Southern Delivery System
Pueblo County
1041 Permit Application

Submitted to

Pueblo County
Department of Planning and Development

229 W. 12th Street
Pueblo, CO 81003

Submitted by

Colorado Springs Utilities
It's how we're all connected

City of Fountain
Pure Colorado

PUEBLO WEST METROPOLITAN DISTRICT

WATER AND SANITATION UTILITY DISTRICTS SECURITY

August 2008

Southern Delivery System
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Submitted to

Pueblo County
Department of Planning and Development

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Pueblo County 1041 Permit Application

Southern Delivery System *Draft Environmental Impact Statement* (DEIS), February 2008, (CD dated August 2008), containing DEIS Executive Summary, DEIS with Appendices, and Supporting Technical Documents

Evaluation Criteria Cross Reference Guide

17.172.120 Applicable Permit Requirement Subsections	A - Application Information	B -Project Information	C -Permits & Approvals	D -Project Feasibility	E - Socioeconomic Impacts	F - Environmental Impacts	G - Hazardous Materials	H - Monitoring & Mitigation	I - Additional Information	J - Waiver of Submission Requirements
17.164.030 Approval Criteria										NA
A. Information describing the applicant.										
A. There is sufficient existing and projected need to warrant and support the proposed activity.		√								
B. New domestic water and sewage treatment systems shall be constructed in areas which result in the proper utilization of existing treatment plants and the orderly development of domestic water and sewage treatment systems of adjacent communities.		√								
C. Major extensions of domestic water and sewage treatment systems will not create growth and development which is incompatible with and cannot be accommodated by the local financial capacity of the area or residents to be served.					√					
D. Major extensions of domestic sewage treatment systems will not overburden the existing systems and current and projected future demand for the service can be met within existing and proposed capacity. NA										
E. The activity can be supported by water possessed by the applicant of sufficient quality to meet the State's drinking water standards and in sufficient quantity to fulfill existing and projected future demand.				√					√	
F. The activity will not create proliferation of special districts, or overlapping of the boundaries of special districts.	√				√					
G. Environmental impacts including, but not limited to, agricultural productivity potential, aquatic life, stream standards, groundwater, and in-stream water quality related to the proposed activity have been identified and will be mitigated or compensated for.			√		√	√		√	√	
H. The proposed activity will not make demands upon natural resource, including, but not limited to, water, energy resources, and unique environmental areas, which demands are excessive when compared with the value of the activity.		√		√		√		√	√	
I. The proposed activity does not conflict with the Pueblo Regional Development Plan, Water Quality Management Plan, or other duly adopted plans of the County of Pueblo.					√	√		√	√	
J. All natural hazards affecting the proposal, including, but not limited to, floods, expansive and corrosive soils, unstable geologic features, such as mudflows, landslides and avalanches have been avoided or compensated for by the activity.						√				
K. The activity will not conflict or create any conflict with the surrounding lands either as they exist currently or as proposed by local plans and programs previously approved by the governing body of the territory in which the proposed activity lies.				√	√				√	
L. The proposed activity is the best alternative available for the provision of water and/or sewer service to the geographical area affected by the proposal.		√							√	
M. Economic impacts including, but not limited to, taxable property, agriculture, NPDES permitted facilities, and recreation related to the proposed activity have been identified and will be mitigated or compensated for.	√			√	√			√		
N. **Additional permit for a major new domestic water supply system or major extension of an existing domestic water supply system.** When the component water supply system for a major new domestic water system or major extension of an existing domestic water system is proposed to be developed for a new or increased diversion per year, or new or increased storage capacity, of 500 acre-feet or more, the additional criteria set forth in §17.172.130, which are incorporated by this reference, shall be satisfied as part of this designation and the activity will require a permit for a Municipal Water Project pursuant to §17.172.010 et seq.			√							
O. Documentation that prior to site disturbance for the Project, the applicant will have obtained all necessary property rights, permits and approvals. The Board may, at its discretion, defer making a final decision on the application until outstanding property rights, permits and approvals are obtained.			√							

Abbreviations and Acronyms List

AASHTO	American Association of State Highway and Transportation Officials
AF	acre-feet
ANSI	American National Standards Institute
Applicant	Colorado Springs Utilities
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
Aurora	City of Aurora, CO
BLM	US Bureau of Land Management
CDNR	Colorado Department of Natural Resources
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CEC	Conservation and Environmental Center
CF&I	Colorado Fuel & Iron
cfs	Cubic feet per second
City	City of Colorado Springs, CO
CNHP	Colorado Natural Heritage Program
CWCB	Colorado Water Conservation Board
ºC	Celsius
dBA	A-weighed decibel
DEIS	Draft Environmental Impact Statement
EPA	US Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMP	Flow Management Program
FONSI	Finding Of No Significant Impact
Fountain	City of Fountain Utilities
fps	feet per second
Fry-Ark	Fryingpan-Arkansas
FVA	Fountain Valley Authority
FVC	Fountain Valley Conduit
GIS	Geographic Information Systems

gpm	gallons per minute
hp	horsepower
I-25	Interstate-25
IAEA	International Atomic Energy Agency
IGA	Intergovernmental agreement
IHA	Indicators of Hydrologic Alteration
ISO	International Organization for Standardization
JPS	Juniper Pump Station
JUM	Joint Use Manifold
JUP	Joint Use Pipeline
KV	Kilovolts
KW	Kilowatts
M	million
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mgd	million gallons per day
Model	a computer model
MOW	Municipal Outlet Works
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NTU	Nephelometric turbidity unit (amount of turbidity [cloudiness] in water sample)
OAHP	Office of Archaeology and Historic Preservation
pH	Hydrogen (ion) concentration
Pilot plant	SDS project pilot water treatment plant
psig	Pound(s) per square in gauge
Pueblo West	Pueblo West Metropolitan District
ROD	Record of Decision
ROW	Right-of-Way
SDS	Southern Delivery System
Security	Security Water District
SECWCD	Southeastern Colorado Water Conservancy District
SHPO	State Historical Preservation Office
Springs Utilities	Colorado Springs Utilities
TDS	total dissolved solids
TOC	total organic carbon

UAVFMP	Upper Arkansas Voluntary Flow Management Program
US Forest Service	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNRC	United States Nuclear Regulatory Commission
UVA	Ultraviolet absorption
VFDs	Variable Frequency Drives
VOC	Volatile organic compound
WTP	Water Treatment Plant
Xcel	Xcel Energy
μS/cm	Micro-seimens/centimeter

Application

APPLICATION TO CONDUCT A DESIGNATED ACTIVITY OF STATE AND LOCAL INTEREST OR TO CONDUCT AN ACTIVITY IN A DESIGNATED AREA OF STATE AND LOCAL INTEREST

(HB 1041 APPLICATION FORM)

Please Attach "Letter of Request" to this Application

The Pueblo Board of County Commissioners sets forth the following list as the minimum requirements for an application to conduct a designated activity or to engage in development within a designated area.

PLEASE READ NOTE AND SIGN BELOW:

The submitted application package requires specific reports/information which may not be adequate as determined through the review process. Additional information may be required. Also, the acceptance of the application package does not mean the specific information has been approved and in final form. Revisions to the information and/or reports may be required. Requests for waivers of any of these requirements must be accompanied by a letter of justification. The Pueblo Board of County Commissioners will hear the waiver request concurrently with the application. Denial of the waiver request shall render this application incomplete and result in the requirement for a new submittal acceptance date and review period.
Your signature below indicates acceptance of these conditions.

Date: 8-20-08 Type of Application:

HB1041 Permit No.

John Fredell

Applicant's/Representative's Signature
John Fredell, Southern Delivery System Project Director

1. **Please list the name, address, telephone number and email address of the following (some may not be applicable);**

Applicant(s) Colorado Springs Utilities

Address: 121 South Tejon Street, Third Floor, MC 930, Colorado Springs, CO 80947-0930

Telephone Numbers: Phone: (719) 668-8037; Fax: (719) 668-8734

Email Address: jfredell@csu.org

Property Owner(s): Information included in Application.

Address: _____

Telephone Numbers: _____

Email Address: _____

Applicant's Representative: John Fredell

Address: 121 S Tejon St, 3rd Floor, MC930, Colo Spgs, CO 80947-0930

Telephone Numbers: Phone: (719) 668-8037: Fax: (719) 668-8734

Email Address: jfredell@csu.org

2. **Address of Property** Information included in Application.
3. **Zone district** Information included in Application.
4. **Legal description of the property** Information included in Application.

(If lengthy, please attach) Information included

5. **Tax parcel number of property** (County Assessor's Records) in Application.
6. **Please list any previous or associated applications** (e.g., map amendments, zoning variances, special use permits, subdivision variances) in connection with this property

   N/A

7. **Fee Amount Paid** $50,000.00
8. **REQUESTS TO CONDUCT A DESIGNATED ACTIVITY OR ENGAGE IN AN ACTIVITY WITHIN A DESIGNATED AREA SHALL BE AVAILABLE FOR THE FOLLOWING WITHIN PUEBLO COUNTY (Please indicate the applicable request):**

   Areas Designated by Pueblo County as of State and Local Interest:

   Natural Hazards and Mineral Resource Areas as follows:

   - ◊ Geological Hazard Areas
   - ◊ Wildfire Hazard Areas
   - ◊ Mineral Resource Areas

◊ Floodplain Areas (Repealed 3-27-86 and superseded by Flood Hazard Area Development Permit)

Activities Designated by Pueblo County as of State and Local Interest

◊ Site Selection of Arterial Highways, Interchanges, and Collector Highways

◊ Site Selection of Development of New Communities

☑ ◊ Site Selection and Construction of Major New Domestic Water and Sewer Treatment Systems and Major Extensions of Existing Domestic Water and Sewer Systems

◊ Site Selection and Construction of Major Facilities of a Public Utility

☑ ◊ Activities Involving Efficient Utilization of Municipal and Industrial Water Projects

Areas and Activities Designated by the State, but not by Pueblo County which would be Eligible for a 1041 Permit with a Concurrent Approval of a Designation by the County:

◊ Areas of Historical, Natural, or Archeological Resources

◊ Areas Around Key Facilities Such As: Airports, Arterial Highway, Interchanges, Major Utility Facilities, and Mass Transit Terminals

◊ Activities Involving Site Selection and Construction of Certain Solid Waste Disposal Facilities

◊ Conducting Nuclear Detonations

9. **Owners and Interests:**

Set out below the names of those persons holding recorded legal, equitable, contractual and option interests and any other person known to the applicant having an interest in the subject property described above in Question No. 4, as well as the nature and extent of those interests for each person, provided that such a recorded interests shall be limited to those which are recorded in the County Clerk and Recorder's Office of Pueblo County, the land office of the Bureau of Land Management for the State of Colorado, the Office of the State Board of Land Commissioners of the Department of Natural Resources, or the Secretary of State's Office for the State of Colorado (Attach additional pages as needed): Information included in Application.

Name: Street City, State, Zip Interest	Name: Street City, State, Zip Interest	Name: Street City, State, Zip Interest
Name: Street City, State, Zip Interest	Name: Street City, State, Zip Interest	Name: Street City, State, Zip Interest

10. **Submittal Requirements**

Submittal requirements for each type of application are fully described within the 1041 Regulations as adopted by Pueblo County. The required information, as stipulated within these Regulations, shall be attached for each of the applicable titles under which this permit approval is being sought as indicated by applicant's response to Question No. 8. The attachments shall be identified by letter or number as indicated in the Regulations, and described by title below.

In the case of a proposal to engage in development in a natural Hazard area or mineral resource area, the applicant shall:

A. Meet the submittal requirements under the "Preliminary Plan" section in Title 16 Subdivisions of the Pueblo County Code if the proposal is for the establishment of a subdivision.

B. Meet the requirements of Chapter 18 of the 2003 International Building Code, if the proposal requires a Map Amendment, but not subdivision review, under Title 17 Land Use of the Pueblo County Code.

11. **Design and Performance Standards**

The design and performance standards as set forth in the County 1041 Regulations shall be certified as being complied with for each type of application being sought as indicated by the applicant's response to Question No. 8 above. Appropriate reports, analyses, and certifications shall be submitted and identified by reference to the appropriate section or title corresponding to each standard as set forth in the Regulations and listed by title below:

12. **Master Plan**

a. Does the proposal comply with the Pueblo regional Comprehensive Development Plan (as amended)? Circle: (YES) or NO

b. If the proposal does not comply, the applicant shall provide an explanation of how it does not comply and any justification as appropriate.

13. **Additional Information as Required**

Please attach any additional information which may be required as set forth in the 1041 Regulations.

14. **Duration of Permit**

The applicant requests a permit for a period of _____

GUIDELINE

FOR A

"LETTER OF REQUEST"

Where applicable, please provide the following information, in a letter format, to serve as a "Letter of Request" for all Department applications:

1. Date of Application

2. Owner and Owner's Representative or Consultant (Addresses, telephone numbers and email).

3. Site location, dimensions and size of property (in feet and acres), and present zoning.

4. Action requested and the reason/purpose for the request (Incorporate answers to the appropriate factors considered by the Commissioners).

5. Existing and proposed facilities, structures, roads, etc.

6. WAIVER OF ANY REQUIRED INFORMATION/REPORTS <u>AND JUSTIFICATION FOR THE WAIVER</u> MUST BE INCLUDED IN OR WITH THIS LETTER.

1041 PERMIT
SUPPLEMENTAL INFORMATION

The submittal deadline is 2:00 p.m. on the 3rd Wednesday of each month.

Notice of the public hearing by the Board of County Commissioners will be sent to the property owners whose property abuts or is within three hundred feet (300 ft.) of the exterior boundaries of the subject property. Notice of the proposed permit application will be posted on or near the subject property and published in the newspaper.

Letter of Request

Colorado Springs Utilities

It's how we're all connected

August 20, 2008

Mr. Kim B. Headley
Director of Pueblo County
Planning and Development
229 West 12th Street
Pueblo, CO 81003

Subject: Letter of Request for a House Bill 1041 Permit to Construct, Operate and Maintain Southern Delivery System Project Components within Pueblo County

Dear Mr. Headley:

Colorado Springs Utilities is proposing to construct, operate, and maintain the Southern Delivery System (SDS), a water delivery project that will bring water from Pueblo Reservoir to the communities of Colorado Springs and our project partners, Pueblo West Metropolitan District, City of Fountain, and Security Water District.

We are seeking approval to construct, operate, and maintain those SDS project facilities to be located in Pueblo County and are submitting this letter of request and accompanying House Bill 1041 Permit Application (Application) for your review in accordance with Title 17, Division II of the Pueblo County Land Use Code addressing "Areas and Activities of State and Local Interest".

The Application is formatted to be specifically responsive to Title 17, Chapter 17.172 "Regulations for Efficient Utilization of Municipal and Industrial Water Projects" and includes information responsive to relevant requirements of Title 17, Chapter 17.164, "Local Regulations of Site Selection and Construction of Major New Domestic Water and Sewage Treatment Systems and Major Extensions of Existing Domestic Water and Sewage Treatment Systems".

SDS project facilities include a new electric substation and an extension of local electric transmission infrastructure, the general siting and effects of which are described in this Application. Conceptual design has been initiated with Black Hills Corporation (formerly Aquila) to further refine siting and proposed construction details, anticipating that Black Hills Corporation will be required to formalize approval to construct these facilities by submitting a separate application responsive to Title 17, Chapter 17.168, "Site Selection and Construction of Major Facilities of Public Utilities" should this Application be approved.

SDS project facilities extend beyond the boundaries of Pueblo County. The information contained in this Application predominately addresses construction impacts within Pueblo County and, per your request received during pre-application meetings, addresses potential effects of the project that are not directly related to construction activity.

1. **Date of Application:** August 18, 2008

2. **Owner and Owner's Representation:**

The SDS project includes four Project Participants: the City of Colorado Springs, Pueblo West Metropolitan District, City of Fountain, and Security Water District. On behalf of the Participants and in accordance with mutual agreements between Participants, Colorado Springs Utilities is the named "Applicant", representing the other "Project Participants" in all matters regarding this Pueblo County 1041 Permit Application.

The Applicant, on behalf of the SDS Project Participants, is proposing to construct, operate, and maintain the Project, a water delivery system that will bring water from Pueblo Reservoir to the Participant's communities.

CH2M HILL, Inc., a contractor of Colorado Springs Utilities, is the engineer for the SDS project, providing design services, permitting support, and technical assistance. CH2M HILL has aided in the preparation of the Application.

Colorado Springs Utilities (Applicant; acting on behalf of all Project Participants)

Point of Contact: John Fredell
Plaza of the Rockies, Third Floor
121 S Tejon, MC930
Colorado Springs CO 80947-0930
Phone: (719) 668-8037
Fax: (719) 668-8734
E-mail: jfredell@csu.org

Pueblo West Metropolitan District (Participant)

Donald Saling, District Manager
109 E. Industrial Blvd.
Pueblo West, CO 80017
Phone: (719) 547-2000
Fax: (719) 547-2833
Email: dsaling@pmwd-co.us

City of Fountain (Participant)

Larry Patterson, Director of Utilities
116 S. Main Street
Fountain, CO 80817
Phone: (719) 322-2076
Fax: (719) 391-0463
Email: lpatterson@fountaincolorado.org

Security Water District (Participant)

Roy Heald, District Manager
231 Security Blvd.
Security, CO 80911
Phone: (719) 392-3475
Fax: (719) 390-7252
Email: r.heald@securitywsd.com

3. Site location, dimensions and size of property (in feet and acres), and present zoning:

The location of the SDS project within Pueblo County is displayed in Appendix B, Location Map. The anticipated area of permanent easement required for the SDS Project is approximately 238 acres (10,400,000 ft^2). An additional 92 acres (4,010,000 ft^2) is estimated to be temporarily required for construction.

A portion of the Project is located on federal land. Zoning information for land affected by the Project is included on the map (Figure I-1) located in Appendix I. Land zones crossed by the project include: S-1 Public Use, A-1 Agricultural 1, A-3 Agricultural 3, and B-4 Community Business.

Pursuant to the National Environmental Policy Act (NEPA), the U.S. Bureau of Reclamation (Reclamation) is conducting an environmental review of the entire SDS project, including aspects of the SDS project outside the boundaries of Pueblo County. A Draft Environmental Impact Statement (DEIS) was released by Reclamation for public comment on February 29, 2008. The public comment period closed on June 13, 2008. The DEIS is supported by a number of technical documents. Both electronic (CD) and printed copies (separately bound) of the DEIS, and supporting technical reports, are included with this Application. The DEIS and supporting documents are also available at the following URL: http://www.sdseis.com/DEIS.html.

The DEIS and supporting documents discuss the entire SDS project, not just the portions of the SDS project within, or affecting, Pueblo County. This Application package contains information derived from the DEIS, but presents it in the context of specific effects to Pueblo County.

4. Action Requested and the reason/purpose for the request (Incorporate answers to the appropriate factors considered by the Commissioners):

Colorado Springs Utilities is requesting a permit and approval to construct SDS project facilities within Pueblo County. The purpose of this letter, and Application, is to provide information in accordance with Pueblo County Land Use Code, Title 17, Chapter 17.172, "Regulations for Efficient Utilization of Municipal and Industrial Water Projects" and Chapter 17.164, "Local Regulations of Site Selection and Construction of Major New Domestic Water and Sewage Treatment Systems and Major Extensions of Existing Domestic Water and Sewage Treatment Systems".

The purpose and objectives of the SDS project are to:

- Provide a safe, reliable, and economical water supply to the Participant's customers.
- Provide redundancy to Participant's existing water delivery systems.
- Satisfy demands for growth and quality water delivery using existing water rights.
- Design and construct the SDS project in a manner that is safe, environmentally aware, and sensitive to community, citizen, and stakeholder concerns.
- Minimize impacts to the area, while installing and maintaining an efficient water delivery asset.

5. Existing and proposed facilities, structures, roads, etc.:

The SDS project is a multi-jurisdictional water supply project that achieves three primary goals for the Project Participants. These include:

- Establishing redundant system infrastructure and water supply to improve reliability of the overall network area water supply.
- Accessing currently held Arkansas River water rights acquired years ago in anticipation of demand.
- Supporting the planning and development objectives of the Participant communities.

The SDS project is very broad in its reach, complexity, and benefits, and requires the involvement of a multitude of stakeholders. As part of the overall permitting process, the Applicant seeks a 1041 permit from Pueblo County for the equipment and physical facilities of the SDS project that are to be located within Pueblo County.

Existing and proposed facilities are shown on documents provided in Appendix B of the Application. The SDS project components within Pueblo County include:

- Approximately 2,200 feet of buried, 78-inch diameter welded steel pipe capable of conveying 96 million gallons per day (mgd) and approximately 1,100 feet of buried, 72-inch diameter welded steel pipe capable of conveying 78 mgd of raw water
- Two proposed turnouts along the 78-inch-diameter reach of pipe: 1) 78-inch by 72-inch tee for future North Outlet Works Connection, and 2) 78-inch by 36-inch tee for Pueblo West Turnout
- Approximately 160 feet of buried, 36-inch, welded steel pipe capable of conveying 18 mgd of raw water to the existing Pueblo West Pump Station
- Approximately 18.4 miles of buried, 66-inch diameter welded steel pipe capable of conveying 78 mgd of raw water

- Various buried raw water pipeline appurtenances and structures including access manways, blow off manholes, combination air release valve vaults, and isolation vaults
- A 78-mgd pump station, Juniper Pump Station (JPS), equipped with seven 3,000-horsepower (hp) vertical turbine pumping units (six duty with one standby)
- Approximately 21.4-miles of fiber optic cable that generally parallels the raw water pipeline
- 115 kV substation and overhead electric transmission facilities connecting existing Black Hills Corporation (formerly Aquila) infrastructure to the JPS site.

The majority of the raw water pipeline alignment within Pueblo County will be buried parallel to existing utilities. The existing utilities consist of underground water pipelines, underground gas pipelines, and overhead electric transmission lines. Creeks, drainages, and roads will be crossed underground by the raw water pipeline. Areas disturbed during construction will be returned to pre-construction conditions at the completion of construction. The pipeline alignment has been designed to minimize disruption to residents, property owners, and existing structures.

The majority of the raw water pipeline will be constructed via open cut methods. Locations proposed to be constructed with trenchless methods are shown on the preliminary plans and include crossings of:

- Juniper Road
- Union Pacific Railroad
- US Highway 50
- Platteville Boulevard (at two locations)

The JPS will be located in Pueblo County near the existing Pueblo West and Fountain Valley Authority Pump Stations. The JPS has been designed to minimize visual impacts and aesthetically blend with the surrounding environment. Renderings of the JPS, as well as preliminary designs, are included in the Application.

6. Waiver of any required information/reports and justification for the waiver must be included in or with this letter:

Reference: Section 17.172.120 (C)(5): After consultation with Pueblo County representatives, it has been determined that C.R.S. 24-65.5-101 (Notification to Mineral Owners of Surface Development), does not apply to the Project Application based on the statutory exemption for "water pipelines and appurtenances". Because, no certification is required, no mineral rights-related responses are included in this Application.

As we have indicated previously, we do reserve any position set forth in our legal counsel David R. Eason's letter of March 27, 2008 to Daniel Kogovsek, Raymond L. Petros, and Gary Raso.

We believe that the information provided in this Letter of Request and Application addresses Pueblo County's House Bill 1041 permit procedures and that the Project meets Pueblo County's permit criteria for approval.

Should you have any questions or need additional information, please don't hesitate to contact me at (719) 668-8037.

Sincerely,

John Fredell
Southern Delivery System Project Director

On Behalf of Pueblo West Metropolitan District, the City of Fountain, and Security Water District.

cc: D. Saling – Pueblo West Metropolitan District
L. Patterson – City of Fountain
R. Heald – Security Water District

17.172.120 Submittal Requirements

Pueblo County Land Use Code, Title 17, Chapter 17.172 Regulations for Efficient Utilization of Municipal and Industrial Water Projects

Section 17.172.120 Application Submittal Requirements

17.172.120.A Information Describing the Applicant

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (F) and (M).

(1) The names, addresses, including email address and fax number, organizational form, and business of the applicant and, if different, the owner of the Project.

Applicant

Colorado Springs Utilities
John Fredell
Southern Delivery System Project Director
121 South Tejon Street, Third Floor, MC 930
Colorado Springs CO 80947-0930
Phone: (719) 668-8037
Fax: (719) 668-8734
E-mail: jfredell@csu.org

Colorado Springs Utilities (Springs Utilities) is an enterprise of the City of Colorado Springs (City) that provides electric, natural gas, water, and wastewater services to customers in the Pikes Peak region.

Other Project Participants

Pueblo West Metropolitan District
Donald Saling
District Manager
109 E. Industrial Blvd.
Pueblo West, CO 81007
Phone: (719) 547-2000
Fax: (719) 547-2833
E-mail: dsaling@pwmd-co.us

Pueblo West Metropolitan District (Pueblo West) is a quasi-municipal political subdivision within unincorporated Pueblo County that provides roads, fire protection services, parks, and water and wastewater services to customers within the community of Pueblo West.

City of Fountain
Larry Patterson
Director of Utilities
116 S. Main Street
Fountain, CO 80817
Phone: (719) 322-2076
Fax: (719) 391-0463
E-mail: lpatterson@fountaincolorado.org

City of Fountain Utilities (Fountain) is an enterprise of the City of Fountain that provides electric and water services to customers in the greater Fountain area.

Security Water District
Roy Heald
District Manager
231 Security Blvd
Security, CO 80911
Phone: (719) 392-3475
Fax: (719) 390-7252
E-mail: r.heald@securitywsd.com

Security Water District (Security) is a quasi-municipal special district within unincorporated El Paso County that provides water service within the service area of Security.

(2) The names, addresses and qualifications, including those areas of expertise and experience with projects directly related or similar to that proposed in the application package, of individuals who are or will be responsible for constructing and operating the Project.

Colorado Springs Utilities
John Fredell
Southern Delivery System Project Director
121 South Tejon Street, Third Floor, MC 930
Colorado Springs CO 80947-0930
Phone: (719) 668-8037
Fax: (719) 668-8734
E-mail: jfredell@csu.org

Mr. Fredell was selected as Project Director for the Southern Delivery System (SDS) project in September 2007. In his role as SDS Project Director, Mr. Fredell is responsible for the planning, permitting, and construction of the SDS project. Prior to his work on the SDS project, he held other positions with Springs Utilities, most recently managing the legal office there. In that role, he served on the Chief Executive Officer's leadership team as the Deputy City Attorney for the Springs Utilities for over five years. Mr. Fredell has been involved with numerous major capital projects during his fifteen years with Springs Utilities, including the Front Range Power Project, the Otero Expansion Project, Twin Rock Pump Station, Lower Homestake Parallel Pipeline, J.D. Phillips Water Reclamation Facility, and the Fountain Creek Recovery Project. In addition, Mr. Fredell brings a wealth of expertise and experience in areas such as contracts, project and risk management, permitting, land acquisition, litigation, design, financing, and construction. Prior to joining Springs Utilities, Mr. Fredell worked in the construction industry. He holds a Bachelor of

Science degree from Okalahoma State University with a concentration in finance and a minor in economics. In addition, he holds a Juris Doctorate from the University of Oklahoma.

CH2M HILL, Inc.
Bruce Spiller, P.E.
Program Manager
90 South Cascade Avenue, Suite 700
Colorado Springs, CO 80903
Phone: (719) 477-4914
Fax: (719) 634-9954
E-mail: Bruce.Spiller@ch2m.com

CH2M HILL is Springs Utilities' SDS consulting engineer providing design and other project services. CH2M HILL is a global leader in full-service engineering, consulting, construction, and operations for public and private clients. With more than 24,000 employees worldwide, CH2M HILL delivers large, complex water projects throughout the world - helping clients develop and manage infrastructure and facilities that improve efficiency, safety, and quality of life. CH2M HILL is a global project delivery company that leads its industry in program management, construction management, and water, wastewater, and environmental design (Engineering News-Record, 2007).

Mr. Spiller is CH2M HILL's Program Manager for the SDS project. Mr. Spiller has over 25 years of project management and lead engineering experience in all phases of projects for municipal clients, including planning, design, and construction. Mr. Spiller was responsible for the design and construction of the 68-million gallons per day (mgd) capacity Twin Rock Pump Station, including the hydraulics, control systems, and physical interfaces between the Lower Homestake delivery system and the Twin Rock Pump Station. Mr. Spiller was also project manager for the Lower Homestake Parallel Pipeline. The project included route selection, permitting, and design of a seven mile, 48-inch and 62-inch diameter pipeline that paralleled portions of Springs Utilities' existing Lower Homestake Pipeline to increase the pipeline capacity to 68 mgd. Mr. Spiller also served as project manager for the 120 mgd Pleasant Valley Pipeline project, which included the route selection, permitting, and design of approximately eight miles of 67-inch diameter welded steel pipe for the Northern Colorado Water Conservancy District. He holds a Bachelor of Civil Engineering degree and a Master of Science degree in Sanitary Engineering, both from the Georgia Institute of Technology.

(3) Authorization of the application package by the Project owner, if different than the applicant.

Springs Utilities is the Owner and the Applicant. Pueblo West, Fountain and Security are Participants in the SDS project through existing intergovernmental agreements (IGAs). Springs Utilities is acting on behalf of the "other project participants" in permit matters.

(4) Documentation of the applicant's financial and technical capability to develop and operate the Project, including a description of the applicant's experience developing and operating similar projects.

Contracting for the SDS project will be through Springs Utilities, which has primary financial responsibility for the SDS project. Other Participants will reimburse Springs Utilities for their portions of the SDS project. **Table A-1** summarizes the 2007 financial highlights of Springs Utilities' 2007 Annual Report (dated December 31, 2007).

TABLE A-1
Springs Utilities Combined Financial Highlights

	2007 ($)	2006 ($)	% Change
Total Operating Revenues	721,355,652	678,530,612	6.31
Total Operating Expenses	654,520,615	617,183,011	6.05
Interest Income	28,947,406	26,221,665	10.39
Interest Expense	60,980,122	59,133,022	3.12
Payment in Lieu of Taxes	25,759,499	25,146,854	2.44
Net Assets	1,234,519,055	1,193,406,749	3.44
Capital Assets	2,447,703,315	2,327,779,542	5.15
Work In Progress	96,833,856	183,006,095	-47.09
Total Assets	2,959,677,344	2,847,570,505	3.94
Long-Term Debt, Net	1,491,413,655	1,450,749,451	2.80
Bond Rating[1]	Aa2, AA, AA	Aa2, AA, AA	
Debt Service	91,166,197	87,054,844	4.72
Debt Service Coverage Ratio	2.18	2.15	1.40

[1]Bond rating agencies: Moody's Investors Service, Standard & Poor's, and Fitch Ratings, respectively. Underlying ratings used.

Documentation of Springs Utilities' financial capability to develop and operate the SDS project is included in Appendix A, Applicant's Financial and Technical Capability.

Colorado Springs has been providing water as a utility service for over 100 years. As a result, Springs Utilities has extensive experience in developing and operating large water infrastructure projects, including the North and South Slope collection systems on Pikes Peak, the Blue River collection system, the Homestake collection system, and the Fountain Valley Conduit (FVC). During its history, Colorado Springs has continuously maintained its financial and technical capacity to meet the growth needs of the community. Springs Utilities' water system is vast and complex. The entire system is made up of 25 major reservoirs (or storage accounts in reservoirs), totaling approximately 245,000 acre-feet (AF) of storage; approximately 220 miles of transmission pipeline ranging up to 99-inch diameter; 10 raw water pump stations with up to 104 mgd individual capacity (including joint ventures); and six water treatment plants with a combined capacity of 232 mgd. Springs Utilities employs approximately 1,900 personnel, over 150 of who are involved in the

planning, design and operation of the Springs Utilities water infrastructure. The system spans nine counties, including Chafee, Crowley, Eagle, El Paso, Lake, Park, Pueblo, Summit, and Teller. In addition, Springs Utilities partners with, and receives water from, the Fryingpan-Arkansas (Fry-Ark) collection system, the Twin Lakes collection system, and the Colorado Canal collection system.

Descriptions of major water delivery systems Colorado Springs has developed are given below.

South Slope Water System

The South Slope of Pikes Peak was the first major water source for Colorado Springs, with development beginning in the 1880's. The seven reservoirs on South Slope have a combined storage capacity of approximately 7,365 AF.

Water collected in these reservoirs is conveyed downstream by pipelines, tunnels, and streams. Some South Slope water is diverted through the Ruxton and/or Manitou Hydroelectric Plant before reaching the Mesa Water Treatment Plant where it is treated prior to customer use.

North Slope Water System

The three reservoirs on the North Slope of Pikes Peak (Crystal, South Catamount, and North Catamount) have a combined capacity of approximately 18,106 AF. This was the second mountain system developed for Colorado Springs citizens.

Water flowing through the New North Slope Pipeline travels 5.5 miles to the Manitou Hydroelectric Plant where it is used for electric generation prior to conveyance to the Mesa Treatment Plant. Alternatively, water can be diverted through the Northfield Transfer Line to be treated at the Pine Valley Water Treatment Plant. In addition, the New North Slope pipeline serves the Ute Pass Water Treatment Plant, which provides service to the towns of Green Mountain Falls, Chipita Park, and Cascade.

Blue River Collection System

Springs Utilities planned, designed, and constructed the Blue River collection system beginning in 1948. The collection system includes two reservoirs, three tunnels, several pipeline facilities, and one pump station. The combined storage of the two reservoirs is 7,370 AF and the pipeline is 30 inches in diameter. The pipeline runs approximately 70 miles in length from Montgomery Reservoir to North Catamount or South Catamount Reservoirs on Pikes Peak. Water can also be diverted through a connection in the Twin Rock Pump Station via the 48-inch Lower Homestake Pipeline to Rampart Reservoir.

Homestake Collection System

Springs Utilities and the City of Aurora (Aurora) jointly developed the Homestake Project from 1963 to 1967. The collection system includes four reservoirs, 10.5 miles of tunnels, 87 miles of pipeline, and two pump stations (one shared with Aurora). Springs Utilities' share of Homestake Reservoir is approximately 21,400 AF. The Homestake Pipeline includes 10.7 miles of 90-inch diameter pipe from Turquoise Lake to Twin Lakes, 50 miles of 66-inch diameter pipe from Homestake Reservoir to Spinney Mountain Reservoir, and 26 miles of 48-inch diameter pipe to Rampart Reservoir. The Otero Pump Station has a capacity of 104 mgd (2002 expansion) and the Twin Rock Pump Station (2002 expansion) has a capacity

of 68 mgd. Both pump stations include hydraulics, control systems, and physical infrastructure similar to those planned for the SDS project.

Fountain Valley Conduit

In 1979, the Fountain Valley Authority (FVA) contracted with Springs Utilities to operate and maintain the FVC under a Management Agreement. The FVC is a 45-mile long pipeline with a maximum diameter of 42 inches. It originates at the Municipal Outlet Works at Pueblo Reservoir and proceeds north into El Paso County, conveying approximately 20 mgd of raw water to FVA participants, including Colorado Springs, Fountain, Security, Stratmoor Hills Water District, and the Widefield Water and Sanitation District. The Management Agreement requires that Springs Utilities provide the necessary resources, including personnel, to operate and maintain the FVC. The FVA is accountable to the Southeastern Colorado Water Conservancy District (SECWCD) to adhere to an established Conveyance Service Contract to ensure each partner in FVA receives their allocated share of conveyed water each year.

(5) Written qualifications of report preparers.

Below are qualifications for the Permit's principal authors and preparers. Other individuals contributed to the permit application; however, only the primary preparer's qualifications have been included in this submittal.

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Mr. Higgins, Springs Utilities Construction and Delivery Program Manager, possesses over 18 years experience in the environmental management and municipal utility fields. The last 10 years of Mr. Higgins' career have been with Springs Utilities with focus on planning, permitting, and managing execution of large capital infrastructure projects, including natural gas, water, and wastewater systems. Mr. Higgins has been responsible for over $200 Million in water and wastewater capital asset development projects over the last five years, and plays a significant management role leading the SDS project. Mr. Higgins obtained a Bachelor of Science in Mechanical Engineering from Colorado State University.

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Mr. Riley, Springs Utilities Planning and Permitting Program Manager, has over 17 years experience in the area of regulatory planning, compliance and permitting. Joining Springs Utilities in 1995, Mr. Riley held the position of Environmental Specialist, where he was responsible for regulatory compliance, groundwater monitoring, waste disposal, and comprehensive auditing of citywide departments (i.e. police, fire, forestry, public works, etc.). Since 2001, Mr. Riley has held the role of Planning and Permitting Program Manager for the SDS project. In this role, Mr. Riley has been the primary governmental liaison on development of the National Environmental Policy Act (NEPA) permitting process. Mr. Riley is also responsible for coordination of state and local permits associated with the SDS project. Mr. Riley graduated from the University of Colorado, Colorado Springs with a Bachelor of Arts degree in Environmental Studies and Geography.

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Mr. McClure has over 25 years of project and program management experience in large complex multi-asset water and wastewater capital improvement programs. Mr. McClure has managed projects internationally and domestically, including water/wastewater treatment and conveyance projects for municipalities in Texas, Florida, North Carolina, Missouri and New York states, all of which included permitting activities. In addition, Mr. McClure has managed water/wastewater treatment and conveyance projects in Great Britain and the United Arab Emirates. Additional permitting experience has been gained domestically with the Corps of Engineers, Environmental Protection Agency, Department of Defense, Southern California Regional Air Quality Management District and other state, county, and local agencies.

