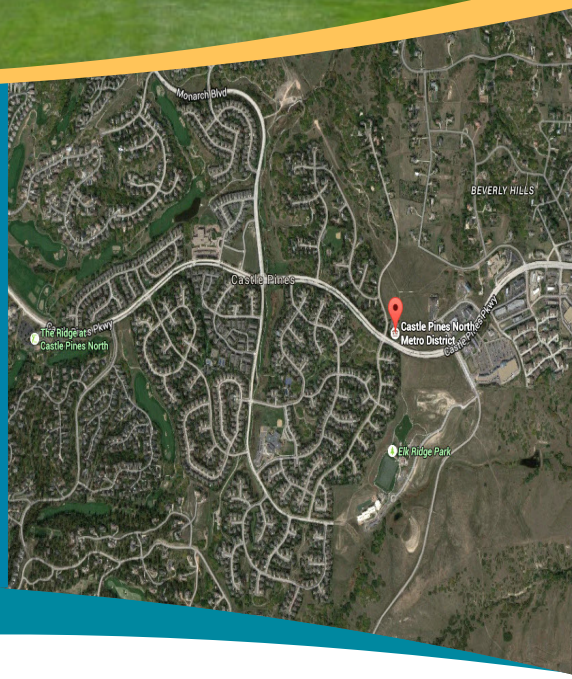
PREPARED FOR
CASTLE PINES NORTH METROPOLITAN DISTRICT

Strategic Renewable Water Implementation Plan

OCTOBER 2015



IMPLEMENTATION REPORT

HAWKSLEY CONSULTING

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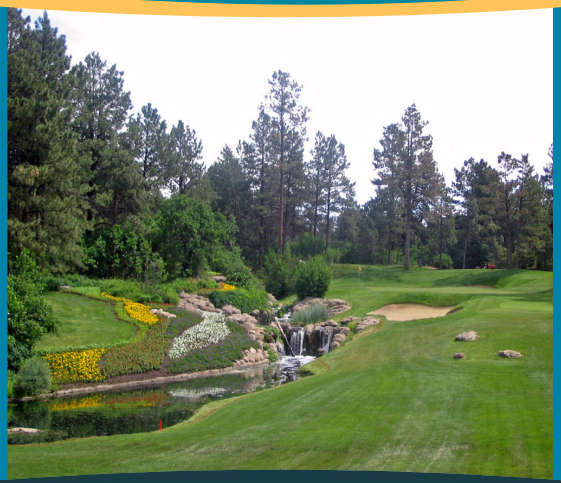
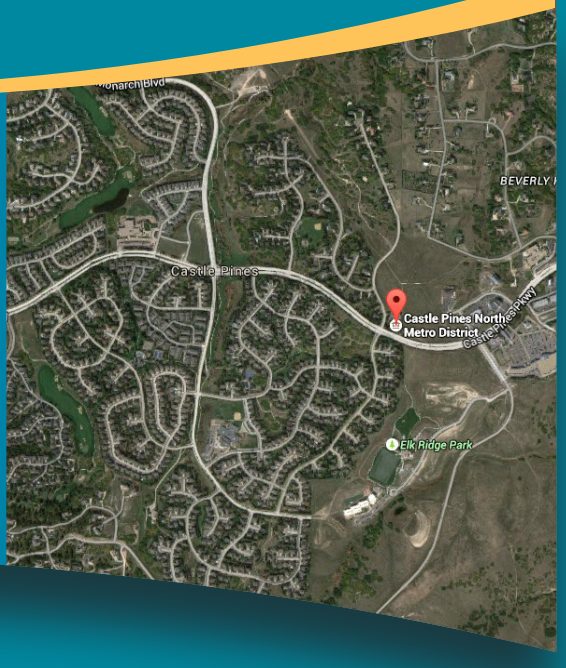




SECTION 1

EXECUTIVE SUMMARY

Like all water providers in Douglas County, the Castle Pines North Metropolitan District has, throughout its entire history, relied exclusively on withdrawals from the Denver Basin aquifer to meet the water supply needs of its residents. While the aquifer is quite large, spanning 6,700 square miles, the water it contains has become more and more difficult to extract. Rapid growth in Douglas County coupled with similar growth in other areas, themselves also dependent on the same aquifer source, has resulted in declining artesian pressure and lower yields. To obtain the same amount of water as just a few years ago, Douglas County water providers must drill ever more wells at greater depths and, of course, at greater expense. Although the aquifer almost certainly contains more water, the fact that the Denver Basin is not naturally replenished by underground springs makes further investment in wells increasingly questionable.

The deteriorating physical and economic aspects of groundwater dependence have prompted most Douglas County water providers to begin searching for renewable surface water supply alternatives. Most of the providers in Douglas County, including the District, began investigations in 2003 with the publication of the South Metro Study, which concluded that “the future of these large drawdowns [of the aquifer] will reduce well production drastically and make production difficult and costly.” It was around that time that the District began acquiring various assets that would make renewable water a potential reality for its residents.

By 2013, ten years after the publication of the South Metro Study, the District had acquired a number of renewable water assets: a portfolio of senior and junior surface water rights in East Plum Creek, the Upper South Platte, and the Lower South Platte; storage rights in Rueter-Hess Reservoir; storage potential in the expanded Chatfield Reservoir; and had already completed construction of an interconnect pipeline to deliver some renewable water via an agreement with Centennial Water & Sanitation District.

The impressive array of assets acquired offered the District a number of possibilities but no obvious direction on how the assets should be used, or what infrastructure would be necessary to turn the collection of assets into a viable renewable water supply system. Hawksley Consulting (a division of MWH Global) was engaged in 2013 to assist the District in developing a comprehensive plan that would answer these important questions. Our engagement with the District was a structured decision making process built on the stated policies and objectives of the elected Board of Directors. With policies and objectives as the guide, expert technical analysis focused on narrowing the field of prospective water supply options from a confusing array of hundreds, to a progressively smaller number resulting in a single recommended renewable water plan.

At the onset of the engagement, it was determined that the District had acquired assets that, altogether, could yield up to 315 possible configurations with varying degrees of supply, reliability, and

cost. After conducting a fatal flaw analysis to identify configurations that were logically inconsistent with one another, we were able to narrow the field to 192. Through a series of steps, referred to as "phases", we were able to narrow the field down to just three so-called "Candidates". A brief description of these phases follows:

Phase 1 – Establishing the Objectives and Decision Criteria

Starting in 2013 and extending into 2014, we engaged the District's Board of Directors in a series of workshops to determine the characteristics of a renewable water system that were important for the Castle Pines North community. These characteristics, sometimes called criteria or objectives, were to become the yardstick to measure the degree to which a given solution could truly satisfy the needs of the community. From those workshops, the Board evaluated the features that the community desired most from a water supply solution. Not surprisingly, obtaining the largest amount of renewable water at the lowest possible cost were the two highest considerations. However, these were not the only objectives. Reduction of risks, water quality, and the speed/timing of the solution were also identified as important factors. Naturally, these characteristics had varying levels of overall importance to the community as gauged by the Board, but it became clear that the cost of the solution was of significantly greater importance than the other characteristics. Figure a is a summary of the Board's selected objectives and the relative importance of each as determined by the District's Board of Directors during the visioning workshops from 2013-2014.

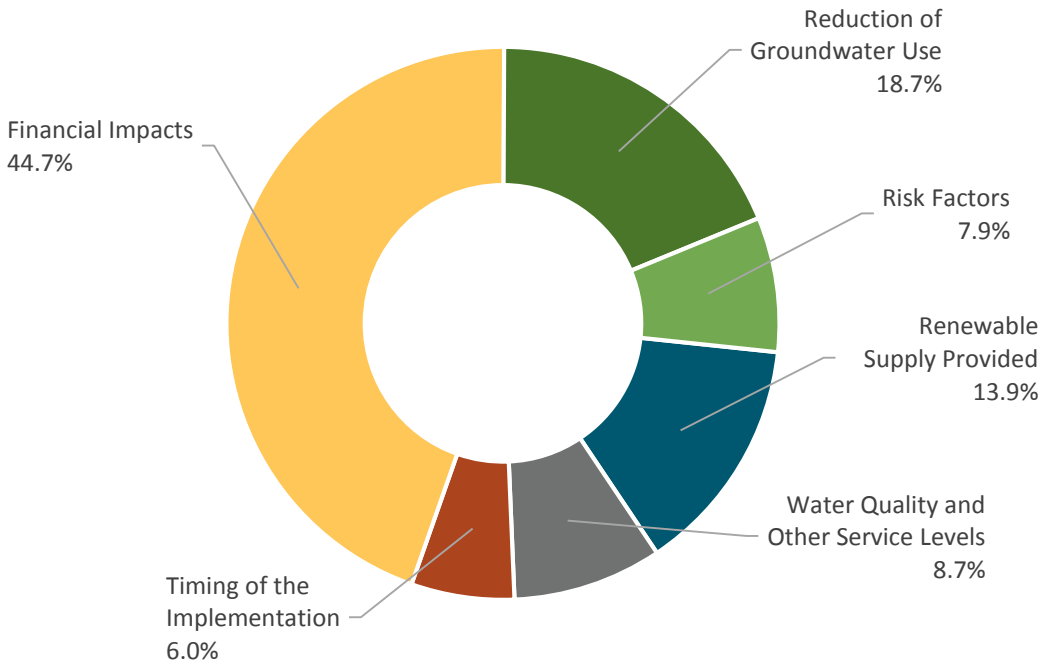


Figure a: The Castle Pines North Metropolitan District's Primary Objectives and Decision Criteria for Selection of a Renewable Water Supply Implementation Plan

One of the important outcomes from Phase 1 was the creation of a common measurement framework in which all potential solutions could be compared objectively. The decision criteria shown above were each given a number of measures, some quantitative and some qualitative. These would ultimately be used to evaluate each alternative as described in the following few sections.

Phase 2a – Preliminary Evaluation and Narrowing of Possibilities to Viable Alternatives

With so many possibilities to consider, a practical first cut at narrowing the field included an evaluation of fatal flaws and a high-level screening based on the most critical of the decision criteria described in the previous section.

The fatal flaw analysis was a simple elimination of possibilities that were not logically feasible. Based on the water supply portfolio the District had acquired (see Figure b), we determined that there were a limited number of possible configurations involving each of three water supply trains. Each of these trains could be paired with one or both of the others, thus producing 315 possible configurations in total. However, not all of the configurations were feasible. For example, some of the CEN alternatives assume the District has storage in Chatfield Reservoir as a result of the Chatfield Reservoir Reallocation Project, and some do not; to perfect the water exchanges necessary for some of the LSP alternatives, the District *must* have storage in Chatfield Reservoir. Therefore, logically, we could eliminate the pairings of CEN + LSP alternatives that did not include Chatfield storage. We made similar reductions for similarly flawed pairings reducing the total number of viable alternatives to 192.

Plum Creek Train (PCT) *No. of Possibilities: 6*	**Centennial Train (CEN)** *No. of Possibilities: 11*	**Lower South Platte Train (LSP)** *No. of Possibilities: 3*
Consists of water rights and proposed facilities on Plum Creek to divert and deliver water to the District.	Consists of water rights in and around Chatfield Reservoir diverted and treated by Centennial Water & Sanitation District for delivery to the District's Interconnect Pumping Project.	Water rights in the Lower South Platte River made available for use either by direct pipeline or through water exchanges.

Figure b: The District's Water Supply Trains and the Potential System Configurations of Each

With the field narrowed, we then applied four high-level filters to the remaining options meant to eliminate those configurations that would obviously not meet the District's stated objectives. A summary of those high-level criteria is provided below in Table 1.

Table 1: High-Level Filtering Criteria Used to Narrow the 192 Remaining Alternatives to 32

High-Level Criteria	What the Criteria Eliminated
Water Quality Filter Total Dissolved Solids (TDS) < 500 mg/l and Chloride < 250 mg/l	This filter eliminated water supplies that were naturally high in TDS and Chloride because these substances are very expensive to remove in water treatment processes.
Number of Treatment Facilities Filter Total Surface Water Treatment Plants < 3	This filter eliminated water supply options that would have required 3 or more water treatment plants in order to work. It was reasoned that some options might include two such plants, but that three or more would never present a viable economic case.
Double Treatment Filter No. of Times Raw Water is Treated < 2	This filter eliminated configurations that would have caused raw water to be treated once, and then stored in an open reservoir before being treated a 2nd time before delivery to residents.
Average Annual Yield Filter Avg. Annual Yield > 50% of Demand	This filter eliminated options that could not possibly provide at least 50% of the District's demand with renewable water supplies. Thus the lower-yielding options were eliminated with the reason being that low yield would not justify the necessary investments.

The result of the fatal flaw and high-level filtering discussed above was to narrow the field of 192 alternatives to smaller list of 32. Ten alternatives were then selected from this list representing a diversity of options. These are summarized on Table 2.

Table 2: The Top 10 Alternatives Selected from Phase 2a

Alt No.	Name	Description	% Demand Met with Renewable Water[1]
1	All Components	Explores using all water rights and all proposed facilities. Maximizes yield, also potentially the most expensive.	95%
2	Maximize Local System	Explores using all water rights and all proposed facilities near the District. Does not use the Lower South Platte Water Rights.	90%
3	Maximize Local System, No ASR	Same as Scenario #2, but does not utilize ASR (injection well) storage. Allows sensitivity analyses for ASR and the proposed Plum Creek Reservoir.	90%
4	No Plum Creek Reservoir	Explores using all existing water rights and potential infrastructure but no Plum Creek Reservoir.	95%
5	No Plum Creek Reservoir or CWTP upgrade	Similar to Scenario 4, but does not use expanded Centennial treatment capacity.	80%
6	Minimum Interconnect Use	Explores a scenario that moves as little water as possible through the Centennial Interconnect; Lower South Platte Water Rights are not available, nor is expanded Centennial treatment capacity.	90%
7	Rueter-Hess Res and Interconnect	Explores a scenario without Lower South Platte Water Rights, expanded Centennial treatment capacity or Plum Creek Reservoir.	90%
8	Maximum Interconnect Use	Explores a scenario without Rueter-Hess Reservoir or Plum Creek Reservoir but expands Centennial treatment capacity.	90%
9	Maximum Interconnect Use With ASR	Same as Alternative 8, but utilizes annual ASR storage.	95%
10	LSP Deliveries in ECCV Pipeline	Explores using capacity in the East Cherry Creek Valley pipeline and treatment plant as an alternative to deliver Lower South Platte water rights to the District.	TBD

The 10 alternatives recommended for further study represent a variety of infrastructure configurations and water rights that provided valuable information on the choices and tradeoffs available to the District's strategic renewable water program. They also offered good opportunities for performing sensitivity analyses on key features such as the size the Chatfield Expansion and the size of Plum Creek Reservoir. They include some more expensive and less expensive alternatives, which allowed for comparison of unit cost of yield (cost per ac-ft of average annual yield) in addition to capital cost.

[1] Percentages are approximate and subject to change based on further analysis and refined assumptions.

Phase 2b – Selecting Candidate Solutions

Reducing the number of alternatives to 10 allowed for a detailed evaluation of each based on the criteria measurements determined in Phase 1. However, before a full scoring of alternatives could be achieved, it was first necessary to develop infrastructure plans for each of the alternatives. The infrastructure plans determined the construction activities necessary to implement each of the alternatives, the cost of those activities, and a relative estimate of timing. Each alternative required a different configuration of infrastructure resulting in different outcomes with respect to the District's key criteria. Figure c, below, summarizes the scoring and expected costs for each alternative under two weighting scenarios: the original weighting, and an adjusted one that factored a higher weight for the "risk" criteria. Both scenarios were reviewed by the District, but the risk-adjusted weighting (green bars below) was selected as the basis for determining the final candidates because the District reasoned that it better characterized the relative degree of risk between the alternatives.

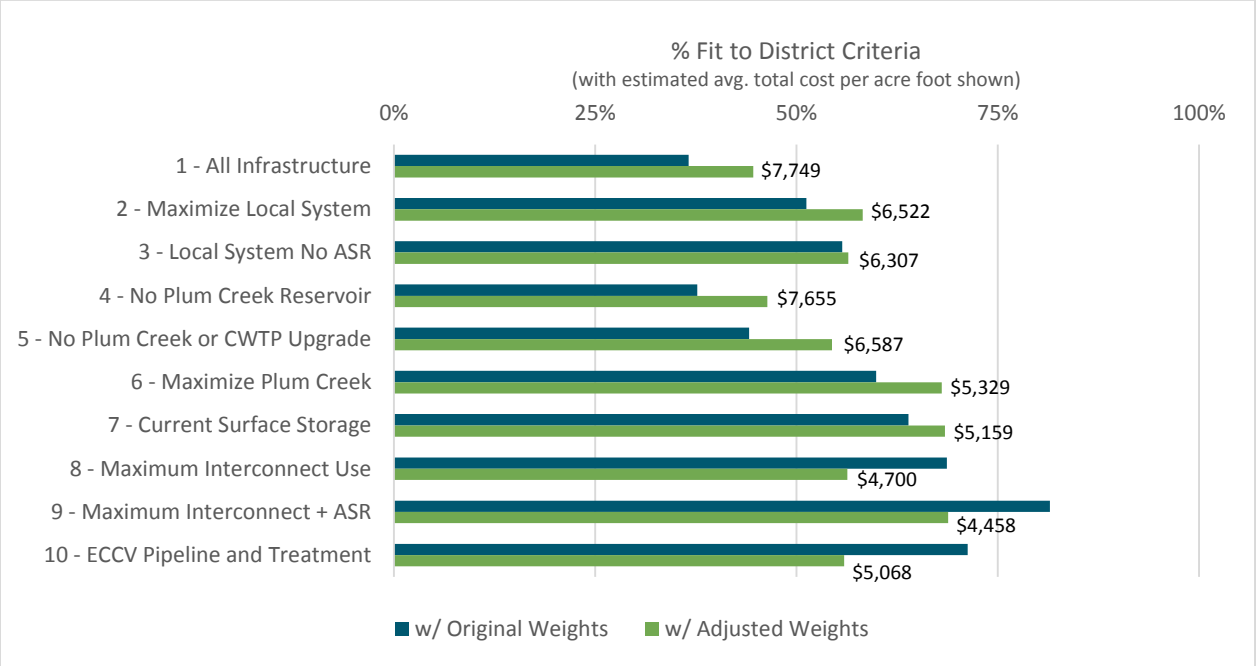


Figure c: Original and Risk-Adjusted Scoring of Alternatives

Based on the outcome of the scoring, Alternatives 6, 7, and 9 presented as the best fit for the District's risk-adjusted criteria. The expected costs for these alternatives were also among the lowest of the 10. Alternatives 8 and 10 presented lower costs, but at much higher risks, which made those alternatives less attractive overall. Alternative 8, however, is very similar to Alternative 9 and the latter alternative can be completed at a lower cost. Alternative 10 includes an elaborate chain of third-party agreements in order to work and the full cost of complying with those agreements was very much undefined at the time of this study.

The District selected Alternatives 6, 7, and 9 as the final Candidates for consideration based on the above scoring and overall value each of the alternatives represents.

Phase 2c – Selection of a Final Candidate Solution

The final Candidates were subjected to additional detailed technical analyses to include full system simulation modeling, construction scheduling, evaluation of permit requirements and timing, and a reevaluation of costs based on any revisions to the technical aspects of the solutions.

The system simulation modeling resulted in minor infrastructure adjustments to Candidates 6 and 7; no adjustments were necessary for Candidate 9. Review of the permitting requirements and construction durations, however, led to some important conclusions relative to the expected timing of the Candidates and their estimated completion dates. In particular, Candidate 6 required more significant work on state and federal permits resulting in the longest implementation time of the three. Candidates 7 and 9 could be completed at approximately the same time (2023) with No. 7 having fewer permit issues and, therefore, a faster startup time.

Table 3: Estimated Implementation Milestone Dates for Each Candidate and Estimated Capital Costs

Candidate #	Estimated Completion of Permitting	Start of Significant Construction Activities	Projected Online / Completion	Est. Capital Costs per Acre Foot
#6: Maximize Plum Creek	2027	2025	2029	$21,500
#7: Current Surface Storage	2018	2022	2023	$28,940
#9: Maximize Interconnect with ASR	2021	2020	2023	$21,610

Hawksley prepared a full financial plan for the three candidates with the above construction schedule and updated costs from the detailed technical analysis. The financial analysis conducted in this phase allowed for a projection of required increases to user charges (i.e. water rates) necessary to finance the implementation plans for each of the candidates. The District has several options for financing the improvements including issuance of general obligation (property tax supported) or revenue (water rate supported) bonds. For the purposes of this analysis, Hawksley assumed that all financing would be supported by water rates, and that 100% of the estimated capital costs would be financed in this way[2]. The technical evaluation also resulted in an estimate of the annual operating costs for each candidate and these costs were also included in the financial analysis in order to forecast the impact on user charges.

Figure d, below, summarizes the rate increases expected through 2040 for each of the three candidates. Hawksley chose to forecast water rate impacts for this extended period in order to give the District a reasonable idea of how operational costs would impact ratepayers after major construction activities are completed. Debt service, however, is the primary driver for the increased rates. It should

[2] All financing was assumed at 30-year terms and 4.5% coupon rates.

be noted that, to the extent the District chooses to finance the implementation with general obligation bonds rather than revenue bonds, the water rates would be less affected.

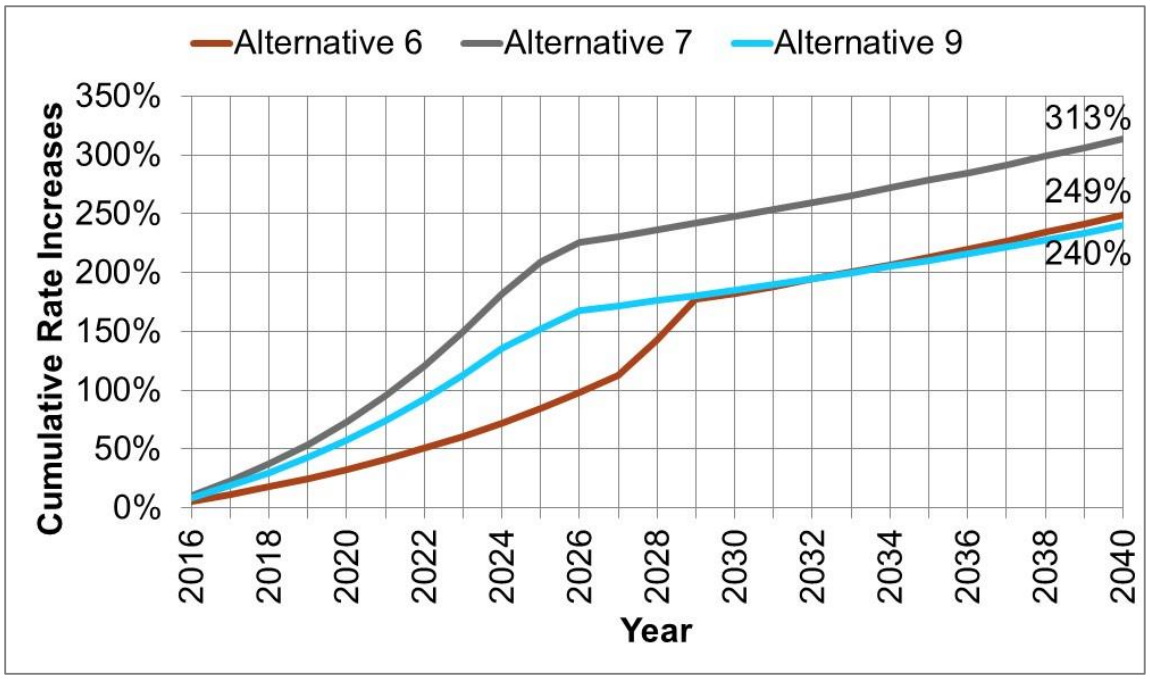


Figure d: Estimated User Charge Increases Required to Finance and Operate the Candidate Solutions

Findings and Recommendations

Based on the full comprehensive evaluation of possibilities, alternatives, and candidates described above, Candidate No. 9 was recommended as the preferred solution for the District. Candidate No. 9 offers the District substantial replacement of groundwater with renewable supplies – approximately 95% of build out demands will be met with renewable supplies with this Candidate solution – at the best overall cost. The recommendation, however, is not without its challenges:

- This solution depends greatly on water exchanges that will allow the District to use relatively clean Upper South Platte water at Chatfield Reservoir in exchange for allowing other users access to the District's Lower South Platte water rights. Perfecting these exchanges is critical to the viability of the solution.

- In order for the proposed exchanges to work, the District will require sufficient storage at Chatfield Reservoir. Such storage will not be available unless and until the Chatfield Reallocation is completed as planned. Due to the volatile legal environment surrounding the Chatfield Reallocation, it is possible that the District's storage interests in Chatfield could be delayed and a remote possibility that those interests could be nullified.

- In order for Candidate No. 9 to work as envisioned, the District will need to reach agreement with Centennial Water & Sanitation District (CWSD) for the expansion of delivery capacity from the CWSD water treatment plant. CWSD already delivers treated water to the District under a delivery agreement, but those deliveries are limited to winter periods only. The District will

require summertime delivery in order for Candidate No. 9 to perform at expected levels. The cost of expanding the CWSD plant has been incorporated into the implementation plan already, but CWSD still needs to agree to the expansion of its plant and modification to the existing delivery agreement.

- Should any of the above conditions fail to be met, the District would likely need to resort to Candidate 6 or 7 instead.

Prior to engaging in this study of its renewable water supply options, the District was faced with a confusing array of up to 315 possible configurations of its assets. Earlier still, in 2012, as it sought to adjudicate the last of its acquired water rights on East Plum Creek, the District entered Water Court with a plan to demonstrate beneficial use of its water based on one of those 315 possibilities: a plan that included use of four water treatment plants, storage in three reservoirs, and significant raw water pipelines from as far away as Ft. Lupton. The cost for implementing such a solution was estimated to cause a 5-fold increase in user charges. As a result of this comprehensive study, the District found a less intensive solution that will provide for substantially all of its water supply needs at a one-third savings over the cost of that earlier plan.

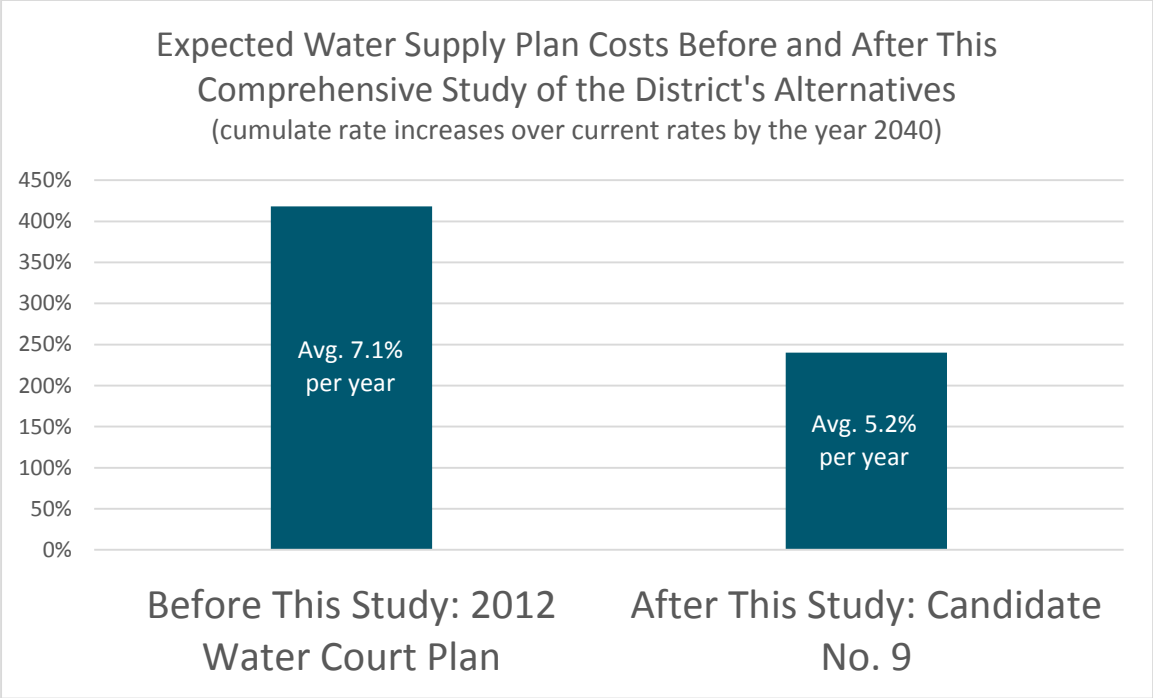
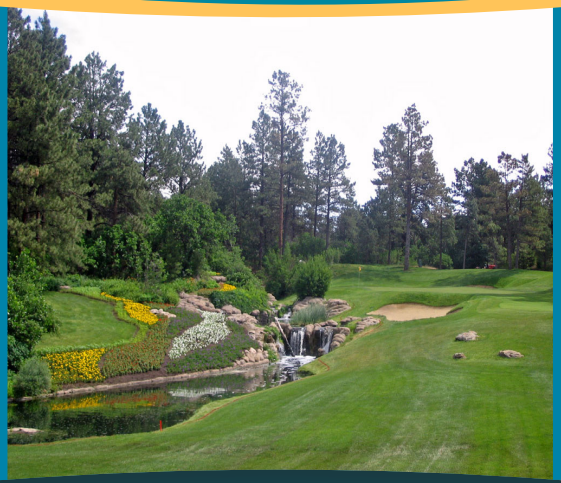
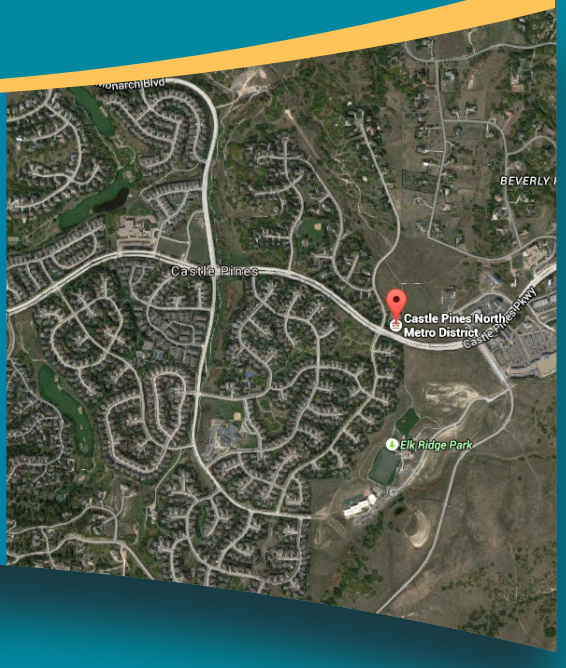


Figure e: Comparison of Water Supply Plan Costs Before and After This Comprehensive Study

SECTION 2

Background and History





SECTION 2

BACKGROUND AND HISTORY

The Castle Pines North Metropolitan District owns substantial water resource assets. The Strategic Renewable Water Implementation Plan is a focused effort to determine the optimal use of those assets to provide sufficient renewable water supplies at the lowest possible cost to the District's residents.

Douglas County residents have long relied on groundwater supplies from the Denver Basin Aquifer system. This huge resource covers 6,700 square miles of surface area, to a depth of up to 3,000 feet. It holds an estimated 200 million acre-feet of recoverable water in storage.

In fact, the Colorado State Engineer estimates that Coloradans have used less than one percent of the water in the aquifer. A single acre-foot can provide enough water to serve two typical families in a typical home for an entire year. That means the aquifer has enough water to provide for the needs of every Coloradan now living for the next 225 years[3]. It could provide for the needs of the current population of Douglas County for the next 3,900 years[4].

If that is the case, then why are water providers in Douglas County, including the Castle Pines North Metropolitan District (District) so concerned about their future water supplies?

The aquifer is not like an underground lake. It is more like a huge sponge made of rock, with water stored in the pores of the rock. Water providers in Douglas County and elsewhere recover the water from the

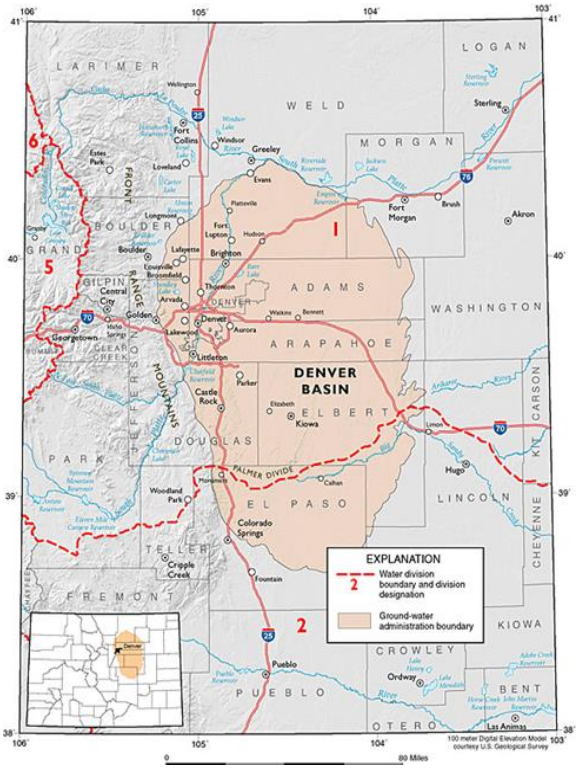


Figure f: The Denver Basin aquifer covers 6,700 square miles in Colorado. The Castle Pines North Metropolitan District is located toward the Southwestern edge of the formation.

