



PARKER WATER & SANITATION DISTRICT

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LETTER

from the
board president

To Our Customers:

This publication fulfills a desire and a responsibility on the part of the Parker Water & Sanitation District (PWSD) to inform our community about our current and future water situation. It serves as a primer on the challenges facing the District and also as an explanation of how the District has laid the groundwork for future water supplies. It also explores efforts – both underway and planned – for securing more water to accommodate the community's ultimate build-out.

Parker is not in immediate danger of running out of water. However, groundwater supplies – a non-renewable resource – are shrinking, and the cost to produce this water is rapidly increasing with time. Therefore, now is the time to plan and act to expand resources and ensure a sustainable water supply.

Sincerely,

Mary Spencer

The Parker area experienced rapid growth for a number of years. Customers of the Parker Water & Sanitation District include the Town of Parker residents and businesses, and a large number of water users outside the town limits. District customers currently get their water primarily from one source: groundwater. However, there are two distinct sources of the groundwater. The District relies on 38 wells located throughout the Parker area which draw from the Dawson, Denver, Arapahoe and Laramie-Fox Hills bedrock aquifers collectively known as the Denver Basin. These bedrock aquifer wells draw from non-renewable water resources and the availability of this water is declining with time.

The District also has eight shallow wells that penetrate the Cherry Creek alluvium, which serves mainly to recapture reusable return flows from water treatment, but also provides the District with limited local renewable water supplies. The District's bedrock well water supply has to be differentiated from the District's Cherry Creek alluvial wells because the bedrock well water supplies are declining with time and are not renewable, while the District has limited rights to about 3,500 acre feet (one acre foot of water serves an average of two families per year) of this renewable and sustainable water supply for the District's customers.

The objective of this Management Plan is to delineate a clear direction for answering the District's primary challenge: shifting from a bedrock groundwater-reliant system to one that incorporates reliable, renewable surface water supplies as underground resources diminish. This includes strategies and developments that span the past 20 years of District management.

The key strategies for success include:

- Maximizing current groundwater supplies through conservation and management initiatives.
- Adding critical infrastructure.
- Locating and investing in renewable surface water supplies.
- Securing the financial muscle to ensure the community's water needs are met well into the future.

Taken as a whole, this strategic foundation incorporates technical viability, economic feasibility and consistency with regional water management activities in which PWSD participates in partnerships with other water and government agencies.

**ENSURING
SUSTAINABLE WATER**

for PWSD customers



ABOUT

the district

Parker Water and Sanitation District, established in 1962, has grown to serve more than 45,000 customers today. Over the years, the District has expanded its objectives to include water conservation and protection of non-renewable resources while expanding water reuse and developing renewable resources.

District facilities include two water reclamation plants, 46 wells and five water storage tanks. Rueter-Hess Reservoir is now under construction and has a planned capacity of 72,000 ac-ft.

Water reclamation plants use the highest standards of advanced wastewater treatment to filter, treat and clean water to meet and exceed federal clean water standards. The treated water is then discharged into Cherry Creek.

Shallow wells, also called alluvial wells, draw their water from the alluvial aquifer water system beneath Cherry Creek and therefore are utilizing local renewable water supplies from Cherry Creek. The District currently operates eight alluvial wells and they are each between 50 and 75 feet deep.

Deep bedrock aquifer wells draw water from underground bedrock reservoirs known as the Denver Basin aquifers. They range from 515 to 2,745 feet deep. The water supplies of the Denver Basin are drawn from a very large basin (6,700 square miles) but, in the long term, the Denver Basin is a non-renewable water resource. The District maintains 38 bedrock wells.

Lift stations raise sewage from areas lower than the wastewater treatment plants in order to produce a gravity flow into treatment plants.

Pump and booster stations pump water from one pressure zone to another, especially when the water is located and/or stored at a lower elevation than its destination (homes and businesses).

Storage tanks hold water for business and residential use as well as Fire Flow Prevention.



This unassuming building carries the water for approximately 25 percent of Parker Water customers. It's the Regional Pump facility on Motsenbocker Road and contains connections to six wells. PWSD pumps from its wells approximately 3 million gallons of water a day in the winter and **13 million gallons a day** in the summer. District wells provide more than **two billion gallons annually** to more than **45,000 customers**.

THE WATER we have

Over many years, PWSD has developed and paid for the substantial infrastructure system that has assured clean and safe water for residents and businesses. These pipelines, pumps, storage facilities and other equipment will remain an important part of the District's overall water management efforts well into the future.