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Ms. Edrich has 11 years experience in the area of civil engineering with an environmental and conveyance systems emphasis. She has extensive experience in permitting such projects as the Twin Rock Pump Station, Fountain Valley Pipeline Relocation, Clear Spring Ranch Sludge Pipeline Replacement, and Cascade Hydroelectric Project. Ms. Edrich was also the project manager and permit task lead for the Fountain Creek Recovery Project, a nationally recognized, award-winning project designed to keep potential wastewater releases from reaching downstream landowners and communities along Fountain Creek.

17.172.120.B Information Describing the Project

(1) Plans and specifications of the Project in sufficient detail to evaluate the application against the Permit Application

The Applicant has provided preliminary plans and drawings for the Project, predominately in Appendix B, to provide reviewers with sufficient detail to evaluate the Project against Pueblo County evaluation and approval criteria. In general, the SDS project is a water delivery system that will convey raw water from Pueblo Reservoir to the communities of Colorado Springs, Pueblo West, Fountain, and Security. The SDS project will provide the Participants with water from their existing water rights. The SDS project consists of multiple system components working together to provide a safe, reliable, and economical water supply. Project components in Pueblo County include:

- Approximately 2,200 feet of buried, 78-inch diameter welded steel pipe capable of conveying 96 mgd of raw water connecting to approximately 1,100 feet of buried, 72-inch diameter welded steel pipe capable of conveying 78 mgd of raw water. This pipeline will deliver water from the Joint Use Manifold (JUM) near Pueblo Reservoir to the Juniper Pump Station (JPS). The pipeline will not have significant changes in the amount of impervious areas.
- Approximately 160 feet of buried, 36-inch diameter, welded steel pipe capable of conveying 18 mgd of raw water to the existing Pueblo West Pump Station.
- Approximately 18.4 miles of buried, 66-inch diameter welded steel pipe (raw water pipeline) capable of conveying 78 mgd of raw water from JPS.
- Various buried raw water pipeline appurtenances and structures, including access manways, blow off manholes, combination air release valve vaults, and isolation vaults. Examples of these appurtenances and structures are shown in **Figure B-1** through **B-3**:
- A 78 mgd pump station, JPS, that is planned to be equipped with seven 3,000-horsepower (hp) vertical turbine pumping units (six duty with one standby). JPS will be located near Pueblo Dam in proximity to the existing Pueblo West and the FVA pump stations.
- Approximately 21.4 miles of fiber optic cable that will generally parallel the raw water pipeline to provide the Applicant communication to operate the Project.
- 115 kilovolts (kV) substation and overhead electric transmission facilities to connect existing Black Hills Corporation infrastructure from south of the Arkansas River to the JPS.

The Project will not have significant changes in the amount of impervious areas.

The majority (approximately 14.3 miles) of the raw water pipeline alignment will parallel existing utilities corridors. The existing utilities consist of underground water pipelines, underground gas pipelines, and overhead electric transmission lines. The Project will not result in excess capacity in existing water or wastewater treatment services or create duplicate services. A copy of the preliminary raw water pipeline plans is included in Appendix B.

FIGURE B-1
Photo of combination air release valve vault after construction. Vault size is a 10'x10' concrete vault, buried below grade approximately 15 feet. Vault houses air release valves and an access manway. Visible features include the air vent, access hatch and valve box markers.

FIGURE B-2
Photo of blow off manhole and dissipation structure after construction. Manhole size is a 60-inch concrete manhole, with a height of approximately 15 feet. Manhole houses a blow off drain valve. The dissipation structure is 10'x5' concrete structure that is located at grade. Visible features include the air vent, dissipation structure, manhole cover and valve box markers.

FIGURE B-3
Photo of isolation vault after construction. Vault size is a 30'x25' concrete vault, buried below grade approximately 20 feet. Vault houses an isolation valve, air release/vacuum valves and miscellaneous piping. Visible features include the air vent, access hatches and valve box markers.

The majority of the raw water pipeline will be constructed via open cut methods. Locations proposed to be constructed with trenchless methods include crossings of:

- Juniper Road
- Union Pacific Railroad
- US Highway 50
- Platteville Boulevard (at two locations)

In open cut construction, the trench is excavated, the pipe installed and welded, the pipeline backfilled, and the ground surface restored to pre-construction conditions. Whether employing open-cut or trenchless installation technologies, the installation and construction methods employed will follow standard industry practices designed to produce a safe, environmentally sound, and quality operation.

Each JPS pumping unit will be designed for a rated flow condition of 9,030 gallons per minute (gpm). This rated condition is consistent with the facility design capacity of 78 mgd with six pumps operating.

During preliminary design of JPS, the design team conducted an Architectural Definition Workshop with Springs Utilities, Reclamation, and State Parks to establish a mutually acceptable architectural design scheme and approach. The description below and renderings provided herein meet the design scheme and approach developed during the Workshop.

The dimensions of the JPS building are estimated to be 161 feet long by 75 feet wide. The total height of the facility is estimated to be approximately 42 feet between the lower level pumping room floor and the top of the parapet. The lower level of the pump building will

be buried approximately 10 feet below grade to reduce the overall height of the structure and to allow structures to be shielded by the existing hill when viewing the site from the east. An office/control complex approximately 47 feet long by 39 feet wide will be attached to the south side of the pump building. The roof construction will be a metal deck on open web steel joists. The building construction will consist of cast-in-place concrete and concrete masonry units, designed to be both aesthetically compatible with the surrounding topography and minimize sound emissions. Access to the site will be from the intersection of Juniper Road and Spillway Road. See **Figures B-4** and **B-5** for renderings of the pump station site, looking south from the intersection of Juniper Road and Spillway road.

FIGURE B-4
Rendering No. 1 of the proposed JPS in relation to Pueblo Dam looking south from the intersection of Juniper Road and Spillway Road

FIGURE B-5
Rendering No. 2 of the proposed JPS looking south from the intersection of Juniper Road and Spillway Road

In addition to the preliminary raw water pipeline drawings, Appendix B includes JPS preliminary design drawings and the Table of Contents from representative SDS project technical specifications for pipelines and pump stations. The Project is in the preliminary design phase and final technical specifications have not yet been completed for all facilities. However, the contents of technical specifications for the pipeline and JPS will be similar to the example technical specifications in Appendix B. Detailed specifications developed and completed for final design will be subject to review by Pueblo County Regional Building officials prior to construction.

(2) Description of alternatives to the Project considered by the applicant. If the Administrator determines that the nature or extent of the proposal involves the potential for significant damage and warrants examination of other specific, less damaging alternatives, the Administrator may require the Applicant to evaluate and present information on such additional alternatives as part of the application.

The Applicant has performed extensive evaluations of potential project alternatives over the course of the SDS project development. Multiple source water locations and raw water pipeline corridors were considered. In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (B) and (L).

Initial Source Water Location Alternatives

Prior to the Alternatives Analysis performed during the development of the Draft Environmental Impact Statement (DEIS), the Applicant screened and analyzed various source water locations to select the best technical alternative for the SDS project source water location. The decision process was based on the following criteria:

- the use of existing specified decreed exchange rights,
- ability to meet SDS project water needs,
- ability to provide redundancy to the existing systems,
- overall delivery capacity, operability and water delivery coordination requirements, and
- public acceptability.

Five potential source water locations were compared:

- Joint-Use Manifold (JUM)-The SDS project would connect to the existing JUM located at Pueblo Dam
- Joint-Use Pipeline (JUP)-The SDS Project would connect to the existing JUP, east of Pueblo Dam at an existing turnout in the JUP.
- Arkansas River Intake-The SDS project would connect to a new river intake located on the Arkansas River upstream of the confluence of the Arkansas River and Fountain Creek.
- Pueblo Reservoir Outlet-The SDS project would connect to a new in-reservoir intake located on the north bank of the reservoir.
- Pueblo Dam North River Outlet Works-The SDS project would connect to the existing river outlet works at the Pueblo Dam.

Figure B-6 shows the locations of the five potential source water locations described above.

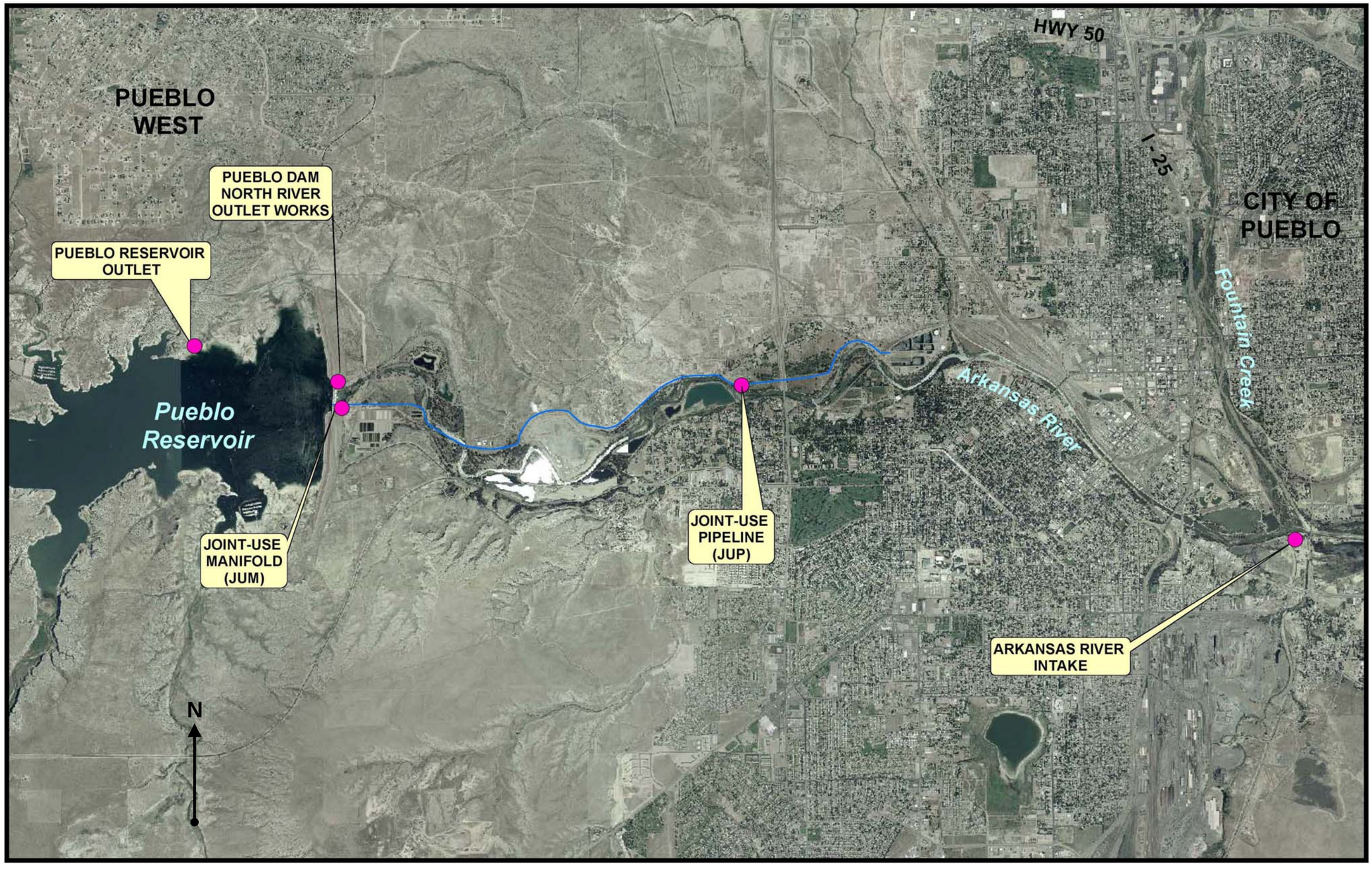


FIGURE B-6
SDS Project Potential Source Water Locations

The Flow Management Program (FMP) plays an important role on this section of the Arkansas River. The FMP is the result of an IGA for a target flow program on the Arkansas River through the City of Pueblo. This river section includes the Legacy Project and the kayak course. The IGA parties include the City of Colorado Springs, Pueblo Board of Water Works, City of Aurora, City of Fountain, City of Pueblo and the Southeastern Colorado Water Conservancy District (SECWCD), each of which agreed to reduce or limit the operation of Arkansas River exchange water rights operated through the City of Pueblo. The Project and the FMP are related because the IGA establishes terms under which parties can terminate participation in the FMP if the Project cannot reasonably be constructed from Pueblo Dam due to terms or conditions in federal, state, or local licenses or permits necessary for construction and operation of the Project.

The JUM was chosen as the best technical alternative based on its ability to convey the required SDS project flow demand, relative ease of operability, conformance with the FMP, a potential to provide service to participant Pueblo West, and a favorable benefit to cost ratio when compared to the other individual source water alternatives. The Pueblo Dam North River Outlet Works can be used as an additional raw water source, ensuring existing users of the Pueblo Dam Municipal Outlet Works receive their allocated capacities. The Pueblo Dam North Outlet Works releases water from Pueblo Reservoir into the Arkansas River. Other than the river release, there are no water users or connections receiving water directly from the Pueblo Dam North Outlet Works. Connecting these two outlets will also provide redundancy to existing and future users of the JUM, including Pueblo Board of Water Works and the proposed Arkansas Valley Conduit.

Initial Raw Water Pipeline Alternatives

Multiple raw water pipeline alignments were evaluated for the JUM source water location. Each alignment was developed by conducting an evaluation of pipeline segments, combining pipeline segments into pipeline alignments, and finally developing the most favorable relative benefit for each segment of the alignments. Each raw water pipeline alignment was screened using aerial photography and mapping; Geographic Information Systems (GIS) data from the Federal Emergency Management Agency (FEMA), Colorado Division of Wildlife (CDOW), US Environmental Protection Agency (EPA), Pueblo County and others; geohazard assessments and geotechnical investigations; field reconnaissance; and locations of other major utilities. Alignment options were evaluated against multiple criteria including, but not limited to, geology, topography, wetlands, engineering constraints, environmental impacts, wildlife patterns, socioeconomic impacts, number of affected properties, and level of disturbance to the surrounding areas. The final raw water pipeline alignments considered, each of which begin at the JUM, are described as follows:

- The western alignment generally parallels the FVA Pipeline, which shares a utility corridor with Black Hills Corporation and Xcel Energy (Xcel). This alignment heads north to the Midway substation, at which point it turns to the northeast until it reaches the Pueblo County line.
- The central alignment crosses Highway 50 near Wildhorse Creek and traverses due north through open country beyond the Pueblo County line. This alignment does not follow any existing utility corridors or roadways, and is compatible with any of the five source water locations with varying lengths of the raw water pipeline within the main portion of the alignment. It was found that the central alignment has constructability

concerns and would be difficult to access for maintenance and was dropped from further consideration.

- The eastern alignment skirts the northerly limits of the City of Pueblo, east of Interstate-25 (I-25), and roughly parallels Overton/Meridian Road for the majority of the alignment. Portions of the alignment diverge from the roadway near Pinon Road in order to avoid steep physical terrain surrounding Overton Road.

Figures B-7 and **B-8** show the locations of the three raw water alignments described above and the corresponding segments.

Following elimination of the central alignment, the two remaining alignments were evaluated based on reliability benefits, public acceptance, environmental benefits, land use benefits, and pipeline equivalent length. The equivalent length criterion is a surrogate for cost and takes into account the number of creek crossings, amount of wetlands impacted, number of road and railroad crossings, length of power line abutment, length of high pressure pipe, and quantity of rock excavation.

As a result of the alignment evaluation, performed against a broad-based and comprehensive set of selection criteria, the western alignment was selected as the Best Technical Alignment. Further hydraulic analysis using this alignment confirmed the JUM, and connection to the Pueblo Dam North Outlet Works, as the preferred source water location.

Other Project Alternatives

Highway 115

An alternative to the proposed project is a project outside of Pueblo County, generally referred to as the Highway 115 Alternative. This alternative includes potentially diverting up to 78 mgd (120 cubic feet per second [cfs]) of raw water from an intake located on the Arkansas River in the vicinity of Florence, Colorado. This raw water would then be conveyed to project participants via an approximately 50-mile long 66-inch diameter pipeline and a series of three raw water pump stations. The pipeline would roughly follow the Highway 115 alignment for much of its route from the Arkansas River to the end point near Colorado Springs. This alternative is currently in a conceptual design phase. If this 1041 Application process is unsuccessful, the Applicant may propose another alternative to the SDS project within Pueblo County or select an alternative that does not include facilities in Pueblo County.

Upstream Intake

The Upstream Intake diverts raw water from the Arkansas River immediately upstream of the confluence with Fountain Creek. This alternative consists of four pump stations and approximately 46 miles of pipeline. Two pump stations would be located in Pueblo County; one adjacent to the Arkansas River at the confluence, and one on Overton Road north of the City of Pueblo. The raw water pipeline begins at the Arkansas River at the confluence, and heads north towards El Paso County. The Applicant is not proposing the Upstream Intake for several reasons: It would require an intake structure on the Arkansas River, potential difficult pipeline construction near Overton Road, two pump stations in Pueblo County, use more than 60 percent more electrical power. Upstream Intake is $15M more in initial cost than the Project and over $40M more for the initial 40 years of operation.

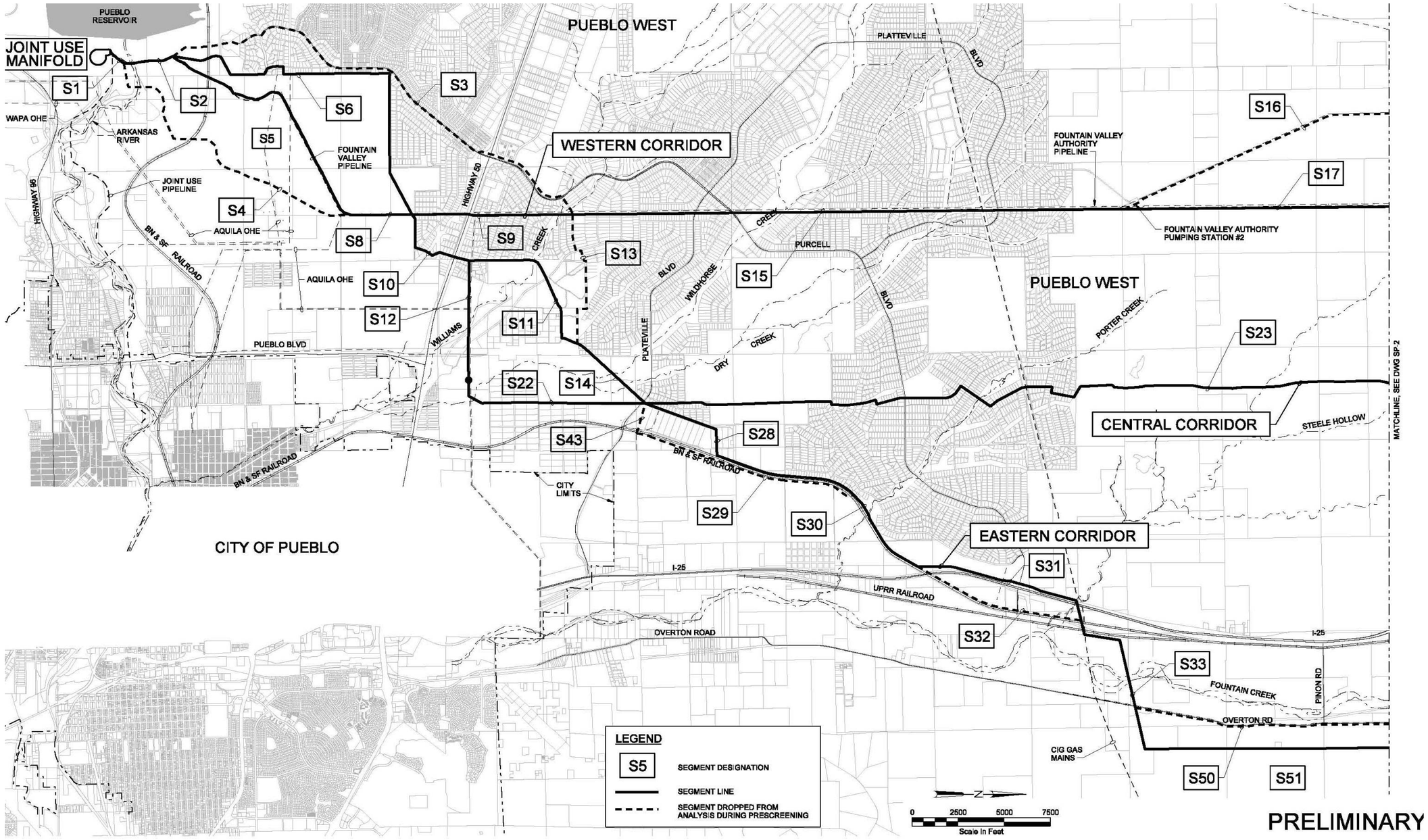


FIGURE B-7
Joint Use Manifold Pipeline Alignments Overall Site Plan 1

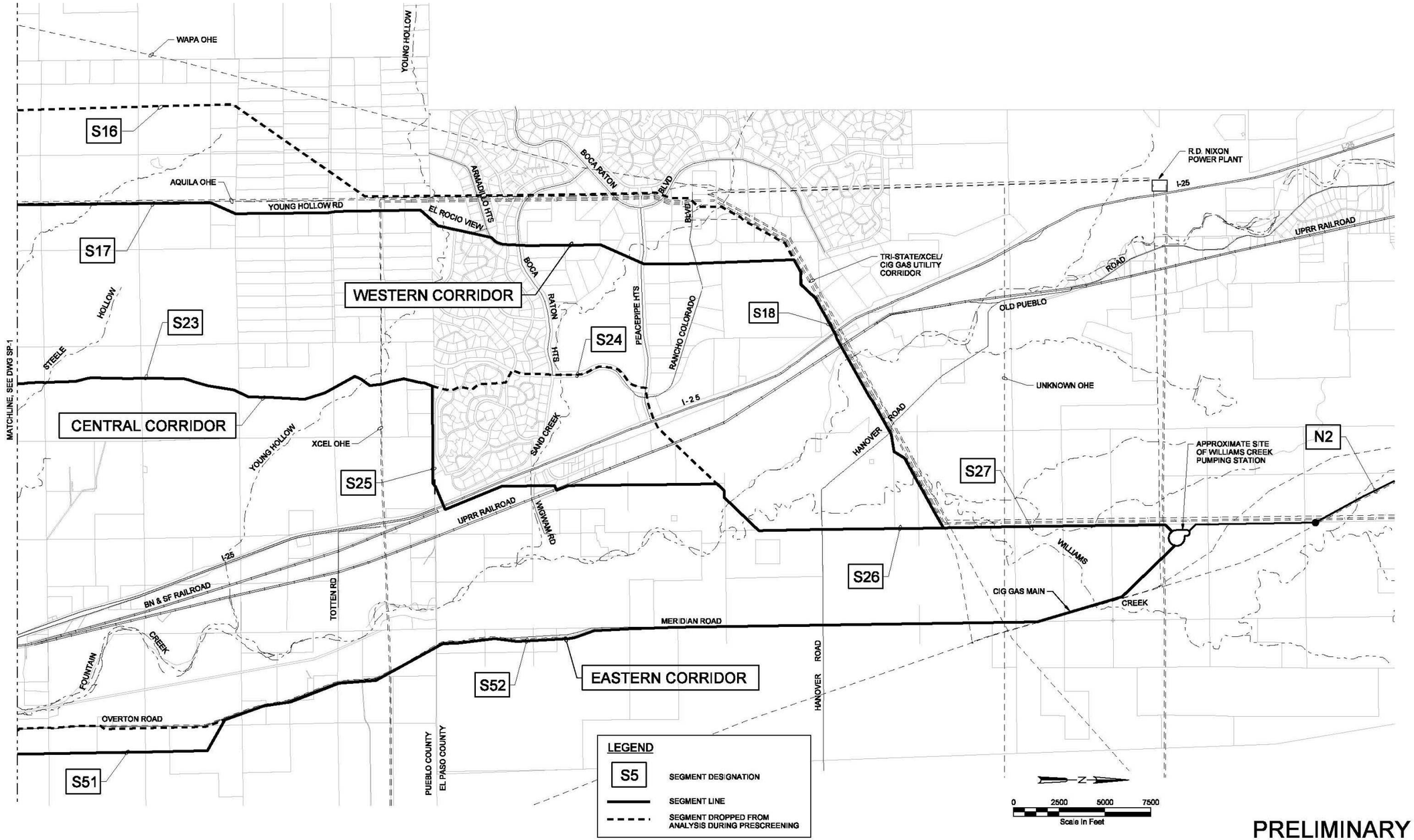


FIGURE B-8
Joint Use Manifold Pipeline Alignments Overall Site Plan 2

Downstream Intake

An additional alternative added during public scoping by the NEPA process for evaluation is the Downstream Intake Alternative. The Downstream Intake Alternative diverts water downstream of the confluence of Fountain Creek and the Arkansas River instead of from Pueblo Reservoir. The Applicant considered and rejected the Downstream Intake Alternative for several reasons. Advanced water treatment would be required by reverse osmosis due to high dissolved solids concentrations. Reverse osmosis is a separation process that uses pressure to force water through a membrane to remove salts and other dissolved impurities. This technology is very effective, but also very expensive to build and operate because of the high pressures required to force the water through the membranes, the need to recover water from the resulting brine, and finally, to dispose of the salt. The Downstream Intake Alternative would be a more damaging alternative than the proposed project. It would require an intake structure on the Arkansas River, two pump stations in Pueblo County, use more than twice as much electrical power, and costs almost $200 million more to construct and $500 million more to operate over the next 40 years than the proposed Project. The operation and maintenance costs for this alternative are approximately 80 percent greater than the proposed Project. Therefore, the Downstream Intake Alternative will not be considered by the Applicant.

Indirect Potable Reuse

As part of the NEPA Alternative Analysis process for the SDS project, six potential indirect potable reuse alternatives were considered. Each alternative involved: (1) the planned indirect potable reuse of Colorado Springs reusable return flows diverted from Fountain Creek downstream of Colorado Springs; (2) advanced water treatment of these reusable return flows, including reverse osmosis; (3) the blending of reusable return flows with Arkansas River water diverted from Pueblo Reservoir with a maximum of 50 percent of the overall water supply originating from reuse; and (4) either riverbank filtration and soil treatment and/or storage in reservoirs to allow natural treatment to take place prior to additional treatment and use.

The reuse alternatives were rejected due to the following reasons:

- The large amount of energy required by the advanced water treatment facility and mechanical brine evaporation used to reduce the volume of brine generated by the reverse osmosis process.
- A similar pipeline (48-inch diameter in place of 66-inch diameter) and three pump stations would still be required from Pueblo Reservoir to provide conventional water required to ensure that no more than 50 percent of the overall water supply originated from a wastewater source.
- After treatment with reverse osmosis, about 15 percent of the water treated remains as a concentrated brine. Two thirds of that water can be recovered using mechanical evaporation, resulting an overall five percent loss. The resulting salt slurry would need to be disposed of in a permitted landfill.
- Because of the dependence on treated wastewater, all reuse alternatives would be considered less desirable from a public heath standpoint than alternatives that use water not from wastewater origin.

(3) Schedules for designing, permitting, constructing and operating the Project, including estimated life of the Project.

Schedule

A summary SDS preliminary project schedule as of July 2008 is included in Appendix C. The following are major SDS project activities:

- Permitting: Federal, State, and Local permit applications to be submitted beginning in 2008.
- Design: To be substantially complete in 2009
- Construction: 2009-2012

Estimated Life

The SDS project will continue in perpetuity. Physical project facilities will be operated, maintained, and replaced as necessary to provide service indefinitely.

(4) The need for the Project, including a discussion of alternatives to the Project that were considered and rejected; existing/proposed facilities that perform the same or related function; and population projections or growth trends that form the basis of demand projections justifying the Project.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (A).

Need for the Project

A significant concern is aging existing infrastructure. The Applicant's major raw water delivery systems range in age from about 20 years to 50 years old. Pueblo West is the only SDS Project Participant located on a major river system. As a result, other participants rely on major pipeline delivery systems or groundwater for most of their drinking water supplies. Aging infrastructure, the need for major maintenance activities, unplanned outages from system failure, future pipeline replacement, and loss or contamination of groundwater make these communities vulnerable. Redundancy is needed to reduce these risks. The SDS project will allow the Applicant to develop water storage, delivery, and treatment capacity to provide critical system redundancy.

Historically, the Applicant's major water delivery systems have been shut down for extended periods for both planned and unplanned reasons. For example, in 1990, the Otero Pipeline was unexpectedly shutdown for six months due to a major electrical switchgear failure and fire at the Otero Pump Station. The pipeline was shut down for two months in both 1999 and 2003 for planned and unplanned events, one month in 1999 for pipeline inspections, one month in 2002 to support construction projects, and one month in 2003 for repairs due to a lightning strike. The need for redundancy is critical because without the Otero System, Colorado Springs would lose over 50 percent of its raw water delivery capacity, and the reliance on one conveyance system for delivery capacity of over 50 percent of a population's water supply poses high risk. Additionally, in 1999, the FVA pipeline was shut down for approximately one year for repairs as a result of subsidence near Fort Carson. The SDS project will not only provide system redundancy, but will also provide greater overall service reliability for the Applicant.

To meet most or all of the future water demands of the SDS project Participants by utilizing their existing Arkansas River Basin water rights is also an import project need. Colorado Springs' water rights activities over the last 30 years were intended to develop senior rights of sufficient volume to meet the needs of Colorado Springs. This has resulted in an extensive portfolio of surface water rights in the Arkansas River Basin. Colorado Springs, Pueblo West, Fountain, and Security are all located within the Arkansas River Basin. The SDS project will not reduce the amount of water available for future water supply in Pueblo County, nor will it have an impact on costs to water users to exercise their current water rights.

An additional need is to meet the demands that result in population growth in the Colorado Springs area. Population projections indicate that Colorado Springs should expect an average annual growth rate of 1.2 percent between 2000 and 2030. As population increases so do the water demands. The Project is necessary to meet community development and population demands in the areas served by the Project. The SDS project will meet the future water demands caused by population growth for the next 40 years.

Alternatives to Project Considered and Rejected

Alternatives to the SDS project that were considered and rejected are discussed in section 17.172.120 B.(2).

Existing/Proposed Facilities Performing Similar Function

Each Participant will utilize the SDS project to provide a safe, reliable water supply to meet future water demands. Detailed specific needs of Springs Utilities and Project Participants are described below:

Colorado Springs

Springs Utilities' delivery of treated water to its customers is limited by its existing raw water delivery systems. Existing systems provide approximately 106.4 mgd of firm yield, which include:

- Local Systems (direct flow water rights and water from storage): 32.2 mgd
- Blue River System: 7.0 mgd
- Otero Delivery System: 57.8 mgd
- Fountain Valley Authority System: 7.4 mgd
- Groundwater System: 2.0 mgd

Each raw water supply source is conveyed to the Springs Utilities service area for treatment and distribution. The SDS project will provide over 70 mgd of raw water delivery capacity to Colorado Springs.

Pueblo West

The Project will meet water delivery needs for Pueblo West, allowing them to meet growth demands and to provide redundancy to their existing water supply and delivery system. As a Participant, Pueblo West rate payers would benefit from the Project by leveraging larger scale capital investments and sharing future maintenance and operating costs with the other Participants. The Project will not have significant adverse effects on the contiguity of development to the existing growth centers of Pueblo West.

Pueblo West owns and maintains its own water system and treatment facilities, and relies solely on one water system for its water supply, a raw water pipeline system originating at

Pueblo Dam and terminating at Pueblo West's Water Treatment Plant (WTP). The primary water source is Twin Lakes water. The water is released from Twin Lakes, on a demand basis, and flows down the Arkansas River to the Pueblo Reservoir. The Pueblo West Pump Station is located next to the Arkansas River, downstream of the Pueblo Dam, connected to the JUM and can pump approximately 10.5 mgd from Pueblo Reservoir.

Pueblo West businesses and residents historically relied on ground water wells to provide their water supply, but these wells are now used for supplemental irrigation and emergency potable water use only. In the event of a system outage, Pueblo West would depend on its treated stored water, which would provide two to five days supply of water for its customers. In a severe emergency, about 4 mgd of water typically used for non-potable irrigation of Pueblo West's Desert Hawk golf course, would be treated for potable consumption. The community of Pueblo West needs another water supply system to provide increased capacity, redundancy and service reliability for its existing delivery system and residents.

The Project would supply Pueblo West with up to 18 mgd of water, which is necessary to meet the communities' development and population demands and the desired redundancy for Pueblo West. If Pueblo West does not participate in the Project, they would develop a new intake on the Arkansas River below the Pueblo Dam. The Project will allow Pueblo West to obtain their water more efficiently and at a lower cost.

Fountain

Fountain relies on two water systems for its water supply: the Fountain Creek Alluvial Wellfield and the Fry-Ark Project through the FVC. The Fountain Creek Alluvial Wellfield provides 44 percent of Fountain's water supply, while the FVC provides the remaining 56 percent. Fountain's water supply consists of wells, storage reservoirs, pumps, regulating valves, and a network of distribution mains. Existing water supplies are capable of providing a firm yield of approximately 4.9 mgd, with an additional 3.0 mgd of water potentially available through a water exchange agreement with Widefield and Security.

Security

Security relies on four water systems for its water supply: the Widefield Aquifer, the FVC, Windmill Gulch Aquifer, and leased water from Colorado Springs. In 1987, the Widefield Aquifer was contaminated with tetrachloroethene, a carcinogenic compound used as a degreaser. Affected Security wells were either shut down or had water treatment systems installed to remove the contamination. This incident highlighted one of the risks associated with Security's reliance on a shallow aquifer for nearly half of its water supply, amplifying the need for a new delivery system to provide system redundancy. Current sources provide Security with firm yield of approximately 4.1 mgd.

Basis of Demand Projections

Colorado Springs

Colorado Springs is the largest water provider in El Paso County. Population projections indicate that Colorado Springs should expect an average annual growth rate of 1.2 percent between 2000 and 2030. The Pikes Peak Area Council of Governments in conjunction with the Colorado State Demographer project that El Paso County would grow from its 2002 population of about 541,000 residents to about 800,000 residents by 2030 (an average annual population growth rate of 1.4 percent). It is projected that if Colorado Springs grows slightly

slower than El Paso County as a whole, Colorado Springs will have about 518,000 residents by 2030, an increase of about 145,000 residents from its 2002 city population.

Pueblo West

From 1992 through 2004, potable water use for Pueblo West has grown from less than 1,000 AF per year (0.89 mgd) in 1992 to about 3,800 AF per year (3.39 mgd) in 2001 and 2004. During these years, the number of accounts served by Pueblo West increased from about 1,950 to about 8,830–an average increase of nearly 13 percent per year. Pueblo West also provides raw water to the Desert Hawk golf course, with annual demands for this purpose averaging about 360 AF per year (0.32 mgd).

Pueblo West currently provides water, sewer, and fire protection services to about 17,000 people. Pueblo West is anticipated to reach community build-out by 2018 with an expected population of approximately 47,000 people. The Project would provide Pueblo West with water to meet projected peak-day demands through build-out.

Fountain

Fountain projects a population growth from 15,197 in 2000 to 49,970 in 2030, at an average annual growth rate of four percent. Fountain's average day demand is projected to increase from 2 mgd in 2000, to 8.3 mgd in 2020, while its maximum day demand is projected to increase from 5.2 mgd in 2000, to 21.2 mgd in 2020. The City of Fountain Master Plan projects an average day demand of 11.8 mgd in 2046, and a maximum day demand of 30.2 mgd in 2046. The SDS project will supply Fountain with an approximate annual average of 2.25 mgd and a peak day of 5.625 mgd.

Security

Security projects a population growth from 18,000 in 2000 to 27,000 in 2030, at an average annual growth rate of 1.4 percent. The Security Water District-Water System Master Plan project an increased future demand from 4.8 mgd in 2006 to 5.8 mgd in 2022 during dry years. At build-out, in 2025, Security will have an unmet demand of 2.2 mgd. The SDS project will supply Security with 1.3 AF per year.

(5) Description of all conservation techniques to be used in the construction and operation of the Project.

Construction Conservation Techniques

The following describes proposed conservation techniques that may be used if necessary and appropriate during the construction of the Project:

- The project will not significantly deteriorate soils and geologic conditions nor cause significant erosion, sedimentation, or flooding. Soil resources will be conserved by the following construction techniques:
  - Measures including erosion control, stock piling of top soil, and revegetation will be used to minimize loss of soil material before, during, and after construction. Efforts will be taken to keep suitable materials on-site and maximize reuse.
  - The area of disturbance will be confined to the defined construction limits.
  - Soils within the construction area will be contained through temporary sediment control measures such as silt fences, sediment logs, trenches, and sediment traps.