[3] Assuming 3 persons per home and a Colorado population of 5.2 million.
[4] Based on 2012 census showing Douglas County population at 300,000 people. Douglas County residents are not the only users of the aquifer; the figure shown is for illustration purposes only.

rocks by drilling wells into the aquifer and pumping the water to the surface. The amount of water that providers can recover depends largely on the location of the well itself, and on the upward (artesian) pressure of the water. Pressure is determined by the level of the water table. As water is removed from the aquifer, the water table falls, and artesian pressure falls with it. When pressure falls, water providers must drill more wells to greater depths and pump harder in order to recover the same amount of water as before. Moreover, the aquifers are somewhat bowl-shaped, and the District is located near the edge of the bowl, geographically speaking. The effects of pumping by others is felt first at the edges, and only later in the deeper parts of the aquifer.

With the rate of growth in Douglas County over the past 20 years, water providers have not only had to drill more and deeper wells to maintain production levels, but also add wells to increase the supplies needed to serve a growing population. While increased withdrawals from the aquifer contribute to the decrease in artesian pressure, proliferation of new wells actually makes all nearby wells less productive.

While it is likely true that the Denver Basin contains an enormous amount of water, the ability to recover the water reliably and/or economically has become more and more questionable. Even sustaining the existing well production is of growing concern. So much so that water providers in Douglas County years ago formed the South Metro Water Supply Authority (SMWSA) to study the problem and to develop solutions. The District is a member of SMWSA along with 14 other water providers in Douglas County.

The South Metro Study

In 2003, the District and many of its neighbors participated jointly in a study of the groundwater issues in Douglas County. Coordinated by the Douglas County Water Resources Authority (DCWRA), Denver Water, and the Colorado Water Conservation District, the so-called "South Metro Study" evaluated aquifer levels, and the existing and expected pumping rates for the next 50 years.

"In the future, these large drawdowns [of the aquifer] will reduce well production drastically and make production difficult and costly." – *South Metro Study, 2003.*

Computer models developed during the study predicted that the aquifer system in Arapahoe and Douglas counties, along the I-25 corridor, would become *unconfined* by 2020. In a confined aquifer, like that which currently exist in the District's vicinity, water is stored between the pores of rocks and stays there due to pressure. As aquifer levels fall, pressure decreases. An aquifer becomes unconfined when it loses so much pressure that the water stored in the pores of the rock starts to drain due to gravity. At that point, water levels will fall even without additional pumping from wells.

The Study concluded that "…the key issue today is not the draining of the resource, but instead exceeding the reasonable and prudent production capability of the aquifer system." It goes on to say that "…even though the volume of appropriated water may be sufficient to meet demands, the water supply cannot be produced at the appropriated volume without large drawdowns in the aquifer water levels. In the future, these large drawdowns will reduce well production drastically and make production difficult and costly."

Data from the State Engineer's Office collected between 1983 and 2006 show aquifer levels declined between 20 and 50 feet per year on average for water providers in Douglas County. In Castle Pines North Metropolitan District, the decline averaged 24 feet per year. Additional growth would only accelerate

those depletion levels. Thus, the aquifer system continues to decline to this day and will continue to do so as long as groundwater remains as the primary source of supply for local water providers.

Existing and Expected Water Demands

Until the completion of its Interconnect Pumping Project (ICPP) in 2012, all of the District's water demands were met with pumping withdrawals from the Denver Basin aquifer. The District serves the residential and commercial water needs for its population of nearly 10,000, including approximately 3,200 customer connections, in addition to irrigation of its parks and open spaces. The sum total of the District's current demands is approximately 1,685 acre-feet per year (one acre-foot is approximately 325,850 gallons).

Table 4: Aggregated Water Demands in Castle Pines North Metropolitan District

Demand Type	Current Demand	Est. Build-Out Demand
Avg. Annual Demand Millions of Gallons (MG)	550	906
Peak Month Demand Millions of Gallons (MG)	89	146
Peak Day Demand (est.) Millions of Gallons per Day (MGD)	3.4	5.7
Peak Hour Demand (est.) Millions of Gallons per Day (MGD)	4.5	7.4

Expected growth within the District's current boundaries is limited. The sum total of all future demands is called the "build-out" demand. Including expected growth, the District's build-out demand for its existing boundaries is estimated at approximately 2,400 acre-feet per year.

Water demand occurs at different rates during a typical year. In Colorado, peak water use occurs during summer months, generally between the months of May and September. Outdoor irrigation makes up as much as 60% of all annual residential water demands in Colorado. In the District, it makes up nearly 80%. Engineers measure water demands in terms of average annual demand, peak-month demand, peak-day demand, and even peak-hour demand. Consideration of all of these demand factors is important for different reasons. Ensuring an adequate water supply means ensuring its availability year round, on demand. Thus, the total amount of water available in a given year is important, but only to the extent that it is available *when* it is needed.

The District's Renewable Water Policy[5]

Like all water providers in Douglas County, the District has conscientiously studied its groundwater situation, and has taken steps to address the issue. The District has been actively working on developing renewable water supplies since 2004. In 2013, the District's Board of Directors took under consideration a specific renewable water policy. The text of the resolution is as follows:

The Castle Pines North Metropolitan District is dependent on non-renewable groundwater supplies to meet a large amount of the water demands of its customers. In 2003, water providers in Douglas County collaborated on an extensive study of groundwater supplies. The final report, known as the South Metro Study, concluded that groundwater pressure would be reduced to a minimum within 20 years, making groundwater supplies increasingly unreliable and costly.

The District recognized and continues to recognize that finding alternatives to unsustainable groundwater is in the best interests of its customers' health, welfare, property values, and quality of life. The District has proactively invested approximately $38 million in renewable water rights, reservoir storage capacity, and access to water treatment capacity. These substantial financial resources represent an initial investment towards the goal of providing its customers with the ability to reduce dependence on non-renewable groundwater. The Board of Directors has been, and will continue to work on, the development of and implementation of a Strategic Renewable Water Implementation Plan ("SRWIP") for the purposes of optimizing the District's assets and building or acquiring the infrastructure necessary to further reduce reliance on non-renewable groundwater, and to deliver renewable water supplies to customers with the highest degree of reliability and at the lowest economic burden.

<u>Guiding Policy:</u>

- *Continue the process of developing a comprehensive plan defining options for infrastructure and other investments necessary to meet the District's projected build-out water needs with renewable water supplies.*
- *Develop infrastructure options that maximize renewable water yield and minimize reliance on non-renewable supplies.*
- *Develop infrastructure options that are responsive to the renewable water needs of the community and sensitive to the ability of the Metro District's customers to pay for the required investments.*
- *Promote water conservation as a prominent value of the Metro District to reduce reliance on all water supply sources.*
- *Demonstrate continual, measurable, and meaningful progress toward reducing the Metro District's reliance on non-renewable groundwater supplies.*
- *Achieve a responsible level of renewable water supply and use in the shortest amount of time, subject to the above policy conditions.*

[5] Policy statement provided by the Castle Pines Metropolitan District Board of Directors as approved in 2014.

The District's Existing Water Resource Assets

While other water providers in Douglas County have struggled to gain momentum on solving their renewable water supply issues, the District has succeeded in acquiring the resources it will need to forge a definitive solution.

Renewable water is a delicate and complex issue. The history of Colorado itself is marked by landmark court cases involving the allocation of the precious resource, resulting in a system called the *prior appropriation doctrine*, or sometimes called a "first in time, first in right" method of allocation. Nearly 95% of the renewable water in Colorado is allocated to agricultural users under prior appropriations. The remaining 5% is increasingly hard to come by for municipal water providers who were not fortunate enough to own any of the earliest appropriations. Cities like Denver and Aurora are both major water rights owners in the same watershed – the South Platte River – as all other metro-area water providers.

The District's options, like those of most every other water provider in Douglas County, are limited to junior water rights and acquisition of agricultural rights for change to municipal use. Senior rights are difficult and sometimes impossible to obtain. They are rarely available for purchase, and when they are, there is fierce competition among other municipal providers resulting in an extremely high market value that is out of the range of practicality for smaller providers with limited financial resources.

Renewable water assets can be divided into a few important categories: water supplies, raw water storage, and delivery infrastructure. Water supplies include all water rights from renewable water sources and are either senior rights, meaning the District's right has a high priority on the water source, or junior rights that the District may use the water if more senior right owners are not diverting the water already.

Raw water storage typically refers to surface reservoirs, but can include aquifer storage as discussed below. Rueter-Hess Reservoir, where the District currently owns 1,500 acre-feet of storage space, is an example of a raw water storage facility. Chatfield Reservoir is another example. Storage reservoirs are not the same as water supplies. A storage reservoir only provides room to store water supplies. Delivery infrastructure includes all of the treatment, pumping, pipelines, and tank storage necessary to move the water to residents. The infrastructure may move water directly from its source, or from its storage reservoirs, and can include infrastructure necessary to move water from the source to a reservoir.

The District currently owns a number of assets in each of these categories. The following is a summary of those assets.

Surface Water Supplies

Plum Creek Junior Water Rights

The eastern tributary of Plum Creek originates in Teller County and covers approximately 120 square miles. It includes the streams that are seen flowing through the Town of Castle Rock and parallel to Highway 85 in Douglas County. The western tributary originates in Douglas County in the Pike National Forest. The eastern and western tributaries reach a confluence near the town of Sedalia before flowing into Chatfield Reservoir and joining with the waters of the South Platte River.

The District owns a number of water rights to divert surface and tributary ground water from East Plum Creek pursuant to appropriations made in 1985 and in 2004. All of these rights are junior and provide

different opportunities to divert water from East Plum Creek for the District's use. The flows in Plum Creek tend to vary depending on the amount of precipitation received, particularly runoff from snow melt in the spring. The District's junior rights will tend to yield larger volumes of water in unusually wet periods and less water in drier periods. During wet periods, more of the needs of the junior rights holders can be met without shorting the senior rights. The opposite is true in drier periods, where senior rights holders may use all available flow leaving no water available to the District. The sporadic nature of junior rights means that storage is usually necessary to make them useful for municipal purposes.

Reclaimed Water

The District is a member of the Plum Creek Water Reclamation Authority (PCWRA). The primary purpose of PCWRA is to treat the wastewater flows of its members before returning the water to Plum Creek. In Colorado, the water that PCWRA returns to Plum Creek is called "return flow", and some of the water rights the District owns include the right to re-use that return flow.

The volume of municipal return flow is directly related to the amount of wastewater the District collects and transports to PCWRA. As the District grows, the amount of wastewater delivered to PCWRA will grow as well as when the District provides service to more homes and businesses. Reusable return flows are similar to a senior water right in that no other entities have a prior claim to the District's return flows. Because wastewater flows tend to be fairly reliable, the expected volume available to the District year in and year out should be quite dependable.

Not all water used in the District makes its way to the wastewater system, however. Water used for lawn irrigation, for example, is not captured in the sewer lines and therefore is never delivered to PCWRA. A portion becomes lawn irrigation return flow, and a portion is lost to evaporation and transpiration. Water that is used and never returned to the stream is called "consumptive use." In addition to consumption resulting from landscape or agricultural irrigation, other examples of consumptive use include evaporative losses during food preparation, manufacturing, and power generation. Residential indoor uses typically account for only a small percentage of water demand.

Upper South Platte Water Rights

The reach of the South Platte River from its headwaters to the Strontia Springs Reservoir in Waterton Canyon is commonly referred to as the "Upper" South Platte River. The water in the Upper South Platte is ideal for municipal water needs because its high water quality requires lower levels of water treatment. Lower treatment requirements mean that water providers can treat the water to state and federal standards at a substantially lower cost.

The District owns a water right in the Upper South Platte, based on an appropriation of water flowing from the Hock Hocking mine near Alma, Colorado. Due to unusual circumstances surrounding the creation of this right, it cannot be superseded by any other senior rights on the South Platte. Although the District's portion of the right yields 333 acre-feet per year, but that amount is measured at the mine portal. Due to transit losses that occur while the water is flowing approximately 65 miles downstream, the amount the District is allowed to recapture at Chatfield Reservoir is significantly reduced. Transit losses include evaporation, ground absorption, and consumption by vegetation along the way, all of which are naturally occurring events that impact all water users. State water administration officials currently allow the District to recapture approximately 287 acre-feet per year at Chatfield for drinking water supplies.

Lower South Platte Water Rights

The reach of the South Platte River below Strontia Springs, all the way to the Colorado state line in northeastern Colorado is referred to as the Lower South Platte. Water quality in the Lower South Platte decreases the further the river flows from the Upper South Platte due to urban stormwater runoff, wastewater treatment plant effluent, and agricultural return flow. At Chatfield Reservoir, the water is still considered to be of very good quality. By the time the water reaches Brighton and further east, the water quality is degraded and requires additional treatment before it can be used as a public drinking water supply.

Much of the water use in the Lower South Platte has historically been for agricultural purposes. However, as renewable water needs increase in the Front Range, the number of municipal water providers acquiring agricultural water rights in the Lower South Platte has increased. Before using purchased agricultural rights, municipal providers are required to adjudicate a change of the rights through a court process in a specially designated "water court." During this process, municipal water providers are required to demonstrate to the court that their community has both a need for the water, the ability to complete the project, and that their use of the changed water rights will not adversely impact other users[6].

The District acquired a number of water rights in the Lower South Platte when it purchased shares of agricultural ditch companies in areas northeast of Denver. Thus far, the District has succeeded in obtaining a favorable water court decision for about 50% of those holdings. The volume of water available from the Lower South Platte holdings varies from year to year based on availability of water in the river, and the amount water diverted and used by holders of more senior rights. Through its ownership of shares in these ditch companies, the District owns a pro-rata portion of the water rights owned by each company. While the shareholders of most corporations get a pro-rata share of the profits, the shareholders of ditch companies get a pro-rata share of the water yielded by the company's water rights. Consequently, a share is not equal to an acre-foot or any particular volume of water. Instead, it is a right to use a percentage of the ditch company's total available water. If there are 100 shares in the ditch company and a shareholder owns 7 shares, then that shareholder would be entitled to 7 percent of whatever amount of water the ditch company diverts in a given period subject to availability and seniority. The table below summarizes the District's current ownership of ditch company shares in the Lower South Platte.

[6] Adjudication of rights in Water Court is required in Colorado to confirm the existence of newly created water rights (new appropriations) and to change existing water rights from one decreed use to another, such as from agricultural irrigation to municipal uses. The District completed water court adjudications confirming its Plum Creek and Chatfield rights as well as its Lower South Platte storage appropriations, and has changed some of its Lower South Platte ditch company shares as identified in the table.

Table 5: Lower South Platte Rights Owned by Castle Pines North Metropolitan District

Stock Name	# of Shares Acquired	Maximum Yield (Acre-Feet)	Water Court Change
Meadow Island Irrigation Co.	7	180*	Not Yet Changed
Lupton Bottom Ditch Co.	2.25	126*	Not Yet Changed
Fulton Irrigation Ditch Co.	105	192	Change Decreed
Platteville Irrigating and Milling Co.	0.5	109	Change Decreed
*- Yields are estimates until firmed by a water court change decree			

Existing Groundwater Rights and Pumping Capacity

One of the advantages of groundwater is its resistance to naturally occurring events like drought. While the District is seeking to take advantage of its portfolio of renewable water assets to minimize its reliance on groundwater, it is unlikely that groundwater usage would be eliminated entirely. Colorado experiences drought-like conditions once every 7 to 8 years on average. Drought conditions place heavy stress on the availability of renewable water supplies. So much so that all Front-Range water providers go to great lengths (and expense) to plan for drought and make themselves as resilient as possible against it. Junior water rights, like most of the water rights owned by the District, are particularly susceptible to droughts because decreased flows in the waterways mean there is less water available for everyone. Senior rights holders have priority over what little water remains, leaving junior holders with little or nothing. It is important to note that the District states in their Renewable Water Policy that the goal of their plan is to minimize reliance on non-renewable water supplies.

Water Storage

Rueter-Hess Reservoir

The District owns 1,500 acre-feet of raw water storage in the Rueter-Hess Reservoir east of I-25 between the District and the Town of Parker in the Cherry Creek watershed. Parker Water & Sanitation District (PWSD) owns the 72,000 acre-foot reservoir and sold the District a permanent right to use 1,500 acre-feet of storage space (the District's build-out water demand is 2,400 acre-feet per year).

Figure g: Rueter-Hess Reservoir (Artist Rendering)

As a condition of the purchase, the District entered into an Operating Agreement with PWSD. The Operating Agreement introduces various conditions, rights, and responsibilities related to use of the reservoir. Key among the conditions is the issue of water quality. Because the reservoir is located on the Cherry Creek watershed, it is subject to different water quality regulations than those on Plum Creek or the South Platte. Specifically, water transported into Rueter-Hess has to meet a rigorous phosphorus level that can be difficult to attain without additional water treatment. Currently, the District's experts estimate that raw water from Plum Creek will meet the phosphorus standard without such treatment.

Reclaimed water, on the other hand, usually has a higher phosphorus level and therefore may require additional treatment if it is transported to Rueter-Hess.

The District may be able to acquire additional storage in Rueter-Hess Reservoir through one of two different means. First, the Operating Agreement allows the members – the District, the Town of Castle Rock, and Stonegate Metropolitan District – to borrow storage space from PWSD or Castle Rock if they are not using all the space they own. Leasing of additional space comes with a fee determined by a formula contained in the Operating Agreement. The District may also acquire space from the other members at a negotiated fee assuming another member wants to sell or lease all or a portion of their space.

Aquifer Storage

The District has the ability and the right to create injection wells that pump water into the Denver Basin aquifers to be stored for later use. Sometimes called Aquifer Storage and Recovery (ASR), these wells pump water into the aquifer formation during winter periods then recover that water from the wells during summertime peaks.

Although the idea of aquifer storage seems simple, the practical application is far more complex. As mentioned earlier, the aquifer is not an underground lake, it is a sponge made of rocks, and the water is held between the rocks at high pressure. Literally, aquifer storage pumps water into the rock sponge at whatever pressure is necessary to do so. Over time, the stored water will migrate away from the well and may elude efforts to recapture it. The District's experts agree that some amount of aquifer storage is practical, but disagree on how much water can be held at a given well site, and how long that water will remain in close enough proximity to the well to be recaptured. Generally, the experts agree that short-term storage, where water is pumped into the aquifer in the winter and removed in the same year, is a viable option for the District.

Delivery Infrastructure

Interconnect Pumping Project

In 2012, the District completed the first renewable water project. The Interconnect Pumping Project (ICPP) allows the District to use its Hock Hocking rights and a portion of its reusable return flows. Through an intergovernmental agreement with Centennial Water & Sanitation District (CWSD), the water is diverted, treated, and transported to the District's pumping station. From there, the water is delivered through pipelines to the District's distribution system. Under the intergovernmental agreement, CWSD diverts the water on the South Platte, treats it at its own water treatment plant, and moves the treated water through its own pipelines to the District's pumping station. CWSD provides these services at a fee detailed in the agreement. The current agreement provides for transfer of up to four million gallons per day (4 MGD) only between the months of October and April. If operated at full capacity during those months, the ICPP could conceivably deliver 1,800 acre-feet to the District. The use of the CWSD treatment capacity during summer periods is only permitted under the current agreement when CWSD does not require all of its treatment capacity to serve its own residents. At present, CWSD says it has no excess capacity during the summer months.

Proposed Renewable Water Assets Available to the District

The sum total of the District's existing assets is impressive but likely not complete if the District is to minimize its reliance on groundwater substantially. Future acquisitions will likely be necessary to firm up the District's junior water rights holdings. This means constructing or acquiring additional water storage, additional delivery infrastructure, and additional water rights where necessary.

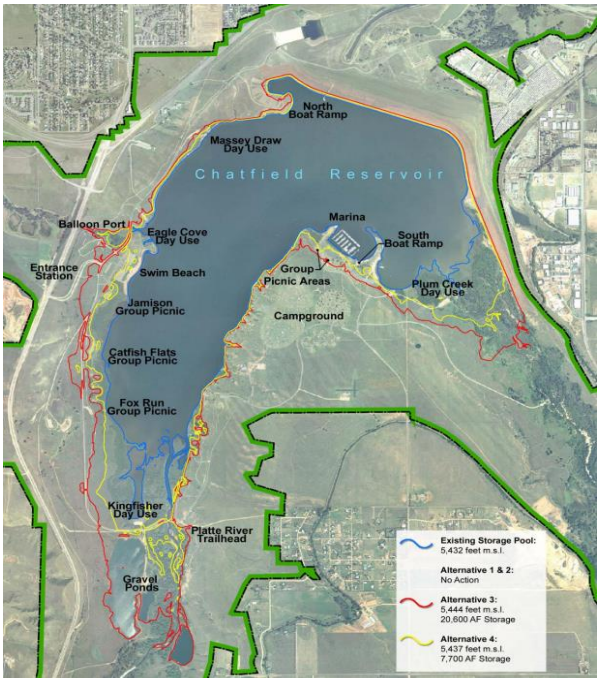


Figure h: Chatfield Reallocation and the Alternatives Under Consideration.

Water Storage

Chatfield Reservoir Reallocation

One of the key future acquisitions the District is pursuing is the purchase of storage space in Chatfield Reservoir. The Chatfield Reservoir is a U.S. Army Corps of Engineers project constructed in response to massive flooding in 1965. Developing drinking water supplies was not a primary purpose when the reservoir was designed; flood control is the reservoir's primary purpose. However, the Corps of Engineers, the Colorado Water Conservation Board, and several municipal water providers including the District have been actively studying alternatives for increasing the water stored at Chatfield and using that increased storage for water supplies.

Approval of the plan to reallocate existing water storage at the reservoir from flood control to municipal water supply is subject to federal permit requirements. Initial federal processes related to the plan commenced in 1994. The Colorado Water Conservation Board became involved in 1999 and the formal study of the storage alternatives started shortly thereafter. The Corps of Engineers released a final review draft of the Environmental Impact Statement (EIS) in 2012. The final (favorable) Record of Decision was rendered in 2014. However, as of the date of this report, the mitigation work that is required before storage in the reallocated space can begin is not yet underway.

If the reallocation mitigation is completed as expected, the District will obtain approximately 1,000 acre-feet of storage in Chatfield Reservoir. One of the water rights the District plans to store in Chatfield is its 500-acre foot storage appropriation made in 2004. The District can also store its Hock Hocking water and, if changed, water derived from its other water rights in the space not being used by the 500-acre foot appropriation. The price the District will have to pay for the 1,000 acre-feet of storage is currently estimated at approximately $7 million. Although no dam or outlet works construction will occur, increasing the water storage levels at the reservoir will have environmental impacts that must be mitigated, and will require relocation of some recreational amenities. The EIS is the best source for all of the details involved[7]. In summary, the cost of reallocating the reservoir includes mitigation measures related to wetland preservation and relocation of several recreational facilities, including the marina.

[7] The 2012 final draft of the EIS is available at the US Army Corps of Engineers website (http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll7/id/10)

The District may be able to acquire additional storage in Chatfield from the unallocated portion currently owned by the Colorado Water Conservation Board and/or by purchasing allocations from other reallocation participants. The cost of such additional storage is currently unknown but is expected to be proportional to the final costs related to mitigation efforts described above.

Plum Creek Reservoir

In order to divert and firm the water supplies available to it on Plum Creek, including its reclaimed water supply, the District may construct a small storage reservoir in the vicinity of the PCWRA treatment facility. As conceptualized, the reservoir would hold approximately 1,700 acre-feet of water and the costs would be shared between the District and the Castle Pines Metropolitan District in proportion to their respective storage capacity.

Lower South Platte Reservoir

With the purchase of its ditch company shares in the Lower South Platte, the District also appropriated storage rights in two gravel pit reservoirs in the general vicinity of the farms on which its ditch shares historically were used. These storage rights total 6,000 acre-feet under a 2009 priority. Importantly, as noted above, these storage appropriations create rights to the water; they do not create rights to a physical storage bucket, which the District will have to construct or acquire separately.

The District has some options related to maximizing this storage right. It can construct gravel pit storage in the Lower South Platte on land holdings that were acquired with the water rights themselves, or it can transport the water to another storage facility. Neither option has been studied in any detail.

Delivery Infrastructure

Apart from the ICPP, the District will likely need to construct additional infrastructure in order to maximize its renewable supply portfolio. As noted above, the ICPP is only able to provide for a portion of the District's renewable water needs. The following is a summary of the additional infrastructure currently under consideration at a conceptual level. The cost of the infrastructure listed below is currently unknown.

Plum Creek Diversion Facilities

In order to make use of its Plum Creek water rights and store them in the proposed Plum Creek Reservoir as contemplated by its existing water court decrees, the District will need to construct diversion facilities that would include surface diversion structures on Plum Creek, a number of alluvial wells, and pipelines from those structures to the proposed reservoir, to Rueter-Hess Reservoir, and to the District.

Plum Creek Water Reclamation Authority Treatment Plant Improvements

Depending on water quality issues related to reclaimed wastewater, the District may need to consider construction of additional treatment processes at the PCWRA wastewater treatment plant. Additional treatment may be required to control phosphorus in the event that the reclaimed water is transported to Rueter-Hess Reservoir; there may be additional treatment needs for other regulatory or service level reasons as well.

Water Treatment Facility or Facilities

Renewable surface water must be treated in order to meet state and federal drinking water standards. Currently, the District has access to one surface water treatment facility – the CWSD plant – but may only receive deliveries from that facility during off-peak (i.e., wintertime) periods. An additional water treatment

plant(s) may be necessary to maximize the renewable water portfolio. The exact placement, timing, and costs of such treatment facilities are currently unknown.

Water Transmission Pipelines and Pumps

Once water is treated it will need to be transported to the District's network of distribution pipes and, ultimately, delivered to residents' homes. The large pipelines carrying treated water are called transmission lines. The ICPP is an example of a transmission line; it carries treated water from CWSD to the District's distribution network. Like the ICPP, some transmission lines may require one or more pumping stations to move the water from lower elevations to the higher elevations in the District. The sizing, length, and amount of pumping required will determine the cost of the transmission facilities.

Analyses and Estimates for Water Court Adjudication

In 2012, the District prepared a number of analyses for a 2013 trial in the District Court, Water Division 1, also known as "Water Court" to adjudicate its 2004 Plum Creek water rights and change certain aspects of its 1985 water rights[8]. As part of the case, the District was required to demonstrate its plans for making beneficial use of the water rights and that it could afford the cost of implementing those plans.

Although the District had not previously evaluated several aspects of its future water system plans to the level of detail that was done for this Renewable Water Implementation Plan, the District did perform various evaluations and analyses of the water rights and associated infrastructure contemplated by the 2004 water court applications, including estimated yield and cost to construct.

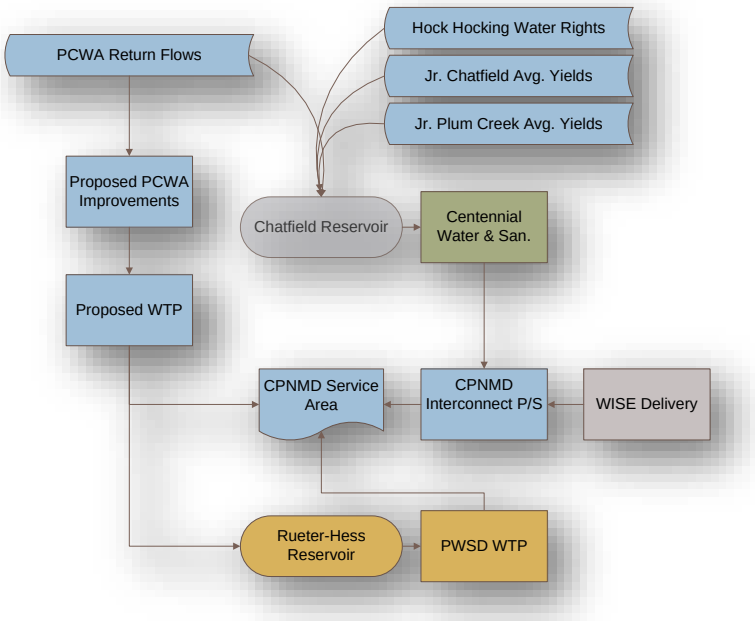


Figure i: Proposed Facilities for Renewable Water Supplies as Proposed in 2004 Water Court Applications.

The proposed facilities (see left) were comprehensive and included the use of numerous existing and proposed assets. The total capital costs for construction of the facilities expected at that time was approximately $250 million. There were significant increases expected in operating and maintenance costs as well. The expert report submitted in water court estimated that total O&M costs would increase from $2.39 million annually to over $5.7 million by 2040 with the proposed facilities in place.

The financial impact expected from the proposed facilities was significant. The average annual water bill for a typical District resident was estimated at $819 for 2012. With the proposed facilities and their related operating costs, the District would expect an estimated increase in average bills to $3,648 by 2040. Water rates would increase at an average annual rate of 5.3% during the period 2012 to 2040 to

[8] District Court, Water Division 1, Colorado. Case Number 04CW292 and 04CW308

support the financing and operations of the proposed facilities. Overall, water rates were expected to increase by 5 times between 2012 and 2040. However, despite the large costs, the expert opinions prepared for the court case found that the District's residents' typical incomes were sufficient and that the plan was "affordable" based on federal standards for evaluating the financial burdens of utility projects.

The water court case was important for two reasons. First, the case was resolved and the District was granted decrees confirming its junior Plum Creek water rights. Secondly, this was the first time that anyone had quantified the potential financial impact that the District should expect to incur in order to actually design and construct the infrastructure necessary to treat and deliver the water supplies that the District had acquired. The large cost, while substantial, was also motivation for the Board's subsequent steps that included passage of the Renewable Water Policy and launch of the Strategic Renewable Water Implementation Plan, which includes this report and its findings.

The Strategic Renewable Water Plan was always meant to take the rough plans presented in the water court case and refine them. The purpose of the plan was to find ways to achieve the same outcome presented in water court, but to do so more efficiently and in consideration of the full array of the District's assets and resources, many of which had been purchased already at great expense.

Phase 1 of the Strategic Renewable Water Implementation Plan

Before starting Phase 1, the District could point to a total of 315 possible combinations of water resources, facilities, and delivery approaches, 192 of which were determined to be theoretically viable – free of any fatal flaws. Still, 192 viable alternatives is too many to evaluate at any reasonable level of detail, so Hawksley Consulting engaged the District's staff and Board of Directors in a process of determining the key objectives, outcomes, and constraints that should be considered in narrowing the alternatives down to the best ones.

Through a series of public workshops hosted at the District's headquarters in the fall of 2013, the Board developed a slate of critical evaluation criteria. Figure j, below, is a summary of the high-level considerations and their relative weight in the evaluation of alternative solutions.

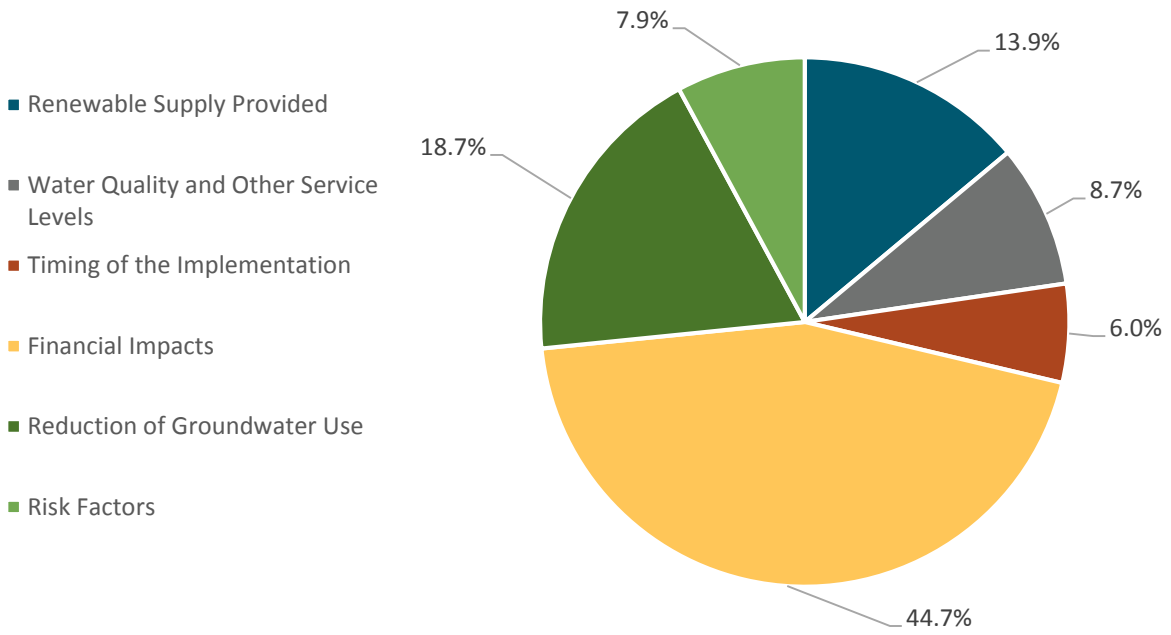


Figure j: Summary of Top-Level Considerations and Relative Weight/Importance Assigned to Each.

