included in the seed mix.

Table 5-1. Recommended Native Seed Mix

Percent	Species	Common Name
25	*Pascopyrum smithii*	Western Wheatgrass
25	*Bouteloua curtipendula*	Side-oats Grama
20	*Bouteloua gracilis*	Side-oats Grama
15	*Festuca arizonica*	Arizona Fescue
10	*Oryzopsis hymenoides*	Indian Ricegrass
4	*Sporobolus cryptandrus*	Sand Dropseed
1	*Hilaria jamesii*	Galleta

Due to the proximity of the Proposed Interconnect Alternative to the Well #18 project, the impacts on fauna including big and small game, migratory birds, and special status species would be similar to those described in Section 5.11.1.2 for the Well #18 project. Since the Proposed Interconnect Alternative is located along the

side of the existing Aspen WWTF access road and County Road T, impacts on fauna are reduced compared to a similar length pipeline travelling overland through similar habitats lacking existing roads.

5.11.5.2.1 Cumulative Impacts

Though not part of this proposed project, the District is also planning to construct other water and wastewater pipelines along East Dream Way (5,500 linear feet of water/sewer), and between the Casita Park lagoon system and the Aspen WWTF (21,000 lf sewer). The cumulative amount of earth disturbance, trench excavation, presence of construction crews and overall impact on flora and fauna would be greater than would solely occur by the Proposed Interconnect Alternative. There would be a greater amount of construction activity in the planning area and/or the activity would occur over a longer period of time than would occur solely with the Interconnect Project. Proposed project pipelines along Skyview Way and the Interconnect Project combined with the reasonably foreseeable other pipelines cumulatively total 36,000 linear feet and would disturb approximately 41 acres assuming a 50-foot disturbance width. However, these cumulative impacts are expected to be minor compared to size of the planning area and would be temporary in nature. The Proposed Interconnect Project and reasonably foreseeable other water and wastewater infrastructure would all occur along or within existing roads or existing treatment plant sites, which minimizes the cumulative impact on undisturbed lands within the planning area.

5.12 Recreation and Open Space

5.12.1.1 No Action Alternative

The No Action Alternative maintains the status quo. No impacts to recreation and open space would occur because no construction activities would occur.

5.12.1.2 Proposed Alternative

The Proposed Alternatives would not diminish recreational opportunities at the Baca Grande National Wildlife Refuge. The Proposed Alternatives would not directly impact any existing recreational open space, parks, or areas of recognized scenic or recreational value. Construction of the Proposed Interconnect Pipeline could temporarily disrupt access to Camper Village while that part of the Interconnect pipeline is being completed. However, Camper Village and the entrance road would remain open during construction.

5.13 Agricultural Lands

Since there are no agricultural lands in the planning or project areas, neither the No Action nor any of the Proposed Alternatives would impact agricultural lands.

5.14 Air Quality

The CDPHE APCD regulates sources of air pollutant emissions in Colorado. The method of registering air pollutant emission sources occurs through the filing of an APEN, and/or through a construction permit application. There are several exemptions from the requirement to file an APEN and a construction permit application. The exemptions from APEN requirements are outlined in Regulation No. 3, Part A, II.D. Sources are exempted because either individually, or cumulatively as a category, they are deemed to have a negligible impact on air quality. If necessary, an APEN would be filed for the proposed project.

5.14.1 Well #18 Project

5.14.1.1 No Action Alternative

The No Action Alternative maintains the status quo. Thus, no direct effects on Air Quality are expected with the No Action Alternative.

5.14.1.2 Proposed Alternative

The Proposed Well #18 Project would generate local, short-term air pollutants from construction activities. Construction activities may generate fugitive dust (PM-10) during clearing and grading, and combustion exhaust from earth-moving and construction equipment. However, the impact of the above emission sources would be temporary and would not cause a significant deterioration in air quality.

5.14.2 Well #18 Additional Storage

5.14.2.1 No Action Alternative

The No Action Alternative maintains the status quo. Thus, no direct effects on Air Quality are expected with the No Action Alternative.

5.14.2.2 Proposed Alternative

The Proposed Well #18 Additional Storage Project would generate local, short-term air pollutants from construction activities. Construction activities may generate fugitive dust (PM-10) during clearing and grading, and combustion exhaust from earth-moving and construction equipment. However, the impact of the above emission sources would be temporary and would not cause a significant deterioration in air quality.

5.14.3 Automation and Telemetry

5.14.3.1 No Action Alternative

The No Action Alternative maintains the status quo. Thus, no direct effects on Air Quality are expected with the No Action Alternative.

5.14.3.2 Proposed Alternative

No direct effects on Air Quality are expected with the Automation and Telemetry Proposed Alternative because the installation and operation of the proposed equipment is not the type of activity that could impact air quality.

5.14.4 Skyview Water Main Replacement

5.14.4.1 No Action Alternative

The No Action Alternative maintains the status quo. Thus, no direct effects on Air Quality are expected with the No Action Alternative.

5.14.4.2 Proposed Alternative

The Proposed Skyview Way Project would generate local, short-term air pollutants from construction activities. Construction activities may generate fugitive dust (PM-10) during clearing and grading, and combustion exhaust from earth-moving and construction equipment. However, the impact of the above emission sources would be short-term and would not cause a significant deterioration in air quality.

5.14.4.2.1 Cumulative Impacts

As indicated earlier, the District is proposing other water and wastewater infrastructure in the planning area that is not part of the Proposed Alternatives. These other projects include approximately 21,000 feet of force main sewer and 5,500 feet of water line and sewer line on Dream Way. These other projects would also result in fugitive dust emissions during construction and the dust generated by the Proposed Alternatives would cumulatively result in greater emission of construction-generated dust than the Proposed Alternatives would alone. However, since these projects are spread out widely through the planning area, the impacts of dust-generation are expected to be localized to the work zone and would not cumulatively cause a significant deterioration in air quality in the planning area.