  - Top 6-inches of soil will be removed and stock piled during the initial phase of earthwork operations. The stock pile will be protected with temporary sediment control measures as indicated above.
  - Topsoil (the top 6-inches initially removed) will be applied to the top 6 inches of backfill. Soil amendments, fertilizers, and mulches will be added as appropriate to promote effective vegetation growth. Seeding will occur during favorable plant establishment climate conditions to match site conditions and revegetation goals.
  - Areas of disturbance will be graded, generally following preconstruction and natural contours to minimize erosion causing run-off and ponding.
  - Disturbed areas will be revegetated with similar pre-excavation vegetation types (excluding weeds) following construction for long-term soil protection.
  - Historical use of lands crossed by Project facilities will be allowed to continue after construction, subject to easement constraints.
- Native Grasslands, Shrublands, and Woodlands will be restored by the following construction techniques:
  - The existing top 6-inches of soil will be stored and replaced.
  - Areas will be reseeded with the appropriate native seeds. If practical, locally collected seeds will be used, especially when replacing plant communities of concern.
  - Trees lost will be replaced with appropriate species.
- Plant species of concern will be protected by the following construction techniques:
  - Construction activities will be routed around areas with plant communities of concern and other sensitive vegetation such as large trees.
  - Areas with known populations of plant species of concern will be surveyed to locate plants of concern. Construction will be adjusted, if practical, to minimize disturbance of these plants.
  - Plants outside of the construction zone will be protected by fencing or other types of barriers.
  - Individual plants will be transplanted to nearby undisturbed areas.
- Noxious weeds will be reduced by implementing the following construction practices:
  - Certified weed-free mulch will be used after seeding.
  - Appropriate vegetation will be reseeded as soon as practicable after disturbance.
  - Seed that does not contain noxious weed seed will be used.
- Potential adverse effects on roadways/traffic will be minimized with the following construction techniques:
  - Trenchless construction will be used where the pipeline crosses railroad lines, state highways (U.S. Highway 50), and major county roadways (Juniper Road and Platteville Road).

  - Trenchless construction will minimize impacts to traffic, preventing congestion during construction.
  - Road improvements and repairs required as a result of construction activities will be paid for by the Applicant.
  - Temporary construction access and roads will not have an adverse effect on the capability of local governments to provide services. Coordination meetings will be held with the Applicant and local government services to coordinate construction activities.

- The project will not significantly degrade air quality. Air quality impacts will be minimized with the following construction techniques:
  - A fugitive dust control plan will be prepared, submitted and implemented as required by the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division
  - Standard control practices will be developed and implemented, such as watering, to minimize particulate and dust emissions from construction work sites as specified in the fugitive dust control plan
  - Construction equipment (especially diesel equipment) will meet opacity standards for operating emissions
  - Disturbed areas will be revegetated as soon as appropriate to reduce dust sources
- Impacts to wetlands and riparian vegetation will be minimized with the following construction techniques:
  - Final alignments and facilities will be designed to minimize wetland impacts.
  - Impacts to wetlands will be mitigated in areas of temporary, short-term effects such as pipeline crossings, on-site at the place of disturbance with similar wetlands and soils to replace existing wetland functions and values.
- Overall construction and reclamation methods will be implemented with the following construction practices:
  - Clearing will be performed in accordance with applicable permits and with conditions contained in right-of-way agreements and special use permits.
  - Vegetation and obstacles will be cleared as necessary to allow safe and efficient use of construction equipment
  - Debris will be disposed of from right-of-way preparation (e.g., vegetation, rock, and building materials) in accordance with applicable regulations, permits, or agreements
  - Materials that cannot be reused in construction of the new facilities will be hauled to a permitted disposal site
  - Unusable spoil material will be disposed of by hauling offsite or selling or giving the material to another user

  - Groundwater encountered in the excavations will be addressed in accordance with requirements of construction dewatering permits. Groundwater will be collected and pumped into a temporary retention pond or land application system or route to appropriate storm drains.
  - Top 6-inches of soil will be removed and stored for use during backfill and revegetation. The site will be graded to establish appropriate contours for facility construction and to provide safe and efficient machinery movement and operation. The topsoil will be replaced after surface settlement has occurred and landscape or revegetation of the site.
  - Sites close to developed areas will be landscaped to match the general character of the area in which it is sited in accordance with governing guidelines
  - Outlying areas will be revegetated consistent with pre-disturbance conditions
  - Through consultation with the Natural Resources Conservation Service and landowner, a revegetation specialist will determine the proper seed mix
  - Property affected by Project construction will be restored to a condition comparable to the pre-construction condition

- Miscellaneous Raw Water Pipeline Construction Techniques:
  - General construction techniques for construction and restoration methods will be followed. The open trench method will be used for most of the raw water pipeline construction. Cross street and driveway pavements will be cut and temporarily covered during pipeline construction to maintain access.
  - Trenchless construction will be used to cross beneath U.S. or state highways, major county roadways, and railroads. Trenchless construction techniques will involve excavating underground from an entrance pit to a receiving pit to avoid disturbing surface features between the two pits. These techniques will minimize disturbance and allow continuous use of the feature that is being crossed.
  - Best management practices will be used to control erosion from water released through blow off valves by installing upland soil protection and/or channel protection by limiting the allowable blow-off valve flow rate, and by constructing appropriate energy dissipators.

Operation Conservation Techniques

The following describes proposed conservation techniques for operation of the Project:

- Pump Station
  - The power supply for the pump station will be electric. The installation of electric motor drivers, gas fired engine drivers, and gas fired engine generators were evaluated. Electric motor drivers provide a cleaner and more sustainable power source that will not require air emission permits, as opposed to gas fired equipment, and will generate lower operation and maintenance costs for the consumer.
  - JPS contains three induction motors with Variable Frequency Drives (VFDs) and four synchronous motors for constant speed pumps to provide optimal electric efficiency. Motors will have a minimum full load efficiency of 96.0 percent.

- JPS contains seven vertical turbine pumps (three variable speed, four constant speed) and will have a minimum pump efficiency of 86.0 percent.
- The three VFD's pump and motor units will mitigate transient voltage dips on the transmission line caused by sudden increases in load flow current to the pump station.

(6) Description of efficient water use, recycling and reuse technology the Project intends to use. Such description shall include estimated stream transit losses of water, reservoir evaporation losses, and power and energy requirements of the Project and alternatives to the Project.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (H).

Efficient Water Use

Springs Utilities began a long-range planning project in the early nineties to ensure a safe and reliable water supply for its customers. The Water Resources Plan was adopted by Colorado Springs City Council in March 1996. The plan considered a wide range of alternatives and recommended four broad options that provide a diverse, flexible and low cost to supply water for customers. The resource options include the following and are shown below in **Figure B-9**:

- Conservation,
- Non-Potable water development
- Existing system improvements
- New major water supply delivery system – The SDS project

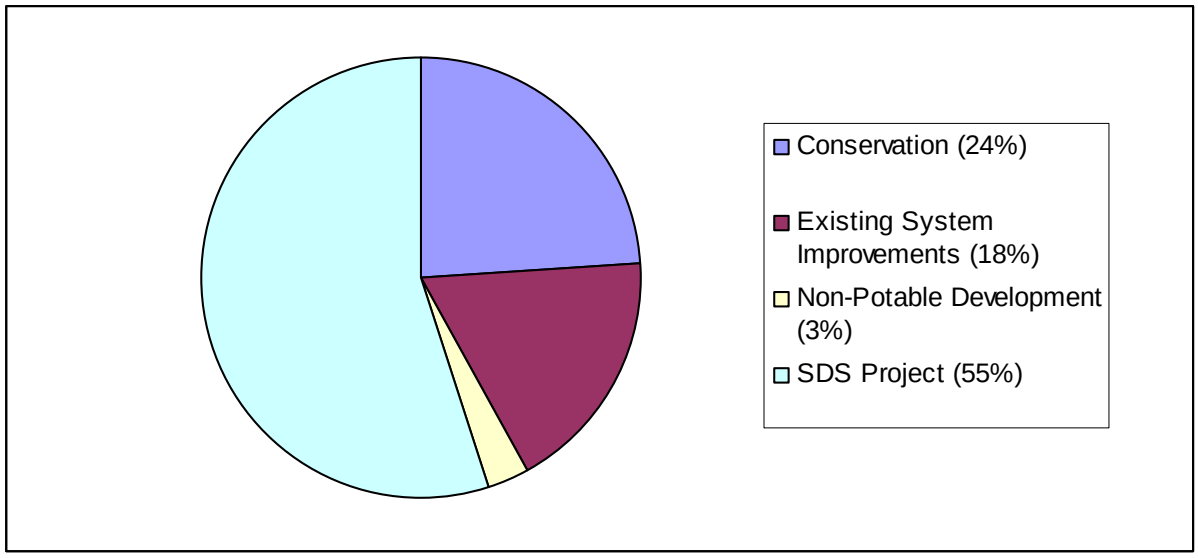


FIGURE B-9
1996 Colorado Springs Utilities Water Resource Plan

Prior to developing a new major water delivery system, the SDS project, Springs Utilities implemented the other three options.

Conservation, an ongoing program, was enhanced to the degree that Colorado Springs has one of the lower per capita water use rates in the west.

Non-potable water development was also expanded. In 2002 and 2003, Colorado Springs expanded the reclaimed wastewater treatment capacity at the Las Vegas Wastewater Treatment Facility from 6 mgd to 12 mgd. A pipeline was constructed to provide an average of about 4 mgd of reclaimed wastewater to the Drake Power Plant for cooling. Additional pipelines were installed to allow more non-potable water to be delivered to major irrigators.

Improvements to allow greater use of existing systems were also implemented. Expansions and improvements to the Homestake System will allow an additional 13 mgd to be delivered through that system. Interconnects with the Blue River system will allow greater use of that system.

The improvements to conservation, non-potable water development, and existing systems were done to efficiently use water resources. The use of water in Colorado Springs is among the most efficient in the west. The SDS project is required to provide additional needed water to Springs Utilities. The water delivered by the SDS project will be used as efficiently as other water sources. The planning, design and operation of the SDS project will reflect principals of resource conservations, energy efficiency and recycling or reuse.

Conservation

Colorado Springs Utilities continues to maintain a sustainable focus on water conservation in order to ensure the most effective and efficient use of water in our community. On December 31, 2007, Colorado Springs Utilities submitted an updated water conservation plan to the Colorado Water Conservation Board (CWCB) for review and approval. Colorado Springs Utilities received a written notification of approval on January 30, 2008.

The 2008-2012 Water Conservation Plan includes a statement of water conservation goals, followed by an analysis and description of selected programs. In addition, the plan addresses the process by which Colorado Springs Utilities identified, screened and selected programs for implementation. The plan further describes how Colorado Springs Utilities will implement and monitor individual programs. The following new programs (presented in **Table B-1**) are planned for implementation in the 2008-2012 timeframe:

TABLE B-1

Programs Planned for Implementation 2008-2012

Builder Incentive Program	Commercial Outdoor Efficiency Incentives
Commercial Car Wash Certification	Commercial Smart (ET) Controller Rebate
Commercial High-Efficiency Toilet Rebate	Landscape Establishment Permits
Commercial High-Efficiency Urinal Rebate	Pre-Rinse Spray Nozzle Retrofit
Commercial Indoor Audit Program	Residential Smart Irrigation Rebate
Commercial Indoor Efficiency Incentives	Residential Sprinkler Check Program
Commercial Outdoor Audit Program	Water Waste Ordinance

In addition to the new programs identified in the 2008-2012 Water Conservation Plan, Colorado Springs Utilities continues to support existing conservation programs that are consistent with state regulations, operational needs and community values. These include:

- **Special Events.** Hosted an Earth Day event April 19, 2008 at the Conservation and Environmental Center (CEC) attended by approximately 800 customers.
- **Conservation Education.** Educational materials distributed through customer newsletters, schools, community events, Springs Utilities' web site and local media.
- **Conservation Rates.** Continued use of residential block rates and commercial seasonal rates to encourage water conservation by sending a strong price signal for heavy water use, particularly during the summer months.
- **School Program.** Continued support of school water conservation programs, featuring curriculum-based materials that are developed in partnership with local educators.
- **Classes and Presentations.** From January through July 2008, provided 32 classes and presentations on Xeriscape and other water conservation topics to 1,317 participants.
- **Residential Rebates.**, From January through July 2008 provided 1,056 Energy Star clothes washer rebates, 28 irrigation equipment rebates and 55 high-efficiency toilet rebates.
- **Promotional Items.** From January through July 2008, provided 2,000 rain gauges free for residential customers.
- **Commercial Landscape Code and Policy.** Requires water-efficient landscaping for newly developed commercial, industrial, and multi-family sites.

Colorado Springs Utilities remains in Stage I of a declared water shortage, which emphasizes voluntary conservation for all water customers.

In 2003, Western Resource Advocates released a report entitled the Smart Water Report. Although Springs Utilities did not participate in the study, the same methodology was used to calculate single-family residential water consumption. Springs Utilities compares very favorably to other cities, as indicated in **Figure B-10** below.

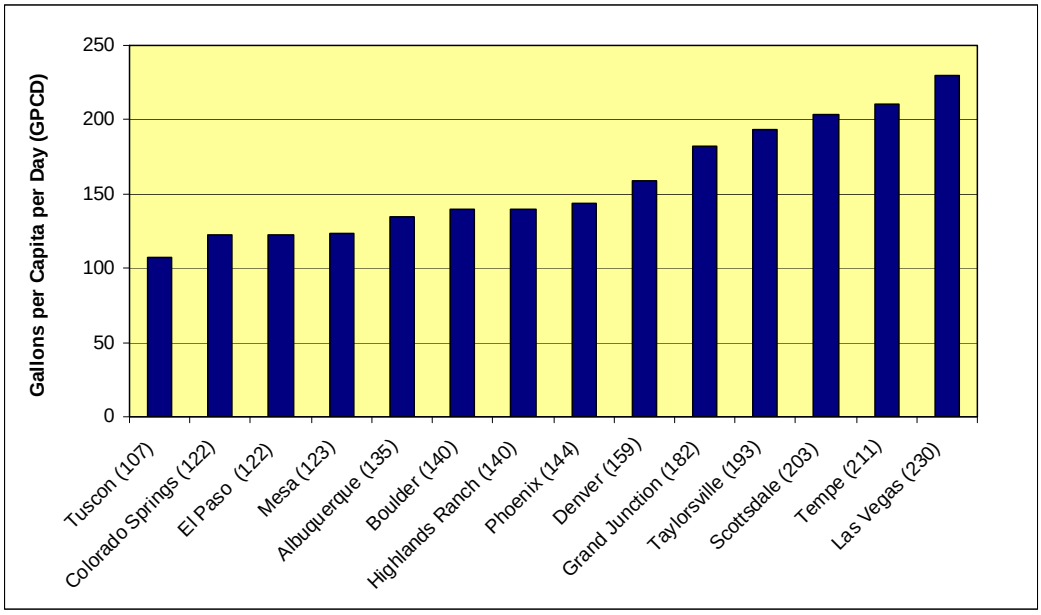


FIGURE B-10
Water Resources Advocates' Smart Water Report 2001 Single-Family Residential Water Consumption

Since 2001, Springs Utilities customers have continued to reduce per capita consumption. Watering restrictions were implemented during drought conditions in 2002-2004. Since then, voluntary restrictions have been in place. Customers continue to respond to conservation education, incentives and inclining block rates. In 2007, residential use averaged 93 gallons per capita day.

Recycling and Reuse Technology

In 1961, Springs Utilities built a wastewater reclamation facility along with non-potable distribution system, and began delivering tertiary-treated wastewater to parks, cemeteries, golf courses, and commercial properties for landscape irrigation. This system is one of the oldest in the Western United States. Stand-alone reclaimed water irrigation systems have also been built and operated at the Air Force Academy and Fort Carson. In total, Springs Utilities' non-potable delivery systems deliver more than 12,000 AF per year of water, accounting for approximately 13 percent of total water deliveries. Of the 12,000 AF per year, approximately 5,500 AF per year is from reclaimed water. Most recent expansion took place in 2003, where Springs Utilities expanded the tertiary treatment facilities at Las Vegas Wastewater Treatment Plant to increase the capacity of the existing tertiary influent pump station from 6 mgd to 12 mgd.

Future plans to expand the non-potable water system include additional distribution storage and at least three major extensions of the current system in the southeast, north, and southwest regions of Springs Utilities' water service area.

Stream Transit Losses

There are no transit losses associated with the Project facilities in Pueblo County because conveyance from the reservoir to SDS project Participants is via a pipeline to be constructed from water-tight welded steel.

The overall SDS project, however, uses Fountain Creek to convey reusable return flow for exchange into Pueblo Reservoir. In 1988, the U.S. Geological Survey (USGS), in cooperation with Springs Utilities, completed a study to develop a computer model (Model) to estimate transit losses for return flows of reusable water discharged into Fountain Creek. The Colorado Department of Water Resources accepted this Model, and has been responsible for its operation since its inception. Currently a multitude of water entities, including Springs Utilities, utilize the Model to assess transit losses for their reusable water being routed down Fountain Creek.

Reservoir Evaporation

Reclamation is responsible for calculating evaporation for waters stored in East Slope Fry-Ark Reservoirs, including Pueblo Reservoir, Twin Lakes, and Turquoise Reservoir. Reclamation's methodology to determine allocated evaporation for Pueblo Reservoir is as follows: (1) Utilizing Reclamation standard practice, determine a total daily evaporation amount for specific waters in the East Slope Fry-Ark reservoirs, including waters in Excess Capacity Storage (2) allocate calculated total daily evaporation amount for those specific waters on a pro-rata basis, based on water currently held in storage.

Reservoir evaporation will occur in Pueblo Reservoir. Significant analysis was performed on reservoir evaporation during the development of the SDS project. For informational purposes, loss analysis procedure and data for the reservoir can be found in the DEIS supporting documents included with this document. Per the analysis, the annual free water

surface evaporation for Pueblo Reservoir is approximately 23,600 AF per year for all users combined.

A terminal storage reservoir will be constructed approximately 5 years after the construction of the raw water pipelines, pump stations and water treatment facility. The location of the terminal storage reservoir will be determined during the final design phase of the SDS project. Two options for the terminal storage reservoir are the Jimmy Camp Creek Reservoir and the Upper Williams Creek Reservoir. The annual free water surface evaporation estimated for the Jimmy Camp Creek Reservoir, located in El Paso County, is 2,350 AF per year. The annual free water surface evaporation estimated for the Upper Williams Creek Reservoir (also located in El Paso County), is 3,550 AF per year. The proposed exchange storage reservoir, Williams Creek Reservoir, is estimated to have an annual free water surface evaporation of 3,750 AF per year.

Power and Energy Requirements

Dedicated 115 kV substation and overhead electric transmission facilities will bring power to JPS. Power will be supplied to the site by Black Hills Corporation. Black Hills Corporation will complete a separate 1041 application for the proposed substation and overhead electric transmission facilities required for the Project. At design capacity, the JPS will use approximately 12,170 kilowatts (KW)/day.

Evaluations of processes to improve upon conveyance efficiency were conducted, including pipeline lining and various pumping options, to select the most efficient water delivery method. The raw water pipelines and pump stations were designed and located to deliver water efficiently.

The three pump station locations (one pump station in Pueblo County, JPS), were selected based on the required lift from Pueblo Reservoir and the proposed Jimmy Camp Creek Reservoir. The source water pump station (JPS) was sized to overcome the largest single lift along the raw water pipeline route and pump from Pueblo Reservoir to Williams Creek Reservoir. Two additional pump stations were sized for pumping water over the remaining elevation differential from Williams Creek Reservoir to Jimmy Camp Creek Reservoir.

(7) Map and description of other municipal and industrial water projects in the vicinity of the Project, including their capacity and existing service levels, location of intake and discharge points, service fees and rates, debt structure and service plan boundaries and reasons for and against hooking on to those facilities.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (D).

FVA Pump Station and FVC

Description

The Fry-Ark Project was built between 1964 and the mid-1980's by the United States government and is a multipurpose, transmountain water diversion and delivery project in southern and central Colorado. The United States government owns and Reclamation administers and operates the facilities associated with the Fry-Ark Project. The Fry-Ark Project makes possible an average annual diversion of 52,000 AF per year (46.4 mgd) of water from the Fryingpan River and other tributaries of the Roaring Fork River, on the

western slope of the Rocky Mountains, to the Arkansas River Basin on the eastern slope. Water diverted from the western slope, together with the available water supplies in the Arkansas River Basin, provides an annual water supply of 73,000 AF per year (65.2 mgd) for both municipal and industrial use and the supplemental irrigation of 280,600 acres in the Arkansas Valley. **Figure B-11** shows a depiction of the Fry-Ark Project components.

Capacity

The FVA operates the FVC and two pump stations in Pueblo County (one located near the proposed JPS site near Pueblo Dam) that have the capacity to convey up to 19.8 mgd of Fry-Ark Project and non-project water from the Municipal Outlet Works at Pueblo Dam to FVA Participants in El Paso County.

Intake and Discharge Points

The intake point for the FVC is a connection with the JUM. FVC delivers raw water to terminal storage tanks located in Fountain, Security, Widefield, and Colorado Springs/Stratmoor Hills prior to treatment and distribution.

Reasons against Hooking On

SDS project participants require up to 96 mgd of raw water. The capacity of the FVC cannot meet the additional required demand for the SDS project.

Pueblo West

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (B).

Description

Pueblo West operates a pump station located on land owned by the United States government and is near the proposed JPS site near Pueblo Dam. Water from Pueblo Reservoir is conveyed from the pump station to the Pueblo West WTP located in Pueblo West. The Project will meet future water delivery needs for Pueblo West, allowing them to meet growth demands and to provide redundancy to their existing water supply and deliver system.

Capacity

The Pueblo West transmission system serves the community of Pueblo West and has a hydraulic capacity of approximately 12 mgd. Existing and future service levels are described in 17.172.120.B.(4).

Intake and Discharge Points

The intake point for the existing Pueblo West transmission system is a connection with the JUM. Raw water is conveyed to the Pueblo West WTP (20 W. Palmer Lake Drive) near the Desert Hawk Golf Course.

Service Fees and Rates

Table B-2 shows the water use charges for Pueblo West as of August 2008. For additional information on Pueblo West service fees and rates see Section 17.172.120.E.(4) and online at http://www.pueblowestmetro.com/util/water/fee.php.

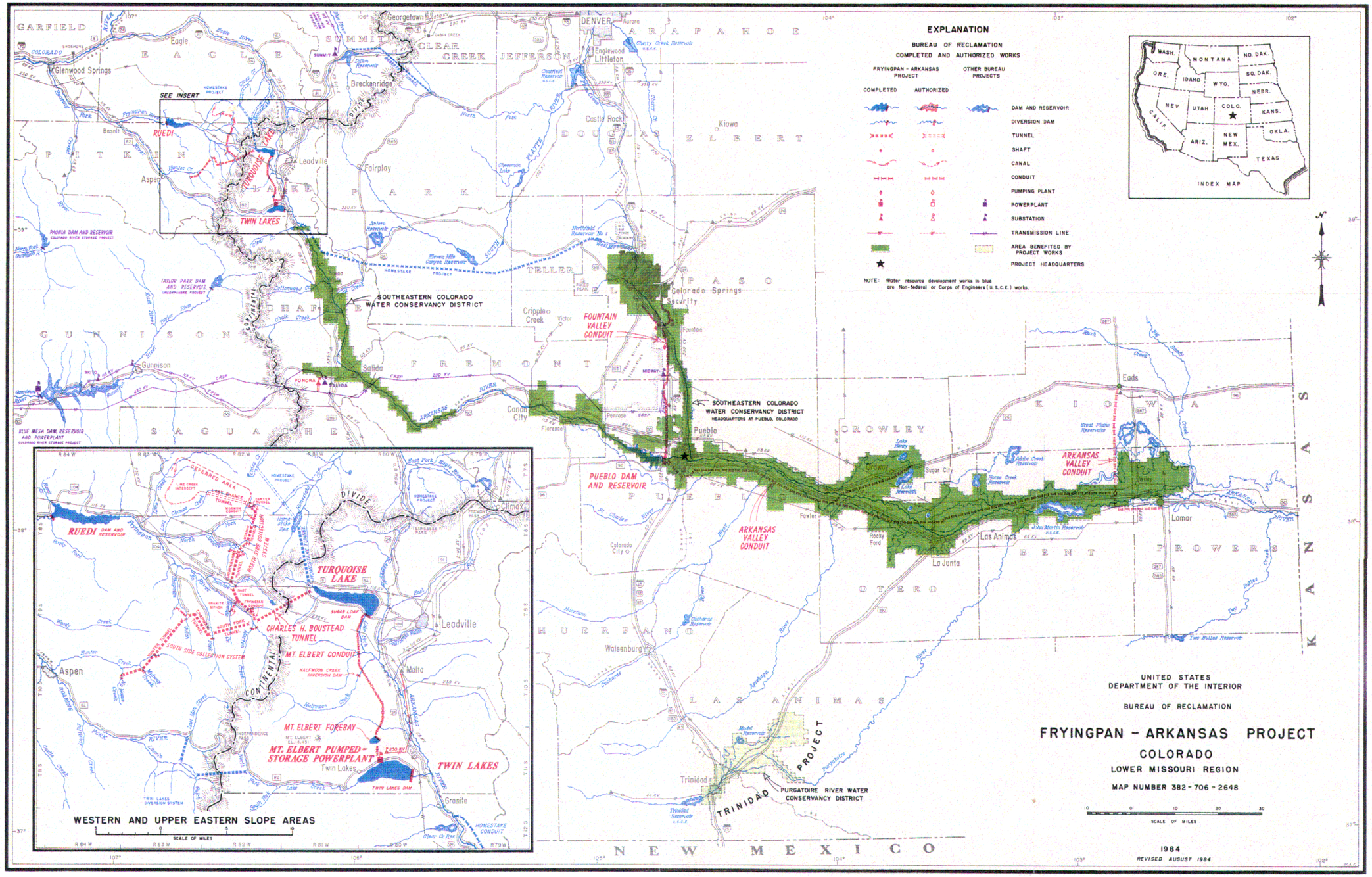


FIGURE B-11
Fryingpan – Arkansas Project

TABLE B-2

Pueblo West Water Use Charges

Customer Class	Rate Code#	1-5,000 GAL/1000	5,001-10,000 GAL/1000	>10,000 GAL
Residential or Irrigation	41	$1.50	$1.94	$2.85
Multiplex 4 or more units/meter	42	$1.94	$1.94	$1.94
Commercial/Industrial	43	$2.11	$2.11	$2.11
Non-Potable/Desert Hawk G.C.	44/48	$1.20	$1.20	$1.20
Hydrant Water	45	$3.06	$3.06	$3.06
Fire Protection (dummy rate)	40	$0.00	$0.00	$0.00
Customer Class	**Rate Code#**	**1-20,000 GAL/1000**	**20,001-40,000 GAL/1000**	**>40,000 GAL**
School 1 1/2" Block Rate (equals to 4 ea. 3/4" equivalents)	37	$1.50	$1.94	$2.85
Customer Class	**Rate Code#**	**1-35,000 GAL/1000**	**35,001-70,000 GAL/1000**	**>70,000 GAL**
School 2" Block Rate (equals to 7 ea. 3/4" equivalents)	38	$1.50	$1.94	$2.85
Customer Class	**Rate Code#**	**1-80,000 GAL/1000**	**80,001-160,000 GAL/1000**	**>160,000 GAL**
School 3" Block Rate (equals to 16 ea. 3/4" equivalents)	39	$1.50	$1.94	$2.85
Customer Class	**Rate Code#**	**1-10,000 GAL/1000**	**10,001-20,000 GAL/1000**	**>20,000 GAL**
Duplex/Triplex 2 or 3 units/meter	40	$1.50	$1.94	$2.85

Reasons For and Against Hooking On

These existing facilities alone are local to Pueblo West and do not have the capacity to meet the Project demand, nor the infrastructure to deliver Participants' water rights to El Paso County.

The Project will connect to the existing Pueblo West Pump Station located at Pueblo Dam to provide an additional 18 mgd to Pueblo West. Pueblo West recently constructed a 36-inch diameter pipeline for the purposes of handling the additional 18 mgd once the Project is constructed and connected.

Reclamation Facilities

Description

The Municipal Outlet Works was designed and constructed to deliver water for municipal and industrial use. It is a multilevel intake structure capable of taking water from the reservoir at different levels, thus providing a degree of control over water temperature and quality. The Municipal Outlet Works includes connections to the JUM. Another multilevel outlet works supplies water to a downstream fish hatchery. An additional outlet through the right (southern) earthfill abutment supplies water to the Bessemer Ditch. Additionally,

there is a North River Outlet Works and other flood control outlets located within the dam; however, they do not supply water to municipal or industrial users.

Services fees and rates for these facilities have been developed under several different contracts that were negotiated with Reclamation. The structure of the service fees and rates for the Project will also be negotiated with Reclamation.

JUM

Capacity

Reclamation considers the total hydraulic capacity of the Municipal Outlet Works to be 359 cfs (approximately 232 mgd). The reported hydraulic allocation for each known water user is presented in **Table B-3**. A Project system layout at Pueblo Dam and schematic drawings of the existing pipeline system are presented in Appendix D.

TABLE B-3

Current Capacity Allocation of Municipal Outlet Works

Water User	Median
Pueblo West	12.2 mgd (18.9 cfs)
Fountain Valley Conduit	19.8 mgd (30.6 cfs)
Arkansas Valley Conduit	20.0 mgd (31.0 cfs)
Pueblo Board of Water Works (JUP)	180.2 mgd (278.5 cfs)
Total	232.3 mgd (359.0 cfs)

Intake and Discharge Points

The JUM is a 120-inch diameter steel pipeline owned by Reclamation that originates from the Municipal Outlet Works at Pueblo Dam and continues east for approximately 500 feet. Four service connections currently exist off of the JUM including; FVA, Pueblo West, Arkansas Valley Conduit and the JUP. The JUP has two service connections for the Pueblo Board of Water Works.

Reasons For Hooking On

The JUM was selected as the Project's initial raw water source based on several criteria, including the use of existing specified decreed exchange rights, ability to meet SDS project water needs, ability to provide redundancy, overall delivery capacity, operability and water delivery coordination requirements, environmental impacts, and public acceptability. The JUM is able to provide the SDS project with the required flows, has a relative ease of operability, conforms to the existing IGA Flow Management Program, can be used to partner with local participant Pueblo West, and has a high benefit to cost ratio compared to the other individual source water supply alternatives. The SDS project will incorporate the use of the Pueblo Dam North River Outlet Works as a second raw water source in the future to avoid exceeding the hydraulic capacity within the JUM, create additional outlet redundancy, and ensure that Pueblo Board of Water Works and the Arkansas Valley Conduit are able to receive their allocated capacity.

Project Participants are beginning negotiations with Reclamation for allocations that are currently unused in the Municipal Outlet Works for SDS project use.

See Appendix B and Appendix D for drawings showing the existing JUM infrastructure relative to Project elements.

JUP

Capacity

The design hydraulic capacity of the JUP is 248 mgd, which is higher than the allocated capacities of the Municipal Outlet Works and the JUM. **Table B-4** presents a summary of the flow allocation for the JUP. Currently, only Pueblo Board of Water Works has this hydraulic capacity satisfied by the allocation through the Municipal Outlet Works.

TABLE B-4

Hydraulic Capacity Allocation of Joint Use Pipeline

Water User	Median
Pueblo Board of Water Works	180.0 mgd (278.1 cfs)
Colorado Springs Utilities	68.0 mgd (105.0 cfs)
Total	248.0 mgd (383.1 cfs)

Intake and Discharge Points

The Joint Use Pipeline (JUP) is a welded steel pipeline consisting of 84-inch, 78-inch, and 66-inch nominal diameter sections. Three existing turnouts are located on the JUP, one each for; Pueblo Board of Water Works at Comanche WTP, Pueblo Board of Water Works Whitlock WTP and the Applicant. After each turnout, the JUP diameter is reduced.

Reasons against Hooking On

Since the JUM and the River Outlet Works are able to provide the SDS project with the required flows, while meeting the hydraulic requirements of downstream users, the JUP turnout will not used for the SDS project.

A detailed steady-state hydraulic analysis for evaluating the JUM and JUP was performed by CH2M HILL in 2003 in order to evaluate the operating hydraulic grade line elevations at the proposed JUM and JUP turnouts for the SDS project. The controlling hydraulic grade line is the minimum hydraulic grade line required at the Whitlock WTP, which is 4,736 feet as defined in the JUP IGA. Under minimum SDS flows and minimum Pueblo Reservoir water surface elevations, the required hydraulic grade line at Whitlock WTP will be achieved. As SDS project demands increase, the operating water surface in the Pueblo Reservoir will need to operate at higher levels to serve the Whitlock WTP. Connecting the JUM to the Pueblo Dam River Outlet Works will provide the additional flexibility in the system while serving the required hydraulic grade line at Whitlock WTP with minimum reservoir elevations. The Project will not reduce the amount of water available for future water supply in Pueblo County.

See Appendix B and Appendix D for drawings showing the existing JUP infrastructure relative to Project elements.

Fish Hatchery

Capacity

The Pueblo State Fish Hatchery was built by Reclamation; however the Division of Wildlife is responsible for its operation and maintenance. The hatchery is located on the south side of the Arkansas River at the base of Pueblo Dam. The hatchery has used an average flow of 16.5 mgd over the past 10 years of operations. During peak years, the hatchery has used up to 22.5 mgd. The quantity and quality of hatchery operations will not be effected during construction and operations of the SDS project.

Intake and Discharge Points

Water delivery to the hatchery is provided through multilevel outlet works, separate from the Municipal Outlet Works and delivered to the hatchery site.

Reasons Against Hooking On

This existing facility is local to Pueblo State Fish Hatchery and does not have the capacity to meet the entire SDS project demand, nor the infrastructure to deliver the Applicant's water rights to El Paso County.

Bessemer Ditch

Capacity

There are about 900 shareholders on the Bessemer ditch and about 20,000 shares overall. Shares in the ditch are generally designated for agricultural use, although the St. Charles Mesa Water District has filed for a change of use to domestic supply on about 10 percent of the shares, which it uses to provide water to homeowners. The ditch is approximately 43 miles in length and is located on the south side of the Arkansas River from Pueblo to the Huerfano River. It irrigates 20,000 acres of land beginning in mid-February until mid-November. The Bessemer Ditch operations will remain ongoing during construction and operations of the Project.

Intake and Discharge Points

Bessemer Ditch is an outlet through the right earthfill abutment that was built by Reclamation to deliver irrigation water to farms on the mesa and other areas of the lower Arkansas River Valley. The ditch traverses St. Charles Mesa along its southern side and is the principal source of recharge to the terrace alluvial aquifer.

Reasons Against Hooking On

SDS project participants require up to 96 mgd of raw water. The capacity of the Bessemer Ditch cannot meet the additional required demand for the Project.

(8) Description of demands that this Project expects to meet and basis for projections of that demand.

Project demands are outlined in Section 17.172.120.B.(4).

(9) List of adjacent property owners and their mailing addresses.

Property owner information is included in Appendix E.

17.172.120.C Property rights, other permits and approvals

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030(G),(N), and (O).

(1) A list of all other federal, state and local permits and approvals that will be required for the Project, together with any proposal for coordinating these approvals with the County permitting process. Copies of any permits or approvals that have been granted.

Federal, State and Other Local Permits and Approvals

Table C-1 presents permits that are expected to be required for the SDS project.

TABLE C-1
Required Permits, Stipulations, Approvals or Other Processes

Permit	Description
Bureau of Reclamation	**Planning Phase - Federal**
Execution of Contracts (Reclamation Project Act 43 CFR 427)	Pueblo Reservoir and associated facilities are owned by the United States Government and administered by Reclamation. The use of these facilities by other entities for water storage or conveyance requires contracts with Reclamation. Encompasses total SDS project.
Record of Decision (ROD)	Execution of long-term contracts for the use of Reclamation facilities is the major Federal action requiring the NEPA process, the EIS, and ROD. Reclamation is the lead agency for the Federal action and is responsible for environmental evaluation and preparation of an EIS and a ROD. Encompasses total SDS Project.
U.S. Fish and Wildlife Service	**Planning and Construction Phases - Federal**
Depredation Permit	Permit allows the taking, under approved situations, of migratory birds, their parts, nests, or eggs. Most migratory birds are protected. It is anticipated that during construction of the Project, active bird's nests may be encountered and this permit will be required to direct construction. Encompasses total SDS Project.
Section 7 Consultation (Endangered Species Act 50 CFR 402)	Consultation with United States Fish and Wildlife Service (USFWS) is required when any activity permitted, funded, or conducted by a federal agency may affect a listed species or designated critical habitat or is likely to jeopardize proposed species or adversely modify proposed critical habitat. Reclamation is consulting with USFWS as part of the NEPA process. The SDS Project is anticipated to have negligible effects on federally listed species or critical habitat. Encompasses total SDS Project.
U.S. Army Corps of Engineers	**Planning Phase - Federal**
404 Permit (Clean Water Act 33 CFR 320)	Permitting under Section 404 of the Clean Water Act ensures the quality of our nation's waters by protecting it and regulating the discharges of dredged or fill material. Dredging or filling of materials in water's of the U.S. will occur for pipeline and new reservoir construction. An Individual Permit will be acquired for these activities. Encompasses total SDS Project.

TABLE C-1
Required Permits, Stipulations, Approvals or Other Processes

Permit	Description
Colorado Department of Transportation (CDOT)	**Construction Phase - State**
Utility/Special Use Permit	CDOT authorizes the installation of new utilities and controls construction within CDOT Right-of-Way (ROW). The acquisition of this permit ensures that CDOT is aware of utilities within their ROW. SDS pipelines that cross CDOT ROW will require this permit. Encompasses CDOT governed roadways.
State Highway Access Permit	CDOT authorizes the construction of permanent or temporary access roads and modifications, relocations, or closure of vehicular access roads located within CDOT ROW. SDS pipeline construction will require access from CDOT ROW and will require this permit. Encompasses CDOT governed roadways.
Colorado Department of Public Health and Environment (CDPHE)	**Construction Phase - State**
Air Pollution Emission Permit for Land Development	CDPHE regulates air emissions that occur during construction. Permits are required for construction activities that disturb areas greater than 25 acres or for earth moving operations that last longer than six months. The construction of SDS Project facilities will require this permit due to both surface area and duration of disturbance. Encompasses total SDS Project.
Stormwater Construction Permit	CDPHE regulates discharge of stormwater runoff from construction sites greater than one acre in size. The permit requires control and elimination of sources of pollutants in stormwater through the development and implementation of a stormwater management plan. The construction of temporary and permanent SDS Project facilities will require this permit. Encompasses total SDS Project.
Construction Dewatering General Permit	CDPHE regulates discharge of groundwater and stormwater from excavation sites into state waters. The permit includes the imposition of effluent limitations and associated monitoring and repairing requirements. The construction of SDS Project facilities will require this permit.
Minimal Discharge Industrial Wastewater General Permit	CDPHE regulates discharge of wastewaters from various sources that are thought to have a minimal impact on water quality. Hydrostatic testing of the SDS Project pipelines may be required. If hydrostatic test waters are discharged to state waters, this permit is required. For discharges associated with ongoing pipeline maintenance, activities may fall under an existing permit or a new permit will be obtained.
Water Quality Control Division Plan Approval	Approval of plans is required for the water treatment plant. CDPHE will review plans for public drinking water to assure that national and state standards are met, (Planning Phase). Encompasses Water Treatment Plant operations.