Each of the high-level considerations included a number of smaller, more measurable characteristics. The "Supply" considerations, for example, included quantitative measurements for the percent of annual demand met by renewable water for a given alternative. It also included measurements for the percent of demand met during droughts, during normal peak seasons, and during peak days. The tables below summarize the specific criteria selected by the Board and the relative weight/importance of each criteria as a component of the high-level category to which the criteria belong.

Table 6: Selected Criteria and Relative Importance of Each Criteria

RENEWABLE SUPPLY (13.93% of Total)			
Criteria	**What it Measures**	**Importance to Supply Criteria**	**Importance in Total**
% Annual Demand	The degree to which a given option meets total annual demands.	39.15%	5.45%
% Drought Demand	The degree to which a given option meets total annual demands in a defined drought condition.	22.06%	3.07%
% Peak Season Demand	The degree to which a given option meets demand in normal peak-summer situations.	15.84%	2.21%
% Peak-Day Demand	The degree to which a given option meetings the normal maximum single-day demand.	22.95%	3.20%

WATER QUALITY AND OTHER SERVICE LEVELS (8.74% of Total)			
Criteria	**What it Measures**	**Importance to Water Quality Criteria**	**Importance in Total**
Public Safety	Measures the impacts a given option may have on health and safety during its construction or operation.	21.79%	8.74%
Water Quality	The relative ability for a given option to meet water quality levels acceptable to the District.	38.39%	3.36%
Regionalization	The degree to which a given option enhances the District's ability to form regional partnerships.	12.10%	1.06%
Alternative Backup Supply	The degree to which a given option includes an alternative supply source in case of disruption.	27.73%	2.42%

TIMING OF IMPLEMENTATION (6.03% of Total)			
Criteria	**What it Measures**	**Importance to Timing Criteria**	**Importance in Total**
Meet Annual Demand	The length of time the option will require before it can meet normal annual demands.	47.59%	2.87%
Meet Peak-Day Demand	The length of time the option will require before it can meet normal peak-day demands.	14.30%	0.86%
Meet Peak-Season Demand	The length of time the option will require before it can meet normal peak-season demands (summer).	24.04%	1.45%
Meet Drought Demand	The length of time the option will require before it can meet peak demands during drought conditions.	14.06%	0.85%

FINANCIAL CONSIDERATIONS (44.7% of Total)			
Criteria	**What it Measures**	**Importance to Financial Criteria**	**Importance in Total**
Average Cost per Unit	Total operating and annual capital costs divided by expected renewable water deliveries.	31.15%	13.92%
PV of Capital Cost/Unit	The cost in today's dollars to acquire, design, and construct the given option.	26.78%	11.97%
PV of Operating Cost/Unit	The cost in today's dollars to operate and maintain the given option.	9.11%	4.07%
Maximize Existing Assets	Measures the extent to which a given option uses the District's already existing assets.	14.29%	6.39%
Asset Efficiency Ratio	Total value of existing and proposed new assets divided by the total renewable water delivered.	18.68%	8.35%

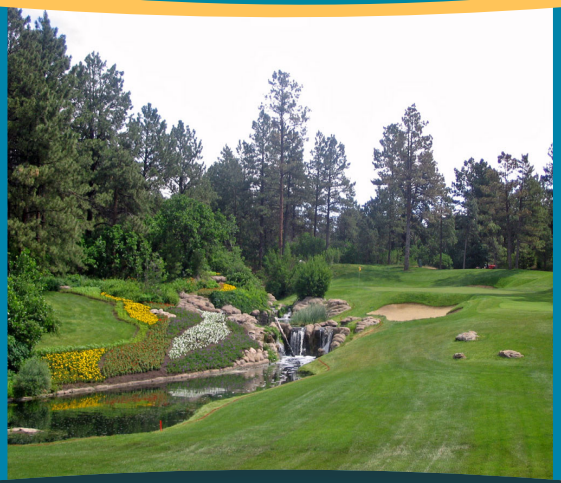
REDUCTION OF GROUNDWATER USE (18.72% of Total)			
Criteria	**What it Measures**	**Importance to Groundwater Criteria**	**Importance in Total**
% Groundwater Reliance	The degree to which a given option reduces the District's reliance on groundwater.	42.26%	7.91%
Shows Progress	The degree to which a given option shows continued reductions in groundwater reliance.	57.74%	10.81%

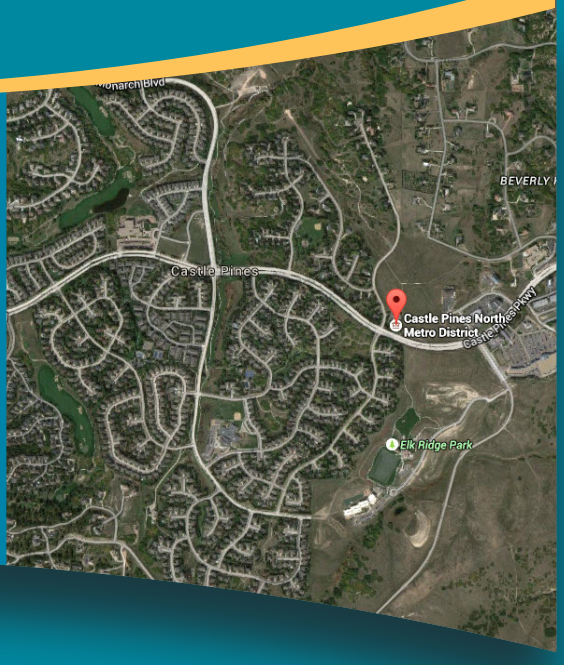
RISK FACTORS (7.88% of Total)			
Criteria	**What it Measures**	**Importance to Risk Criteria**	**Importance in Total**
Legal Risk	Measures the risk of potential legal actions to bring a given option online.	16.52%	1.30%
Counterparty Risk	The degree to which a given option is dependent on the performance of a 3rd party to make it work.	14.64%	1.15%
Operational Risk	The degree of complexity involved in operating the facilities of a given option.	21.56%	1.70%
Reliability of Water Rights	The strength of a given option in terms of the seniority of its water rights.	23.46%	1.85%
Reliability of Exchanges	The degree to which a given option depends on water exchanges for delivery of water to the District.	23.82%	1.88%

Phase 1 was completed in January 2014. The above criteria were then documented along with more detailed discussion of the workshops and the process involved in a Phase 1 Report provided to the District in March 2014. The evaluation criteria were later used in each of the evaluation processes included in Phase 2, which is the topic of the remainder of this report.

SECTION 3

Preliminary Evaluation of Alternatives





SECTION 3

PRELIMINARY EVALUATION OF ALTERNATIVES

The Preliminary Evaluation, called Phase 2a of the Study, narrowed the universe of 315 possibilities to just ten (10) based on high-level application of the District's selection criteria developed in Phase 1.

There were over 315 possible alternatives for renewable water delivery to the District at the completion of Phase 1. In order to determine which of these alternatives were worth more detailed analysis, we applied high level screening criteria to narrow the crowded field. Our high level criteria was based on the Board's selection criteria, a preliminary estimate of the average annual yield available from the alternatives, and the expert assessment of a team consisting of members of MWH, Jehn Water Consultants, the District's water rights attorney, and the District's general manager.

The Possible Alternatives

The recommended alternatives are a subset of a much larger number of possible alternatives that were first identified during Phase 1. Specifically, we outlined a number of supply themes within each of the potential water supply trains available to the District.

Plum Creek Train (PCT)	**Centennial Train (CEN)**	**Lower South Platte Train (LSP)**
No. of Possibilities: 6	*No. of Possibilities: 11*	*No. of Possibilities: 3*
Consists of water rights and proposed facilities on Plum Creek to divert and deliver water to the District.	Consists of water rights in and around Chatfield Reservoir diverted and treated by Centennial Water & Sanitation District for delivery to the District's Interconnect Pumping Project.	Water rights in the Lower South Platte River made available for use either by direct pipeline or through water exchanges.

In addition to the above single-train alternatives, there were, of course, multiple combinations linking two and even all three of the supply trains together. All told, we identified 315 such combinations, but were able to eliminate 123 of them due to fatal flaws in their configurations[9]. For example, some of the CEN alternatives assume the District has storage in Chatfield Reservoir as a result of the Chatfield Reservoir Reallocation Project, and some do not; to perfect the water exchanges necessary for some of the LSP alternatives, the District *must* have storage in Chatfield Reservoir. Therefore, logically, we could eliminate the pairings of CEN + LSP alternatives that did not include Chatfield storage. We made similar reductions for similarly flawed pairings reducing the total number of viable alternatives to 192.

Development of Screening Criteria

The District's Board developed detailed selection criteria during Phase 1 of the Strategic Renewable Water Implementation Program in the fall of 2013 resulting in six major categories including 24 specific criteria. The specific categories and criteria were explained fully in our Phase 1 report *Strategic Renewable Water Implementation Program, Phase 1 Report*.

Evaluation of the 192 remaining alternatives against all 24 detailed criteria would be prohibitively expensive and time consuming. Therefore, the purpose of Phase 2a was to reduce the 192 viable alternatives remaining at the end of Phase 1 to a more manageable number of 10 that can be thoroughly analyzed with the detailed criteria.

The first step in the initial screening process was to use a team of subject matter experts (SME) to create a set of higher-level criteria that could be used to quickly separate the best 10 alternatives from the remaining 192. Using the District's detailed criteria as a guide, the SME developed a handful of high-level criteria. These are described in Table 7. The high-level criteria were reviewed with the District's Board in March 2014 and applied against the 192 alternatives in April.

[9] The total number of alternatives, 315, was a mathematical extrapolation based on the number of trains and the number of possible pairings. We began our qualitative assessment of the total only after identifying all of the raw possibilities.

Table 7: High-Level Criteria Developed by SME Team

High-Level Criteria	Applicability to District's Criteria
Water Quality Standard *Total Dissolved Solids (TDS) < 500 mg/l* *Chloride < 250 mg/l* The water quality standard states that the District should avoid raw water supplies that would require reverse osmosis treatment processes. Specifically, this means that the raw water must have a measured total dissolved solids (TDS) less than 500 milligrams per liter, and total chloride less than 250 milligrams per liter.	Financial / Service Level / Risk Water quality relates to three of six of the District's selection criteria categories. Water high in TDS and Chloride is prohibitively expensive to treat to drinking water standards. It is also likely to lead to taste and odor problems, leading to service complaints from customers. The risk of regulatory compliance is increased as well.
Number of Treatment Facilities *Total Surface Water Treatment Plants < 3* Many of the 192 remaining alternatives would require multiple treatment facilities in order to work. The SME team reasoned that the District should expect to build and construct at least one such facility, and may have to consider up to two to maximize yields. However, the team reasoned that three or more treatment facilities would never result in a yield high enough to justify the extreme costs of construction and long-term operations.	Financial / Risk / Timing The financial implications of building multiple treatment plants are clear. However, construction also involves certain risks. For example, each treatment plant would require regulatory reporting to CDPHE and EPA. Every construction project potentially increases the timing required for implementation.
Double Treatment Standard *No. of Times Raw Water is Treated < 2* Some of the remaining alternatives would have resulted in the expense of treating water to drinking water quality only to watch it moved into open raw water storage reservoirs. To use the water again, the District would have to incur the cost of treating the water a second time, thus doubling the total treatment costs.	Financial / Supply / Risk Double (or more) treatment of raw water comes at double (or more) the expense of single-treatment, thus the financial impact is clear. In addition, treatment processes inherently result in measureable losses of raw water; so-called process losses. Thus multiple treatment processes can reduce total raw water supplies. Multiple treatment processes expose the District to various risks ranging from regulatory to operations.
Average Annual Yield Standard *Avg. Annual Yield ≥ 50% Build Out Demand* Among the District's primary goals for the Strategic Renewable Water Implementation Program is to achieve maximum surface water yield, thus substantially reducing reliance on groundwater supplies. The SME team reasoned that alternatives that won't provide a minimum of approximately 50% of the District's build out demand from its surface water supply portfolio would ultimately fail to satisfy the District's stated goals. Thus, alternatives that provide lesser amounts could be eliminated.	Groundwater Reliance / Supply Low yielding alternatives will fail to provide enough water to substantially reduce groundwater reliance, and would not provide enough surface water supplies to make the cost of implementation feasible.

Screening Process Using High Level Criteria

Water Quality

Of the possible water supply trains available to the District currently, only the Lower South Platte source failed to meet the water quality criteria listed in Table 7. Specifically, the Lower South Platte supply in the area around Fort Lupton, where the District's water rights are physically available for diversion, exceeds the 500 milligram per liter (mg/l) limit for total dissolved solids (TDS) that the SME team established.

MWH evaluated actual historical water quality data available from various sources in order to make this determination. The specific sources of the data are summarized below with a more detailed summary provided in Appendix A[10].

Table 8: Data Sources for CPNWTP Water Sources

Proposed Water Source	Data Source
East Plum Creek, upstream of PCWRA WWTP	Plum Creek Watershed Monthly Data Apr 2012 – Feb 2014 Sample ID: EPC-15.3
Plum Creek Reservoir	Plum Creek Watershed Monthly Data Apr 2012 – Feb 2014 Sample ID: EPC-15.1
South Platte River, near Fort Lupton	South Platte River Monthly Data Jan 2008 – Dec 2013 Sample ID: PWP
Rueter-Hess Reservoir	Rueter-Hess Reservoir Monthly Data Nov 2012, May – Nov 2013 Sample ID: Various

Application of the water quality criteria eliminated only the specific alternatives that included *direct* use of the Lower South Platte supply source. There are many alternatives of the remaining 192, however, that use the Lower South Platte supply *indirectly* through exchanges that move water upstream essentially by trade with other users. In those cases, the District's Lower South Platte water with high TDS levels is exchanged for Upper South Platte water at Chatfield Reservoir. The water in the Upper South Platte is far lower in TDS and therefore meets the criteria established by the SME team.

Number of Treatment Facilities

Application of the double treatment standard eliminated the alternatives that would have required the District to construct, either in whole or in part, more than two surface water treatment plants. There were a number of alternatives in the 192 remaining that implied construction of three or even four such plants, and these alternatives were eliminated based on the criteria that there be no more than two in any case.

Double Treatment

Several of the alternatives of the remaining 192 included storage in reservoirs of water already treated to drinking quality standards. These alternatives were easily identified and eliminated. The SME team noted, in doing so, that future supplies may yet require treatment more than once in order to maximize yields,

[10] Note that the Appendix is available on CD only due to the volume of information provided.

and/or mitigate risks with larger storage volumes. At this time, however, the SME team was unanimous in recommending against the prohibitive cost of treating raw water twice (or more).

Water Supply Level

There were just 32 remaining alternatives after applying *all* of the previous screening criteria. We then applied the water supply criterion by preparing preliminary estimates of the percentage of total demand met with renewable surface water by the remaining alternatives. Our water supply evaluation of the 32 alternatives resulted in a rank-ordering of the alternatives based on estimated percentage of demand met with renewable water.

The consideration of alternatives assumes that the Chatfield Reservoir Reallocation environmental permitting process is completed such that the District will get the 1,006 ac-ft of storage space for which it has currently contracted. It also assumes that all Lower South Platte agricultural water rights currently owned by the District are changed to municipal use. All alternatives retained for consideration after the previous screening step include capture and potential reuse of all the District's reusable wastewater effluent, and availability of the District's 1,500 acre-feet of storage in Rueter-Hess Reservoir.

Alternatives considered at this stage involved a more refined evaluation of exchanges and ASR.

ASR was previously analyzed with indefinite carry-over storage for injected water. Based on discussions with the District regarding the uncertainty of using ASR for long-term water storage, the current ASR configuration only allows water to be extracted within 12 months after injection.

MWH developed a water resources simulation model to estimate the yield available from the remaining renewable water alternatives. The model was developed using the MODSIM modeling platform created by Colorado State University and enhanced by MWH. Model inputs were based largely on previous models for the District's water rights investigations by JWC and presents the 32 alternatives ranked by the preliminary estimates of the percentage of ultimate demand met with renewable water. These estimates were based on results of running the MWH's water resources simulation model for 10 of the alternatives, and interpolations from the limited model results for the other alternatives. For Phase 2a, there was no effort to optimize the performance of any of the alternatives. Modeling was preliminary and assumptions changed moving forward as the alternatives were investigated further and refined. However, these preliminary estimates were adequate for selecting alternatives for further study. The 10 selected alternatives were then modeled in a more detailed manner in Phase 2b of the renewable water program development.

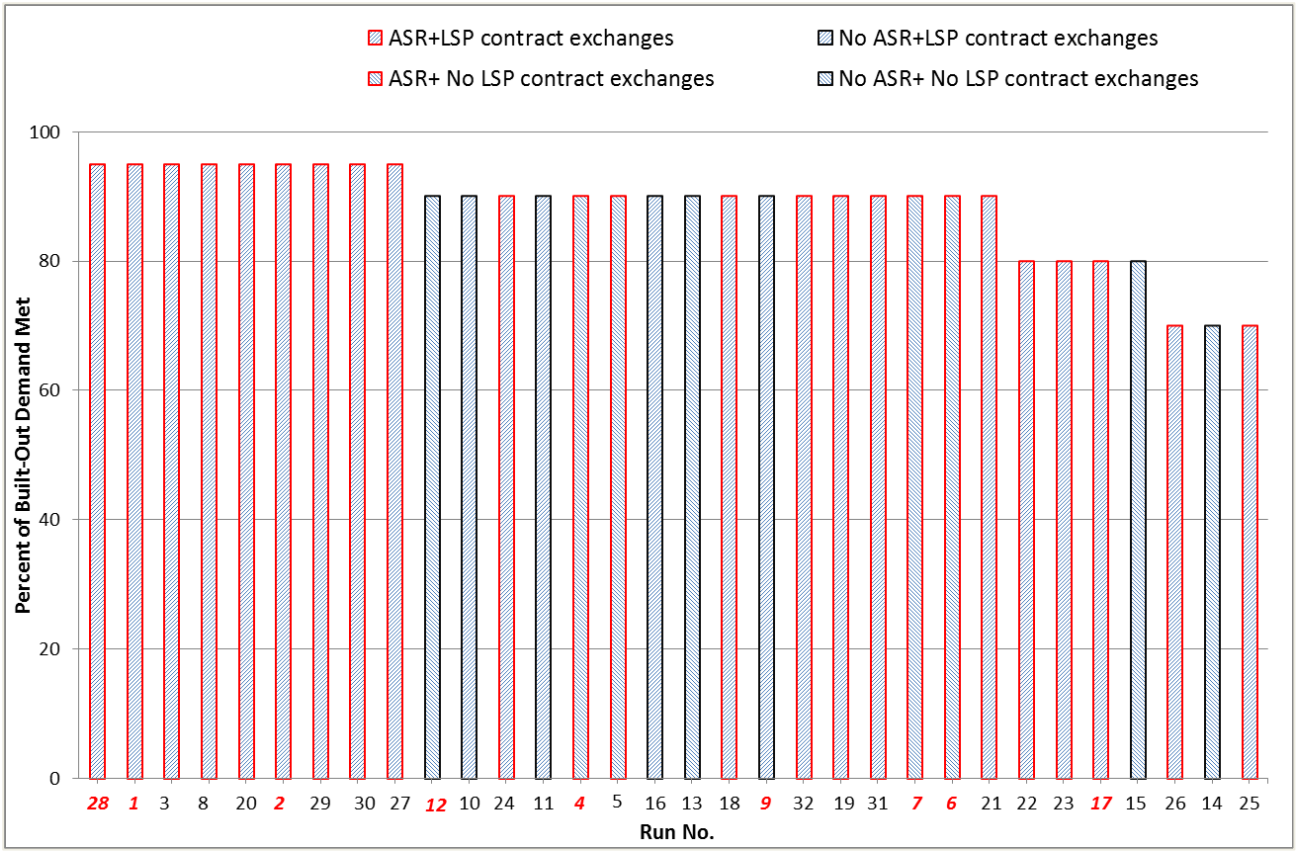


Figure k: Percentage of Ultimate Demand Met with Renewable Water by the 32 Remaining Alternatives, Ordered from Most to Least (note: recommended alternatives shown in red with italicized numbers).

All of the final 32 alternatives would meet at least 50% of the District's build-out water demands. In narrowing the recommended list to 10, we considered factors other than yield. Some of the top yielding alternatives contain only minor variations from each other. In addition, other lower-yielding alternatives represent higher reliability, lower costs, and other potential benefits. The following factors were considered when selecting the 10 alternatives recommended for further study.

- The top 10 yielding alternatives all included the exchange of Lower South Platte storage with water in Chatfield Reservoir, but the District needs to consider alternatives that do not include this component in case the exchanges prove to be infeasible.

- We wanted to include a range of alternatives with and without the expense of proposed new components, including the Centennial Water Treatment Plant upgrade, ASR, and Plum Creek Reservoir.

- We wanted to include alternatives that maximize or minimize potential strategies, such as reliance on local surface water storage or the Centennial Interconnect Pipeline.

Recommended Alternatives for Phase 2b

Based on all of the above criteria, objectives, and yield results, MWH recommended the following 10 alternatives, summarized in Table 9, for further detailed consideration in Phase 2b.

Table 9: Summary of Ten Recommended Supply Alternatives (not rank ordered)

Alt No.	Name	Description	% Demand Met with Renewable Water[11]
1	All Components	Explores using all water rights and all proposed facilities. Maximizes yield, also potentially the most expensive.	95%
2	Maximize Local System	Explores using all water rights and all proposed facilities near the District. Does not use the Lower South Platte Water Rights.	90%
3	Maximize Local System, No ASR	Same as Scenario #2, but does not utilize ASR (injection well) storage. Allows sensitivity analyses for ASR and the proposed Plum Creek Reservoir.	90%
4	No Plum Creek Reservoir	Explores using all existing water rights and potential infrastructure but no Plum Creek Reservoir.	95%
5	No Plum Creek Reservoir or CWTP upgrade	Similar to Scenario 4, but does not use expanded Centennial treatment capacity.	80%
6	Minimum Interconnect Use	Explores a scenario that moves as little water as possible through the Centennial Interconnect; Lower South Platte Water Rights are not available, nor is expanded Centennial treatment capacity.	90%
7	Rueter-Hess Res and Interconnect	Explores a scenario without Lower South Platte Water Rights, expanded Centennial treatment capacity or Plum Creek Reservoir.	90%
8	Maximum Interconnect Use	Explores a scenario without Rueter-Hess Reservoir or Plum Creek Reservoir but expands Centennial treatment capacity.	90%
9	Maximum Interconnect Use With ASR	Same as Alternative 8, but utilizes annual ASR storage.	95%
10	LSP Deliveries in ECCV Pipeline	Explores using capacity in the East Cherry Creek Valley pipeline and treatment plant as an alternative to deliver Lower South Platte water rights to the District.	TBD

The preliminary average annual yield estimates from renewable surface water for all of the recommended alternatives are at least 80 percent of the District's ultimate annual demand. Many of the alternatives (those that include the exchanges from the Lower South Platte into Chatfield Reservoir) provide about 95 percent of the annual demand on an average annual basis.

[11] Percentages are approximate and subject to change based on further analysis and refined assumptions.

The 10 alternatives recommended for further study represent a variety of infrastructure configurations and water rights that provided valuable information on the choices and tradeoffs available to the District's strategic renewable water program. They also offered good opportunities for performing sensitivity analyses on key features such as the size the Chatfield Reallocation and the size of Plum Creek Reservoir. They include some more expensive and less expensive alternatives, which allowed for comparison of unit cost of yield (cost per ac-ft of average annual yield) in addition to capital cost.

Alternative 1 – All Components (Model Run No. 28). This alternative includes all the possible components that are currently owned by the District or that have been proposed for the District's renewable water program. It will produce the maximum supply of renewable water available to the District's system with the current water rights and all potential infrastructure. We posited that this would also likely be the most expensive alternative.

Alternative 2 – Maximize Local System (Model Run No. 4). This alternative maximizes the development of the local system by including all infrastructure components near the District. It does not rely on any water from the Lower South Platte system. This alternative represents the potential yield and cost of Plum Creek and Upper South Platte water rights and storage/conveyance facilities only.

Alternative 3 – Maximize Local System, No ASR (Model Run No. 12). This is the same as Alternative 2, but it does not include ASR. The District is skeptical about the long-term feasibility of ASR as an effective storage option. Comparison of yields and costs between Alternatives 2 and 3 allowed investigation of the cost and benefit tradeoffs of ASR. In all ASR analyses, it is assumed that water put in ASR storage must be withdrawn within 12 months or it will be lost. A sensitivity analysis was performed in Phase 2b on the size of Plum Creek Reservoir to determine if the maximum feasible capacity of 850 AF for the District is really needed.

Alternative 4 – No Plum Creek Reservoir (Model Run No. 2). This alternative includes all components except Plum Creek Reservoir. Previous studies for the District and others have indicated that this is an expensive storage facility relative to its size. As currently envisioned the construction and operation of this facility would be shared with Castle Pines Metro District. This alternative helped determine the maximum surface water yield available to the District without constructing Plum Creek Reservoir.

Alternative 5 – No Plum Creek Reservoir or CWTP upgrade (Model Run No. 17). This is the same as Alternative 4, but it does not include upgrading the Centennial Water Treatment Plant (CWTP) to allow for summer season deliveries from Chatfield Reservoir through the Centennial Interconnect Pipeline. Comparing the surface water yields and costs of Alternatives 4 and 5 allowed investigation of the cost and benefit tradeoffs of the potential CWTP expansion.

Alternative 6 – Minimum Interconnect Use (Model Run No. 7). This alternative includes only those facilities that would minimize use of the Centennial Interconnect Pipeline. This would minimize the 15 percent water fee charged to the District by Centennial WSD for use of the Interconnect Pipeline. Components excluded from this alternative are the CWTP upgrade and the Lower South Platte system, since that water would most likely be moved into Chatfield Reservoir via exchange (Alternative 10 notwithstanding) and then delivered to the District through the Interconnect Pipeline. The alternative includes Chatfield Reservoir storage because the District already owns that storage. When modeling this alternative, priorities for storage and conveyance were set to store as much water as possible in Plum

Creek Reservoir, Rueter-Hess Reservoir and ASR before having carry-over storage in Chatfield Reservoir.

Alternative 7 – Current Surface Storage Only (Model Run No. 6). This alternative uses only surface storage accounts that are currently exist or are owned by the District, i.e., Chatfield Reservoir Reallocation space and Rueter-Hess Reservoir space. The proposed new Plum Creek Reservoir and Lower South Platte Reservoir would not be constructed. This alternative provides the available yield and cost associated with an alternative that does not involve any additional reservoir storage construction. It does include ASR for additional storage space.

Alternative 8 – Maximum Interconnect Use (Model Run No. 9). This alternative moves as much water through the existing Centennial Interconnect Pipeline and as possible. As such it assumes that all Plum Creek water rights would be stored in Chatfield Reservoir and delivered through the Interconnect Pipeline, and Lower South Platte water would be exchanged to Chatfield Reservoir for delivery through the Interconnect Pipeline. It includes upgrading the CWTP to allow for summer season deliveries, and obtaining additional Chatfield Reservoir Reallocation storage space. A sensitivity analysis was performed to determine the amount of additional space that would be useful in improving yields. Under this alternative, Plum Creek Reservoir would not be built and the District would sell its ownership of storage rights in Rueter-Hess Reservoir.

Alternative 9 – Maximum Interconnect Use With ASR (Model Run No. 1). This is the same as Alternative 8 but it includes ASR. Comparison of Alternative 9 with Alternative 8 allowed for investigation of the cost and benefit tradeoffs for ASR in this configuration.

Alternative 10 – LSP Deliveries in ECCV Pipeline (Not Modeled at This Time). The District requested that this alternative be included as one of the 10 alternative selected for further study. In this alternative, Lower South Platte water would be stored in a new Lower South Platte Reservoir, exchanged or piped to Barr Lake, then moved south through the existing East Cherry Creek Valley renewable water pipeline and water treatment plant. To focus the analysis on this Lower South Platte system, the alternative only includes other storage accounts and facilities that the District currently owns (i.e., Rueter-Hess Reservoir storage, Chatfield Reservoir storage, and the existing Centennial Interconnect Pipeline capacity).

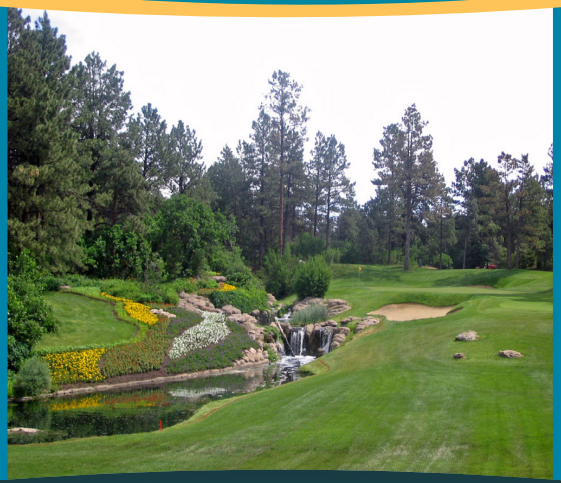
Table 10: Characteristics of Recommended Supply Alternatives

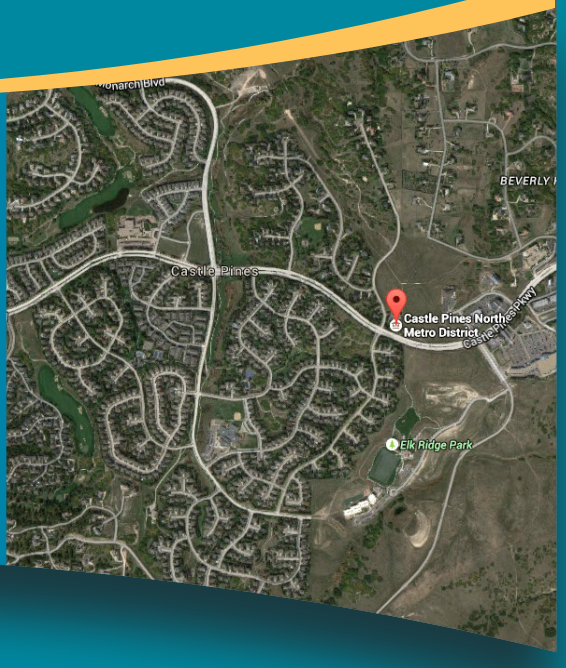
Alternative	PCR (AF)	RHR (AF)	CHAT (AF)	LSP (AF)	CWTP	ASR (AF/M)	Comments	Screening Model Run	% Demand met with Renewable Water
1. All Components	850	1500	1005	6000	Expand	150	All water rights, all potential infrastructure. Max yield, max cost.	28	95
2. Maximize Local System	850	1500	1005	-	Expand	150	No LSP system.	4	90
3. Maximize Local System, No ASR	400 - 850	1500	1005	-	Expand	-	Same as Alt 2 but no ASR. Do sensitivity analysis on size of Plum Creek Res.	12	90
4. No Plum Creek Res	-	1500	1005	6000	Expand	150	No Plum Creek Reservoir. Compare to Alt 7 to see benefit of Plum Creek Res.	2	95
5. No Plum Creek Res or CWTP upgrade	-	1500	1005	6000	-	150	Same as Alt 4 but no CWTP upgrade.	17	80
6. Minimum Interconnect Use	850	1500	1005	-	-	150	No LSP exchange to Chatfield or CWTP expansion. Compare to Alt 2 for benefit of CWTP expansion.	7	90
7. Current Surface Storage Only	-	1500	1005	-	-	150	Use only current surface storage reservoirs and accounts.	6	90
8. Maximum Interconnect Use	-	-	>1005	6000	Expand	-	Change Plum Creek WR to Chatfield. Least new infrastructure; potentially least capital cost.	9	90
9. Maximum Interconnect Use With ASR	-	-	>1005	6000	Expand	0 – 300	Same as Alt 8 plus ASR. Do sensitivity analysis on ASR size.	1	95
10. LSP Deliveries in ECCV Pipeline	-	1500	1005	6000	-	-	Requested by CPNMD. Maximize use of LSP water rights. ECCV pipeline and WTP for conveyance.	33	TBD

Notes: PCR = Plum Creek Reservoir (CPNMD storage); RHR = Rueter-Hess Reservoir (CPNMD storage); CHAT = Chatfield Reservoir (CPNMD storage); LSP – Lower South Platte; CWTP = Centennial Water Treatment Plant; ASR = Aquifer Storage and Recovery (monthly injection capacity); all LSP yields require exchanges to Chatfield.

SECTION 4

Selection of Candidate Solutions





SECTION 4

SELECTION OF CANDIDATE SOLUTIONS

The next phase of the evaluation was to conduct detailed screening on each of the ten alternatives to identify no more the three "candidate" solutions for final consideration by the Board.

After obtaining the yield analysis in Phase 2a, and limiting the universe of possibilities to ten alternatives, more analysis would be required to establish the best manner to deliver renewable water to the District. The next step is to establish the values for the Board's decision-making criteria for each final 10 alternatives. In order to accomplish this, it was necessary to gain a more detailed understanding of the alternatives including not only the yields of the proposed solutions, but the inner workings of how that water is delivered. This starts with an infrastructure plan to understand all the pieces of the delivery puzzle, from reservoirs and transmission systems to water treatment plants and pump stations. An infrastructure plan allows us to estimate capital and operating costs, identify potential risks in water delivery and permitting, project the amount of time required to build the infrastructure, and most importantly compare each alternative to identify the best possible renewable water solution for the District.