5.14.5 Interconnection of Water Systems

5.14.5.1 No Action Alternative

The No Action Alternative maintains the status quo. Thus, no direct effects on Air Quality are expected with the No Action Alternative.

5.14.5.2 Proposed Alternative

The Proposed Interconnection Project would generate local, short-term air pollutants from construction activities along the project corridor. Construction activities may generate fugitive dust (PM-10) during clearing and grading, and combustion exhaust from earth-moving and construction equipment. However, the impact of the above emission sources would be short-term and would not cause a significant deterioration in air quality.

5.14.5.2.1 Cumulative Impacts

Cumulative impacts on air quality related to the proposed Interconnection Alternative are the same as those discussed above for the Skyview Water Main alternative.

5.15 Water Quality and Quantity

5.15.1.1 No Action Alternative

The No Action Alternative would result in maintaining the status quo. Because no construction would occur, there would be no construction-related water quality impacts would occur and no changes in existing water uses would occur

5.15.1.2 Proposed Alternatives

The Proposed Project Alternatives include conservation measures in addition to needed rehabilitation and upgrade features. These projects do not affect groundwater withdrawal volumes and none of the Proposed Project Alternatives would result in an increase in water use or groundwater withdrawal compared to existing No Action conditions. The Proposed Alternatives are not proposed in response to existing or future growth and increases in water use would occur at the same or similar rate as would occur under the No Action Alternative.

The District's current source of water is Well #18 for the Chalets and the Motel Well for Casita Park. The Well #18 project will bring a second well, currently not in use (Well #17), online to supplement the water supply and provide a backup to Well #18. Additional sources of water are not required to meet current demands, although the proposed interconnection of the Baca-Chalet (Well #18) and Baca-Casita Park (Motel Well) systems will improve the reliability of both systems.

Potential impacts to surface water resources that could occur as a result of the proposed project are increased sedimentation and turbidity of surface water as a result of ground disturbance and increased sediment delivery into surface waters via runoff. The potential for adverse water quality impacts would be temporary and would decrease over time as disturbed construction areas at the Well #18 Project, and the Interconnect Project re-vegetate and become stabilized. The magnitude of these potential impacts to surface water quality depends on slope aspect and gradient, soil type, the duration and timing of the activities, and the success or failure of reclamation and protection measures. Since revegetation may take several years to establish, water quality concerns would persist after construction is complete.

The Proposed Automation and Telemetry would have no impacts on water quality or quantity. However, improved water system operations via Automation and Telemetry would possibly reduce potential inefficiencies associated with the current manual system operation.

The Skyview Way Waterline project could have adverse water quality impacts caused by erosion of temporary trench spoil piles, though the project area is within existing pavement, so post-construction stabilization will be rapid. The Skyview Way Water Main project would reduce future leaks in the water main, which would reduce water loss from the system.

Protection of water quality is an important concern. Since the proposed project would disturb over 1 acre of land, preparation of a Stormwater Pollution Prevention Plan (SWPPP) would be required. Also, submittal of a Notice of Intent to discharge stormwater from a construction site would need to be sent to CDPHE prior to the initiation of earthmoving activities. Construction Best Management Practices (BMPs) would be employed during construction and would remain in place until the construction sites are stable. These BMPs would minimize or eliminate potential adverse water quality effects from erosion and sedimentation.

5.15.1.2.1 Cumulative Impacts

As indicated earlier, the District is proposing other water and wastewater infrastructure in the planning area that is not part of the Proposed Alternatives. These other projects include approximately 21,000 feet of force main sewer and 5,500 feet of water line and sewer line on Dream Way. These other projects would also result in potential erosion and sedimentation impacts on water quality during and after construction and the potential cumulative water quality impacts could be greater than the impacts of only the Proposed Project Alternatives. However, since these projects are spread out widely through the planning area and both the Proposed Project Alternatives and reasonably foreseeable other projects would require preparation of a SWPPP, the cumulative impacts on water quality would be minimal.

5.16 Public Health

5.16.1 Well #18 Project

5.16.1.1 No Action Alternative

The District is currently operating under a temporary variance to the CDPHE Potable Water System Design Criteria. This variance allows the District to feed sodium hypochlorite directly into the casing of Well #18. At the present time, this is the only reliable method for providing disinfected water to all District customers. Prior to implementing this disinfection practice, District customers served by the water line from Well #18 to the South Crestone Tank received un-disinfected water. Use of the temporary disinfection method is acceptable to CDPHE as a short-term solution only.

5.16.1.2 Proposed Alternative

The proposed Well #18 Project includes a new disinfection system located at the new Well #18 pumping station to achieve compliance with CDPHE regulations. Sodium Hypochlorite (NaOCl) is a preferred

chemical for water disinfection. The sodium hypochlorite disinfection system will consist of NaOCl storage tanks and chemical feed pumps. NaOCl is known to be a corrosive chemical thus special handling of NaOCl is required. The Proposed Alternative would allow the District to provide disinfected drinking water to all of its customers and meet CDPHE requirements.

Chlorine gas disinfection at Well #18 was also considered, and would have provided adequately disinfected water to all District customers. However, chlorine gas (Cl_2) disinfection was ruled out because it is a powerful oxidizing agent that is transported and stored as a liquefied gas under pressure and can pose a health risk to facility operators and a potential risk to the public since it is extremely volatile and hazardous.

5.16.2 Well #18 Additional Storage

5.16.2.1 No Action Alternative

The No Action Alternative will not provide adequate disinfection for the Baca Grande water supply because of inadequate contact time. This poses a health risk to some of the District's customers that might get un-disinfected water.

5.16.2.2 Proposed Alternative

Using Well #18 storage tank as additional storage would provide adequate contact time with chlorine and would meet the necessary requirements for disinfection as stated in the WQCD Policy State of Colorado Design Criteria for Potable Water Systems. The Proposed Alternative would allow the District to provide disinfected water to all of its customers.