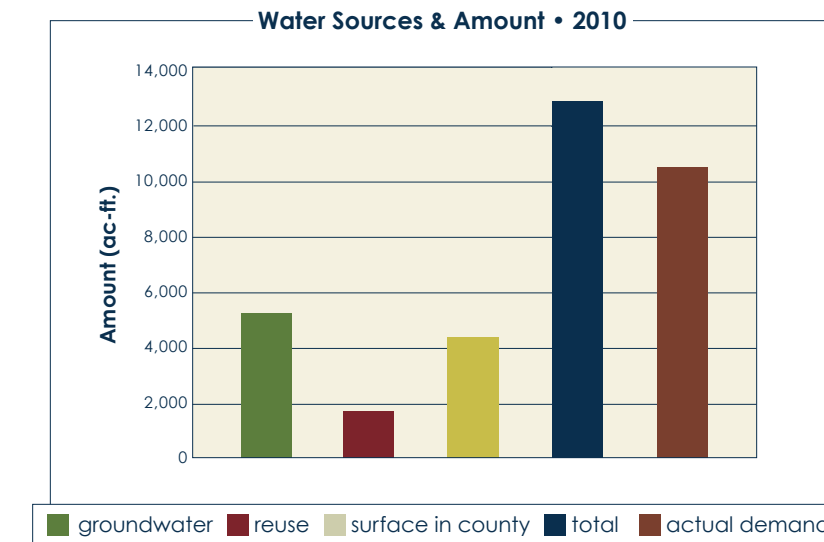
PWSD's current water sources include Denver Basin aquifers, water available for reuse after advanced water treatment, reusable lawn irrigation return flows and water from Cherry Creek.

Denver Basin Aquifers: PWSD has acquired a large portfolio of Denver Basin aquifer water rights through numerous inclusions and contracts. This source totals nearly 33,000 ac-ft.

Water Reuse: PWSD has an augmentation plan that allows reuse of "Advanced Water Treatment" water. AWT water is discharged into Cherry Creek after treatment in PWSD facilities, allowing a like amount to be taken back out for future use.

"Lawn Irrigation Return Flows": The amount of water that flow back into surface water supplies after irrigation. The District is entitled to draw an equivalent amount for its customers.

Cherry Creek Water Rights: PWSD estimates that it can divert an average of 5,000 ac-ft. of Cherry Creek water, in addition to that obtained by water reuse. However, the development of local renewable water from Cherry Creek by PWSD is governed by the administration of the river and will vary from year to year.



