BBC RESEARCH & CONSULTING

Review and Analysis of Rates, Fees, Taxes and Finance Structure of the Cherry Creek Basin Water Quality Authority

Cherry Creek Basin Water Quality Authority

REPORT

Report

November 23, 2016

Review and Analysis of Rates, Fees, Taxes and Finance Structure of the Cherry Creek Basin Water Quality Authority

Prepared for

Cherry Creek Basin Water Quality Authority

Prepared by

BBC Research & Consulting
1999 Broadway, Suite 2200
Denver, Colorado 80202-9750
303.321.2547 fax 303.399.0448
www.bbcresearch.com
bbc@bbcresearch.com

BBC RESEARCH & CONSULTING

Table of Contents

EXECUTIVE SUMMARY

Key Findings

The following key findings are based on BBC's examination of the Cherry Creek Basin Water Quality Authority's (hereafter the 'Authority') financial structure and historical financial data:

- The financial structure of the Authority is reasonable. The people responsible for creating water quality impairments, or benefiting from their reduction, contribute toward activities and/or capital investments that improve water quality.

- The financial structure of the Authority has been effective, but the Authority does face some risks to maintaining its effectiveness in the future due to statutory limitations and long-run financial trends.

- Over the past ten years, the Authority has expended more funds than it has raised in revenues and drawn down its fund balances. During the next 10 years, the Authority will need to increase its revenues or reduce its expenditures.

- The financial structure of the Authority is equitable amongst groups that create water quality impairments, but equity would be enhanced by increasing the amount that water quality beneficiaries contribute to the Authority's budget.

Recommendations

Based on our key findings, we recommend:

- Develop a 10-year financial plan that includes projected annual costs for maintaining existing PRFs.

- Increase the balance of the general and proprietary funds to improve the Authority's ability to respond to unforeseen circumstances and to invest in the construction and maintenance of PRFs over the long run.

- Minimize the risk of budget deficits by reducing the costs of non-PRF expenditures.

- Improve equity and effectiveness by increasing the amount of revenue collected from recreation fees.

Detailed Analysis of CCBWQA Financial Structure and Trends

Background

The Cherry Creek Basin Water Quality Authority (CCBWQA) was established in 1988 by the Colorado State Legislature to preserve water quality in Cherry Creek and Cherry Creek Reservoir, and to benefit the people of the state of Colorado by preserving waters for recreation, fisheries, water supplies, and other beneficial uses. The Authority's statutory requirements are codified in C.R.S. 25-8.5 101, which grants the Authority the right to raise revenue from multiple sources in order to implement water quality improvement measures. These measures include activities defined in Regulation 72, the Cherry Creek Reservoir Control Regulation, which defines actions and activities that the Authority can use to reduce nutrient flows into the reservoir. The Authority is also responsible for ensuring that its actions maintain water quality in Cherry Creek Reservoir and the greater Cherry Creek Basin that are consistent with water quality standards defined by the Colorado Department of Public Health and Environment Water Quality Control Regulation 38 (hereafter referred to as 'Regulation 38'), which classifies and defines water quality standards in the South Platte, Laramie River, Republican River and Smoky Hill River basins.

The Authority maintains water quality in Cherry Creek Basin by collecting revenue to finance the construction and maintenance of pollution reduction facilities (PRFs) in addition to activities that support their construction and maintenance. The PRFs that the Authority invests in consist of stream stabilization and reclamation activities, shoreline stabilization and adjacent parking and/or boat access, and instillation of monitoring wells and meteorological stations in addition to other activities (CCBWQA 2015). The Authority identifies implementable PRFs through its planning process to identify potential projects. Proposed projects are evaluated in terms of their costs and anticipated benefits before being reviewed first by the Authority's Technical Advisory Committee and finally by the Board (CCBWQA 2015). Projects recommended by the Board are included in the Authority's 10-year Capital Improvement Project (CIP) list and each year projects from the 10-year CIP list are selected for construction.

The Authority requires a predictable and consistent flow of revenue so that it may construct and maintain PRFs and sustain its other activities on an on-going basis. Therefore, the Authority is interested in understanding if its revenue sources are reasonable and effective for fulfilling its water quality and beneficial use mandate. The Authority is also interested in understanding if its revenue and expenditure structure is equitable in the sense that the contribution to the Authority's revenue by various stakeholders is roughly proportionate to the benefit they receive from the Authority's activities and/or their shares of water quality impairment addressed by the Authority.

BBC has catalogued the Authority's revenues and expenditures from 2006 to 2015 and reviewed several of the Authority's annual reports in order to address the questions outlined above. The remainder of this memo documents what BBC knows about the Authority's revenues and

expenditures and concludes with a number of recommendations to ensure that the Authority's revenue and expenditure structures can meet its mandates in a reasonable, effective and equitable manner.

Water Quality in Cherry Creek Basin and Cherry Creek Reservoir

Any assessment of the Authority's financial structure, revenues and expenditures must begin with the context in which the Authority operates. The Authority's mission helps define its financial requirements and also helps to identify who should pay for the costs of the Authority's operations.

The Authority's focus is improving, protecting, and preserving water quality needed to support the beneficial uses in Cherry Creek Reservoir and Cherry Creek watershed. The beneficial uses and the numeric water quality standards to protect the uses are set by Regulation 38. As part of improving, protecting, and preserving water quality the Authority makes investments in pollution reduction facilities (PRFs) to limit the level of phosphorous and other nutrients available to support biomass growth (measured by chlorophyll α) in Cherry Creek and Cherry Creek Reservoir. Excessive levels of phosphorous, which along with nitrogen are limiting resources of most plant growth, can lead to eutrophication of the reservoir. This causes high algal growth, ecological changes, low dissolved oxygen content and fish and wildlife kills. Algal blooms can also reduce recreational opportunities for swimmers, boaters, and fishermen in addition to creating unpleasant odors for other reservoir users.

Phosphorous enters the reservoir from a variety of point and non-point sources, which flow into Cherry Creek and Cottonwood Creek and their tributaries before eventually flowing into the reservoir. Point sources include six (6) major water treatment facilities that discharge treated water into the basin. The water treatment plants now use advanced treatment processes to remove almost all phosphorous from their discharge. Some treatment plants also remove inorganic nitrogen depending on their nutrient limits defined in their permit. In 2015, 31 additional point sources have been granted permits, consistent with the phosphorous requirements in Colorado Department of Public Health and Environment Water Quality Control Regulation 72 (hereafter referred to as 'Regulation 72'), to discharge water into the basin. Non-point sources of phosphorous come from streams, direct precipitation and the alluvium, which carry nutrients from soil erosion, airborne particulates, and agricultural and residential runoff. Phosphorous also enters the reservoir's water through internal nutrient loading. This occurs when soluble reactive phosphorous (SRP) and dissolved inorganic nitrogen (DIN) are released from the sediment at the bottom of the reservoir.