5.16.3 Automation and Telemetry

5.16.3.1 No Action Alternative

The No Action Alternative would result in maintaining the status quo. Longer response time for operators to manually close and open valves and to respond to leaks could result in public heath issues.

5.16.3.2 Proposed Alternative

The Automation and Telemetry Proposed Alternative would allow the District to have better control over its water distribution system and would better allow them to respond to leaks and potential public health issues associated with system operations. Response times from a system operations standpoint would be shortened.

5.16.4 Skyview Water Main Replacement

5.16.4.1 No Action Alternative

Some of the pipelines in the water distribution system are constructed of ACP and are prone to failure. Frequent pipe failures in this area result in service interruptions at a higher frequency than desired.

5.16.4.2 Proposed Alternative

The installation of PVC pipe provides a more durable and long lasting solution to ensure more reliable delivery of potable water and reduce water loss and outages along the system.

Handling and manipulation of ACP poses a potential public health issue if asbestos becomes airborne and is inhaled by workers or the public. However, the District would require the construction contractor to follow all applicable handling and disposal requirements to reduce the potential for this health risk. The Proposed Skyview Way Alternative has been structured such that cutting of the ACP is minimized. Removal of large

sections of pipe at existing joints would occur to minimize the need to cut the ACP which can generate airborne asbestos if not conducted properly. Detailed plans and specifications would require the contractor to cut, handle and transport ACP in such a manner that the potential public health threat is minimized or eliminated.

5.16.5 Interconnection of Water Systems

5.16.5.1 No Action Alternative

If either Well #18 or the Motel Well pumps fails, there is currently no redundancy in the system to provide a backup water supply. This increases the possibility that either the Casita Park or Chalets areas would have a water supply interruption if either well fails. An interruption in either water supply poses an unacceptable inability for the District to provide water for fire suppression activities in all or a portion of its service area.

5.16.5.2 Proposed Alternative

Connecting these two sources would provide much needed redundancy and reliability for both service areas and would reduce the potential that the District could temporarily become unable to supply potable water to either or both the Casita Park or Chalets areas.

5.17 Energy

The No Action Alternative would result in maintaining the status quo. No additional consumption of energy would occur.

The Proposed Automation and Telemetry Alternative will consume a small amount of additional electrical power. However, by allowing the District to control their water system from a centralized location, the District staff would not need to drive as frequently to various locations throughout their infrastructure system to manually operate equipment, which would reduce their gasoline/diesel consumption by a small amount in the long-term.

The proposed booster pumps associated with the Well #18 project represent the largest increase in power use of all the Proposed Project Alternatives. The additional power required for the booster pumps at Well #18 would require replacement of the existing 75 kVA transformer with a larger transformer. Initial discussions with the local power provider have indicated that this project is within the capacity of the existing local power system so the Proposed Well #18 Project booster pumps would not cause a strain on local power system capacity.

5.18 Regionalization

There are no jurisdictional disputes over the Proposed Project Alternatives, and the projects would be in conformance with local and regional planning efforts.

5.19 Public Participation

The proposed project elements analyzed in this EA have been discussed on multiple occasions at District Board Meetings, which are open to the public. The public generally supports the proposed improvements to their water system. Section 6.0, Consultation and Coordination, discusses further the agencies and organizations contacted for consultation regarding the project. Public support for District water and wastewater capital projects is high.

In addition to the public meetings held in the past at which projects elements have been discussed, a special public meeting has been scheduled on July 17, 2009 specifically to discuss the proposed projects.

Notification of this meeting was published in the Saguache Crescent newspaper on July 11, 2009 (Appendix A).

5.20 Environmental Laws

The Proposed Project Alternatives are expected to be constructed and operated in compliance with all applicable State, Federal and Local environmental laws and regulations.

6. CONSULTATION AND COORDINATION

The proposed project elements analyzed in this EA have been discussed on multiple occasions at District Board Meetings, which are open to the public. The public generally supports the proposed improvements to their water system.

The following is a list of agencies contacted with regard to the impacts of this project and their response.

Table 6-1. List of all Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Jamie Anthony CDOW Headquarters 6060 Broadway Denver, CO 80216	Wildlife resources Fish and Wildlife Coordination Act	No response received to date.
Mike Blenden Project Leader Baca National Wildlife Refuge 9383 El Rancho Lane Alamosa, CO 81101	National Wildlife Refuge administration	No response received to date. Adequate response has been received from Ron Garcia (see below).
Ron Garcia Refuge Manager Baca National Wildlife Refuge	Local contact for the Baca NWR. Refuge management	No approvals from the USFWS are required to use the District's existing deeded easements. Mr. Garcia would like the District to coordinate the proposed work between County Road T and the Aspen WWTP with him so that their proposed wire fence replacement work would not interfere with the proposed pipeline construction. Mr. Garcia was given suggestions on where to locate the fence to avoid the District's planned construction.
Susan Collins State Archaeologist 1300 Broadway Denver, CO 80203	Section 106 of the National Historic Preservation Act	Colorado State Historic Preservation Officer recommended that the cultural resources effort for this project follow the requirements of Section 106 of the National Historic Preservation Act. A file search for the Planning Area was conducted and discussed in this EA.
Dan Corson Jim Green Colorado Historical Society 1300 Broadway Denver, CO 80203-2137	Section 106 of the National Historic Preservation Act	Same as Susan Collins – see above.
Jim Dileo CDPHE – Air Pollution Control Division 4300 Cherry Creek Drive South Denver, CO 80246	Air Pollution Control	All sources of air emissions are required to obtain an air permit, unless exempted by Colorado Regulation No. 3. Land development (earth moving activities) that are greater than 25 acres and last longer than 6 months will most likely require an air pollution emission notice to be submitted to CDPHE.
Tracy Geringer Monte Vista CDOW 722 South Road 1 East Monte Vista, CO 81144	Wildlife resources Fish and Wildlife Coordination Act	No response received to date.