Infrastructure Plan

An infrastructure plan identifies the required capital improvements needed to deliver renewable water for each alternative, specifically focusing on the transmission of raw water from the source of supply to the District's distribution system. Those assets include raw water transmission lines (pipes), raw water storage tanks, and water treatment plants. To properly size this required infrastructure, MWH created GIS-based hydraulic models for all ten scenarios.

Hydraulic Modeling of Alternatives

Hydraulic modeling allows MWH to identify how and where the supply of water will flow through the system to meet the District's demands at different times of the year. The modeling identifies the capacity required for all pieces of infrastructure. It calculates the water pressure associated with changes in elevation in order to size the pump stations. It calculates the volume of water moved through pipelines and the corresponding required diameter of that pipeline. Using the GIS system in conjunction with the hydraulic model, the location, length, and arterial crossings of pipelines are determined as well. All of this information then leads into the determination of the required water treatment plant max day treatment capacity.

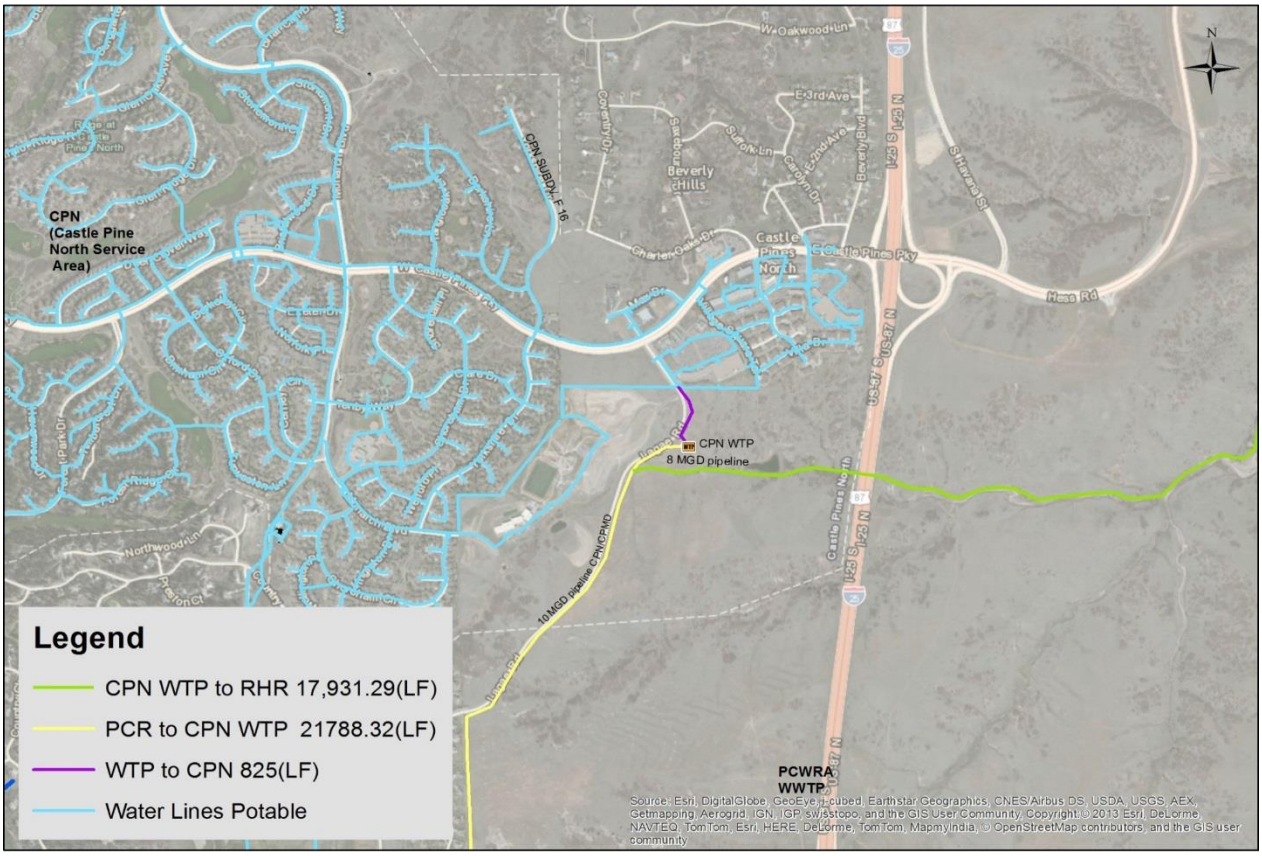


Figure I: Preliminary GIS Map of Pipelines and Water Treatment Plant for Alternative 1.

Hydraulic modeling for the raw water transmission system was delivered to the client in fall of 2014. Please refer to Appendix B for a detailed analysis of the flows from sources of supply, inflows by reservoir, and water moved by infrastructure.

Water Treatment Plant Design

Another important output of the water quality screening process in Phase 2a was the determination of the level of treatment required for the remaining water sources.

A water treatment plant (WTP) is designed to take water from the environment and produce drinking water that meets all drinking water standards, as established by the Environmental Protection Agency and the Colorado Department of Public Health and Environment.

The treatment processes used in a WTP are dependent on which regulated contaminants are found in the raw water supply. The relevant raw water quality from Plum Creek and Rueter-Hess, the treated water goals, and treatment options are summarized in Table 11**.** This table is not a comprehensive list of regulated contaminants; instead, it focuses on the constituents that exceed or are close to exceeding treated water goals.

As shown in Table 11, there are some treatment technologies that will remove or breakdown a number of the constituents of concern. The selected technologies for the Castle Pines North WTP are shown in bold. A schematic of the proposed WTP is shown in Appendix C. Coagulation and floatation will be provided by a Dissolved Air Floatation (DAF) system, a technology well suited for the removal of algae as well as many of the other contaminants listed in Table 11. Oxidation, provided by ozone contactors, will cause

metals to precipitate and organics (TOC and emerging contaminants) to breakdown into simpler forms. Granular Activated Carbon filters will be able to adsorb and filter solids while the biota growing on the filters will further breakdown organics. Disinfection with ultraviolet light will provide primary disinfection without producing any disinfection byproducts. Secondary disinfection (i.e., residual disinfection for the distribution system) will be provided by chlorine and ammonia (chloramines), which produce fewer regulated DBPs compared to free chlorine. Washwater from the filters will go to small washwater DAF system to separate the liquid and solids streams. Clean water will be returned to the head of the plant. The solids produced by both the main and washwater DAF systems will be thickened in a gravity thickener and dried by a screw press so that solids can be landfilled.

Table 11: Raw Water Quality and Select Treated Water Goals

Constituent	Plum Creek	Rueter-Hess Reservoir	Treated Water Goal[1]	Regulation	Treatment Options
Arsenic	No Data	Range: 2.8 – 23 µg/L Ave: 6.8 µg/L	< 10 µg/L	National Primary Drinking Water Regulations	Adsorption Media, Ion Exchange, Coagulation / Filtration, Oxidation / Filtration, Activated Alumina, Reverse Osmosis
Algae	Unlikely to be present	Present		Contributes to taste and odor issues and fouling of processes	Floatation, Oxidation / Filtration
Aluminum	No Data	Range: 43 – 322 µg/L Ave: 110 µg/L	250 – 200 µg/L	National Secondary Drinking Water Regulations (Color)	Adsorption Media, Ion Exchange, Coagulation / Filtration, Oxidation / Filtration, Activated Alumina, Reverse Osmosis
Iron	No Data	Range: 5 – 247 µg/L Ave: 60 µg/L	300 µg/L	National Secondary Drinking Water Regulations (Color)	Ion Exchange, Coagulation/Filtration, Oxidation/Filtration, Reverse Osmosis
Total Organic Carbon (TOC)	No Data	Range: 5.6 – 8.7 mg/L Ave: 6.4 mg/L	25% - 40% Removal, (Depends on influent TOC and influent alkalinity)	Stage 1 Disinfectants and Disinfection Byproducts (DBP) Rule	Coagulation / Filtration, Oxidation / Filtration,
Turbidity[2]	Range: 0.4 - 60 NTU Ave: 18 NTU	Range: 0.05 – 4.6 NTU Ave: 1.5 NTU	≤0.3 NTU in 95% of monthly samples <1 NTU Max	Surface Water Treatment Rule	Sedimentation, Floatation, Filtration
Emerging Contaminants				None	Oxidation / Filtration
Minimization of Disinfection By Products				Stage 1 Disinfectants and Disinfection Byproducts Rule	Ultraviolet Light Disinfection, Chloramination

Note 1: The treated water goals include the numeric goal and the type of regulation. Primary Drinking Water Standards must meet the goal (Maximum Contaminant Limit) in order to distribute water to the public. Secondary Drinking Water Standards affect aesthetic characteristics, as noted, but the limits are not enforced. TOC removal is required in order to minimize the formation of Disinfection Byproducts.

Note 2: Turbidity data was not available; therefore it was estimated based on Total Suspended Solids data.

Please refer to Appendix C for the process flow diagram and the proposed layout of the CPN water treatment plant.

Cost Evaluation of Alternatives

Infrastructure Capital Cost Estimates

With the hydraulic modeling complete, cost of all infrastructure must be determined in order to calculate the financial impact of each renewable water alternative for CPNMD's ratepayers. MWH Constructors, a subsidiary of MWH Global, was contracted to calculate the AACE Class 5 cost estimates for each piece of infrastructure. AACE is the Authority for Total Cost Management, which is considered to be the global leader in certification of cost engineering experts.

Class 5 cost estimates are the most preliminary estimates provided by engineers used primarily for screening and feasibility of capital projects. They typically do not provide a great deal of accuracy with actual costs running anywhere between 35% less than the estimate, or 50% more. These estimates also typically include a contingency of 20% to 40% of the estimated costs. The goal of a Class 5 estimate for the CPNMD study is to provide a reasonable estimate for the cost of the proposed alternatives and be able to compare those alternatives based on that cost. If all alternatives are measured in the same manner, with the same accuracy and contingencies, then they can be fairly and equitably compared against each other.

The accuracy of the classes, and their corresponding design completion percentage is presented below.

Table 12: Summary of AACE Cost Estimating Standards

AACE Class	% Design Completed	Range of Estimating Accuracy	Typical Contingency in Cost Estimate
5	< 5%	-35% to +50%	20-40%
4	< 15%	-25% to +35%	10-30%
3	10-40%	-15% to +20%	5-20%
2	50-99%	-10% to +15%	0-10%
1	100%	+/- 5%	0-5%

MWH Constructors were provided a detailed list of proposed assets generated by the hydraulic modeling task. With this information, they were able to generate Class 5 costs for all proposed infrastructure in each scenario.

A summary of the major construction cost estimates are below. A detailed output from this analysis can be found in Appendix D.

Table 13: Opinions of Probable Cost for Major Infrastructure Items

Major Infrastructure Group	Level 5 OPCC
Plum Creek Reservoir and Pump Station	$36.3 M
Plum Creek Wet Wells and Pump Station	$31.0 M
Proposed 5MGD Treatment Plant	$50.2 M
Lower South Platte Gravel Pit	$52.2 M
Aquifer Storage and Recovery	$10.1 M
ECCV Infrastructure (Excluding Gravel Pit)	$28.3 M

Infrastructure Operating Cost Estimates

An important piece of the criteria used to select the top ten alternatives is the operating costs for each alternative, with a criteria weight of 9%. Our engineers reviewed similar projects with comparable characteristics and compiled the projected fixed and variable operating costs for each proposed asset.

A detailed output of this analysis can be found in Appendix E.

Financial Analysis

With the detailed capital and operating costs associated with each renewable water alternative, MWH was then able to compile financial calculations associated with each of the alternatives. Because the timing of the projects were unknown at the time, it was assumed all projects would be completed over a maximum of four years. The first year was designated as the design period, where design for all assets associated with a given alternative would be completed. The remaining three years would be designated as the construction period. MWH Constructors provided estimated construction durations for all assets, allowing MWH to approximate the annual spend for each project.

Land acquisition costs for reservoirs, pump stations, and treatment plants were also incorporated into the cost of construction at a rate of 3% of the cost to build the asset, assuming the District did not already own the land. Pipelines were considered to not need land acquisition costs and were assumed to be built using easements. For this Phase 2b analysis, MWH did not consider the financial impact of the sale of unused assets.

A summary of the capital costs and timing of the capital outlay for our preliminary analysis is found in Table 14.

Table 14: Estimated Capital Costs

Alternative	Phase 1	Phase 2	Phase 3	Phase 4	Total Capital Costs	Annual O&M Costs
Alternative 1	$38,780,718	$110,753,146	$64,722,146	$2,166,667	$216,422,677	$6,009,401
Alternative 2	$33,560,718	$87,263,146	$41,232,146	$2,166,667	$164,222,677	$5,362,063
Alternative 3	$31,584,218	$78,888,146	$41,232,146	$2,166,667	$153,871,177	$5,695,742
Alternative 4	$38,865,148	$111,953,946	$57,922,146	$2,166,667	$210,907,907	$6,113,360
Alternative 5	$31,862,210	$99,775,467	$45,743,667	$2,166,667	$179,548,010	$4,424,244
Alternative 6	$26,557,780	$75,084,667	$29,053,667	$2,166,667	$132,862,780	$3,721,352
Alternative 7	$26,642,210	$80,535,467	$22,253,667	$2,166,667	$131,598,010	$4,069,917
Alternative 8	$12,222,938	$39,980,254	$39,980,254	$4,311,774	$96,495,220	$4,656,202
Alternative 9	$14,199,438	$48,355,254	$39,980,254	$4,311,774	$106,846,720	$4,541,034
Alternative 10	$19,440,139	$64,806,128	$38,454,119	$2,166,667	$124,867,052	$4,851,635

In order to calculate annual costs associated with the capital plan, MWH assumed 100% debt financing at 4.5% interest over 30 years. Combining the debt service with the annual fixed and variable operating costs yields the total annual cost for an alternative. Total annual costs and annual cost per acre-foot of renewable water for all alternatives are summarized in Table 15.

Table 15: Estimated Annual Costs

Alternative	Annual Debt Service	Annual O&M Costs	Total Annual Cost	Average Annual Cost $/AF
Alternative 1	$13,286,522	$6,009,401	$19,295,923	$7,749
Alternative 2	$10,081,884	$5,362,063	$15,443,947	$6,522
Alternative 3	$9,446,389	$5,695,742	$15,142,131	$6,307
Alternative 4	$12,947,962	$6,113,360	$19,061,321	$7,655
Alternative 5	$11,022,729	$4,424,244	$15,446,973	$6,587
Alternative 6	$8,156,651	$3,721,352	$11,878,003	$5,329
Alternative 7	$8,079,005	$4,069,917	$12,148,922	$5,159
Alternative 8	$5,923,990	$4,656,202	$10,580,193	$4,700
Alternative 9	$6,559,485	$4,541,034	$11,100,519	$4,458
Alternative 10	$7,665,781	$4,851,635	$12,517,416	$5,068

A summary of all financial findings for the Phase 2b analysis can be found in Appendix F.

Ranking Service Level, Timing, Groundwater Reliance, and Risk

In order to obtain inputs for all other criteria required for the Expert Choice analysis, MWH needed to rank the remainder of criteria for the 10 renewable water alternatives. In order to do so, specific measurements were established for all sub criteria. These measurements and rankings were created by the subject

matter expert team consisting of members of MWH, the District's water rights attorney, and the District's general manager.

Service Level

In order to measure public safety, the team counted the number of open bodies of water and the number of times a pipe crossed a road. Open bodies of water represent a drowning danger, as well as the possibility of contamination. Road crossings represent danger during construction and repair. Open bodies of water were considered to be three times as dangerous as a road crossing. Details of the calculation are found in Table 16.

Table 16: No. of Road Crossings and Open Water Bodies

Public Safety	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Alt-6	Alt-7	Alt-8	Alt-9	Alt-10	SME Weight
Road Crossings	6	6	6	6	6	6	6	0	0	2	**0.25**
Open Water	4	3	3	3	2	3	2	2	2	2	**0.75**
Score	**4.5**	**3.75**	**3.75**	**3.75**	**3**	**3.75**	**3**	**1.5**	**1.5**	**2**	

Alternative 8 and 9, due to the fact that they use the existing interconnect, do not require any additional road crossings. These alternatives also have the fewest number of open bodies of water, giving them the lowest and best score.

Water quality is measured by the variation in water supplied to the District. Each source of water, less well water, has approximately the same quality. However, when switching supplies throughout the year, customers notice a change in taste and odor. The fewer inputs to the system, the more consistent the drinking water will taste and smell, and the better the alternative will rank in the water quality measurement. Only alternatives 8 and 9 have two water inputs, whereas all other alternatives have three.

Regionalization measures the degree to which an alternative allows for a regional delivery solution for renewable water. Our subject matter experts agreed that all alternatives use regional components, or have capacity to be regional assets. All alternatives were scored equally for this measurement.

To measure the alternative backup supply, the subject matter experts simply looked at the renewable water inputs to the system and subtracted one input. Alternatives 8 and 9 rely solely on the existing interconnect to deliver renewable water. Were that input to fail, the District would need to rely on wells to supply drinking water. However, for other alternatives, inputs include the interconnect pipeline and pipelines from two different reservoirs into the water treatment plant, offering more redundancy and scoring higher.

Timing

Detailed scheduling for alternatives was not planned until Phase 2c of the study. In order to approximate the duration of the alternatives, MWH, in conjunction with District staff, estimated the maximum annual capital expenditure the District would be capable of undertaking to be $5 million. This estimate was based on the District's history of project management and project completions; it provides some perspective on the District's internal capacity to complete the necessary projects. The estimated years to complete for each alternative under this assumption is shown in Table 17.

Table 17: Estimated Years to Complete

Alternative	Years to Complete Alternative
Alternative 1	44
Alternative 2	33
Alternative 3	31
Alternative 4	43
Alternative 5	36
Alternative 6	27
Alternative 7	27
Alternative 8	20
Alternative 9	22
Alternative 10	25

It was also assumed that the entire project would go online at the same time, meaning that for each timing sub-criteria (years to reach peak demand, years to reach drought demand, etc.) would be the same. Projects that are less expensive would be completed sooner than more expensive projects, scoring better.

Denver Basin Groundwater Reliance

Using the hydraulic demand modeling, the amount of water required to meet annual demand from Denver Basin groundwater wells (nonrenewable water) was calculated to be the difference between the monthly supply from renewable water sources and monthly demand. No alternative provides 100% renewable water, and each alternative relies on groundwater at some point during the year, especially during drought years. The amount of groundwater water each alternative relies upon is shown below. Alternatives that use less groundwater score higher in this category, as shown in Table 18.

Table 18: Percent of CPNMD Water Supply Provided by Denver Basin Groundwater Sources After Implementation of Alternative

Groundwater Use	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Alt-6	Alt-7	Alt-8	Alt-9	Alt-10
% Groundwater Use	2%	7%	6%	2%	8%	13%	8%	12%	2%	3%

The other criteria of Denver Basin groundwater reliance is related to whether the alternative provides reasonable progress towards meeting the District's renewable water goals. As all alternatives provide a high degree of renewable water, the subject matter experts agreed that all alternatives provide reasonable progress towards meeting the District's goals. Each alternative is scored equally for this criteria.

Risk

In order to identify the legal risk associated with each of the alternatives, the subject matter experts relied heavily upon the District's special water counsel. Legal risk, for the purposes of this analysis, is in relation to the potential issues with obtaining permits for various reservoirs and stream diversions required for the different alternatives.

The diversion on Plum Creek, used in alternatives that require the Plum Creek reservoir or pump station, represented the most legal risk. This is due to the fact that building any structure in a natural stream channel requires a permit issued by the U.S. Army Corps of Engineers under § 404 of the Clean Water Act. Before the Corps can issue a permit, however, they must comply with the National Environmental Policy Act ("NEPA"), which requires an evaluation of potential environmental impacts that would result from the river depletions allowed by permitting the activity. Smaller projects may only require an Environmental Assessment, but projects that may result in significant impacts – which likely include this project – require preparation of an Environmental Impact Statement ("EIS").

Assuming the environmental impacts of a surface diversion from East Plum Creek have already been considered by the Corps, the proposed Plum Creek Reservoir would add only a relatively small additional risk, arising primarily from issues associated with mitigation of any wetlands on the site of the proposed reservoir. The lower South Platte gravel pit reservoir may not require a new stream diversion, if the diversion to fill the reservoir can made through an existing diversion structure and canal, however, applicable federal regulations are currently in flux.

Chatfield and Rueter-Hess Reservoirs are considered to have little to no legal risk because the environmental impacts caused by those structures have already been evaluated under NEPA. However, neither of those storage alternatives are without uncertainty. Highway crossings also represent a minor legal risk associated with permitting. Detailed scoring of the alternatives are shown in Table 19. The lower value represents a higher score for the legal risk criteria.

Table 19: Estimated No. of Permits Required

Legal Risk	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Alt-6	Alt-7	Alt-8	Alt-9	Alt-10	SME Weight
Plum Creek Reservoir	1	1	1	0	0	1	0	0	0	0	**2**
Plum Creek Diversion	1	1	1	1	1	0	1	0	0	0	**4**
Rueter-Hess Reservoir	1	1	1	1	1	1	1	0	0	0	**0**
Lower South Platte	1	0	0	1	1	0	0	1	1	1	**2**
Chatfield	1	1	1	1	1	1	1	1	1	1	**0**
Highway Crossing	1	1	1	1	1	1	1	0	0	1	**1**
Score	**9**	**7**	**7**	**7**	**7**	**3**	**5**	**2**	**2**	**3**	

Counter Party Risk is calculated as the amount of water delivered by another agency. This risk is associated with relying on an agency other than the District to reliably deliver renewable water. All exchanges, including those from the Lower South Platte to Chatfield in alternatives 7, 8 and 9 depend to some degree on the actions of others. Further, in order for the District to move any Chatfield water through its interconnect pipeline, it must rely on Centennial Water & Sanitation District. Under alternative 10, East Cherry Creek Valley would be responsible for wheeling and treating water through their pipeline

from the Lower South Platte to the District's boundaries to the North. For purposes of this study, the subject matter experts considered each agency to represent the same amount of risk, and scores were not weighted. The more water that moves through a counter party, the riskier that alternative was assumed to be, and the lower it scored in this category. The total acre feet moved through different parties is shown in Table 20 below.

Table 20: Estimated Amount of Water Supply Subject to Counterparty Performance

Counter Party Risk	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Alt-6	Alt-7	Alt-8	Alt-9	Alt-10
Central (AF)	194	-	-	148	69	-	94	1,648	1,187	-
Centennial (AF)	549	508	1,078	523	259	196	384	603	753	666
ECCV (AF)	-	-	-	-	-	-	-	-	-	1,804
Score	**743**	**508**	**1,078**	**671**	**328**	**196**	**478**	**2,251**	**1,940**	**2,470**

The riskiest alternatives, 8 through 10, rely on a counter party to deliver a majority, if not all of the renewable water for the District.

Operational risk refers to the risk the District takes when operating additional assets. The asset with the most operational risk is the proposed water treatment plant due to the complexity of a surface water treatment plant compared to the District's existing groundwater treatment plant. Leveraging the expertise of our subject matter experts, we judged the complexity of running and maintaining each major piece of infrastructure, then counted the number of those complex processes each alternative required to deliver renewable water. Using a weighted average, we calculate the operation risk for each alternative, as shown in 8 below. The lower the value, the higher the alternative scores.

The score for operational risk is shown below.

Table 21: Number of High-Maintenance Facilities Requiring Intensive Operational Focus

Operation Risk	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Alt-6	Alt-7	Alt-8	Alt-9	Alt-10	SME Weight
Water Treatment Plant	1	1	1	1	1	1	1	0	0	0	**4**
Pump Station	3	3	3	3	3	3	3	0	0	2	**3**
Reservoir	2	1	1	1	1	1	0	1	1	1	**2**
Big Pipelines	2	2	2	2	2	2	2	0	0	2	**1**
Aquifer Storage and Recovery	1	1	0	1	1	1	1	0	1	0	**1**
Water Treatment Plant	1	1	1	1	1	1	1	0	0	0	**4**
Score	**20**	**18**	**17**	**18**	**18**	**18**	**16**	**2**	**3**	**10**	

The alternatives that rely most on counter parties also saw the lowest operational risk.

Phase 2b Results

Phase 2b results were presented to the District's Board of Directors in September of 2014. The figure below displays the results of the ranking of the alternatives based on the sum of the District's criteria.

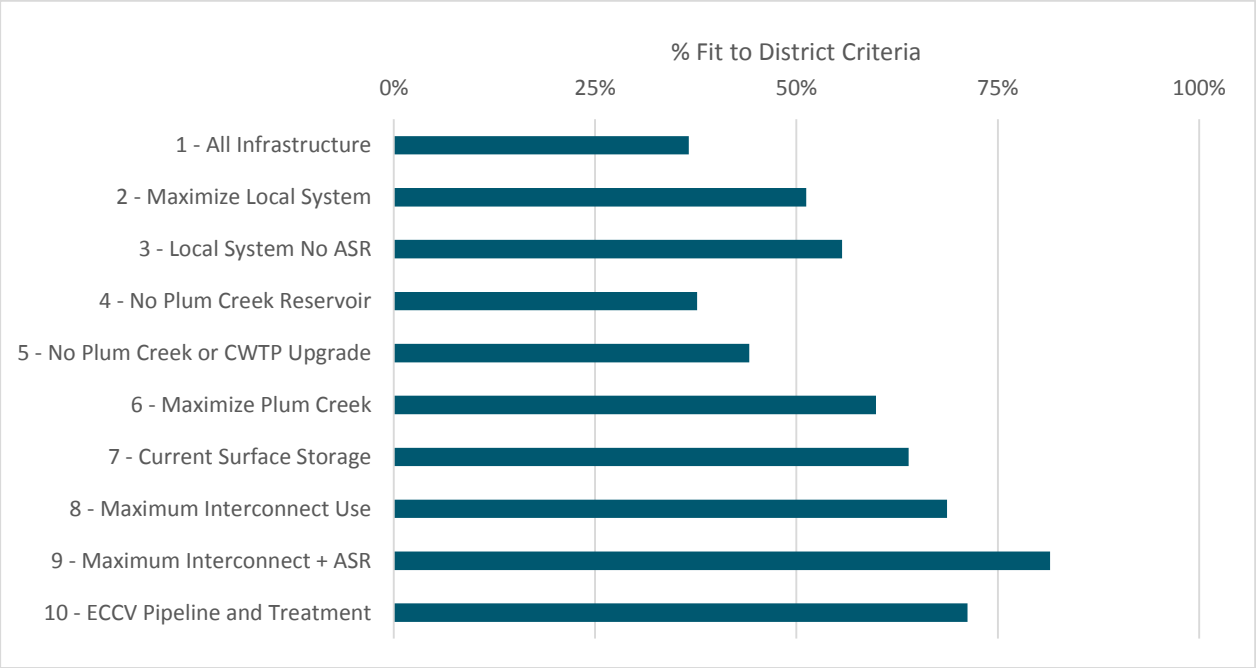


Figure m: Ranking of Alternatives Based on Sum of District's Selection Criteria.

Alternatives 6 through 10 performed the best, mostly due to the fact that they delivered the most renewable water at the lowest cost. However, after discussions with District staff, MWH recommended increasing the importance of Risk to the analysis. MWH believes Risk, especially counterparty and exchange risk, represents a much larger factor in the success of an alternative than the 9.7% weight it was originally given by the Board. We recommended making the weight of Risk, as a category, the same weight as Financial. The District agreed with our recommendation and the criteria weighting was adjusted as shown in Table 22.

Table 22: Original and Adjusted Criteria Weights

Criteria	Original Weights	Adjusted Weights
Financial	**41.4%**	**31.4%**
Timing	6.9%	5.2%
Groundwater Reliance	15.3%	11.6%
Supply	16.2%	12.3%
Service Level	10.5%	10.5%
Risk	**9.7%**	**31.4%**

After applying the revised criteria weights as shown in Table 22, the updated rankings were then presented to the Board. The bottom bar for each alternative in Figure n represents the updated risk scoring.

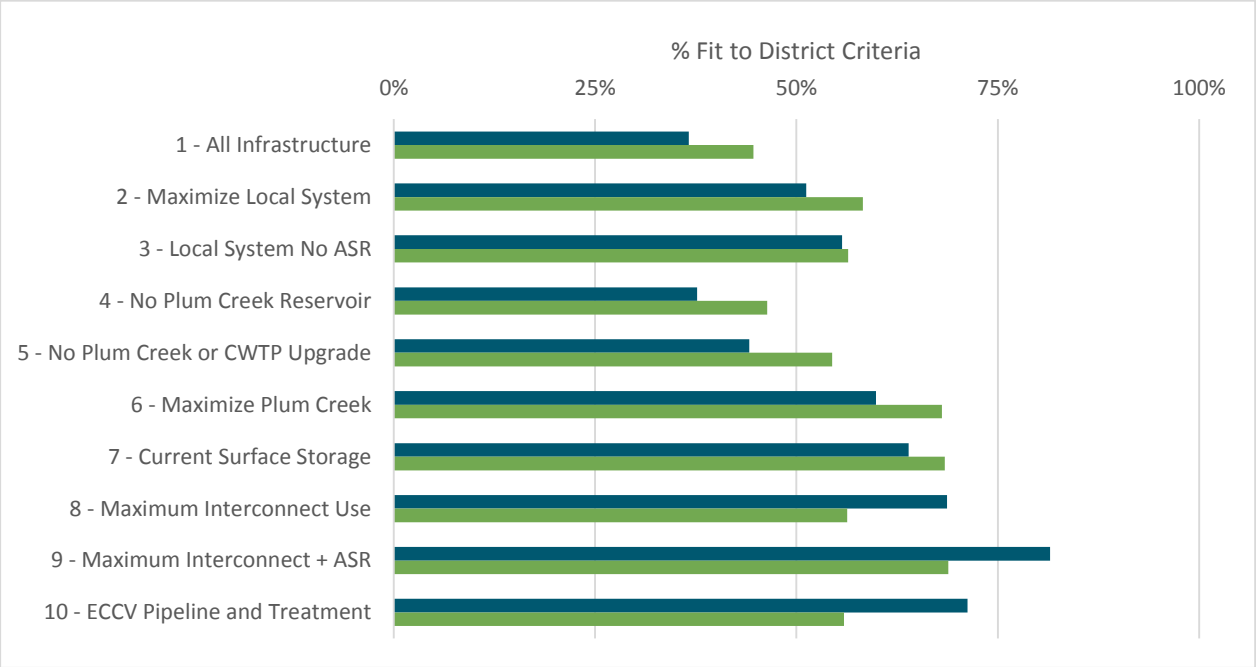


Figure n: Revised Ranking of Alternatives with Adjusted Decision Criteria Weights.

Based on the revised rankings as shown in Figure n, the District elected to narrow the field of alternatives into three “candidates” and chose alternatives 6, 7, and 9 for further detailed screening. As you can see from Figure n, alternatives 6, 7, and 9 all scored relatively close in terms of best fit to the District’s criteria after adjusting the weights of the criteria for Risk as described earlier (above). These alternatives also present the highest and best fit of the ten. Alternatives 8 and 10, while scoring high initially, did not fare as well once risk became a larger consideration. Alternatives 1 through 5 scored relatively low under both the original and adjusted criteria.

The following figures provide graphical depictions of the selected Candidates.

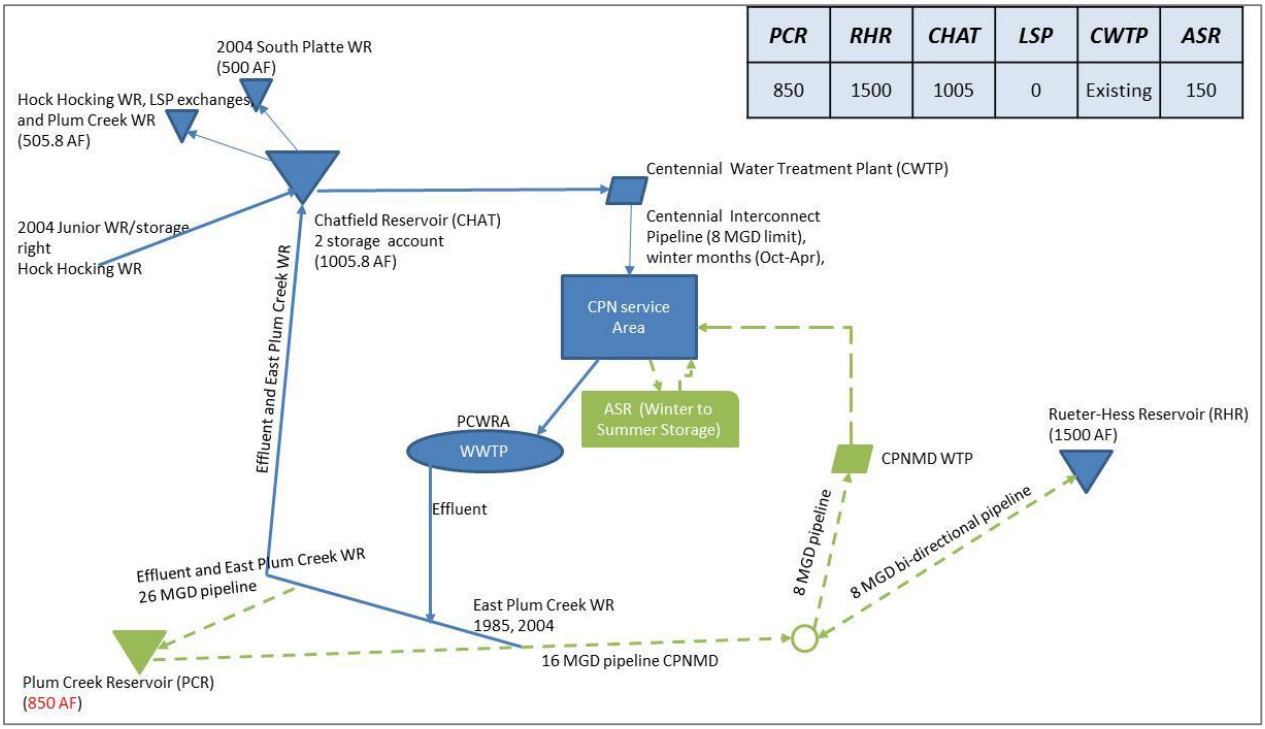


Figure o: Graphical Depiction of Alternative 6 – Maximize Plum Creek.