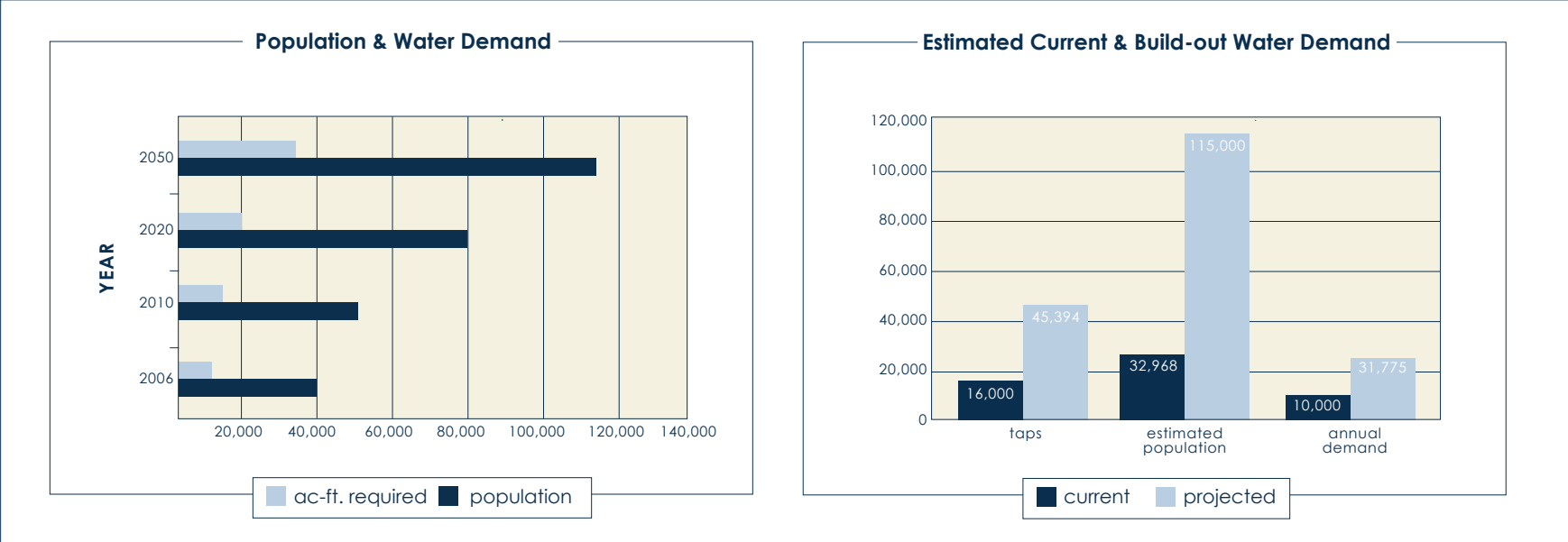
THE WATER we need

The Denver Basin aquifers serving the South Metro area are considered a non-renewable resource. The aquifers are only minimally replenished by infiltration and deep percolation of precipitation (rain and snow). The Denver Basin aquifers are used by many municipal water providers and this cumulative well pumping exceeds the natural rate of aquifer recharge. Since the Denver Basin aquifers have historically also been PWSD's primary source of water, the fact that cumulative pumping by everyone in the basin has exceeded recharge means that the aquifer system is non-sustainable on a long-term basis. Since the 1980s, groundwater levels have declined significantly in the Denver Basin. This is a regional dilemma, not Parker's alone, but this issue has to be addressed by PWSD since it affects the district's water supply over the long term.

As water levels decline, well production decreases. PWSD conducted a study of well production in the Arapahoe aquifer, one of the four primary aquifers of the Denver Basin system, that concluded aquifer production is going to significantly decline over time as water levels continue to decline. The result of water level and water production decline shows there is a need to install additional wells to not only serve future customers, but also to replace production losses that serve current customers. Ongoing reliance on the Denver Basin aquifers as the primary source of supply will result in significant cost increases as the number of wells that are necessary to serve PWSD's customers multiplies. Eventually, the number of wells required to meet demand would become impractical, and continued reliance on non-renewable groundwater is not a viable long-term option.

BY the numbers

PWSD currently serves approximately 16,000 "single family equivalent" (SFE) customers, which equates to a total demand exceeding 10,000 ac-ft. annually. The 2009 Water and Sewer Master Plan (available online at www.pwsd.org/waterandsewermasterplan) estimates a total of more than 45,000 SFEs when the community is fully built out, with a projected population of approximately 115,000 in the District. This equates to a water demand of 31,775 ac-ft. per year.



- Storage of PWSD Cherry Creek entitlement water
- Storage of equivalent volumes of reuse water from PWSD water reclamation plant and lawn irrigation return flows
- Storage of new surface water supplies as they are obtained
- Management of water supply through carryover storage in dry years
- Maintenance of additional capacity for future use
- Lease/sale of capacity to neighboring water districts, providing income to PWSD

RUETER-HESS RESERVOIR
benefits and uses:

[Rueter-Hess expanding. Completion is expected in 2012 • Photo: Jackie Schumaker Photography]

WATER MANAGEMENT milestones

In several critical areas, PWSD is ahead of the curve in preparing for the surface-water future. This includes building and expanding Rueter-Hess Reservoir and the already-completed Cherry Creek Diversion Facility. In addition, the District's Conservation Plan helps stretch groundwater supplies and will create greater efficiency as the system evolves.

Originally conceived in 1985 to handle the storage and water management needs of PWSD, Rueter-Hess Reservoir, named for the family that owned the land on which it is being constructed, is destined to become a regional resource that will serve not only PWSD's customers but those of several surrounding communities.

The purpose of the reservoir is not only to store water but, as important, to manage water use. For example, the reservoir will facilitate a more efficient, consistent groundwater pumping regimen by pumping the lower-yielding aquifers at a constant rate year-round and storing surplus reusable water that can be released for peak period use. Such water management will extend aquifer life.

The 2,500 acre site was originally aimed at creating 16,200 ac-ft. of storage. Upon start of construction in 2004, several neighboring water agencies – Castle Rock, Castle Pines North and Stonegate Village Metropolitan District – asked to join PWSD in the construction of an enlarged reservoir – a 72,000-ac-ft. configuration with expected completion in 2012.

While the original \$105 million price tag for the smaller reservoir was paid for with a general obligation bond being paid back from PWSD revenues, the additional \$60 million for expansion is covered by payments received from the new partners, who will also construct, at their costs, pipelines that will carry their entitled and reuse water to and from the reservoir.

