

Uintah Water Conservancy District Water Management and Conservation Plan



Prepared For:



Prepared By:



Final

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Uintah Water Conservancy District

78 West 3325 North

Vernal, Utah

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EXECUTIVE SUMMARY

Introduction

The Uintah Water Conservancy District (District) delivers irrigation, municipal, and industrial water to much of the Ashley Valley and Jensen areas in Uintah County. The District was formed in 1957 to serve as the sponsoring repayment and operating entity for the Vernal and Jensen Units of the Central Utah Project (CUP). The U.S. Bureau of Reclamation (Reclamation) planned and constructed these two units of the CUP to develop a portion of Utah's share of Colorado River water. The District is governed by a seven-member Board of Trustees to oversee the operations of the District.

The purpose of this Water Management and Conservation Plan (WMCP) is to identify new measures for future implementation in order to enhance the District current water management program and water supply.

Facilities

The District operates Federally-owned facilities, District owned facilities, and Privately-owned facilities. Federally owned facilities include those constructed by Reclamation for the Vernal Unit (Fort Thornburgh Diversion Dam, Steinaker Feeder Canal, Steinaker Dam and Reservoir, and Steinaker Service Canal) and the Jensen Unit (Red Fleet Dam and Reservoir, Tyzack Pumping Plant, and Tyzack Aqueduct Reaches 1 and 2). District-owned facilities include the District Administration buildings, Red Fleet to Ashley Creek Bypass Pipeline, Island Ditch Pipeline and Pump Plant, the Tyzack Aqueduct Reach 3, and the Green River Pump Plant. Privately-owned facilities operated by the District include the West Side Combined Canals Salinity Project facilities and the Moffat-Ouray Pipeline Salinity Project facilities. Each of these is described in detail in Chapter 2.

Water Inventory

The District utilizes Ashley Creek and Brush Creek flows for its water supply. Excess spring and winter Ashley Creek flows are stored in Steinaker Reservoir for the Vernal Unit and excess spring and winter Brush Creek flows are stored in Red Fleet Reservoir for the Jensen Unit. These supplies have provided sufficient water to meet the irrigation, municipal and industrial needs of the project shareholders. Water for future growth is expected to come from the unallocated Jensen Unit M&I water supply, construction of the Burns Bench Pump Plant (original feature of the Jensen Unit), additional surface water from the Uinta and Whiterocks Rivers, and pumped water from the Green River.

Issues and Goals

Looking to the future, the District identified three main issues and five goals to guide their water management efforts during the next five years. These issues and goals are summarized below.

Issues and Goals

- **Issue 1: Protect and Enhance District Assets**
 - Goal 1* - Ensure all District facilities are maintained and up-graded for long-term sustainability
 - Goal 2* - Ensure water rights are protected and well managed
- **Issue 2 : Keep up with the Growing Demand for Water**
 - Goal 3* - Protect, conserve, and better utilize existing water supplies
 - Goal 4* - Develop adequate additional water to meet future demands
- **Issue 3: Perform the “Water Consultant” Role within the County**
 - Goal 5* - Assist irrigation companies and other water entities in accomplishing their water management and development responsibilities

Candidate Measures

The District identified the following thirteen candidate measures to address the three issues and five goals described above. These measures are identified by geographic area within the District boundary.

Candidate Measures

- **District-Wide**
 - CM-1*: Continue ongoing SCADA system maintenance and upgrade
 - CM-2*: Prepare water rights master plan
 - CM-3* Support conveyance system efficiency improvement projects
 - CM-4*: Continue development of Green River water right
- **Ashley Valley Area**
 - CM-5*: Implement the Vernal Unit Efficiency Project
 - CM-6*: Pursue secondary irrigation systems
 - CM-7*: Investigate agriculture to M&I conversions
 - CM-8*: Install water-wise landscaping at District office building
- **Brush Creek Area**
 - CM-9*: Evaluate and upgrade Jensen Unit facilities
 - CM-10*: Purchase 3,300 ac-ft of Red Fleet Reservoir water
 - CM-11*: Sponsor Burns Bench Pump Station
- **Western Uintah County Area**
 - CM-12*: Prepare western Uintah County water management plan
 - CM-13*: Expand Green River Pumping Plant capacity

Implementation Plan

The District selected the following candidate measures for implementation, subject to funding and final approval by the Board of Trustees. Measures are listed by year or years of intended implementation.

Implementation Plan

- **Annually**
 - CM-1:* Continue ongoing SCADA system maintenance and upgrade
 - CM-3:* Support conveyance system efficiency improvement projects
 - CM-4:* Continue development of Green River water right
- **2013 - 2023**
 - CM-5:* Implement the Vernal Unit Efficiency Project
- **2013**
 - CM-9:* Evaluate and upgrade Jensen Unit facilities
 - CM-10:* Purchase 3,300 ac-ft of Red Fleet Reservoir water
 - CM-12:* Prepare western Uintah County water management plan
- **2014**
 - CM-2:* Prepare water rights master plan
 - CM-6:* Pursue secondary irrigation systems
- **2015**
 - CM-7:* Investigate agriculture to M&I conversions
 - CM-13:* Expand Green River Pumping Plant capacity
- **2016**
 - CM-11:* Sponsor Burns Bench Pump Station
 - CM-8:* Install water-wise landscaping at District office building

CHAPTER 1

Introduction

DESCRIPTION OF THE AREA

The Uintah Water Conservancy District (District) delivers irrigation, municipal, and industrial water to much of the Ashley Valley and Jensen areas in Uintah County. Settlements in these areas began in the early 1800's due to the discovery of gold, copper and gilsonite. Although many settlements, such as Bonanza, Gusher, Rainbow, Watson, Dragon, and Dyer, were a result of these discoveries, most are no longer in existence. Gilsonite and other natural resources such as oil, natural gas, and phosphate still play an important part in the economy today. Agriculture has also become a vital part of the economy.

The soil conditions and summer time climate create a favorable growing season in the Ashley Valley and Brush Creek areas. Crops grown in these areas include alfalfa hay, barley, corn for grain, corn for silage, irrigated pasture, and grass-legume hay.

The central portion of the basin has an elevation of 5,000 to 5,500 feet. The mountains receive about thirty inches of precipitation annually. The average annual precipitation in the valley is about 8.3 inches, with a smaller area around Ouray and Leota receiving less than 6 inches annually. Average monthly high temperatures vary from about 89 degrees in July to 29 degrees in January with low temperatures varying from an average of about 51 degrees in July to 4 degrees in January.

DESCRIPTION OF THE PROJECT

The District was formed in 1957 to serve as the sponsoring repayment and operating entity for the Vernal and Jensen Units of the Central Utah Project (CUP). The U.S. Bureau of Reclamation (Reclamation) planned and constructed these two units of the CUP to develop a portion of Utah's share of Colorado River. Reclamation transferred operation and maintenance responsibility for both the Vernal and Jensen Units to the District.

Vernal Unit

The Vernal Unit was established to provide a firm irrigation, municipal and industrial water supply to land in Ashley Valley. Historically, irrigators in Ashley Valley depended on direct flows from Ashley Creek for their water supply. During a dry year when there is little flow in the creek, or as flows in the creek diminished late in the irrigation season, the irrigator's ability to adequately irrigate their land decreased. Preliminary investigation for a method to supply a firm water source to irrigators in Ashley Valley was initiated by Reclamation in 1939. In April of 1956, Congress authorized the Vernal Unit Project of the CUP as a participating project of the Colorado River Storage Project Act.

The purpose of the Vernal Unit is to store high spring runoff and winter flows in Ashley Creek to be used for supplemental irrigation, municipal, and industrial purposes. The major features of the Vernal Unit include: Steinaker Dam and Reservoir, Fort Thornburgh Diversion, Steinaker Feeder Canal and the Steinaker Service Canal. Construction of the Vernal Unit began in 1959. In the spring of 1961 the Fort Thornburgh Diversion and Steinaker Feeder Canal were completed, which allowed the diversion of Ashley Creek water to the new Steinaker Reservoir. Construction of Steinaker Dam was completed in 1962. The Steinaker Service Canal, which delivers stored irrigation water from Steinaker Reservoir to farmlands in Ashley Valley, was completed in late 1962. Steinaker Reservoir was filled to capacity for the first time on June 30, 1965.

The project serves approximately 14,000 acres of land with supplemental irrigation water either by direct delivery through the Steinaker Service Canal or by exchange through the existing canals above the Steinaker Service Canal. The project also delivers 1,600 ac-ft of water annually for municipal and industrial use by Maeser Water Improvement District (MWID), Ashley Valley Water and Sewer Improvement District (AVWSID), and Vernal City.

Reclamation transferred the operation and maintenance responsibility for the Vernal Unit to the District in January 1967. The District continues the operation and maintenance of the project and administers the sale and delivery of project water.

Jensen Unit

The Jensen Unit was also established in 1956, by Reclamation, as a participating project of the Colorado River Storage Project. The Jensen Unit was planned primarily as an irrigation project to supply supplemental irrigation water to irrigators in the Jensen area and areas extending east to the Green River. The Jensen Unit later expanded to include the development of municipal and industrial water, fish and wildlife enhancement, and flood control. In all, the Jensen Unit has the potential when fully developed to provide 22,600 ac-ft annually; 18,000 ac-ft for municipal and industrial use and 4,600 ac-ft for irrigation. Currently, only 2,000 ac-ft of municipal and industrial water is being utilized annually with an additional 3,300 available for purchase.

The Jensen Unit supplies municipal and industrial water to Jensen Water Improvement District (JWID), AVWSID, Vernal City, and Simplot (phosphate mining). About 440 acres of farm land receive full service water supply and 3,640 acres receive supplemental irrigation water from the Jensen Unit. The Jensen Unit utilizes high runoff flows in Brush Creek as its water source.

The major features of the Jensen Unit include Red Fleet Dam and Reservoir, Tyzack Pumping Plant, and Tyzack Aqueduct Reach Nos. 1, 2, and 3. The Burns Bench Pumping Plant was originally planned, as part of the Jensen Unit but has not yet been constructed. Municipal and industrial supplies are delivered to the Ashley Valley Water Purification Plant (AVWPP) from Red Fleet Reservoir by way of the Tyzack Pumping Plant and Tyzack Reach Aqueduct No. 1. Tyzack Reach Nos. 2 and 3 deliver the treated water from the AVWPP to Vernal City, JWID, MWID, and AVWSID. Stored irrigation

water is released from Red Fleet Reservoir back into Brush Creek as supplemental irrigation water during times of low flow in the creek.

Reclamation transferred responsibility for operation and maintenance of the Jensen Unit to the District in May of 1985. The District continues the operation of the project and administers the sale and delivery of project water.

ADMINISTRATION

The District is governed by a seven-member Board of Trustees to oversee the operation of the project. Board members are appointed by the Uintah County Commission to serve four-year terms and may be re-appointed or replaced at the end of each four-year term. Each of the board members represents specific areas of the county. The District office is located at: 78 West 3325 North, Vernal, Utah 84078.

PURPOSE

This Water Management and Conservation Plan (WMCP) is an update to and replacement for the plan dated November 2008. Its primary purpose is to identify water management measures that will help the District meet its water management and delivery responsibilities. Its secondary purpose is to meet the legal requirements for preparation of water conservation plans.