TABLE C-1
Required Permits, Stipulations, Approvals or Other Processes

Permit	Description
Other State Permits/Approvals	**Planning Phase - State**
401 Certification (Clean Water Act 40 CFR 121)	When a section 404 permit from the U.S. Army Corp of Engineers is applied for, typically a Section 401 water quality certification from the state environmental agency with jurisdiction over the project must also be obtained. Issuance of a certification means that the state anticipates that the project will comply with state water quality standards and other aquatic resource protection requirements under the state's authority. The 401 Certification can cover both the construction and operation of the proposed SDS project. Conditions of the 401 Certification become conditions of the Federal permit or license. Encompasses the total SDS Project.
Reservoir Plan and Dam Safety Emergency Preparedness Plan Approval	The Office of the State Engineer, Division of Water Resources administers the rules and regulations that require review and approval of plans for construction alteration, modification, repair, enlargement, and removal of dams and reservoirs; quality assurance of construction; acceptances of construction, non jurisdictional dams, safety inspections, Owner responsibilities, emergency preparedness plans, and fees, and restriction of recreational facilities within reservoirs. The construction of the SDS Project reservoirs will require this permit. Encompasses SDS Project operations in El Paso County.
Section 106 Review (National Historic Preservation Act 36 CFR 800)	Reclamation is consulting with the State Historical Preservation Office (SHPO) and is complying with Section 106 by providing information to SHPO. Reclamation is working with SHPO to seek ways to avoid or mitigate adverse effects to historic properties. A final programmatic agreement will be established for the SDS Project in regard to cultural resources. The current working draft agreement is dated 12/2007.
Union Pacific/Burlington Northern Santa Fe Railroad Permits	**Planning Phase - Private**
Utility License/Pipeline Crossing Agreements	Authorization is required for the crossing of the SDS Project pipelines of any railroad ROW.
Potential Regional Permits*	**Planning and Construction Phases - Local**
Various Building related Permits (i.e. electrical, mechanical, HVAC, structural, etc.)	Regional Building Departments review building plans to ensure compliance with building codes. The SDS Project pump stations and the water treatment plant will require this permit. The majority of these type permits will require significant levels of design to be completed prior to application.
Flood Plain Permits	Pipeline construction within floodplains is not expected to affect the characteristics of a flooding source. Local jurisdictional floodplain offices typically require permits for any construction to take place within a designated floodplain, (Planning Phase).
Potential County Permits*	**Planning and Construction Phase - Local**
Excavation/Grading Permits	Required for excavation or grading within county ROW.
Driveway Access Permits	Authorizes driveway access to be constructed from county roads.

TABLE C-1
Required Permits, Stipulations, Approvals or Other Processes

Permit	Description
Land Use/Zoning Permits	Authorizes projects within county jurisdiction and ensures that county land and zoning regulations are met. This is required for SDS Project construction within county jurisdictional areas (Planning).
Grading and Erosion and Stormwater Quality Control Permits	Authorizes and requires best management practices to be implemented for land disturbing activities in order to control erosion, sedimentation and stormwater quality during construction. This is required for SDS Project construction within county jurisdictional areas.
Air Quality Construction Permits	Authorizes air emissions during construction within county.
Individual Sewage Disposal System Permits	County Health Departments review and approve individual sewage disposal systems. SDS Project buildings may require this permit.
Potential City Permits*	**Planning and Construction Phase - Local**
Excavation/Grading Permits	Authorizes projects to disturb areas for the purposes of planned excavation and grading related to construction of physical structures.
Land Use/Zoning Permits	Authorizes projects within city jurisdiction and ensures that city land and zoning regulations are met. This is required for SDS Project construction within city jurisdictional areas.
Grading and Erosion and Stormwater Quality Control Permits	Authorizes and requires best management practices to be implemented for land disturbing activities in order to control erosion, sedimentation and stormwater quality during construction. This is required for SDS Project construction within city jurisdictional areas.
Driveway Access Permits	Authorizes driveway access to be constructed from city roads.

*As required by local agency with jurisdiction over the specific SDS Project work location. These may include the Pueblo Regional Building Department, Pikes Peak Regional Building Department, Pueblo County, El Paso County, and Pueblo West Metropolitan District Department of Public Works.

Permit Coordination with County Permitting Process

Applicant will act as coordinator of permit requirements with Pueblo County, as well as with Federal and State permit requirements. Copies of permits granted by Federal and State agencies will be made available to the Pueblo County Planning Department as they are received.

Prior to site disturbance in Pueblo County, the Applicant will obtain and provide documentation that provides proof that the necessary property rights, permits and approvals have been obtain for the Project by the Applicant. The Project shall comply with applicable regulatory and technological requirements, as stipulated by regulatory authorities with jurisdiction over the Project.

On the date of this submission, no permits have been acquired for the SDS project. Currently, the Applicant is preparing 404/401 permits with the U.S. Army Corps of

Engineers. The public comment period for the DEIS has concluded, and the Applicant is presently preparing responses to public comments. No approved and authorized permits have been granted, and therefore none have been included in this submittal.

(2) Copies of all official federal and state consultation correspondence prepared for the Project; a description of all mitigation required by federal, state and local authorities; and copies of any draft or final environmental assessments or impact statements required for the Project.

Federal and State Consultation Correspondence

Federal and State consultation and coordination correspondence is included in Appendix F of this application. Appendix F primarily contains correspondence associated with consultation and coordination of SDS project development activities with various federal, state, and local authorities. Additional information regarding consultation and coordination with authorities can be found in the DEIS. The Applicant has contacted responsible agencies, authorities, and the public, to initiate scoping meetings, workshops, and provide notices of available information regarding SDS project status or upcoming events. Various forms of notification have been used to ensure proper distribution of information to responsible agencies and the public. Forms of notification include:

- Bureau of Reclamation website (www.sdseis.com)
- Letters sent via U.S. Postal Service
- Periodic project newsletters
- Public Meetings
- Federal Register publication
- Public Library distribution

Table C-2 lists the agencies and organizations consulted during development of the SDS project.

TABLE C-2
Agencies and Organizations Consulted

Federal Agencies	State Agencies	Local Agencies
U.S. Environmental Protection Agency	Colorado Department of Natural Resources (CDNR), Division of Water Resources and State Engineer	City of Pueblo
U.S. Army Corps of Engineers	CDNR, Division of Wildlife	City of Aurora
U.S. Fish and Wildlife Service	CDNR, State Land Board	Pueblo County Planning
Peterson Air Force Base	CDNR, State Parks	Pueblo County Public Works Department
Air Force Academy	CDOT	Turkey Creek Soil Conservation District
Federal Aviation Administration	CDPHE	Southeastern Colorado Water Conservancy District
U.S. Geological Survey	Colorado State Historical Society, SHPO	Lower Arkansas River Water Conservancy District

TABLE C-2
Agencies and Organizations Consulted

Federal Agencies	State Agencies	Local Agencies
Bureau of Indian Affairs		Colorado Aviation Historical Society Aviation Archaeology

In addition to consulted agencies and authorities, the Applicant has sent notices of SDS project information availability to the following local and regional groups:

- Libraries
- Federal Agencies
- Native American Organizations
- State Agencies
- Local Agencies
- Elected Officials
- Over 1,700 organizations and individuals

Description of Required Mitigation Measures

Federal, state, and local permits have yet to be acquired for the SDS project; therefore, specific stipulated mitigation requirements, by a governmental agency or authority, have not been established at this time. The Applicant has proposed mitigation measures that are typical of this type of construction, working environment, and level of area development. Proposed mitigation measures will consider industry standards; however, it is recognized by the Applicant that agencies or authorities may require specific mitigation measures.

Proposed mitigation measures to be implemented during construction include road and surface restoration, and revegetation (discussed in more detail in Section 17.172.120.B.(5)). These constructions measures will follow general industry accepted practices to preserve and restore areas of disturbance. The open trench construction method would be used for most of the pipeline. Cross street and driveway pavements would be cut and temporarily covered during pipeline construction to maintain access. Trench excavation methods would be designed to reuse on-site materials and minimize disturbance to the surrounding environment, including dust, noise, and impacts by construction equipment. The excavated material would be used for pipe backfill where suitable. Typically, trenchless construction would be used to cross beneath major roadways as indicated in section 17.172.120.B.(1). Roads and driveways cut and excavated during pipeline construction will be restored to pre-construction conditions following construction. Areas disturbed by construction will be graded, prepared and revegetated, as appropriate, to similar pre-disturbance conditions. The attached DEIS, and associated technical documents, includes more overall SDS project-specific details and additional information regarding general mitigation practices.

The Applicant believes the Project is not subject to significant risk from natural hazards, nor will it significantly impact the natural environment, economy, citizens, or community opportunities in Pueblo County.

Copy of Draft Environmental Impact Statement

Both an electronic and printed copy of the DEIS and supporting technical reports have been included with this submittal. Printed copies of the DEIS and supporting technical reports have been submitted separately. The DEIS and technical reports can also be located on the Reclamation website (www.sdseis.com).

(3) Description of the water to be used by the Project and alternatives, including: the source, amount, the quality of such water; the applicant's right to use the water, including adjudicated decrees, and applications for decrees; proposed points of diversion and changes in the points of diversion; and the existing uses of water. If an augmentation plan for the Project has been decreed or an application for such plan has been filed in the court, the applicant must submit a copy of that plan.

Description of the Water to be used on the Project

The proposed SDS project will convey 96 mgd of raw Arkansas River water, from Pueblo Reservoir, to meet the Applicant's requirements for redundancy, accessing previously acquired water rights, and area growth demands.

The SDS project will not impair water rights held by others, and will emphasize the most efficient use of water. The use of existing water rights will not result in excess capacity for raw water conveyance and treatment, nor will the SDS project create duplicate services.

Source Water Location and Points of Diversion

Project

The source water locations for the project include the Pueblo Dam Municipal Outlet and associated JUM, and Pueblo Dam North Outlet Works, (also known as the River Outlet Works). Both alternatives have Pueblo Reservoir as the source.

Alternatives

An alternative source water diversion point is located at the existing Lester & Atteberry diversion near the junction of Colorado State Highway 115 and the Arkansas River. Although not currently designed, the existing diversion would be improved and enlarged and an intake structure would be constructed. Raw water would be pumped via a pipeline that follows Highway 115 in Fremont and El Paso Counties.

Amount of Water

The Project has the capacity to convey 96 mgd (149 cfs).

Water Quality

The Municipal Outlet Works (MOW) was and historically has been used to provide raw water for municipal treatment and use. Currently, the MOW is a source water supply for FVA, Pueblo Board of Water Works, and Pueblo West. Water quality data from the FVA WTP is representative of the water from the MOW and is presented in this section.

The SDS project pilot water treatment plant (pilot plant) was operated from March through August, 2004, at the FVA WTP in Fountain, Colorado. The pilot plant utilized raw water pumped to the pilot plant from Pueblo Reservoir MOW via the FVC.

The time period for the pilot plant study was selected to allow testing during late winter conditions of cold water and low turbidity, during the spring runoff event in June, and during the late summer conditions of high organic levels.

A summary of the raw water quality encountered during the pilot study is presented in **Table C-3**. A wide range of raw water quality conditions were encountered during the pilot plant study. The parameters presented were sampled regularly during the study.

TABLE C-3
Summary of Raw Water Quality (March 1 through August 27, 2004)

Item	Bench Turbidity (NTU)	Water Temp. (ºC)	pH	Total Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	UVA, Unfiltered (cm^{-1})	UVA, Lab Filtered (cm^{-1})	TDS (Calculated) (mg/L)	TOC (mg/L)
Number of Analyses	321	313	314	178	177	309	148	300	60
Average	6.3	15.4	7.8	186	114	0.081	0.037	284	2.16
Standard Deviation	4.90	4.3	0.21	22.9	11.0	0.030	0.004	43.0	0.21
Minimum	0.5	6.1	7.3	144	86	0.040	0.026	211	1.68
Maximum	21.3	21.6	8.7	216	134	0.242	0.062	364	2.65

Historical raw Arkansas River water quality data was collected daily over a 10-year period from January 1, 1994, through May 5, 2004. The available raw water database includes raw water temperature, pH, alkalinity, hardness, and turbidity. For water temperature, CH2M HILL's analysis evaluated the low values recorded each day, whereas for turbidity, the average values recorded each day were evaluated. For total organic carbon (TOC), a smaller data set was available, with raw water data from August 6, 1996, through April 6, 2004. A summary of the available data is presented in **Table C-4**.

The Project will not significantly degrade or have adverse effects on the quality and quantity of water in Pueblo County.

Applicant's Right to Use Water

The following summarizes the Applicant's water rights for primary water sources of supply for the SDS project (additional details are presented in Appendix G).

- Colorado Springs Arkansas River Exchange – Exchange of Colorado Springs sewered reusable return flows within the Arkansas River Basin
- Colorado Canal Companies' water – Exchange of Colorado Springs reusable return flows and prorate ownership of transferred Colorado Canal Shares
- Fryingpan-Arkansas Project decrees – Trans-mountain imports from Frying Pan River to the upper Arkansas River

- Independence Pass Transmountain Diversion System - Decrees for Colorado Springs Shares in Twin Lakes Reservoir and Canal Company
- Wheel Ranch Decree and Hill Ranch Decree
- Homestake Project Decrees – Project water delivered through Turquoise Reservoir
- Colorado Fuel & Iron (CF&I) Water Rights – Transfer case for use of purchased CF&I water rights in the Arkansas River and Turquoise Reservoir including the Colorado Gulch Placer

TABLE C-4
FVA Raw Arkansas River Water Data from January 1, 1994, through May 5, 2004

	Temperature (°C)	Alkalinity (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)	pH	Turbidity (NTU)	TOC (mg/L)
Number of Analyses	3,721	3,674	3,680	3,721	3,721	104
Average	*14.2*	*101*	*182*	*8.1*	*6.1*	*2.13*
Minimum	4.8	30	74	7.2	0.33	1.66
Maximum	26.8	188	322	9.0	108	8.13
Standard Deviation	4.9	19	38	0.2	7.6	0.68
1st Percentile	5.3	60	100	7.5	0.49	1.67
5th Percentile	6.7	70	112	7.7	0.96	1.72
10th Percentile	7.6	74	130	7.8	1.2	1.76
25th Percentile	10.1	88	156	7.9	1.8	1.85
50th Percentile (Median)	13.8	104	185	8.1	3.9	2.01
75th Percentile	18.6	114	206	8.3	7.5	2.15
90th Percentile	21.0	122	238	8.4	12.8	2.53
95th Percentile	22.0	126	248	8.4	17.2	2.67
99th Percentile	23.0	138	258	8.5	37.6	3.50

Note: TOC data available from August 6, 1996, through April 6, 2004.

(4) Description of property rights that are necessary for or that will be affected by the Project.

Pueblo Reservoir and associated facilities are operated by Reclamation and are listed in the Assessor's records as being owned by the United States Government. The use of these facilities by entities other than Reclamation requires contracts with Reclamation. Colorado Springs, Pueblo West, Fountain, and Security each have requested separate contracts with Reclamation to store water in Pueblo Reservoir, and a single contract for all Participants to convey water through facilities associated with Pueblo Reservoir.

The Applicant, working collaboratively with Reclamation, located a JPS site that minimized impacts to Reclamation land and State Park property, including aesthetics and viewing points by the public. The proposed JPS facility will be located within the Lake Pueblo State

Park boundaries, on property administered by Reclamation for the United States Government, adjacent to the existing Pueblo West and Fountain Valley Pump Stations. ROW/Outgrant approvals will be obtained from Reclamation prior to construction on Reclamation property, or Lake Pueblo State Park, as it relates to the pipeline alignment within State Park Boundaries.

The Applicant will obtain necessary access rights and easements from private property owners, as required, for the approved pipeline alignment and appurtenances. The Applicant is in the process of securing those rights as this application is filed. The Applicant will have these rights and easements prior to performing work on a property.

The anticipated area of permanent easement required is approximately 191 acres for the raw water pipeline and approximately 21 acres for 115 kV substation and overhead electric transmission facilities. Permission for temporary construction work areas of approximately 111 acres is required for construction of the raw water pipeline. Property owners will be compensated for the rights acquired to their property. Ownership of land in permanent easement areas will remain in the name of the easement conveyor. A list of landowners (current as of August 15, 2008, along the Project route in Pueblo County is provided in Appendix H. Besides individual ownership, land owners also include governmental authorities (i.e. federal, State of Colorado, City of Pueblo, Pueblo West Metro District) and corporate ownerships.

The Project will not significantly impact property rights held by others. Property right impacts will be negotiated with property owners based on fair and equitable compensation and mitigation of proposed impacts. The Project will be consistent with relevant provisions of land use and is not anticipated to have significant adverse effects on land use patterns.

(5) Any application which requires compliance with §24-65.5-101, et seq. C.R.S. (Notification to Mineral Owners of Surface Development) shall not be considered to have been submitted as complete until the applicant has provided a certification signed by the applicant confirming that the applicant or its agent has examined the records of the Pueblo County Clerk and Recorder for the existence of any mineral estate owners or lessees that own less than full fee title in the property which is the subject of the application, and stating whether or not any such mineral estate owners or lessees exist. In addition, for purposes of the County convening its initial public hearing on any application involving property which mineral estate owners or lessees owning less than full fee title in the property have been certified by the applicant to exist, the application shall not be considered to have been submitted as complete until the applicant has provided an additional signed certification confirming that the applicant has, at least 30 days prior to the initial public hearing, transmitted to the County and to the affected mineral estate owners and lessees the notices required by §24-65.5-101, et seq. C.R.S.

After consultation with Pueblo County representatives, it has been determined that C.R.S. 24-65.5-101 (Notification to Mineral Owners of Surface Development), does not apply to the Project application based on the statutory exemption for "water pipelines and appurtenances". Because no certification is required, no mineral rights-related responses are included in this Application.

17.172.120.D Technical and financial feasibility of the Project

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (E), (H), and (M).

(1) The Estimated Construction Cost and Period of Construction for each Development Component and the Total Mitigation Costs for the Project.

Estimated Construction Costs and Period of Construction

The Applicant has evaluated numerous variables in the design, siting, and alignment of the SDS project. The Applicant believes that the current design, as detailed in this submittal, represents a highly efficient use of resources and capital that simultaneously minimizes impacts to the environment, land owners, and the local communities. The Applicant believes the SDS project is both technically and financially feasible.

The estimated construction cost and period of construction for each of the Project components are provided in **Table D-1**. The costs provided below are estimates and based on current knowledge of the project and general economic factors. These costs take into consideration construction cost inflation (based upon historical values); however, they do not include all potential costs of permit conditions, which are undetermined at this time.

TABLE D-1
Construction Cost and Period of Construction

Component	Construction Cost $M*	Construction Period
JPS including connection to JUM and Power Transmission Lines	58.6	2009-2011**
Pueblo West Facilities	0.1***	2009 -2011
Raw Water Pipeline	134.1	2009-2011
TOTAL	**192.8**	

*Costs are in January 2007 Dollars
**Construction for Phase II of the Intake will begin in 2025.
***Cost does not include connection and valving costs that are undefined at this time.

Mitigation of Construction Impacts

Currently no permits have been acquired for the SDS project. Actual mitigation measures required by federal, state, and local authorities, through permit conditions, are unknown at this time. Construction mitigation measures anticipated to be taken include erosion control, siltation control, noise and dust suppression, traffic control, street cleaning, road and drainage restoration, and re-vegetation. Road and driveway cuts and excavation during pipeline construction will be restored to pre-construction conditions, at a minimum. Costs for mitigation have been estimated based on standard industry accepted civil construction mitigation practices, and at this preliminary stage of SDS project development, are estimated at less than two percent of construction costs.

(2) Revenues and Operating Expenses for the Project.

Revenues

Revenues generated through the SDS project will be based on customer rates approved at the time SDS project water is delivered to the Applicant's customers, and subsequent authorized rate changes approved on the SDS project. The Applicant has a debt service obligation on revenue based bonds to finance the SDS project and to maintain a revenue-to-debt ratio of 1.30 to 1.0. Therefore, future water rates and revenues generated will be aligned with these ratios. Additional details regarding financing the SDS project can be found in this section.

Operating Expenses

Estimated operating expenses through 2046 are presented in **Table D-2**. Operating expenses typically include power, planned maintenance, inspections, consumables, personnel labor and overhead.

TABLE D-2
Operating Costs

Component	Total Operating and Maintenance (through 2046) ($M)
JPS including Connection to JUM and Power Transmission Lines	104.4
Pueblo West Facilities	<0.1
Raw Water Pipeline	8.0
TOTAL	112.5

NOTE: Costs are in January 2007 Dollars

(3) The Amount of any Proposed Debt and the Method and Estimated Cost of any Debt Service

The Applicant is a highly financially viable enterprise, with an outstanding record (Insured Ratings: Moody's Aa2; S&P AA; Fitch AA) in the municipal financing markets. The Applicant possesses significant experience in funding and financing major capital infrastructure projects in partnerships with other service delivery entities. These partnerships provide greater overall benefits to rate-paying customers, by leveraging and maximizing the efficiency of the financed capital investment.

The entities that will bear the full capital, operation, and maintenance costs of the SDS project are:

- Colorado Springs Utilities
- City of Fountain
- Security Water District
- Pueblo West Metropolitan District

Springs Utilities is the major SDS project shareholder and will finance construction of the SDS project in its entirety. Payments to be made in conjunction with permitting, designing, and constructing the SDS project, will be by Springs Utilities. Per IGAs between Springs Utilities and its SDS project partners, in case of default by any of the partner parties, Springs

Utilities has full liability for payment of SDS project costs and repayment of the revenue bonds. IGAs stipulate repayment agreements between the parties based on a combination of current funds and future revenues.

The SDS project will be paid for by the Applicant through the issuance of Bonds. The Bonds (and any parity securities previously or subsequently issued) are subordinate lien utilities revenue bonds, payable from the "Net Pledged Revenues" derived from the operation and use of the utility system, after provision is made for the payment of the principal, premium (if any), and interest on the senior lien utilities revenue bonds. The cost of debt service will be at market rates at the time bonds are underwritten and sold.

Under a Colorado Springs Ordinance authorizing the issuance of the Bonds, a reserve fund is required as additional security for the Bonds. The amount on deposit in the reserve fund must generally equal the average amount of interest payable on each series of the Bonds during each fiscal year.

Ordinances governing outstanding utilities revenue bonds include a rate covenant, requiring that rates charged to users of the SDS project's services be sufficient so that the ratio of Net Pledged Revenues to debt service on and the outstanding parity bonds and of any other parity financial products for the current fiscal year will be at least 1.30 to 1. For many years, the Applicant has consistently maintained debt service coverage greater than the required Rate Coverage Ratio of 1.30 to 1, and therefore assesses the risk to debt services as low.

Based upon the estimated construction, operation and maintenance costs of the project, the Applicant has the necessary expertise and financial capability to develop and operate the SDS project consistent with all requirements and conditions. The Project will not create an undue financial burden on existing or future residents of Pueblo County.

(4) Details of any Contract or Agreement for Revenues or Services in Connection with the Project.

Each of the SDS project participants possess IGAs with Springs Utilities, and the agreements govern the parties contribution to initial capital, operating and maintenance costs, and debt service. Each of the SDS project participants also holds individual service agreements with Reclamation for raw water supply.

Intergovernmental Agreements:

- Between: City of Colorado Springs, Colorado and City of Fountain and the Security Water District
  Dated: August 1, 2003
  Governing: Construction of SDS.

- Between: Colorado Springs Utilities and Board of Water Works of Pueblo, Colorado
  Dated: August 15, 2000
  Governing: Pueblo Dam Raw Water Pipeline Connections.

- Between: City of Colorado Springs, City of Fountain, Security Water District and Pueblo West Metropolitan District. Pueblo West included as an Amendment to the original August 1, 2003 IGA listed above. Adopted by the Pueblo West Metropolitan District as Resolution 1753, dated November 13, 2007.

Dated: February 4, 2008
Governing: Construction of SDS

- Between: City of Pueblo, City of Aurora, The Southeastern Colorado Water Conservancy District, City of Fountain, City of Colorado Springs, and The Board of Water Works of Pueblo, Colorado
  Dated: May 25, 2004
  Governing: Flow, Yield, and Waste Management Pueblo Reservoir and Arkansas River.

(5) Description of the Persons, or entity(ies) who will Pay for or use the Project and/or Services Produced by the Development and those who will Benefit from any and all the Revenues Generated by it.

Entities Paying for or using the SDS Project and/or Services

The SDS project will be financed by the Applicant through bond financing described in item (3) of this Section 17.172.120.D. Ultimately, the SDS project will be paid for by the SDS project participants' rate-paying customers, through a rate schedule approved by the legislative bodies authorized to establish and set utility service rates. Revenue generated by the SDS project, will be used to repay debt obligations and operations and maintenance costs for the SDS project. The Applicant is subject to annual audit to verify use of SDS project funds and revenue to debt ratios.

Project Participants funding the SDS Project

- Colorado Springs Utilities
- City of Fountain
- Security Water District
- Pueblo West Metropolitan District

Beneficiaries of the SDS Project Revenues

Revenue generated from the SDS Project will be used to repay debt and fund the annual operation and maintenance of the system.

Revenue generated by and for:

- Colorado Springs Utilities
- City of Fountain
- Security Water District
- Pueblo West Metropolitan District

17.172.120.E Socioeconomic impacts

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (F), (I) and (K).

(1) Land Use

(a) Description of existing land use within and adjacent to the impact area.

(b) Description of provisions from local land use plans that are applicable to the Project and an assessment of whether the Project will comply with those provisions.

(c) Description of impacts and net effect that the Project would have on land use patterns.

The activities associated with the Project, including JPS, 115 kV substation and overhead electric transmission facilities, and the raw water pipeline, are compatible with historical, current, and future land use (per Pueblo's Comprehensive Plan and Future Land Use Map) of land impacted by the Project. The raw water pipeline is compatible with the uses contemplated by the zoning for the subject lands, including the utilities planning for Pueblo West. The construction and operation of the Project will not require material or lasting change in other current uses of the subject lands, including residential uses and roads, nor will it interfere with approved plans or programs.

Existing Land Use within and adjacent to the impact area

Juniper Pump Station

JPS and the 115 kV substation and overhead electric transmission facilities will be located on land owned by the United States Government and administered by Reclamation. The land is zoned as a Public Use District (S-1) and is leased by State Parks.

Based on Pueblo's Comprehensive Plan, developed by the Pueblo Area Council of Governments, existing land use within and adjacent to the impact area associated with JPS and the 115 kV substation and overhead electric transmission facilities is classified as 'Permanent Open Space'.

Raw Water Pipeline

The raw water pipeline permanent easements and construction workzones will be located in unincorporated Pueblo County in a corridor beginning at Pueblo Dam and generally heading north to the Pueblo County line. According to the official website of the Pueblo County Assessor, the lands that are directly impacted by the raw water pipeline are zoned as:

- Public Use District (S-1)
- Agricultural 1 (A-1)
- Agricultural 3 (A-3)
- Community Business District (B-4)

Adjacent land uses include:

- Public Use District (S-1)
- Agricultural 1 (A-1)

- Agricultural 3 (A-3)
- Community Business District (B-4)
- Multiple Residential and Office District (R-5)
- Mixed Residential District (R-4)

The raw water pipeline permanent easements and construction workzones will be located in areas with land use classified as:

- 'Permanent Open Space'
- 'Developing Metro Area'
- 'Employment Center'
- 'County Residential'
- 'Rural/Ranch'

Properties adjacent to the raw water pipeline impact area are also classified as:

- 'Permanent Open Space'
- 'Developing Metro Area'
- 'Employment Center'
- 'County Residential'
- 'Rural/Ranch'

Description of provisions from local land use plans that are applicable to the Project and an assessment of whether the Project will comply with those provisions.

The Applicant has reviewed current local land use provisions and has concluded, based on available data, that the Project complies with and is consistent with Pueblo's Comprehensive Plan. The Project conforms with Regional Development Principle: "Encourage efficient and prudent extensions of infrastructure in a manner that considers impacts to both service providers and taxpayers" (p. 30); and Urban Development Principle: "Provide public services and infrastructure to areas of the Region that are environmentally and economically suitable for urban growth" (p. 30).

As a Participant, Pueblo West will share land, capital, and future maintenance and operating costs with the other Participants, resulting in more efficient use of land and resources, and shared cost savings to Pueblo West customers. By participating in the Project, the use of land and local resources will be minimized. The Project will meet future water needs for Pueblo West, allowing for future projected growth and providing redundancy to Pueblo West's existing water supply, as previously described in 17.172.120.B(4), accommodating lands appropriate for future service and industrial growth. Pueblo West's plans for development and growth have been reviewed and approved by Pueblo County, and incorporated into Pueblo's Comprehensive Plan, and are not anticipated to contribute to urban sprawl or "leapfrog" development, or create proliferation of special districts or overlap boundaries of special districts.

Description of impacts and net effect that the Project would have on land use patterns

The raw water pipeline and related components of the Project will be constructed and operated within the corridor previously described and depicted on the drawings submitted with this application in Appendix B. This raw water pipeline alignment was selected using a set of criteria that included such factors as technical feasibility, use of additional resources,

cost effectiveness, and impacts to community, recreation, environment, and commerce. Overarching goals of the Project have always included achieving minimum disruption, efficient utilization of resources, and reliable service delivery. The following describes potential impacts in specific areas:

Zoning

Juniper Pump Station and 115 kV Substation and Overhead Electric Facilities

JPS and the 115 kV substation and overhead electric transmission facilities will be located on United States Government property administered by Reclamation in Lake Pueblo State Park on land zoned for public uses (S-1 zone).

Raw Water Pipeline

As shown on Figure I-1 in Appendix I, the raw water pipeline and its related components will be situated on land zoned for public uses (S-1 zone) and agricultural uses (A-1 and A-3 zones), and in one instance, business uses (B-4 zone).

Historical and Existing Use of Affected Lands

Juniper Pump Station and 115 kV Substation and Overhead Electric Facilities

Pueblo's Comprehensive Plan shows that the existing land use in which JPS and the 115 kV substation and overhead electric transmission facilities will be constructed is classified as 'Permanent Open Space'. As shown in Appendix B and Appendix D, the JPS will be situated near Pueblo Dam and near similar existing facilities, including the Pueblo West Pump Station and FVA Pump Station, both of which are located on the same property as JPS. JPS will not be visible from most public vantage points, has been designed to blend with the surrounding land, and will not change the character of this 'Permanent Open Space'.

The 115 kV substation and overhead electric transmission facilities supplying power to JPS will be located on land owned by the United States Government, currently utilized by Lake Pueblo State Park, with a land use classification 'Permanent Open Space'. Similar substations and electric lines, including Black Hills Corporation 115 kV overhead electric facilities, Tri-State Generation and Transmission Association, Inc. 115 kV overhead electric facilities, and Black Hills Corporation 69 kV overhead electric facilities, are located northeast of JPS on property with the same 'Permanent Open Space' land use classification. The Project facilities will not change the character of this 'Permanent Open Space'.

Raw Water Pipeline

Utility uses are contemplated in those zones in which the raw water pipeline traverses under Pueblo County's current and historical zoning resolutions. Lands so zoned have historically been, and currently are used, for utility facilities and activities, including water storage and transmission facilities, resulting in no significant change in the character of the area in which it is to be constructed. The route of the raw water pipeline through Pueblo West parallels a corridor that was planned for utility transmission facilities, and that has been used for such facilities since the mid-1950's.

As shown by the photographic depiction of previous and existing uses in **Figures E-1** through **E-3**, the raw water pipeline and related components will be situated on and adjacent to lands that are currently used for utility facilities and activities, including the following:

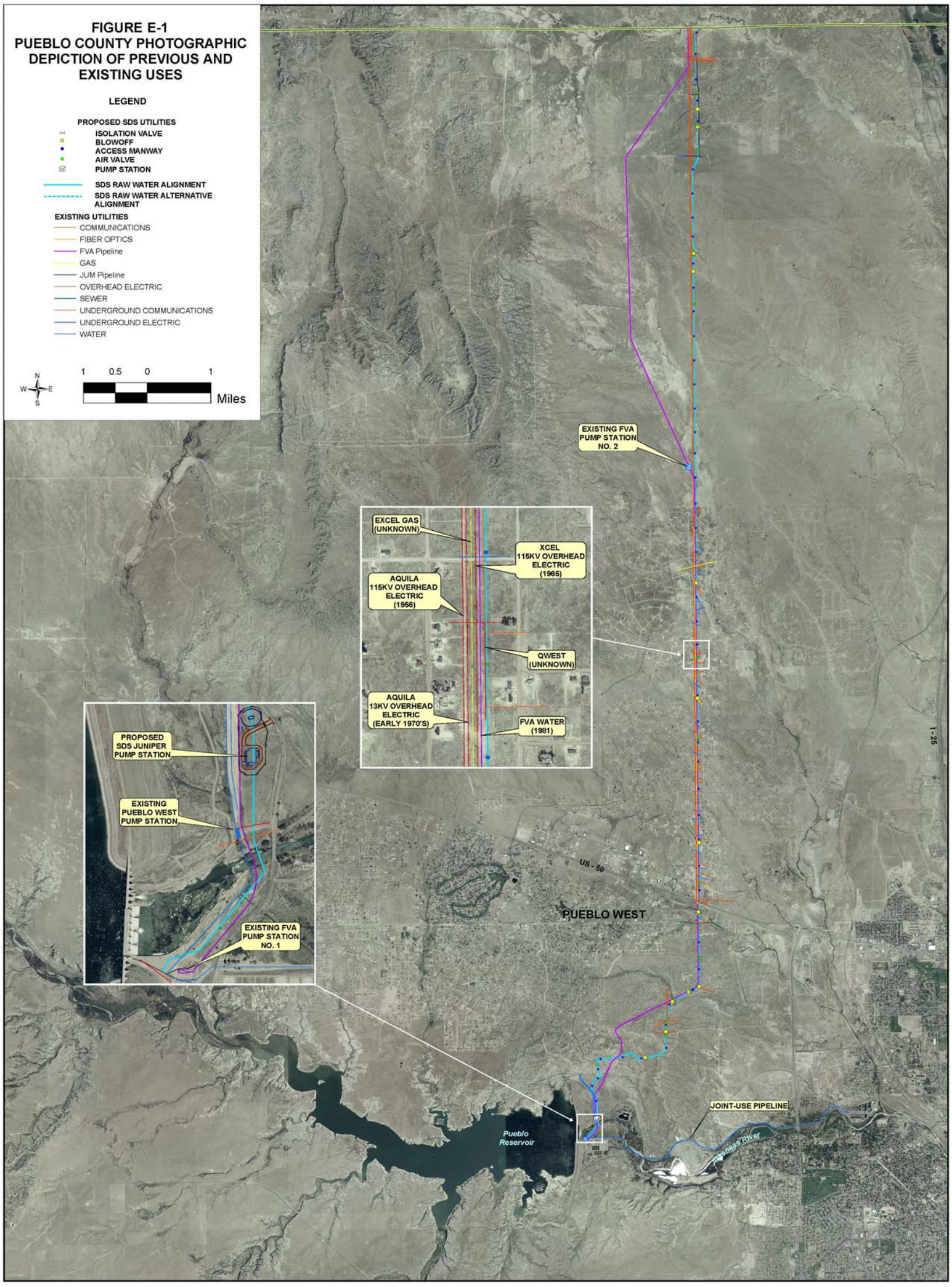


FIGURE E-1
PUEBLO COUNTY PHOTOGRAPHIC DEPICTION OF PREVIOUS AND EXISTING USES
LEGEND
PROPOSED SDS UTILITIES
ISOLATION VALVE
BLOWOFF
ACCESS MANWAY
AIR VALVE
PUMP STATION
SDS RAW WATER ALIGNMENT
SDS RAW WATER ALTERNATIVE ALIGNMENT
EXISTING UTILITIES
COMMUNICATIONS
FIBER OPTICS
FVA Pipeline
GAS
JUM Pipeline
OVERHEAD ELECTRIC
SEWER
UNDERGROUND COMMUNICATIONS
UNDERGROUND ELECTRIC
WATER
N
W
E
S
1 0.5 0 1
Miles
EXISTING FVA PUMP STATION NO. 2
EXCEL GAS (UNKNOWN)
XCEL 115KV OVERHEAD ELECTRIC (1965)
AQUILA 115KV OVERHEAD ELECTRIC (1956)
QWEST (UNKNOWN)
AQUILA 13KV OVERHEAD ELECTRIC (EARLY 1970'S)
FVA WATER (1981)
PROPOSED SDS JUNIPER PUMP STATION
EXISTING PUEBLO WEST PUMP STATION
EXISTING FVA PUMP STATION NO. 1
US - 50
PUEBLO WEST
I - 25
JOINT-USE PIPELINE
Pueblo Reservoir
Arkansas River

FIGURE E-2
Raw Water Pipeline Corridor and Adjacent Utility Facilities through Pueblo West

FIGURE E-3
Raw Water Pipeline Corridor and Adjacent Utility Facilities through Pueblo West

1. Three overhead electric lines (two transmission lines and one distribution line) installed in 1956, 1965, and in the early 1970s.
2. An underground natural gas transmission pipeline.
3. An underground communications line
4. The FVC, previously described, installed and in operation since 1981
5. Water lines, sewer lines, natural gas distribution lines, and fiber optic cables, which cross the pipeline's track at various points.