The Authority manages a monitoring program and a reservoir model to evaluate the potential effects of alternative nutrient management strategies within the reservoir and watershed. This information has helped the Authority prioritize investments in the design, construction, operation, and maintenance of PRFs to control the phosphorous entering the reservoir. During the period in which BBC was conducting this review and analysis, the Authority was in the process of updating the reservoir model.

Beneficiaries of Water Quality Improvements

The Authority's activities benefit a number of different parties, although reservoir users are the primary beneficiaries of water quality improvements. While Cherry Creek Reservoir was originally designed and built to protect downstream communities from flooding – which it still does - the site began to attract recreationists when it became a state park in 1959. Since then, it has become a destination for recreationists who visit the park each year to take advantage of the opportunities to boat, fish, hike, swim, horseback ride, bicycle, view wildlife, and enjoy other forms of recreation (Cherry Creek State Park 2010).

Water quality improvements also benefit local property owners by raising the value of their homes and local residents benefit from increased quality of life. Residents throughout the Cherry Creek Basin also benefit from the construction and maintenance of PRFs. Since 1989, the Authority has invested more than $13 million into the design, construction and maintenance of 23 PRFs throughout the Authority's boundary. The PRFs that have been constructed have predominantly been stream reclamation projects, but several others have secured the shoreline of the reservoir and created new wetland areas (CCBWQA 2015). The PRFs were originally located in Cherry Creek State Park, but over the years the Authority has been constructing them further upstream. While the primary purpose of the PRFs is to reduce phosphorous entering the reservoir, the projects almost certainly benefit individuals living near them. Several of the PRFs have improved the aesthetic values of the areas where they are located by introducing vegetation and reducing channel formation.

Sources of Revenue for the Authority

Under C.R.S. 25-8.5 101, the Authority has the right to collect revenue from a variety of sources to finance its activities (Table 1). Property taxes and specific ownership taxes are the primary source of revenue for the Authority. A half mill levy is charged against the assessed value of property within the Authority's boundary. Revenue from specific ownership taxes is generally assumed to equal 8% of the total property tax collected by the Authority.

The Authority is also allowed to collect revenue from rates, tolls, other fees and charges. By statute, revenue from these sources cannot exceed 30 percent of the annual budget, net of the cost of the Authority's services and programs (C.R.S. 25-8.5-111 subsection 1, (n)). This limitation potentially constrains the Authority's ability to build reserve balances to fund future obligations.

Builders inside the Authority's boundary must pay a one-time building permit fee of $60.00 for every new single family home, $0.04 per square foot for new structures and another $0.04 for each square foot of new impervious area. A waste water effluent fee of $0.05 per 1,000 gallons is charged to any permitted entity that discharges waste water into the basin. Additionally, the Authority collects revenue from visitors to Cherry Creek Reservoir through a two-tiered entrance fee system. Visitors who buy an annual State Parks Pass pay an additional one-time fee of $3.00 to purchase one year of access to Cherry Creek Reservoir and visitors who buy a day-pass pay the Colorado state park entrance fee plus an additional $1.00. By statute, and on an annual basis, the Authority cannot collect more than $1 in revenue from each reservoir user.

Table 1.
Sources of Revenue for the Authority

Revenue Sources	Rates and Fees
Property Tax	
Mill Levy[a]	0.5
Specific Ownership Tax[b]	8% of total property tax
Building Permit Fees	
Single Family Residence	$60.00
Building Footprint	$.04/sqft
Impervious Area	$.04/sqft
Reservoir User Fee	
Annual State Park Pass	$3.00 per year
One day State Park Pass	$1.00 per visit
Other Taxes and Fees	
Waste Water Effluent Fee[c]	$0.05/1,000 gallons

Note:

a. The Mill levy has varied between .392 and .5 from 2006 to 2015 as a result of temporary mill levy reductions and refunds and abatements.

b. The Authority assumes the specific ownership tax is equal to 8% of the total property taxes collected by the Authority.

c. Before January 2016 the Waste Water Effluent Fee was $0.25/1,000 gallons.

Source: 2015 Cherry Creek Basin Water Quality Authority Annual Report

The majority of the Authority's revenue comes from property and specific ownership taxes on all taxable property within the Authority's boundaries (Table 2). Between 2006 and 2015 the Authority collected between 70.2 and 81.4 percent of its annual operating revenue through these taxes. Between 2006 and 2015, the property and specific ownership taxes supplied the Authority with 76.9 percent of its annual operating revenue, on average.

Table 2.
Revenue as a Percent of Total for 2006 – 2015

Operating Revenue	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Property Tax & Specific Ownership Tax	**70.2%**	**70.4%**	**71.8%**	**78.3%**	**79.7%**	**79.9%**	**81.4%**	**79.8%**	**78.8%**	**79.0%**
Percent of Revenue from Rates, Tolls, Fees, Charges, and Penalties	**20.3%**	**20.6%**	**19.4%**	**12.7%**	**9.6%**	**11.0%**	**9.5%**	**11.5%**	**12.8%**	**12.6%**
Building Permit Fees	13.8%	14.8%	12.1%	4.2%	2.9%	5.2%	4.2%	6.4%	7.8%	7.0%
Wastewater Surcharges	6.5%	5.8%	7.4%	8.5%	6.7%	5.8%	5.3%	5.0%	5.0%	5.6%
Recreation Fees	**9.2%**	**8.6%**	**8.6%**	**8.8%**	**9.8%**	**8.6%**	**8.9%**	**8.6%**	**8.3%**	**8.2%**
Other Revenue Sources	**0.3%**	**0.4%**	**0.2%**	**0.2%**	**1.0%**	**0.4%**	**0.2%**	**0.1%**	**0.1%**	**0.2%**
Net Investment Income	0.0%	0.0%	0.0%	0.2%	1.0%	0.4%	0.2%	0.1%	0.1%	0.2%
Interest Income	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reimbursed Expenditure	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: *This is the sum of Building permit fees, trading program fees, and wastewater surcharges.

Source: Cherry Creek Basin Water Quality Authority Audited Budgets (2006 through 2015).