Section 201(b) of the Reclamation Reform Act of 1982 requires all Reclamation project sponsoring entities to submit water management plans to Reclamation. Additionally, in 1998 the State of Utah passed the “Water Conservation Plan Act” which requires water conservancy districts and water retailers with more than 500 service connections to file a water conservation plan with the Utah Division of Water Resources. This WMCP was prepared to fulfill the requirements of these two laws.

CHAPTER 2

Description of Facilities

District owned or operated facilities are located throughout Uintah County and are described in this section in five different categories; Vernal Unit facilities, Jensen Unit facilities, District owned and operated facilities, privately owned and District operated facilities, and associated facilities. Figure 1 located at the end of this chapter is a map showing facilities located in the Ashley Valley (eastern Uintah County) and Figure 2 is a map showing facilities in western Uintah County.

VERNAL UNIT FACILITIES

Steinaker Dam and Reservoir

Steinaker Reservoir is located approximately four miles north of Vernal in Steinaker Draw. The Steinaker Dam and Reservoir were designed and constructed by Reclamation as part of the Vernal Unit of the CUP. The dam is a rolled earth-fill structure, 140 feet high with a crest length of 1,900 feet. Construction of the Steinaker Dam was completed in 1962.



The Steinaker Reservoir is fed from Ashley Creek delivered through the Steinaker Feeder Canal. The reservoir formed by the dam has a total storage capacity of 39,848 ac-ft. The usable storage capacity is 34,955 ac-ft, two-thirds of which is released annually (on



average) to meet project water requirements. Thus, in wet years, water is stored for carryover use for later dry years. In addition to water storage, the reservoir also provides recreational activities to Ashley Valley area residents; fishing, boating, swimming, and other water-related recreational activities. The Utah State Division of Parks and Recreation maintains and operates the recreational facilities on the Steinaker Reservoir.

Fort Thornburgh Diversion Dam

The Fort Thornburgh Diversion Dam is located approximately four miles northwest of Vernal on Ashley Creek. The diversion is a rock-fill overflow embankment that diverts water from Ashley Creek into the Steinaker Feeder Canal. Construction of the Fort Thornburgh Diversion Dam was completed in 1961. The diversion headwork has a design capacity of 400 cfs. In 1996, a



remote monitoring system was installed. The monitoring system allows District personnel to monitor the water level on the forebay and the flow to the Rock Point Extension, and Steinaker Feeder Canal from one central location. The system also allows the District to adjust gate openings at the diversion.

Steinaker Feeder Canal

The Steinaker Feeder Canal conveys water from the Fort Thornburgh Diversion on Ashley Creek to Steinaker Reservoir. The Steinaker Feeder Canal is an earth-lined canal. The canal is approximately three miles long and has a designed conveyance capacity of 400 cfs.



Steinaker Service Canal

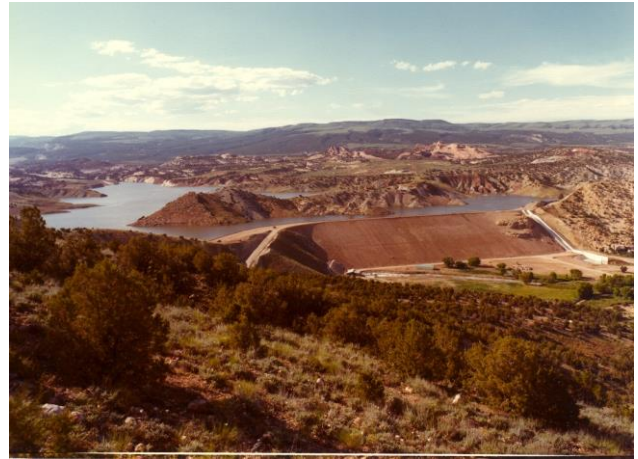
The Steinaker Service Canal heads at the outlet works in Steinaker Dam with an initial capacity of 300 cfs. The canal runs approximately 12 miles from the Steinaker Dam, south through the Ashley Valley. The canal is clay-lined for much of its length, with short reaches near the head lined with concrete or plastic membrane. The Service Canal delivers Steinaker Reservoir storage water for irrigation throughout the Ashley Valley. At various points along the canal, water is released to irrigation laterals for delivery to farmlands.



JENSEN UNIT FACILITIES

Red Fleet Dam and Reservoir

The Red Fleet Dam and Reservoir are located approximately 10 miles northeast of Vernal on Brush Creek. The dam is a rolled earth-fill structure, 145 feet high with a crest length of 1,750 feet. Red Fleet Reservoir has a total storage capacity of 26,015 ac-ft, with 23,300 ac-ft being active storage. Construction of the dam was completed in 1980. Reclamation transferred responsibility for operation and maintenance of Red Fleet Dam to the District on May 1, 1985. In addition to water storage, the reservoir also provides recreational activities to the Ashley Valley area. The Utah State Parks and Recreation Division maintains and operates the recreational facilities on Red Fleet Reservoir.



Tyzack Pumping Plant

The Tyzack Pumping Plant is located near the downstream end of the outlet works of Red Fleet Dam. The pumping plant consists of five pumps with a pumping capacity of 45 cfs. The Tyzack Pumping Plant allows the District to pump Red Fleet Reservoir storage to the Ashley Valley Water Purification Plant (AVWPP). For much of the year the AVWPP utilizes flow from Ashley Springs as its source of supply. Each year, during the spring months, the high turbidity levels in the Ashley Spring supply makes the spring water difficult to treat. When this occurs, Red Fleet Reservoir storage water is pumped to the AVWPP in exchange for the high turbidity spring water. In recent years, the pumping plant has pumped Red Fleet Reservoir storage water to the AVWPP for approximately three months during the spring. Due to the relatively high costs associated with pumping the Red Fleet Reservoir storage water, the pumping plant is only operated when needed.



Tyzack Aqueduct

The Tyzack Aqueduct conveys raw water from the Tyzack Pumping Plant to the AVWPP and treated water from AVWPP to municipalities and water districts, as described below.

- **Tyzack Aqueduct Reach 1:** Tyzack Aqueduct Reach 1 conveys Red Fleet Reservoir storage water to the AVWPP. Reach 1 runs from the pumping plant uphill to a pressure-regulating tank approximately two miles west of Red Fleet Dam, and then in a westerly direction to the AVWPP. The total length of the aqueduct is approximately 10.6 miles. Reach 1 has a design capacity of 46 cfs. The aqueduct is 39-inch diameter steel pipe at the pumping plant, which reduces to 28-inches by the time it reaches the AVWPP.
- **Tyzack Aqueduct Reach 2:** Tyzack Aqueduct Reach 2 delivers treated water from the AVWPP to Vernal City and other entities along the aqueduct. Reach 2 runs from the AVWPP to approximately 1500 North and 1500 West in Vernal. The aqueduct is 33-inch diameter steel pipe. Reach 2 gives the District the ability to convey water to Vernal City, Jensen City, AVWSID and MWID.

DISTRICT OWNED AND OPERATED FACILITIES

In addition to the Federal Vernal and Jensen Unit facilities, the District owns and operates the following facilities.

District Administration Building Facilities

District administration facilities are located at 78 West 3325 North, Vernal, Utah. Facilities include the District headquarters office building, a maintenance shop, and two storage buildings. The office building was constructed in 1980 to house the new District SCADA equipment and provide more office space for district employees and the Board of Trustees. The building contains a board room, three office rooms, the SCADA system room, and a library. The shop building was constructed in 1999. The old house and the other two buildings are used for storage.



Red Fleet to Ashley Creek Bypass Pipeline

The District recently completed construction of the Red Fleet to Ashley Creek Bypass Pipeline. The 18-inch Bypass Pipeline runs approximately 5,600 linear feet west from the AVWPP to the Ashley Upper Canal. The Bypass Pipeline allows stored water in Red Fleet Reservoir to be exchanged for Ashley Creek water. This exchange allows stored Red Fleet water to be used as supplemental supply during the late summer months when flows are low in Ashley Creek. The Bypass Pipeline has allowed the District to effectively use all of its water supply to the benefit of municipalities and canal companies that depend on Ashley Creek for their water supply.

Island Ditch Pumping Project Facilities

The Island Ditch Pipeline Project, completed in 2008, pumps water from the Steinaker Service Canal to the Fort Thornburgh Diversion Dam and the Rock Point Extension diversion. The project delivers stored water from Steinaker Reservoir to areas above the Steinaker Service Canal for use by Rock Point Canal, Island Ditch, Central Canal, and Dodds Ditch. Prior to the Island Ditch Pumping Project, these lands relied entirely on direct flow water from Ashley Creek. The project consists of a pipeline from the Steinaker Service Canal to the Fort Thornburgh Diversion and a pump station that pumps the stored water from the Steinaker Service Canal.



Tyzack Aqueduct Reach 3

Tyzack Aqueduct Reach 3 was constructed by the District and delivers water from AVWPP to the west side of Vernal City's water system through their existing storage reservoirs to the MWID and AVWSID water systems. Reach 3 is a 30-inch diameter pipeline approximately 6,000 feet long and runs from the existing Reach 2 at approximately 3000 North 2500 West to Vernal City's existing 16-inch pipeline along 3500 West at approximately 2750 North. From this location, a pump station delivers flows from Reach 3 to the AVWSID-owned Chocolate Rock Water Tank, enabling Reach 3 water to be delivered to the higher service areas of the AVWSID.

Green River Pumping Plant

The Green River Pumping Plant (GRPP) pumps up to 10,000 acre-feet of water per year from the Green River to lands in the Uinta River drainage in western Uintah County. The project consists of a water intake and pumping station on the Green River, a 30 acre-foot regulating pond, and approximately three miles of pipeline to connect the pump station to the pond and to the existing Ouray Park Irrigation Company (OPIC) pipeline. Construction of the project was completed and placed into operation in 2012.

Currently, GRPP provides supplemental irrigation water to OPIC, the Uintah River Irrigation Company (URIC), and the Whiterocks Irrigation Company (WIC). Because of the large geographic area served by GRPP, not all of the water can be pumped directly to the irrigated lands. Therefore, water historically delivered to those areas served directly by GRPP is diverted upstream by exchange to the upper areas. As the holder of the Green River water right, the District sponsored, constructed, and is operating the project.

PRIVATELY OWNED AND DISTRICT OPERATED FACILITIES

In addition to District-owned and operated facilities, the District has operation and maintenance responsibility for the projects described below.

West Side Combined Canals Salinity Project Facilities

The West Side Combined Canals Salinity Project (WSCCSP) is a District-sponsored salinity project constructed from 2000 to 2005. The project combines several canals on the west side of Uintah County into one piped conveyance system. The project in its entirety replaces approximately 46.4 miles of unlined canal with approximately 16 miles of main pipeline and several miles of piped laterals. The project conserves and utilizes water that was previously lost to seepage. The project also reduces the salt load carried to the Colorado River. The project combines all of the canals headings on the Uinta River into one heading.

Moffat-Ouray Pipeline Salinity Project Facilities

The Moffat-Ouray Pipeline Salinity Project (MOPSP), sponsored by the District, is the final phase of WSCCSP. MOPSP, completed in June 2008, consists of almost 6 miles of pipeline which enabled the abandonment of the Moffat and Ouray Canals. The project was funded by Reclamation's salinity program.