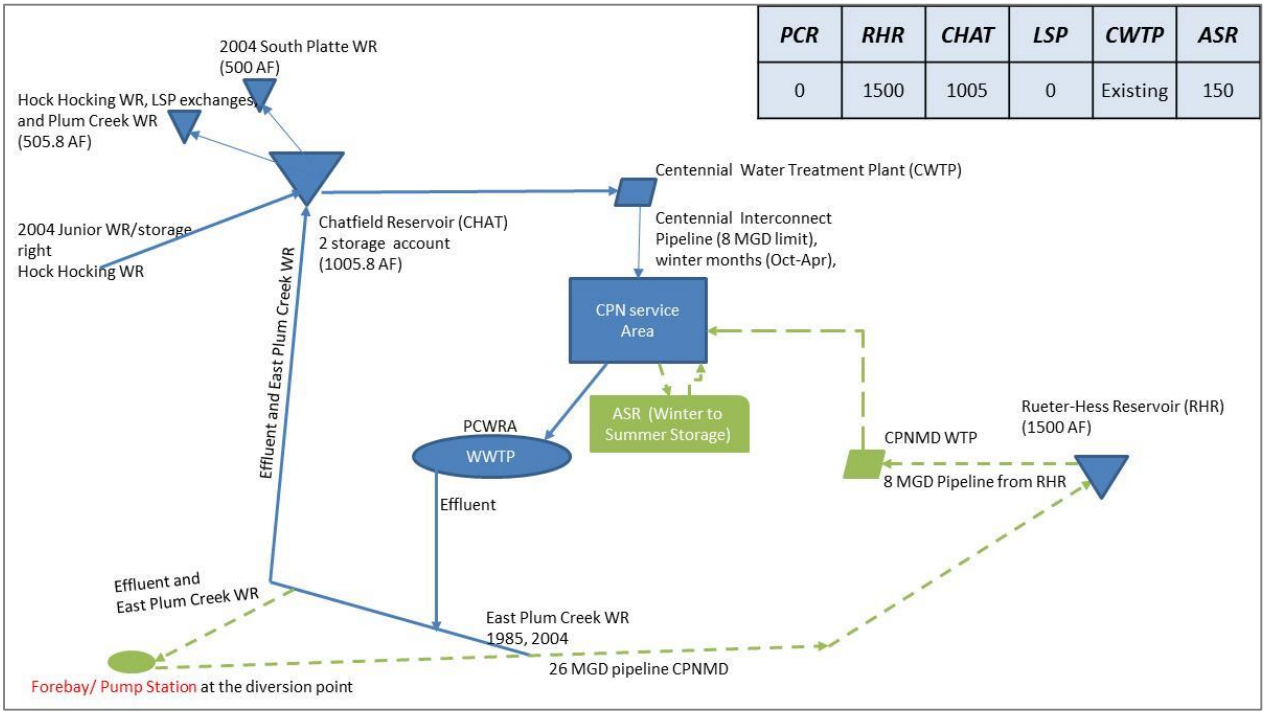
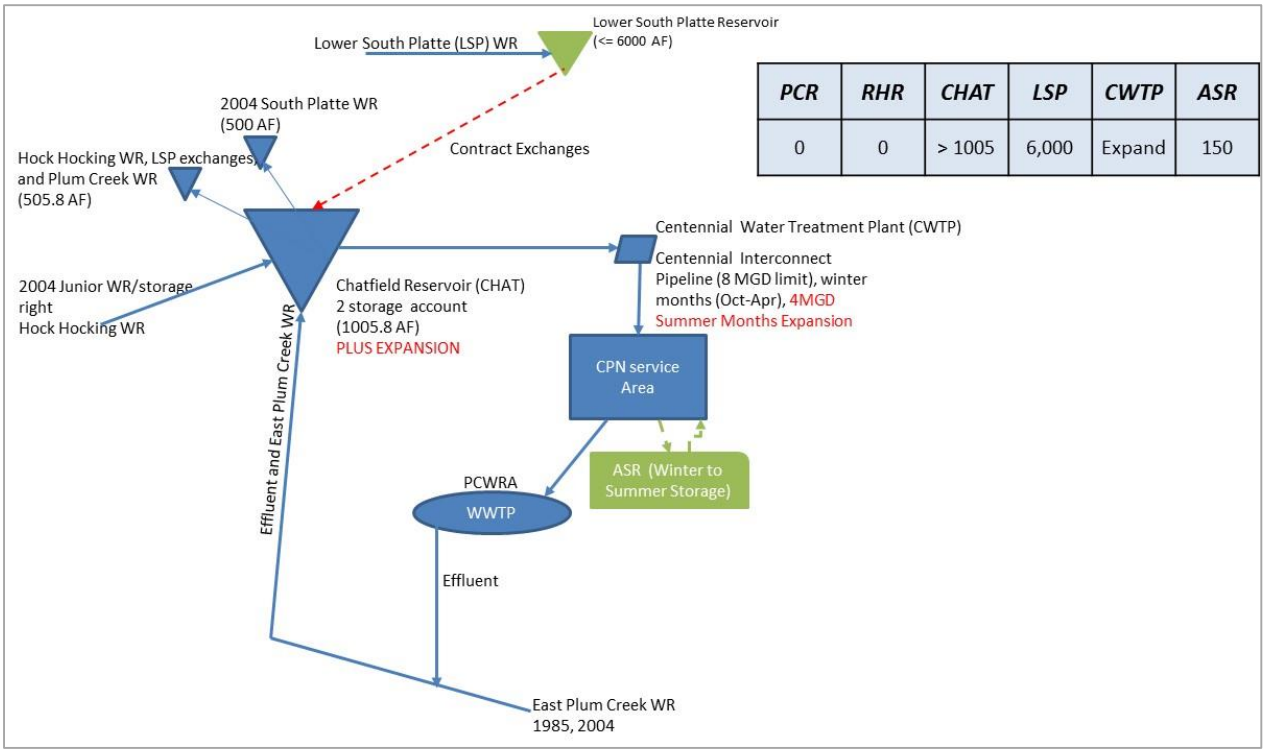


Figure p: Graphical Depiction of Alternative 7 – Maximizing Current Surface Storage.

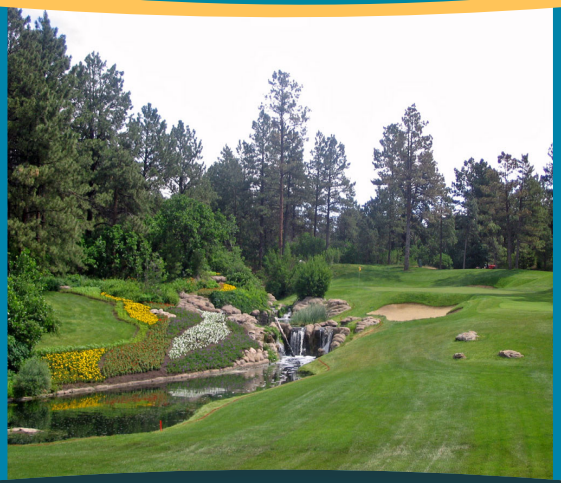


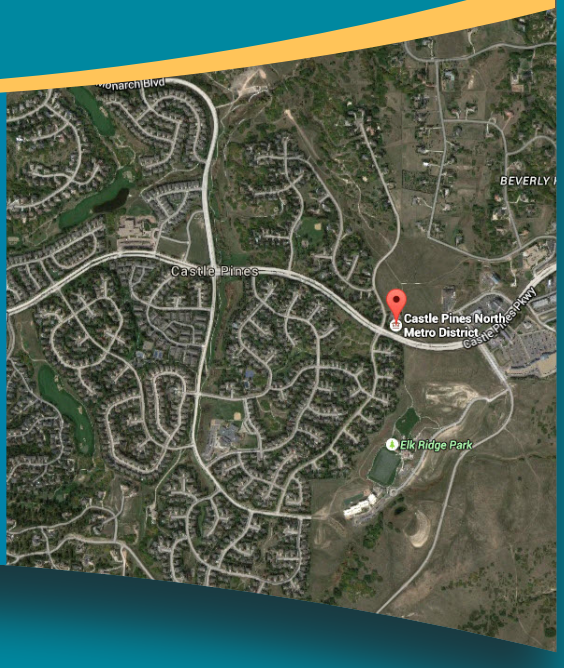
PCR	RHR	CHAT	LSP	CWTP	ASR
0	0	> 1005	6,000	Expand	150

Figure q: Graphical Depiction of Alternative 9 – Maximizing the Interconnect and ASR.

SECTION 5

Detailed System Evaluation





SECTION 5

DETAILED SYSTEM EVALUATION

The final phase of the evaluation was to expose the Candidate solutions to even further rigorous examination. This included evaluation of distribution system impacts, detailed project scheduling, a review of permitting requirements, and a final cost evaluation.

In Phase 2c, MWH took the Candidate solutions selected by the Board of Directors and subjected them to a complete system evaluation. This evaluation was designed to obtain more detailed information about all aspects of the top three alternatives including modeling total system functionality, scheduling of project construction, and projecting detailed costs. Due to the importance of risk placed on deciding the top three alternatives, MWH also included a more detailed analysis of the required permitting and legal risks.

Detailed System Modeling

MWH expanded the hydraulic modeling developed in Phase 2b to the District's distribution system (including storage tanks) and individual demand nodes (customer meters). Recall that Phase 2b only included system modeling up to the District's transmission system. The detailed system model was intended to accurately reflect the operation of the drinking water system under the remaining alternatives and to see how each alternative would impact the distribution system. In some cases, additional capital costs were identified in order for an alternative to function appropriately. Specifically, Candidates 6 and 7 required an additional 4,560 foot 16" water line from the proposed water treatment plant into the distribution system in order to maintain appropriate water pressure during peak demand. Hydraulic modeling for the detailed system modeling was delivered to the client in spring of 2015.

Please refer to Appendix G for a technical memorandum describing the creation of the hydraulic model and the evaluation of the three alternatives.

Project Scheduling

In order to understand when the project timing and corresponding financial burdens for each Candidate solution, MWH developed detailed project schedules for each Candidate. Project completion is impacted by both the normal procurement, design and construction activities as well as the various state/federal/local permit requirements. MWH Constructors provided estimated durations for design and construction of the facilities based on a linear project timeline assuming the District would manage each Candidate solution such that all activities would be managed from a single start point to a completion date without pauses in between. The District's special water counsel provided a detailed analysis of the specific permitting issues.

The proposed preliminary start date for all permitting and other activities is January 1, 2017. This date was chosen as a future point that would give the District sufficient time to review the findings of this study and arrange the financing capacity as may be necessary in order to pay for the initial efforts.

Once the permitting issues were identified by the District's special water counsel, MWH reviewed the corresponding level of effort to obtain each permit. Please refer to Appendix H for a memorandum describing the proposed timelines. Each of the Candidates poses different permitting issues which affect the project timing (i.e. construction cannot begin unless and until the permitting is in place). The projected online date for each of the final alternatives are shown below.

Table 23: Summary of Significant Milestones from Jan. 1, 2017 Start Date

Candidate #	Estimated Completion of Permitting	Start of Significant Construction Activities	Projected Online / Completion
#6: Maximize Plum Creek	2027	2025	2029
#7: Current Surface Storage	2018	2022	2023
#9: Maximize Interconnect with ASR	2021	2020	2023

With both the permitting and construction durations determined, MWH then scheduled the proposed alternatives' various projects in a professional project scheduling software, specifically Primavera P6. Outputs for that software were delivered to the District in spring 2015.

Please refer to Appendix I for the proposed schedules.

Detailed Cost Analysis

MWH Constructors provided updated AACE Class 4 cost estimates (recall that Phase 2b included only Class 5 estimates) for all proposed capital projects for the final 3 alternatives. Class 4 cost estimates are usually completed with less than 15% of design complete. They provide an accuracy range of -25 to +35% and contingencies of 10 to 30%. MWH used the projected costs provided by MWH Constructors and did not include contingencies.

Another important aspect of the detailed cost analysis is determining the sale price of any existing renewable water asset that goes unused in a given Candidate solution. For instance, Lower South Platte water rights are valued at approximately $10,000 to $15,000 per acre foot. Candidates 6 and 7 both dispose of this asset to help fund construction of the proposed infrastructure. Candidate 6 proposes a sale date of 2025, while Candidate 7 projects the sale date to be 2020. Candidate 9 proposes the District will sell its storage rights in Rueter-Hess Reservoir. Due to the uncertainty of the market for storage rights in Rueter-Hess Reservoir, however, MWH projected the District could dispose of this asset at its original cost of $5,500 per acre foot in 2020 without any market appreciation or depreciation assumed.

MWH prepared detailed financial plant for the final three Candidates based on the most recent financial plan used by the District for their 2015 rate setting process. All projects and their associated operating

costs were incorporated into the long term financial plan with the proposed start date of projects of January 1, 2017.

Table 24 below summarizes the average cost per acre foot of demand in 2014 and the present value of operating costs per acre foot of renewable water.

Table 24: Summary of Key Financial Findings

Alternative Number	Average Cost per AF in 2040	PV of Operating Costs per AF of Delivered Water
#6: Maximize Plum Creek	$9,350	$12,480
#7: Current Surface Storage	$10,010	$15,490
#9: Maximize Interconnect with ASR	$8,210	$14,620

Present value of capital costs per acre foot of renewable water supplied by each alternative is shown in **Error! Reference source not found.**below.

Table 25: Summary of Present Value Cost of Acre Foot of Water

Alternative Number	PV of Capital Costs per AF of Delivered Water*
#6: Maximize Plum Creek	$21,500
#7: Current Surface Storage	$28,940
#9: Maximize Interconnect with ASR	$21,610

Cumulative rate increases under the three final alternatives are projected in Figure r, below. These increases do not include inflationary rate increases and represent current year dollars.

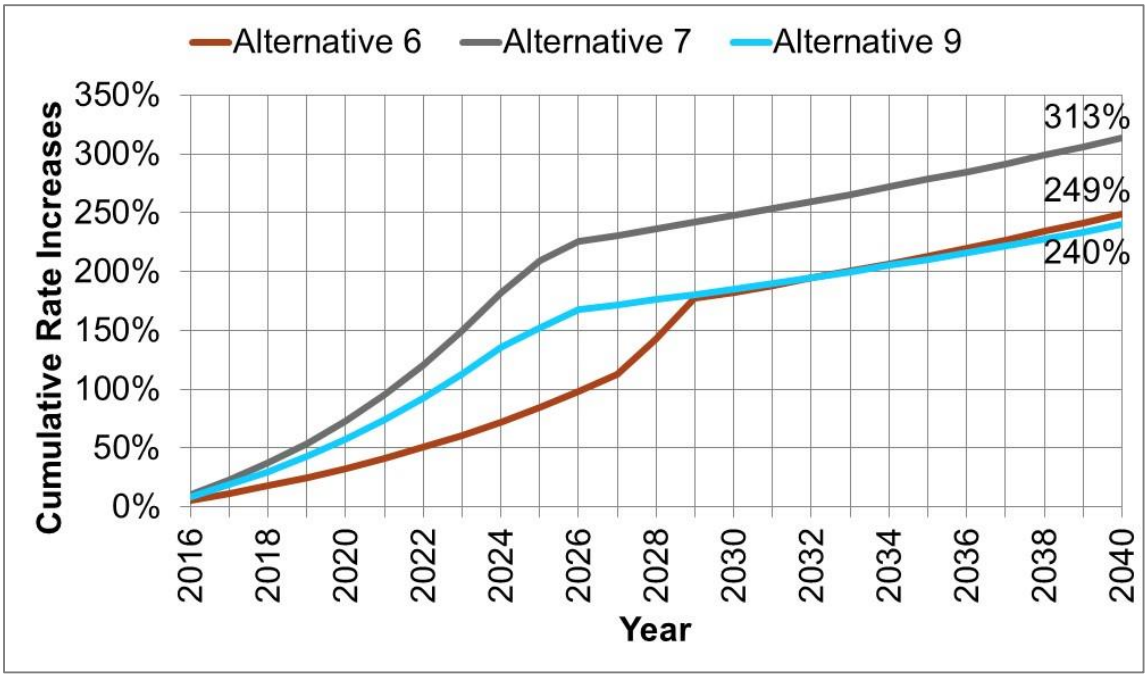
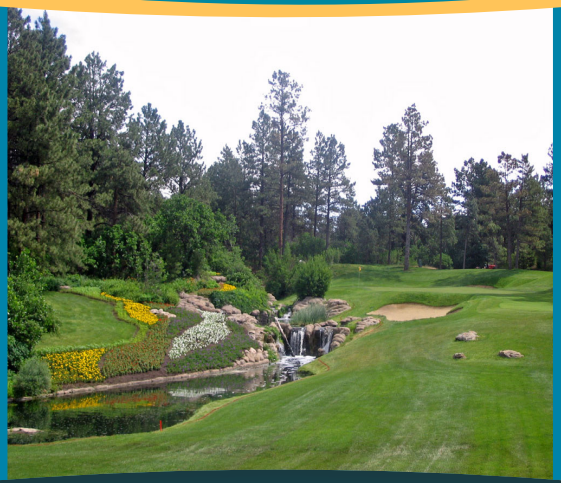


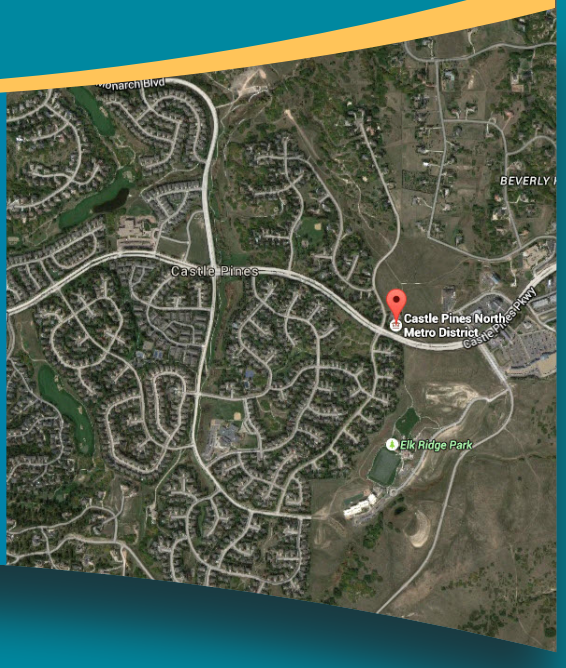
Figure r: Projected Rate Increases Necessary to Finance the Candidate Solutions

Please refer to Appendix J for PDF print outs of each alternative's detailed financial plans.

SECTION 6

Findings and Recommendations





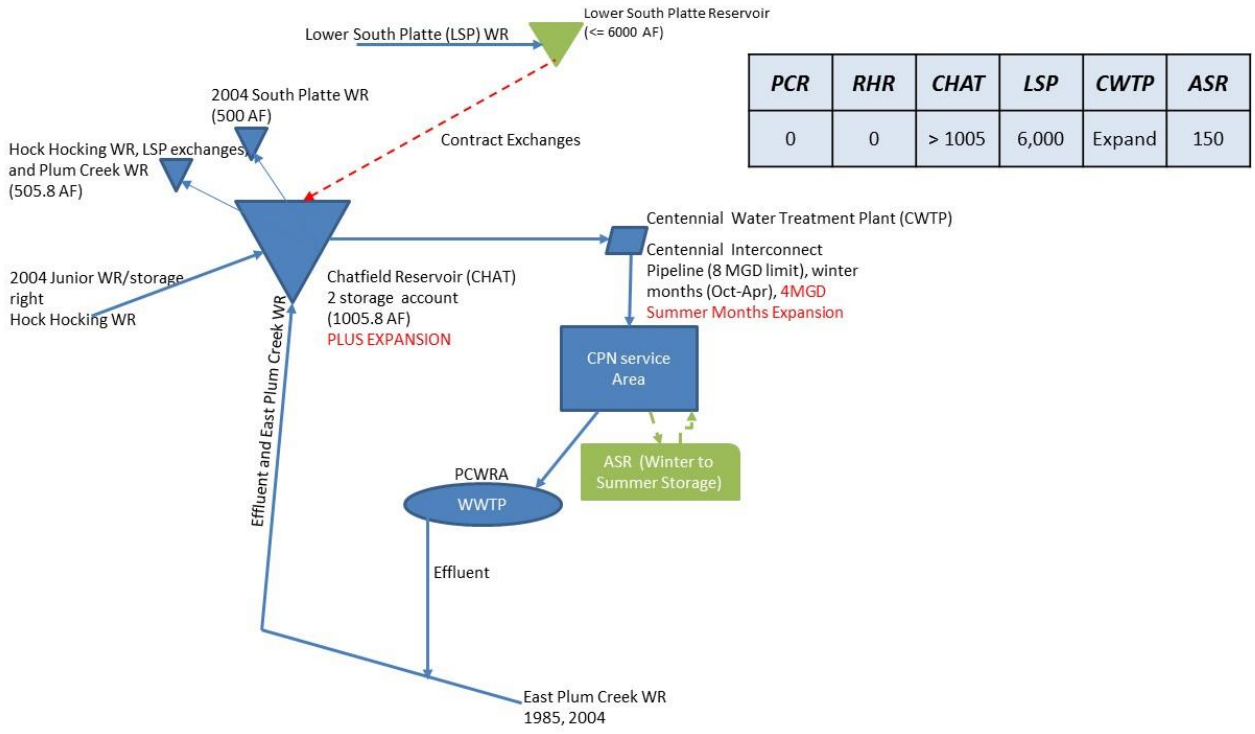
SECTION 6

FINDINGS AND RECOMMENDATIONS

The best Candidate solution for the District is the one the best fits the established selection criteria. After thorough examination starting with 315 alternatives, the District narrowed its selection down to three Candidates and selected Candidate No. 9 as best to meet its needs.

After the Phase 2c results were gathered, the Candidates were re-ranked against the District's selection criteria to determine if any change in ranking had occurred between Phase 2b and 2c. Although there were some minor changes in the rankings, the relative fit for each Candidate remained such that Candidate No. 9 was the best overall.

Candidate 9 outperformed the others in all major categories while providing 100% renewable water in all but two of the driest (i.e., severe drought) years of the hydraulic analysis. Candidate 9 also offers the fastest completion date (2023) by six years compared to the others while delivering the most renewable water at the lowest total average cost.



PCR	RHR	CHAT	LSP	CWTP	ASR
0	0	> 1005	6,000	Expand	150

Figure s: Candidate No. 9 Offers the Best Combination of Renewable Water and Cost.

Candidate No. 9 could be completed as early as 2023, just six years from the proposed start date of 2017. The implementation plan, which is spelled out in detail in Appendix K, calls for major construction activities in 2012 and 2022 mostly for construction of a storage reservoir in the Lower South Platte, a feature that is necessary in order to have water available to exchange when such exchange opportunities exist. Major construction is preceded by payments for Reallocated Chatfield Reservoir space, engineering/design activities for the proposed reservoir and for expansion of the treatment plant at CWSD, and some ASR design and construction. In addition, permitting activities would commence between 2017 and 2018 to obtain the required permits for the proposed reservoir.

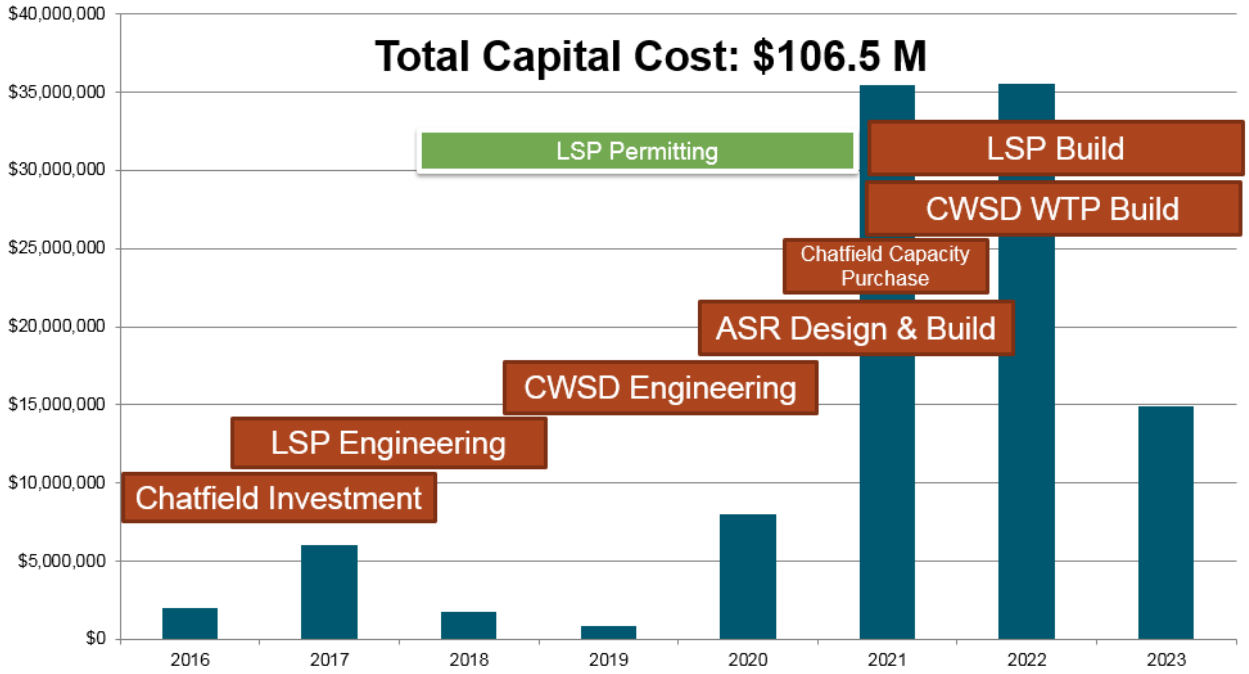


Figure t: Schedule of Capital Expenditures for Candidate No. 9.

Significant Risks

Candidate 9 is clearly the best possible solution for the District based on its decision criteria. However, it is not without risks, some of which hold the potential to make this solution infeasible. A summary of these key risks are summarized here:

- Exchanges. In order for Candidate 9 to work, the District must perfect sufficient exchange capacity with into Chatfield. Its ability to do so cannot be predicted with certainty at this time. Failure to obtain such exchange capacity would eliminate Candidate 9 as a viable option for the District.

- Chatfield Reallocation. The exchanges further require sufficient storage at Chatfield Reservoir in order to work. Due to the level of accuracy of the existing estimates on which the Reallocation mitigation costs are based, and other factors, the availability of Chatfield Reservoir storage space potentially could be delayed, or it could become economically infeasible. In the worst case, absent the Chatfield Reallocation, Candidate 9 ceases to be a viable option for the District. Moreover, while delays in accomplishing the mitigation required to make the storage space available would

not necessarily eliminate this solution, they would delay the full benefits of the associated expenditure.

- Centennial Water & Sanitation District Water Treatment Plant Expansion. In order for Candidate 9 to provide the District with renewable water during summer months, the water treatment plant at CWSD must be expanded to provide the needed capacity. The District and Hawksley have confirmed that sufficient land area exists at the CWSD plant for such an expansion, thus there do not appear to be any physical reasons why the expansion could not occur as envisioned. However, CWSD must also agree to such an expansion and so far has been noncommittal in preliminary discussions. Absent the expansion of the CWSD plant, Candidate 9 would not be the District's best option.

Should any of the above risks prove unmanageable, the District would be advised to revert to one of other two Candidate solutions discussed herein, specifically Candidate No. 6 and then No. 7 in that order.

Improvement from the Water Court Case Estimates

As discussed in Section 1 of this report, the District originally proposed a renewable water plan in Water Court in 2004. As part of the evidence provided in that case, expert witnesses provided opinions showing that the then-proposed solution would cause the District's water rates to increase 5-fold between 2016 and 2040. While the experts and the court concluded that the District could afford such a solution based on technical analyses, the impact on District ratepayers was clear. Candidate 9 improves on the financial burdens significantly by cutting the potential rate increase nearly in half. The potential savings by 2040 is approximately $7.5 million per year, with a present value of about $100 million. Thus, because of the deliberate and thoughtful process of screening its many alternatives, the District has saved its residents the equivalent of $100 million in today's dollars and cut the cost of renewable water supply nearly in half.

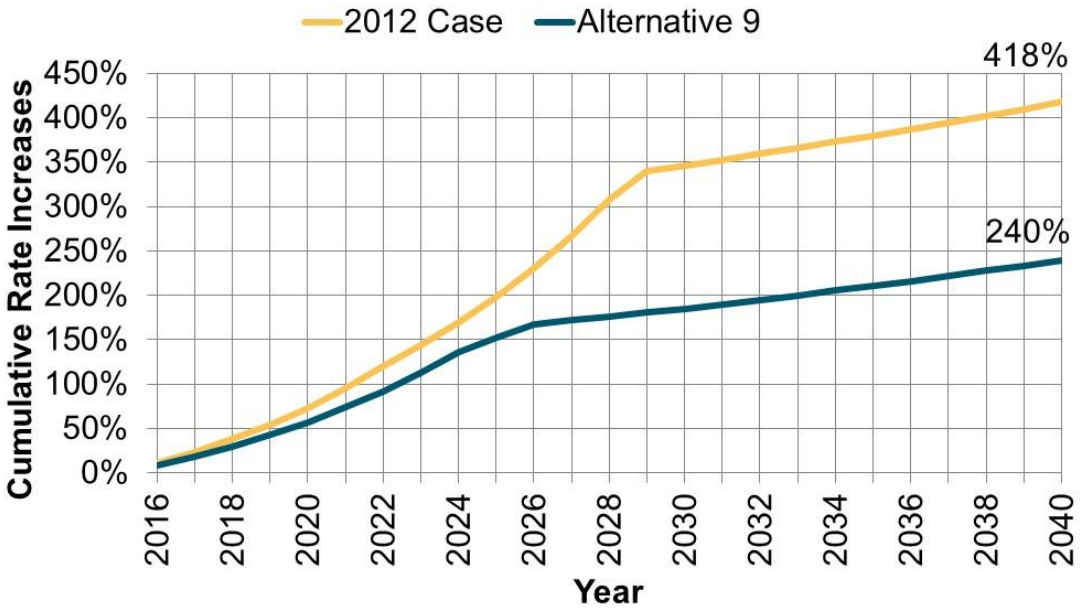
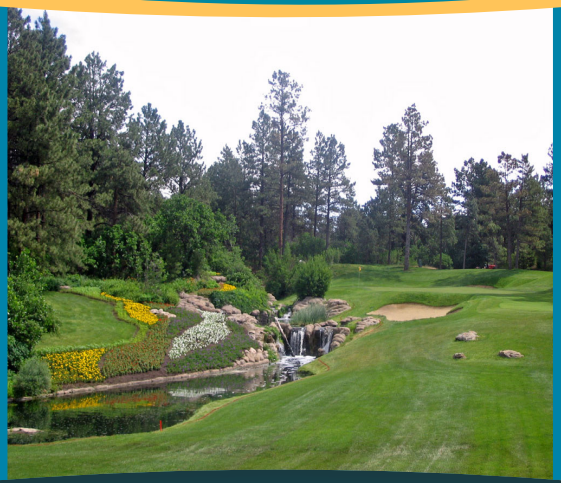
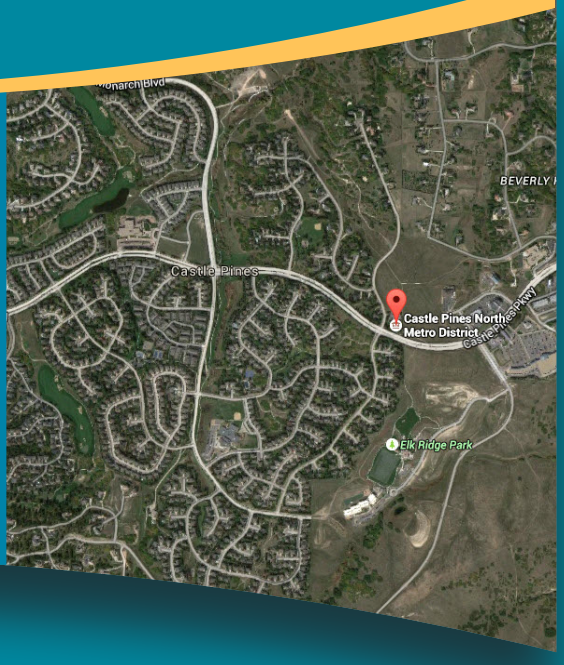


Figure u: Rate Increases Compared to 2012 Expert Opinions in the Case.