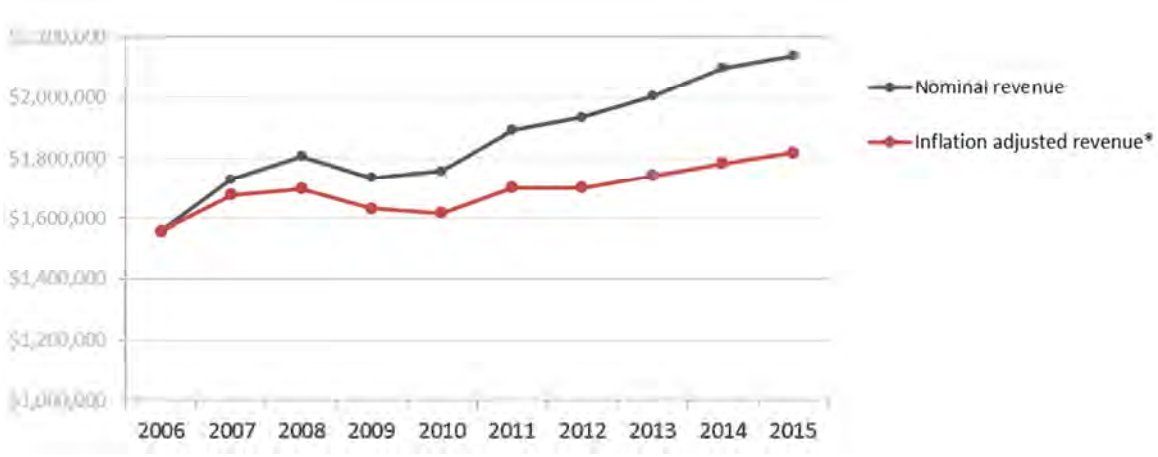
Between 2006 and 2015, other rates, tolls, fees and charges (excluding ad valorem taxes and recreation fees) accounted for between 9.5 and 20.6 percent of the Authority's annual revenue. On average, other rates, tolls, fees, charges and penalties have accounted for 14 percent of the Authority's annual revenues. Building permit fees have accounted for the largest share of revenue from this category. Between 2006 and 2015, building permit fees accounted for 7.8 percent of the Authority's revenue, on average. Revenue from building permit fees has also been highly variable. In 2007, revenue from building permit fees reached a high of 14.8 percent just before the Great Recession and hit a low of 2.9 percent in 2010 after two years of low building

starts. Since then, revenue from building permit fees has increased to close to its long run annual average. Wastewater surcharge fees have been a smaller source of revenue for the Authority since 2006. Between 2006 and 2015 they accounted for an average of 6.2 percent of the Authority's annual revenue.

Recreation fees have been a stable source of the Authority's operating budget, contributing an average of 8.8 percent of annual revenue since 2006. Park visitation continues to grow at Cherry Creek State Park so recreation fees are likely to continue to be a consistent part of the Authority's annual budget. Other revenue sources, including net investment income, interest income, and reimbursed expenditures have accounted for an average of 0.3 percent of the Authority's annual revenue since 2006, although net investment income has been the only reliable source of revenue among these three sources during that time.

BBC analyzed the trends in the Authority's total revenue from 2006 through 2015. During this time total revenue grew from $1.56 million in 2006 to $2.14 million in 2015 (Figure 1). Revenue reached $1.8 million in 2008, but the Great Recession led to a decline in revenue the following year. The fall in revenue in 2009 was largely driven by a $144,969 reduction in revenue from building permit fees compared to 2008. Revenue from specific ownership taxes and reimbursed expenditures also fell below their 2008 levels. Since 2009, the Authority's total revenue has been steadily growing each year at an annualized nominal rate of 3.86 percent. In inflation adjusted terms, the Authority's revenue increased by an average rate 1.8 percent per year between 2009 and 2015. This is roughly one-half the nominal rate of revenue growth.

Figure 1.
Total Revenue Received by the CCBWQA from 2006 – 2015



Note: *Revenue in 2006 dollars.

Source: Cherry Creek Basin Water Quality Authority Audited Budgets (2006 through 2015).

Revenue growth has largely been supported by significant increases in property tax revenue, which has grown by an average of 5 percent per year since 2006 (Table 3). Year-over-year growth in building permit fees, waste water surcharges, recreation fees and specific ownership taxes have also contributed to revenue growth at certain times, but the contribution of these sources has been inconsistent. For example, in 2007, 2011, 2013 and 2014, revenue from building permit fees increased year-over-year by between 20 to 94 percent. However, in 2008,

2009, 2010, 2012 and 2015 revenue from building permit fees shrank year-over-year by between 9 and 66 percent. Revenue from specific ownership taxes, net investment income and wastewater surcharges have also proven to vary, sometimes significantly, from one year to another. Revenue from these sources has declined by as much as 60 percent in some years. Still, the Authority's revenue structure appears to be fairly stable. Even in 2009, when building permit revenue fell by 66 percent as a result of the Great Recession, the Authority's total revenue only fell by 4 percent because the reduction in building permit fee revenue was offset by revenue increases from other sources, but most notably by a 5 percent increase in property tax and specific ownership tax revenue.

Table 3.
Annual Change in Revenue by Revenue Source, 2006 to 2015

Operating Revenue	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Property Tax & Specific Ownership Tax	**-**	**11%**	**7%**	**5%**	**3%**	**8%**	**4%**	**2%**	**3%**	**2%**
Percent of Revenue from Rates, Tolls, Fees, Charges, and Penalties	**-**	**13%**	**-1%**	**-37%**	**-23%**	**23%**	**-12%**	**25%**	**17%**	**0%**
Building Permit Fees	-	20%	-15%	-66%	-30%	94%	-17%	58%	27%	-9%
Wastewater Surcharges	-	-2%	34%	11%	-20%	-7%	-6%	-2%	4%	15%
Recreation Fees	**-**	**4%**	**4%**	**-1%**	**12%**	**-5%**	**5%**	**1%**	**1%**	**1%**
Other Revenue Sources	**-**	**37%**	**-58%**	**27%**	**367%**	**-53%**	**-60%**	**-35%**	**-32%**	**139%**
Net Investment Income	-	0%	0%	0%	367%	-53%	-60%	-35%	-32%	139%
Interest Income	-	42%	7%	-100%	0%	0%	0%	0%	0%	0%
Reimbursed Expenditure	-	34%	-100%	0%	0%	0%	0%	0%	0%	0%

Source: Cherry Creek Basin Water Quality Authority Audited Budgets (2006 through 2015).

Property Tax Revenue

BBC contacted the county assessor's office in Douglas and Arapahoe counties to collect information on the property values of parcels inside of the Authority's tax boundary. Both counties queried their property databases for all parcels in the Authority's tax boundary and supplied an excel spreadsheet describing the taxable value of each parcel for 2016. The data also contained information about the geographic location based on the ZIP code of the parcel as well as the parcel's land use classification. The county assessor's data contained parcels that lie within the Authority's tax boundary, but are exempt from paying the Authority's mill levy. These parcels were given an assessed value of 0 by the county assessor's office.

According to the information received from the Arapahoe county assessor's office, the total assessed value of properties in the tax boundary was approximately $1.5 billion in 2016 (Table 4). The assessed value of properties with ZIP codes corresponding to an Aurora post office that pay the Authority's half mill levy was $764.3 million in 2016 (19% of the total assessed value in the Authority's boundary). Properties with ZIP codes corresponding to an Englewood post office had an assessed value of $740.1 million (approximately 19% of the total assessed value in the Authority's boundary) and properties with ZIP codes corresponding to post offices located in other towns and municipalities in Arapahoe County had an assessed value of $34.2 million

(approximately 1% of the total assessed value in the Authority's boundary). In total, properties inside the Authority's boundary in Arapahoe County contribute 39 percent of the property tax revenue the Authority receives.