The FVC referenced above conveys up to 20,100 AF of water annually to Colorado Springs, Fountain, Security, and other communities. As shown in **Figure E-1**, the FVC begins at Pueblo Dam and runs north into El Paso County. Its capacity is approximately 31 cfs (20 mgd). Components of the FVC within Pueblo County include:

- Approximately 13.5 miles of 42-inch diameter pipeline with multiple manholes, blow-offs, and air valves along the pipeline route
- Approximately 7.3 miles of 39-inch diameter pipeline with multiple manholes, blow-offs, and air release valves along the pipeline route
- Two pump stations and forebay tanks
- Two surge tanks (one of which, at a high point immediately to the north of Pueblo Dam, is visible from a distance)
- The existing permanent easement for the FVC is generally 60 feet and an additional 90 feet was obtained for construction workzone

Near Pueblo Dam and south of Pueblo West, the raw water pipeline will be constructed on property owned by the United States Government (administered by Reclamation and leased to State Parks) and the State of Colorado. The FVC, Pueblo West Pipeline, and Pueblo Board of Water Works Pipeline are existing raw water pipelines currently located near the proposed raw water pipeline. The raw water pipeline will cross portions of residential lots as it traverses portions of Pueblo West. The Applicant will coordinate with affected landowners along the raw water pipeline route to obtain approvals to enter their property and negotiate the appropriate agreements with the landowners to obtain easements, ROW's, or purchase of the parcel, and will not significantly impair the property rights held by others. The construction and operation of the raw water pipeline will require that affected portions of the subject lots not be built upon or used in a manner that could damage the pipeline or affect its operation.

The raw water pipeline would cross certain roads identified in the drawings provided in Appendix B, including Juniper Road, East Spaulding Avenue, Grouse Drive, U.S. Highway 50, East Holiday Drive, East Industrial Boulevard, East Ivanhoe Drive, East Paramount Drive, East Ranch Road, East Sapinero Drive, East Sequoya Drive, East Marengo Drive, Desert Cove Drive, East Platteville Boulevard, North Iliff Drive, North Purcell Boulevard, East Jaroso Drive, East Linda Avenue, East Sandusky Drive, North Kirkwood Drive , East Blackstone Drive, Antelope Road, Pronghorn Road, and West Salt Cedar Road. The construction of the raw water pipeline does not require or call for any change in the width, elevation, or composition of any of those roads, nor will the raw water pipeline

preclude the construction of future roadways as shown in Pueblo's Comprehensive Plan and described in the Pueblo Area Council of Governments 2035 Long Range Transportation Plan.

The Applicant is not aware of any approved or proposed local plans or programs for lands in the vicinity of the raw water pipeline that would be materially impacted by the construction or operation of the pipeline.

(2) Local Government Services

(a) Description of existing capacity of and demand for local government services including but not limited to roads, schools, water and wastewater treatment, water supply, emergency services, transportation, infrastructure, and other services necessary to accommodate development within Pueblo County.

(b) Description of the impacts and net effect of the Project to the capability of local governments that are affected by the Project to provide services.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (C) and (M).

Existing Capacity of and Demand for Local Government Services

The Project will have a limited need and demand for local government services provided by Pueblo County. Project facilities, including JPS, the 115 kV substation and overhead electric transmission facilities, and the raw water pipeline, are unmanned facilities that will be remotely operated. The Project may require periodic inspections by Pueblo County agencies such as the Pueblo Regional Building Department, and emergency services that would be provided by the Pueblo Emergency Response Team, an integrated group consisting of the Fire Team, the Dive Rescue/Recovery Team, and the Search and Rescue Team. The need for these services however are anticipated to be limited, and will have minimal impacts on Pueblo County and the ability of these agencies to accommodate development within Pueblo County. The Project is expected to have no significant adverse impact on Pueblo County schools, infrastructure, public transportation, water supply, and water and wastewater treatment.

Other local government services that could be affected by the Project involve services that are currently provided by Pueblo West, including water and wastewater treatment, water supply, public works, and emergency services. Since these services would impact the quasi-municipal political subdivision of Pueblo West, any need for these services would not affect the various departments or agencies of Pueblo County.

Description of Impacts

Traffic and Roads

Impacts caused by construction equipment and activity on Pueblo County roads will be short term and minor, resulting in no long term changes to traffic patterns, road capacity, and traffic congestion. The Applicant places a high priority on safety during construction, and will implement a traffic management plan based upon local traffic control requirements and general safe operating practices. Proper signage, flaggers, lighting, speed limits, work hours, postings, notifications, and other precautionary safety measures will be taken to

protect the citizens of Pueblo County. Impacts on traffic due to construction are anticipated to be negligible.

Raw water pipeline construction will utilize trenchless construction (i.e. tunneling) when crossing Juniper Road, U.S. Highway 50, and Platteville Boulevard (at two locations), resulting in little to no disruption to traffic. Temporary traffic delays and detours will be needed where the raw water pipeline would be installed by open-cut construction across existing roads. Traffic disruption would be temporary, and would cease after construction. Traffic control plans will be implemented prior to construction, subject to approval by the Pueblo West Department of Public Works and/or the Pueblo County Department of Public Works Road and Bridge Division.

Per the Pueblo Area Council of Governments 2035 Long Range Transportation Plan, Chapter 4 Socio-economic Profile and Trends, the Project will involve coordination with future roadway corridors. The Project will not preclude or restrict the construction of any planned future roadways.

Emergency Services

The Project is anticipated to have a limited effect on existing emergency services. Safety is a primary concern during construction, and measures will be implemented prior to construction to avoid the need for emergency services during construction. Operation and maintenance activities will be minimal following construction due to the automated control systems to be installed, resulting in no expected impact to emergency services.

Traffic detours will be coordinated with the appropriate emergency service providers, including the Pueblo West Fire Department and the Pueblo Emergency Response Team, to avoid impacts to emergency service access and mobility.

JPS preliminary plans were reviewed by the Pueblo West Fire Department and by State Parks. The Pueblo West Fire Department will be first responders to the JPS site in emergency situations. Coordination with these entities will continue through design, construction, and operation.

Water and Wastewater

The Project will not have a direct impact to water or sewer demands on local government systems. Bottled water will be provided for drinking water, and raw water will be used for other purposes such as fire protection. The Applicant will supply water in portable storage containers for hand washing and eye rinsing. At JPS, an on-site septic storage system will be used for wastewater storage during operation. Waste will be removed periodically by the Applicant and treated in Colorado Springs.

The Project is not expected to affect the City of Pueblo's Wastewater Treatment Facility or the cost of water and wastewater services for County residents other than those described for Pueblo West. The Project will not impact the quality and services of Pueblo West water and wastewater treatment. In anticipation of projected build-out, Pueblo West has upgraded their water treatment facility in anticipation of growth and Project water while maintaining the quality of existing services. Future expansions of existing Pueblo West treatment facilities will be completed as necessary during appropriate phases of Pueblo West future development, and will utilize existing infrastructure resulting in the orderly development of Pueblo West treatment systems while preventing duplicate services. The Project will not

create overlapping or competing service areas since Project water distributed in Pueblo County will be used within the service area of Pueblo West.

The Project will not preclude future utilities from crossing the raw water pipeline and associated easement. Pueblo West is an SDS project Participant, and are aware of the location and details of the raw water pipeline through their community, and will consider future potential utility projects accordingly. New utilities cross water transmission pipelines on a routine basis. Sound engineering practice minimizes costs and effects of such crossings.

Stormwater

The Project will not create an adverse impact regarding stormwater. Drainage facilities will control drainage for surface runoff on the JPS site. Stormwater control ponds will be constructed on the JPS site to detain and release drainage flows in accordance with Pueblo County requirements. The raw water pipeline will be underground and will not create an adverse impact to stormwater drainage.

Municipal stormwater regulations throughout the Project area specify restrictions. A stormwater management plan, including a description of best management practices, will be implemented to minimize effects from construction.

(3) Housing

(a) Description of seasonal and permanent housing including number, condition and cost of dwelling units.

(b) Description of the impact and net effect of the Project on housing during construction and operation stages of the Project.

Description of seasonal and permanent housing including number, condition and cost of dwelling units.

During construction, temporary housing (hotels and/or house rentals) within Pueblo County is expected to be required. Permanent housing is not expected to be required. Because construction contracts are not in place at this time, the number of temporary housing units needed during construction, their condition, and their cost, are not precisely known at this time. The need for temporary housing will occur over the three year construction period.

Description of the impact and net effect of the Project on housing during construction and operation stages of the Project.

Up to an estimated 130 construction personnel (through the duration of construction) could be working in Pueblo County. Some personnel working on the Project may be Pueblo County residents, resulting in decreased impacts associated with temporary housing during construction.

The Project will not require housing within Pueblo County during operation since Project facilities will be unmanned.

(4) Financial Burden on County Residents

(a) Description of the existing tax burden and fee structure for government services including but not limited to assessed valuation, mill levy, rates for water and wastewater treatment, and costs of water supply.

(b) Description of impacts and net effect of the Project on financial burdens of residents.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* section 17.164.030 (M).

Description of the existing tax burden and fee structure for government services including but not limited to assessed valuation, mill levy, rates for water and wastewater treatment, and costs of water supply.

The typical single family residence within Pueblo West presently pays an average of about $34 per month for water service and about $22 per month for sewer service. The water connection charge for new homes is $6,883 per home, which includes both a water tap fee and a plant investment fee, while a sewer connection charge for new homes is typically $2,186, which includes both a sewer tap and sewer plant investment fee. A breakdown of Pueblo West water and sewage fees are provided in Appendix J.

According to the State of Colorado, the 2008 Total Levy for Pueblo West is 20.193 mills. Pueblo West's 2008 Assessed Value is approximately $218 million. Additional information can be found at the following website:
http://www.dola.state.co.us/dlg/local_governments/tax_entity_pueblo.html

The Project will not have a significant adverse effect on Pueblo West assessed valuation or Pueblo County property tax burden. Changes in property tax calculations would only apply to property acquired by the Applicant. The Applicant possesses a tax exempt status and will minimize the number of properties acquired in fee (See Section 17.172.120.I).

Description of impacts and net effect of the Project on financial burdens of residents.

The Project may have minor adverse effects on property values along the proposed pipeline alignment. This would be mostly a short-term effect during construction and the landowners would be compensated financially for providing access to their property. Acquiring properties and easements through voluntary, willing agreements to the maximum extent possible will help mitigate any adverse effects on the owners of these properties through mutually agreed upon compensation. The Applicant will coordinate with the affected landowners along the raw water pipeline route to obtain approvals to enter their land, and negotiate the appropriate agreements with the landowners to obtain easements, rights-of-way, or purchase of the parcel.

Pueblo West intends to pay its share of Project capital costs from existing reserves. Existing rates and charges implemented in early 2006 have already incorporated Project capital and operation and maintenance costs. Pueblo West's anticipatory preparation and planning for their future projected growth will allow them to not only supply water for their customers through the Project, but also allow them to maintain the existing standards of services provided to their community.

The Project is not expected to affect the City of Pueblo's Wastewater Treatment Facility or the cost of water and wastewater services for Pueblo County residents other than those described for Pueblo West.

Over 99 percent of the combined capital and operations and maintenance costs for the Project will be paid for by customers outside of Pueblo County.

(5) Local Economy

(a) Description of the local economy including but not limited to revenues generated by the different economic sectors, and the value or productivity of different lands.

(b) Description of impacts and net effect of the Project on the local economy and opportunities for economic diversification.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* section 17.164.030 (M).

Local Economy Description

Government, educational services, and health services are the largest employment sectors in Pueblo. There were about 74,300 people working in private and public sector jobs in Pueblo County in 2003 (according to IMPLAN, 2006. County level data files for 2003. Minnesota IMPLAN Group, Inc.). Apart from schools, hospitals, and local and state government offices, examples of major employers today include Convergys, a telemarketing company with about 1,400 local employees; Rocky Mountain Steel, which currently owns the CF&I Plant and employs about 800 workers; Trane, Boeing and B.F. Goodrich manufacturing plants; and a Target distribution center.

Pueblo County produced $42 million of agricultural products in 2002, about twice as much as the Upper Arkansas Valley and about one-sixth as much as the Lower Arkansas Valley. Pueblo County had a total of about 25,000 acres of irrigated cropland and 6,000 acres of irrigated pasture. About two percent of jobs in Pueblo County are in agriculture.

Pueblo Reservoir is an important recreation resource. As one of the top five statewide recreational attractions (based on visitation), the area receives as many as 1.6 million visitors per year. A market assessment of Colorado State Parks estimates that visitor expenditures associated with trips to Pueblo Lake State Park directly and indirectly contributed more than $16.5 million to the local economy in 2004. Including resident and visitor expenditures, and other parts of Pueblo County, estimated expenditures on fishing activities and supplies directly and indirectly contributed over $42 million to the local economy in 2002.

Total personal income in Pueblo County was about $3.7 billion in 2003. This income comes mainly from earnings from jobs in the region, dividends, interest and rent, and transfer payments. A disproportionate share of personal income in Pueblo County comes from transfer payments. In 2003, more than one-quarter of personal income in Pueblo County was derived from transfer payments, compared to only 10 percent for the state as a whole. Transfer payments include retirement benefits paid by the government, Medicare and Medicaid payments, unemployment insurance and other payments to people for which no services are performed. The relatively large retiree population in Pueblo County and the

larger percentage of people living below the poverty line are two reasons for the relative importance of transfer payments to the local economy.

Although Pueblo was once a center for manufacturing, the sector-by-sector distribution of employment now roughly parallels the state as a whole. In 2003, employment in Pueblo County manufacturing totaled around 4,300 jobs, fewer than in 1990. Manufacturing employment accounted for six percent of total jobs in Pueblo County in 2003, a slightly larger share than the five percent of statewide jobs that are in manufacturing.

The Pueblo County sectors showing the highest growth in employment from 1990 to 2000 were construction, which doubled its jobs; and trade, which increased its employment by over 40 percent. Services employment increased by one-third. These trends suggest that the relatively high-paying manufacturing jobs lost in the local economy are being replaced by lower-wage retail and services jobs. Pueblo ranked 260 out of 318 U.S. metropolitan areas in the levels of wages in 2001.

Although public sector employment in Pueblo County accounts for a greater share of jobs than found for the state, jobs in government have been growing relatively slowly in Pueblo County since 1990. Agriculture accounts for 1,100 jobs in Pueblo County, about one percent of countywide employment.

Project Impacts

There would be no long term impacts to Pueblo County population and economic growth, nor any permanent opportunities for economic diversifications, resulting from the Project. During construction, however, the Project may provide some opportunities for Pueblo County construction workers and construction firms. Construction employment and non-labor construction expenditures could generate jobs for Pueblo County residents.

SDS project effects to water surface elevation and surface area in Pueblo Reservoir would result in negligible effects to visitation levels and the quality of the recreation experience at Pueblo Reservoir, and would not affect the long term quality and availability of land based recreation at Lake Pueblo State Park. However, the construction of Project infrastructure will have minor adverse effects on land-based recreation at Lake Pueblo State Park. Minor temporary impacts on existing trails in the area and access for angling below the dam affected by the Project would impact less than one percent of the 17 miles of trails in Lake Pueblo State Park. Impacts to existing trails would be mitigated through permanent trail reroutes or temporary detours, diminishing any adverse affect that the Project would have on the local economy.

The City of Pueblo opened a whitewater recreation amenity in downtown Pueblo in the spring of 2005. The SDS project is subject to the FMP under which FMP Participants agree to meet recreation flow targets through the City of Pueblo from March through November. The SDS project is anticipated to increase the average number of days that target flows are achieved during the summer season, as agreed upon in the FMP, resulting in a benefit to the City of Pueblo whitewater park. The economic implications of this benefit will depend on the use the whitewater park attracts and the expenditures of park users in Pueblo. While these factors are not currently known, some insight into the potential magnitude of economic effects may be drawn from a study of the economic benefits of the Clear Creek Whitewater Park in Golden, Colorado conducted in 2000. The Clear Creek study estimated an annual use of about 14,000 kayakers per year, producing a stimulus to the local economy

of about $1.3 million per year, including "multiplier effects" from re-spending of kayaker expenditures throughout the local economy. Assuming the same usage as the Clear Creek Whitewater Park as well as an updated economic stimulus due to inflation, the potential annual economic contribution of the Pueblo Whitewater Park to the local economy could be approximately $1.5 million, with the economic contribution from the course ranging up to $12,000 per day during the peak summer months. The maximum net economic benefit of meeting target flows during the summer for an additional day would be about $12,000.

The Project will not adversely affect the local economy associated with other water-related amenities in Pueblo County, nor will the Project have any adverse effects on Pueblo County agriculture that relies on the Arkansas River.

(6) Recreational Opportunities

(a) Description of present and potential recreational uses, including but not limited to the number of recreational visitor days for different recreational uses and the revenue generated by types of recreational uses.

(b) Map depicting the location of recreational uses such as fishery stream segments, access points to recreational resources, hiking and biking trails, and wilderness areas.

(c) Description of the impacts and net effect of the Project on present and potential recreational opportunities and revenues to the local economy derived from those uses.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (K) and (M).

Present and Potential Recreational Uses

Recreation resources in the Pueblo area involve both water- and land-based recreation opportunities associated with Pueblo Reservoir and rivers and stream corridors such as the Arkansas River. In addition to Lake Pueblo State Park, some of the primary recreation attractions in this area include the Greenway Nature Center of Pueblo, the Historic Arkansas Riverwalk Project, Runyon/Fountain Lakes State Wildlife Area, the Honor Farm property, as well as numerous other recreation amenities such as trails, parks, and open space. There is currently no information quantifying revenue generated by the types of recreational uses described herein.

Lake Pueblo State Park (Existing Resources)

Recreational use at Pueblo Reservoir is centered on boating, angling (shore and boat), personal watercraft, sailboarding, and water skiing. Over the past several years, annual visitation at Pueblo Reservoir ranged from 1.3 to 1.6 million people. Visitation was lower in 2001 due to closure of the park and reservoir following the September 11 terrorist attacks and in 2002 and 2003 due to drought conditions and fire bans. Peak months for recreational use at Lake Pueblo State Park are June, July, and August, which account for over 50 percent of annual visitation. Given the projected growth along the Front Range, visitation is expected to increase to 1.7 to 1.8 million annually within the next five years.

Boating

Two marinas, two boat ramps, and a sailboard launch area provide reservoir boating access. The sailboard launch also provides access for canoers and other non-motorized boaters.

Angling
The diversity of game fish species makes Pueblo Reservoir a popular destination for anglers. Popular game fish species include walleye, rainbow and brown trout, wiper, catfish, smallmouth and largemouth bass, and crappie. Because Pueblo Reservoir does not freeze over, shore and boat fishing are popular all year. About 67 percent of angling use occurs between April and August.

Other Water-Based Recreation
Sailboarding, personal watercraft, water skiing, and jet skiing are also popular water-based recreation activities that occur at Pueblo Reservoir during the summer. While swimming is not permitted in Pueblo Reservoir, the nearby Rock Canyon Swim Area accommodates swimmers.

Land-Based Recreation
About 17 miles of paved trails and 30 miles of unpaved trails are found in Lake Pueblo State Park. The Pueblo River Trail, which is part of the 35-mile Greenway Trail System, connects Pueblo to Lake Pueblo State Park.

River Corridor Recreation–Below Pueblo Reservoir (Existing Resources)

Angling
The portion of the Arkansas River within the Pueblo area is currently managed as a sport fishery. The CDOW annually stocks the Arkansas River below the Pueblo Dam with rainbow and brown trout. Other game fish species recorded in the area include walleye and perch. The area between the dam and Wildhorse Creek is popular, while the fishery is less productive below Wildhorse Creek. Angling opportunities are also available at the "Chain of Lakes" ponds and at Runyon and Fountain lakes.

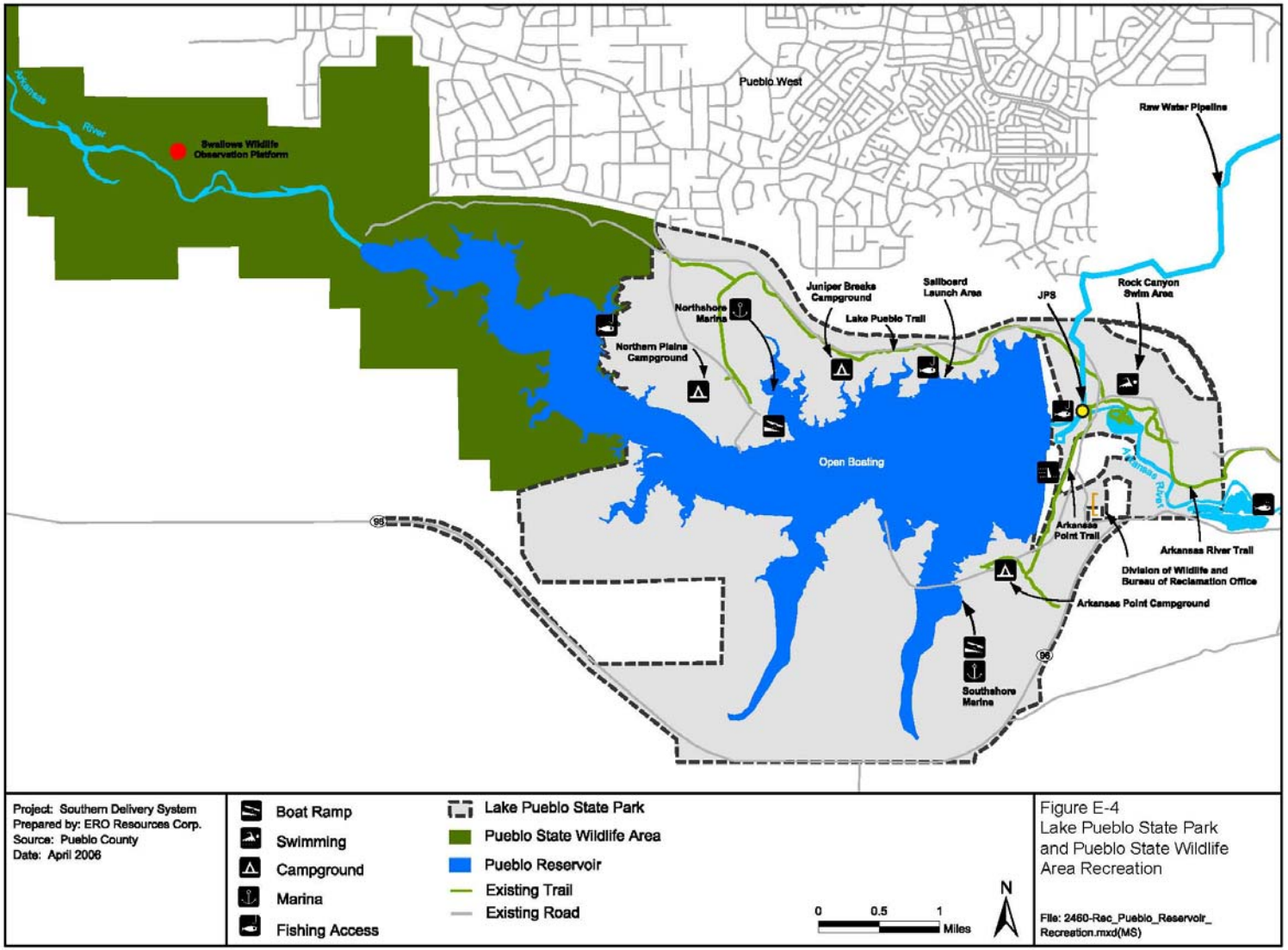
Boating
Recreational boating on the Arkansas River below Pueblo Dam is limited to kayaks, canoes, and inner tubes.

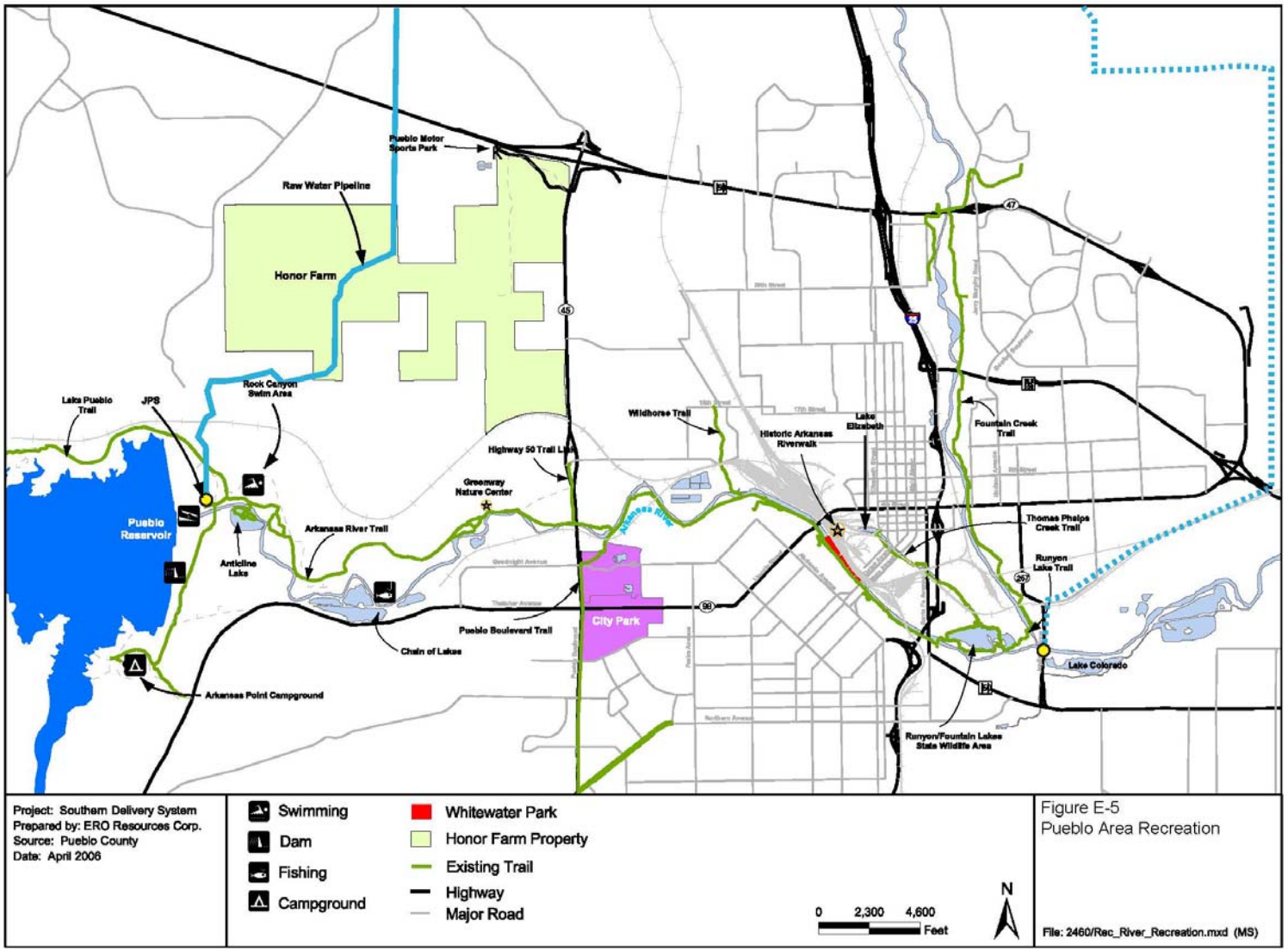
Other Pueblo County Area Recreation (Existing Resources)

Honor Farm Property
Located just northeast of Lake Pueblo State Park, the Honor Farm Property is a 2,300-acre area acquired by the City of Pueblo from Colorado State Parks. Most of the Honor Farm Property is open space, and a Master Plan process is underway to determine types and locations of specific uses of the property. Proposed long-term plans for the property include a designated off-highway vehicle area, a network of trails, a restored natural park area, and the extension of Joe Martinez Road/24th Street through the area.

Maps Depicting Location of Recreational Uses

Figures E-4 and **E-5** display the location of recreational uses discussed above.


Pueblo West
Raw Water Pipeline
Arkansas River
Swallows Wildlife Observation Platform
Juniper Breeks Campground
Sailboard Launch Area
JPS
Rock Canyon Swim Area
Northshore Marina
Lake Pueblo Trail
Northern Plains Campground
Open Boating
Arkansas River
Arkansas Point Trail
Arkansas River Trail
Division of Wildlife and Bureau of Reclamation Office
Arkansas Point Campground
Southshore Marina
96
Project: Southern Delivery System
Prepared by: ERO Resources Corp.
Source: Pueblo County
Date: April 2006
Boat Ramp
Swimming
Campground
Marina
Fishing Access
Lake Pueblo State Park
Pueblo State Wildlife Area
Pueblo Reservoir
Existing Trail
Existing Road
0
0.5
1
Miles
N
Figure E-4
Lake Pueblo State Park and Pueblo State Wildlife Area Recreation
File: 2460-Rec_Pueblo_Reservoir_Recreation.mxd(MS)


Pueblo Motor Sports Park
Raw Water Pipeline
Honor Farm
Rock Canyon Swim Area
Lake Pueblo Trail
JPS
Pueblo Reservoir
Anticline Lake
Arkansas River Trail
Greenway Nature Center
Highway 50 Trail Link
Widhorse Trail
Historic Arkansas Riverwalk
Lake Elizabeth
Fountain Creek Trail
Thomas Phelps Creek Trail
Runyon Lake Trail
Lake Colorado
City Park
Pueblo Boulevard Trail
Chain of Lakes
Arkansas Point Campground
Runyon/Fountain Lakes State Wildlife Area
Project: Southern Delivery System
Prepared by: ERO Resources Corp.
Source: Pueblo County
Date: April 2006
Swimming
Dam
Fishing
Campground
Whitewater Park
Honor Farm Property
Existing Trail
Highway
Major Road
0 2,300 4,600
Feet
N
Figure E-5
Pueblo Area Recreation
File: 2460/Rec_River_Recreation.mxd (MS)

Impacts and Net Effect of the Project on Present and Potential Recreational Uses

Non-Impacted Resources

The effects of the Project on the following resources were found to be negligible and are not discussed further:

- Rock Creek Swim Area
- Lake Colorado
- Pueblo Greenway Trail System
- Runyon/Fountain Lakes SWA
- Greenway Nature Center of Pueblo
- Historic Arkansas Riverwalk of Pueblo

Lake Pueblo State Park (Impacts)

The minor decreases in reservoir elevations due to the SDS project would result in negligible impacts on general water-based recreation on Pueblo Reservoir. **Table E-1** shows the existing maximum average month, minimum average month, and average monthly water surface elevations in Pueblo Reservoir and associated impacts due to the SDS project.

TABLE E-1
Pueblo Reservoir Average Water Surface Elevations (Feet)

Condition	Existing	SDS Project Direct Effects
Minimum Month Elevation	4,848.9	4,845.4
Average Monthly Elevation	4,857.0	4,853.5
Maximum Month Elevation	4,865.6	4,861.2

According to the Arkansas River Water Needs Assessment report prepared by US Bureau of Land Management (BLM), Reclamation, US Forest Service (USFS), and the CDNR, while minor changes in surface water elevation and surface water area would occur, the changes would be too small to measurably affect the quality of the recreation experience and the amount of visitation. This is supported by surveys conducted at Pueblo Reservoir that indicated there is little sensitivity to minor fluctuations in water levels and the quality of the recreation experience.

Boating

The Project is not expected to have an impact on boating and other water-based recreation (e.g., sailboarding, water skiing, jet skiing, and canoeing) on Pueblo Reservoir due to only minor decreases in reservoir elevations.

Angling

The Project is not expected to affect angling opportunities.

Land-Based Recreation

The Project is not anticipated to affect the long-term quality and availability of land-based recreation at Lake Pueblo State Park, including camping, picnicking, walking, hiking, cycling, wilderness experience, hunting, and wildlife observation. However, the

construction of Project infrastructure downstream of the Pueblo Reservoir dam would result in minor temporary adverse effects on existing trails in the area. Specifically, the raw water pipeline alignment would cross the Arkansas Point Trail and the Arkansas River Trail. The actual trail impact would only be approximately 400 linear feet. These temporary impacts would be less than one percent of the 17 miles of trails in Lake Pueblo State Park. Impacts to existing trails would be mitigated through temporary detours or closures, diminishing the adverse affect that construction impacts would have on recreational use. The JPS would be consistent with the existing character and use of the area as a water infrastructure facility and would not result in any direct long-term impacts to recreational uses or facilities. The 115 kV substation and overhead electric transmission facilities providing power to JPS is not expected to have any impact on existing trails.

River Corridor Recreation–Below Pueblo Reservoir (Impacts)

As previously mentioned, the SDS project could have minor potential benefits to the Pueblo Whitewater recreation facility in downtown Pueblo by increasing the number of days target flows are met during the peak summer season.

Boating

Similar to the potential benefits associated with the whitewater park in downtown Pueblo, boating in the Arkansas River below Pueblo Dam would benefit from the potential increase in days target flows are met per the FMP.

Angling

The construction of facilities below the Pueblo Dam would result in minor temporary adverse impacts to angling opportunities in that location by interrupting angling access during construction. CDOW stocks and manages the fishery in this reach of the Arkansas River. The anticipated hydrological changes through this reach would result in moderate benefits to angling opportunities in this area.

Trails

The Project would not affect existing or proposed trails in Pueblo County, with the exception of temporary impacts to existing trails at Lake Pueblo State Park and the Honor Farm Property during construction.

Other Pueblo County Area Recreation (Impacts)

Honor Farm Property

The raw water pipeline would cross the Honor Farm property, resulting in temporary impacts to 24 acres of the property, and to approximately 500 feet of proposed trails. This effect would be minor in comparison to the amount of existing trails in the Honor Farm property.

(7) Areas of Paleontological, Historic, or Archaeological Importance

(a) Map and/or description of all sites of paleontological, historic or archaeological interest.

(b) Description of the impacts and net effect of the Project on sites of paleontological, historic or archaeological interest.

Paleontological, Historic and Archaeological Sites

Reclamation and the Colorado Office of Archaeology and Historic Preservation (OAHP) have concerns that the information related to the location or character of historic resources should not be released to the general public. The OAHP policy regarding the "Dissemination of Cultural Resource Information" and the "Laws and Citations Concerning Site Information Dissemination" must not be ignored. Maps and descriptions of paleontological, historical, or archaeological interest cannot be included as part of this submittal due to the sensitive nature of these areas of concern.

However, a Programmatic Agreement (provided in Appendix K) between Reclamation, the Advisory Council on Historic Preservation, Colorado Springs, and the Colorado State Historic Preservation Officer specifies the measures to be taken with regard to the identification and evaluation of historic properties. These measures may include a treatment plan to resolve adverse effects, a treatment report, modifications to project design, the unanticipated discovery of historic properties, the unanticipated discovery of human remains, curation, and other terms and conditions related to the preservation of paleontological, historical, and archaeological sites.

Impacts and Net Effects

A review of known registered sites was conducted and compared to the pipeline alignment. Currently, twelve (12) sites have been identified in the alignment, of which three (3) sites are of a "high" value classification by the OAHP, five (5) sites hold a "medium" value, and four (4) sites hold "low" value designations.

Due to the confidential nature of this information, further description cannot be provided; however, the Programmatic Agreement ensures that issues associated with impacts to these sites will be addressed and handled by the appropriate parties.

(8) Nuisance

(a) Descriptions of noise, glare, dust, fumes, vibration, and odor levels caused by the Project.

Description of Impacts

Noise and Vibration

The corridor for the northern portion of the raw water pipeline within Pueblo County is in mostly open rangeland with existing low ambient noise levels (30 to 45 dBA). Bellowing cattle, overhead military fighter jets practicing maneuvers, commercial and private aircraft, or existing traffic may be the principal existing noise factors in these areas. The southern portion of the raw water pipeline is in Lake Pueblo State Park and sparsely populated areas of Pueblo West. JPS is located in Lake Pueblo State Park. These areas currently have low ambient noise levels (30 to 55 dBA). Existing vibration along the raw water pipeline corridor and at the JPS site is practically non-existent.

Direct effects from the Project may include noise from construction equipment, increased traffic noise from project vicinity roadways, and noise from the operation of JPS. In addition, blasting may be required north of Pueblo Reservoir, which would increase noise levels in that area. However, the noise increases would be short term and cease after blasting.

Noise during construction would be loudest near the point of generation and would decrease with increased distance from the source. Frequently, many of the complaints about construction noise involve standard backup alarms, which are used on heavy equipment as a safety device. Backup alarms could be audible for up to 3.2 km (two miles) from their source. Noise from construction equipment can reach up to 90 dBA, which would create a noise impact close to the activity. Vibration would only be felt close to construction equipment.

Construction of Project components would be phased depending on need; however, once all components are constructed, construction noise and associated vibration would cease. Noise levels and vibration during operation of the raw water pipeline would be negligible, and the noise effects from JPS would be minor and diminish quickly with distance from the pump station. An acoustical evaluation was performed for JPS to determine the estimated noise levels inside the pump station and at JPS site boundaries. The anticipated noise levels at the JPS site boundaries were well below the more stringent Colorado Revised Statutes noise code nighttime limitation of 50 dBA for residential zones.