SECTION 7

Summary of Appendices





SECTION 7

SUMMARY OF APPENDICES

Appendix A – Water Quality Summary

Appendix B – Renewable Water Flow Analysis Summary

Appendix C – Proposed Water Treatment Plant Process Flow Diagram and Layout

Appendix D – Class 4 Cost Estimates

Appendix E – Projected O&M Costs for Proposed Infrastructure

Appendix F – Phase 2b Financial Results

Appendix G – Memorandum Outlining District's Distribution Hydraulic Model

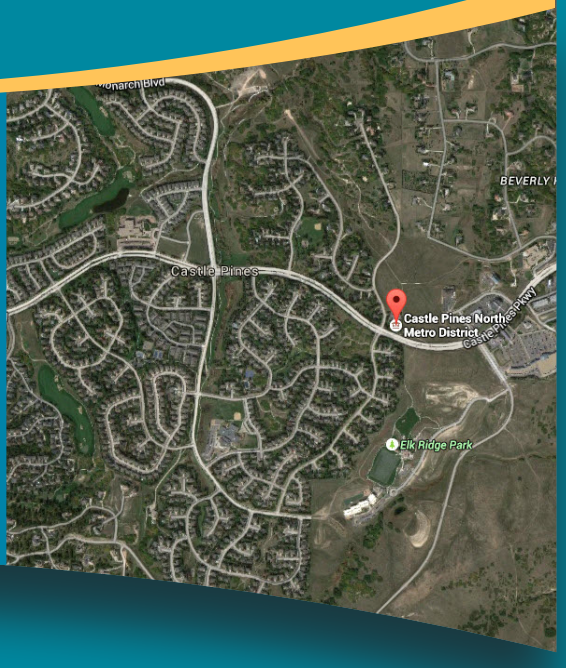
Appendix H – Review of Permitting Level of Effort for CPN's Top Three Alternatives

Appendix I – Proposed Schedules for CPN's Top Three Alternatives

Appendix J – Detailed Financial Results for CPN's Top Three Alternatives

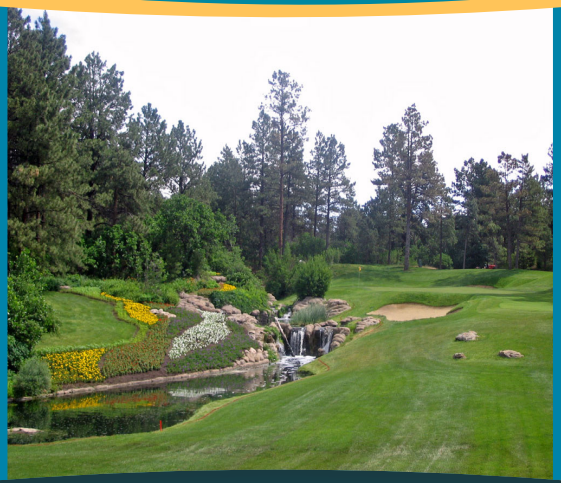
APPENDIX A

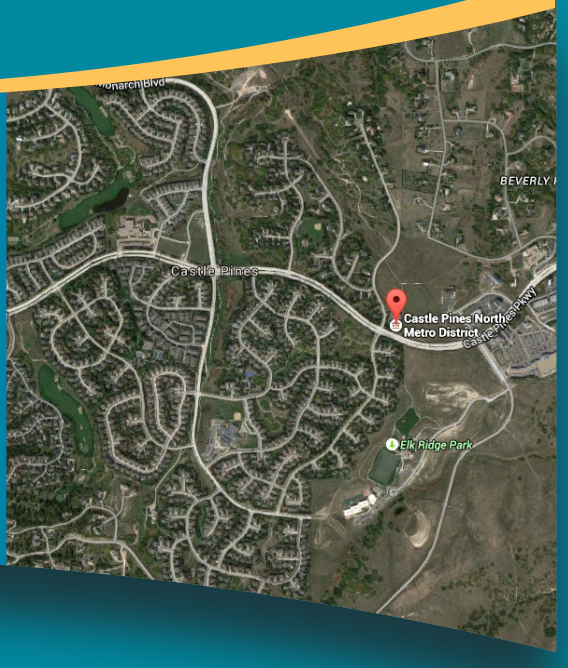
Water Quality Summary



	Location		Primary and Secondary MCLs	East Plum Creek, upstream of PCWRA			East Plum Creek, downstream of PCWRA			Reuter Hess Reservoir			Chatfield Reservoir			Chatfield Reservoir Outflow			South Platte River at Chatfield			South Platte River at Brighton			South Platte River at Brighton, via River Bank Filtration			South Platte River - PWP		
	Data Source		National Drinking Water Standards	Plum Creek Watershed Data			Plum Creek Watershed Data			Rueter Hess Reservoir monitoring data through the end of 2013			Chatfield Reservoir Authority			Chatfield Reservoir Authority			Chatfield Reservoir Authority			Aurora Water Master Plan			Aurora Water Master Plan			Per Aurora Water		
	Parameter	Units		Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max
Primary Regulated Inorganic Chemicals	Antimony	µg/L	6													ND			ND									1	1	1
	Arsenic	µg/L	10							18.0	2.8	20.0				ND			ND									1.88	1.88	1.88
	Asbestos	MFL	7																											
	Barium	µg/L	2000													60	49	68	44	35	55									
	Berylium	µg/L	4													ND			ND									1	1	1
	Cadmium	µg/L	5													ND			ND									1	1	1
	Chromium	µg/L	100							17.8	1.5	20.0				ND			ND									1	1	1
	Copper	µg/L	1300							35.5	0.8	50.7				6.8	5	9	7.7	6	10							11.5	11.5	11.5
	Cyanide	mg/L	0.2																											
	Fluoride	mg/L	2																			0.93	0.72	1.05	1.05	0.94	1.26	0.90	0.52	1.2
	Lead	µg/L	15							8.8	0.1	10.0				ND			ND									6.67	6.67	6.67
	Mercury	mg/L	0.002													ND			ND											
	Nitrate-N	mg/L as N	10	0.22	0.0040	0.44	1.5	0.27	3.9	0.05	0.05	0.12	0.1	0.04	0.22	0.05	0.05	0.05	0.11	0.060	0.16	4.66	2.82	6.47	3.23	2.08	5.76	4.6	1.3	7.2
	Nitrite-N	mg/L as N	1																			0.57	0.5	0.85	0.5			0.58	0.30	1.4
	Selenium	µg/L	50							17.8	0.8	20.0				ND			ND									5	5	5
	Thallium	µg/L	2													ND			ND									1	1	1
Secondary Regulated Inorganic Chemicals	Aluminum	µg/L	50 - 200							92	40	322				173.5	68	387	140.5714	41	368							480	480	480
	Chloride	mg/L	250							64	48	75																105	41	212
	Color	CU	15																											
	Iron	µg/L	300							56	5.0	247				199	80	420	166	50	380	40.1	12.5	124.8	107	20	382	840	840	840
	Manganese	µg/L	50							33	10	819				142	28	350	44	22	76	81.8	0.4	263.1	698	480	847	148.5	80	217
	pH		6.5 - 8.5	7.8	7.2	8.6	7.8	7.5	8.2	8.6	7.7	9.2	7.9	7.2	8.8	8.0	7.8	8.3	8.1	7.7	8.4				7.55			7.6	7.3	8.1
	Silver	mg/L	0.1													ND			ND											
	Sulfate	mg/L	250	52	11	73	50	34	69																			148	70	200
	Total Dissolved Solids	mg/L	500	430	270	508	371	223	473	249	229	269										658	384	848	700	553	783	638.039	298	848
	Conductivity	mg/L	~750	768	519	1062	689	528	911	507	259	565	474	369	545	450	350	500	308	230	440							934.5	452.0	1217
	Zinc	µg/L	5000							20	10	94				8	8	8	8	6	13							43.1	43.1	43.1
Microbiological Contaminants	Coliform, Total	MPN/100ml	< 5% of samples positiv	1296	194	2420	1746	387	2420	1.7	1.0	6.0																2365	99	2420
	Bacteria E.coli-QT		< 5% of samples positiv	58	0	727	64	5	461	1.5	1.0	8.0																242	11	2420
	Giardia	#/L	3 log removal, min																			11.5	0.545	39.7	0.091			10.1	0.1	40
	Cryptosporidium	#/L	< 0.075 = Bin 1 0.075 - <1.0 = Bin 2 1 - <3.0 = Bin 3 >3.0 = Bin 4																			3.37	0.091	24	0.091			2.685585	0.091	18
Source Water	Algae Analysis Count																											71	59	82
	Chlorophyll	µg/L								8.14	0.03	36.96	9.1	2.6	13.1															
	Taste and Odor																													
Other	Alkalinity	mg/L as CaCO3		134	92	153	134	97	171	124	114	140	106	76	137	97	76	102	64	48	84	154	92	191	175	140	205	147	71	192
	Total Organic Carbon	mg/L								6.37	5.64	8.71	2.93	2.6	3.3	3.1	2.7	3.5	2.6	1.9	4.1	6.8	4.4	9.1	2.83	2.3	3.2	6.9	3.7	9.8
	Required TOC Removal									25%	35%	30%	25%			25%			25%			15%			15%			15%		
	Hardness	mg/L as CaCO3		259	181	352	181	157	242	149	139	172										237	148	275	288	219	340	240	119	644
	Calcium	mg/L		82	59.2	94.4	58	52	67	45	44	52				45	35	51	33	22	42									
	Magnesium	mg/L		7	1.8	12	6.2	3.5	7.4	11	11	11				11	8.3	12	8.3	6.1	12									
	Sodium	mg/L		40	32	51	55	33	64	38	37	42				30	21	33	19	10	37									
	TKN	mg/L	10							0.68	0.30	1.00	0.74	0.3	1.7	0.39	0.2	0.6	0.37	0.2	0.8									
	Orthophosphate	mg/L as P		0.035	0.017	0.081	0.062	0.025	0.24	0.02	0.01	0.21																		
	Phosphorus Total-Dissolved	mg/L as P	0.3	0.10	0.024	0.24	0.14	0.077	0.31	0.03	0.02	0.24	21	12	31	23	12	42	13	7	17	1.4	0.64	2.15	0.38	0.32	0.44			
	Temperature	°C		12	0.4	25	16	8.9	25	17	6	25				17	7	27	14	0	21							17	17	17
	TSS	mg/L		48	1.6	231	21	3.4	60	2.1	1.0	2.5				5.6	2	10	4.5	1	11									
	Turbidity	NTU											5.0	1	34							8.2	1.9	16.3	0.26	0.09	0.98	13	1.9	75
	UV254	abs/cm								0.08	0.07	0.11										0.12	0.09	0.17	0.064	0.048	0.074			
	NDMA	ng/L																				4.3	2	6.9	2					

APPENDIX B
Renewable Water Flow Analysis Summary





Appendix B - Flow Analysis

Sources of Supply to meet Demand	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Plum Creek Reservoir	832	973	912			832
ECCV						
Rueter-Hess Reservoir	351	339	411	1,322	1,337	351
Chatfield Reservoir	743	508	1,078	671	328	743
Aquifer Surcharge and Recovery (ASR)	564	548		497	680	564
Denver Basin Aquifer	62	184	151	62	207	62
Total	**2552**	**2552**	**2552**	**2552**	**2552**	**2552**

Appendix B - Flow Analysis

Sources of Supply to meet Demand	Alternative 7	Alternative 8	Alternative 9	Alternative 10
Plum Creek Reservoir				
ECCV				1,804
Rueter-Hess Reservoir	1,355			
Chatfield Reservoir	478	2,251	1,940	666
Aquifer Surcharge and Recovery (ASR)	522		550	
Denver Basin Aquifer	197	301	62	82
Total	**2552**	**2552**	**2552**	**2552**

Appendix B - Flow Analysis

Inflows by Reservoir	Alt-1		Alt-2		Alt-3	
Month	PCR (AF/month)	RH (AF/month)	PCR (AF/month)	RH (AF/month)	PCR (AF/month)	RH (AF/month)
1	98	0	98	0	75	26
2	90	0	89	-	45	46
3	97	2	96	1	44	55
4	148	98	147	98	104	124
5	206	150	207	149	185	92
6	78	63	78	63	71	64
7	73	11	69	12	56	15
8	76	2	76	2	75	5
9	56	1	56	1	55	2
10	15	63	30	48	70	8
11	87	0	92	0	77	13
12	97	0	97	0	72	26
Total	1,121	392	1,135	376	929	475

Appendix B - Flow Analysis

Inflows by Reservoir	Alt-4		Alt-5		Alt-6		Alt-7	
Month	PCR (AF/month)	RH (AF/month)	PCR (AF/month)	RH (AF/month)	PCR (AF/month)	RH (AF/month)	PCR (AF/month)	RH (AF/month)
1	-	99	-	102	98	0	-	99
2	-	90	-	91	90	0	-	89
3	-	98	-	100	97	2	-	98
4	-	239	-	243	148	98	-	239
5	-	223	-	231	206	150	-	237
6	-	155	-	134	78	63	-	155
7	-	85	-	71	73	11	-	76
8	-	78	-	78	76	2	-	78
9	-	57	-	57	56	1	-	57
10	-	78	-	78	15	63	-	78
11	-	88	-	90	87	0	-	98
12	-	97	-	99	97	0	-	98
Total	-	1,387	-	1,373	1,121	392	-	1,402

Appendix B - Flow Analysis

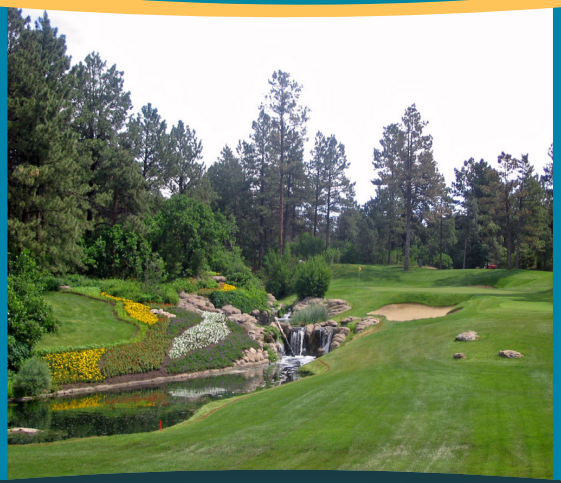
Water Moved by Infrastructure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
PC Intake to PCR	1,121	1,135	929	-	-	1,121
PC Intake to PC Booster to RHR	-	-	-	1,387	1,373	
PCR to WTP	832	973	912	-	-	1,224
RHR to WTP	351	339	411	1,322	1,337	351
WTP Treated Water	1,183	1,312	1,323	1,322	1,337	1,183
ICPP Water via Chatfield	743	508	1,078	671	328	743
Aquifer Surcharge and Recovery (ASR)	564	548	-	497	680	564
Denver Basin Aquifer	62	184	151	62	207	62

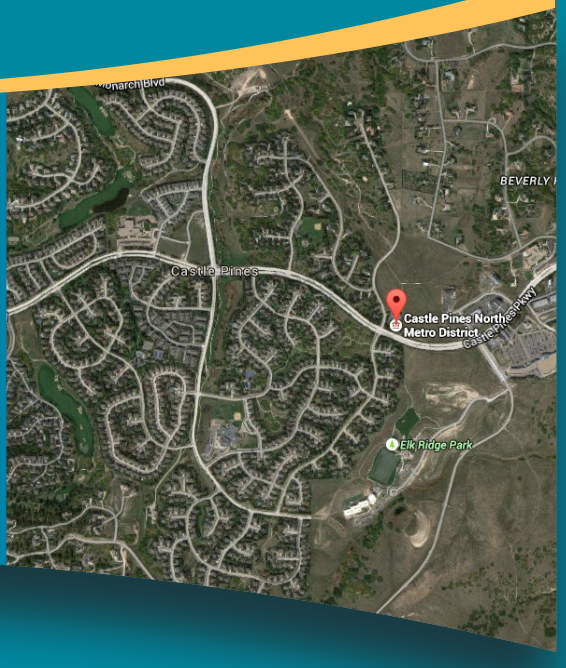
Appendix B - Flow Analysis

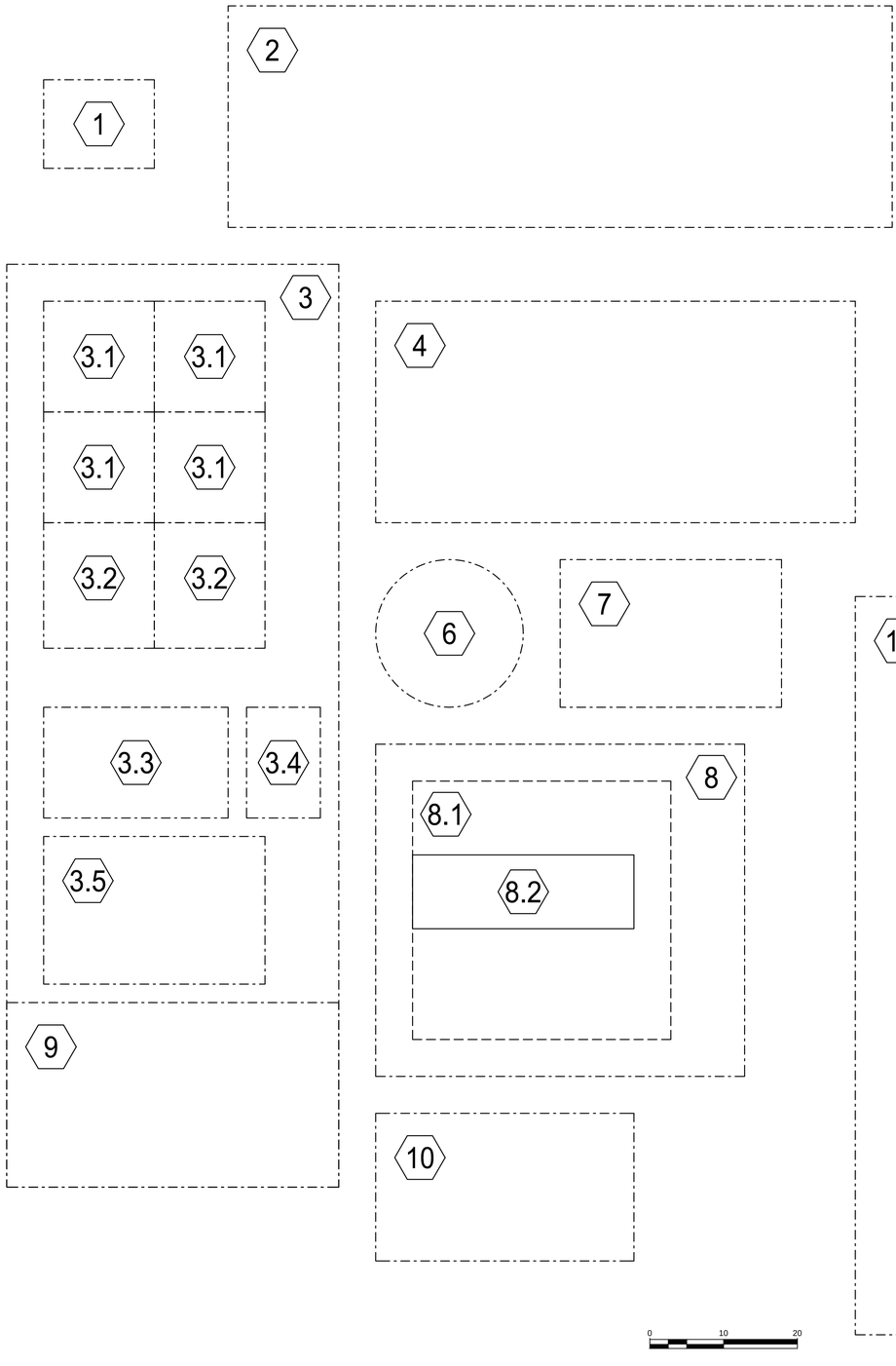
Water Moved by Infrastructure	Alternative 7	Alternative 8	Alternative 9	Alternative 10
PC Intake to PCR	-	-	-	-
PC Intake to PC Booster to RHR	1,402	-	-	-
PCR to WTP	-	-	-	-
RHR to WTP	1,355	-	-	-
WTP Treated Water	1,355	-	-	-
ICPP Water via Chatfield	478	2,251	1,940	666
Aquifer Surcharge and Recovery (ASR)	522	-	550	-
Denver Basin Aquifer	197	301	62	82

APPENDIX C

Proposed Water Treatment Plant Process Flow Diagram and Layout







KEYNOTES:

1. RAW WATER METER/CHEMICAL AND MIX VAULT (12'x 15')
2. ADMINISTRATION BUILDING (90'x 30')
3. PROCESS BUILDING (45'x 125')
   - 3.1. FLOCCULATION (15'x 15')
   - 3.2. CLARIFICATION (15'x 17')
   - 3.3. OZONE (25'x 15')
   - 3.4. UV (10'x 15')
   - 3.5. FILTRATION (30'x 20')
4. OZONE GENERATION/STORAGE (65'x 30')
5. CHEMICAL STORAGE AND METERING (60'x 60')
6. SLUDGE THICKENING TANK (D=20')
7. SLUDGE DEWATERING BUILDING (30'x 20')
8. BUILDING
   - 8.1. WASTE WASHWATER EQUALIZATION (BURIED)
   - 8.2. WASH WATER DAF
9. ELECTRICAL METERING AND SWITCHGEAR BUILDING
10. STANDBY POWER – 1000 (35'x 20')
11. BACKWASH PUMPING, HIGH SERVICE PUMPS AND CLEARWELL (150'x 100')

MWH®

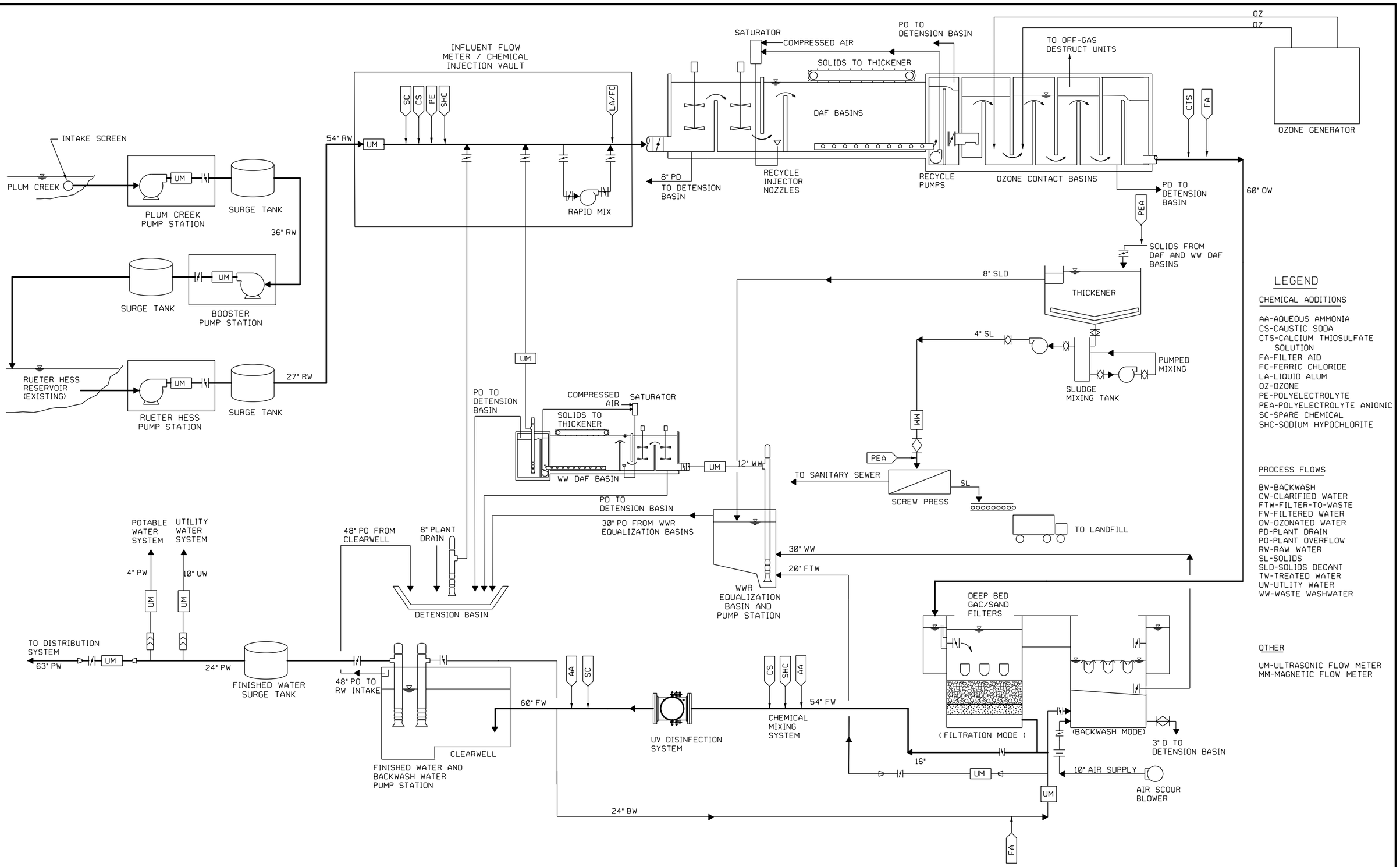
CASTLE PINES NORTH
WWTP SITE PLAN

OVERALL SITE

FIGURE
1
10504320

12/7/2010 10:20 AM MORGANC

M:\Clients-A-H\Castle Pines North WWTP\CAPN SITE PLAN - WWTP



LEGEND

CHEMICAL ADDITIONS

AA-AQUEOUS AMMONIA
CS-CAUSTIC SODA
CTS-CALCIUM THIOSULFATE SOLUTION
FA-FILTER AID
FC-FERRIC CHLORIDE
LA-LIQUID ALUM
OZ-OZONE
PE-POLYELECTROLYTE
PEA-POLYELECTROLYTE ANIONIC
SC-SPARE CHEMICAL
SHC-SODIUM HYPOCHLORITE

PROCESS FLOWS

BW-BACKWASH
CW-CLARIFIED WATER
FTW-FILTER-TO-WASTE
FW-FILTERED WATER
OW-OZONATED WATER
PD-PLANT DRAIN
PO-PLANT OVERFLOW
RW-RAW WATER
SL-SOLIDS
SLD-SOLIDS DECANT
TW-TREATED WATER
UW-UTLITY WATER
WW-WASTE WASHWATER

OTHER

UM-ULTRASONIC FLOW METER
MM-MAGNETIC FLOW METER

Job No: 10504320 File: $$$$$$$$$$$$$$$$directory/filename$$$$$$$$$$$$$$$$ Plot Date: 20-AUG-2021 Plot Date:

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED _____
DRAWN _____
CHECKED _____

SUBMITTED BY _____ LICENSE NO. _____ DATE _____
_____ LICENSE NO. _____ DATE _____

MWH
MONTGOMERY WATSON HARZA
Denver Colorado

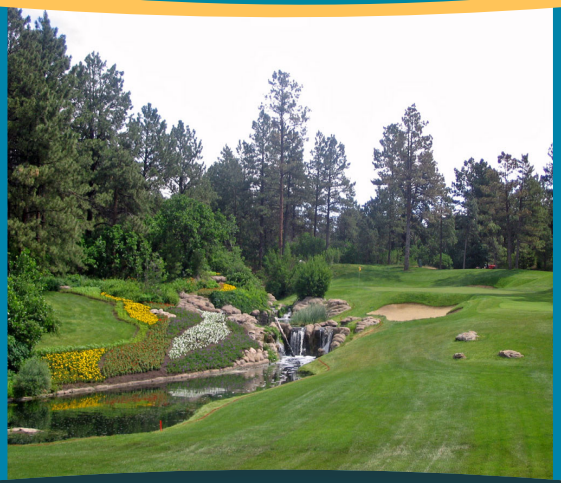
CASTLE PINES NORTH METROPOLITAN DISTRICT
CASTLE PINES NORTH WATER TREATMENT PLANT

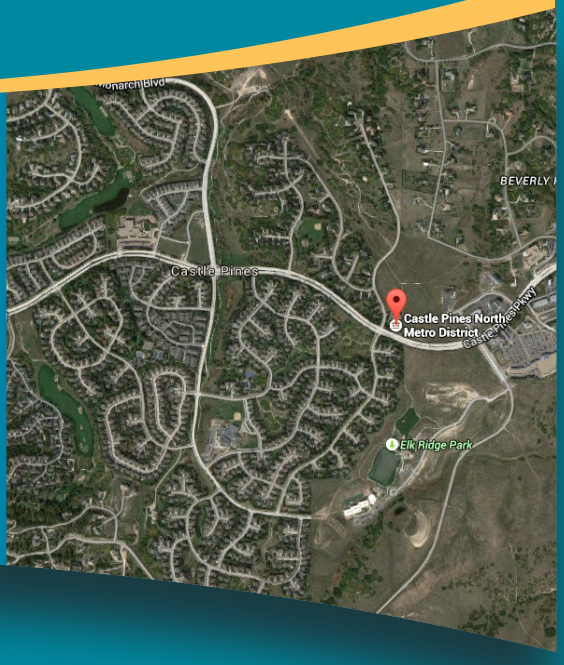
PROCESS FLOW DIAGRAM
ALTERNATIVES 4 AND 5

SHEET
G-1b
.