Ouray Park Canal Salinity Project Facilities

The last remaining open section of the Ouray Park Canal (5.2 miles in length) is being replaced with pipeline with funding assistance from a 2010 salinity program grant from Reclamation. The project is currently under construction and is scheduled for completion in April 2013. Upon completion, the entire Ouray Park Canal will be enclosed, from Cottonwood Reservoir on the north to an area near Pelican Lake on the south.

ASSOCIATED FACILITIES

Associated facilities, for purposes of this report, are those other water facilities within the District boundary that, while not operated by the District, are closely related to and tied into the operation of District facilities.

Ashley Valley Water Purification Plant

The Ashley Valley Water Purification Plant (AVWPP) is owned and operated by the Central Utah Water Conservancy District (CUWCD). The District operates the Tyzack Aqueduct System that delivers raw water to the plant and then distributes the treated water leaving the plant. The AVWPP was constructed in 1985 with a design capacity to treat 15 million gallons per day (mgd) of water. Water is fed to the AVWPP either through the raw



water line from Ashley Springs or pumped from Red Fleet Reservoir through Reach 1 of the Tyzack Aqueduct. Water from Red Fleet Reservoir is used during periods of high flows on Ashley Creek, which raises the turbidity and lowers the alkalinity of the water from Ashley Springs to levels that are difficult to treat. During a normal year, water from Ashley Springs is used approximately nine months of the year and water is pumped from Red Fleet Reservoir during the Ashley Creek high flow periods the other three months of the year. The treated water from the AVWPP is conveyed through Reach 2 of the Tyzack Aqueduct to Vernal City, Jensen City, and to MWID.

Ashley Creek Area Facilities

Various canal companies utilize water from Ashley Creek for irrigation in Ashley Valley. Eight of these canals rely on direct flow water from Ashley Creek during much of the year and have purchased storage water in Steinaker Reservoir to supplement their supply when the natural flows drop off in the late summer and fall. These eight canals are:

- Highline Canal
- Ashley Upper Canal/Alta Ditch
- Colton Ditch
- Ashley Central/Hardy Ditch
- Steinaker Ditch
- Island Ditch
- Dodds Ditch
- Rock Point Canal

Brush Creek Area Facilities

A number of private canal companies use water from Brush Creek for their water supply. Four of these canals have storage rights in Red Fleet Reservoir to supplement their late season supplies. These canals are:

- Burns Bench Canal
- Murray Ditch
- Burton Ditch
- Sunshine Canal

West Uintah County Area Facilities

Associated facilities in western Uintah County include the following reservoirs and canals:

Reservoirs:

- Paradise Park Reservoir
- Julius Park Reservoir
- Montes Creek Reservoir
- Brough Reservoir
- Bottle Hollow Reservoir
- Pelican Lake
- Cottonwood Reservoir
- Lapoint Reservoir

Irrigation Canals:

- Ouray Valley Canal
- Whiterocks Canal
- Mosby Canal
- Moffat Canal
- Deep Creek Canal
- Bench Canal

Insert Figure 1

Insert Figure 2

CHAPTER 3

Water Inventory and Budget

The District utilizes Ashley Creek and Brush Creek flows for its water supply. Excess spring and winter Ashley Creek flows are stored in Steinaker Reservoir for the Vernal Unit. Excess spring and winter Brush Creek flows are stored in Red Fleet Reservoir for the Jensen Unit. Historically, these supplies have provided adequate water to meet the irrigation, municipal and industrial water demands of District shareholders. The following paragraphs describe the historical water supply and demand of the District and sources of water for new development.

VERNAL UNIT

Supply

As previously mentioned, the Vernal Unit utilizes Ashley Creek flows for its source of water. Flow in Ashley Creek varies significantly throughout the year. Early season runoff produces high flows in the creek. Much of this excess spring runoff is diverted to the Steinaker Reservoir, by way of the Fort Thornburgh Diversion Dam and Steinaker Feeder Canal and is stored for use by the Vernal Unit. The Steinaker Reservoir has a total storage capacity of 39,848 ac-ft with an active capacity of 34,955 ac-ft. The active capacity was increased from 33,280 ac-ft to the 34,955 ac-ft in 2007 when Reclamation approved a reservoir level increase of 2.7 feet.

Although, Steinaker Reservoir has a usable (active) capacity of 34,955 ac-ft, the Vernal Unit entitlement rights are only 21,483 ac-ft of water per year. Therefore, the reservoir provides storage for approximately 1.5 times the annual required entitlement. Table 1 shows the total usable storage and the storage available to the Vernal Unit from Steinaker Reservoir for the period 1965-2012.

As shown in Table 1, Steinaker Reservoir has supplied a full 21,483 ac-ft allotment of water to the Vernal Unit every year except four; 93% in 1977, 84% in 1989, 82% in 1990, and 92% in 2002. During dry years, municipal and industrial water has priority over irrigation water. Thus, in years of limited supply, municipal and industrial supplies receive full allotments while irrigation supplies receive rationed allotments. The most critical dry period of record was in 1989 and 1990 where the available storage was only 18,000 ac-ft and 17,700 ac-ft respectively.

Based on past history, it can be assumed that Steinaker Reservoir will continue to provide similar amounts of storage water to the Vernal Unit as shown in Table 1. As shown, the average available storage supply from Steinaker Reservoir over its 47-year history (1965 to 2012) has averaged 21,260 ac-ft/yr, which is almost 99% of the full 21,483 ac-ft/yr demand.

Table 1			
Steinaker Reservoir Historical Storage Volumes			
Year	Total Useable	Available Storage	Percent of
	Storage ¹ ac-ft	Vernal Unit ac-ft	Entitlement %
1965	33,280	21,483	100%
1966	33,280	21,483	100%
1967	33,280	21,483	100%
1968	33,280	21,483	100%
1969	33,280	21,483	100%
1970	33,280	21,483	100%
1971	33,280	21,483	100%
1972	33,280	21,483	100%
1973	33,280	21,483	100%
1974	31,630	21,483	100%
1975	33,280	21,483	100%
1976	33,280	21,483	100%
1977	19,900	19,900	93%
1978	22,000	21,483	100%
1979	26,000	21,483	100%
1980	33,280	21,483	100%
1981	33,100	21,483	100%
1982	33,280	21,483	100%
1983	33,280	21,483	100%
1984	33,280	21,483	100%
1985	33,280	21,483	100%
1986	33,280	21,483	100%
1987	33,280	21,483	100%
1988	32,000	21,483	100%
1989	18,000	18,000	84%
1990	17,700	17,700	82%
1991	29,500	21,483	100%
1992	29,500	21,483	100%
1993	24,500	21,483	100%
1994	11,000	11,000	N/A
1995	33,280	21,483	100%
1996	33,280	21,483	100%
1997	33,280	21,483	100%
1998	33,280	21,483	100%
1999	33,280	21,483	100%
2000	33,280	21,483	100%
2001	33,280	21,483	100%
2002	19,828	19,828	92%
2003	25,828	21,483	100%
2004	25,381	21,483	100%
2005	35,885	21,483	100%
2006	35,470	21,483	100%
2007	34,582	21,483	100%
2008	34,955	21,483	100%
2009	34,955	21,483	100%
2010	34,955	21,483	100%
2011	34,955	21,483	100%
2012	34,334	21,483	100%
Total	1,477,958	1,010,197	46.51
Average	31,212	21,260	100%

¹Storage in 1990 was limited to 11,000 AF due to construction on Steinaker Dam. Storage in 2005 and 2006 was increased due to extra releases for spillway tests (2005) and use of old capacity charts with new reservoir sediment tests (2006). Also, useable storage was increased beginning in 2007 with the 2.7 ft increase in maximum reservoir elevation.

Demand

The Vernal Unit supplies irrigation water to approximately 14,000 acres of farmland, either by direct delivery through the Steinaker Service Canal or by exchange through existing canals above the Steinaker Service Canal. Irrigation delivery is on a call or demand system. Orders from individual users are compiled at the Ashley Valley Water Users Association central office and then forwarded to the District.

Vernal Unit water is provided to the following canals in Ashley Valley: Highline Canal, Ashley Upper Canal, Colton Ditch, Ashley Central Canal, Island Ditch, Dodds Ditch, Hardy Ditch, and the Rock Point Canal. Stored water is conveyed through the Steinaker Service Canal to lands served by these canals that lie downstream (east) of the Service Canal and by exchange to lands above (west and north) of the Service Canal. Water is then diverted into various lateral ditches for delivery to the farmland. As shown in Table 2, irrigation deliveries for the Vernal Unit have averaged 15,171 ac-ft per year for the 1984-2011 period of record.

The Vernal Unit supplies municipal and industrial water to Maeser Improvement District (MID), Ashley Valley Water Special Improvement District (AVWSID), and Vernal City. As shown in Table 2, municipal and industrial deliveries have averaged 1,760 ac-ft per year for the 1984-2011 period of record. This represents a full 100% allotment of water each year.

Water Budget

Also shown in Table 2, total deliveries from the Vernal Unit (irrigation and M&I) have averaged 16,785 ac-ft/yr for the period from 1984 to 2011. This represents delivery of about 80% of the water that was available for delivery. Total deliveries have ranged from a high of 25,046 ac-ft in 2001, which is in excess of the 100% allotment of 21,483 ac-ft, to a low of 9,984 ac-ft in 1986. The reasons for the variations are 1) the stockholders ability to carry water over from one year to another and 2) the variation in a specific canal company's demand for the water that year. A stockholder will often carry water over from one year to the next year which would reduce a delivery in one year and increase it the next. Also, since the storage is a supplemental last-called-on supply, demand for the water can vary significantly from year to year.

As population growth continues in Ashley Valley, the demand for project water will likely shift from commercial agricultural uses to domestic irrigation uses. For purposes of the projected water budget, it is assumed that the demand for domestic irrigation water will be the same in the future as the existing commercial agricultural demand. Therefore, it is assumed that the total irrigation demand on the Vernal Unit for its current shareholders will not significantly increase in the near future, although it will likely shift from commercial irrigation to domestic irrigation. From this analysis, it appears that the Vernal Unit has adequate water storage to meet the existing and future demands of its shareholders. The project, however, will not meet additional demands from new customers anticipated by the increased population growth in the area.

Table 2					
Vernal Unit					
Historical Water Deliveries and Supplies					
Year	Holdover Deliveries ac-ft	Deliveries Irrigation (ac-ft)	M&I (ac-ft)	Total (ac-ft)	Available Supply (ac-ft)
1984	0	11,442	1,760	13,202	21,483
1985	0	14,056	1,760	15,816	21,483
1986	0	8,224	1,760	9,984	21,483
1987	0	12,216	1,760	13,976	21,483
1988	0	18,899	1,760	20,659	21,483
1989	0	16,619	1,760	18,379	18,000
1990	0	15,788	1,760	17,548	17,700
1991	0	12,550	1,760	14,310	21,483
1992	3061	13,267	1,760	15,027	21,483
1993	0	17,167	1,760	18,927	21,483
1994	0	14,345	1,760	16,105	16,056
1995	0	9,212	1,760	10,972	21,483
1996	3470	18,642	1,760	21,712	21,483
1997	0	10,112	1,760	11,872	21,483
1998	0	13,040	1,760	14,800	21,483
1999	0	13,932	1,760	15,692	21,483
2000	0	21,535	1,760	17,981	21,483
2001	0	23,286	1,760	25,046	21,483
2002	596	17,927	1,760	19,687	19,828
2003	0	18,439	1,760	20,230	21,483
2004	0	16,054	1,760	18,490	21,483
2005	0	12,693	1,760	14,281	21,483
2006	0	16,854	1,760	18,614	21,483
2007	2825	17,849	1,760	18,992	21,483
2008	1633	17,256	1,760	19,016	21,483
2009	1587	15,731	1,760	17,491	21,483
2010	0	18,638	1,760	20,398	21,483
2011	0	9,018	1,760	10,778	21,483
Total	13,172	424,791	49,280	469,985	587,176
Average	470	15171	1760	16785	20971
1) Irrigation deliveries are based on annual water reports provided by the District					
2) The reduced available supply in 1994 is due to construction related reservoir restriction					
3) Years where total deliveries exceed available supply are due to hold-over use that year					

JENSEN UNIT

Supply

The Jensen Unit utilizes Brush Creek as its source of water supply. High spring runoff flow in Brush Creek is stored in Red Fleet Reservoir and is utilized for both irrigation and municipal and industrial purposes. The Red Fleet Reservoir has a total storage capacity of 26,015 ac-ft and an active capacity of 23,300 ac-ft.