Rueter-Hess itself has renewable surface water rights that will yield about 5,000 ac-ft. per year out of Cherry Creek, and will begin life by storing that water and operating as a water management tool to use other sources available today. Later, it will provide critical storage of newly developed surface water supplies. The expansion will create storage of 40,000 ac-ft. exclusively for PWSD and for its current partners and 32,000 additional ac-ft. available for lease to new participants.

Thus, PWSD's customers only have a significantly larger resource but also three partners who will pay for storage, with a number of other agencies possibly joining the partnership on behalf of their own communities. The current excess capacity of Rueter-Hess gives PWSD a marketable commodity for decades to come, helping to finance other critical projects. The reservoir also will benefit the community with recreational facilities.

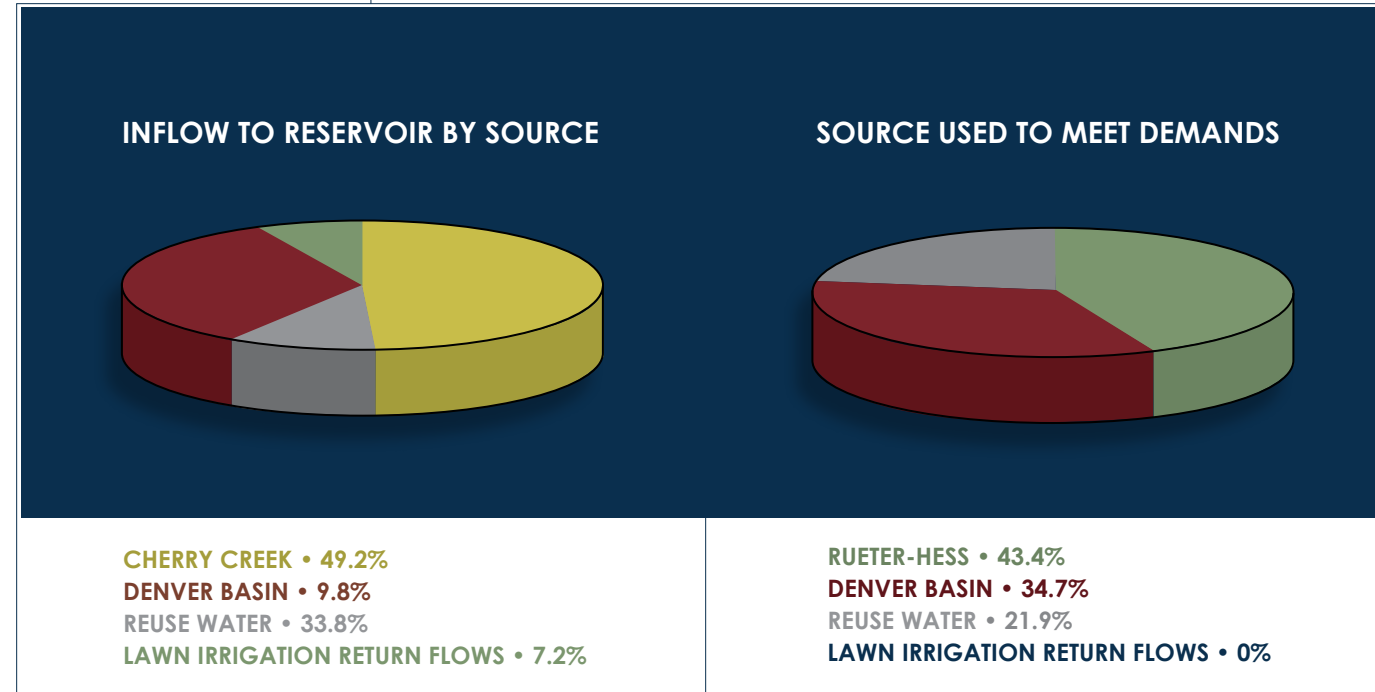
RUETER-HESS RESERVOIR:
cornerstone of current and future supplies



[Rueter-Hess Reservoir under construction]
Photo: Jackie Schumaker Photography



OPERATIONAL model summary



Given the District's almost complete current reliance on Denver Basin groundwater, the Rueter-Hess Operational Model from the Supplemental Environmental Impact Statement indicates the tremendous importance of the Reservoir in future water management. The Reservoir will provide 43 percent of demand when only local renewable water is considered, significantly reducing reliance on direct groundwater pumping. In the future, when supplemental sources of renewable water are available, the Reservoir will satisfy an even greater portion of the District's demand.

[Cherry Creek Diversion Facility]



CHERRY CREEK
diversion facility

A critical companion to Rueter-Hess Reservoir, the Cherry Creek Diversion Facility enables PWSD to (a) discharge water from its water reclamation facilities, return it to Cherry Creek and pump an equivalent volume to Rueter-Hess for eventual reuse, and (b) capture native flows of Cherry Creek when PWSD can legally divert these flows.