Other Nuisances

Visual nuisance impacts are discussed in the following Section 17.172.120.F.(2)

The Project will be in compliance with Federal and State air quality standards. Effects from fumes, dust, and odor levels will be minor and mitigated during construction. Effects would decline after the completion of construction. Operational activities would result in negligible air quality effects and would not exceed federal or state air quality standards.

Short-term minor noise and vibration effects would result from construction, and will be negligible during operation. Noise ordinances for allowable noise levels during construction and operation would be followed at all times. Mitigation measures are outlined in Section 17.172.120.H. Project activity notifications would be provided to potential impacted residences and businesses prior to anticipated nuisance activities.

There will be no increases in heat associated with the Project. JPS, the 115 kV substation and overhead electric transmission facilities, and the raw water pipeline will not create significant heat sources that will affect Pueblo County.

(9) Loss of Agricultural Productivity

(a) Information on any agricultural water rights in the region converted to provide water for the Project, now or in the future.

(b) Information on the amount of irrigated agricultural lands taken out of production, and a description of revegetation plans.

(c) Economic consequences of any loss of irrigated agriculture, including loss of tax base in the region.

(d) Information as to loss of wildlife habitat, loss of topsoil, or noxious weed invasion as a result of the transfer of water rights and subsequent dry-up of lands.

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (G) and (M).

Agricultural Water Rights

Although the Applicant's water rights portfolios include agricultural water rights that have been or will be converted to municipal uses, these were not converted to provide water for the Project, nor are they contingent upon construction of the Project.

Impacts to Irrigated Agricultural Lands and Revegetation Plans

The Project will not have a permanent impact on irrigated agricultural lands. Only temporary effects on the production of a limited amount of agricultural lands affected by the raw water pipeline may/will result from the construction of the Project. Such agricultural lands taken out of production will be restored to their original state following construction, including revegetation and other mitigation, as described in 17.172.120.H.

Economic Consequences

The short-term impacts due to the Project will not create economic losses or significant changes in tax revenues on irrigated agricultural lands. The Project would create some loss of topsoil. However the top 6-inches of soil will be removed, stored, and replaced by the SDS Project.

Impacts Due to the Transfer of Water Rights

Existing agricultural rights for irrigation and stock watering are senior to proposed SDS Project exchanges. Consequently, the SDS project would not affect the quantity of water available to Pueblo County irrigators from their existing water rights. As a result, the SDS project is expected to have a negligible effect on Pueblo County agricultural irrigation that relies on the Arkansas River, and will not result in the dry-up of lands leading to loss of wildlife habitat, loss of topsoil, or noxious weed invasion.

17.172.120.F Environmental impacts

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030 (G), (H), (I), and (J).

Description of the existing natural environment and an analysis of the impacts of the Project to the natural environment. Descriptions in this section shall include an analysis of existing conditions, supported with data, and a projection of the impacts of the Project in comparison to existing conditions. The analysis shall include a description of how the applicant will comply with the applicable Permit Application Approval Criteria.

Description of Existing Natural Environment and Impacts of the Project

The following elements of the natural environment are described and analyzed in this section:

- Air Quality
- Visual Quality
- Surface Water Quality
- Groundwater Quality
- Surface Water Quantity
- Floodplains, Wetlands, and Riparian Areas
- Terrestrial and Aquatic Animals and Habitat
- Terrestrial and Aquatic Plant Life
- Soils, Geologic Conditions, and Natural Hazards

Each section will include analysis of existing conditions, data sources, and projection of impacts of the project with respect to existing conditions for construction and operation. The SDS Project has been evaluated with respect to each of the areas of potential environmental impact listed above, and is not expected cause a significant nuisance during construction or operations, nor significantly degrade the environment.

(1) Air Quality

(a) Description of the airsheds to be affected by the Project, including the seasonal pattern of air circulation and microclimates.

(b) Map and/or description of the ambient air quality and state air quality standards of the airsheds to be affected by the Project, including particulate matter and aerosols, oxides, hydrocarbons, oxidants, and other chemicals, temperature effects and atmospheric interactions.

(c) Descriptions of the impacts and net effect that the Project would have on air quality during both construction and operation, and under both average and worst case conditions.

Pueblo County Airshed

The Pueblo County airshed is located in an area of rolling plains and bounded by the Rocky Mountain Front Range to the west. It has generally mild weather, with about 300 days of sunshine per year. Wind patterns are from the southeast during the day and from the west at night. Average wind speeds are relatively constant throughout the year, with speeds

around 7 miles per hour in the fall and 11 miles per hour in the spring. On clear days, Pikes Peak is easily visible. (CDPHE, 2008).

Analysis of Existing Conditions

The CDPHE, Air Pollution Control Division has an air monitoring station located at 211 East D Street in Pueblo. The only constituents that the site monitors are PM_{10} (particulate matter less than 10 microns in aerometric diameter) and $PM_{2.5}$ (particulate matter less than 2.5 microns in aerometric diameter) (CDPHE, 2006). Pueblo County is considered an attainment area by the CDPHE. This means that the area currently meets the national primary or secondary ambient air quality standard for criteria pollutants. See Appendix L for the State of Colorado Ambient Air Quality Standards.

Impacts of the Project

During Construction

Air quality impacts due to construction of the Project facilities in Pueblo County will be primarily contained to dust generated by construction vehicle traffic and general earth moving. Additional impacts will be generated by diesel fuel powered equipment. The level and type of these impacts are considered typical for a civil construction project of this nature and not considered excessive. The Project will, however, comply with federal and state air quality standards applicable to the specific area, uses and types of construction operations. Additional details regarding air quality impacts and mitigation measures during construction can also be found in section 17.172.120.H of this application.

During Operations

The JPS will be primarily powered by electric power supplied by Black Hills Corporation for the sole purpose of raw water conveyance at this site. The JPS is anticipated to contain a propane fuel supply system (on-site tanks addressed in Section 17.172.120.I of this application), for back-up generator fuel and building heating. These systems will be used only infrequently and intermittently and are expected to produce only small volumes of air emissions typical with propane fueled equipment. Propane is considered a relatively "clean" source of hydrocarbon fuel.

The Project will not significantly degrade air quality during either construction or operations phases.

(2) Visual Quality

(a) Map and/or description of groundcover and vegetation, forest canopies, waterfalls and streams or other natural features.

(b) Description of viewsheds, scenic vistas, unique landscapes or land formations.

(c) Map and/or description of buildings and structure design and materials to be used for the Project.

(d) Descriptions of the impacts and the net effect that the Project would have on visual quality.

Description of Vegetation and Natural Features

The Project is in the high plains character region, which is found east of the foothills between Colorado Springs and Pueblo West. Landforms are predominantly low-lying, long,

subtle hills. The region is nearly void of visible rock outcrops and trees except along creeks and rivers. Vegetation is predominantly low-growing grasses, wildflowers, and cacti. This region contains numerous stream valleys and many intermittent streams, with narrow, linear riparian areas composed of cottonwood and Russian olive trees, native willows, and salt cedars. The high plains character region also includes the urban and suburban areas of Pueblo West (DEIS, Chapter 3-Aesthetics and Visual Effects, 2007).

Figure F-1 and **Figure F-2** show groundcover in the project area near Pueblo Reservoir. The groundcover delineation for the rest of the project area within Pueblo County is provided in Appendix M (vegetation types) and Appendix N (wetland and riparian areas).

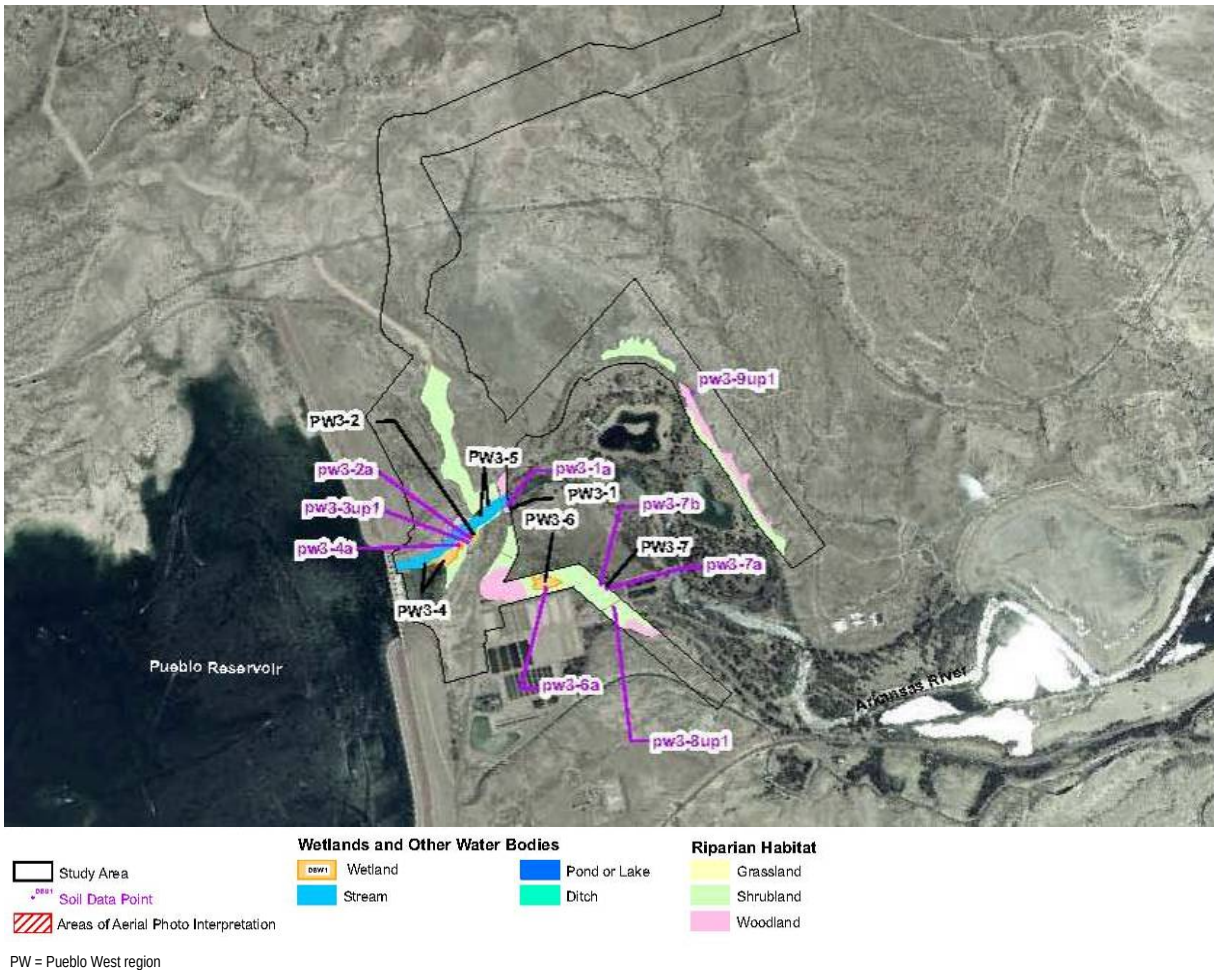


FIGURE F-1
Visual Resources: Wetlands, Water Bodies, and Riparian Habitat

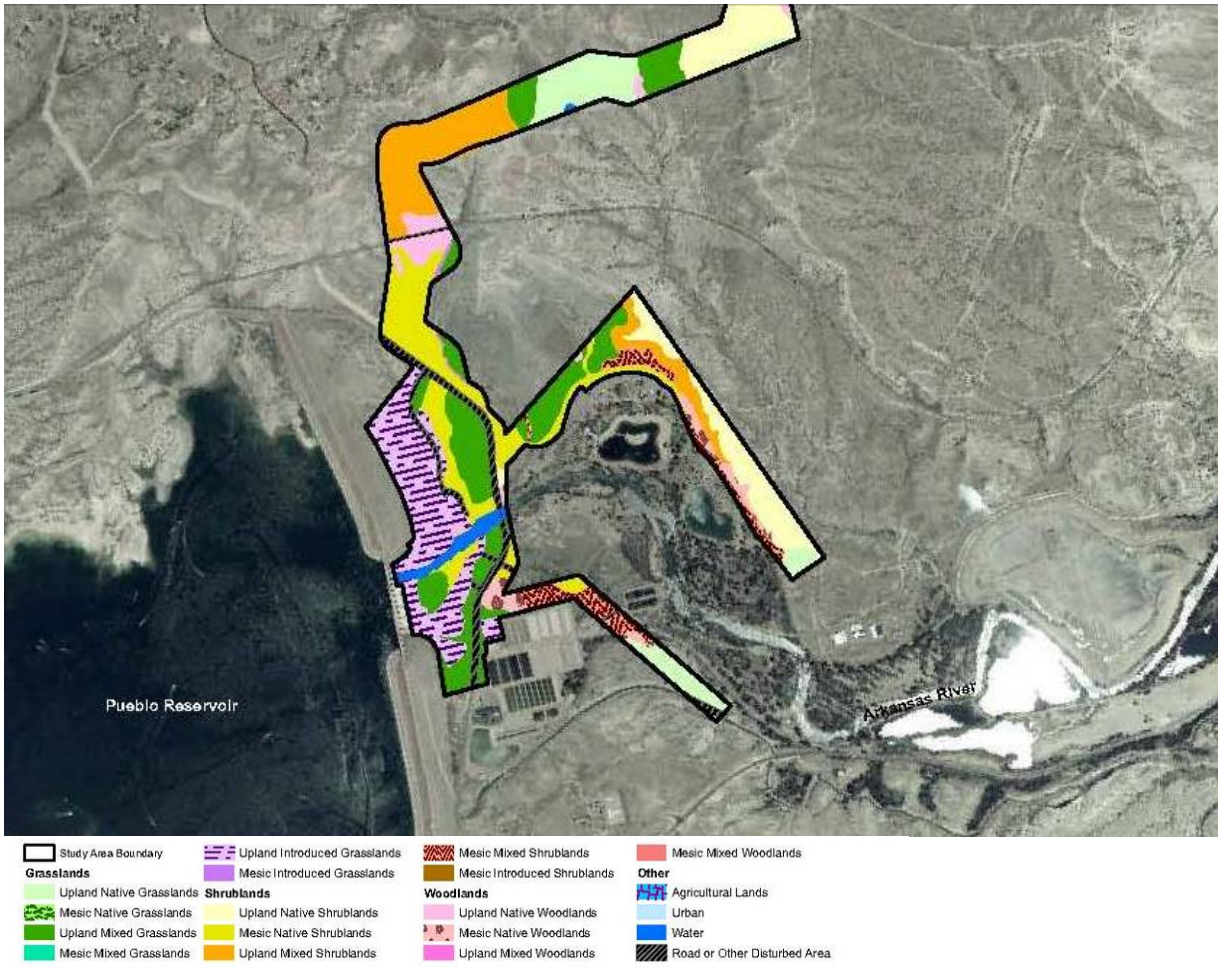


FIGURE F-2
Visual Resources: Groundcover

Description of Viewsheds

The visual resources of the high plains character region are dominated by unobstructed views in any direction. Distant mountains are typically visible to the west, and large areas of the sky and changing weather conditions can be seen in all views. Views in this character region have only subtle variations in landform, color, and texture, except within or near the riparian corridors of creeks and rivers (DEIS, Chapter 3-Aesthetics and Visual Effects, 2007).

Description of Buildings

The Applicant, Reclamation and their architect, and representatives from State Parks worked to establish a mutually acceptable architectural design scheme and approach for JPS. Based on preliminary equipment sizes, the dimensions of the JPS building are estimated to be 161 feet long by 75 feet wide. The lower level of the of the pump building will be buried approximately 10 feet below grade to reduce the overall height of the structure and to allow structures to be shielded by the existing hill when viewing the site from the east. An office/control complex approximately 47 feet by 39 feet will be attached to the south side of the pump building. The building construction will consist of cast-in-place concrete and concrete masonry units. Walls above grade will be brick in a color that blends with the surrounding prairie grasses. The roof construction will consist of open web steel joists with

a metal deck; it will be nominally flat and finished with a coating product in a color that matches the building brick color (SDS TM 7-E.8S, 2005). Preliminary design drawings showing the site layout of the building are provided in Appendix B.2. **Figure F-3** is a rendering of the conceptual design of the pump station and shows how it will fit in with the look of the existing setting.

FIGURE F-3
Conceptual Image of Juniper Pump Station

Impacts to Visual Resources

The JPS and appurtenances have been designed to minimize the visual impact to visitors and provide synergy with the local natural topography and colorations. The pipeline and appurtenances will be buried underground in an easement that parallels the existing FVC over most of its length. Therefore, visual resources in Pueblo West and northern Pueblo County will not be adversely impacted by the Project.

The overhead powerlines to JPS would be visible from the recreational fishing area and local roads below and near the Pueblo Reservoir Dam. Because multiple facilities are visible at this same location and the overhead powerline would have few if any "skyline" observation points along the roads, there would not be impacts to visual resources from the powerlines.

The intake and JPS would be located near the lowest portion of the Pueblo Reservoir spillway, near the base of the dam. This location is characterized by existing chain link fences, paved and unpaved roads, open meadows, the riprap face of the dam, large concrete reservoir spillway outlets, and some small buildings for operation of the dam. There would not be a negative impact from these facilities, because the presence of the water intake and JPS would not be in contrast with the surrounding landscape.

(3) Surface Water Quality

(a) Map and/or description of all surface waters to be affected by the project including:

(1) Description of provisions of the applicable regional water quality management plan that applies to the Project and assessment of whether the Project would comply with those provisions.

(b) Existing data monitoring sources.

(c) Descriptions of the immediate and long-term impact and net effects that the Project would have on the quantity and quality of surface water under both average and worst case conditions.

Surface Waters to Be Affected

The surface waters to be affected by the Project include:

- The Arkansas River upstream of Pueblo Reservoir
- The Arkansas River through the City of Pueblo
- The Arkansas River downstream of the City of Pueblo
- Fountain Creek, and
- Pueblo Reservoir

Each of these surface waters will possess different project influences and are addressed in this section. Water quality data indicated in this section is referenced from current CDPHE sample data. The Project will not significantly degrade surface water quality over the Project area or within Pueblo County. Affected surface waters are shown in **Figure F-4**.

FIGURE F-4
Surface Waters in the Project Area

Upper Arkansas River

The Upper Arkansas River will be influenced by the Pueblo Reservoir lake levels generated by raw water extraction rates and volumes. According to recent sampling of the River water quality in the Upper Arkansas, water quality is generally considered "good" or "unimpaired" relative to applicable water quality standards.

Arkansas River through Pueblo

The Arkansas River course through the City of Pueblo will be influenced by Reservoir levels and discharges from Pueblo Dam, as managed by the Reclamation. Recent changes in water quality standards in the area have removed the Arkansas River from the list of streams impaired by high concentrations of naturally occurring selenium.

Lower Arkansas River

Water quality along the Lower Arkansas River varies. High levels of sediment in the water, caused by the erosion of unstable river banks and bottoms in different areas, make the water

look cloudy and brown, but do not impact the use of the water for drinking water supplies or agricultural irrigation. Naturally occurring concentrations of selenium nearly exceed updated water quality standards in this stretch of the river. Concentrations of salinity (salt) in the Lower Arkansas River are above recommended levels for crop irrigation and drinking water sources.

Fountain Creek

Fountain Creek will be influenced by exchange water from the SDS project. Fountain Creek experiences increased bacterial concentrations, particularly E. coli, associated with urban and agricultural runoff. Salinity (salt) levels along Fountain Creek are elevated although they do not impact agricultural water uses.

Pueblo Reservoir

The quality of water flowing into Pueblo Reservoir from the upper Arkansas River tends to contain no "impairments". Pueblo Reservoir water strongly stratifies during the summer (i.e., develops horizontal layers of differing water temperatures and chemical qualities), which reduces mixing and can lead to periods of low dissolved oxygen near the bottom. The low dissolved oxygen causes some metals and nutrients, particularly manganese, to dissolve out of the sediments. Historically, the dissolving metals and nutrients have not been sufficiently widespread to affect water quality in the reservoir as a whole, or quality of releases downstream of the reservoir. Algae levels in Pueblo Reservoir are relatively low to moderate; due to the lower phosphorus nutrient levels limiting growth. Chlorophyll *a* concentrations (a measure of green algae levels) indicate that Pueblo Reservoir borders between medium and high levels of nutrients and low dissolved oxygen content, which is indicative of moderate to high organic productivity (between mesotrophic and eutrophic) conditions in the reservoir (DEIS, Water Quality Technical Report, 2007).

Applicable Regional Water Quality Management Plan

The County of Pueblo Department of Planning and Development prepared a "Section 208 Plan" for the Pueblo Area Council of Governments, as part of a water quality program from 1977 to 1994. The 208 Plan, and subsequent updates, contains information regarding various bodies of water, as they relate to specific projects and developments planned for the region. Following a review of the 208 Plan, and updates, the Applicant did not identify any provisions in the Section 208 Water Quality Management Plan that apply to the Project.

Per the 208 Plan Update, Volume VI, 1987, "Pueblo Reservoir's design, operation, and maintenance are for the benefit of the municipalities and farmers that own the water". The SDS project will be utilizing the water rights owned by the Applicant in order to use the Applicant's water currently stored in Pueblo Reservoir. Potential Project impacts to Pueblo Reservoir are described in Sections 17.172.120.E.(6), F.(3), and F.(5).

More detailed information may be found in an updated Pueblo Reservoir study, which was conducted as a part of the DEIS and contains information supplementing the Pueblo Reservoir Study contained in 208 Plan Update, Volume VI, 1987. Detailed Pueblo Reservoir water quality information can be found in the DEIS and 17.172.120.C.(3) of this application.

Existing Data Monitoring Sources

Existing data monitoring sources are discussed in section 17.172.120.C.(3). This referenced section includes detailed data tables from water quality monitoring at the FVA WTP and SDS project Pilot Plant studies. The Project will not significantly degrade water quality.

Impact to Water Quality

Impacts to water quality were assessed in the DEIS using the best available modeling and estimating approaches. The results of the analysis are summarized below.

Upper Arkansas River

The Project would not impact water quality in the Upper Arkansas River due to a JUM connection and all construction activity occurring east of the Pueblo Dam and then a northerly pipeline alignment. Heavy metal concentrations, created by upstream non-Project activity, in the Upper Arkansas would be unchanged from existing conditions.

Arkansas River through Pueblo

Long-term water quality from operation of the SDS project would not change water quality from existing conditions. Construction operations may have limited and low level water quality impacts due to construction at the JUM and pipeline river crossing. The Project will be designed to minimize any impacts by construction and mitigation measure will be in place. See Section 17.172.120.H for more details on construction mitigation measures.

Lower Arkansas River

The Project diverts and returns water above this section of the Arkansas River and has little impact on flow rates or water quality in the Lower Arkansas River. Concentrations of salinity (salt) in the Lower Arkansas River are unchanged from existing conditions, and continued use of the water is not expected to result in a significant impact.

Fountain Creek

The increased volume of treated and disinfected wastewater in Fountain Creek would dilute concentrations of E. coli. Impacts to Fountain Creek are further discussed in section 17.172.120.I.(2), where information regarding a comparison of water quality and quantity between existing and proposed project conditions is discussed.

Pueblo Reservoir

The U.S. Army Corps of Engineers CE-QUAL-W2 model (ver. 3.2) was used to simulate water quality in Pueblo Reservoir for the existing conditions and SDS project impact. Lake operations, water temperature, dissolved oxygen, TDS, dissolved ammonia, dissolved nitrate (measured as dissolved nitrite plus nitrate), dissolved orthophosphorus, total phosphorus, algal biomass (measured as chlorophyll *a*), and total iron were modeled. The SDS project impacts were modeled for three contiguous years, October 1999 to October 2002 (water years 2000 to 2002), representing a wet, average, and dry hydrologic cycle.

For the SDS project conditions, the quality of inflows into Pueblo Reservoir would be similar to historical inflow quality and would not affect reservoir water quality. Simulated hydrologic data shows that the average water depth in Pueblo Reservoir would typically be within three feet of existing conditions and the average residence time would decrease from an existing condition of 119 days to 110 days. Shorter residence times are generally beneficial to water quality in Pueblo Reservoir because nutrients can be flushed out of the water body before being used by algae. The SDS project would have minimal impacts to

water quality overall in Pueblo Reservoir. Slightly higher concentrations of nutrients may be expected. Ammonia levels are expected to be low compared to water quality standards.

The Project is not anticipated to significantly degrade water quality due to increased erosion, sediment loading, streambed channel or shoreline stability in Pueblo County (DEIS, Chapter 3-Water Quality Effects, 2007).

(4) Groundwater Quality

(a) Map and/or description of all groundwater, including any aquifers.

(b) Description of the impacts and net effect of the Project on groundwater.

Description of Groundwaters and Aquifers

Figure O-1 in Appendix O displays the location and extent of major aquifers in the Arkansas River basin boundary. The area impacted by the Project falls within the major Dakota-Cheyenne Aquifer boundary, which stretches broadly on the western boundary west along the Arkansas River, and east along the river beyond Lamar, Colorado. On the northern boundary the Aquifer stretches along Sandy Creek to Interstate I-70 and south along Interstate 1-25 to the New Mexico border, according to USGS surveys.

Project Impacts on Groundwater

The SDS project draws water directly from Pueblo Reservoir through the JUM and does not draw from waters that would directly impact groundwater levels. Discharge to Fountain Creek may create potential Aquifer recharge downstream and beyond to the Arkansas River. Overall, the project will not significantly impact alluvial groundwater, due to the use of the Reservoir source water, pipeline conveyance, and the fact that the Project does not use aquifers to store water or wells to extract water (DEIS, Section 3.6-Ground Water Hydrology, 2008).

(5) Water Quantity

(a) Map and/or description of existing stream flows and reservoir levels.

(b) Map and/or description of existing Colorado Water Conservation Board held minimum stream flows.

(c) Descriptions of the impacts and net effect that the Project would have on water quantity.

(d) Statement of methods for efficient utilization of water, including recycling and reuse.

Existing Stream Flows and Reservoir Levels

The surface waters to be affected by the Project are the Arkansas River upstream of Pueblo Reservoir, the Arkansas River through Pueblo, the Arkansas River downstream of Pueblo, Fountain Creek, and Pueblo Reservoir. These surface waters are previously shown in **Figure F-4**.

Upper Arkansas River

Colorado Springs supports and participates in the Upper Arkansas Voluntary Flow Management Program (UAVFMP) – a program that establishes target minimum water flow rates in the river to assure fishery and recreational needs are met. Currently, these flow rates are met about 345 days per year. Minimum flow targets of 190 cfs at the site of the Fremont

County Rainbow Park Wastewater Treatment Facility discharge are met about 356 days per year.

Arkansas River through Pueblo

The river section below Pueblo Reservoir is controlled by releases from the reservoir. Summer streamflow in this reach of the Arkansas River is dominated by releases made for downstream irrigation. Flows in this reach are heavily impacted by inflows from Wildhorse Creek and diversions between Wildhorse Creek and Fountain Creek. Neither of these influences is related to Project activities.

The Flow Management Program (FMP) plays an important role on this section of the Arkansas River. The FMP is the result of IGAs for a target flow program on the Arkansas River through the City of Pueblo. This river section includes the Legacy Project and the kayak course. The IGA parties – Colorado Springs, Pueblo Board of Water Works, City of Aurora, City of Pueblo, City of Fountain and the Southeastern Colorado Water Conservancy District (SECWCD) – agreed to reduce or limit the operation of Arkansas River exchange water rights operated through the City of Pueblo:

- To attain a year-round average daily flow of 100 cfs at the Above Pueblo Gage (below Pueblo Dam)
- To maintain a seasonal recreational flow between 100 and 500 cfs from March 16 through November 14 –the 245-day boating season.
- To cooperate with other agencies and water users to release water for special events planned on an annual basis.

Colorado Springs currently participates in the FMP, with water flow targets being met 220 out of the 245 days during the boating season.

Lower Arkansas River

The stream flow is highest just downstream of Fountain Creek, which has an average annual flow of 975 cfs for the existing condition. By the time the River reaches the Las Animas River, flow is down to 322 cfs as a result of irrigation diversions**.**

Fountain Creek

Non storm flows on Fountain Creek have increased over the years as more treated wastewater from more residents is discharged into the creek. The continuous flows in Fountain Creek now support vegetation and habitat that may not have been present during times when the stream did not flow continuously. Existing conditions of Fountain Creek are further discussed in section 17.172.120.I. of this application.

Pueblo Reservoir

Pueblo Reservoir is located on the main stem of the Arkansas River and is the largest reservoir in the Fry-Ark Project. The reservoir is a keystone in operations of the Arkansas River, including providing storage for the Fry-Ark Project, the Winter Water Storage Program, and numerous municipalities through short term and long term excess capacity contracts. Changes in operations within the basin affect the demand for stored water in the reservoir. The Applicant will use existing rights to water in Pueblo Reservoir. The SDS project will allow additional water to be stored by Applicant under future storage contracts with Reclamation.

Colorado Water Conservation Board Minimum Stream Flows

The streams that have Colorado Water Conservation Board minimum stream flows are shown in **Figure F-5.** None of these streams are within the project area.

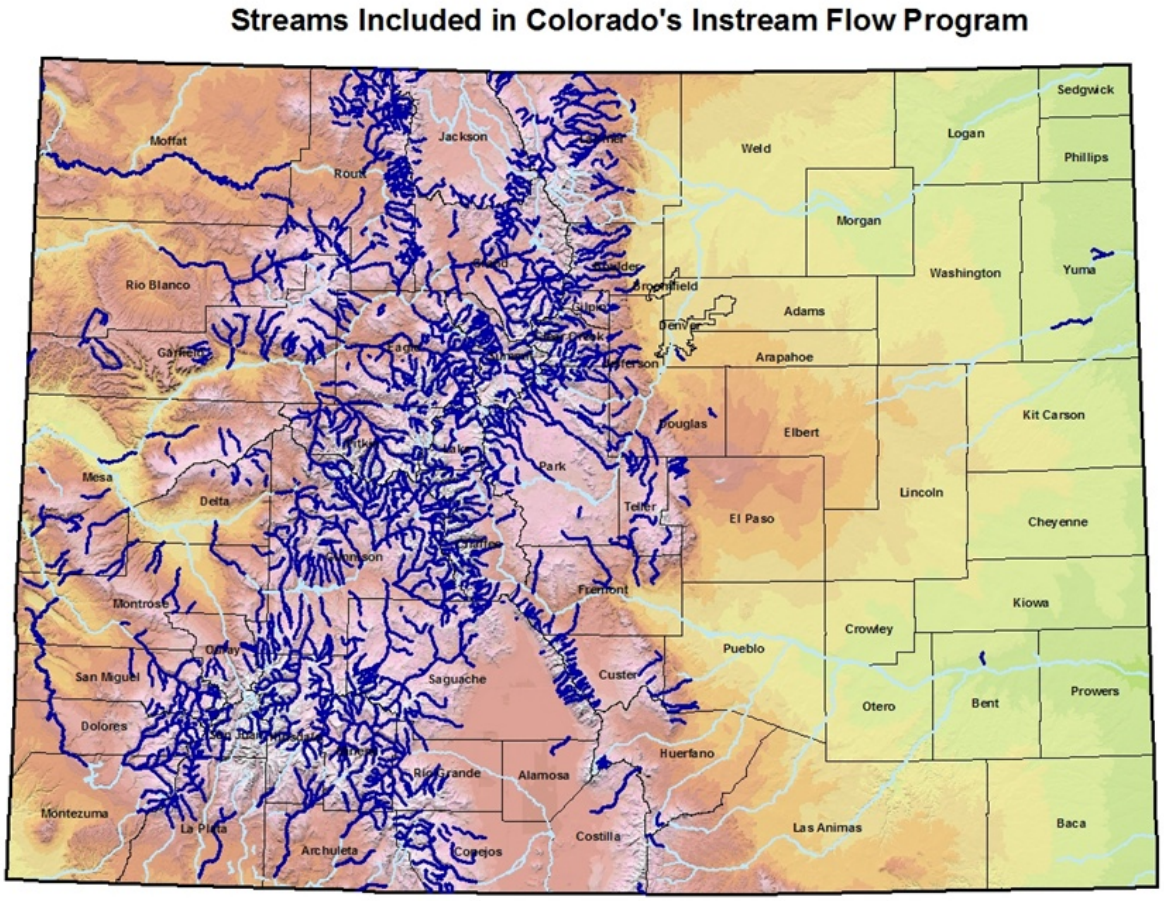


FIGURE F-5

Impact to Water Quantity

Upper Arkansas River

The minimum flow targets set by the UAVFMP are expected to be met 343 days per year, a 2-day decrease from existing conditions. Participation in the UAVFMP was not simulated as part of the Project to allow for flexibility during periods of drought. Complying with the UAVFMP would increase the average flows by 0.5 cfs and would result in meeting flow targets two days more than if Colorado Springs did not participate in the UAVFMP. Average flows below Highway 115 would be similar to existing conditions. Minimum flow targets of 190 cfs at the site of the Fremont County Rainbow Park Wastewater Treatment Facility discharge would be met 358 days per year, two days more than existing conditions.

Arkansas River through Pueblo

Colorado Springs would participate in the FMP, resulting in FMP targets being met 224 days, four more days than existing conditions, during the boating season. Average flow rates would decrease by 85 cfs compared to existing conditions. Average annual flow rates decrease because more water is exchanged per day outside of boating season.

Lower Arkansas River

The Project diverts and returns water well above this section of the Arkansas River and has little impact on flow rates or water quality in the Lower Arkansas River.

Fountain Creek

Average annual flow in Fountain Creek at Pueblo would increase to 273 cfs, compared to 196 cfs for existing conditions. Impacts to Fountain Creek are further discussed in section 17.172.120.I. of this application.

Pueblo Reservoir

The SDS project includes a raw water intake at Pueblo Dam that diverts a maximum average annual volume of 65,300 AF for the Applicant. At maximum operation in 40 years, the SDS project is projected to change average reservoir levels by less than 3.5 feet. The effect of the SDS project on the average monthly overall storage contents and average water surface elevation for Pueblo Reservoir over 40 years are presented in **Table F-1**.

TABLE F-1
Storage Impacts From the Project in Year 2046

	Average Storage (ac-ft)		Average Water Surface Elevation (ft)	
Month	**Existing**	**Project**	**Existing**	**Project**
Oct	149,000	140,500	4848.9	4845.4
Nov	152,400	142,400	4850.0	4846.3
Dec	167,700	154,700	4854.9	4850.6
Jan	183,500	169,000	4859.7	4855.3
Feb	195,800	180,800	4863.3	4858.9
Mar	203,500	188,800	4865.6	4861.2
Apr	193,900	181,900	4863.5	4859.6
May	181,800	174,500	4860.1	4857.2
Jun	177,600	172,800	4858.4	4856.5
Jul	171,700	166,600	4856.2	4854.0
Aug	158,900	153,000	4852.1	4849.4
Sep	150,200	143,100	4849.3	4846.0
Average	173,700	163,900	4857.0	4853.5

Source: DEIS, Chapter 3 – Surface Water Hydrology Effects, 2008

Efficient Utilization of Water

The Applicant's Water Resources Plan (1996) considers a wide range of alternatives and recommends four broad options that provide a diverse, flexible and low cost supply of water for customers. One of the options included is conservation. More information of the Applicant's efficient utilization of water is provided in 17.172.120.B.(6). This section reflects

the Applicant's efforts during the planning, design and operation of the Project to implement principles of resource conservation, energy efficiency and recycling and reuse.

(6) Floodplains, Wetlands and Riparian Areas

(a) Map and/or description of all floodplains, wetlands, and riparian areas to be affected by the Project, including a description of the types of wetlands, species composition, and biomass.

(b) Description of the source of water interacting with the surface systems to create each wetland (i.e., sideslope runoff, over-bank flooding, groundwater seepage, etc.).

(c) Description of impacts and net effect that the Project would have on the floodplains, wetlands and riparian areas.

Description of Floodplains, Wetlands, and Riparian Areas

Floodplains

The impact of the SDS project on flood flows is presented in **Table F-2**. The table shows both the direct effects (effects associated with the proposed SDS project components) and cumulative effects (effects of all reasonably foreseeable actions within the study area). The direct effects analysis most clearly describes the impacts associated with SDS project while the cumulative effects analysis describes a more complete representation of future conditions by incorporating changes within the surrounding communities. The data indicates low levels of change, if any, in flood attenuation. However, no significant degradation of wetlands and riparian habitat will occur. New development practices, such as the storm water enterprise, will positively impact cumulative effects in the long-term. Additional information on the impacts to Fountain Creek is included in section 17.172.120.I.

TABLE F-2
Project Impacts on Flood Flows – values in cfs

	Direct Effects			Cumulative Effects		
	2-year	10-year	100-year	2-year	10-year	100-year
Existing	4,700	16,000	44,000	4,700	16,000	44,000
Project with JCCR	4,400	15,000	41,000	4,700	16,000	44,000
Project with UWCR	4,700	16,000	44,000	5,000	16,000	47,000

Source: DEIS, Chapter 3 – Water Resources Effects, 2008)
JCCR = Jimmy Camp Creek Reservoir
UWCR = Upper Williams Creek Reservoir

Existing Wetlands and Riparian Habitat

Wetlands were delineated in the field periodically from December 2003 to February 2007 in areas potentially directly impacted by the Project following methods outlined in the Corps of Engineer's Wetland Delineation Manual (Corps 1987). Wetland functions were evaluated using the Montana Wetland Assessment Method, which assigns wetlands to the following categories based on total functional points and other criteria.