APPENDIX D

Class 4 Cost Estmates





Castle Pines Program - Version 4 Scope with 10Sep14 Revisions

Class 5 OPCC's with Basis-of-Estimate Items

Index #	Basis-of-Estimate Item	1 Pump Station: Plum Creek Intake to Plum Creek Reservoir	2 Pipeline: Plum Creek to Plum Creek Reservoir	3 Plum Creek Reservoir	4 Pump Station: Plum Creek Reservoir to Castle Pines North WTP
1	***Quantity***	1 with 2+1 pumps (VT)	800 LF	1	1 with 3+1 pumps (HC)
2	***Size/Capacity Each***	26 MGD	36" Ø	850 AF	10 MGD
3	***OPCC***	$7,227,000	$379,000	$13,600,000	$6,746,000
4	***Engineering, Permits, & Legal Allowance***	30%	30%	30%	30%
5	***OPCC with Engineering, Permits, & Legal***	**$9,395,000**	**$493,000**	**$17,680,000**	**$8,770,000**
6	***OPCC Class (per AACE, Inc.)***	Class 5	Class 5	Class 5	Class 5
7	***Estimated Construction Duration***	7 months	4 weeks	14 months	6 months
8	***Estimate Contingency***	15% Included	20% Included	30% Included	15% Included
9	***Scope/Project Contingency***	Excluded	Excluded	Excluded	Excluded
10	***Escalation***	Excluded	Excluded	Excluded	Excluded
11	***Sales Tax***	Excluded	Excluded	Excluded	Excluded
12	***Construction Wage Rates***	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon
13	***Overtime/Shift Work Schedule***	Excluded	Excluded	Excluded	Excluded
14	***Bonds & Insurances***	Included	Included	Included	Included
15	***Owner's Representative***	2nd Party Engineer	2nd Party Engineer	2nd Party Engineer	2nd Party Engineer
16	***Project Bidding & Execution***	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction
17	***Prime Contractor***	General Contractor with select Subs	Specialty (i.e. pipeline) Contractor	General Contractor with select Subs	General Contractor with select Subs
18	***Program Management***	Excluded	Excluded	Excluded	Excluded
19	***CM/CMAR***	Excluded	Excluded	Excluded	Excluded
20	***Land Acquisitions, ROW's, etc.***	Excluded	Excluded	Excluded	Excluded
21	***Demolition (of existing items)***	Excluded	Excluded	Excluded	Excluded
22	***Site Condition***	Greenfield (rural)	Urban & Greenfield (rural)	Greenfield (rural)	Greenfield (rural)
23	***Site Topography***	Relatively Flat	Mix of flat & rolling hills	Rolling hills	Relatively Flat
24	***Mitigation of Soil/Bearing Issues***	Excluded	Excluded	Excluded	Excluded
25	***Deep Foundations***	Excluded	Excluded	NA	Excluded
26	***Rock/Hard Excavation***	Excluded	Excluded	10% of total excavation	Excluded
27	***Excavation Shoring***	Included	Trench boxes only	NA	Included
28	***Mitigation of Excess Groundwater***	Excluded	Excluded	Excluded	Excluded
29	***Excavation Dewatering***	Included	Included	Included	Included
30	***Erosion Controls***	Included	Included	Included	Included
31	***Traffic Controls***	Urban areas only	Urban areas only	Included (minimal)	Urban areas only
32	***Spoil Haul-Away & Disposal***	Maximum of 10 miles/RT	Maximum of 1 hour/RT	Included (minimal)	Maximum of 10 miles/RT
33	***Utility Relocations***	Excluded	Excluded	Excluded	Included
34	***Hazmat & Cultural Remediation***	Excluded	Excluded	Excluded	Excluded
35	***Off-Site Infrastructure & Roads***	Excluded	Excluded	Excluded	Excluded
36	***Test Water Supply & Disposal***	Excluded	Excluded	NA	Excluded
37	***Site Primary Power Supply***	480V	NA	NA	4.16kV
38	***Site Outside Battery-Limit Tie-Ins***	Piping & Electrical-100 LF	NA	NA	Piping & Electrical-100 LF
39	***Site Roads & Parking***	Temp (gravel) & permanent (asphalt)	NA	2,500 LF gravel access road	Temp (gravel) & permanent (asphalt)
40	***Site Fencing & Gates***	8' galv steel chain link w/ barbed wire	NA	Gate at access road entry only	8' galv steel chain link w/ barbed wire
41	***Site Pole Lighting***	Included	NA	Excluded	Included
42	***Pipe & Conduit Supports***	Coated steel fabrications & Unistrut	NA	NA	Coated steel fabrications & Unistrut
43	***Accessways, Grates, & Hatches***	Aluminum	NA	NA	Aluminum
44	***Building Wall Construction***	8" reinforced CMU with brick face	NA	NA	8" reinforced CMU with brick face
45	***Building Roof Construction***	Flat built-up roof with membrane	NA	NA	Flat built-up roof with membrane
46	***3rd Party Tests/Inspections***	Only as needed to perform work	Only as needed to perform work	Only as needed to perform work	Only as needed to perform work
47	***Clarifications & Exceptions***	CIP concrete discharge meter vault	C905 PVC pipe	Dam excluded	CIP concrete surge tank vault
		Temp steel cofferdam for PS area	100 PSI	Lining excluded	CIP concrete discharge meter vault
		Intake trash racks & isolation gates	4'-5' buried depth	Spillway excluded	
			Blow-off at 2,500 LF	Cut-off wall excluded	
			AVAR at 2,500 LF	Export of materials excluded	
			Isolation valve at 5,000 LF	Seepage control grouting excluded	
			Rural-Seeding	Native soils conducive to retain water	
			Urban-4" asphalt on 8" aggregate	Native soils suitable for embankment	
			Trench patch only-no overlay	Rip-rap is the only imported material	
			Turn-outs excluded		
			10% of pipe $ for fittings		

Castle Pines Program - Version 4 Scope with 10Sep14 Revisions

Class 5 OPCC's with Basis-of-Estimate Items

Index #	Basis-of-Estimate Item	*5* *Pipeline:* *PC Res to WTP* *QA ONLY*	6 Pump Station: Plum Creek Intake to Booster PS	7 Pipeline: Plum Creek to Booster PS	8 Pump Station: Booster PS to Reuter Hess Reservoir
1	***Quantity***		1 with 3+1 pumps (VT)	10,276 LF	1 with 3+1 pumps (VT)
2	***Size/Capacity Each***		26 MGD	36" Ø	26 MGD
3	***OPCC***		$11,269,000	$4,819,000	$7,797,000
4	***Engineering, Permits, & Legal Allowance***		30%	30%	30%
5	***OPCC with Engineering, Permits, & Legal***		**$14,650,000**	**$6,265,000**	**$10,136,000**
6	***OPCC Class (per AACE, Inc.)***		Class 5	Class 5	Class 5
7	***Estimated Construction Duration***		8 months	26 weeks	8 months
8	***Estimate Contingency***		15% Included	20% Included	15% Included
9	***Scope/Project Contingency***		Excluded	Excluded	Excluded
10	***Escalation***		Excluded	Excluded	Excluded
11	***Sales Tax***		Excluded	Excluded	Excluded
12	***Construction Wage Rates***		Prevailing/Davis-Bacon	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon
13	***Overtime/Shift Work Schedule***		Excluded	Excluded	Excluded
14	***Bonds & Insurances***		Included	Included	Included
15	***Owner's Representative***		2nd Party Engineer	2nd Party Engineer	2nd Party Engineer
16	***Project Bidding & Execution***		Bid/Build without Pre-Construction	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction
17	***Prime Contractor***		General Contractor with select Subs	Specialty (i.e. pipeline) Contractor	General Contractor with select Subs
18	***Program Management***		Excluded	Excluded	Excluded
19	***CM/CMAR***		Excluded	Excluded	Excluded
20	***Land Acquisitions, ROW's, etc.***		Excluded	Excluded	Excluded
21	***Demolition (of existing items)***		Excluded	Excluded	Excluded
22	***Site Condition***		Urban	Urban & Greenfield (rural)	Greenfield (rural)
23	***Site Topography***		Relatively Flat	Mix of flat & rolling hills	Relatively Flat
24	***Mitigation of Soil/Bearing Issues***		Excluded	Excluded	Excluded
25	***Deep Foundations***		Excluded	Excluded	Excluded
26	***Rock/Hard Excavation***		Excluded	Excluded	Excluded
27	***Excavation Shoring***		Included	Trench boxes only	Included
28	***Mitigation of Excess Groundwater***		Excluded	Excluded	Excluded
29	***Excavation Dewatering***		Included	Included	Included
30	***Erosion Controls***		Included	Included	Included
31	***Traffic Controls***		Urban areas only	Urban areas only	Urban areas only
32	***Spoil Haul-Away & Disposal***		Maximum of 10 miles/RT	Maximum of 1 hour/RT	Maximum of 10 miles/RT
33	***Utility Relocations***		Included	Excluded	Included
34	***Hazmat & Cultural Remediation***		Excluded	Excluded	Excluded
35	***Off-Site Infrastructure & Roads***		Excluded	Excluded	Excluded
36	***Test Water Supply & Disposal***		Excluded	Excluded	Excluded
37	***Site Primary Power Supply***		4.16kV	NA	480V
38	***Site Outside Battery-Limit Tie-Ins***		Piping & Electrical-100 LF	NA	Piping & Electrical-100 LF
39	***Site Roads & Parking***		Temp (gravel) & permanent (asphalt)	NA	Temp (gravel) & permanent (asphalt)
40	***Site Fencing & Gates***		8' galv steel chain link w/ barbed wire	NA	8' galv steel chain link w/ barbed wire
41	***Site Pole Lighting***		Included	NA	Included
42	***Pipe & Conduit Supports***		Coated steel fabrications & Unistrut	NA	Coated steel fabrications & Unistrut
43	***Accessways, Grates, & Hatches***		Aluminum	NA	Aluminum
44	***Building Wall Construction***		8" reinforced CMU with brick face	NA	8" reinforced CMU with brick face
45	***Building Roof Construction***		Flat built-up roof with membrane	NA	Flat built-up roof with membrane
46	***3rd Party Tests/Inspections***		Only as needed to perform work	Only as needed to perform work	Only as needed to perform work
47	***Clarifications & Exceptions***		CIP concrete discharge meter vault	Welded CS pipe	CIP concrete surge tank vault
			Temp steel cofferdam for PS area	200 PSI	CIP concrete discharge meter vault
			Intake trash racks & isolation gates	Lined & coated	
				4'-5' buried depth	
				Blow-off at 2,500 LF	
				AVAR at 2,500 LF	
				Isolation valve at 5,000 LF	
				Urban-4" asphalt on 8" aggregate	
				Trench patch only-no overlay	
				Turn-outs excluded	
				10% of pipe $ for fittings	

Castle Pines Program - Version 4 Scope with 10Sep14 Revisions

Class 5 OPCC's with Basis-of-Estimate Items

Index #	Basis-of-Estimate Item	9 Pipeline: Booster PS to Reuter Hess Reservoir	10 Pump Station: Reuter Hess Reservoir to Castle Pines North WTP	*11* *Pipeline:* *RH Res to WTP* *QA Only*	12 Castle Pines North WTP
1	***Quantity***	25,919 LF	1 with 2+1 pumps (HC)		1
2	***Size/Capacity Each***	36" Ø	5 MGD		5 MGD
3	***OPCC***	$10,082,000	$3,856,000		$40,174,000
4	***Engineering, Permits, & Legal Allowance***	30%	30%		25%
5	***OPCC with Engineering, Permits, & Legal***	**$13,107,000**	**$5,013,000**		**$50,218,000**
6	***OPCC Class (per AACE, Inc.)***	Class 5	Class 5		Class 5
7	***Estimated Construction Duration***	40 weeks	6 months		23 months
8	***Estimate Contingency***	20% Included	15% Included		15% Included
9	***Scope/Project Contingency***	Excluded	Excluded		Excluded
10	***Escalation***	Excluded	Excluded		Excluded
11	***Sales Tax***	Excluded	Excluded		Excluded
12	***Construction Wage Rates***	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon		Prevailing/Davis-Bacon
13	***Overtime/Shift Work Schedule***	Excluded	Excluded		Excluded
14	***Bonds & Insurances***	Included	Included		Included
15	***Owner's Representative***	2nd Party Engineer	2nd Party Engineer		2nd Party Engineer
16	***Project Bidding & Execution***	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction		Bid/Build without Pre-Construction
17	***Prime Contractor***	Specialty (i.e. pipeline) Contractor	General Contractor with select Subs		General Contractor with select Subs
18	***Program Management***	Excluded	Excluded		Excluded
19	***CM/CMAR***	Excluded	Excluded		Excluded
20	***Land Acquisitions, ROW's, etc.***	Excluded	Excluded		Excluded
21	***Demolition (of existing items)***	Excluded	Excluded		Excluded
22	***Site Condition***	Urban & Greenfield (rural)	Greenfield (rural)		Greenfield (rural)
23	***Site Topography***	Mix of flat & rolling hills	Relatively Flat		Mix of flat & rolling hills
24	***Mitigation of Soil/Bearing Issues***	Excluded	Excluded		Excluded
25	***Deep Foundations***	Excluded	Excluded		Excluded
26	***Rock/Hard Excavation***	Excluded	Excluded		Excluded
27	***Excavation Shoring***	Trench boxes only	Included		Included
28	***Mitigation of Excess Groundwater***	Excluded	Excluded		Excluded
29	***Excavation Dewatering***	Included	Included		Included
30	***Erosion Controls***	Included	Included		Included
31	***Traffic Controls***	Urban areas only	Urban areas only		Urban areas only
32	***Spoil Haul-Away & Disposal***	Maximum of 1 hour/RT	Maximum of 10 miles/RT		Maximum of 10 miles/RT
33	***Utility Relocations***	Excluded	Included		Included
34	***Hazmat & Cultural Remediation***	Excluded	Excluded		Excluded
35	***Off-Site Infrastructure & Roads***	Excluded	Excluded		Excluded
36	***Test Water Supply & Disposal***	Excluded	Excluded		Excluded
37	***Site Primary Power Supply***	NA	480V		4.16kV
38	***Site Outside Battery-Limit Tie-Ins***	NA	Piping & Electrical-100 LF		Piping & Electrical-100 LF
39	***Site Roads & Parking***	NA	Temp (gravel) & permanent (asphalt)		Temp (gravel) & permanent (asphalt)
40	***Site Fencing & Gates***	NA	8' galv steel chain link w/ barbed wire		8' galv steel chain link w/ barbed wire
41	***Site Pole Lighting***	NA	Included		Included
42	***Pipe & Conduit Supports***	NA	Coated steel fabrications & Unistrut		Coated steel fabrications & Unistrut
43	***Accessways, Grates, & Hatches***	NA	Aluminum		Aluminum
44	***Building Wall Construction***	NA	8" reinforced CMU with brick face		8" reinforced CMU with brick face
45	***Building Roof Construction***	NA	Flat built-up roof with membrane		8" reinforced CMU with brick face
46	***3rd Party Tests/Inspections***	Only as needed to perform work	Only as needed to perform work		Only as needed to perform work
47	***Clarifications & Exceptions***	Welded CS pipe	CIP concrete surge tank vault		Admin bldg with sloped metal roof
		200 PSI	CIP concrete discharge meter vault		CIP concrete detention basin
		Lined & coated			CIP concrete clearwell
		4'-5' buried depth			CIP concrete surge tank vault
		Blow-off at 2,500 LF			CIP concrete discharge meter vault
		AVAR at 2,500 LF			
		Isolation valve at 5,000 LF			
		Rural-Seeding			
		Urban-4" asphalt on 8" aggregate			
		Trench patch only-no overlay			
		Turn-outs excluded			
		10% of pipe $ for fittings			

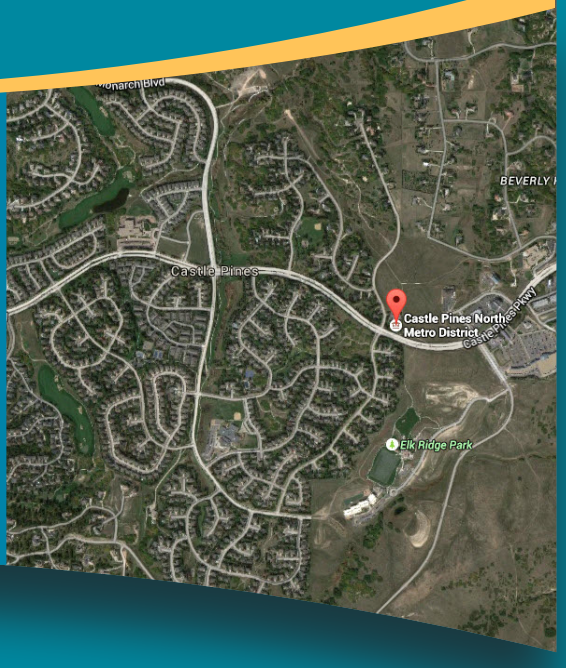
Castle Pines Program - Version 4 Scope with 10Sep14 Revisions

Class 5 OPCC's with Basis-of-Estimate Items

Index #	Basis-of-Estimate Item	18 South Platte Reservoir: Gravel w/spillways	19 ASR Wells with Steel Surficial & Well Casings
1	***Quantity***	1	5 @ 1,400 VLF/EA
2	***Size/Capacity Each***	6,000 AF	350 GPM/EA
3	***OPCC***	$100,200,000	$8,375,000
4	***Engineering, Permits, & Legal Allowance***	20%	20%
5	***OPCC with Engineering, Permits, & Legal***	**$120,240,000**	**$10,050,000**
6	***OPCC Class (per AACE, Inc.)***	Class 5	Class 5
7	***Estimated Construction Duration***	24 months	5.5 weeks/EA
8	***Estimate Contingency***	30% Included	20% Included
9	***Scope/Project Contingency***	Excluded	Excluded
10	***Escalation***	Excluded	Excluded
11	***Sales Tax***	Excluded	Excluded
12	***Construction Wage Rates***	Prevailing/Davis-Bacon	Prevailing/Davis-Bacon
13	***Overtime/Shift Work Schedule***	Excluded	Excluded
14	***Bonds & Insurances***	Included	Included
15	***Owner's Representative***	2nd Party Engineer	2nd Party Engineer
16	***Project Bidding & Execution***	Bid/Build without Pre-Construction	Bid/Build without Pre-Construction
17	***Prime Contractor***	General Contractor with select Subs	Specialty (i.e. well) Contractor
18	***Program Management***	Excluded	Excluded
19	***CM/CMAR***	Excluded	Excluded
20	***Land Acquisitions, ROW's, etc.***	Excluded	Excluded
21	***Demolition (of existing items)***	Excluded	Excluded
22	***Site Condition***	Greenfield (rural)	Greenfield (rural)
23	***Site Topography***	Rolling hills	Relatively Flat
24	***Mitigation of Soil/Bearing Issues***	Excluded	NA
25	***Deep Foundations***	NA	NA
26	***Rock/Hard Excavation***	10% of total excavation	NA
27	***Excavation Shoring***	NA	NA
28	***Mitigation of Excess Groundwater***	Excluded	NA
29	***Excavation Dewatering***	Included	NA
30	***Erosion Controls***	Included	Included
31	***Traffic Controls***	Included (minimal)	Urban areas only
32	***Spoil Haul-Away & Disposal***	Included (minimal)	Included
33	***Utility Relocations***	Excluded	Excluded
34	***Hazmat & Cultural Remediation***	Excluded	Excluded
35	***Off-Site Infrastructure & Roads***	Excluded	Excluded
36	***Test Water Supply & Disposal***	NA	NA
37	***Site Primary Power Supply***	NA	480V
38	***Site Outside Battery-Limit Tie-Ins***	NA	Piping & Electrical-50 LF
39	***Site Roads & Parking***	2,500 LF gravel access road	50 LF gravel access road
40	***Site Fencing & Gates***	Gate at access road entry only	8' galv steel chain link w/ barbed wire
41	***Site Pole Lighting***	Excluded	Excluded
42	***Pipe & Conduit Supports***	NA	Coated steel fabrications & Unistrut
43	***Accessways, Grates, & Hatches***	NA	NA
44	***Building Wall Construction***	NA	NA
45	***Building Roof Construction***	NA	NA
46	***3rd Party Tests/Inspections***	Only as needed to perform work	Only as needed to perform work
47	***Clarifications & Exceptions***	Dam excluded	Drill/bore obstructions excluded
		Lining excluded	Site accessible for rigs, materials, etc.
		Emergency spillway	Wellhead pad surface structure
		Cut-off wall excluded	Wellhead power and I&C panel rack
		Export of materials excluded	Piping & electrical past pad excluded
		Seepage control grouting excluded	Welded CS casing pipe
		Native soils conducive to retain water	0.25" casing wall thickness
		Native soils suitable for embankment	
		Rip-rap is the only imported material	

APPENDIX E

Projected O&M Costs for Proposed Infrastructure



ANNUAL OPERATIONS AND MAINTENANCE COSTS FOR 1 ASR Well (350 GPM)					
Items	**Description**	**Quantity**	**Unit**	**Price per unit**	**Total Cost**
1	350 GPM ASR Well	0.5	MGD	$ 0.18 /1000 gallons	$33,000
2	10-inch Diameter Piping to Transmission Main	80	Linear Feet	$ 2.25 /Linear Feet	$180
3	350 GPM Injection Pump	43,200	Kilowatt-hour	$ 0.11 /Kilowatt-hour	$4,752
4	350 GPM Injection Pump	2%	Lump Sum	$ 75,000 /Injection Pump	$1,500
				SUBTOTAL COST ITEMS	$39,000
				Contingency 10%	$4,000
				Total Annual Operations and Maintenance Costs (1 well)	**$ 43,000**
				Total Annual Operations and Maintenance Costs (5 wells)	**$ 215,000**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Fixed Annual Costs ($/yr)					
Labor[1]	$ 943,410	$ 943,410	$ 943,410	$ 943,410	$ 943,410
Out-sourced work[2]	$ 26,000	$ 26,000	$ 26,000	$ 26,000	$ 26,000
WTP Maintenance[3]	$ 496,450	$ 496,450	$ 496,450	$ 496,450	$ 496,450
WTP Power[4]	$ 45,858	$ 45,858	$ 45,858	$ 45,858	$ 45,858
PS-1: Plum Creek Intake to PC Res Maintenance[3]	$ 83,170	$ 83,170	$ 83,170		
PS-2: PC Res to WTP Maintenance[3]	$ 78,260	$ 78,260	$ 78,260		
PS-3: Plum Creek Intake to Booster PS Maintenance[3]				$ 129,640	$ 129,640
PS-4: Booster PS to RH Res Maintenance[3]				$ 90,230	$ 90,230
PS-5: RH Res to WTP Maintenance[3]	$ 45,210	$ 45,210	$ 45,210	$ 45,210	$ 45,210
PS-6: Gravel Pit to Baar Lake Maintenance[3]					
PS-7: ECCV to CPN Intertie Maintenance[3]					
Fixed Costs Subtotal	***$ 1,718,358***	***$ 1,718,358***	***$ 1,718,358***	***$ 1,776,798***	***$ 1,776,798***
With Misc. Contingencies [6]	***$ 1,976,112***	***$ 1,976,112***	***$ 1,976,112***	***$ 2,043,318***	***$ 2,043,318***
Variable Costs ($/MG)					
Chemicals	$ 129	$ 129	$ 129	$ 129	$ 129
WTP Power[5]	$ 283	$ 283	$ 283	$ 283	$ 283
PS-1: Plum Creek Intake to PC Res Power	$ 35	$ 35	$ 35		
PS-2: PC Res to WTP Power	$ 454	$ 454	$ 454		
PS-3: Plum Creek Intake to Booster PS Power				$ 265	$ 265
PS-4: Booster PS to RH Res Power				$ 248	$ 248
PS-5: RH Res to WTP Power	$ 292	$ 292	$ 292	$ 292	$ 292
PS-6: Gravel Pit to Baar Lake Power					
PS-7: ECCV to CPN Intertie Power					
Variable Costs Subtotal	***$ 1,192***	***$ 1,192***	***$ 1,192***	***$ 1,217***	***$ 1,217***
Misc. Contingencies [6]	***$ 1,371***	***$ 1,371***	***$ 1,371***	***$ 1,399***	***$ 1,399***

Notes:

[1]For the WTP and Raw Water Pump Stations: 1 Plant Supervisor, 1 Water Quality Manager, 6 Operators, 1 Technician and 10 hours/week of overtime.

[2]Includes: lab work, landscaping, specialty contractors

[3]Includes maintenance, repair and replacement. Based on two percent of equipment capital cost.

[4]Fixed systems: Dissolved Air Filtration, UV Disinfection, Lighting, HVAC

[5]Variable systems: Rapid mix, ozone, finished water pumping

[6]Assumes 15% contigency

	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10
Fixed Annual Costs ($/yr)					
Labor[1]	$ 943,410	$ 943,410			$ 28,080
Out-sourced work[2]	$ 26,000	$ 26,000			$ 11,000
WTP Maintenance[3]	$ 496,450	$ 496,450			
WTP Power[4]	$ 45,858	$ 45,858			
PS-1: Plum Creek Intake to PC Res Maintenance[3]	$ 83,170	$ 83,170			
PS-2: PC Res to WTP Maintenance[3]	$ 78,260	$ 78,260			
PS-3: Plum Creek Intake to Booster PS Maintenance[3]					
PS-4: Booster PS to RH Res Maintenance[3]					
PS-5: RH Res to WTP Maintenance[3]	$ 45,210	$ 45,210			
PS-6: Gravel Pit to Baar Lake Maintenance[3]					$ 42,530
PS-7: ECCV to CPN Intertie Maintenance[3]					$ 45,570
Fixed Costs Subtotal	***$ 1,718,358***	***$ 1,718,358***	***$ -***	***$ -***	***$ 127,180***
With Misc. Contingencies [6]	***$ 1,976,112***	***$ 1,976,112***	***$ -***	***$ -***	***$ 146,257***
Variable Costs ($/MG)					
Chemicals	$ 129	$ 129			
WTP Power[5]	$ 283	$ 283			
PS-1: Plum Creek Intake to PC Res Power	$ 35	$ 35			
PS-2: PC Res to WTP Power	$ 454	$ 454			
PS-3: Plum Creek Intake to Booster PS Power					
PS-4: Booster PS to RH Res Power					
PS-5: RH Res to WTP Power	$ 292	$ 292			
PS-6: Gravel Pit to Baar Lake Power					$ 95
PS-7: ECCV to CPN Intertie Power					$ 376
Variable Costs Subtotal	***$ 1,192***	***$ 1,192***	***$ -***	***$ -***	***$ 472***
Misc. Contingencies [6]	***$ 1,371***	***$ 1,371***	***$ -***	***$ -***	***$ 543***

Notes:

[1]For the WTP and Raw Water Pump Stations: 1 Plant Supervis overtime. For Alt 10, 0.5 FTE for an operator with a 10% allowance for overtime.

[2]Includes: lab work, landscaping, specialty contractors

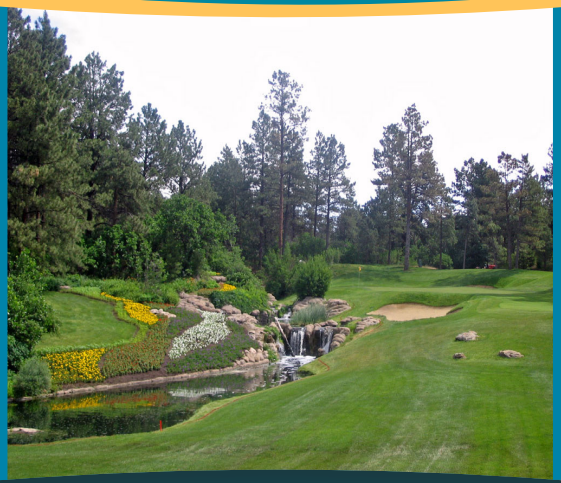
[3]Includes maintenance, repair and replacement. Based on twc

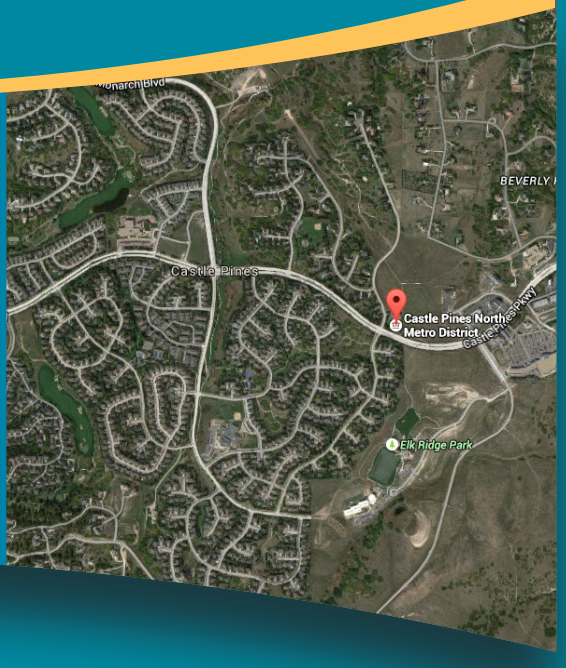
[4]Fixed systems: Dissolved Air Filtration, UV Disinfection, Lighti

[5]Variable systems: Rapid mix, ozone, finished water pumping

[6]Assumes 15% contigency

APPENDIX F
Phase 2b Financial Results





Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Capital Costs

	Phase 1	Phase 2	Phase 3	Phase 4	Total Capital Costs
Alternative 1	$38,780,718	$110,753,146	$64,722,146	$2,166,667	$216,422,677
Alternative 2	$33,560,718	$87,263,146	$41,232,146	$2,166,667	$164,222,677
Alternative 3	$31,584,218	$78,888,146	$41,232,146	$2,166,667	$153,871,177
Alternative 4	$38,865,148	$111,953,946	$57,922,146	$2,166,667	$210,907,907
Alternative 5	$31,862,210	$99,775,467	$45,743,667	$2,166,667	$179,548,010
Alternative 6	$26,557,780	$75,084,667	$29,053,667	$2,166,667	$132,862,780
Alternative 7	$26,642,210	$80,535,467	$22,253,667	$2,166,667	$131,598,010
Alternative 8	$12,222,938	$39,980,254	$39,980,254	$4,311,774	$96,495,220
Alternative 9	$14,199,438	$48,355,254	$39,980,254	$4,311,774	$106,846,720
Alternative 10	$19,440,139	$64,806,128	$38,454,119	$2,166,667	$124,867,052

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Operations and Maintenance Costs

	Annual O&M Costs	Fixed O&M Costs	Variable O&M Costs
Alternative 1	$6,009,401	$4,697,194	$1,312,207
Alternative 2	$5,362,063	$4,227,394	$1,134,669
Alternative 3	$5,695,742	$4,218,154	$1,477,588
Alternative 4	$6,113,360	$4,657,478	$1,455,881
Alternative 5	$4,424,244	$3,266,697	$1,157,547
Alternative 6	$3,721,352	$2,836,613	$884,738
Alternative 7	$4,069,917	$2,839,397	$1,230,519
Alternative 8	$4,656,202	$2,441,925	$2,214,277
Alternative 9	$4,541,034	$2,451,165	$2,089,869
Alternative 10	$4,851,635	$2,868,713	$1,982,922

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Water Supply Provided by Alternatives (Acre Foot)

	Total AF Water	Total AF Well	Total AF RW
Alternative 1	2,552	62	2,490
Alternative 2	2,552	184	2,368
Alternative 3	2,552	151	2,401
Alternative 4	2,552	62	2,490
Alternative 5	2,552	207	2,345
Alternative 6	2,552	323	2,229
Alternative 7	2,552	197	2,355
Alternative 8	2,552	301	2,251
Alternative 9	2,552	62	2,490
Alternative 10	2,552	82	2,470

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Water Supply Provided by Alternatives (Million Gallons)

	Total MG Water	Total MG Well	Total MG RW
Alternative 1	832	20	811
Alternative 2	832	60	772
Alternative 3	832	49	782
Alternative 4	832	20	811
Alternative 5	832	67	764
Alternative 6	832	105	726
Alternative 7	832	64	767
Alternative 8	832	98	733
Alternative 9	832	20	811
Alternative 10	832	27	805

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Total Average Annual Cost per Acre Foot

	Annual Debt Service	Annual O&M Costs	Total Annual Cost	Average Annual Cost $/AF
Alternative 1	$13,286,522	$6,009,401	$19,295,923	$7,749
Alternative 2	$10,081,884	$5,362,063	$15,443,947	$6,522
Alternative 3	$9,446,389	$5,695,742	$15,142,131	$6,307
Alternative 4	$12,947,962	$6,113,360	$19,061,321	$7,655
Alternative 5	$11,022,729	$4,424,244	$15,446,973	$6,587
Alternative 6	$8,156,651	$3,721,352	$11,878,003	$5,329
Alternative 7	$8,079,005	$4,069,917	$12,148,922	$5,159
Alternative 8	$5,923,990	$4,656,202	$10,580,193	$4,700
Alternative 9	$6,559,485	$4,541,034	$11,100,519	$4,458
Alternative 10	$7,665,781	$4,851,635	$12,517,416	$5,068

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Net Present Value of Capital and O&M Costs per Acre Foot

	NPV of Capital	NPV of Cap / AF	NPV of O&M	NPV of O&M / AF
Alternative 1	$138,220,771	$55,510	$66,631,174	$26,760
Alternative 2	$105,650,532	$44,616	$59,453,609	$25,107
Alternative 3	$98,810,507	$41,154	$63,153,376	$26,303
Alternative 4	$135,115,579	$54,263	$67,783,849	$27,222
Alternative 5	$115,131,423	$49,097	$49,055,235	$20,919
Alternative 6	$85,666,376	$38,433	$41,261,690	$18,511
Alternative 7	$85,309,047	$36,225	$45,126,518	$19,162
Alternative 8	$60,083,681	$26,692	$51,627,147	$22,935
Alternative 9	$66,923,706	$26,877	$50,350,184	$20,221
Alternative 10	$79,338,803	$32,121	$53,794,069	$21,779

Summary of Financial Scores

WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Expected Variance in Construction Costs

150% 65%

	Upper Capital Cost Variance	Lower Capital Cost Variance	Total Variance
Alternative 1	$207,331,156	$89,843,501	$117,487,655
Alternative 2	$158,475,799	$68,672,846	$89,802,953
Alternative 3	$148,215,761	$64,226,830	$83,988,931
Alternative 4	$202,673,369	$87,825,126	$114,848,242
Alternative 5	$172,697,135	$74,835,425	$97,861,710
Alternative 6	$128,499,565	$55,683,145	$72,816,420
Alternative 7	$127,963,571	$55,450,881	$72,512,690
Alternative 8	$90,125,522	$39,054,393	$51,071,129
Alternative 9	$100,385,559	$43,500,409	$56,885,150
Alternative 10	$119,008,204	$51,570,222	$67,437,982

Summary of Financial Scores

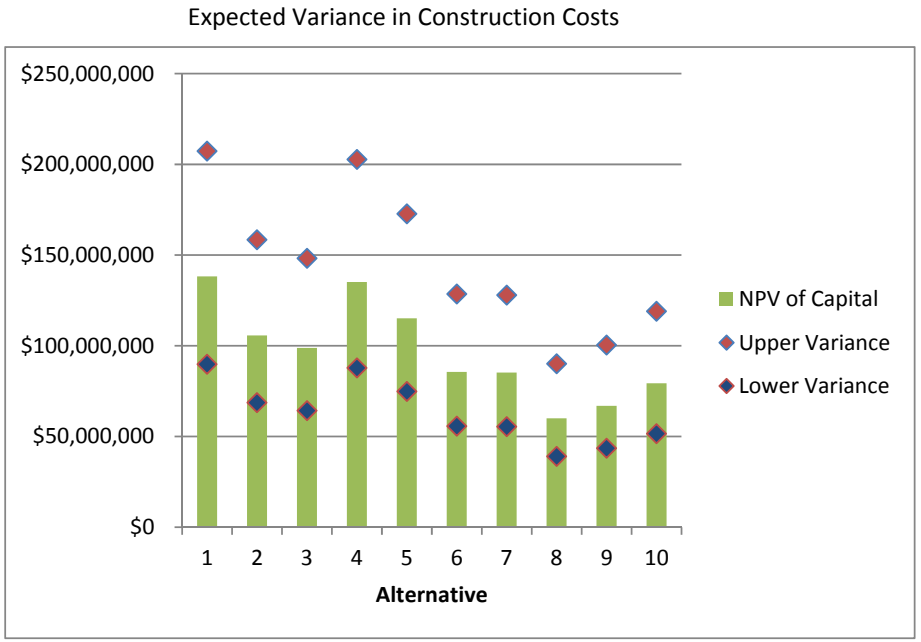
WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

Total Existing and Proposed Capital Cost per Acre Foot

	Existing RW Assets	Proposed RW Assets	Total RW Assets	Asset Efficiency Ratio
Alternative 1	$37,387,452	$216,422,677	$253,810,129	$101,932
Alternative 2	$37,387,452	$164,222,677	$201,610,129	$85,139
Alternative 3	$37,387,452	$153,871,177	$191,258,629	$79,658
Alternative 4	$37,387,452	$210,907,907	$248,295,359	$99,717
Alternative 5	$37,387,452	$179,548,010	$216,935,462	$92,510
Alternative 6	$37,387,452	$132,862,780	$170,250,232	$76,380
Alternative 7	$37,387,452	$131,598,010	$168,985,462	$71,756
Alternative 8	$37,387,452	$96,495,220	$133,882,672	$59,477
Alternative 9	$37,387,452	$106,846,720	$144,234,172	$57,925
Alternative 10	$37,387,452	$124,867,052	$162,254,504	$65,690

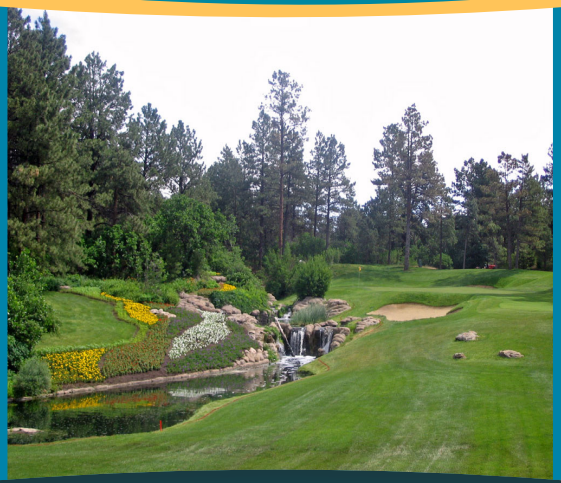
Summary of Financial Scores	
WACC for CPNMD	**11.52%**
Real Cost of Capital for CPNMD	**9.02%**

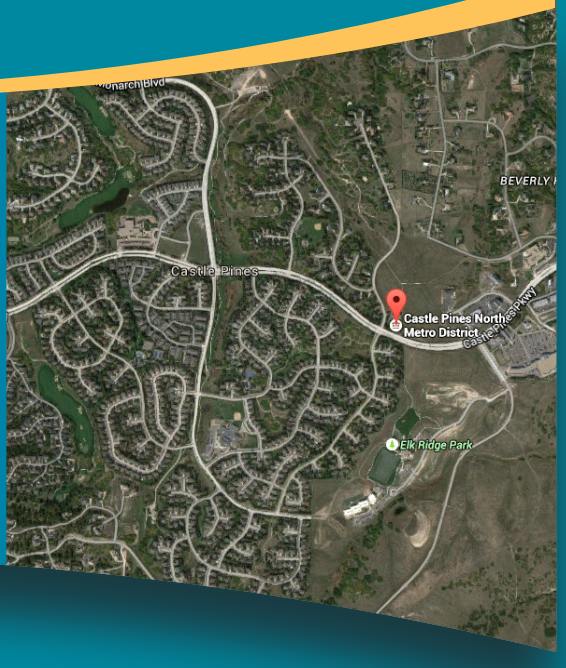
Alternative 1
Alternative 2
Alternative 3
Alternative 4
Alternative 5
Alternative 6
Alternative 7
Alternative 8
Alternative 9
Alternative 10



APPENDIX G

Memorandum Outlining District's Distribution Hydraulic Model





TECHNICAL MEMORANDUM

MWH

BUILDING A BETTER WORLD

To: Castle Pines North Metro District **Date:** April 16, 2015

From: MWH

Subject: Technical Memorandum: Model Creation and Evaluation of Alternatives

This Technical Memorandum (TM) describes the methods used to develop and update the Castle Pines North Metro District (the District) water system hydraulic model. The model is subsequently used to evaluate the alternatives created to provide reliable water supply to the Districts service area.