The Cherry Creek Diversion Facility – located creekside south of Stroh Road – is part of a water recovery system that will grow in efficiency as the Reservoir goes online. The District uses the creek and this facility to divert Rueter-Hess Reservoir's surface water rights and to reuse water that has been recovered from the system. The District's water reclamation facilities produce recycled water that is currently sent to the creek. Eventually, an equivalent amount of water will be redirected at the diversion structure and then pumped to the Reservoir and become part of a renewable, reliable water supply for PWSD's customers and businesses.

FUTURE RUETER-HESS
water treatment facility

In addition to Rueter-Hess Reservoir and the Cherry Creek facility, one of the District's critical priorities is the construction of a new water treatment facility, which will enable water stored in Rueter-Hess Reservoir to be treated and utilized by the District's customers. The plant is scheduled to start operation in 2015. Analysis will then determine whether the District needs to drill additional groundwater wells until new surface water supplies come online.

PWSD

conservation plan

Efficient water use is an important component of water supply planning for the District and the single most important area for community participation. Reduced water demands will decrease future water supply needs, leaving a more finite and valuable resource to be used when needed. Water demand reduction will also save significant financial capital required to build water and wastewater treatment, distribution and collection facilities. The District's recently completed Conservation Plan and a wealth of helpful consumer conservation information can be found at: www.pwsd.org/conservation.php.

PWSD's customers are primarily residential, with some commercial and no industrial users. Of the 74 percent of single-family water users, more than half of that total is used for landscape irrigation, with the rest for in-home use. The charts above illustrate the importance of resident cooperation to maximize conservation in the District.

Water use can be classified by indoor and outdoor categories to characterize customer use patterns. Outdoor use represents primarily landscaping irrigation and is higher than indoor use. This can be attributed to the high growth the District has experienced in this decade, where newer homes and neighborhoods typically have operational irrigation systems and homeowners associations are more likely to require landscaping maintenance.

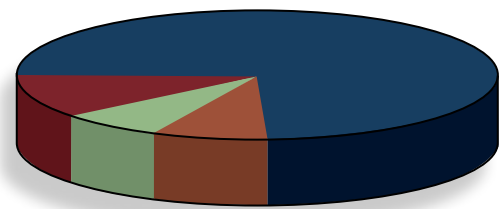
PWSD develops its water conservation activities in conjunction with the local jurisdictions within its service area. Existing PWSD water conservation activities include the following, for which details can be found on the District Web site.

- Low water use requirements for new fixtures
- Low water use landscapes
- Drought-resistant vegetation
- Water-efficient processes
- Public education
- Water-saving demonstrations
- School programs
- Informative & understandable water bills
- Water bill inserts
- Water conservation expert available
- Volume billing
- Conservation (tiered) rate structure
- Turf restrictions
- Water waste prohibition
- Give-aways (e.g., low-flow shower heads)
- Reuse of tertiary-treated reclaimed water
- Leak repair

Percentage of Total Use						
	Single Family Residential	Multi-Family Residential	Commercial	Other Irrigation	District & Construction	Total
indoor	52%	75%	67%	3%	56%	47%
outdoor	48%	25%	33%	97%	44%	53%
total	100%	100%	100%	100%	100%	100%

Millions in Gallon						
	Single Family Residential	Multi-Family Residential	Commercial	Other Irrigation	District & Construction	Total
indoor	56	9	10	1	16	92
outdoor	51	3	5	32	13	104
total	107	12	15	33	29	196

notes: 1. Indoor use is based on November through March.
2. Outdoor use is the difference between the total use and the indoor use.



Single Family • 74%
Other Irrigation • 12%
Commercial • 6%
Multi-Family • 8%

[Water use by user type]



FUTURE water supplies

PWSD's primary strategy for future surface water supplies can be succinctly stated: Identify every potential surface water source and vigorously pursue each of them to determine the legal, engineering, hydrologic and economic feasibility of each option.

While it may be necessary in the short term to drill additional wells – at a cost of \$4 million each to drill, equip and maintain them, expending large capital costs on a declining water resource is not desirable or prudent. The District must secure additional renewable surface water supplies to meet long-range demands.

The District has aggressively explored a variety of potential new sources over the past several years, an effort that will continue for the foreseeable future. All potential sources are accompanied by high costs either for acquisition, transportation or treatment, with some estimates as high as \$700 million over several decades.