Although Red Fleet Reservoir has an active capacity of 24,015 ac-ft, the Jensen Unit currently utilizes only 10,600 ac-ft per year or about 44% of the total capacity. This 10,600 ac-ft consists of 4,600 ac-ft of irrigation water and 2,000 ac-ft of M&I water. This unsubscribed M&I water is available for future growth as explained in other sections of this report. Based on the 10,600 ac-ft of entitlements, Red Fleet Reservoir has been able to supply a full allotment of water every year that it has been in service. An additional 15,300 ac-ft of M&I water would be available with the purchase of the remaining 3,300 ac-ft of unsubscribed Red Fleet water and the development of 12,000 ac-ft through construction of the Burns Bench Pumping Project.

Demand

The Jensen Unit serves 3,640 acres of land with supplemental irrigation water and 440 acres with full-service irrigation water for a total of 4,080 acres along Brush Creek and in the Jensen area. Irrigation deliveries are made to the following canal companies: Murray Canal Co., Burton Canal Co., Burns Bench Canal Co., Sunshine Ditch Canal Co., Brush Creek Canal Co., and direct flow water users. Table 3 shows the historic irrigation deliveries for the Jensen Unit for the 1987-2011 period of operation. The average irrigation deliveries, as shown in the table, were 4,063 ac-ft/yr in the Jensen area. Deliveries ranged from a low of 832 ac-ft in 1995 to a high of 6,339 ac-ft in 2001.

During drought years, the Tyzack Pumping Plant allows water to be pumped to Ashley Creek through the District's Red Fleet to Ashley Creek bypass pipeline for irrigation use in Ashley Valley. In these drought years, Ashley Valley irrigators may elect to purchase unsubscribed Jensen Unit M&I water in Red Fleet Reservoir and pay the higher operation and maintenance costs in order to have supplemental water for their crops. As shown in Table 3, an average of 358 ac-ft/yr was delivered for use in the Vernal Unit (Ashley Valley) area.

The Jensen Unit supplies a total of 2,000 ac-ft of water for municipal and industrial use in the Ashley Valley; 1,000 ac-ft to Vernal City, 500 ac-ft to AVWSID, 300 ac-ft to JWID, and 200 ac-ft to Simplot. These municipal and industrial supplies are delivered either by exchange or by way of the Tyzack Pumping Plant and the AVWPP. The Jensen Unit also provides up to 1,000 ac-ft of water per year to Stewart Lake under a June 14, 2000 Memorandum of Understanding between the District, Reclamation, and Burns Bench Irrigation Company. The purpose of this water delivery is to help reduce selenium levels in Stewart Lake.

Historical Water Deliveries and Supplies

(1) Full capacity of Red Fleet Reservoir is 26,015 acre-feet

As shown in Table 3, Red Fleet Reservoir consistently provides a full 10,600 ac-ft/yr allocation of water for the Jensen Unit with total deliveries (irrigation and M&I) of only about 6,036 ac-ft/yr. This illustrates the under-utilization of the reservoir due to the non-construction of the Burns Bench Pump Plant and the still unallocated 3,300 ac-ft water supply.

WATER SOURCES FOR NEW DEVELOPMENT

Three primary sources of water are available for future development; unallocated Jensen Unit M&I water, surface water from the Uinta and Whiterocks Rivers, and pumped water from the Green River. Each of these sources is described briefly below.

Unallocated Jensen Unit M&I Water

The Jensen Unit was designed to provide 18,000 ac-ft annually for municipal and industrial purposes. This 18,000 ac-ft demand was based on an accelerated population growth predicated on Project Independence, a 1974 Federal initiative to aid the United States in becoming independent of foreign nations in the production of energy, including oil shale development. Project Independence, however, failed to materialize resulting in the curtailment of energy development and a corresponding decrease in population. The M&I demand was estimated to be less than 2,000 ac-ft/yr at that time and was not anticipated to exceed 6,000 ac-ft/yr in the foreseeable future.

Due to the reduction in M&I demand, the Burns Bench Pumping Plant portion of the project which would have developed 12,000 ac-ft of M&I water was not constructed. The District subscribed to only 2,000 ac-ft of the 6,000 ac-ft M&I water already developed, and the District entered into an Amendatory Repayment Contract with the United States to reduce their repayment obligation to cover only the District-subscribed 4,600 ac-ft of irrigation water and 2,000 ac-ft of M&I water. The remaining 4,000 ac-ft of developed M&I water and the 12,000 ac-ft of undeveloped M&I water was reserved to the United States.

The Amendatory Repayment Contract includes several provisions governing the marketing and acquisition of this surplus water. Among the provisions is that the United States cannot market the water within the District service area and the District has the right of first refusal to acquire the water.

Of the 4,000 ac-ft reserved M&I supply, the United States contracted with the District and Burns Bench Irrigation Company to deliver 1,000 ac-ft/yr to Stewart Lake; 780 ac-ft of water from the Jensen Unit and 220 ac-ft of water dedicated to the Fish and Wildlife Service by the Sunshine Irrigation Company under a Central Utah Project Completion Act, Section 207 project. Providing this 780 ac-ft/yr supply reduces the yield of Red Fleet Reservoir by about 700 ac-ft/yr. Thus, the quantity of water now available for acquisition from the United States is 3,300 ac-ft of already developed water and the 12,000 ac-ft of water that could be developed with construction of the Burns Bench Pumping Plant.

Uinta and Whiterocks Rivers

The Uinta and Whiterocks rivers and their tributaries are the two major water sources for the project area. Most of this water, however, has already been appropriated and is being used to meet existing demands. Additional storage would be required to develop any significant amounts of this limited remaining resource.

Green River

Much of the water for future development in the basin is expected to come from the Green River. On August 7, 1958, the Bureau of Reclamation filed water right number (WRN) 41-2963 (A30414) to appropriate 4,000,000 ac-ft of water from the Green River for storage in Flaming Gorge Reservoir. A significant portion of this water was to be used within the Uintah Basin. On March 12, 1996, the United States assigned WRN 41-3479 (A30414d) to the State of Utah comprising the undeveloped and unperfected portion of WRN 41-2963 (A30414). Subsequent to this filing, twenty-five segregation applications were filed to divide this water among the various Utah water companies in the Green River drainage basin. WRNs 41-3487 (A30414db) for 8,400 ac-ft and 41-3523 (A30414do) for 43,400 ac-ft were segregated for use in Uintah County. This 51,800 ac-ft Green River water right will be the water source for much of the future water development within Uintah County.

CHAPTER 4

Legal, Institutional, and Environmental Considerations

The District's water supply for the Vernal and Jensen Units is established by contract with Reclamation. The District also holds Green River water rights and other rights in Uintah County for current and future water development. There are no unusual requirements that would impact the District's water supply. District policies, in conjunction with Reclamation policies, govern the operation of the Vernal and Jensen Units.

The District manages its projects in a manner that protects and enhances environmental resources. Specific enhancement measures that the District has been involved with in recent years include: 1) sponsor canal rehabilitation projects that reduce the salt load carried to the Colorado River, 2) provide a long-term 1,000 ac-ft per year clean water supply from Red Fleet Reservoir to help reduce selenium levels in the Stewart Lake Waterfowl Management Area, 3) voluntary release of a minimum 2 cfs fishery flow below Red Fleet Dam, 4) cooperate with the Utah Division of Parks and Recreation in efforts to eliminate Zebra Muscle transport to Steinaker and Red Fleet Reservoirs, and 5) cooperate with the Utah Division of Wildlife Resources to potentially provide Osprey nesting sites on the District's administration building property.

CHAPTER 5

Past and Current Water Management Projects

The District has always practiced good water management. Their primary goal is to efficiently and economically meet the water needs of its Vernal Unit and Jensen Unit shareholders. Their secondary goal is to fulfill the water management and development responsibilities that come from its water district entity role for within Uintah County. The District priorities in meeting these goals are first to maximize the efficient use of existing resources (water and facilities) and second to develop additional water. The purpose of this section is to provide a brief overview of the District's past accomplishments and current projects in accomplishing these goals and priorities.

This chapter is divided into three sections; 1) water measurement and accounting, 2) facility maintenance and upgrade, and 3) water development. The first two sections deal with the District's first priority of maximizing the use of existing resources and the third section deals with the second priority of developing additional water.

WATER MEASUREMENT AND ACCOUNTING

Good water measurement and accounting is an important part of the District's water management program. The District's SCADA system was first installed in 1988 and has been upgraded several times since then to meet the growing needs of the District. The most recent upgrade has occurred under a WaterSmart project with Reclamation as described below. The SCADA system allows the District to monitor the amount of water that is entering the system and the amount being conveyed to its customers. The metering devices also allow the District to prepare water audits to determine the efficiency of the entire conveyance system. This allows the District to identify problem areas and focus efforts on improving the efficiency within those areas of highest water loss first.

SCADA System Upgrade Project (WaterSmart 2010 Project)

The District was awarded a grant from Reclamation's WaterSmart Program in 2010 to perform a major upgrade of its SCADA System. The system was in need of upgrade for several reasons. First, computer technology had changed to the point that maintaining or even using the current system had become difficult and time consuming. Adding new features such as canal automation or expanding the system to include new sites was difficult or impossible. Second, the recently completed West Side Combined Canals Salinity Project (WSCCSP) and the then soon to be completed Green River Pumping Project (GRPP) added a significant amount of new data that would be valuable to the system. Combining all data from throughout Uintah County on one SCADA system and making the data available to water users would be very beneficial to the District and to the water users throughout the District service area. The upgrade project is scheduled to be complete in September 2013.

When complete, key data from the following four Uintah County geographic areas will be delivered to the new SCADA system base station located in the District's Vernal Unit

office building: 1) Ashley Valley area (Steinaker Reservoir and Ashley Valley Canals), 2) the Brush Creek area (Red Fleet Reservoir and Brush Creek Canals), 3) western Uintah County area (WSCCSP, GRPP and Uinta River facilities), and 4) the upper Ashley Creek area (private storage and conveyance facilities).