Table 6-1. List of all Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Great Sand Dunes National Park Attn: Superintendent National Park Service 11500 Highway 150 Mosca, CO 81146-9798	National Park administration	No response received to date.
Robert McBride District Conservationist Natural Resource Conservation Service P.O. Box 580 Center, CO 81125	Soils, rangeland, vegetation issues	No response received to date.
Mike Sullivan Division Engineer Colorado State Engineer Water Division 3 301 Murphy Drive Alamosa, CO 81101	Water rights and well permitting	The interconnection of the Motel Well with Wells # 18 and #17 may violate certain conditions and limitations of existing Well Permits and/or Court Decrees regarding aggregate pumping, total diversions, consumptive use, etc. The District anticipates resolution of this issue in July and is currently discussing options with the State Engineer.
U.S. Fish and Wildlife Service Colorado Field Office P.O. Box 25486 Denver Federal Center Denver, CO 80225	Section 7 of the Endangered Species Act, and potential effects on ESA-listed, proposed and candidate species	Response indicated they do not have adequate staff to provide project reviews. The list of threatened and endangered species for Saguache County found at http://www.fws.gov/mountainprairie/endspp/countylists/colorado.pdf may be used as a basis for determining species potentially present in the project areas.
Van Truan U.S. Army Corps of Engineers Albuquerque District South Colorado Regulatory Office 200 South Santa Fe Avenue, Suite 301 Pueblo, CO 81003	Under Section 404 of the Clean Water Act (33 USC 1251), the Corps regulates the discharge of dredged and fill material into waters of the United States, including wetlands.	A Section 404 Permit may be required for the work if it occurs in wetlands or waters of the U.S.
Gary Weiner Wild and Scenic Rivers National Park Service P.O. Box 25287 Denver, CO 80225	Wild and Scenic Rivers	Email response indicating no impact to nationally significant river resources will result from the proposed improvements to the Baca Grande water distribution and treatment system.

7. REFERENCES

Colorado Division of Wildlife. 2009. Natural Diversity Information Source. Species and habitat occurrence maps. Accessed June 2009, various occasions. Available at: http://ndis.nrel.colostate.edu/

Colorado Natural Heritage Program. 2005. Baca Grande Biological Assessment.

Brown and Caldwell. 2009. Engineering Report For Drinking Water Projects, Prepared for Baca Grande Water & Sanitation District, Crestone, Colorado. June 1, 2009.

National Park Service. 2009. National Wild and Scenic Rivers System website, www.nps.gov/rivers. accessed June 2009

Saguache County Colorado. 2009a. County website, http://www.saguachecounty.net. Accessed June 24, 2009

Saguache County. 2009b. Telephone communication between Kati Petersburg of Brown and Caldwell and Saguache County Land Use Department

United States Department of Agriculture Natural Resources Conservation Service. 2009. Custom Soil Resource Report for Saguache County Area, Colorado Casita Park. June 10, 2009.

United States Department of Agriculture Natural Resources Conservation Service. 2009. Custom Soil Resource Report for Rio Grande NF Area, Colorado, West Part, Parts of Archuleta, Conejos, Hinsdale, Mineral, Rio Grande, Saguache, and San Juan Counties; and Saguache County Area, Colorado Chalet 1. June 10, 2009.

United States Department of Agriculture Natural Resources Conservation Service. 2009. Custom Soil Resource Report for Saguache County Area, Colorado Chalets 2 & 3. June 10, 2009.

United States Department of Agriculture Natural Resources Conservation Service. 2009. Custom Soil Resource Report for Saguache County Area, Colorado. June 10, 2009.

U.S. Fish and Wildlife Service. 2009. On line species list for Saguache County, available at: http://www.fws.gov/mountain-prairie/endspp/CountyLists/Colorado.pdf , accessed March 16, 2009.

United States Fish and Wildlife Service. 2008. Final Environmental Assessment of Planned Gas and Oil Exploration, Baca National Wildlife Refuge, Saguache County, Colorado. October 2008. United States Fish and Wildlife Service, Alamosa, Colorado.

Benedict, J. B. and B. L. Olson 1978 *The Mount Albion Complex*. Center for Mountain Archaeology, Research Report #1, Ward, CO.

Brechtel, J. M. 2003 *Intensive Cultural Resource Survey of the Crestone Fuelwood Treatment Project, Saguache County, Colorado*. James Enterprises, Inc. for the BLM San Juan Field Office, Colorado

Cassells, E.S. 1983 *The Archaeology of Colorado*. Johnson Books, Denver Colorado

Jodry, M.A. 1999. Paleoindian stage. In *Colorado Prehistory: A Context for the Rio Grande Basin*, M.A. Martorano, T. Hoefer, M.A. Jodry, V. Spero, and M.L. Taylor, (eds.). Pp. 45-114. Colorado Council of Professional Archeologists, Denver, Colorado.

Martorano, M.A.1999. Late prehistoric/ceramic Stage. In *Colorado Prehistory: A Context for the Rio Grande Basin*, M.A. Martorano, T. Hoefer, M.A. Jodry, V. Spero, and M.L. Taylor, (eds.). pp 129-137. Colorado Council of Professional Archeologists, Denver, Colorado

8. LIMITATIONS

Report Limitations

This document was prepared solely for Baca Grande Water & Sanitation District in accordance with professional standards at the time the services were performed and in accordance with the contract between Baca Grande Water & Sanitation District and Brown and Caldwell from May, 2009. This document is governed by the specific scope of work authorized by Baca Grande Water & Sanitation District; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Baca Grande Water & Sanitation District and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

APPENDIX A

Public Notice

BACA GRANDE WATER AND SANITATION DISTRICT
141 Union Boulevard, Suite 150
Lakewood, Colorado 80228-1898
Tel: 303-987-0835 * 800-741-3254
Fax: 303-987-2032

June 4, 2009

RECEIVED + TRANSMISSION OK 6-4-09

Attn: Dean
Saguache Crescent
PO BOX 195
Saguache, CO 81149

Via Facsimile No. (719) 655-2620

Re: Publication of Notice of Open Meeting for Public Hearing - Baca Grande Water and Sanitation District Water Projects - Preliminary Engineering Report (PER).