- Category I: Wetlands of exceptionally high quality that are generally rare in the state. Category I wetlands can provide primary habitat for federally-listed threatened or endangered species; represent a high quality example of a rare wetlands type; provide irreplaceable ecological functions (e.g., are not replaceable within a human lifetime, if at all); exhibit exceptionally high flood attenuation capability; or are assigned high ratings for most of the assessed functions and values resulting in the total actual functional points >80 percent of total possible functional points.
- Category II: Wetlands that are more common than those in Category I, provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are unique in a given area, or are assigned high ratings for many of the assessed functions and values resulting in the total actual functional points >65 percent of total possible functional points.
- Category III: Wetlands that are more common, generally less diverse, and often smaller and more isolated than those in Category I and II. They can provide many functions and values, although they may not be assigned high ratings for as many parameters as Category I and II wetlands.
- Category IV: Wetlands that are generally small, isolated, and lack vegetative diversity. These sites provide little in the way of wildlife habitat and are often directly or indirectly disturbed. Wetlands are Category IV when they rate low for uniqueness, production export/food chain support, and the total actual functional points <30 percent of total possible functional points.

The pipeline alignment in northern Pueblo County traverses through dry rangeland with no wetlands and only infrequent riparian shrubland and grassland along intermittent drainages. Near State Highway 50, the pipeline alignment crosses two intermittent drainages, both with cattail-dominated wetlands and surface water. These wetlands are classified as riverine palustrine emergent. Narrow wetlands along small streams such as these are Category III wetlands according to the Montana Wetland Assessment Method and typically rate low for flood attenuation, short- and long-term surface water storage, uniqueness, and recreation/education potential; moderate for general wildlife habitat and production export/food chain support; and moderate to high for sediment/nutrient/ toxicant removal and sediment/shoreline stabilization (DEIS, Wetlands, Waters, and Riparian Resources Technical Report, 2007).

The intake, JPS, and powerlines would be located below Pueblo Reservoir dam on property owned by the federal government. This area includes a reach of the Arkansas River, which has a willow-dominated wetland complex below the dam and more narrow bands of wetlands along the banks. These wetlands are classified as riverine palustrine emergent or scrub-shrub. These wetlands are Category II wetlands and in general rate moderate to high for most functions and values. Other locations in this area have a dominance of wetland indicator species such as sandbar willow or saltgrass; however, hydric soils and wetland hydrology indicators were not present, and those areas were not delineated as wetlands. Sandbar willow-dominated riparian shrublands and cottonwood dominated woodlands are found throughout this area. Mesic shrublands and grasslands within the drainages extend away from the Arkansas River. No wetlands are associated with the JPS site (DEIS, Wetlands, Waters, and Riparian Resources Technical Report, 2007).

Impact to Wetlands and Riparian Habitat

Figures N-1 through N-3 in Appendix N show the riparian habitat found within the Project area in Pueblo County. **Table F-3** presents the acreage of affected wetlands, waters, and riparian vegetation in Pueblo County. Based on the predominance of Class II and III wetlands and an estimated nine acres of permanent direct effects, the impact to wetlands and riparian habitat is considered low, based on the quantity of like habitat along the entire Arkansas River course upstream of Pueblo Reservoir and downstream to the east of Pueblo County.

TABLE F-3
Permanent and Temporary Direct Effects on Wetlands, Waters, and Riparian Vegetation

Resource	Permanent Direct Effects (acres)	Temporary Direct Effects (acres)
Wetlands		
Wetland[1]	0.5	0.1
Waters		
Stream [2]	0.2	0.4
Ditch[1]	0	0
Pond or Lake[1]	0	0
Riparian Vegetation		
Riparian Grassland[3]	0	0
Riparian Shrubland[3]	7	2
Riparian Woodland[3]	1	0

Notes:
[1]Wetlands, ditches, and ponds or lakes are measured in acres (rounded to the nearest 0.1).
[2]Stream (streambed) is measured in miles (rounded to the nearest whole number).
[3]Riparian grassland, riparian shrubland, and riparian woodland are measured in acres (rounded to the nearest whole number).

Source: Data provided by MWH

The wetlands within the project area are shown in **Appendix N** and their classifications, species composition, wetland functional category, water source, area of permanent effects, and area of temporary effects are presented in **Table F-4**. Both temporary and permanent effects to wetlands and riparian habitat are anticipated to not create any significant adverse impacts to the environment. Impact avoidance and mitigation measures to minimize impacts to these critical habitat types are discussed in detail in Section 17.172.120. H.

TABLE F-4
Wetland Information

Wetland I.D.	Classification	Species Composition	Wetland Functional Category	Water Source	Permanent Effects (Acres)	Temporary Effects (Acres)
PW2-1	Slope palustrine emergent	Alkali muhly (*Muhlenbergia asperifolia*), rabbitsfoot grass (*Polypogon monspeliensis*), cattail (*Typha latifolia*)	III	Groundwater Seepage	0	0.005
PW2-2	Riverine palustrine emergent	Softstem bulrush (*Schoenoplectus tabernaemontani*)), cattail, alkali muhly, foxtail barely (*Hordeum jubatum*)	III	Groundwater Seepage	0.026	0.085
PW3-1	Riverine palustrine emergent	Foxtail barley, field rush (*Juncus* sp.), orchardgrass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pratensis*)	II	Adjacent to the Arkansas River: Seasonal overbank flow and highwater table	0	0
PW3-2	Riverine palustrine emergent and palustrine scrub-shrub	Sandbar willow (*Salix exigua*), redtop (*Agrostis gigantea*), foxtail barley, horsetail (*Equisetum arvense*), orchard grass	II	Adjacent to the Arkansas River: Seasonal overbank flow and highwater table	0	0
PW3-4	Riverine palustrine emergent and palustrine scrub-shrub	Sandbar willow, field rush	II	Adjacent to the Arkansas River: Seasonal overbank flow and highwater table	0	0
PW3-5	Riverine palustrine emergent and palustrine scrub-shrub	Sandbar willow, field rush, foxtail barley	II	Adjacent to the Arkansas River: Seasonal overbank flow and highwater table	0.002	0.002
PW3-6	Depressional palustrine emergent and palustrine scrub-scrub	Saltgrass (*Distichlis spicata*), alkali yellowtops (*Flaveria campestris*), swamp sow-thistle (*Sonchus uliginosus*), showy prairie gentian (*Eustoma grandiflorum* ssp..*russlliarum*), sandbar willow	II	Groundwater Seepage	0.380	0
PW3-7	Depressional palustrine emergent and palustrine scrub-scrub	Saltgrass, alkali muhly, sacaton (*Sporobolus airoides*), sandbar willow	III	Groundwater Seepage	0	0

Source: (DEIS, Chapter 3-Wetlands, Waters, and Riparian Resources Effects, 2007)

(7) Terrestrial and Aquatic Animals and Habitat

(a) Map and/or description of terrestrial and aquatic animals including the status and relative importance of game and non-game wildlife, livestock and other animals; a description of streamflows and lake levels needed to protect the aquatic environment; description of threatened or endangered animal species and their habitat.

(b) Map and description of critical wildlife habitat and livestock range to be affected by the project including migration routes, calving areas, summer and winter range, and spawning beds.

(c) Description of the impacts and net effect that the Project would have on terrestrial and aquatic animals, habitat and food chain.

Description of Terrestrial, Aquatic Animals

Terrestrial Animals

Wildlife in the Project area generally consists of species adapted to human-altered environments, such as suburban areas and agricultural lands. Wildlife will be temporarily disturbed from construction activities that would cause temporary avoidance of the area by some species. There are no federal threatened, endangered, or candidate wildlife habitat in the Project area. The Project will not significantly degrade terrestrial animal life or their habitats. Mitigation measures are further outlined in section 17.172.120 H.

Figures P-1 through P-5 in Appendix P show terrestrial animal habitat within the Project area.

Several species listed by Colorado as state threatened, endangered, or species of special concern have the potential to occur in the Project area. Species that have been described as rare, vulnerable, or imperiled in Colorado by the Colorado Natural Heritage Program (CNHP) were considered in the DEIS. Of the CNHP-ranked species, only S1 and S2 species, defined as imperiled or critically imperiled in Colorado, were also considered.

The Project would have minor adverse effects on species associated with prairie dog towns, because impacts on their habitat would be small on a regional scale. The Project will have no impact on cliff and canyon species, including townsend's big-eared bat, the peregrine falcon, moss' elfin, and mottled duskywing. Additional suitable habitat for the mountain plover exists in extensively grazed or shortgrass prairie in Pueblo County. Because this species inhabits low growing vegetation (<6 inches) with extensive bare ground and minimal shrubs, suitable habitat for this species declines west of I-25.

The Project will have minor effects on migratory predatory birds, amphibian or reptile habitat. Potential impacts and mitigation measures will be coordinated with the CDOW in the project planning phase. There are also impacts to non-state listed game species. Two species, mule deer and pronghorn, are impacted, because the Project passes through their winter range. The Project would have a negligible effect on large game winter range and minor temporary effects on movement corridors (DEIS, Chapter 3 – Wildlife Effects, 2007).

Aquatic Animals

Pueblo Reservoir contains a mix of many different species of fish. The two-tiered fishery contains rainbow trout as the coldwater species and numerous warm water species. Since 1999, CDOW has collected 17 fish species and three hybrids. Most of these species are game fish, providing opportunities for recreational fishing. Gizzard shed is the predominant forage fish species. CDOW annually stocks the reservoir with a variety of game fish species and hybrids. Channel catfish, largemouth bass, rainbow trout, walleye and wiper were stocked each year between 1999 and 2004. No data was available on the benthic invertebrate community of Pueblo Reservoir. The community probably consists of midges and worms typical of reservoirs.

The DEIS used Indicators of Hydrologic Alteration (IHA) to evaluate impacts to aquatic life. The IHA method summarizes changes in hydrology using parameters relevant to habitat conditions for fish and invertebrates. There are 33 parameters that can be used for an IHA analysis. **Table F-5** shows these parameters and their potential ecosystem influences. The DEIS only used the parameters that were directly related to the habitats being analyzed in the project area.

TABLE F-5
Indicators of Hydrologic Alteration

IHA group	Hydrologic parameters	Ecosystem influences
Magnitude of monthly water conditions	1. Mean value for each calendar month	1. Availability of habitat for aquatic organisms 2. Availability of soil moisture for plants 3. Availability of water 4. Reliability of water supplies for wildlife 5. Effects of water temperature and dissolved oxygen
Magnitude and duration of annual extreme water conditions (mean daily flow)	1. Annual 1-day minima 2. Annual 3-day minima 3. Annual 7-day minima 4. Annual 30-day minima 5. Annual 90-day minima 6. Annual 1-day maxima 7. Annual 3-day Maxima 8. Annual 7-day maxima 9. Annual 30-day maxima 10. Annual 90-day maxima 11. Number of zero-flow days 12. 7-day minima/mean for year	1. Balance of competitive and stress-tolerant organisms 2. Creation of sites for plant colonization 3. Structure of river channel morphology and physical habitat conditions 4. Soil moisture stress in plants 5. Dehydration in wildlife 6. Duration of stressful conditions 7. Distribution of plant communities
Timing of annual extreme water conditions	1. Julian date of each annual 1-day maxima 2. Julian date of each annual 1-day minima	1. Predictability and avoidability of stress for organisms 2. Spawning cues for migratory fish
Frequency and duration of high and low pulses	1. Number of low pulses within each year 2. Mean duration of low pulses each year 3. Number of high pulses within each year 4. Mean duration of high pulses each year	1. Frequency and magnitude of soil moisture stress for plants 2. Availability of floodplain habitat for aquatic organisms 3. Effects of bedload transport and channel sediment distribution, and duration of substrate disturbance

TABLE F-5
Indicators of Hydrologic Alteration

IHA group	Hydrologic parameters	Ecosystem influences
Rate an frequency of water condition changes	1. Means of all positive differences between consecutive daily values 2. Means of all negative differences between consecutive daily values 3. Number of hydrologic reversals	1. Drought stress on plants 2. Desiccation stress on low-mobility streamedge organisms

Source: http://www.blm.gov/nstc/resourcenotes/resnotes.html; Note 58

The impact of the Project on reservoir characteristics that affect aquatic life is provided in **Table F-6**. The expected changes in the reservoir will not adversely affect fish and invertebrates in Pueblo Reservoir.

TABLE F-6
Aquatic Life Impacts From Project –Pueblo Reservoir

Parameter	Existing Condition	Project Condition
1-day minimum (ac-ft)	102,600	94,560
7-day minimum (AF)	102,600	94,590
90-day minimum (AF)	118,000	104,700
1-day maximum (AF)	256,800	241,500
7-day maximum (AF)	255,800	241,000
90-day maximum (AF)	239,000	225,200
Date of minimum	30 Sep	30 Sep
Date of maximum	30 Mar	2 Apr
Low pulse count	0	0
Low pulse duration	152	193
High pulse count	1	0
High pulse duration	22	66
Number of reversals	51	48

Source: (DEIS, Chapter 3 – Aquatic Resources Effects, 2007)

The impact of the Project on stream characteristics for the Arkansas River below Pueblo Reservoir that affect aquatic life is provided in **Table F-7**. The expected changes in the stream will not adversely affect fish and invertebrates.

TABLE F-7
Aquatic Life Impacts From Project–Arkansas River below Pueblo Dam

Parameter	Existing Condition	Project Condition
1-day minimum (cfs)	51	52
7-day minimum (cfs)	69	70
30-day minimum (cfs)	86	86
1-day maximum (cfs)	3,923	4,056
7-day maximum (cfs)	3,316	3,125
30-day maximum (cfs)	1,990	1,714
Low pulse count	7	5
High pulse count	6	6
Number of reversals	176	182

Source: (DEIS, Chapter 3 – Aquatic Resources Effects, 2007)

(8) Terrestrial and Aquatic Plant Life

(a) Map and/or description of terrestrial and aquatic plant life including the type and density, and threatened or endangered plant species and habitat.

(b) Descriptions of the impacts and net effect that the Project would have on terrestrial and aquatic plant life.

Existing Vegetation

Vegetation Cover Types

Figures P-1 through P-6 in Appendix P show the vegetation cover types and rare plant communities within the Project area. The mapping methods consisted of field surveys and aerial photograph interpretation for areas with limited access. The Project will not significantly deteriorate terrestrial plant life or plant habitat during construction or operations. Impact avoidance and mitigation measures will be in place to minimize impacts as discussed in this application.

Plant Species and Communities of Concern

There are no federal threatened, endangered and candidate plant species found in the Project area.

A survey of potential habitat in the Project area for plant species and plant communities rated State critically imperiled (S1) and imperiled (S2) found three plant species in the Project area in Pueblo County. Two CNHP-listed vulnerable species (S3), Arkansas River feverfew and showy prairie gentian, occur within the Project area in Pueblo County.

Dwarf milkweed, a Colorado critically imperiled (S1) species, was found on the lower slopes of the piñon/juniper woodland-covered bluffs north of Lake Pueblo State Park on the pipeline alignment. Three small subpopulations totaling fewer than 30 plants were found on the sparsely vegetated lower slopes of low shaley hills.

Rocky Mountain bladderpod, a Colorado imperiled species, was found in the Project area in the hillsides north of Lake Pueblo State Park on the pipeline alignment. Population sizes ranged from a few individuals to over 100 plants. The Project would have only a minor effect on the survivability of this species because it is known from 28 other occurrences, two of which have more than 2,000 individuals, and less than a third of the plants found within the study area would be disturbed.

A small population of golden blazingstar was found within the Project area in Pueblo County with less than ten individuals. The populations were found north of Pueblo Reservoir on the pipeline alignment. This species is usually found on sparsely vegetated shaley hillsides with scattered piñon pines and junipers. The effects from the Project would be minor.

Other plants, not considered threatened, endangered, or of concern that will be impacted include upland and mesic native grasslands, upland native shrublands, mesic introduced shrublands, upland mixed grasslands, upland mixed shrublands, upland introduced grasslands, mesic introduced grasslands, and upland native woodlands (DEIS, Chapter 3 – Vegetation Effects, 2007).

Proposed mitigation measures to protect and mitigate vegetation impacts are described in section 17.172.120.H Monitoring and Mitigation Plan.

Noxious Weeds

Noxious weeds were noted as part of the vegetation surveys conducted for the Project (DEIS, Chapter 3 – Vegetation Effects, 2007). The following species on the State of Colorado Noxious Weed List were found.

- Canada thistle is listed on the State B list, as well as Pueblo Counties' noxious weed lists.
- Field Bindweed is on the State C and Pueblo County lists.
- Kochia is not on the State Noxious Weed List, but is on the Pueblo County's noxious weed list.
- Saltcedar is listed on the State B list and on the Pueblo County Noxious Weed list.

Areas recently disturbed by construction activities are vulnerable to invasion by these aggressive species. Additionally, other noxious weeds not currently found in the analysis area may invade the sites disturbed during construction. Noxious weed control during and after construction minimizes noxious weed infestation and is discussed in section 17.172.120 H.

(9) Soils, Geologic Conditions, and Natural Hazards

(a) Map and/or description of soils, geological conditions, and natural hazards including but not limited to soil types, drainage areas, slopes, avalanche areas, debris fans, mud flows, rock slide areas, faults and fissures, seismic history, and wildfire hazard areas.

(b) Descriptions of the risks to the Project from natural hazards.

(c) Descriptions of the impact and net effect of the Project on soil and geologic conditions in the area.

Soils and Geological Conditions

The soils in Pueblo County are dominated by the Midway, Razor, and Limon soils. The soils are similar and vary by depth to bedrock. The Midway and Razor soils are less than 40 inches deep; the Limon soil is greater than 40 and typically at least 60 inches deep. All three soils have clayey textures, a moderate susceptibility to wind and water erosion, and a high shrink/swell potential (DEIS, Chapter 3 – Soils Section, 2007).

The Project crosses through areas underlain by Pierre Shale in the northern portions and primarily interbedded shale, limestone and sandstone of the Niobrara Formation in the southern portions.

Natural Hazards

The Project would not be located in areas of high susceptibility for landslides and will not cross any active geologic fault, and the risk posed by seismicity to the Project is low. The Project is located in a region with very low peak acceleration values (level of ground shaking or horizontal acceleration during an earthquake) (DEIS, Chapter 3 – Geology Section, 2007).

The portion of the Project that is covered by the Pueblo County Community Wildfire Protection Plan will be located in minimal to moderate wildfire hazard areas and will not be located within high to extreme wildfire hazard areas. Construction operations will implement fire precautions common to these activities, such as using spark arrestors on all equipment, no smoking regulations, and fire extinguisher equipment at "hot work" areas such as welded pipe joint locations and structural steel erection. Emphasis will be placed on training and will be part of the overall SDS Project health & safety training and awareness given to all personnel working on site.

Lightning strikes are a potential hazard, primarily to construction workers around metal objects associated with steel frame and pipe installation. Safety regulations will be enforced on site with regard to work stoppages due to lightning and thunderstorms in the vicinity of the work area.

Impact to Soils and Geologic Conditions

Soil productivity would decrease temporarily in disturbed areas and would slowly return to pre-disturbance productivity following construction and reclamation. Some loss of soil material from wind and water erosion would be likely during construction and until disturbed areas are revegetated. Best Management Practices would be implemented to minimize soil loss (DEIS, Chapter 3 – Soils Section, 2007).

Drainages are displayed on the preliminary plans. A scour analysis of each drainage has been conducted and recommendations from the analysis will be implemented in the final design of the Project. Drainages will be restored back to pre-construction conditions or bank stabilization will be implemented as required.

The effects of soil stability on the Project will be negligible. Standard engineering practices involving geotechnical investigations prior to design and construction ensures that appropriate measures are incorporated properly address areas of instability.

The Project would be affected by corrosive soils, shallow bedrock, and expansive soils, the impacts of which will be addressed through proper construction techniques. To protect the pipeline from corrosive soils, a cathodic protection system using anodes will be used. Shallow bedrock encountered will be broken through by either blasting or ripping of the rock. The effects of expansive soils will be accounted for encasing the pipeline in controlled low strength material (i.e. flow-fill) and by adding flexible coupling where ridged structures or concrete encased pipe join the flow-fill encased pipeline.

The Project is not subject to significant risk from natural hazards, and will not significantly deteriorate soils and geologic conditions nor cause significant erosion, sedimentation or flooding. Geologic data is included in Appendix Q.

17.172.120.G Hazardous materials description

(1) Description of all hazardous, toxic, and explosive substances to be used, stored, transported, disturbed or produced in connection with the Project, including the type and amount of such substances, their location, and the practices and procedures to be implemented to avoid accidental release and exposure.

Hazardous Materials

During Construction

Hazardous materials to be used during construction include:

- Paint
- Propane
- Radioactive material (e.g. x-ray equipment, soils testing equipment)
- Explosive material (limited use as needed)

Contractors will create and implement Health, Safety, and Environment plans in compliance with Federal, State, and Local handling, storage, disposal, and transportation regulations prior to mobilizing on-site for Project construction. These plans will include spill prevention and response plans, and measures to protect the environment from accidental release and exposure.

Paint

During Construction

JPS: Low emission volatile organic compounds (VOCs) paint will be used during the construction of JPS. Paint will be used on above ground components within the pump station such as pipe, valves, pumps, motors, doors, walls, exposed beams, etc. Paints will be stored in the construction staging area in manufacturer supplied paint cans within fire proof cabinets, which will be locked during non-working hours.

Raw Water Pipeline: Minimal amounts of paint will be used during construction. Paint will not be kept on-site during non-working hours, and will be transported to and from the construction site by the contractor on an as needed basis.

During Operation

Paint will not be stored on-site during Project operation, and will be brought on-site for touch-up painting as needed.

Propane

During Construction

JPS: A 1,000 gallon self contained tank will be required during construction of JPS. The tank will be located in the construction staging area, which will be fenced and secured during non-working hours.

Raw Water Pipeline: Minimal amounts of propane will be used during construction. Portable 5 gallon propane tanks will be brought on-site when needed, and will not be kept on the construction site during non-working hours.

During Operation

JPS: Four-1,000 gallon self contained tanks will be required during operation of JPS. These tanks will be buried underground, and fabricated and tested in accordance with the American Society of Mechanical Engineers (ASME) boiler and pressure vessel code Section VIII Division I for unfired pressure vessels, and National Fire Protection Association (NFPA) 58/Title 8 for 250 psig maximum operating pressure. The tanks will be installed underground and tested in compliance with NFPA 54, NFPA 58, and Pueblo County codes.

Raw Water Pipeline: Propane will not be required for operation of the raw water pipeline.

Radioactive Material

During Construction

Specialty contractors will be used to conduct tests and inspections that require the use of radioactive material, and will ensure safe procedures are followed that comply with Federal, State, and Local regulations, as well as SDS project Health, Safety, and Environment plans. Equipment containing radioactive material will not be kept on-site during non-working hours.

Soil Density/Compaction Testing: Soil density/compaction testing equipment will be used during construction of JPS and the raw water pipeline. At JPS, soil density/compaction tests will occur during fill activities once every lift (approximately every 8-inches). These same tests will be carried out along the raw water pipeline alignment for trench backfill (approximately one test per 8-inch lift) carried out about every 500 feet along the pipeline route. This testing equipment contains minimal amounts of radioactive material.

A nuclear moisture-density gauge measures in-place soil density and moisture content in one shielded unit. Gauges contain a small gamma source (about 10 mCi) such as Cesium-137 on the end of a retractable rod. Soil density is determined by measuring the interaction between electrons in the soil and gamma rays emitted from the source. Moisture is measured using a neutron source, such as Americium-241:Beryllium, also placed inside the gauge.

The nuclear moisture-density gauge has been in use on construction sites for over 30 years for compaction control of soil, aggregate, and asphalt. Gauges contain sealed sources, which have been designed to meet the durability testing requirements of the International Atomic Energy Agency (IAEA) for certification as "special form" radioactive materials. Special form sources are tested to demonstrate that they are unlikely to release their radioactive contents even under extreme conditions. Individuals or organizations desiring to possess and use portable nuclear gauges must obtain a license issued by the United States Nuclear Regulatory Commission (USNRC). Nuclear gauge operators are required by USNRC regulations to receive formal radiation safety training and meet U.S. Department of Transportation (DOT) training requirements. Operators also must complete a certified Nuclear Gauge Safety Operator Course that includes radiological protection regulatory requirements, transportation regulations, personnel monitoring, and accident response. Compaction testing using the nuclear moisture-density gauge is standardized under the American Society for Testing and Materials (ASTM) standard D-6938, American Association of State Highway and Transportation Officials (AASHTO) T 310, and CDOT Procedure CP 80-08.

A leading manufacturer of nuclear moisture-density gauges is Troxler Electronic Laboratories, Inc. A brochure for one of their gauges is provided in Appendix R. More information can be obtained from their website: http://www.troxlerlabs.com/ .

X-Ray Welding Inspection: X-ray welding inspection will be conducted on about 10 percent of raw water pipeline welds, and will be used to inspect groove type welds and randomly selected welds to ensure an added level of quality assurance for proper welding and installation of the raw water pipeline.

A radiographic exposure device is commonly used for these types of inspections. These devices are self-contained, and typically contain small amounts of Iridium-192, which is shielded by depleted uranium to prevent exposure to the environment. An x-ray is taken of the weld, which will show whether or not the weld is complete. Radiographic exposure devices used during construction will be tested and manufactured to meet the requirements of American National Standards Institute (ANSI) N432-1980, International Organization for Standardization (ISO) 3999-1 2000E, IAEA TS-R-1 (1996), USNRC 10CFR34, 10CFR71 and 49CFR173. Further quality assurance protocols accredited to ISO 9001 (2000) and approved in accordance with USNRC 10CFR 71, Subpart H, and reporting requirements in accordance with USNRC 10CFR21, are required. Radiographic exposure device operators will be required to receive formal training to meet USNRC and U.S. Department of Transportation training requirements, and to be certified by an independent certifying organization of radiographers.

A leading manufacturer of radiographic exposure devices is QSA Global, Inc. A brochure for one of their devices is provided in Appendix R. More information can be obtained from their website: http://qsa-global.com/SENTINEL.html.

During Operation

Radioactive material will not be used during operation of SDS project facilities.

Explosive Material

During Construction

JPS: Blasting is not anticipated to be required for construction of JPS.

Raw Water Pipeline: Blasting may be required north of Pueblo Reservoir to loosen and fracture mass rock for removal. Materials used for blasting may include ammonium nitrate or other explosive material, and blasting caps. If blasting is required, the contractor will be required to develop an approved blasting plan and obtain a mandatory State of Colorado Explosive Permit issued by the Division of Oil and Public Safety, and if necessary, a Hazardous Materials Transportation Permit if transporting large amounts of explosive material (criteria to be determined by the State), prior to blasting activities.

Blasting materials will not be stored on-site overnight. Materials would be transported to the construction site daily, depending on the amount needed for that particular day. Security protocol and permit conditions will be followed at all times. This would prevent accidental release or improper usage by unauthorized individuals.

During Operation

Explosive materials will not be used during operation of Project facilities.

(2) Location of storage areas designated for equipment, fuel, lubricants, and chemical waste storage with an explanation of spill containment structures.

Contractors will create and implement Health, Safety, and Environment plans in compliance with Federal, State, and Local regulations prior to mobilizing on-site for Project construction. These plans will include measures to protect the environment from unintended releases. Spill containment kits will also be required in working areas where there are risks of potential spills in order to contain and remove spills.

Fuel, Lubricants, and antifreeze

During Construction

Equipment: Redundant locking mechanisms will be used on equipment hydraulic and oil lines to help avoid leaks or spills.

JPS: A 1,000 gallon self contained diesel fuel tank will be required during the construction of JPS. The tank will be stored in a secondary containment unit designed to contain 1.5 times the volume of the tank in order to contain leaks or spills to prevent release into the environment. The diesel fuel tank will be located in the construction staging area, which will be fenced and secured during non-working hours.

Approximately 25 gallons of oil lubricant and five gallons of antifreeze will be stored in the construction staging area in specialized containment/distribution storage containers, designed with built-in spill prevention and containment for use on equipment as needed. Oil lubricants and antifreeze will be securely stored in fireproof locked cabinets during non-working hours.

Raw Water Pipeline: During construction, it is anticipated that oil lubricants and antifreeze will be brought on-site as needed. These liquids will not be kept on-site during non-working hours.

During Operation

JPS: Approximately 5 gallons of oil lubricants will be stored in specialized containment/distribution storage containers within a fireproof locked cabinet inside JPS.

Raw Water Pipeline: Operation of the raw water pipeline will not require storage of fuel, lubricants, or antifreeze.

Chemical Waste

During Construction

Chemical waste is expected to be minimal, and will consist of small volumes of paints, solvents, lubricants, etc. These types of chemical waste are commonplace among construction projects. Efficient use of these materials during construction will minimize waste generated by the Project.

Chemical waste (e.g. spent oil, lubricants, antifreeze, paint, etc.) will be stored in fire proof chemical waste storage containers, with placards and labels, and will be locked and stored in the secured construction staging area(s).

During Operation

Only small amounts of chemical waste in the form of lubricants are expected during operation of JPS. These will be stored in a designated cabinet and periodically removed for proper disposal.

There are no chemical wastes associated with the raw water pipeline.

Equipment

During Construction

JPS: A staging area for JPS will be located on the construction site at a location to be specifically determined prior to the start of construction, and will remain at that location during the duration of JPS construction. The staging areas will be fenced and locked to prevent unauthorized access. Large equipment (e.g. loaders, backhoes, construction vehicles, etc) will be locked when parked in the staging area.

Raw Water Pipeline: Staging areas for raw water pipeline construction will be located within the pipeline easement and will follow the working area along the alignment.

During Operation

Construction equipment containing fuel, lubricants, antifreeze, and chemical waste will not be used during operation of Project facilities.

17.172.120.H Monitoring and Mitigation Plan

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030.(G), (H), (I), (M).

(1) Description of all mitigation that is proposed to avoid, minimize or compensate for adverse impacts of the Project and to maximize positive impacts of the Project.

(a) Describe how and when mitigation will be implemented and financed.

(b) Describe impacts that are unavoidable that cannot be mitigated.

When will Mitigation be Implemented?

The Applicant possesses significant knowledge in planning, designing, and implementing projects that minimize adverse impacts to citizens, communities, economies, and the environment. The Applicant seeks to provide mitigation measures that ensure a successful project for all stakeholders. A proper construction project focuses not only on the actual mitigation measures, but more importantly on the identification of potential impacts and strategies designed to avoid those impacts to the extent possible.

Mitigation begins in the planning and design phase of the SDS project. The general area of Project impact was assessed to determine a specific location for the Project equipment and facilities that would create the least amount of impact and thus the least amount of mitigation required. The Project design continues the process of continuously evaluating potential impacts and evaluating potential mitigation strategies that reduce nuisance, time, and cost.

Prior to construction, mitigation measures are being implemented in the way of community outreach and dissemination of information to citizens, well in advance of any construction activities. This allows questions and concerns to be addressed prior to field activities commencing. Most community and citizen concerns can be alleviated with proper information and education regarding efforts being taken by the Project to protect and minimize impacts.

Mitigation during the construction mobilization phase will include initiatives such as clear signage and detours; containment of work areas to protect the public, and measures to protect wildlife, aquatic life and vegetation. Construction personnel will receive briefings as part of the mitigation measures to ensure that individuals working on the Project are aware of the sensitive elements of the work areas, proper impact avoidance strategies and mitigation measures.

During construction, mitigation measures focus on building and maintaining systems that were designed to protect the public, wildlife, aquatics, and vegetation from the impacts of construction. Post-construction activities focus on repair of impacted areas and returning or improving the area to conditions prior to construction.

Mitigation efforts will occur throughout the SDS project, from early planning to final clean-up and restoration. As much, or more, effort must be taken to properly plan the avoidance of impacts and protect against impacts than providing restoration.

The following listing provides specific details on mitigation planning, avoidance, protection and restoration efforts that are proposed for the SDS project. Proposed mitigation efforts include, but will not be limited to, the following (additional mitigation details can be found in the DEIS attached):

Noise and Vibration

The predominance of the SDS project will occur away from inhabited areas or areas with high public visitation, therefore noise and vibration associated with construction will be minimal to the public. In those areas that may have a potential noise and vibration impact, a mitigation plan will be prepared and implemented. The mitigation plan steps start in the planning phases with the selection of proper equipment, sound suppression measures, barricades and other strategies that could be used in sensitive areas. Public awareness of the potential noises, vibration and their levels, will be important to create an awareness well before the start of work activities. Noise and vibration levels of permanently operating equipment, such a large electric motor pumps, will be suppressed by enclosure in specially designed buildings to minimize their effect. Other measures to minimize noise and vibration include:

- Construction equipment used by contractors will function as designed, be properly maintained, and conform to applicable noise emission and safety standards.
- Unless previously authorized, contractor will adhere to project work hour restrictions (7 a.m. to 6 p.m.) within 500 feet of residences, hospitals, schools, churches, and libraries.
- Access to construction areas will be restricted so that the public could not be in close proximity to loud equipment or blasting.
- Coordinating work hours with local traffic flows.
- The pumping facilities will be housed in structures designed to minimize radiated noise outside the structure, and will meet local noise ordinance requirements.

The Project is not anticipated to have a significant noise and vibration impact on local structures, citizens, environment or community.

Air Quality

The primary source of air emissions during construction of the Project will be related to construction operations. These operations will be typical of large civil earthmoving projects and will include dust and diesel exhaust. Dust can be effectively controlled via numerous methods, including moistening the soil, shortening distances vehicles have to travel and the application of temporary road surface material to name a few. The Project will incorporate these types of measures in a dust control plan developed before Project operations begin. Diesel operated equipment used on-site will be required to meet all State and Local emission standards before being allowed to operate on-site. Additional measures will include:

- A fugitive dust control plan will be prepared, submitted, and implemented as required by CDPHE's Air Pollution Control Division.
- Standard control practices, such as watering, will be developed and implemented to minimize particulate and dust emissions from construction work sites as specified in the fugitive dust control plan.

- Construction equipment (especially diesel equipment) will be ensured to met opacity standards for operating emissions.
- Disturbed areas will be revegetated.

The Project will not significantly degrade air quality.

Visual Resources

It is the intent of the SDS project to minimize the obtrusiveness of permanent and temporary installed structures. Efforts will be made to minimize the visual impacts structures may have to local citizens and the community. The Project will not significantly degrade existing visual quality. Typical mitigation measures may include:

- Disturbances associated with the construction of facilities will be revegetated and/or landscaped with plants.
- Underground pipeline excavations will be restored to pre-existing grades.
- Pump station equipment in structures will be matched to the architectural characteristics of the surrounding structures.
- Power lines will be constructed with non-specular (not shiny) wire, non-reflective and opaque insulators, and light-colored, non-reflective finished poles.

Wetlands, Waters, and Riparian Vegetation

The Applicant recognizes the value that wetlands and riparian ecosystems add to the semi-arid Colorado environment. The Applicant also recognizes the sensitive nature of these ecosystems and importance of significant planning to avoid impacts. Based on current designed alignments, there are no anticipated wetland or riparian habitat crossings in Pueblo County, and the Project will not significantly degrade wetlands or riparian habitat. Typical measures for mitigation of these sensitive areas would include:

- Final alignments and facilities will be designed to first and foremost, minimize wetland impacts. No wetland or riparian crossings are anticipated in the proposed raw water pipeline alignment.
- Unavoidable impacts will be mitigated to wetlands in areas of temporary, short-term effects such as pipeline crossings, on-site at the place of disturbance with similar wetlands and soils to replace existing wetland functions and values.
- Alternative construction methods for pipeline crossings (i.e. directional drilling v. open cut) will be assessed to minimize wetland/stream impacts.

Wildlife

Colorado's wildlife form a significant part of this state's recreational opportunities and therefore constitutes a large contribution to the area's economy. SDS project participants recognize this importance, not only from an economic standpoint, but also a quality of life and ecosystem diversity standpoint. Avoiding wildlife impacts is a significant component to the planning and design process. Where potential wildlife encounters may occur during construction of the Project, mitigation or protection efforts will be taken to minimize impact. Mitigation measures can never take the place of sound avoidance planning. The Project will not significantly degrade terrestrial or aquatic animal life or their habitats. The SDS project efforts may include:

- Best management practices and state and federal guidelines will be used to conform to minimize short- and long-term effects on wildlife.
- Promptly revegetating disturbed areas may restore native wildlife habitat.
- Clearance surveys for state listed species will be conducted following standard protocols prior to construction.
- Proposed avoidance and mitigation measures for wetlands will be followed to mitigate impacts to state-listed amphibian species.
- Seasonal restrictions will be imposed on construction where needed to avoid sensitive large game winter habitat.
- Temporarily disturbed areas will be revegetated with native species that provides species diversity and food and cover for large game and other wildlife.
- Raptor nest surveys will be conducted prior to construction. Recommended buffers (generally ¼ to ½ mile) and seasonal restrictions will be imposed around active raptor nest sites and heron rookeries during construction.
- Artificial nests will be constructed in suitable habitat or prey habitat enhanced to mitigate any unavoidable loss of raptor nests.
- Construction schedules will be developed to avoid impacts to nesting migratory birds. If construction is scheduled to occur during the nesting season (April 1 through August 31) in areas where migratory birds may nest, a qualified biologist will conduct a nesting bird survey prior to the commencement of construction activities to determine the presence of migratory birds and their nests. If an active nest is detected, a buffer zone between the nest and the limit of construction would be flagged and avoided, or construction would be scheduled outside of the nesting season.
- Nesting deterrents (netting and other physical deterrents) will be installed to prevent nesting before April 1 and deterrents removed no more than 24 hours before initiation of construction.
- Pre-construction surveys will be conducted for Botta's pocket gopher. USFWS experts will be consulted to identify species located in and around the work areas.