Among the variety of potential sources of new water – with the goal of eventually obtaining 16,000 ac-ft. of surface supplies – two are discussed in the following pages as illustrations of the District's explorations.

LOGAN county farms		
&	FLAMING gorge	>>

The District began a farm purchase program in Logan County several years ago. This water would require transportation to the District and then treatment. The District bought the first farms in 2001 and acquisition continues today.

Importantly, the farms, which now total 9,000 acres, continue as working agricultural parcels leased back to farmers. If and when the District decides to move the water, a likely scenario is that the land will be followed. However, a Colorado State University study sponsored by PWSD and supported by a state grant is exploring ways to continue agriculture while harvesting some of the water.

The development of this "Rural/Urban Water Model" will explore ways to sustain irrigated agriculture while also meeting the increasing water needs of urban areas. The results, expected in 2011, will provide crucial information in the development of state and local water policy and ways to establish rural-urban water partnerships.

If the District eventually decides to use this farm water, routing water into Rueter-Hess Reservoir from the lower South Platte is possible, but treatment would be expensive. If the water is never used, the District still retains an investment that can be kept or sold.

LOGAN

county farms

WHERE THE MONEY WILL COME FROM:

a financing plan

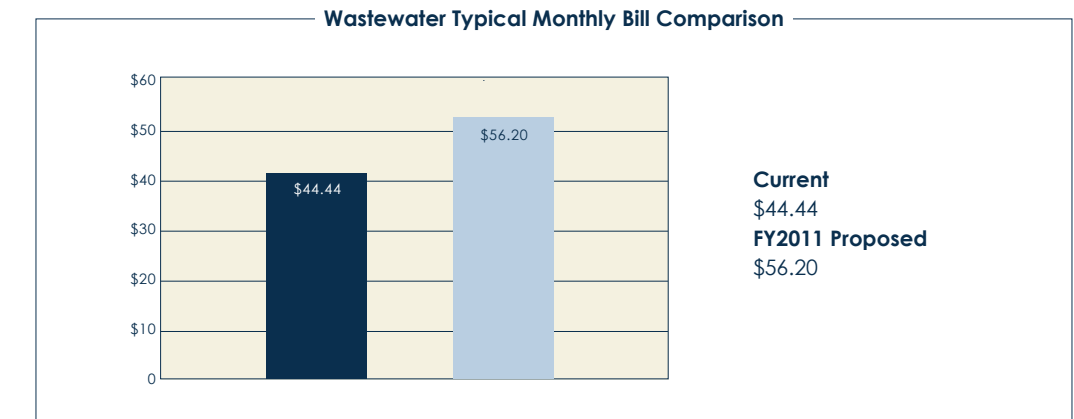
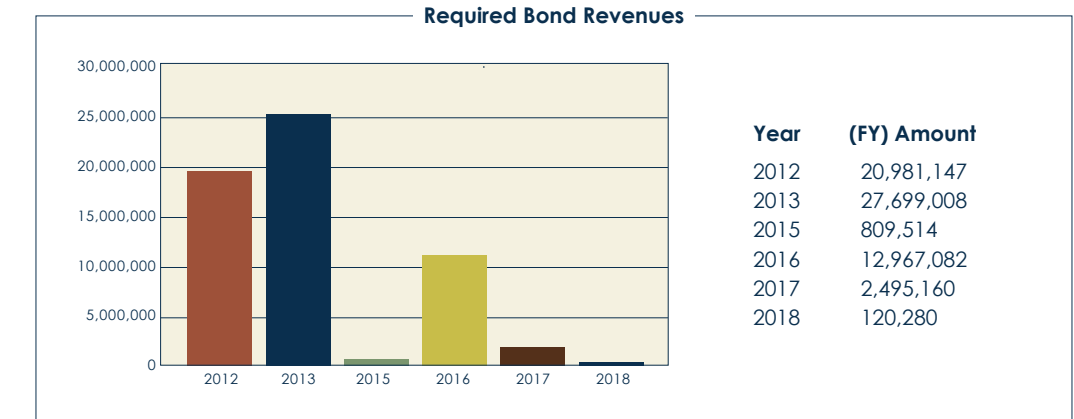
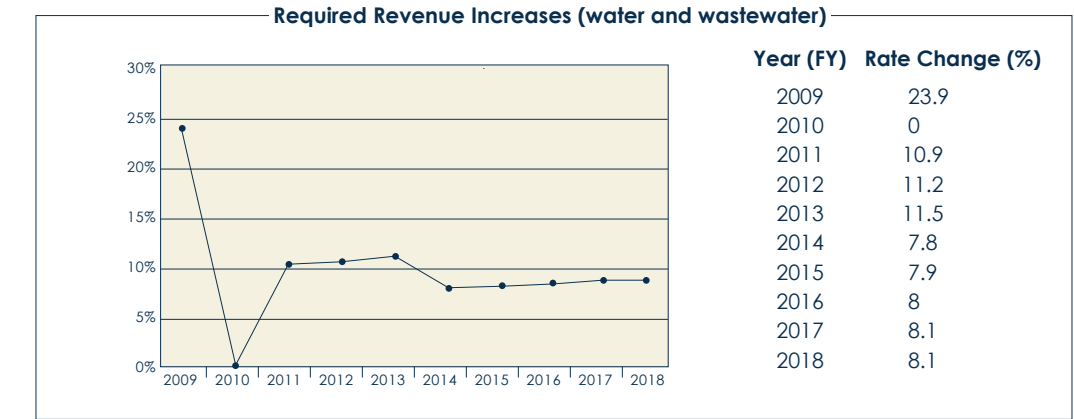
PWSD has developed both a 10-year capital improvement plan and a plan for financing it. Improvement projects that contribute to securing needed water resources will undoubtedly be costly. But the effort will pay long-term dividends for customers.