Dear Dean:

Attached is a Notice of Open Meeting for Hearing regarding the Baca Grande Water and Sanitation District Water Projects – Preliminary Engineering Report (PER). Please publish said Notice on Thursday, June 11, 2009 (one time only) in the legal notice section of the Saguache Crescent.

Please 'OK' the publication and acknowledge receipt of this correspondence and the enclosed Notice via facsimile (303-987-2032) or by email to (tmaulik@sdmsi.com). Once the notice has published, please prepare an Affidavit of Publication and send it to this office as soon as possible.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Terri L. Maulik

Terri L. Maulik
Assistant to AJ Beckman
District Manager

Attachment

P.01

TRANSACTION REPORT

JUN-04-2009 THU 04:51 PM

FOR: SDMS, INC. 3039872032

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
JUN-04	04:49 PM	917196552620	1'49"	3	FAX TX	OK	519	

TOTAL : 1M 49S PAGES: 3

BACA GRANDE WATER AND SANITATION DISTRICT

141 Union Boulevard, Suite 150
Lakewood, Colorado 80228-1898
Tel: 303-987-0835 * 800-741-3254
Fax: 303-987-2032

June 4, 2009

Attn: Dean
Saguache Crescent
PO BOX 195
Saguache, CO 81149

Via Facsimile No. (719) 655-2620

Re: Publication of Notice of Open Meeting for Public Hearing - Baca Grande Water and Sanitation District Water Projects - Preliminary Engineering Report (PER).

Dear Dean:

Attached is a Notice of Open Meeting for Hearing regarding the Baca Grande Water and Sanitation District Water Projects – Preliminary Engineering Report (PER). Please publish said Notice on Thursday, June 11, 2009 (one time only) in the legal notice section of the Saguache Crescent.

Please 'OK' the publication and acknowledge receipt of this correspondence and the enclosed Notice via facsimile (303-987-2032) or by email to (tmaulik@sdmsi.com). Once the notice has published, please prepare an Affidavit of Publication and send it to this office as soon as possible.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Terri L. Maulik

Terri L. Maulik
Assistant to AJ Beckman
District Manager

Attachment

BACA GRANDE WATER AND SANITATION DISTRICT
141 Union Boulevard, Suite 150
Lakewood, Colorado 80228-1898
Tel: 303-987-0835 * 800-741-3254
Fax: 303-987-2032

June 4, 2009

Attn: Dean
Saguache Crescent
PO BOX 195
Saguache, CO 81149

Via Facsimile No. (719) 655-2620

Re: Publication of Notice of Open Meeting for Public Hearing - Baca Grande Water and Sanitation District Water Projects - Preliminary Engineering Report (PER).

Dear Dean:

Attached is a Notice of Open Meeting for Hearing regarding the Baca Grande Water and Sanitation District Water Projects – Preliminary Engineering Report (PER). Please publish said Notice on Thursday, June 11, 2009 (one time only) in the legal notice section of the Saguache Crescent.

Please 'OK' the publication and acknowledge receipt of this correspondence and the enclosed Notice via facsimile (303-987-2032) or by email to (tmaulik@sdmsi.com). Once the notice has published, please prepare an Affidavit of Publication and send it to this office as soon as possible.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Terri L. Maulik

Terri L. Maulik
Assistant to AJ Beckman
District Manager

Attachment

Legal Notice

Notice of Public Hearing for the Baca Grande Water and Sanitation District Crestone, Colorado

Date: July 17, 2009
Time: 9:00 a.m.
Location: Baca Grande Water and Sanitation District Office
Address: 57 Baca Grant Way South Crestone, Colorado 81131
Topic: Baca Grande Water and Sanitation District Drinking Water Projects – Preliminary Engineering Report.

A public hearing will be conducted for informing citizens and soliciting public input, written or oral, regarding the Baca Grande Water and Sanitation District Water Projects - Preliminary Engineering Report (PER). The PER is a report detailing the projects required to upgrade the potable water treatment and distribution system and prevent violations of the Colorado Primary Drinking Water Regulations.

The report is being submitted to the Colorado Department of Public Health and Environment (CDPHE) to qualify the District for funding of the projects under the American Recovery and Reinvestment Act (ARRA) or a State Revolving Fund Loan.

The PER evaluated the ability of the existing potable water system to meet current Colorado Primary Drinking Water Regulations (CPDWR) and found that health and safety considerations, difficulties with system operation and control, lack of accountability for water usage, and growth in the number of users in the system make it difficult for the system to provide an adequate supply of clean, healthy water that meet these standards to District customers. It is recommended in the PER that several projects be undertaken to improve the District facilities to address these issues.

The PER evaluated the cost of the recommended improvements and it is estimated that the cost for the included improvements to the drinking water system will be $ 1,928,000. It is estimated that the debt service for the required capital for the recommended improvements will be repaid entirely

from property tax revenues currently imposed by the District and that no additional mill levy will be levied to fund these improvements. In 2009 the District increased its mill levy 7.21 mills, from 38.792 to 46, in anticipation of the issuance of general obligation debt and other financings to finance these and other improvements. The amount paid by property owners is dependent upon the property's assessed valuation. By way of example, for a $300,000 home 7.21 mills equates to $172.17 per year.

Copies of the Preliminary Engineering Report are available for public review prior to the Public Hearing at the following location:

Baca Grande Water and Sanitation District,
57 Baca Grant Way South
Crestone, Colorado.