Table 4.
Assessed Property Values for Properties in CCBWQA Tax Authority Area in Arapahoe and Douglas Counties, 2016

Source:
Arapahoe and Douglas Counties Assessor's Offices.

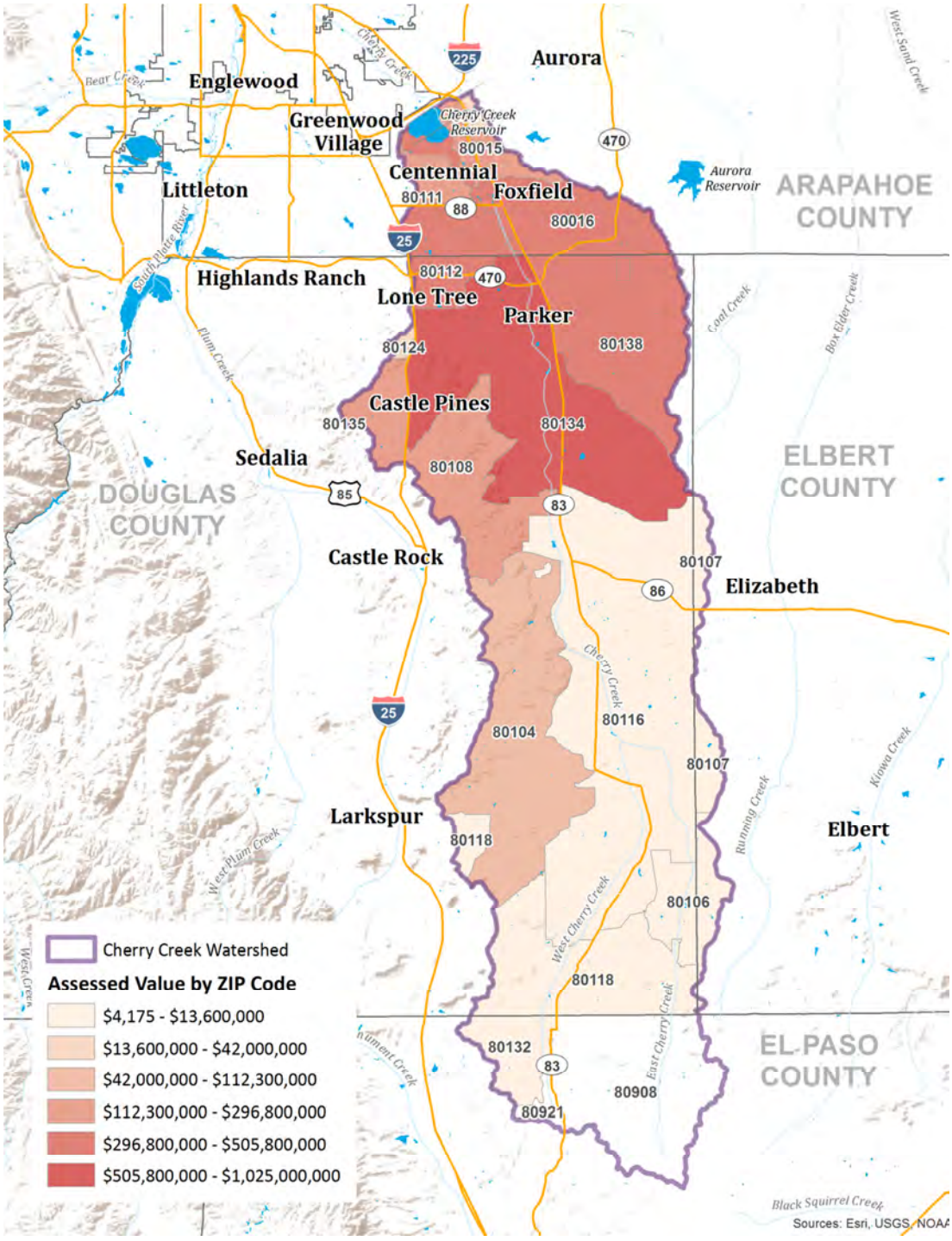
County	Zip Code	Total Assessed Value
Arapahoe County	80014	$42,012,063
	80015	$216,477,212
	80016	$505,762,518
	80111	$238,813,763
	80112	$501,312,386
	Other	$34,159,005
		$1,538,536,947
Douglas County	80016	$11,387,630
	80104	$112,282,880
	80108	$296,797,160
	80111	$23,340,240
	80112	$414,836,430
	80116	$80,006,390
	80118	$13,581,700
	80124	$39,947,710
	80134	$1,024,613,480
	80138	$397,101,240
	Other	$4,401,080
		$2,418,295,940
Total		**$3,956,832,887**

Based on information BBC received from the Douglas County assessor's office, the total assessed value of properties in the Authority's tax boundary was approximately $2.4 billion in 2016. The assessed value of properties with ZIP codes corresponding to a post office in Parker, Colorado that pay the Authority's half mill levy was $1.4 billion in 2016 (36% of the total assessed value in the Authority's boundary). Property with ZIP codes corresponding to a post office in Castle Rock, Colorado had an assessed value of $409.1 million (10% of the total assessed value in the Authority's boundary) and Douglas County properties with ZIP codes corresponding to a post office in Englewood, Colorado (primarily the southern portion of ZIP code 80112) had an assessed value of $438.2 million (11% of the total assessed value in the Authority's boundary). Properties with ZIP codes corresponding to post offices located in other towns and municipalities in Douglas County had an assessed value of $4.4 million (approximately 0.1% of the total assessed value in the Authority's boundary). In total, properties inside the Authority's boundary in Douglas County contribute 61 percent of the property tax revenue the Authority receives.

Figure 2 displays the total assessed value by ZIP code. As Table 1 showed, all property owners in the Authority's boundary pay a half mill levy on the assessed value of their property. As a result, the ZIP codes that contribute the most property tax revenue to the Authority are the ZIP codes where large numbers of people live. It is also important to note that only property inside the

Authority's boundary is subject to the half mill levy. Properties outside of the Authority's boundary are not subject to the half mill levy even if they are located in a ZIP code that contains part of the Authority's boundary.

Figure 2.
Assessed Values by ZIP Code



Source: Arapahoe and Douglas Counties Assessor's Offices.