Vegetation

Vegetation is critical to protection of the working area for several reasons, and will be factored into avoidance strategies and mitigation plans. Vegetation is critical for erosion control, topsoil preservation, wildlife species support, maintaining ecosystems and aesthetic purposes. Planning for protection of existing vegetation and replacement of vegetation is a large component of any construction mobilization process, including the design of on-site traffic lay-outs, placement of storage areas and education of staff to the existence, location and protection of critical plant species. The Project will not significantly deteriorate terrestrial plant life or plant habitat. Mitigation measures may include:

- Existing topsoil will be stored and replaced to a maximum of 6 inches where topsoil previously existed.

- Appropriate native seeds will be used to reseed. If possible, only locally collected seeds will be used, especially when replacing plant communities of concern.
- Trees lost will be replaced with appropriate species.
- Locations of S1 and S2 plant communities of concern and other sensitive vegetation will be reviewed to determine if there are design changes needed to minimize impacts.

The following measures would mitigate for effects on plant species of concern:

- Construction activities will be routed around areas with plant communities of concern and other sensitive vegetation such as large trees to the extent practicable.
- In the appropriate season prior to construction, the areas with known populations of plant species of concern will be resurveyed and each individual plant or area of high density will be relocated. If possible, the construction areas will be adjusted to avoid these plants.
- Plants found nearby but outside of the construction zone, will be protected by fencing or other types of barriers or high density areas.
- If avoiding individual plants is not possible, these individual plants may be transplanted to nearby undisturbed areas; many rare species, however, do not transplant successfully.

The following measures would reduce the spread of noxious weeds:

- Certified weed-free mulch will be used after seeding.
- Appropriate vegetation will be reseeded as soon as practicable after disturbance.
- Only seed that does not contain any noxious weed seed will be used.
- Prior to delivery to the construction site, earthmoving construction equipment will be washed so that noxious weeds are not spread from other construction sites.

Soils

Productive growing soils in the Arkansas River Basin are very shallow and critical to protect. Agricultural soils will require different protection and replacement methods than Sagebrush flats; however, the SDS project soils conservation measures will include strategies for the various encountered areas requiring protection. The Project will not significantly deteriorate soils and geologic conditions nor cause significant erosion, sedimentation or flooding. Mitigation strategies may include:

- Measures will be implemented to minimize the loss of soil material before, during, and after construction.
- The area of disturbance will be confined to define construction limits and limit the time bare soil is exposed.
- Soils within the analysis area will be contained through temporary sediment control measures such as silt fences, sediment logs, trenches, and sediment traps.
- Topsoil will be removed and stored as an initial phase of earthwork operations.
- Woody vegetation will be removed prior to topsoil salvaged and, to the extent possible, topsoil will be salvaged within tree stump roots.

- Topsoil salvage methods will be used, including windrowing topsoil at the limits of construction, and pulling the soil back on slopes during reclamation.
- Selective topsoil will be redistributed to soil deficient areas as needed.
- Topsoil (up to 6-inches in depth), soil amendments, fertilizers, and mulches will be applied as appropriate, and selective seeding will be applied during favorable plant establishment climate conditions to match site conditions and revegetation goals.
- Disturbed areas will be promptly revegetated following construction for long-term soil protection.
- To the extent feasible, irrigated lands will be avoided during final design.
- To the extent feasible, continued use of lands crossed by project facilities will be allowed after construction.
- Where the proposed pipeline crosses prime farmland soils, a soils handling plan will be developed that separates the top 6 inches and the soils between 6 and 36 inches for subsequent reclamation.

Traffic

Traffic control and the protection of existing streets and roadways are paramount to the Project safety and roadway impact mitigation strategy. Traffic management plans will include designs of temporary roadways, detours and road protection measures to minimize the impacts of construction traffic to the community. Most construction traffic will occur over one particular working area for an average 30 to 90 day period. The working face of the pipeline excavation will progress over time, minimizing overall impacts to one particular area. The JPS is the only facility where construction will occur over a longer period. The Project will not create a significant nuisance during construction or operation. Specific measures to mitigate impacts caused by construction traffic may include:

- Trenchless construction will be used appropriately when construction features cross railroad lines, state highways, county roadways, and major city roadways in densely populated areas.
- Traffic control plans will be prepared for approval by state and local traffic authorities and followed by contractors during construction.
- Traffic signage, signals, acceleration, and deceleration lanes will be constructed as directed by state and local traffic authorities for access to the pump station and pipeline access points.
- Improvements to existing access roads or construction of temporary alternate access roads to the pump station and pipeline access points will be constructed as directed by state and local traffic officials.

Geology and Paleontology

The Applicant will work cooperatively with federal and state authorities to identify specific geological and paleontological areas of interest, and protective or salvage efforts that may be required. The Project will not significantly degrade areas of paleontological, historic or archaeological importance. Measures may include:

- A preliminary survey and surface salvage will be conducted prior to construction.
- Monitoring and salvage will occur during excavation.
- Agreements will be made containing provisions for work to cease and have material evaluated by a qualified paleontologist, and work to resume within a specified timeframe.

Hazardous Material

Any valuable mitigation plan includes mitigation measures in the eventuality that hazardous materials are encountered during excavation. The Project mitigation plan will include measures for this eventuality; however, based on an assessment of the proposed pump station and pipeline alignment in Pueblo County, there were no potential sites identified that may have produced hazardous materials or wastes, in, or adjacent to, the area of installation. The Project will not result in unreasonable risk of release of hazardous materials. As precaution the Project will:

- Trained and certified construction personnel will be provided with proper personal protective equipment should hazardous materials be encountered. Containment systems will be employed to eliminate potential releases to the surrounding environment.
- Unexpectedly encountered hazardous materials will be containerized and transported to an appropriate hazardous material/waste disposal facility.

Cultural Resources

Working jointly with experts from various cultural and historical authorities, the Project will work cooperatively to minimize impacts to sites that may contain information regarding area inhabitants and their heritage. Working cooperatively will lead to:

- A Programmatic Agreement implemented and executed between Reclamation, the Advisory Council on Historic Preservation, the Applicant, and the Colorado State Historic Preservation Officer.
- Final alignments and facilities for the selected alternative designed to avoid and minimize effects on cultural resources.
- Avoidance measures will be implemented during construction, including physically marking boundaries around historic property locations in order to avoid construction related impacts where practicable. This practice may include monitoring of such sites during construction activities.
- Sites, where practicable, will be protected through "in-place" protection of those cultural resources that may be subject to occasional impacts.
- Mitigation will be implemented for unavoidable adverse effects that remain after all appropriate and practicable avoidance and protection has been achieved. Cultural resource mitigation will be guided by a Treatment Plan that provides a research design that addresses:
    1) characteristics of the physical environment and the associated culture
    2) related historic contexts and specific property types

3) field and laboratory methods employed while working with historical and archaeological sites and materials

4) proposed work to be conducted on specific historic properties

5) reporting standards

6) standards for curation of project collections in approved curatorial facilities

7) standards for public participation and Native American involvement

- A Discovery Plan will be developed and implemented to provide details relating to:

1) methods and standards for construction monitoring
2) protocols for discovery situations, including the presence of human remains

- A program will be developed to educate the public regarding the importance of cultural resources. The public will be informed about the status of excavations and, where possible, visual displays and explanatory written information will be provided, especially within publicly accessed locations of the project area. Signage and other interpretive techniques may also be implemented as mitigation measures. There will not be any significant impact to cultural, historical or archaeological resources during the Project.

Socioeconomics and Land Use

The SDS project recognizes the need to protect local landowners, residents, and the community from potential construction impacts. Working with residents prior to construction activities and soliciting feedback through community outreach will provide the Applicant with valuable information regarding potential impacts and value of mitigation measures. The Project management plan will incorporate this feedback, as well as other potential measures as those listed below:

- A construction management plan will be developed to outline best management practices to minimize impacts to surrounding properties.
- Open sources of information will be maintained regarding the project, including a project website, information pamphlets, resource center, and other pre-construction informational sources.
- Early and clear expectations will be established regarding the potential impacts and what measures can best alleviate impacts to the residents.
- Affected landowners will be coordinated with along the pipeline route to obtain approvals to enter their land, and negotiated with to secure appropriate agreements to obtain easements, rights-of-way, or purchase of the parcel.

The Project will not create an undue financial burden on existing or future residents of Pueblo County, nor will it significantly impact land use or property rights. In addition, the Project will not significantly affect any current or future sector of the local economy.

Recreation

Recreation in Pueblo County provides citizens and tourists diverse opportunities within and adjacent to the Pueblo State Park. These local and out of County visitors bring a tremendous economic influx to Pueblo County. The Applicant recognizes this County resource and will

devise construction plans to minimize this impact, and ultimately avoid a majority of impacts. It is the Project's intent to hire local Pueblo County contractors for this work. Contractor's employees use these facilities for recreation and appreciate the importance of the resource to the County.

The Project will not have a significant adverse effect on the quality or the quantity of recreational opportunities and experience in the County.

- During short-term construction activities that require trail closures, a safe and reasonable detour will be designated around the project site. Signs will be posted directing trail users.
- Construction activities requiring trail closures will be conducted during winter months when trail use may be lower.

The following measures are proposed to mitigate effects to open space areas during construction:

- Where temporary effects occur within open space lands, affected areas will be revegetated with native vegetation. Follow-up monitoring and maintenance will be provided to control noxious weed infestations and ensure that revegetation efforts are effective.
- In areas with permanent, aboveground project facilities, park facilities that may be affected will be reconfigured and facilities visually screened from other park uses with vegetation, berming, or attractive fencing.

Aquatic Life

The SDS project has studied the potential impacts to aquatic life during construction and operation of the JPS and pipeline. A significant impact to aquatic life from the JPS facility or pipeline is not anticipated, beyond what would be anticipated by a pump station of a significant dam structure. Stream crossings represent the most significant impact to aquatic life along the alignment. A crossing of the Arkansas River just below Pueblo Reservoir Dam to connect the JUM with the JPS is anticipated. The crossing will be designed to minimize impacts to aquatic life by managing some of the key factors affecting aquatic life in streams, primarily silts, temperature, and oxygen levels. Specific mitigation measures will be developed as the SDS project design progresses.

Water Quality

The most effective mitigation measure is a monitoring program at key locations of raw water sources combined with adaptive management strategies. These measures would apply to operation of the project, rather than construction, which is not likely to have significant water quality effects.

How will Mitigation Measures be Financed?

Mitigation measures are considered a cost of the Project and will therefore be estimated and budgeted as a Project cost. Typical mitigation costs, based on industry standard practice for large civil infrastructure projects, are less than two percent of construction costs. As detailed in Section 17.172.120.D of this application, the SDS project will be revenue bond financed.

Unavoidable Impacts that cannot be Mitigated

Not all potential impacts can be avoided, as the Project involves construction. The key to any major construction project is to focus on plans and strategies to avoid impacts (thus the need for mitigations), and to minimize impacts that are unavoidable due to the nature of the work.

Although most impacts are not deemed to be significant in nature, relative to similar civil construction projects, some impacts would be unavoidable and include land disturbance, impacts to wildlife, wetlands, and riparian areas, impacts to historic or archaeological sites, noise, visual impacts, and vibration. These impacts are a part of construction. The mitigation measures and information provided in this application, and the DEIS, will help alleviate the impacts associated with the construction of the SDS project.

17.172.120.I Additional Requested Information

In addition to being responsive to *Pueblo County Land Use Code, Title 17, Chapter 17.172,* the following information also addresses criteria described in *Chapter 17.164* sections 17.164.030.(E),(G),(H),(I),(K),(L).

Responses to Pueblo County - Department of Planning and Development

Request for Additional Information

During a meeting on April 23, 2008, between Pueblo County Department of Planning and Development; and Colorado Springs Utilities, additional information was requested by Pueblo County to supplement efforts in the SDS Project Finding Of No Significant Impact (FONSI) determination and review of the Pueblo County 1041 Permit pre-application submission by Colorado Springs Utilities (Applicant). The following text provides a summary of the information requested, responses to requests by the Applicant and location of supporting documentation, drawings, data, etc. found within the body of this permit application.

(1) Lake levels in Pueblo Reservoir – differences between existing conditions and the proposed project.

To fully implement the SDS Project, Excess Water Storage Contracts must be executed with Reclamation to store water in Pueblo Reservoir. The storage and use of this water will impact Pueblo Reservoir.

The SDS Project DEIS evaluated existing river and stream conditions and those anticipated under a number of possible future scenarios. A direct effects analysis was conducted to determine the impacts from the various SDS Project Alternatives. Direct effects are those impacts that are directly attributed to the SDS Project Alternatives, such as water use in the SDS Project Participants' communities in the year 2046, construction impacts, or impacts related to changes in water flows in streams and rivers. The direct effects analysis most clearly describes the impacts associated with the SDS Project.

Existing conditions represent current operations. In this scenario, SDS Project Participants' water is stored as part of the excess storage capacity via Winter Water Storage Program on a space available basis. The Applicant stores an average of 8,700 AF in the excess capacity under the existing condition. Pueblo Reservoir currently has an average annual storage volume of 173,700 AF, which includes current Fry-Ark storage, occasional flood storage, and other storage, including the excess capacity used by the Applicant and other users.

The Applicant will have formal contracts to store water in Pueblo Reservoir. Water will be stored in Pueblo Reservoir through the use of water rights exchanges. This will allow the Applicant to store water in Pueblo Reservoir and provide the ability to deliver that water to serve their users' demands. These exchanges would be suspended periodically to meet the flow targets of the Pueblo FMP. The suspension of the exchanges would result in lower storage volumes in the Reservoir because water would not be taken out of the River and put into storage. As a result, the findings reported in the DEIS for the Average Annual Simulated Reservoir Volume indicate that reservoir storage volumes are likely to decrease from those currently seen. At full development in 2046, the average storage volume in

Pueblo Reservoir was estimated to be 163,900 AF. The reduction in storage volume means the average water surface would decrease by approximately 3.5 feet from existing conditions.

These conditions represent average annual conditions which provide a good measure of overall impact but don't necessarily reflect other important conditions. For example, Pueblo Reservoir is an important summer recreational amenity. While storage volumes and elevations are expected to drop during the summer, the Applicant's operations will limit the decrease to lower than average amounts during the peak recreation season. On average, lake levels are expected to drop by less than three feet during the months of June through August, at full project development. These relatively nominal lake level decreases would reduce the surface area of the lake by about 70 acres (around two percent less area).

Even in the very driest years, when weather and storage conditions are similar to those experienced in the last four or five years, when the Applicant's demands would require the greatest use of the stored water in Pueblo Reservoir, the DEIS predicted that lake levels would drop by only eight feet below those experienced during the worst historic periods of drawdown. While these are slightly higher than the average, these decreases would be felt during the winter months when recreation demands are lowest and would, therefore, have a lower direct impact.

The DEIS notes that changes in lake levels for the direct effects analyses would not measurably affect the quality of the recreation experience for boating or angling, or overall visitation levels.

Changes in the lake levels were evaluated to determine the potential impacts to water quality and to aquatic species. Here again, the DEIS reported that impacts to aquatic species for the direct effects would be minor with conditions very similar to the existing condition for the SDS project.

(2) Changes to base flows in Fountain Creek due to increased return flows – compare water quality and quantity between existing conditions and the proposed project.

The baseflow in Fountain Creek will increase due to increased wastewater effluent flows and urban landscape irrigation return flows from both SDS Project Participant communities and other outlying areas. This response addresses both the impacts to water quantity and water quality of baseflows.

Water Quantity

The DEIS looked at the differences in baseflows between the existing condition (circa 2005) and the future condition (circa 2046) for the SDS project. The DEIS direct effects analysis describes the impacts associated with the SDS project. The DEIS surface water hydrology analysis used the Arkansas River Daily Simulation Model to describe the hydrologic operations and effects of the SDS project and reasonably foreseeable activities in the Arkansas River Basin. The analysis estimated daily baseflows with and without the SDS project.

Baseflow is flow not associated with surface water runoff during storms; therefore, the median daily streamflow is the best way to estimate baseflow quantities. This represents the average daily flow in Fountain Creek 50 percent of the time (approximately 180 days per

year). The current median flow (or baseflow) for Fountain Creek at the Pueblo gage is about 150 cfs. This flow is easily contained within the banks of the low flow channel. Even at the narrowest sections of Fountain Creek through Pueblo, this flow is between 1 and 1.5 feet deep and is flowing at slightly less than three feet per second (fps). Flows of this nature pose a very low hazard, even when wading through the stream.

Base flows will increase as a result of the SDS project. The projected growth in water demand by the Applicant will result in increases in wastewater effluent and urban landscape return flows that, by themselves, will increase base flows by about 60 to 70 cfs on average in 2046. The increase in average baseflow will result in the median condition being equivalent to flow conditions currently seen on Fountain Creek about one out of every five days.

This increase in baseflows will be gradual and the growth in baseflow is likely to be linear between existing flows and those in 2046. As such, the impacts reported in the DEIS are those that will be experienced in 2046 and greater than those actually seen prior to that time. The increase in baseflow of 70 cfs will change depths by less than a half a foot and increase velocities by less than 0.5 fps. These changes are not likely to materially increase any hazard to people wading in the stream.

Operations by the Applicants may have some temporary changes in the baseflow that differ from the average 70 cfs change. Because the SDS project will rely on exchanges to fully utilize the Applicant's water rights, some of the wastewater effluent will be stored for future exchange releases. This will result in some periods when base flows are essentially unchanged from the existing conditions. However, there will be other times during the summer when the baseflows increase by 130 cfs as a result of system operations. Even these changes will be relatively minor and are likely to increase depths by less than one foot over existing conditions. Velocities are likely to be around 3.5 fps. Here again, the combination of these depths and velocities is still expected to be below the threshold where wading is unsafe.

Water Quality

Salinity

The existing levels of salinity are 1500 µS/cm and exceed the recommended levels of 778 µS/cm established as a guide to reflect potential impacts on drinking water taste. These levels also exceed other guidelines for desirable irrigation water supplies. Nevertheless, the water is being used successfully for both applications.

The DEIS looked at salinity by developing a model that uses a salt balance approach to estimate specific conductance, a measure of the ability of water to conduct electrical current, which is directly related to total dissolved solids (TDS). Because of limitations in the salinity model, only differences of at least 10 percent in calculated salinity are considered meaningful.

The DEIS reports that changes in the salinity levels are more important than absolute values. The SDS project will change salinity, but by less than the 10 percent threshold identified as significant by the DEIS. While no specific analysis was done in this reach to assess drinking water or agricultural impacts, the socioeconomic impact evaluations predicted no impacts to agricultural productivity.

Bacteria

During base flow conditions, concentrations of fecal coliform are below, but very near, stream standards for the reach of Fountain Creek above Pueblo. *E.coli* concentrations are higher than standards and have resulted in portions of Fountain Creek being listed on the State's summary of impaired waters. The DEIS conducted a very limited assessment of impacts to *E.coli* by using a combination of mass balance and changes in flow rate.

The analysis concluded that the source of *E.coli* is generally surface runoff and that base flows are not impacted by surface runoff. As such, the changes in the baseflow associated with the Applicant's action will not increase bacterial concentrations. In fact, increases in wastewater effluent return flow and irrigation return flows are likely to further dilute baseflow and reduce *E.coli* concentrations.

Emerging Contaminants

The DEIS determined that the potential effects of the SDS project, if any, on emerging contaminants in Fountain Creek cannot be reliably predicted. No existing impairments have been identified by CDPHE along Fountain Creek. Concentrations are extremely low and in many cases these contaminants are detected in the stream at locations both above and below wastewater treatment plant effluent. As such, the DEIS does not identify any adverse impacts associated with the SDS project.

Sediment

Even during baseflow conditions, sediment moves along Fountain Creek. While there are numerous locations along the stream that erode and pick up sediment, there are also many areas where sediment is deposited during baseflow conditions. In general, the very lowest reaches of Fountain Creek experience deposition during baseflows.

The geomorphology section of the DEIS performed a baseflow analysis that looked at three indicators, baseflow discharge, mobile grain size, and stream power, to determine the impact of the SDS project to erosion and sedimentation within Fountain Creek. Actual sediment transport values were not determined because of the lack of available sediment transport data to construct and accurately calibrate a sediment transport model. The Fountain Creek Watershed Study (Watershed Study - USACE 2007) conducted similar evaluations of Fountain Creek.

The DEIS determined that the best indicator for geomorphic responses during baseflow was the mobile grain size. The mobile grain size is the largest sediment grain size that can be transported by a given streamflow. It is an indicator of the mobility of bed material and notes that higher flows are capable of moving more and bigger materials. The Watershed Study conducted similar computations. In general, while both studies acknowledged that significant amounts of material may be transported by baseflows, these flows are not the ones that define the channel shape or create a majority of the problems associated with the stream.

The DEIS determined that the SDS project will increase the mobile grain size for Fountain Creek. While this may suggest an increase in erosion, the change in mobile grain size in the lower reaches of Fountain Creek was smaller than that in the upper reach and indicates a slight increase in the potential to deposit materials. In contrast to the finding of the DEIS, the watershed study reported that the increased flows in the lower reaches, being greater than

the increases farther up in the watershed, may actually be able to carry more sediment and could result in some of the sediment generated upstream being carried through the reach.

The lack of precision or clear conclusions in either analysis indicates the difficulty in estimating actual sediment impacts resulting from low flows. While no specific amounts were quantified, the DEIS did characterize the baseflow effects as being negligible.

(3) Changes to storm flows in Fountain Creek due to increased development in Colorado Springs – compare water quality and quantity between existing conditions and future growth supported by the proposed project.

The SDS project and/or other future activities within the Fountain Creek Watershed have the potential to affect flood flows in Fountain Creek and create other impacts. This response addresses both the impacts to water quantity and water quality during storm events.

Water Quantity

Flooding has long been a concern along Fountain Creek. Long before Colorado Springs and El Paso County experienced the current levels of growth, floods have plagued the watershed. Floods have been recorded as far back as 1864 and the flood in 1965, with a peak flow of 47,000 cfs, remains the flood of record on Fountain Creek in Pueblo. The most recent severe flood was in 1999 when 19,000 cfs were recorded at the Fountain Creek Pueblo gage. The DEIS and the US Army Corps of Engineers Fountain Creek Watershed Study (Watershed Study) have evaluated flooding along Fountain Creek to better understand the flood hazard. Both studies agree that the existing flood flows for the 2-year, 10-year and 100-year floods are 4,700 cfs, 16,000 cfs, and 44,000 cfs, respectively.

Future flood flow quantities were determined differently in the two studies. The Watershed Study future flow rates for Fountain Creek were based on 2025 conditions. The DEIS hydrology analysis was based on the Watershed Study but revised to better reflect the impacts from the SDS project. The modifications made in the DEIS included the addition of the proposed SDS project reservoirs and modified land use to reflect the entire planning period of the SDS project with future conditions projecting 2046 land uses.

The Watershed Study results are reported in significant detail and estimate future flood flows as 5,800 cfs, 17,000 cfs and 51,000 cfs for the 2-year, 10-year and 100-year floods respectively. While these are appropriate for floodplain management purposes, they don't fully capture the Direct Effects of the SDS project. For example, they reflect changes in the full-basin watershed, such as growth, over which the Applicant has no impact. They also don't reflect the incidental benefit of SDS project facilities or the benefits that may accrue from the full implementation of the controls exercised by the Colorado Springs Stormwater Enterprise.

The DEIS, which used the Watershed Study as its basis, provides a more complete assessment of the impact of SDS. The direct effects analysis shows a decrease in peak flow rates for the SDS Project from the existing conditions to 4,400 cfs, 15,000 cfs and 41,000 cfs for the 2-year, 10-year and 100-year floods respectively. The simulation includes growth within the Applicant's service areas and also includes the probable reduction in flows due to the incidental flood attenuation of the two (2) SDS project reservoirs, (Jimmy Camp Creek and Williams Creek). Two SDS project reservoirs, which will be located on tributaries to Fountain Creek, are designed to store raw water and exchange flows and not flood flows.

However, the incidental storage that they provide above the normal operating pools will serve to attenuate peak flows. The reduction in flows results in no increases in flood hazard to Pueblo as a result of future development within the service areas of the SDS project participants.

In summary, the analysis of flood peaks indicates that the combined effects of growth and the SDS Project elements are likely to be offsetting and that flood hazards in Pueblo are not expected to increase as a result of the implementation of the SDS project.

Water Quality

Bacteria

Fountain Creek is listed on the 2006 303(d) list for *E.coli*, one type of fecal coliform bacteria. The primary source of *E.coli* in the watershed is non-point source runoff from both developed and undeveloped/agricultural areas. Existing concentrations of *E.coli* in Fountain Creek are typically 10 times higher during storm events (flows in excess of two times the baseflow) than during lower flows and cause the exceedence of allowable stream water quality standards. The concentrations of *E.coli* are relatively low during times when there are relatively continuous baseflows.

The DEIS did not quantify the actual concentrations of *E.coli* because the data is limited. Rather, the DEIS concluded that the relative contribution from the various sources would be constant and the only changes would be how the SDS project affected flows along the stream. A mass balance approach was used that recognized the contribution of wastewater return flows (with concentrations of *E.coli* below the allowable stream standard) would be small in comparison to the non-point sources and would have concentrations below those flows in the stream during storm flow periods. As such, the analysis focused on flow rates in the stream rather than *E.coli* concentrations.

The baseflows for the SDS project are approximately 70 cfs greater than baseflows for the existing condition due to increased volumes of wastewater effluent. On average, the Applicant's wastewater return flows have bacteria concentrations well below the bacteria water quality standards; therefore, any increase in baseflow from wastewater effluent is likely to dilute bacteria densities during stormflows. The DEIS concluded that the SDS Project would likely be beneficial for bacteria densities in Fountain Creek because of more dilution from higher stormflows.

Concentration of bacteria is only a part of the hazard. Risk from bacteria is a function of both concentration and exposure. While the non-point source runoff contribution during a flood would result in high concentrations of *E.coli*, the likelihood of exposure would be smallest for large storm events when the public seldom ventures into flood waters. In this case, the impact from wastewater dilution would be the lowest but risk of exposure also the lowest. The risk of exposure would be largest for small stormflow but the impact from wastewater dilution would be greatest and the net effect would be a reduction in overall hazard.

Sediment

Fountain Creek is generally a sand bed stream with slight to moderate entrenchment. Existing conditions show erosion occurring in the upstream portion of Fountain Creek near Colorado Springs and sedimentation occurring in Fountain Creek downstream near Piñon

and Pueblo. Although large amounts of sediment are being transported from upstream during peak flow discharges, the stream cannot transport this same amount at downstream locations. Stream power decreases because of reduced peak flows and changes in channel geometry and gradient.

The DEIS examined the impact of the SDS Project on channel geomorphology during peak flows by determining peak flow discharge magnitude, the sediment transport capacity, and the stream power during storm events. It found that the primary factor in channel stability was the sediment transport capacity. The peak flow sediment transport capacity for the SDS project would be unchanged from existing conditions for Fountain Creek upstream of Fountain and would be approximately 10 percent lower than existing conditions for Fountain Creek near Pueblo. These changes will result in minor to moderate increase in sedimentation potential in the lower reaches of Fountain Creek as the inflowing sediment is dropped because of the lower downstream capacity.

The Watershed Study indicates the largest potential impact to the character of the channel is during the channel forming flows. These flows are those that are conveyed by the low flow channel and, in the case of Fountain Creek, are around 2,000 to 5,000 cfs. While these flows were not explicitly addressed in the DEIS, it is likely that the changes associated with the SDS project will have a nominal impact on these flows. As such, no significant impact is expected.

(4) Provide Information on propane tanks at Juniper Pump Station – quantity, size, use and storage conditions.

At the Schematic Design phase, it is anticipated that JPS will have four 1,000 gallon propane tanks. Each tank will be 41 inches in diameter and 16 feet long. At the preliminary level of design, technical specifications have not been developed. A copy of the 90 percent design phase technical specifications from the Williams Creek Pump Station is provided as reference documents to support this application. It is anticipated that the JPS technical specifications will be similar to Williams Creek Pump Station. The propane tanks will be buried and will be used for heating and for back-up power generation. A copy of the JPS Site Piping Plan from the Schematic Design, is provided in Appendix B.2, and displays the proposed location of the tanks. During final design of JPS, the number and size of propane tanks may change after a heating analysis is conducted. A copy of the 90 Percent Design Williams Creek Pump Station Drawings is also provided as reference documents to support this application, which includes a Propane Storage Plan. JPS will have a similar plan.

(5) Provide the number of parcels that will require easements and number of parcels that will be acquired fee simple. Also provide the number and type of structures that will be demolished or relocated for the project.

The Applicant's objective is to minimize impact to the community and residents through easements (temporary and permanent), acquisition of properties and the removal or relocation of structures. Until the permitting process is complete, the exact extent of easements, acquisitions and relocations are unknown at this time. Using preliminary alignment routes we can estimate a range of real property transactions required for pipeline installation. Estimates include:

Permanent Easements: 157-163 parcels

Fee simple acquisition(s): Minimum number necessary
Number of structures removed or relocated: Minimum number necessary

(6) Provide restrictions on other utilities that may cross the pipeline – existing and future.

In accordance with Colorado Springs Utilities Water Line Extension and Service Standards, 2008 Edition, restrictions on other utilities that may cross the pipeline are indicated in **Table I-1**. Any storm or sanitary sewer crossings that cross above the raw water pipeline shall be sleeved. Sleeve shall be two times the carrier pipe diameter.

TABLE I-1

Clearance Matrix for Typical Crossings of Colorado Springs Underground Utilities:
(All dimensions are in feet)
All separations shown are the clear vertical distance between two objects measured surface to surface (AWWA M24 Dual Water systems – see Water LESS, Water Construction Detail A7-9 & A7-10)

Colorado Springs Utilities (Underground):	Potable Water	Non-Potable Water	Waste-water	Storm Sewer	Gas main	Gas mains 150 psig or higher	Electric Primary up to 34.5kV
Potable Water	-	1.5***	1.5***	1.5***	1	5*	1
Non-Potable Water	1.5***	-	1.5***	1.5***	1	5*	1
Wastewater	1.5***	1.5***	-	1.5	1	5*	1
Storm Sewer	1.5***	1.5***	1.5***	-	1	5*	1
Gas main	1	1	1	1	-	-	1
Gas mains 150 psig or higher	5*	5*	5*	5*	-	-	5*
Electric Primary up to 34.5kV	1	1	1	1	1	5*	-

- See the Gas Line Extension and Service Standards, page 2-3 for certain exceptions.
- See Electric Line Extension and Service Standards, page 7-4, for residential secondary, 18-304 for primary.
- See Wastewater Line Extension and Service Standards, Chapter 3.18.
- Clearance to other utilities (telecommunication, fiber optics, etc.) or high voltage underground transmission cables shall be determined on a case by case basis by Field Engineering.
- Storm Sewer clearances must be verified by City Engineering.
- Larger clearances than shown may be required – clearances must meet all requirements set forth in all four of the Colorado Springs Utilities Line Extension and Service Standards, Colorado Springs City Codes, NEC, and NESC, latest editions.

(7) Provide information on Aquila's power service to the project – location of transmission lines, location and size of substation(s), and other customers that are served by the same facilities.

Black Hills Corporation (formerly Aquila) will provide dedicated power service to the SDS Project from their Comanche substation southeast of the proposed JPS, near Highway 96. Proposed 115 kV overhead transmission facilities, approximately 1.5 miles long, will bring power from the Comanche lift station, to a dedicated 115kV substation near the JPS site. The 115 kV transmission line will be strung on steel poles spaced at regular intervals. The substation will have a footprint of 300 feet by 350 feet. The SDS Project will be the only user served by the substation.

It is assumed that Black Hills Corporation will submit a separate 1041 Permit for transmission line and substation construction to support the energy demands of the JPS. The Black Hills Corporation equipment will be designed and installed solely to service the JPS, and a 1041 permit approval would therefore be required for both projects to make the Pueblo Dam JUM and JPS alternative for the SDS Project viable.

(8) Provide location of State Park lease boundary on Reclamation's land and superimpose project facilities.

Figure I-1 illustrates the location of the JPS within the State Park Boundaries and residing on Reclamation land. The map also indicates the location of other pump stations within the same boundaries near Pueblo Dam. See also Section 17.172.120.E.(6) **Figure E-4** for entire State Park boundary. The Applicant will take recreational impact avoidance measures and employ mitigation procedures to create no significant impact to recreational opportunities and experience with the State Park boundaries.

(9) Provide an architectural rendering of Juniper Pump Station.

During preliminary design of JPS, the design team conducted an Architectural Definition Workshop with the Applicant, Reclamation, and State Parks to establish a mutually acceptable architectural design scheme and approach. The preliminary design drawings provided in Appendix B.2 and renderings provided in Section 17.172.120.B.(1) meet the design scheme and approach developed during the Workshop. The JPS will be designed to create no significant degradation of existing visual qualities.

Architectural drawings from the Juniper Pump Station Schematic Design Drawings, February 2006 are provided are provided in Appendix B.2.

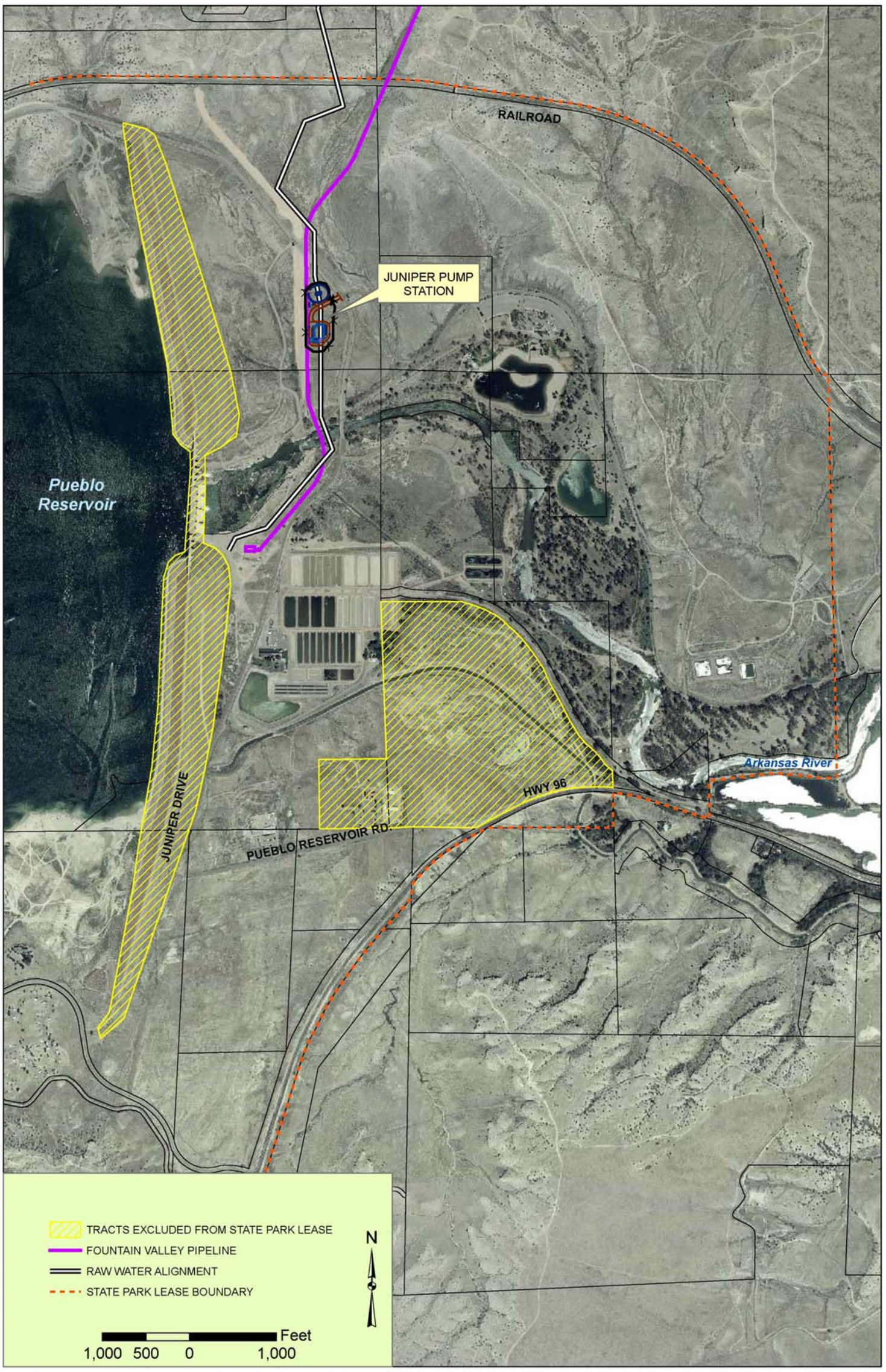


FIGURE I-1
State Park Lease Boundary and Pump Station Location

17.172.120.J Waiver of Submission Requirements

Waiver Request

Ref. Section 17.172.120 (C)(5): After consultation with Pueblo County representatives, it has been determined that C.R.S. 24-65.5-101 (Notification to Mineral Owners of Surface Development), does not apply to the Project application based on the statutory exemption for "water pipelines and appurtenances". Because no certification is required, no mineral rights-related responses are included in this application. Based upon this exemption, the Applicant requests a waiver from the requirement identified in Section 17.172.120.(C)(5).