The system was designed to perform the following functions:

- Reservoir and other Project Facilities Data – Steinaker Reservoir elevation and outflow data as well as additional data from Red Fleet Reservoir, the Tyzack Pumping Plant, and the Island Ditch Pumping Plant is collected and transmitted to the base station.
- Flow Measurement – Existing flow measurement devices are upgraded and new devices installed, as necessary, throughout each of the four areas of Uintah County. Flow data from these devices is transmitted to the new base station.
- WSCCSP Data – All data currently available on the WSCCSP SCADA system is transmitted to the base station.
- GRPP Data – All data collected for the operation of GRPP is transmitted to the base station.
- GRPP Operating Criteria – The Utah Division of Water Resources is creating a computer water model of the Uinta River which will allow the District to develop operating criteria for the operation of GRPP. These operating criteria will be integrated into the District SCADA system.
- Automation – Headgates at each of the eight canals within Ashley Valley that deliver Steinaker Reservoir water are automated for remote operation.
- Water Bank – Water banks are being created in Steinaker Reservoir and Red Fleet Reservoir to allow storage of private water conserved by the SCADA system project. This water will be made available to the water users to reduce shortages or to others. The water banks will be created in part by a Warren Act storage contract between the District and Reclamation now in its final stage of negotiation.
- Base Station – Existing SCADA system equipment at the base station (computers, radios, software, cabinets, etc.) has been upgraded and new equipment installed and properly programmed to accommodate the increased functions of the system.

FACILITY MAINTENANCE AND UPGRADE

Maintaining the integrity and serviceability of infrastructure is an important part of good water management, as aging and deteriorating water facilities limit management opportunities. Also, ensuring good facility maintenance also enhances both the quantity and quality of the water supply. The District has aggressively pursued opportunities for maintaining the integrity of its infrastructure as described below.

Project Facilities Inspection and Maintenance Program

District personnel perform regular inspections of District facilities to ensure they are in good operable condition. In addition, Reclamation routinely inspects all of the District's federal facilities. All District facilities are maintained in accordance with Reclamation standards. As a result of this level of inspection and maintenance, the dams and other Project facilities are in very good condition. The private irrigation companies maintain the water conveyance facilities that are not owned or operated by the District. Regular inspections and maintenance has resulted in very little down time for the District's facilities and has allowed them to effectively use their water resources.

Red Fleet to Ashley Creek Bypass Pipeline

The District constructed the Red Fleet to Ashley Creek Bypass Pipeline to improve their ability to manage the Red Fleet water supply. The 18-inch Bypass Pipeline runs just over a mile long west from the Ashley Valley Water Purification Plant to the Ashley Upper Canal. The Bypass Pipeline allows stored water in Red Fleet Reservoir to be exchanged for Ashley Creek water. This exchange allows stored Red Fleet water to be used as supplemental supply during the late summer months when there are low flows in Ashley Creek. The Bypass Pipeline has allowed the District to effectively use its water supply to the benefit of the municipalities and canal companies that depend on Ashley Creek flows for water.

Ten-Million Gallon Finished Water Storage Project

In 2004, the District entered into an agreement with CUWCD to purchase two million gallons of finished water storage capacity in the AVWPP terminal reservoir. The 10 million gallon storage facility was constructed by the CUWCD between 2003 and 2005. Located adjacent to the AVWPP, the terminal reservoir provides 8 million gallons of operational and emergency storage for the treatment plant in addition to the two million gallons of distribution storage for the District and its customer agencies. The reservoir also provides water treatment benefits by allowing the necessary chlorination contact time under peak demand conditions. The total construction cost for the reservoir and associated improvements was \$5,600,000, of which the District provided \$600,000.

Steinaker Reservoir Level Increase

On February 15, 2007, the District received approval from the Bureau of Reclamation to increase the normal water surface level in Steinaker Reservoir from 5,517.8 feet to 5,520.5 feet. This 2.7 foot elevation increase provides an additional 2,160 ac-ft of active storage volume in the reservoir. This additional capacity increases the District's water supply without the need for structural or operational modifications. The additional water benefits existing shareholders by increasing the carryover capability in the reservoir and thus reducing water shortages.

Island Ditch Pumping Project

The Island Ditch Pump Station pumps water from the Steinaker Service Canal to the Fort Thornburgh Diversion Dam and Rock Point Extension Diversion Dam for use by Rock Point Canal, Island Ditch, Central Canal, and Dodds Ditch. Prior to the Island Ditch Pumping Project, these lands above the Service Canal had to rely entirely on direct flow water from Ashley Creek. These lands now receive a more consistent and equitable share of stored water from Steinaker Reservoir. The project consisted of a pipeline from the Steinaker Service Canal to the Fort Thornburgh Diversion and a pump station that pumps the stored water from the Service Canal. The total cost was about \$1,950,000, shared by the District, a grant from Reclamation's Water 2025 program, and a loan from the Utah Board of Water Resources. Construction of the project occurred from February 2008 to August 2008.

Conveyance Facility Efficiency Improvements

Over the past almost fifteen years the District has aggressively sought opportunities to improve conveyance facility efficiencies through participation in Reclamation's salinity program. This section describes five salinity projects completed within the District boundary over the past approximately 10 years.

- **Ashley Valley Canal Automation Project** – The headgates to the eight canals in Ashley Valley that deliver Steinaker water are being automated for remote operation under the 2010 SCADA system upgrade project. The existing Parshall flumes will be retrofitted to measure the water surface level in the flume and transmit the data to the District's SCADA system.
- **West Side Combined Canals Salinity Project** - The District sponsored the West Side Combined Canals Salinity Project (WSCCSP) in conjunction with the Ouray Park Irrigation Company (OPIC), the Uinta Irrigation Company (UIC), and the Bureau of Indian Affairs (BIA). The WSCCSP combines canals from three irrigation companies (OPIC, UIC, and BIA) into one system. Construction on the project began in 2000 and was completed in 2005. The project combines several canals on the west side of Uintah County into one piped canal system. The project in its entirety replaces approximately 46.4 miles of unlined canal with approximately 16 miles of main pipeline and several miles of piped laterals, which conserves water previously lost to seepage. The project also reduces the salt load carried to the Colorado River. The project combines all of the canals headings on the Uintah River into one heading.
- **Moffat-Ouray Pipeline Salinity Project** - The District MOPSP which is the final phase of WSCCSP. MOPSP, completed in June 2008, consists of almost 6 miles of pipeline which enabled the abandonment of the Moffat and Ouray Canals. The project was funded by Reclamation's salinity program.

- **Brough Pipeline Project** - Brough pipeline consists of about 3.5 miles of 30-inch HDPE pipe. It will be constructed from the end of the existing West Side Combined Canals Salinity Project pipeline to Brough Reservoir. This will allow deliveries of water from the Whiterocks River through piped facilities directly to Brough Reservoir rather than flowing through the existing 29-mile unlined Whiterocks and Ouray Valley Canals. The District has received funding through Reclamation's salinity program for final design and construction of the project.
- **Steinaker Ditch Salinity Project** – The Steinaker Ditch was piped as part of a 2008 salinity project funded in part by Reclamation's salinity program. The new 12-inch PVC pipeline was installed within the existing canal corridor.
- **Ouray Park Canal Salinity Project** – The last remaining open section of the Ouray Park Canal (5.2 miles in length) is being replaced with pipeline under a 2010 salinity program grant from Reclamation. The project is currently under construction and is scheduled for completion in April 2013. Upon completion, the entire Ouray Park Canal will be enclosed, from Cottonwood Reservoir on the north to an area near Pelican Lake on the south.

WATER DEVELOPMENT

This section describes water development projects that the District has either recently completed or are in the planning, design, or construction phases.

Increased Utilization of Red Fleet M&I Water (currently available)

The District has identified the 3,300 ac-ft of unallocated Jensen Unit M&I water as a top-priority water source to help meet future M&I needs in the area. This water is described in more detail in Chapter 3. As the M&I water demands increase, the District will exercise its options under the "Jensen Unit Amendatory Repayment Contract" to contract with the United States for the water and put it to beneficial use.

Water Banks in District Reservoirs (near completion)

Water banks are being established in both Steinaker and Red Fleet Reservoirs as part of the 2010 SCADA upgrade project. These water banks would be created by executing "Warren Act" contracts with Reclamation. These contracts would allow non-project water to be stored in the reservoirs to be used to reduce existing shortages or to market the water to others. The ability to store unused water provides an incentive to the irrigators to conserve water.

Green River Pumping Project (completed)

The recently completed Green River Pumping Project (GRPP) pumps up to 10,000 acre-feet of water per year from the Green River lands in the Uinta River drainage on the west side of Uintah County. The project consists of a water intake and pumping station on the

Green River, a 30 acre-foot regulating pond, and approximately three miles of pipeline to connect the pump station to the pond and to the existing OPIC pipeline.

GRPP provides supplemental irrigation water to the Ouray Park Irrigation Company (OPIC), the Uintah River Irrigation Company (URIC), and the Whiterocks Irrigation Company (WIC). Water is pumped directly to lands in the lower Cottonwood service area and exchanged upstream to lands in the upper Cottonwood, URIC, and WIC service areas.

Burns Bench Pumping Project (future)

The Burns Bench Pumping Plant feature of the Jensen Unit was never constructed. This feature would develop up to an additional 12,000 ac-ft of M&I water to be stored in Red Fleet Reservoir. The District has identified construction of the Burns Bench Pumping Project as a high-priority project to develop additional M&I water for the area. The District has initiated preliminary work toward moving this project toward design and construction.

Uinta/Green River Exchange Project (future)

The original purpose of the Uintah Unit of the CUP was to develop enough water to alleviate much of the irrigation shortages in the Uintah Basin. However, the Uintah Unit and subsequent replacement projects intended to meet the original purposes of the CUP have not been realized. At the same time, the demand for water in the basin has significantly increased over the years and is expected to increase at a more accelerated rate as the oil shale and tar sand deposits in the basin are developed.

The District co-sponsored with the CUWCD and DCWCD the “Conceptual Analysis of Uinta and Green River Water Development Projects” study to help justify the transfer of Green River water rights to UWCD and DCWCD and to evaluate scenarios to use the water rights to meet agricultural, municipal, and energy demands in the Uintah Basin. This study was completed in December 2007. The study evaluates present and future demands for the three most significant demand categories in the Uintah Basin – agricultural, municipal, and energy. The study further identified ten scenarios for meeting the rapidly growing demands. These ten scenarios include a combination of four proposed new reservoirs, two proposed reservoir enlargements, an extension of the Yellowstone Feeder Canal, pumping from the Green River, and multiple water right exchanges.

Green River Water Right Segregation for Use along the Green River (in process)

Water Right Number (WRN) 41-2963 (A30414) was filed August 7, 1958 in the name of the United States Bureau of Reclamation to appropriate 4,000,000 ac-ft of water from the Green River for storage in Flaming Gorge Reservoir. On March 12, 1996, the United States assigned WRN 41-3479 (A30414d) to the State of Utah Board of Water Resources (Board) comprising the undeveloped portion of WRN 41-2963 (A30414). Subsequent to this assignment to the Board, 25 segregations were filed, including WRN 41-3478 (A30314db) filed in the name of the District on November 18, 1996, covering 8,400 ac-ft

of water for irrigation of lands under the Leota Bench Irrigation Company, and WRN 41-3523 (A30414do) filed in the name of the District on February 28, 2000 covering 43,400 ac-ft of water for irrigation of lands in the Leota Bench and Pelican Lake areas of Uintah County. These assignments were conditioned on the filing of necessary change applications, payment of costs, filing of beneficial use within the time specified, and not reassigning the right without prior consent of the Board.