Expenditures of the Authority

BBC reviewed the Authority's financial expenditure data from 2006 to 2015 in the Authority's General Fund and Proprietary Fund and found more than 70 types of expenditures. BBC worked with the Authority to assign each expenditure to a larger expenditure category. The Authority and BBC classified expenditures into seven (7) broad categories:

- Construction and maintenance of PRFs
- Monitoring activities
- Special projects
- Technical reports and memoranda
- Administration costs
- Miscellaneous projects
- TMAL (Total Maximum Annual Load)

As stated in CRS 25-8.5-111(3):

Of the revenues collected by the authority under paragraphs (n), (o), and (p) of subsection (1) of this section, a minimum of sixty percent on an annual basis shall be spent on construction and maintenance of pollution abatement projects in the Cherry Creek basin or on payments due under loans or other debt incurred and spent by the authority entirely upon such projects. (C.R.S. 25-8.5-111 subsection 3; CCBWQA 2015).

Due to the nature of capital investments, the Authority attempts to fulfill this mandate on a multi-year basis. The remaining 40 percent of the Authority's budget is spent on a long term monitoring program, special and technical reports and memoranda, administrative costs and other expenditures.

Table 5 shows the Authority's financial expenditures as a percent of total from 2006 through 2015. Since 2006, administrative costs have accounted for a significant share of the Authority's annual expenditures (between 21 and 44 percent). In some years, administrative costs have been the largest single expenditure made by the Authority, but most years it is the second largest expense behind the construction and maintenance of PRFs.

Expenditures on the construction and maintenance of PRFs have grown significantly as a share of total expenditures since 2006, when they accounted for 18 percent of the Authority's expenditures. By 2008, the Authority spent 67.6 percent of its total budget on PRFs and in 2012 PRFs accounted for 74.7 percent of the Authority's expenditures. Monitoring activities have consistently been the third largest annual expenditure made by the Authority. Since 2006, monitoring activities have accounted for between 1.9 percent and 15.1 percent of the Authority's annual expenditures, or between $31,276 and $214,176 per year, respectfully.

Expenditures on special projects, like the Cherry Creek Stewardship Partners and the Authority's website, have also fluctuated over the years. In 2006, special projects accounted for 11.3 percent of the Authority's budget, but between 2008 and 2013 the category only accounted for 1.1 to 2.6 percent of expenditures. By 2015, expenditures on special projects had grown again to be 10.3 percent of the Authority's annual budget. Other expenditures, which include activities meant to meet the TMAL requirement and miscellaneous projects, accounted for approximately 20 percent of the Authority's expenditures in 2006 and 2007, but after the TMAL requirement was retired in 2009, expenditures in this category fell to zero.

Total expenditures have fluctuated between $867,149 and $3,001,130 since 2006 (Table 6). The wide range of annual expenditures reflects the nature of the Authority's multi-year approach toward investing in the construction and maintenance of PRFs. In some years, the Authority has invested as little as $160,991 in PRF construction and maintenance (2006) and in other years it has invested as much as $2,242,673 (2012). On average, the Authority has invested approximately $1.2 million per year in the maintenance and construction of PRFs over the last decade.

Administration, special projects, and monitoring activities represent the remaining sources of significant expenditures made by the Authority (Table 6 on page 12). Administration costs have been gradually increasing since 2006 when they accounted for $341,459 of the Authority's total expenditures. By 2015, annual administration costs had grown to $834,170, an increase of 144 percent. Expenditures for special projects, which include the Authority's website, grant implementation and funding for the Cherry Creek Stewardship Partners, have varied significantly over time. On average, the Authority has spent $67,802 on special projects each year, but in 2014 and 2015 the amounts grew to $214,176 and $196,274, respectfully. This is more than a 300 percent increase compared to expenditures on special projects in 2013 and well above the historical expenditures made in this area. Spending on monitoring activities has been relatively stable since 2011, varying between $97,472 and $144,173.

Table 5.
Expenditures as a Percent of Total for 2006 – 2015

Expenditures	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Construction and maintenance of PRFs	18.0%	18.6%	67.6%	48.2%	64.5%	70.8%	74.7%	63.3%	61.6%	38.6%
Monitoring activities	15.1%	10.5%	3.0%	2.5%	1.9%	5.2%	3.2%	5.4%	5.5%	7.3%
Special projects	11.3%	5.3%	1.1%	2.5%	1.7%	2.6%	1.3%	2.3%	8.2%	10.3%
Technical report and memoranda	4.1%	5.4%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Administration costs	37.1%	40.5%	22.0%	43.7%	31.4%	21.4%	20.7%	29.1%	24.6%	43.8%
Miscellaneous projects	0.1%	1.6%	0.1%	0.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
TMAL	14.3%	18.1%	4.5%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Expenditures	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Cherry Creek Basin Water Quality Authority Audited Budgets 2006 – 2015.

Table 6.
Expenditures of the Cherry Creek Basin Water Quality Authority for 2006 – 2015

Expenditures	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Construction and maintenance of PRFs	$166,325	$160,991	$1,577,562	$613,912	$1,210,784	$1,802,530	$2,242,673	$1,450,329	$1,605,769	$736,167
Monitoring activities	$139,509	$91,341	$69,583	$31,276	$35,561	$132,575	$97,472	$122,731	$144,173	$139,684
Special projects	$104,280	$45,554	$26,088	$31,264	$31,080	$65,752	$39,662	$52,365	$214,176	$196,274
Technical report and memoranda	$37,631	$47,222	$41,965	$0	$0	$0	$0	$0	$0	$0
Administration costs	$341,459	$351,386	$512,846	$556,043	$590,024	$544,639	$621,198	$667,138	$641,124	$834,170
Miscellaneous projects	$938	$13,820	$1,805	$10,538	$9,893	$1,018	$125	$0	$0	$0
TMAL	$131,375	$156,835	$104,772	$29,913	$0	$0	$0	$0	$0	$0
Total Expenditures	**$921,517**	**$867,149**	**$2,334,621**	**$1,272,946**	**$1,877,342**	**$2,546,514**	**$3,001,130**	**$2,292,563**	**$2,605,242**	**$1,906,295**

Source: Cherry Creek Basin Water Quality Authority Audited Budgets 2006 – 2015.

Is the Authority's Funding Structure Reasonable?

The word reasonable is defined by the Merriam-Webster dictionary as being "governed by or being in accordance with reason and sound thinking." The Authority was created to improve and maintain water quality standards in Cherry Creek Basin and Cherry Creek Reservoir. In a reasonable system, the people responsible for creating water quality impairments, or benefiting from their reduction, would contribute toward activities and/or capital investments that improved water quality.

Based on this logic, the financial structure of the Authority appears to be reasonable. Water quality impairments in the Cherry Creek Basin and Cherry Creek Reservoir come from both point and non-point sources. Point sources in the Cherry Creek Basin include wastewater treatment plants and permitted municipal separate storm sewer systems (MS4s). Wastewater treatment facilities pay a wastewater surcharge on any water discharged into the basin. MS4 permittees often have their own fees, and certain MS4 permittee projects may include passive water quality treatment. Non-point sources of water quality impairments include soil erosion, residential runoff, agriculture and airborne particulates, many of which come from residential and agricultural properties as well as new residential development inside of Cherry Creek Basin. These groups contribute to the Authority's revenue through a combination of property and specific ownership taxes and building permit fees.