In early 2009, the District commissioned a rate and fee study, and financing plan that projected potential sources of revenues for capital projects over 10 years (until 2018). The Board of Directors' review of this plan is intended to result in a final rate and financing strategy. A Community Working Group was part of the plan's development to ensure involvement by representatives from the community. Both the Community Working Group Final Report and the Water and Wastewater Rate and Fee Study are available at www.pwsd.org.

Standard sources of revenue for PWSD are monthly customer charges and tap fees – those fees charged to customers when they are connected to the system. The third source is represented by a mill levy attached to property taxes. The 2009 mill levy for the District is 1.839 (the number of dollars a taxpayer pays for every \$1000 of assessed value). These revenue sources help pay for infrastructure but, as important, put PWSD in a position to issue bonds that can be paid off by continuing operations.

Funding sources for recommended capital improvements will comprise a combination of cash from rate adjustments starting in September 2009 and ranging from 23.9 percent in 2009 and decreasing in subsequent years, and more than \$66 million of additional long-term debt through fiscal year 2018. Rueter-Hess debt service is projected to be paid entirely with property taxes by FY 2011. The 10-year capital projects list indicates specific infrastructure improvements benefiting PWSD customers.

Note: figures used here are recommendations not acted upon by the Board by the time of publication. Interested individuals should check the Web site for updates on Board actions regarding the study.



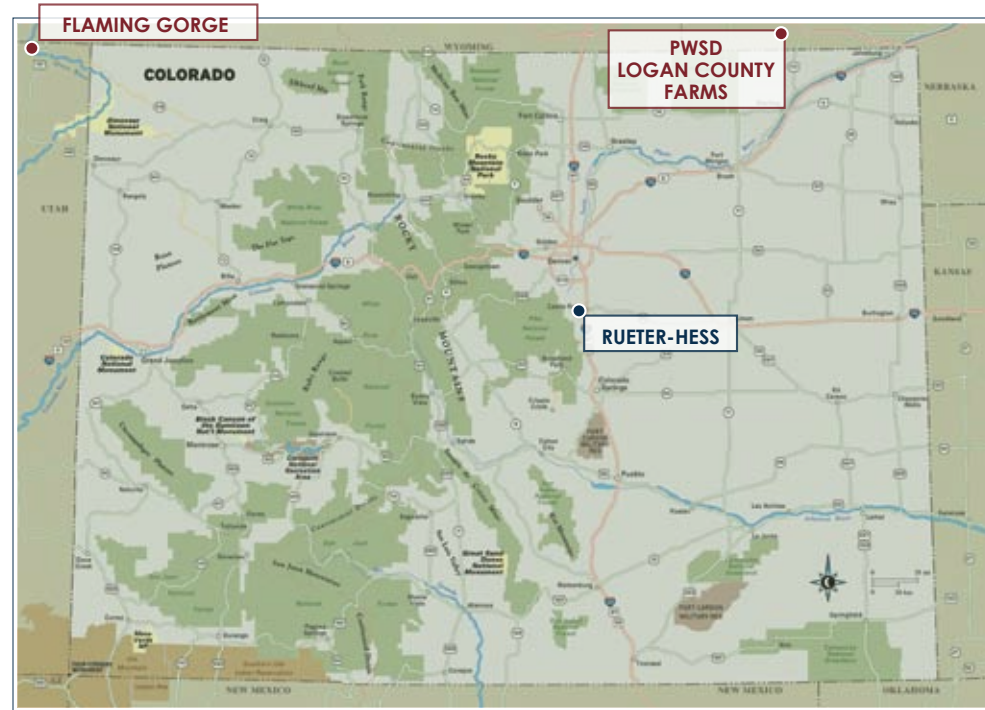
FLAMING

gorge

Flaming Gorge, in Wyoming just northwest of Colorado, represents a potential cooperative venture with regional governments in Colorado and Wyoming, covering nearly a half million water users to this point.