To date, twenty-seven separate segregations totaling about 19,000 ac-ft of water have been made on the District's Green River WRN 41-3523, for use by the District and individual water users along the Green River. This amount represents about 44 percent of the District's 43,400 acre-foot right, leaving a balance of about 24,400 ac-ft for other projects including the Green River Exchange project mentioned above. These segregations occurred between January 2001 and February 2011 and range in size from 10 ac-ft to 8,500 ac-ft.

District Assistance to Private Water Development (in process)

In addition to sponsoring water conservation/development projects, the District also has and will continue to assist others with their projects. Each of these projects is described below.

- **Red Wash Dam and Reservoir** - The District provided technical assistance to the Mosby Irrigation Company with the planning, funding, design, and construction of the Red Wash Dam Project. The Red Wash Dam Project is an off-channel dam and reservoir constructed about two miles northeast of Lapoint, Utah. The reservoir is used to store supplemental irrigation water for the Mosby Irrigation Company, as well as provide future municipal and industrial water supplies for western Uintah County. A canal from the adjoining Deep Creek drainage was constructed to deliver the water to the reservoir. The reservoir has a storage volume of 2,200 ac-ft. Funding for the project came from grants from the District, CUWCD, Mosby Irrigation Company, and a loan from the BWR. The Project was completed in the late summer of 2008.
- **Whiterocks Irrigation Company Storage Project** - Residents of the Tridell-Lapoint area have long recognized the need for a storage reservoir to help meet their irrigation and M&I needs. The District has contributed \$495,000 in three installments of \$165,000 each toward dam site investigation, design and construction. The M&S Dam is currently under construction with completion anticipated in the fall of 2013.

CHAPTER 6

Issues and Goals

This chapter describes water management issues and goals. “Issues” are defined as problems or needs, and are the reasons or justifications for why an action should be taken. “Goals” are defined as the result or condition the District would like to achieve with respect to the issue. And “Candidate Measures”, described in Chapter 7, are the specific measures identified to accomplish the goals. Looking to the future, the District has identified three main issues and five goals with respect to water management during the next five years.

ISSUE 1: PROTECT AND ENHANCE DISTRICT ASSETS

The District has made significant investment in capital over the past 50-plus years in developing some of the most efficient and well managed water resource assets in the state. These assets must be protected in order for the District to continue to meet its objectives and obligations to shareholders. For purposes of this discussion, District assets are categorized into two groups; water infrastructure and water rights. Protecting the integrity of the infrastructure preserves the ability of the District to deliver water. Protecting and maximizing the use of District water rights is critical in meeting and enhancing the District’s ability to continue to meet its obligations to shareholders. District goals within this first issue are therefore:

- Goal 1: Ensure all District facilities are maintained and upgraded for long-term sustainability
- Goal 2: Ensure water rights are protected and well managed

ISSUE 2 – KEEP UP WITH THE GROWING DEMAND FOR WATER

The Uintah Basin has been growing at a rapid rate over the past number of years. This rapid growth rate is expected to continue and even increase in the future, due in part to the large oil reserves in the county. The District first focus in providing water for this growth is to improve the efficient use of existing water supplies and second to develop new supplies. Below is a summary of the growth-related issues in the three most significant demand categories – agricultural water, municipal water, and energy industry water.

- **Agricultural Water** - Water for agriculture is very important to the local economy. Although the District does not own or operate most of the canals in the area, it supplies some of the water that is being conveyed in the canals. Most of the canals in the project area are earth-lined and experience high seepage loss. Canal seepage losses vary based on their location and the amount of flow, but it is estimated that losses range between 20 and 50 percent of the total water diverted into the canal. The district recognizes that significant water can be saved through improving water delivery system efficiencies.

- **Municipal Water** - The District supplies approximately 3,600 acre-feet of M&I water per year to Vernal City, Jensen, MWID, and AVWSID. As the population grows, the demand for M&I water also grows. The District has and will continue to pursue opportunities to develop additional M&I water.
 - **Energy Industry Water** - Energy industry water demands will likely increase as energy resources in the Uinta Basin are further developed. Oil shale and tar sands deposits in Utah and Colorado have been estimated to have more oil than all of the Organization of the Petroleum Exporting Countries (OPEC) combined. While the projected volume of water needed per barrel of oil developed has down due to new technology, a significant amount of industrial water would still be needed for any significant level energy development in the basin.
- Goal 3: Protect, conserve, and better utilize existing water supplies
 - Goal 4: Develop adequate additional water to meet future demands

ISSUE 3 – PERFORM THE “WATER CONSULTANT” ROLE IN THE COUNTY

The District, by virtue of being the state-sponsored water district for Uintah County, has accepted the role of “water consultant” as it relates to working with government, irrigation companies, and other water user entities in the county. As such, it sponsors projects; provides technical and financial assistance; works with local, state and federal governments on water management and development initiatives; and otherwise serves as the neutral, clearing-house entity in the county on water matters.

- Goal 5: Assist irrigation companies and other water entities in the county with their water management and development responsibilities

SUMMARY

Issues and Goals are summarized in Table 4

Table 4
Summary of Issues and Goals

Issue 1: Protect and Enhance District Assets
<i>Goal 1</i> - Ensure all District facilities are maintained and up-graded for long-term sustainability
<i>Goal 2</i> - Ensure water rights are protected and well managed
Issue 2 : Keep up with the Growing Demand for Water
<i>Goal 3</i> - Protect, conserve, and better utilize existing water supplies
<i>Goal 4</i> - Develop adequate additional water to meet future demands
Issue 3: Perform the “Water Consultant” Role within the County
<i>Goal 5</i> - Assist irrigation companies and other water entities in accomplishing their water management and development responsibilities

CHAPTER 7

Candidate Measures

The District has identified thirteen candidate measures that address the issues and goals described in Chapter 6. These candidate measures are described in the following four geographic area categories; District-wide, Brush Creek area, Ashley Valley area, and Western Uintah County area.

DISTRICT-WIDE

CM-1: Continue Ongoing SCADA System Maintenance and Upgrade

The District has invested considerable time and resources into its SCADA system. The system has proven to be very beneficial in helping the District manage its water. With assistance from a Reclamation WaterSMART grant, the District is nearing completion on a comprehensive SCADA system upgrade project. The new system allows the District to more efficiently manage water throughout the District area; from the Brush Creek area on the East to the Ashley Valley area in the center to the Uinta River area in western Uintah County. Continual maintenance and upgrade is necessary, however, in order to keep up with changes in technology and District needs. This candidate measure consists of aggressively maintaining and upgrading the system in the future.

Projected Benefits: Implementing this measure will protect the District's considerable investment in the SCADA system and improve its effectiveness as a water management tool.

Costs: Cost to the District of implementing this measure is estimated at \$5,000 per year. These costs are included in the District's annual budget.

Issues or Constraints: None - the District has full control over this measure.

CM-2: Prepare Water Rights Master Plan

The District has the responsibility to protect and manage a large number of very valuable Federal and private water rights. As the demand for water increases, the need to protect and manage these water rights also increases. The objective of the proposed master plan would be to create a document that could be utilized by the District on a day-to-day basis to better understand and manage its water rights. Developing the master plan would consist of 1) researching, gathering, analyzing, and compiling all water rights and contracts information associated with the operation of District facilities, 2) analyzing the data to identify areas of risk and opportunity, and 3) developing a plan for dealing with the risks and opportunities.

To implement this measure, the District would select a qualified engineering firm to conduct the study and prepare the final report. The engineering firm would work closely with the State Engineer's office, Reclamation, and water user entities to ensure accurate

information is utilized and all stakeholders are involved and in concurrence with the final results of the analysis.

Projected Benefits: Implementing this project would be beneficial to the District in two primary ways. First, it would provide the District with a large database of information on water rights, contracts, and operations. And second, it would identify risks and opportunities and recommend a plan for minimizing risks and maximizing opportunities.

Costs: The cost of this measure is estimated at \$35,000.

Impacts or Constraints: There are no constraints to this proposal.

CM-3: Support Conveyance System Efficiency Improvement Projects

A major funding source for canal rehabilitation projects in the Uintah Basin is from Reclamation's Colorado River Salinity Control Program. The District has aggressively pursued salinity funding in the past and has been successful in receiving funds for several very successful projects. This candidate measure consists of continuing to provide District resources to assist local irrigation companies with improving the efficiency of their conveyance systems and thus conserving water. District resources will be in the form of staff time, educational materials, and funding.

Projected Benefits: Measured canal seepage losses in Uintah County range from 20 to 50 percent of the total water delivered. Lining or piping these canals would save significant amounts of water. Other benefits include salinity reduction to the Colorado River and improved safety for wildlife and the public associated with enclosing open canals.

Costs: Cost to the District of implementing this measure is estimated at \$10,000 per year. These costs are included in the District's annual budget.

Impacts or Constraints: Eliminating seepage from the canals may affect wetlands or riparian vegetation that is currently fed by the seepage. These and other environmental impacts would be evaluated as part of the planning and design of the project.

CM-4: Continue Development of Green River Water Right

The District owns water right number 41-3523 on the Green River; a Flaming Gorge water right allocated to the District from the Utah Division of Water Resources. The District has been working with water users along the river to develop these rights. To date over twenty separate segregations totaling about 19,000 acre-feet of water have been made from the District's Green River water rights for use by the District and these individual water users. This candidate measure consists of the District providing assistance to these and any future water right holders to develop their projects and perfect their water rights. District assistance would be in the form of technical assistance by staff, looking for funding sources, assisting with funding applications, and assisting with project implementation.

Projected Benefits: Implementing this measure would put to beneficial use a portion of the District's Green River water right. It would also improve crop yields and provide water to help meet the growing water demands in the area.

Costs: Cost of implementing this measure is assumed to be zero as costs for technical assistance and other coordination and consultation would not significantly increase staff costs already budgeted on an annual basis.

Impacts or Constraints: Each project sponsor is required to comply with NEPA and other federal, state and local laws applicable to the development of the water right. Analysis associated with compliance with these laws will identify issues or constraints, and measures needed to mitigate them. It is anticipated, however, that there would not be any significant environmental impacts or other constraints associated with implementing this candidate measure.

Impacts or Constraints: Implementing this measure would have no environmental impacts or other legal or institutional constraints.

ASHLEY VALLEY AREA (VERNAL UNIT)

CM-5: Implement the Vernal Unit Efficiency Project

Vernal Unit facilities consist of Steinaker Dam and Reservoir, Fort Thornburgh Diversion, Steinaker Feeder Canal, and Steinaker Service Canal. These facilities are now over 50 years old and even though they are in good operating condition, significant benefits can be realized with a few upgrades. Current condition of facilities is described below:

- **Steinaker Dam and Reservoir** – Steinaker Dam and Reservoir facilities are in very good condition. The District has not identified any need for upgrade at this time.
- **Fort Thornburgh Diversion Dam** – At the present time, the Fort Thornburgh Diversion is in need of rehabilitation. The diversion dam is located in a section of Ashley Creek that often experiences high flood flows. These high flows, together with natural age-related deterioration, have eroded portions of the apron and cap of the diversion structure to the point where some rebar is exposed. This portion of the diversion dam should be rehabilitated to ensure long-term operational capability of the structure.
- **Steinaker Feeder Canal** – The Steinaker Feeder Canal is in good condition and functions well with the exception of seepage and some canal capacity concerns. Upgrading the canal to restore its original capacity or even expand capacity would conserve water in the canal and improve the operational flexibility of the Vernal Unit system.