Recreationists and other Cherry Creek State Park users are the direct beneficiaries of the Authority's actions to improve and maintain water quality in Cherry Creek and Cherry Creek Reservoir. Visitors who buy an annual State Parks Pass pay an additional one-time fee of $3.00 to purchase one year of access to Cherry Creek Reservoir and visitors who buy a day-pass pay the Colorado state park entrance fee plus an additional $1.00. By statute, and on an annual basis, the Authority cannot collect more than $1 in revenue from each reservoir user.

Is the Authority's Funding Structure Effective for Meeting its Mandate?

The word "effective" is defined by the Merriam-Webster dictionary as "the degree to which something is successful in producing a desired result or success." In order for the Authority's financial structure to be judged as "effective" it would need to generate a stable and predictable stream of revenue that allows the Authority to improve or maintain the water quality in Cherry Creek and Cherry Creek Reservoir by making new and ongoing investments in PRFs.

The Authority's funding structure is stable and predictable because its main sources of revenue are stable and predictable. Property taxes and specific ownership taxes are the Authority's primary sources of revenue and have accounted for more than 78 percent of total annual revenue each year since 2009. The combined revenue from these two sources has increased every year since 2006 at a steady and predictable average annual rate of 5.4 percent. This has kept the Authority's revenue relatively stable over time as growth in property tax revenue has offset temporary declines in other revenue sources, like building permit fees and wastewater surcharges. Even during the height of the Great Recession in 2009, when revenue from building permit fees fell by $144,969 from the previous year, the Authority's revenue remained relatively stable. Recreation fees have also been a stable and predictable source of revenue for the Authority. Since 2006, the fees have accounted for 8.2 to 9.8 percent of the Authority's annual revenue because visitation numbers to Cherry Creek State Park have remained strong over time.

Other revenue sources, like building permit fees and wastewater surcharges have shown themselves to be less stable and predictable, but since the Authority does not rely on these revenue sources for a large share of its budget they do not heavily influence the financial health of the Authority.

Still, the nature of the Authority's funding and expenditure structure creates some inherent risk regarding its ability to fulfill its mandate. As Figure 1 showed, the Authority can reasonably expect to receive between $2.0 and $2.5 million in annual revenue over the next 10 years. On the other hand, the Authority's operating expenditures — total expenditures minus the investment in PRFs — have been growing steadily since 2011, largely as a result of increasing administration costs, which have increased 144 percent since 2006. Excluding investments in PRFs, the Authority incurs annual operating costs of $809,098, on average.[1] As the Authority's operating costs increase, its capital expenditures must also increase in order for the Authority to meet its mandate to invest 60 percent of its budget in the construction and maintenance of PRFs.

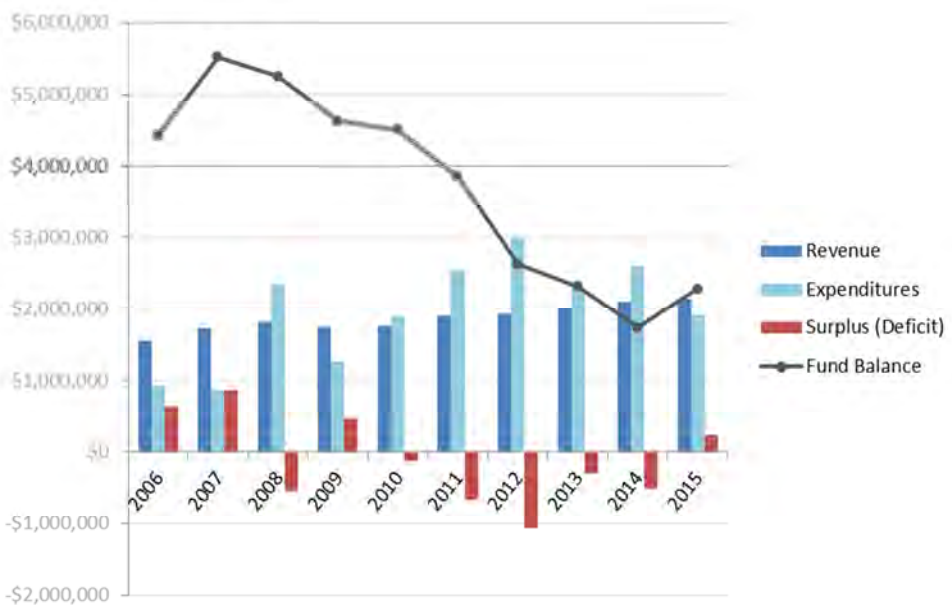
The Authority's approach of meeting the 60 percent expenditure target over a multi-year period requires the Authority to build up its fund balances in the years preceding large capital investments (Figure 3). In 2006 and 2007, the Authority spent 16 and 19 percent of its budget on PRFs, respectively. This allowed the Authority to increase the balances of its general and proprietary funds. In 2008, 2010, 2011, 2012, 2013 and 2014 the Authority used the savings to make expenditures in PRFs that amounted to 60 percent or more of its budget (Table 6). These expenditures were large enough that the Authority had to use money from the general and proprietary funds to pay for them and as a result the combined fund balances declined significantly over that period (Figure 3). In 2007, the balance of the Authority's funds was $5.5 million, but by 2014 the combined balance of the funds had fallen to $1.7 million.

[1] The Authority's annual operating costs without investments in PRFs were estimated by subtracting the expense of PRFs from the total expenditure each year.

Figure 3. Revenues, Expenditures and Fund Balances of the CCBWQA from 2006 – 2015

Source:

Cherry Creek Basin Water Quality Authority Audited Budgets (2006 through 2015).



The statutory requirements on the Authority's PRF expenditures means that approximately 60 percent of the Authority's expenses are determined by how much the Authority spends on operational expenses like monitoring and administration. Even though these operational expenses represent 40 percent or less of the Authority's budget, they have a multiplier effect on the Authority's expenditures. As a result, every $1 of operational expenses requires an additional $1.50 of expenditures on PRFs. If the upward trend in operating costs continues, it could put the Authority in a position where expenditures routinely exceed revenue.

Is the Authority's Funding and Expenditure Structure Equitable?

The word "equitable" is defined by the Merriam-Webster dictionary as "being fair and impartial." The Authority's funding and expenditure structure could be considered equitable if the contribution to the Authority's revenue by various stakeholders is roughly proportionate to the water quality impairment they create and/or the benefit they receive from the Authority's activities to remedy water quality impairment impairments.