The Flaming Gorge dam and reservoir are owned by the Bureau of Reclamation. They store water from the Green River, part of the Colorado River system. Colorado has significant entitlements to water from the Colorado River system under agreements with other states called "compacts." Preliminary investigations of water availability indicate that at least 165,000 ac-ft. could be available from Flaming Gorge for use by Colorado water providers. This is a development project that could take 10 to 20 years to complete but could make a significant contribution to sustainable water supplies.

Getting water from Flaming Gorge would require a 450-mile pipeline, the cost of which will be shared proportionally between many water users across the two states. Although the right-of-way in Wyoming is secured, that is not the case in Colorado, where it would have to be purchased. Currently, the District is participating in due diligence discussions with the federal government and municipal partners (local water providers) in Wyoming and Colorado.



OPERATIONAL model summary

These standard revenue sources generally support District operations, but are not sufficient to cover all anticipated needs. However, the ability of these sources to cover operational costs enables the District to obtain financing from outside sources. Debt financing can include revenue-secured debt, general obligation bonds and certificates of participation. Each option has pros and cons that are weighed as recommendations are presented to the Board.

As part of a 10-year capital needs analysis, the projects to the right were identified:

PROPOSED VOLUME RATES, THRESHOLDS (PER SINGLE FAMILY EQUIVALENT)	RATE PER 1,000 GAL.	THRESHOLDS
Block 1	\$2.47	0 - 5,000
Block 2	\$4.66	5,001 - 10,000
Block 3	\$5.94	10,001 - 18,000
Block 4	\$7.25	18,001 - 28,000
Block 5	\$9.06	Over 28,000

WATER		TEN YEAR CAPITAL OUTLOOK	CONST. YEAR	AMOUNT
improvements	Phase 4 Pipelines		2009	\$800,000
	24 Inch Zone 2 Water Line		2009	\$1,200,000
	5 MG Storage Tank		2016	\$3,500,000
	Water Purchase		2011	\$8,000,000
	10 MGD WTP Equipment Purchase		2009	\$1,000,000
	10 MGD Water Treatment Plant		2012	\$49,000,000
	Annual Pump & Motor Downsizing		2010	\$2,700,000
Total Water Projects:				\$66,200,000

WASTEWATER		TEN YEAR CAPITAL OUTLOOK	CONST. YEAR	AMOUNT
improvements	South Plant Pump Improvements		2011	\$800,000
	North Plant Backwash Tank		2010	\$200,000
	South Plant AWT Rehab		2011	\$500,000
	Bar CCC Transfer to North Plant		2010	\$300,000
	West Interceptor Phase 2		2018	\$8,000,000
	2 MGD WWTP Expansion Planning & Design		2014	\$2,000,000
	2 MGD WWTP Expansion		2015	\$25,000,000
Total Wastewater Projects:				\$36,800,000

EXISTING, PROPOSED FIXED MONTHLY WATER CHARGE (PER SFE)		AMOUNT
Existing		\$22.03
Proposed		\$27.92
% Change		26.7%



[Rueter-Hess Construction]
photo: Jackie Schumaker Photography

The future sustainable water supply for the residents and businesses of the District will be obtained through the following strategies:

- The District will maximize and manage current groundwater supplies through tactics such as water reuse and using Rueter-Hess Reservoir to its maximum potential.
- The District will identify, pursue and obtain new surface water supplies outside of District boundaries, both as an individual agency and through partnerships with other water agencies and government bodies.
- The District will secure the financing necessary to convey and treat new surface water to meet the District's long-term needs.
- The District will proactively focus on water conservation methods accomplished both by the District itself and by its customers.

The significant progress already made – through Rueter-Hess Reservoir, the Cherry Creek Diversion Facility, which allows for water recycling and reuse, and explorations into surface water supplies all bode well for Parker's water future.

PWSD's board and staff are committed to continued communication with customers about proactive and responsible water resource management. This strong commitment to the development of new, sustainable surface water supplies will help preserve and enhance the quality of life for all PWSD customers.

WATER management summary