- **Steinaker Service Canal** – The Steinaker Service Canal is in good condition but has significant water loss from seepage and evaporation and is an increasing liability risk to the District as adjacent lands are converted from agricultural use to domestic use. Losses in the canal are estimated at about 20 percent of the water diverted into the canal or about 5,000 ac-ft annually.

In addition to the above-mentioned District facilities, the District sees considerable value in partnering with local canal companies in Ashley Valley to improve water delivery efficiencies. Efficiencies could be improved by delivering some of the private canal company water through District facilities, combining sections of canals, and otherwise more efficiently utilizing District facilities to improve water delivery efficiencies throughout the valley. The District estimates that up to 32,400 acre-feet per year of private water could be taken through District facilities. The District recently completed a water model and concept plan for how VUEP would be implemented.

Projected Benefits: Implementing VUEP would conserve an estimated 11,000 acre-feet of water per year. It would also 1) improve the utilization of Steinaker Reservoir, the Feeder Canal, and the Service Canal by storing and/or carrying non-project water through the facilities, 2) improve hydropower generation potential, 3) reduce salinity to Colorado River, 4) reduce selenium levels in runoff water, 5) improve public safety, 6) reduce District liability, and 7) reduce operation and maintenance costs.

Costs: Cost of the project is unknown at this time but would be determined during design. The District would implement the project in phases as funding becomes available. Each phase would be funded from one or a combination of District funds, grants, and loans.

Impacts or Constraints: Completing VUEP would require coordination with a number of governmental and private entities. It would also require compliance with Federal law and approval from Reclamation.

CM-6: Pursue Secondary Irrigation Systems

Secondary irrigation is becoming a popular and cost-effective way of “developing” new culinary water supplies. By using irrigation water for outdoor lawn and garden use, treated water is preserved for indoor use thus extending existing high-quality water supplies and delaying the need for costly expansions or new construction. To date, there are no secondary irrigation systems in the District’s service area. In the short term, secondary irrigation systems are seldom cost effective because of the large upfront capital cost. However, long-term benefits can be significant.

This candidate measure consists of investigating the feasibility of constructing secondary irrigation systems in the Uintah Basin. The feasibility study would gather and evaluate data, identify communities in the basin that could benefit from secondary irrigation systems, identify sources of water to be used, identify potential funding sources, develop alternatives and cost estimates, and evaluate alternatives and recommend a plan of action. The District would work closely with the culinary water entities during the performance of the study and assist, as requested, with implementation.

Projected Benefits: Constructing secondary irrigation systems would extend the culinary water provider's current water supply and reduce treatment costs. It is also an effective water conservation measure because it allows lower quality water to be used for domestic irrigation purposes which reduces the demand on high-quality, treated water.

Costs: Cost of the investigation is estimated at \$100,000. The District would pursue cost-share with Vernal City, Maeser Water Improvement District, and/or Ashley Valley Water & Sewer Improvement District with the District's share estimated at \$50,000.

Impacts or Constraints: There would be no environmental impacts or other constraints associated with the feasibility investigation. The study would identify proposed actions and would evaluate potential environmental impacts, if any, which would result from implementing those actions. Feasible options would not likely require state, federal, or other approvals.

CM-7: Investigate Agriculture to M&I conversions

As with other urbanizing areas of the state, lands historically used for agriculture in the District service area are being developed for homes and businesses. Based on depletion calculations, a portion of the water used on these previously irrigated lands would be available for M&I use. Converting federal Reclamation irrigation water to M&I purposes would require Reclamation approval.

This measure consists of investigating the feasibility of converting agricultural water to M&I water. The feasibility study would incorporate the most recent population projections and most likely locations of future developments, estimate acres of irrigated land that would likely be converted to residential and business use, identify types of water to be converted (direct flow, storage, etc.), identify constraints to conversion along with potential solutions to the constraints, estimate quantities of water that could efficiently be converted, develop alternatives and cost estimates, evaluate alternatives and recommend a plan of action.

Projected Benefits: Agriculture to M&I conversion would likely be one of the most cost effective sources of "new" water for future development. Converting agricultural water for culinary use would reduce the need to develop the more costly sources of water. Investigating the feasibility of agriculture to M&I conversions would also help in the feasibility investigation of secondary irrigation systems (CM 6). Agriculture to M&I conversion is an effective water conservation measure because it puts water that would otherwise be surplus to its current use to a beneficial use.

Costs: Cost of the study is estimated at \$10,000.

Impacts or Constraints: Implementing this measure would have no environmental impacts or other legal or institutional constraints. The study would identify proposed actions and would evaluate potential environmental impacts, if any, which would result from implementing those actions. Feasible options would not likely require state, federal, or other approvals.

CM-8: Install Water-wise Landscaping at District Office Building

Currently, a majority of the landscape at the District administration building is turf. This candidate measure consists of converting a portion or all of the landscape at the District office building to a more water efficient and drought tolerant landscape. In a recent analysis performed by a landscape architect, a the entire landscape could accommodate as many as 1800 shrubs, 86 trees (evergreen and deciduous), sod, topsoil, mulch, an irrigation system, an entry kiosk, concrete and paver pathways, benches, a gazebo, and signage for plant identification. A smaller project for the immediate area around the building could be accomplished at much less cost. This candidate measure consists of investigating re-landscape options to find one that maximizes benefits at reasonable cost.

Projected Benefits: Installing water-wise landscaping at the district office building would yield several benefits. First, it would conserve water by replacing turf with low water use trees and shrubbery. Second, the District would be setting an example of wise water use for its customers and the local public. Third, the landscape would serve as a demonstration garden for those wishing to install new or replace existing landscapes. And fourth, replacing sod with water tolerant plants would reduce operation and maintenance costs associated with caring for the turf.

Costs: Preliminary cost estimates for a complete re-landscape of the entire District's office building property is \$400,000, which includes \$15,000 for the landscape design, \$210,000 for purchase of materials and \$175,000 for installation. The cost for a water-wise re-landscape of a smaller area adjacent to the building could be as low as \$20,000.

BRUSH CREEK AREA (JENSEN UNIT)

CM-9: Evaluate and Upgrade Jensen Unit Facilities

Jensen Unit facilities include Red Fleet Dam and Reservoir, Tyzack Pumping Plant, and the Tyzack Aqueduct system. Current condition of Jensen Unit facilities is shown below:

- **Red Fleet Dam and Reservoir** – Red Fleet Dam and Reservoir facilities are in very good condition. The District has not identified any need for upgrade at this time.
- **Tyzack Pumping Plant** – The Tyzack Pumping Plant is in good operating condition but has never operated at full capacity because the Burns Bench Pumping Plant component of the Jensen Unit was never constructed. With the anticipated construction of the Burns Bench Pumping Project (CM-11) in the near future, the Jensen Unit will have been completed and the Tyzack Pumping Plant will be operating at full design capacity. The District would like to evaluate the current condition of the facility and perform any needed upgrades prior to the development of the Burns Bench Pump plant.

- **Tyzack Aqueduct** – The Tyzack Aqueduct is in good operating condition with no issues at this time.

This measure, therefore, consists of performing a thorough evaluation and assessment of the condition of the Tyzack Pumping Plant, identifying areas of upgrade if any, and developing an upgrade implementation plan.

Projected Benefits: Benefits of the project would include 1) knowing what upgrades if any are required, 2) reducing the risk of down-time as a result of equipment failure, 3) improving efficiencies with installation of new more efficient equipment, and 4) having the plant ready for the increased use anticipated with construction of the Burns Bench Pump Plant.

Costs: The cost of the analysis and report is estimated at \$40,000.

Impacts or Constraints: There are no constraints to doing the analysis.

CM-10: Purchase 3,300 ac-ft of Red Fleet Reservoir Water

Of the 6,000 ac-ft of M&I water already developed by the Jensen Unit and available for allocation, 3,300 ac-ft remains unallocated. As the demand for M&I water increases, the District intends to exercise its options under the December 30, 1992 “Jensen Unit Amendatory Repayment Contract” to purchase this unallocated water from the United States and include it into their M&I water supply. This candidate measure consists of working with Reclamation to meet the necessary provisions of the contract and to purchase the water.

Projected Benefits: Purchasing the unallocated Jensen Unit water would be the most readily available source of M&I water for the District. Benefits of purchasing the water include increasing the municipal water supply in the area and at the same time increasing the efficient operation of the Jensen Unit, since all features of the Jensen Unit were designed for full use of the water.

Costs: Costs to implement this measure will be minimal other than the cost of purchasing the water. The cost of the water, as stated in Article 4 (c) (3), will be: “The annual cost per acre-foot of such project municipal and industrial water will be based on an annual payment of \$113.29 per acre-foot times 49 years (\$5,551.21), which includes principal and interest, divided by the number of years remaining between the date of acquisition and 2037.” Additional costs may be charged if other costs are incurred by the project after January 1, 1988.

Impacts or Constraints: Implementing this measure would have no adverse environmental impacts or other legal or institutional constraints because the water has already been approved for allocation. The District will follow Reclamation contracting requirements.

CM-11: Sponsor Burns Bench Pump Station

As explained in Chapter 3, the Burns Bench Pumping Plant portion of the Jensen Unit Project, which would have developed 12,000 ac-ft of M&I water, was never constructed. This candidate measure consists of the District sponsoring the project and performing the necessary project planning, environmental compliance, designs, and construction, to make this 12,000 ac-ft of water available for project M&I use.

The first step in the process is for the District to request proposals from qualified engineering firms for the planning and design of the project. The planning phase would be to gather and review previous Reclamation project planning and design data, evaluate changed conditions since the Reclamation data was prepared (Murray, Burns Bench, Burton, and Sunshine canals rehabilitation work, new canal capacities, flows, etc.), identify alternatives, evaluate alternatives, identify potential environmental impacts and/or legal or institutional constraints, identify potential funding sources, and select a preferred plan. The design phase would be to prepare final design, specifications, cost estimates, and other required work to permit construction of the project. The last phase would be to construct the project.

Projected Benefits: The Burns Bench Pumping Plant Project would provide the largest single source of M&I water available for the District. The project would be planned to complement and enhance, where feasible, other components of the Jensen Unit to make the entire operation of the Jensen Unit more efficient. The other features of the Jensen Unit (Red Fleet Dam, Tyzack Pumping Plant, and the Tyzack Aqueduct) were constructed as if the Burns Bench Pumping Project were in place. Constructing the Burns Bench Pumping Project would therefore maximize the efficient use of these other features of the Jensen Unit. For example, the Tyzack Pumping Plant has never operated to design capacity because only 2,000 ac-ft of the 18,000 ac-ft of M&I water is being used. Purchase of the 3,300 ac-ft of unallocated water (CM-10) and construction of the Burns Bench Pumping Plant would increase its use to design capacity.

Costs: Sponsoring and constructing the Burns Bench Pumping Project is expected to cost the District about \$3,000,000 over the next several years. Total estimated project costs will be determined upon completion of final design. The cost for the planning and design report is estimated at \$60,000.