The financial structure of the Authority is equitable amongst groups that create water quality impairments. The Authority's tax and fee structure roughly reflects the distribution of non-point and point source water quality impairments created by property owners, residents, developers, and waste water dischargers in the Cherry Creek Basin. According to the 2010 CCBWQA Annual Report, 525 lbs. of phosphorous (6 percent of total) was discharged into Cherry Creek Reservoir by point sources between October 2009 and September 2010. During that same time period 9,411 lbs. of phosphorous (94 percent of total) entered the reservoir from non-point sources. As Table 3 showed, property taxes and building permit fees account for approximately 84.7 percent of the Authority's annual revenue, on average, and are partially responsible for the 90 percent or more of phosphorous that enters the reservoir from non-point sources. Wastewater treatment plants and other point sources account for approximately 6.2 percent of the Authority's annual revenue, on average, and are responsible for approximately 6 percent of the phosphorous that enters the reservoir.

There is room to improve the equity of the Authority's financial structure by increasing the amount that water quality beneficiaries contribute to the Authority's budget. The benefits that recreationists receive from Cherry Creek State Park and Cherry Creek Reservoir are significant. In 2000, Stratus Consulting estimated the consumer surplus associated with recreation activity at Cherry Creek State Park and Cherry Creek Reservoir. Consumer surplus is the difference between what a person visiting Cherry Creek State Park is willing and able to pay for the experience and what they actually had to pay. Estimates of daily consumer surplus values for different recreation activities were taken from a database of recreational values published by John Loomis, a professor of environmental economics at Colorado State University. The values were estimated at sites across the United States and 'transferred' to Cherry Creek State Park.

In 2016, an estimated 1.9 million people will visit Cherry Creek State Park and Cherry Creek Reservoir to participate in some form of recreation (Table 7). Recreationists enjoy daily consumer surpluses of between $21.90 (Horseback riding) to $85.39 (Bicycling). As a group, fisherman have the largest annual consumer surplus from recreating at the reservoir ($24 million), followed closely by motor boaters ($21 million) and bicyclists ($12 million). In total, all of the people who will participate in at least one recreation activity in 2016 will have an estimated combined consumer surplus of more than $92 million.

Table 7.
Estimated Economic Benefits Received by Recreationists at Cherry Creek State Park

Activity	User Days 2016*	Value Per Activity Per Day**	Total Value at CCSP
Swimming	172,082	$35.70	$6,143,141
Fishing	510,196	$47.05	$24,005,978
Motor boating	288,867	$73.20	$21,143,932
Nonmotorized boating	32,369	$54.90	$1,776,973
Sightseeing	231,277	$35.67	$8,249,658
Pedestrian use	250,987	$35.67	$8,952,717
Bicycling	144,326	$85.39	$12,324,055
Picnicking	102,375	$33.28	$3,406,783
Camping	79,046	$36.34	$2,872,302
Rifle range	44,952	$35.67	$1,603,432
Interpretation	34,391	$35.67	$1,226,717
Model airplane	10,572	$35.67	$377,112
Horseback riding	8,755	$21.90	$191,696
Total	**1,910,195**		**$92,274,496**

Note: The number of user days for each activity in 2016 were calculated by estimating the annual growth rate in total user days between 1999 and 2009. Stratus Consulting (2000) reported 1.372 million visitors in 1999 and Cherry Creek State Park (2010) reported 1.756 million visitors in 2009. This represents an annual change in visitation between 1999 and 2009 of 2.79 percent. The estimated annual growth rate was used to extrapolate the 2009 visitation numbers to 2016. The value per activity day was originally reported in 1999 dollars (Stratus Consulting 2000). The values were inflated to 2016 values using the Bureau of Economic Analysis's Consumer Price Index Inflator factor of 1.45.

Source: Adapted from Stratus Consulting 2000.

The 2000 Stratus report found that a decline in water quality that leads to a 10 percent reduction in recreation visits and a 20 percent reduction of recreation values would cause recreationists to lose $10.01 to $25.67 million per year in consumer surplus.[2] If this loss were distributed across the 1.9 million people forecasted to visit Cherry Creek State Park in 2016, it would equate to a loss of value of $5.25 to $13.47 per person per visit. Since these losses are avoided as a result of the Authority's investments in water quality improvements, recreationists are benefiting from the Authority's activities by between $10.01 to $25.67 million per year even though they only contributed $175,000 to the Authority's revenue in 2015. While many visitors to the park may already contribute to the Authority's revenue through property taxes - the same study reported that 61 percent of the visitors lived within 12 miles of Cherry Creek State Park and 81 percent lived within 20 miles – the half mill levy is compensation for the nutrients that enter the reservoir and the benefits homeowners receive from reducing them. Therefore, recreationists are receiving a large subsidy from other rate payers within the Authority's boundary.

Conclusions and Recommendations

Based on our review of the Authority's revenues and expenditures since 2006 and related information, BBC concludes that the Authority's financial structure has been reasonable, effective and mostly equitable at meeting the Authority's mandates over the past 10 years. Whether or not this financial structure continues to be reasonable, effective and equitable in the future depends on how the Authority will evolve to meet its mandates in the next 10 to 20 years.

In the next 5 to 10 years, the Authority has a number of new PRF projects it would like to build as part of its 10-year CIP. As Figure 2 showed, constructing and maintaining new PRFs could be a potential challenge for the Authority since the combined balance of the general and proprietary funds have been declining for several years. This has reduced the Authority's ability to cover shortfalls in revenue in years when the Authority makes large capital investments. Still, by statute, the Authority is mandated to spend at least 60 percent of its budget on the construction and maintenance of PRFs. Over the next 10 to 20 years this requirement has the potential to create an odd incentive for the Authority to find ways to spend money on these types of projects if other Authority expenses, such as administration, continue to increase.

This creates a potential challenge for the Authority because over time it is reasonable to expect the Authority to spend less on the construction of new PRFs as the number of sites where PRFs are needed grows smaller. Absent changes in rates and fees, the Authority will have to spend less than it has over the past 10 years on its other functions if less overall money is spent on PRFs.

The Authority also needs to manage the combined balance of the general and proprietary funds to support its expenditure structure. As shown previously in Figure 2, the combined balance of the Authority's funds has declined from about $5 million in 2007-2008 to about $2 million at present. Unless the Authority increases its annual revenues, it will have to spend less over the next ten years than it has in the past decade.

[2] The Stratus Consulting report estimated a decline in water quality at Cherry Creek Reservoir would lead to an annual welfare loss of $6.9 million to $17.7 million in 1999 dollars. BBC used the Bureau of Economic Analysis Consumer Price Index (CPI) inflator to update the estimates to 2016 dollars using a CPI inflator of 1.45

Recreation fees would be the most appropriate place for the Authority to generate additional revenue on the grounds of improving the Authority's effectiveness and equity. Currently, the Authority collects approximately $175,000 from reservoir users, but under C.R.S. 25-8.5-111 subsection 1, (o), the Authority can collect as much as $1 per reservoir user per year. Under current reservoir visitation numbers, the Authority could raise as much as $1.7 – $1.9 million per year. This is nearly 10 times the current revenue collected from recreation fees. The evidence suggests that reservoir users at Cherry Creek State Park have large consumer surpluses, which means that the Authority could raise additional revenue from this group without having a significant impact on their willingness or ability to visit Cherry Creek State Park. The evidence also suggests that this group receives significant benefits – valued at $10.01 million to $25.67 million per year - from the Authority's activities despite contributing less than $175,000 to the Authority's annual revenue.