The point of contact for the Baca Grande Water and Sanitation District is Steven Harrell, General Manager, 719-256-4310

Baca Grande Water and Sanitation District
Steven Harrell
General Manager

APPENDIX B

Public Agency Responses

STATE OF COLORADO

Bill Ritter, Jr., Governor
James B. Martin, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

http://www.cdphe.state.co.us

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

May 27, 2009

Chris Reichard
Brown and Caldwell
1697 Cole Blvd.
Suite 200
Golden, CO 80401

Re: Crestone Water System Improvements

Dear Mr. Reichard,

On May 19, 2009, the Colorado Air Pollution Control Division received a request for an air quality determination concerning Crestone Water System Improvements. Thank you for taking the time to inquire about air quality requirements in this area. The following information pertains to air quality issues only.

All sources of air emissions in Colorado are required to obtain a construction permit unless they are specifically exempted by the provision of Regulation No. 3. The first phase of air permitting involves submission of an Application for Construction Permit for each facility and one Air Pollution Emission Notices (APEN) for each emission source. For purposes of Air Pollution Emission Notice reporting, a source can be an individual emission point or group of similar emission points (Ref: Regulation No. 3, Part A) Both APEN reporting and permit requirements are triggered by uncontrolled actual emission rates. Uncontrolled actual emissions are calculated based on the requested production/operating rate Assuming no control equipment is used. In general, an APEN is required for an emission point with uncontrolled actual emissions of any criteria pollutant equal to or greater than the quantity listed in the table below:

AREA	UNCONTROLLED ACTUAL EMISSIONS
Attainment Areas	2 Tons Per Year
Non-attainment Areas	1 Ton Per Year
All Areas	Lead Emissions: 100 pounds per year

Please consult http://www/cdphe.state.co.us/ap/attainmemaintain.asp to determine if your project will be located within an attainment or non-attainment area. Other exemptions may be found in Regulation No.

3., Part A, Section II.D.1, however a source may not be exempted if the source would otherwise be subject to any specific federally applicable requirement.

Sources of non-criteria reportable pollutants have different reporting levels depending on the pollutant, release point height, and distance to property line. Please see Appendix A and Appendix C of Regulation No. 3 for determining the appropriate reporting level for each pollutant and for the list of non-criteria reportable air pollutants. The following chart will assist you in determining your reportable non-criteria pollutant levels from your project.

However, none of the exemptions from Air Pollution Emission Notice filing requirements described above shall apply if a source would otherwise be subject to any specific federal or state applicable requirement. Information concerning submittal of revised Air Pollution Emission Notices is also given in Regulation No. 3, Part A. An Air Pollutant Emission Notice is valid for a period of five years. The five-year period recommences when a revised APEN is received by the Division.

If you have any questions regarding your reporting and permitting obligations please call the Small Business Assistance Program at 303-692-03148 or 303-692-3175.

Land development (earth moving) activities that are greater than 25 acres or more than 6 months in duration will most likely be required to submit an APEN to the Division and may be required to obtain an air permit. In addition a startup notice must be submitted 30 days prior to commencement of the land development project. Please refer to the following link for additional information: http://www.cdphe.state.co.us/ap/down/land develop.pdf.

If you have any questions or feel as though you need more information on possible air pollution permits or notice requirements, please contact me directly at 303-692-3127 or the Colorado Air Pollution Control Division's Stationary Source Program at 303-692-3150. I can also be reached via email at jim.dileo@state.co.us.

Again, thank you for taking the time to contact the Division about this upcoming project.

Sincerely,

James A DiLeo
NEPA Coordinator
Colorado Air Pollution Control Division

cc: Louanna Cruz, WQCD

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
SOUTHERN COLORADO REGULATORY OFFICE
200 SOUTH SANTA FE AVENUE, SUITE 301
PUEBLO, COLORADO 81003-4270
719-543-9459
FAX 719-543-9475

REPLY TO
ATTENTION OF:

May 27, 2009

Regulatory Division

SUBJECT: Action Number SPA-2009-00294-SCO – Baca Grande Water Distribution and Treatment Improvements, Prism Project No. 136853

Mr. Chris Reichard
Brown and Caldwell
1697 Cole Boulevard
Suite 200
Golden, Colorado 80401

Dear Mr. Reichard:

This letter is in response to your May 19, 2009, request for the Corps of Engineers' preliminary environmental review for the proposed Baca Grande Water Distribution and Treatment Improvements located in Saguache County, Colorado. We have assigned Action No. SPA-2009-00294-SCO to this activity. To avoid delay, please include this number in all future correspondence concerning this request.

We have reviewed your request in accordance with Section 404 of the Clean Water Act (CWA). Under Section 404, the Corps regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Based on the information provided, other information available to us, and current regulations and policy, we have determined that a section 404 permit may be required for the proposed work. For your information, an application packet with instructions may be obtained from our website at http://www.spa.usace.army.mil/reg/.

The Corps based this decision on a preliminary jurisdictional determination (JD) that there may be waters of the United States on the project site. Preliminary JDs are advisory in nature and may not be appealed. An approved JD is an official Corps determination that "waters of the U.S." and/or "navigable waters of the U.S." are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA or RHA. If you wish, you may request that the USACE reevaluate this case and issue an approved JD. If you request an approved JD, you may not begin work until the approved JD, which may require coordination with the Environmental Protection Agency, is completed. Please contact this office if you wish to request an approved JD for this case.

If you have any questions concerning this jurisdictional determination or our regulatory program, please call me at (719) 543-6914 or e-mail me at Joshua.G.Carpenter@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Joshua G. Carpenter
Environmental Specialist

May 22, 2009

Chris Reichard
Natural Resource Specialist
Brown and Caldwell
1697 Cole Boulevard, Suite 200
Golden, Colorado 80401

Re: Water Distribution and Treatment Improvements, Baca Grande Water and Sanitation District, Crestone, Colorado (CHS #32511)

Dear Mr. Reichard,

Thank you for your correspondence dated May 19, 2009 (received by our office on May 21, 2009) regarding the subject project.