Impacts or Constraints: Because the Green River is a tributary to the Colorado River, the Burns Bench Pumping Project is subject to the Upper Colorado River Endangered Species Recovery Program. The program allows for water development projects to proceed while protecting the fish species. However, due to the size of the Burns Bench Pumping Project, coordination with the U.S. Fish and Wildlife Service would be required. Since the project was a feature of the Jensen Unit and because it will likely require federal approval, and may eventually become a federal facility, it will also be subject to compliance under NEPA, CWA, and other federal, state, and local laws. Investigations during NEPA compliance will determine the extent to which these laws may impact the project.

WEST UINTAH COUNTY AREA

CM-12: Prepare Western Uintah County Water Management Plan

The District manages several projects in western Uintah County. The West Side Combined Canals Salinity Project (WSCCSP), constructed from 2005 to 2008, combines canals from three irrigation companies (Ouray Park Irrigation Company, Uintah Irrigation Company, and Bureau of Indian Affairs) into one system. This project replaced almost 50 miles of canals with pipe. The District also sponsored the Moffat-Ouray Pipeline Project and Brough Pipeline Project. The Green River Pumping Project, also sponsored and constructed by the District, pumps up to 10,000 acre-feet per year of water from the Green River for agricultural use in western Uintah County. In addition, Ouray Park Irrigation Company operates four reservoirs in the area; the Cottonwood Reservoir, Brough reservoir, Pelican Lake, and Cliff Lake.

The District, with assistance from the Utah Division of Water Resources, is developing a water model for the Uinta River and its tributaries. This model is expected to be finished in February 2013. As a companion to the water model, the District would like to develop operating criteria and management procedures to be utilized in operating the multiple systems in the area. This measure consists of; 1) gathering existing water rights and operational data for the various projects in the area, 2) identifying alternative operational scenarios including use of new or existing storage reservoirs, 3) testing those scenarios with use of the water model, 4) developing operating criteria, and 5) documenting study results and management plan into a report.

Projected Benefits: The proposed project would significantly improve water management and conservation in the area. A coordinated operation plan, for example, would help determine when to start pumping water from the Green River (GRRP) to avoid the likelihood of pumping water into a full (or soon to become full) system and spill the water back down to the river. It would also help determine when and in what priority to store water in OPIC reservoirs. Fine-tuning operations would save water and minimize pumping and other operation and maintenance costs.

Costs: Cost of the analysis and report is estimated at \$20,000

Impacts or Constraints: There are no constraints to implementing this measure. Environmental compliance may be required if changes in operation are made as a result of the study.

CM-13: Expand Green River Pumping Plant Capacity

Construction of the Green River Pumping Plant (GRPP) was completed in 2012. GRPP is currently approved to pump up to 10,000 acre-feet of water per year to irrigators in western Uintah County. With some minimal equipment upgrade and permitting, it could be operated to develop at least another 10,000 acre-feet for a total of 20,000 acre-feet per year. To expand the current capacity of the plant, the District would need to: 1) receive subscriptions for the additional water, 2) expand the GRPP service area into Brough or Pelican Lake areas to ensure adequate exchange capability upstream, 3) utilize the

District's Green River water right or obtaining additional water through Reclamation, 4) perform minimal equipment upgrade as necessary, and 5) obtain compliance with NEPA, ESA, and other applicable Federal Laws.

Projected Benefits: Expanding the capacity of GRPP would develop additional water at minimal capital cost. It would also reduce the operation, maintenance, and replacement costs for everyone due to the larger number of users sharing the costs.

Costs: Cost of expansion is unknown at this time. Costs would be determined during the planning/design phase.

Impacts or Constraints: Because the Green River is a tributary to the Colorado River, GRPP is subject to the Upper Colorado River Endangered Species Recovery Program. The program allows for water development projects to proceed while protecting the fish species. However, due to the size of the expansion, coordination with the U.S. Fish and Wildlife Service would be required. Compliance with the Clean Water Act (CWA), the National Environmental Policy Act (NEPA) and other federal, state, and local laws may also be required. Having already moved through these issues once for construction of the plant, it is expected that approval for expansion could come with much less effort as most of the analysis is already done.

SUMMARY

Table 5 shows a summary list and costs for the candidate measures described above.

Table 5
Summary of Candidate Measures

No.	Candidate Measure	Cost
District-wide		
1	Continue ongoing SCADA system maintenance and upgrade	\$5,000/year
2	Prepare water rights master plan	\$35,000
3	Support conveyance system efficiency improvement projects	\$10,000/year
4	Continue development of Green River water right	Staff
Ashley Valley Area		
5	Implement the Vernal Unit Efficiency Project	Unknown
6	Pursue secondary irrigation systems	\$50,000
7	Investigate agriculture to M&I conversions	\$10,000
8	Install water-wise landscaping at District office building	\$20,000 +
Brush Creek Area		
9	Evaluate and upgrade Jensen Unit facilities	\$40,000
10	Purchase 3,300 ac-ft of Red Fleet Reservoir water	Staff
11	Sponsor Burns Bench Pump Station	\$60,000
Western Uintah County Area		
12	Prepare western Uintah County water management plan	\$20,000
13	Expand Green River Pumping Plant capacity	Unknown

CHAPTER 7 Implementation Plan

IMPLEMENTATION PLAN

District staff and Board of Trustees selected the candidate measures listed in Table 6 for implementation, subject to additional investigations and funding. Most candidate measures will need formal board approval before implementation can take place. The plan presented below is for planning purposes only.

**Table 6
Implementation Plan**

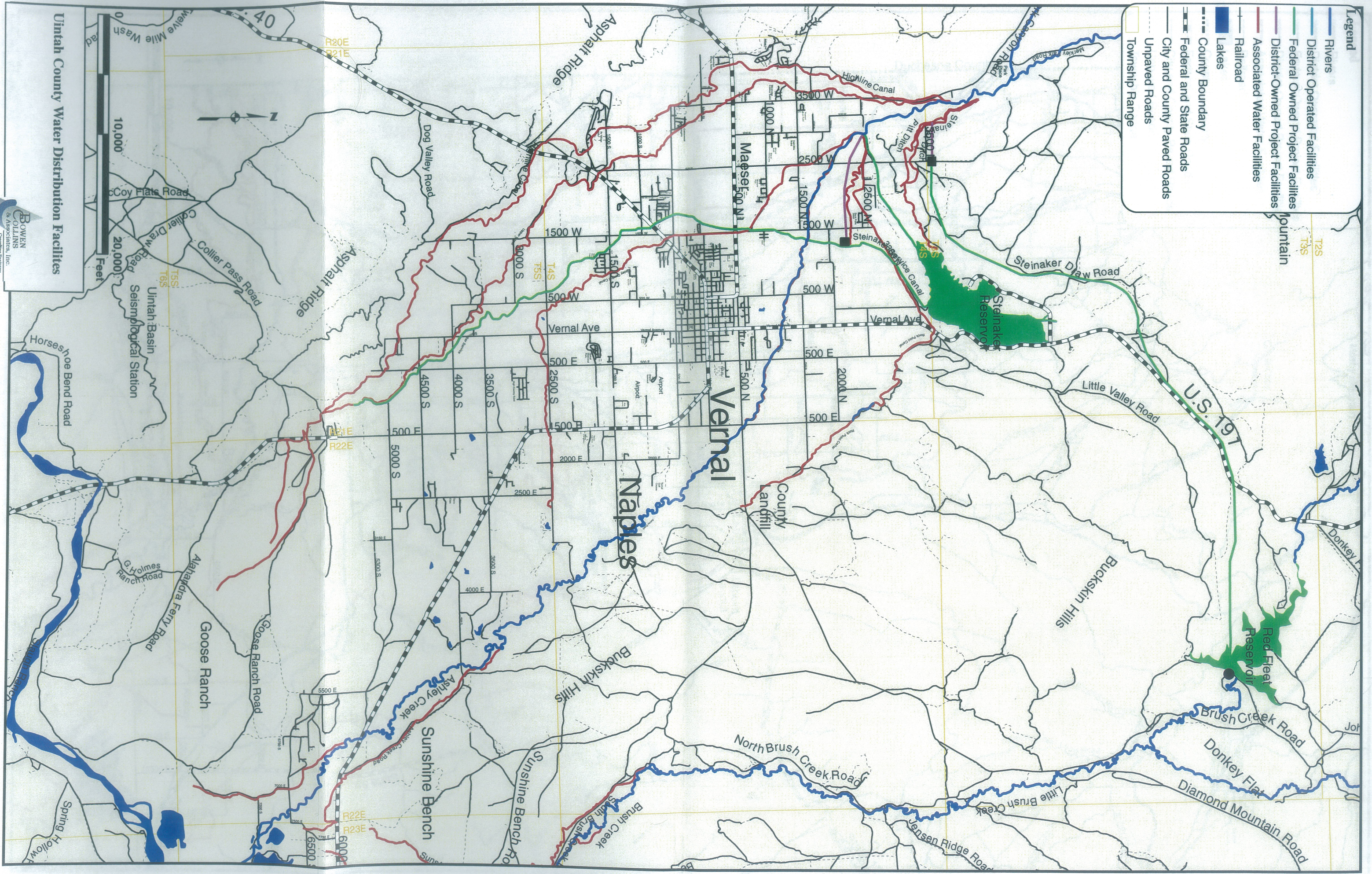
CM	Adopted Measures	District Cost (\$)
	<u>Annually</u>	
1	Continue ongoing SCADA system maintenance and upgrade	\$5,000/year
3	Support conveyance system efficiency improvement projects	\$10,000/year
4	Continue development of Green River water right	Staff
	<u>2013 to 2023</u>	
5	Implement the Vernal Unit Efficiency Project	Unknown
	<u>2013</u>	
9	Evaluate and upgrade Jensen Unit facilities	\$40,000
10	Purchase 3,300 ac-ft of Red Fleet Reservoir water	Staff
12	Prepare western Uintah County water management plan	\$20,000
	<u>2014</u>	
2	Prepare water rights master plan	\$35,000
	<u>2015</u>	
6	Pursue secondary irrigation systems	\$50,000
7	Investigate agriculture to M&I conversions	\$10,000
13	Expand Green River Pumping Plant capacity	Unknown
	<u>2016</u>	
11	Sponsor Burns Bench Pump Station	\$60,000
8	Install water-wise landscaping at District office building	\$20,000 +

MONITORING AND EVALUATION PLAN

Monitoring and evaluation will occur in three ways. First, all adopted measures will be integrated into the District's master plan. This program is the tool currently used by the District to identify, evaluate, prioritize, budget for, and implement all major planning, design, and construction activities of the District. Second, a thorough review of the WMCP will be made on an annual basis in conjunction with the District's annual goals and budget review process. Third, the WMCP will be updated on its five-year anniversary to evaluate progress, re-assess needs, and modify the plan based on the most current information at the time.

Legend

- Rivers
- District Operated Facilities
- Federal Owned Project Facilities
- District-Owned Project Facilities
- Associated Water Facilities
- Lakes
- Railroad
- County Boundary
- Federal and State Roads
- City and County Paved Roads
- Unpaved Roads
- Township Range



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Uintah County Water Distribution Facilities

- Legend**
- Rivers
 - District Operated Facilities
 - Federal Owned Project Facilities
 - District-Owned Project Facilities
 - Associated Water Facilities
 - Railroad
 - Lakes
 - County Boundary
 - Federal and State Roads
 - City and County Paved Roads
 - Unpaved Roads
 - Township Range