Appendix.

BBC reviewed the Authority's financial expenditure data from 2006 to 2015 in the Authority's General Fund and Proprietary Fund and found more than 70 types of expenditures. BBC worked with the Authority to assign each expenditure type to a larger expenditure category. The table below displays the Authority's detailed expenditures as well as the larger expenditure categories the expenditures were assigned to. The table also displays the total amount the Authority spent on each expenditure type between 2006 and 2015.

Table A-1.
Disaggregated Expenditures from 2006 to 2015

Macro Category	Expenditure Name	Total Expenditure (2006 - 2015)
Administration costs	Accounting and auditing	$341,559
Administration costs	Administration	$560,809
Administration costs	Annual report	$237,503
Administration costs	Control regulation administration	$24,684
Administration costs	Data management	$199,035
Administration costs	Decals	$112,986
Administration costs	Depreciation	$22,673
Administration costs	Dues and subscriptions	$9,734
Administration costs	General technical support	$414,728
Administration costs	General watershed management	$1,217,768
Administration costs	Insurance	$57,568
Administration costs	Land use applications	$254,281
Administration costs	Legal	$477,922
Administration costs	Management	$619,878
Administration costs	Master plan	$106,788
Administration costs	Miscellaneous expenses	$1,969
Administration costs	Office expenses	$20,147
Administration costs	Repairs and maintenance	$1,811
Administration costs	Site application review	$84,295
Administration costs	TAC coordination	$93,505
Administration costs	Trading applications	$8,543
Administration costs	Treasurer's fees	$202,814
Administration costs	Triennial review hearing	$580,148
Administration costs	Watershed plan implementation	$8,879
Miscellaneous projects	Miscellaneous - CIP	$16,563
Miscellaneous projects	Miscellaneous projects	$21,574
Monitoring activities	Basin-wide monitoring	$512,395
Monitoring activities	In-lake monitoring	$304,677
Monitoring activities	Laboratory analysis (CEC)	$43,811
Monitoring activities	Monitoring and sampling report	$12,102
Monitoring activities	Monitoring equipment	$11,445
Monitoring activities	QA/QC sampling	$18,701
Monitoring activities	WQ Data reporting	$100,774

Source: Cherry Creek Basin Water Quality Authority Audited Budgets 2006 – 2015

Table A-1 (continued).
Disaggregated Expenditures from 2006 to 2015

Macro Category	Expenditure Name	Total Expenditure (2006 - 2015)
Construction and maintenance of PRFs	Advanced water treatment plant	$4,015
Construction and maintenance of PRFs	CC Sediment pond (Arapahoe Road)	$73,918
Construction and maintenance of PRFs	CCSP Wetlands	$19,861
Construction and maintenance of PRFs	Centennial airport ponds	$131,360
Construction and maintenance of PRFs	Compression eval implement	$51,226
Construction and maintenance of PRFs	Cottonwood creek	$91,762
Construction and maintenance of PRFs	Cottonwood stream restoration	$200,000
Construction and maintenance of PRFs	Cottonwood stream restoration	$1,316,524
Construction and maintenance of PRFs	Cottonwood wetlands pond	$420,751
Construction and maintenance of PRFs	Facility maintenance	$11,364
Construction and maintenance of PRFs	Piney creek sediment removal	$59,237
Construction and maintenance of PRFs	PRF general and emergency repairs	$21,262
Construction and maintenance of PRFs	PRF lab	$16,511
Construction and maintenance of PRFs	PRF monitoring	$728,529
Construction and maintenance of PRFs	PRF O&M and inspections	$193,279
Construction and maintenance of PRFs	Pollution reduction - Cottonwood perimeter	$2,071
Construction and maintenance of PRFs	Pollution reduction - Peoria Trib B/Airport	$0
Construction and maintenance of PRFs	Reservoir destratification	$148,949
Construction and maintenance of PRFs	Reservoir shoreline - Mountain Lake Loop	$10,472
Construction and maintenance of PRFs	Reservoir shoreline stabilization	$7,001
Construction and maintenance of PRFs	Shoreline erosion - Tower Loop	$46,400
Construction and maintenance of PRFs	Stream corridor preservation	$9,220
Construction and maintenance of PRFs	Stream stabilization - CC 12 Mile Park	$1,368,607
Construction and maintenance of PRFs	Stream stabilization - CC Arap Rd to Piney Creek	$1,052,604
Construction and maintenance of PRFs	Stream stabilization - CC County Meadows	$504,238
Construction and maintenance of PRFs	Stream stabilization - CC Hess Road	$42,195
Construction and maintenance of PRFs	Stream stabilization - CC State Park to Eco Park	$68,425
Construction and maintenance of PRFs	Stream stabilization - CC Vermillion Creek	$5,835
Construction and maintenance of PRFs	Stream stabilization - Cherry Creek Eco Park	$1,445,182
Construction and maintenance of PRFs	Stream stabilization - Cottonwood Creek	$410,430
Construction and maintenance of PRFs	Stream stabilization - McMurdo Gulch	$640,421
Construction and maintenance of PRFs	Stream stabilization - Mountain Loop	$1,040,522
Construction and maintenance of PRFs	Stream Stabilization - Norton Loop	$239,229
Construction and maintenance of PRFs	Stream stabilization - Shop Creek Trail	$35,536
Construction and maintenance of PRFs	Stream stabilization - West boat ramp	$269,965
Construction and maintenance of PRFs	Stream Stabilization - CC PJCOS	$648,661
Construction and maintenance of PRFs	Utilities destratification	$165,293
Construction and maintenance of PRFs	Weed control	$66,187
Special projects	CC Stewardship partners	$222,300
Special projects	CCBWQA website	$42,844
Special projects	Grant implementation	$25,453
Special projects	I&E coordination	$86,769
Special projects	Phosphorous broker	$80,177
Special projects	Stormwater planning/implementation	$1,785
Special projects	Unassigned studies	$347,167
Technical report and memoranda	Public information program	$1,328
Technical report and memoranda	Watershed model update	$125,490
TMAL	319 Grant - TMAL action	$4,009
TMAL	TMAL action - Background study	$34,395
TMAL	TMAL action - BMP infiltration	$24,279
TMAL	TMAL action - Depth profiling	$133,753
TMAL	TMAL development	$226,459

Source: Cherry Creek Basin Water Quality Authority Audited Budgets 2006 – 2015