It appears that the project has oversight from the Colorado Department of Public Health and Environment. In order to determine the effect of the proposed project on cultural resources, we recommend that you coordinate your NEPA or other environmental studies with the cultural resource studies required under Section 106 of the National Historic Preservation Act (NHPA). Per 36 CFR 800.8, "Federal agencies are encouraged to coordinate compliance with Section 106 and the procedures in this part with any steps taken to meet the requirements of the National Environmental Policy Act." Also, Section 110 of the National Historic Preservation Act states that Federal agencies should "coordinate with the earliest phases of any environmental review carried out under the National Environmental Policy Act."

The findings from the Section 106 studies can inform the NEPA studies, such as including mitigation measures identified under Section 106 into the NEPA decision document. Once we receive the Section 106 studies, we will be able to fully complete our reviews under both NHPA and NEPA. We have enclosed a flow chart that explains the coordination between Section 106 and NEPA. Additional information regarding the Section 106 process is available on our website at http://www.coloradohistory-oahp.org/FAQ/106.htm.

The following information, as applicable, is requested in your letter to Colorado's state historic preservation officer:

I. Project description
- A. Identify the Federal agency/program and contact information and type of federal involvement
- B. What you propose to do
- C. Vicinity information
  1. Any buildings or structures 50 or more years of age on or adjacent to property site?
  2. Will any buildings 50 or more years old be vacated elsewhere as a result of this project?
  3. Any ground disturbance?
     - a. Previously undisturbed land?
     - b. Access roads?
     - c. Borrow areas?
     - d. Staging or storage areas?

4. Previous use(s) of site

II. Establish the Area of Potential Effect (APE), which is defined as the geographic area or areas within which an undertaking or project may cause changes in the character or use of historic properties, if such properties exist. The APE should reflect the potential visual and physical effects to the setting of historic resources, which include outbuildings, canals and ditches, roads and railroad grades, as well as residences, commercial, industrial or agricultural structures as well as cultural landscapes.

III. Conduct a file search and field survey to identify known historic below-ground and above-ground resources.

IV. Complete Inventory form(s) for each building or structure (50+ years old) and archaeological site within the Area of Potential Effect. An inventory form should include your opinion on the National Register eligibility of any resource for which an inventory form is completed.

V. Supply your opinion on the project's potential effects to resources identified as eligible for the National Register within the Area of Potential Effect.

VI. Consult with the appropriate local government and other consulting parties regarding your determinations of eligibility and potential effects, if applicable

The following page on our website provides information regarding conducting a file search with our office: http://www.coloradohistory-oahp.org/FAQ/file.htm.

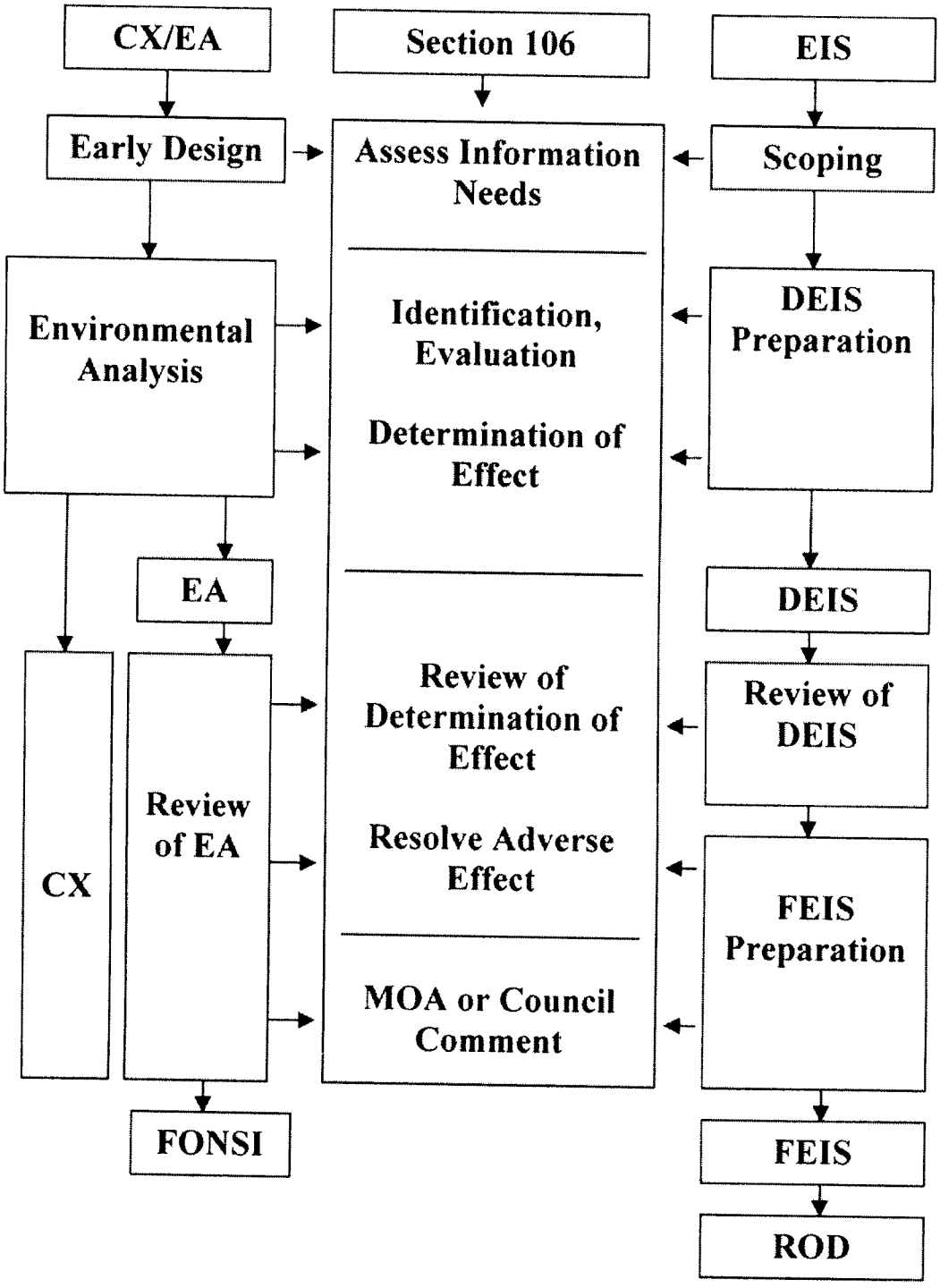
Please note that under the process established for the protection of historic properties from adverse effects as a result of federal undertakings the lead agency official remains legally responsible for all required findings and determinations if the services of a consultant have been utilized for the purpose of obtaining recommendations regarding NRHP eligibility and project effect (36 CFR 800.2(a)(3)) or if an applicant for federal assistance has been authorized by the lead agency to initiate consultation with the State Historic Preservation Officer (36 CFR 800.2(c)(4)). In future correspondence, please identify the point of contact at the appropriate federal agency for the proposed project.

Additional information regarding the Section 106 process is available on our website at http://www.coloradohistory-oahp.org/FAQ/106.htm. If we may be of further assistance, please contact Shina duVall, Section 106 Compliance Manager, at (303) 866-4674 or shina.duvall@chs.state.co.us.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer
ECN/SAD

COORDINATION BETWEEN NEPA AND SECTION 106



The Public and Consulting Parties must be notified and given the opportunity to comment during each step of the Section 106 review process.

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

Bill Ritter, Jr.
Governor

Harris D. Sherman
Executive Director

Dick Wolfe, P.E.
State Engineer

Craig Cotten, P.E.
Division Engineer

June 17, 2009

TO: Brown and Caldwell
Attention: Chris Reichard, Natural Resource Specialist
1697 Cole Boulevard, Suite 200
Golden, CO 80401

Re: **Water Distribution and Treatment Improvements**
Baca Grande Water and Sanitation District - Crestone, Colorado
Prism Project No. 136853

The purpose of this correspondence is to provide a response to your letter dated May 19, 2009, regarding the above noted project. Based upon your letter, it is our understanding that you are assisting the Baca Grande Water and Sanitation District (District) with the planning and design of various water system improvements.

In review of your letter, we offer comments and questions regarding the Interconnection of the two service areas you describe as the Casita Park and Chalet areas. Your letter indicates that Well #17 currently provides water to the Casita Park area and Well #18 provides water to the Chalet area, and the proposed interconnection of these two wells would require 17,000 linear feet of waterline. However, our records indicate that Well #17 (Grant Well #17, W-2219) and Well #18 (Grant Well #18, W-2219) are located approximately 1,500 feet apart. We do not believe that Well #17 is being used to serve any area in the District at the present time. The letter also indicates the interconnection of the two wells being accomplished with the tie-in to well #17 near the White Eagle Inn. Our records indicate two wells in the vicinity of the White Eagle Inn, Well #27 (W-2997) and the Motel Well (W-2219). Both of these wells would better corroborate with the estimated distance of 17,000 linear feet to Well #18.

We have concerns that the interconnection of the Casita Park and Chalet service areas may violate certain conditions and limitations of existing Well Permits and/or Court Decrees. Well #27 is an Alternate Point of Diversion (APD) to a decreed surface water right, therefore subject to operation and limitations in accordance with the ditch priority and said decree. The Motel Well decree and registration have specific conditions regarding total diversions and place of use. It appears that this well may only be used in portions of what you have referenced as the Casita Park service area, and may not be used in the Chalets service area. Additionally, Well #18 and Well #17 have specific conditions of the permits and/or decree limiting the aggregate pumping, total diversions, consumptive use, etc.

Please provide us with additional information to accurately identify which wells are proposed to be tied together. Once we can identify which wells are proposed to be tied together we may provide more comments regarding the proposed project. Additionally, please provide a schematic of the water supply (wells) and distribution system that currently serves the Casita Park and Chalets service area. This will allow us to provide more specific comments regarding the proposed project.

If you have any questions or concerns regarding this matter or wish to discuss this matter in more detail, please contact either Corey DeAngelis or me at 719-589-6683. Thank you for giving us the opportunity to comment on these proposed actions.

Sincerely,

Craig W. Cotten

Craig W. Cotten
Division Engineer, Division III

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
P.O. Box 25486, DFC (65412)
Denver, Colorado 80225-0486

IN REPLY REFER TO:
ES/CO: T&E/List
TAILS 65412-2009-SL-0394

MAY 29 2009
BROWN AND CALDWELL

MAY 28 2009

Chris Reichard
Natural Resource Specialist
Brown and Caldwell
1697 Cole Boulevard, Suite 200
Golden, Colorado 80401

Dear Chris Reichard:

This responds to your letter of May 19, 2009 concerning the proposed water distribution and treatment improvements in Crestone, Saguache County, Colorado. These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et Seq.)*

The Service has no specific knowledge of this site. However, a list of Federal endangered, threatened, proposed and candidate species (listed species) occurring in Colorado can be accessed at: http://www.fws.gov/mountainprairie/endspp/countylists/colorado.pdf. The list for Saguache County may be used as a basis for determining species potentially present in the project areas. Due to staffing constraints, the Colorado Field Office cannot provide you with site-specific information or provide recommendations regarding options under the Endangered Species Act.

If we can be of further assistance, please contact Adam Misztal, of the Colorado Field Office at (303) 236-4753 or at email: adam_misztal@fws.gov.

Sincerely,

Susan C. Linner
Colorado Field Supervisor