1 Introduction

Three alternatives are created to provide reliable water supply to the Castle Pines North Metro District service area. These three alternatives are described in more detail in January's Board of Director's presentation. In summary:

1) Alternative 1 is installing a new Reservoir (Plum Creek Reservoir). This new reservoir and Rueter-Hess Reservoir (RHR) water would then be conveyed to the new Castle Pine North Metro District Water Treatment Plant (CPNMD WTP), which would then convey water to the District's service area.
2) Alternative 2 is installing a new pump station to pump the East Pump Creek WR to an expanded Rueter-Hess Reservoir. The RHR would then be conveyed to the new CPNMD WTP, which would then convey water to the District's service area.
3) Alternative 3 is constructing the Lower South Platte Reservoir and developing water contract exchanges for supply from the Centennial Interconnect during the summer months.
4) All three of these alternatives include Aquifer Storage and Recovery (ASR), enabling the District to use potable water to recharge the aquifers during winter months, increasing the reliability of the groundwater source during summer months.

A water distribution system hydraulic model is developed to determine the impact of each of the three alternatives on the distribution system. The distribution system model would show if additional headloss or a reduction in pressure would occur due to the three alternatives. It shall be noted that the model has not been calibrated or validated with field data, and therefore the accuracy of the model is dependent on the accuracy of the GIS data provided by the District. This analysis cannot be used to determine actual headloss or pressure in the system. Without

calibrating the model, the results of the model cannot be validated. Therefore, the distribution model can only be used to compare between different scenarios and find the change in pressure or change in headloss between different scenarios.

2 Model Creation

2.1 Pipelines

The pipelines are created based upon the GIS data provided by the District. The essential attributes for pipelines (diameter, material, installation year, etc.) are checked and cleaned up upon MWH receiving the data. The GIS data is then imported into InfoWater model as the pipeline network. All pipelines and facilities in the model are checked for accuracy and some pipelines and facilities are redrawn to resolve model connectivity issues and more accurately depict the system configuration. There are 3,706 pipe segments in the model. Since roughness coefficients are not provided by the District and since no hydrant tests are performed to validate the roughness coefficient of the pipelines, a roughness coefficient value of 120 is assigned to all the pipelines based on MWH's experience on working on similar systems. A majority of the system is composed of ductile iron pipes, which typically have roughness coefficients from 120-140 according to industry standards. The pipelines are identified in the "Status" field in InfoWater as either a "Distribution Main" or "Raw Water Main" to distinguish the distribution system from the raw water main which conveys the well water to the Water Treatment Plant (WTP).

2.2 Junctions

Junctions are defined as the intersections of two or more pipelines, or at the location where any pipeline changes diameter or material. Attribute information for junctions include elevation and demand. There are 1,927 junctions in the model. Valves (gate valves, blowoff, airvac, butterfly valves, etc.) are also imported into the model. The junctions information field "Placed_On" identifies if the junctions are located on the Distribution Main or on the Raw Water Main. There are no demands on the junctions located on the raw water main, besides the Ridge Golf Course, which is described in more detail later in this TM.

2.3 Pressure Regulating Valves

Pressure regulating valves (PRVs) are modeled with information such as valve diameter, elevation, and valve settings. Pressure settings are provided by District operation staff for each active valve. There are six PRVs in the system, which are used to create two smaller zones; one in the northeast portion of the system and the southwest portion of the system. A PRV as well as two check valves create another smaller zone in the middle west portion of the system on Buffalo Trail and Buffalo Ridge Rd.

2.4 Storage Tanks

Storage tanks are modeled as cylindrical tanks. Attributes such as elevation, diameter, and tank height are included based on GIS data provided by the District and information from District

staff. There are two storage tanks in the model, South Tank No.1 and No.2. The head in the system is based upon the elevation in the tanks.

2.5 Pumps and Wells

Where manufacturer's pump curves are not available, the pump database is populated with the design head and design flow for each pump or well in the system. The model can create pump curves based on a design point, which allows the pumps to produce a head up to 133 percent of the recorded head and flow up to two times the recorded flow. For pumps without curves or design points, constant horse power pumps are implemented.

Each well is modeled as a reservoir and a pump, where the reservoir represents the groundwater aquifer and the pump represents the well pump. The reservoirs are modeled as "fixed head" (i.e. unlimited volume of water at a specified elevation) reservoirs with a water elevation equal to the static groundwater elevation minus drawdown. The groundwater elevation is determined from the GIS data by taking the elevation of the well minus the airline depth.

All the wells pump into the raw water main. The raw water main transfers the raw well water to the Water Treatment Plant, and the treated water is then distributed to the system. There are four, high service pumps located at the WTP. The only other pumps in the system is the Castle Pines Pkwy booster pump station which increases the pressure for the community along Buffalo Ridge Rd and in Vista Lodge Loop. There are four booster pumps in this location; one pump is on all the time (5.0 hp), two pumps are turned on intermittently and used as standby (15 hp), and one bigger pump (50 hp) is used for fire flow. This booster pump station is modeled as a single pump with a constant power input.

2.6 Existing Water Treatment Plant

The Water Treatment Plant (WTP) disinfects the raw well water before the water enters into the distribution system. The WTP is modeled as a fixed head reservoir with a pressure reducing valve to supply water into distribution system. The fixed head reservoir is set at 6,666 feet, which is the same pressure as the tanks if they are nearly full. The pressure reducing valve is set at 110 PSI, which is the typical pressure leaving the WTP.

In the model, the raw water mains convey the raw water into the fixed head reservoir at the water treatment plant. Since the wells are not calibrated with field data, it is determined that the best way to model the system is to have a fixed head reservoir set at a certain pressure to deliver water to the system. Therefore, in the model the conveyance of the raw water to the treatment plant has no effect on the distribution network.

2.7 Facility Elevation Data

The elevations for junctions are derived from contour GIS data provided by the District. Using the contour data, ground elevations are extracted and assigned to all new junctions in the model. The elevations for storage tanks and pumps are recorded from GIS shapefiles provided by the District.

2.8 Geocoding Existing Demands

The process of geographically locating each billing record is known as geocoding. Each billing record is geographically located using the street address in the billing data and street centerline Geographic Information System (GIS) coverage. The geocoding process electronically places the location of each service connection on a map.

Demands are allocated to "demand" junctions based on proximity to the geocoded consumption data. Demand junctions are selected based on proximity to customer meter locations. Customer demand data is then aggregated and assigned to each demand junction. All junctions associated with raw water transmission pipelines are excluded from the demand allocation process.

The demands assigned to the junctions are determined from the average customer billing data from the year 2011. In 2011, the average demand is 957 gallons per minute (gpm). This value is similar to the average demand in 2014 (947 gpm) and 2010 (918 gpm). An additional 47 gpm is added to the model for residential areas that are developed after 2011, creating a total of 1,004 gpm as the average day demand (ADD). To represent the maximum day demand (MDD), the maximum day production from 2014 is evaluated. The maximum day production in 2014 occurred on July 6, with a total of 3,744,444 gallons produced from the wells, which averages out to be 2,600 gpm. The MDD to ADD factor is determined by dividing the MDD (2,600 gpm) by the 2011 ADD (957 gpm) which equals 2.7. Therefore, the demands in the model are all scaled by a factor of 2.7 to represent the max day demands, which means the MDD is 2,710 gpm. The max day demands are evaluated because this is when the system experiences the greatest amount of stress. The model has a maximum of ten different fields to distribute the demands, and these fields can be used to distinguish the type of demand (e.g. residential or irrigation). The ADD demands are distributed amongst the fields as followed:

Demand 1: Residential (736 gpm)
Demand 3: Commercial (37 gpm)
Demand 4: Irrigation (64 gpm)
Demand 5: Irrigation CPN (59 gpm)
Demand 6 and 7: New residential customers (47 gpm)
Demand 9: Future ASR wells (not included in the ADD or MDD demand, but included in the ASR scenario)
Demand 10: Residential Large Lots (31 gpm)

The Ridge Golf Course uses approximately 2/3 recycled water and approximately 1/3 water from the raw water main from Well A-1 and Well LDA-1. In 2014, the max use for the golf course is 89 gpm. Since the raw water main and demands associated to this main have no effect on the distribution system (as described in Section 2.6), the golf course demand is not added to the model.

2.9 Modeled Scenarios

Scenarios are created in the model to represent different model conditions, such as differing demands, pumps on/off data, or pipelines being active or inactive. Multiple scenarios within one

model are created to easily switch between different model conditions when analyzing the system. In the model, six different scenarios are created:

1) JustWells: This scenario is analyzed using MDD demands and assumes that only the wells are on, and that Centennial Water Treatment Plant (CWTP) provides zero water during the summer months. This scenario is used as the baseline scenario and is the current as-is operation of the District's service area.
2) Scenario_1_2: This scenario is analyzed on MDD demands and represents Alternatives 1 and 2. Both of these alternatives have the same point source of water into the system (CPNMD WTP). Therefore, as far as the modeling is concerned, Alternatives 1 and 2 can be modeled as one scenario. The CPNMD WTP is modeled as a fixed head reservoir.
3) Scenario_3: This scenario is analyzed on MDD demands and represents Alternative 3. This scenario assumes that the existing CWTP distribution line is active during the summer months and can provided up to 4 MGD.
4) Winter_ASR_1_2: This scenario is analyzed on ADD demands and represents ASR replenishment wells using the source from Alternative 1 and 2. This scenario uses three demand nodes to represent water demanded from the system and injected into the ground. These injection wells are located at well sites 2, 6, and 7.
5) Winter_ASR_3: This scenario is analyzed on ADD demands and represents ASR replenishment wells using the source from Alternative 3. This scenario uses three demand nodes to represent water demanded from the system and injected into the ground. These injection wells are located at well sites 2, 6, and 7.
6) Winter_ASR_WTP: This scenario is analyzed on ADD demands and represents ASR replenishment wells using the source from the WTP. This scenario uses three demand nodes to represent water demanded from the system and injected into the ground. These injection wells are located at well sites 2, 6, and 7.

The model is analyzed on a steady state time step, which means that the model is run as a single snapshot. A model is run for a 24 hour time period if the model is equipped with a diurnal curve. However, for this analysis a single snapshot is sufficient to run the required analysis.

3 Model Analysis

The purpose of the model analysis is to determine the effect on the distribution system of the alternatives discussed at the beginning of this TM. If the source water for an alternative enters the distribution system at a different point in the distribution system other than the WTP, the system could experience higher headloss if pipelines are undersized or experience a change in system pressure. Therefore, the new scenarios will evaluate if the alternative affects the 1) headloss, 2) pressure, or 3) ability to meet demand in the system due to the new water supply source. As mentioned in the beginning of this TM, the results of the baseline scenario have not been validated or calibrated with field data. Therefore, the results from this scenario and other scenarios should not be used as absolute values, but can only be compared with each other. This analysis will evaluate the model using current demands that are determined from recent data as

discussed in **Section 2.8**, as well as analyze the model using future demands assuming that the demand in the system is equal to the maximum design output (5 MGD) of the CPNMD WTP.

3.1 Existing Demands

The model is first analyzed using existing demands derived in **Section 2.8.**

3.1.1 Base Simulations

The "JustWells" scenario is analyzed as a baseline scenario. This scenario will be compared to the other scenarios to determine the effect of the alternatives on the distribution system. In all the scenarios analyzed, the tanks are deactivated, which means that the tank levels are unable to help provide water to the system. The tanks are deactivated because during a steady state run the tanks can provide a large amount of supply, making the system appear like it is responding fine, but in actuality the tanks are being depleted at a high rate. Therefore, in all scenarios the tanks are deactivated and all water required to meet the demands must be provided by the source. **Table 1** shows the minimum and maximum pressure and the highest headloss in the system during the baseline scenario.

Table 1
Baseline Scenario Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Wells (gpm)
JustWells (MDD)	46 PSI at end of Kent Place	148 PSI at Monarch Blvd and Stonemont Dr.	4.67 ft/1000 ft on 8 inch pipeline on Oxford Dr. and Monarch Blvd.	2,710

3.1.2 Alternatives 1 and 2

Alternatives 1 and 2 are summarized by one scenario. This scenario assumes that a new Castle Pines North Metro District Water Treatment Plant (CPNMD WTP) distributes treated water into the distribution system. CPNMD WTP is modeled as a fixed head reservoir with a flow control valve set at the MDD demand in the system. The exact location of the CPNMD WTP has not been determined, although anticipated sites have been determined. From the anticipated site, an additional 1,000 ft of 18-inch pipeline is required from the anticipated location of the CPNMD WTP to the existing distribution system as seen by the red line in **Figure 1.** This 18-inch line will attach to the 12-inch line on Mira Vista Ln.

The scenario is first analyzed by closing both South tanks and shutting off all of the wells. Since the distribution system is now being fed on Mira Vista Ln instead of at the WTP, there is a higher flow and a greater velocity through the 12-inch main on Mira Vista Ln. Due to the high flow through the Mira Vista Ln main, there is additional headloss in the system through the 12-inch main before the water reaches the main distribution line on Monarch Blvd. This scenario is first analyzed with the head of the CPNMD WTP at 6,666 feet. There is approximately 17 feet (7.4 psi) of headloss from Mira Vista Ln to the end of Monarch Blvd, and then an additional 6 feet (2.6 PSI) drop along Monarch Blvd before the 12-inch main reaches the 18 inch main. **Table 2** presents the low pressure and high pressure at the same nodes as the base scenario. However,

since the CPNMD WTP has not been designed yet, if the head from the CPNMD WTP is increased by 20 feet, the system will still be able to provide similar pressures as seen during the base scenario. The higher velocities (4.5 ft/sec) through the 12-inch main could lead to leaks or deteriorations of the pipe network.

This scenario is also evaluated if the wells are pumped in addition to the supply from the CPNMD WTP. During this scenario, the low and high pressures are similar to that seen during the base scenario. Therefore, the CPNMD WTP in addition to the wells will have little effect on the pressures seen in the distribution system.

Table 2
Alternative 1 and 2 Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Wells (gpm)
Scenario_1_2 (MDD) (head of 6,666 at CPNMD WTP)	38 PSI at end of Kent Place	138 PSI at Monarch Blvd and Stonemont Dr.	6.83 ft/1000 ft on 12 inch pipeline on 2,900 feet of pipeline on Mira Vista Ln.	0
Scenario_1_2 (MDD) (head of 6,686 at CPNMD WTP)	46 PSI at end of Kent Place	146 PSI at Monarch Blvd and Stonemont Dr.	6.83 ft/1000 ft on 12 inch pipeline on 2,900 feet of pipeline on Mira Vista Ln.	0
Scenario_1_2 (MDD) (head of 6,666 at CPNMD WTP) Wells active	47 PSI at end of Kent Place	148 PSI at Monarch Blvd and Stonemont Dr.	3.22 ft/1000 ft on 8 inch pipeline on Oxford Dr. and Monarch Blvd.	1,935

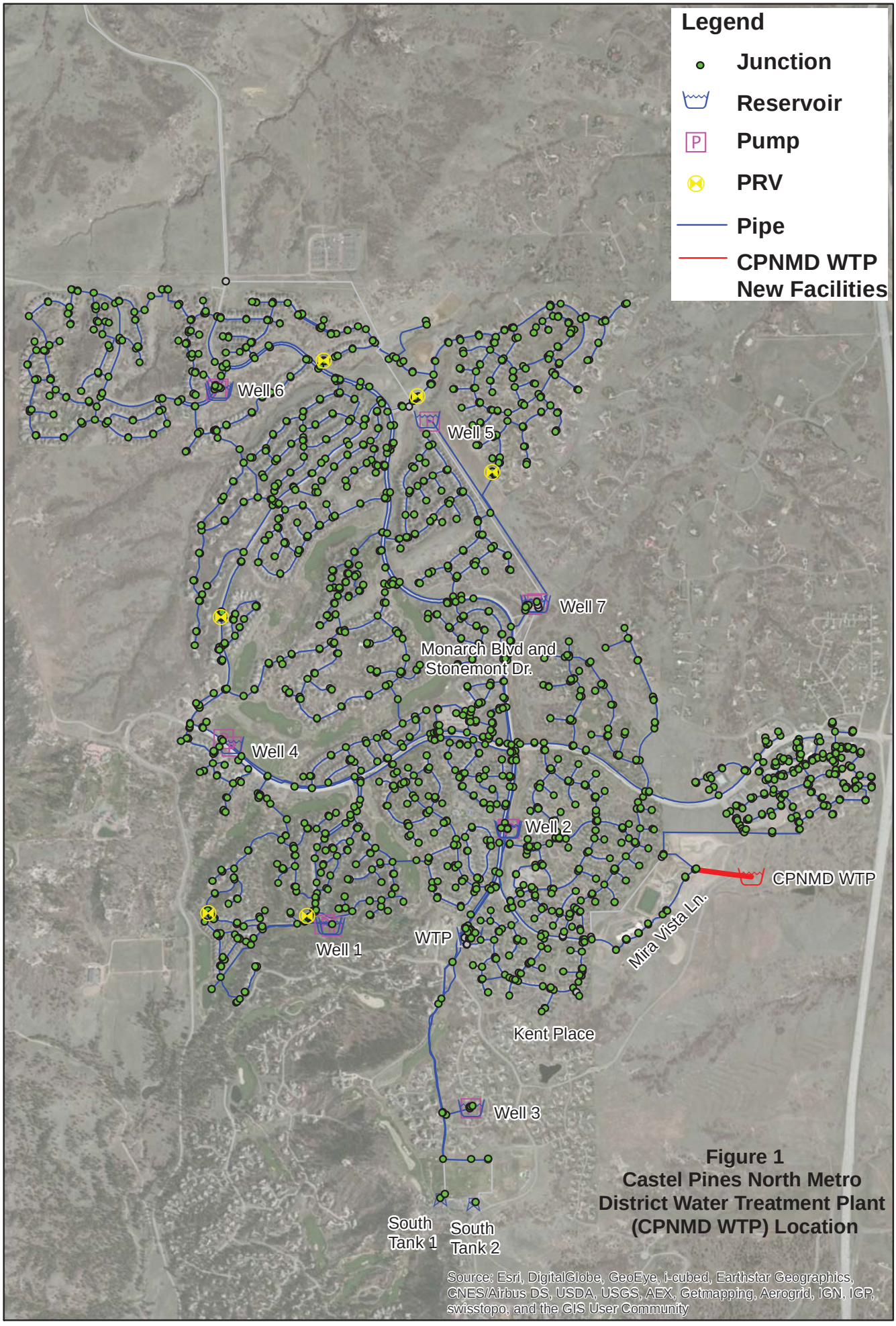


Figure 1
Castel Pines North Metro District Water Treatment Plant (CPNMD WTP) Location

3.1.3 Alternative 3

Alternative 3 assumes that the Centennial Water Treatment Plant (CWTP) is able to provide 4 MGD during summer months, which is enough supply to meet the MDD demand. CWTP is modeled as a fixed head reservoir and a flow control valve with a fixed head of 6,666 feet with an allowed flow of 2,750 to meet MDD. The pipeline supplying water from the CWTP to the District's service area is a 24-inch pipeline that ties into the distribution system at three different points, as seen in **Figure 2**. In addition to the connection to the distribution system, the 24-inch pipeline from the CWTP also can connect into the raw water main on Monarch Blvd north of Stonemont Dr.

The scenario is analyzed by closing both South tanks, shutting off the wells, and supplying the distribution system through the three connection points shown in **Figure 2**. As seen in **Table 3**, pressure and headloss appear to be unaffected by changing the source water through the three connection points instead of through the WTP. The pressure at the end of Kent Place drops by about 3 PSI due to headloss from water now flowing from the upper portion of the system instead of at the southern portion of the system at the WTP. If the wells are activated, the pressures are the same as the baseline scenario and there are no segments of pipeline with high headloss.

Table 3
Scenario 3 Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Wells (gpm)
Scenario_3 (MDD) (head of 6,666 at CWTP)	43 PSI at end of Kent Place	147 PSI at Monarch Blvd and Stonemont Dr.	2.2 ft/1000 ft on 14-inch pipeline on Monarch Blvd and Stonemont Dr.	0
Scenario_3 (MDD) (head of 6,666 at CWTP) Wells active	47 PSI at end of Kent Place	149 PSI at Monarch Blvd and Stonemont Dr.	1.6 ft/1000 ft outside of WTP	1,530

If the water is conveyed into the raw water main instead of the distribution main, there is no difference in the distribution system hydraulics between Scenario 3 and the baseline scenario because in both of these scenarios all the water will be originating from the WTP into the distribution system.

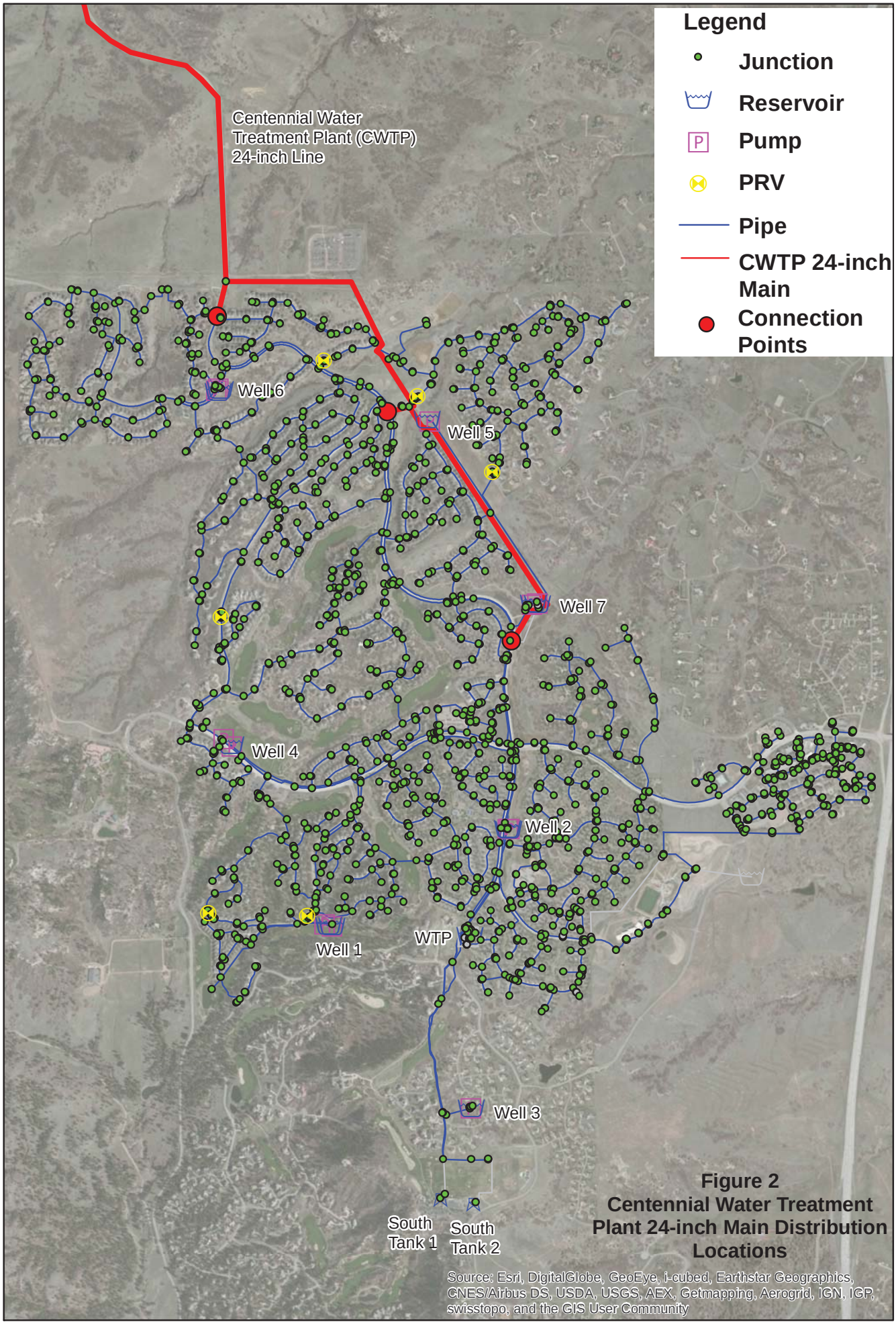


Figure 2
Centennial Water Treatment Plant 24-inch Main Distribution Locations

3.1.4 ASR Wells

All three of the alternatives anticipate Aquifer Storage and Recovery (ASR) wells being implemented. ASR will allow the District to recharge the aquifer during the winter months when supply is abundant, allowing the district to replenish their groundwater system. The District overlays three different aquifers: the Arapaho, Denver, and Lower Dawson aquifers. There are seven wells in the Arapaho aquifer, two wells in Denver aquifer, and two wells in the Lower Dawson aquifer.

There has been no groundwater management study performed with this analysis, so this analysis is purely focused on the distribution system and the effects of conveying water during the winter months to the injection well locations. Therefore, the amount of water chosen to be injected into the ground and the well locations to inject are arbitrarily picked. The well locations are chosen at three spots that have the capability of pumping water into multiple aquifers. The amount of water chosen to be injected into the ground is arbitrarily chosen to place larger demands throughout the system to see the effect.

ASR wells will increase the amount of flow through the distribution mains to the injection well locations. Increased flow could lead to increased headloss and a decrease of pressure in the system. To minimize the effects of headloss, the ideal locations (in terms of conveyance) for the ASR wells would be next to large distribution mains. Therefore, the best locations within the District's service area are Well A-2 and LDA-2, A-7 and Denver-7, and Well A-6 and Denver-6. These locations are next to large distribution mains and are the three largest wells.

During ADD conditions, the total demand in the system is 1,004 gpm (1.4 mgd). With the addition of injecting 300 gpm at Well 2, Well 6, and Well 7 locations, the total demand in the system is 1,904 gpm. The injection line at Well 7 location can be tied into the 24-inch service line from Centennial WTP. The injection line at Well 7 location can also be tied into the 14-inch line on Monarch Blvd. The injection line at Well 2 location can be tied into the 18-inch distribution main, and the Well 6 location can be tied into the 12-inch distribution main.

It is assumed that while water is injected into the aquifers, none of the wells will be pumping since that would defeat the purpose of ASR. Therefore, three scenarios are created to represent the three alternatives:

1) WINTER_ASR_1_2: This scenario represents Alternative 1 and 2 where the water source is from the new CPNMD WTP and enters the system into the 12-inch main on Mira Vista Ln.
2) WINTER_ASR_3: This scenario represents Alternative 3 where the water source is conveyed to the three points in the distribution system from the 24-inch pipeline leaving the CWTP.
3) WINTER_ASR_WTP: This scenario assumes that water is either conveyed from the 24-inch pipeline from the CWTP to the raw water main or conveyed from the new CPNMD WTP into the raw water main. In both of these situations, the water is then pumped out from the WTP.

In all of these scenarios, the tanks are deactivated to force all the water to come from each scenarios source, which is the most conservative evaluation since it will represent the worst-case scenario. Since the total demand for Winter_ASR (1,903 gpm) is less than the MDD demand (2,710 gpm), the ASR wells could negatively affect the distribution system if a larger flow of water is conveyed through a pipe that is not designed to have a large flow. However, all of the ASR well locations are located off large pipelines in the distribution system. **Table 4** presents the results of the ASR well scenarios.

The Winter_ASR_1_2 Scenario is able to provide the ASR flow (900 gpm) to all three ASR locations. The model has the most difficult time providing flow to the Well 6 location since it is farthest from the source data. Therefore, if Alternative 1 and 2 are used, it is best to place the ASR wells at well location 2 or 7.

The Winter_ASR_3 has no difficulty in supplying the larger flows for the ASR wells, especially since the CWTP conveys water to the upper portion of the system where the ASR wells are located. The Winter_ASR_WTP scenario also has no difficulty in providing the ASR flows.

Table 4
Winter ASR Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Disinfection Plant (gpm)
WINTER_ASR_1_2 (ADD) (head of 6666 at CPNMD WTP) (ASR wells at Well 2, 6 and 7)	43 PSI at end of Kent Place	143 PSI at Monarch Blvd and Stonemont Dr.	6.82 ft/1000 ft on a 6-inch line at the PRV station on Buffalo Trail	0
WINTER_ASR_3 (ADD) (head of 6666 at CWTP) (ASR wells at Well 2, 6 and 7)	45 PSI at end of Kent Place	148 PSI at Monarch Blvd and Stonemont Dr.	1.18 ft/1000 ft on Serena Ave and Monarch Blvd.	0
WINTER_ASR_WTP (ADD) (head of 6666 at WTP) (ASR wells at Well 2, 6 and 7)	47 PSI at end of Kent Place	149 PSI at Monarch Blvd and Stonemont Dr.	2.39 ft/1000 ft on outside of WTP	1,903

In addition to these alternative evaluations, model evaluations are performed if all the ASR water is injected into one well location instead of three locations. Model runs are evaluated with flows of 1,000 gpm at Well 7 and Well 2 for these three scenarios. All six of these model runs show the ASR has little effect on the distribution system for all three scenarios, since these distribution mains are sized large enough to handle that amount of flow, and the distribution system is well networked to not have significant headloss in the system. Alternative 1 and 2 is able to meet the 1,000 gpm flow at Well 6, although there is high headloss (11 ft/1000 ft) in the 10-inch pipeline on Monarch Blvd north of Briar Dale Dr. Therefore, it is preferred to have ASR well locations at Well 7 and Well 2.

3.2 Future Demands

The model is also analyzed using future demands. The new CPNMD WTP is designed to be able to output 5 MGD, which is approximately 3,500 gpm. Therefore, the largest stress on the existing system from the CPNMD WTP will result when the CPNMD WTP is supplying 5 MGD into the system. The future demand analysis will be identical to the analysis done above for the existing system, but will scale the existing ADD demand (1004 gpm) by 3.5 to equal the 5 MGD demand. Similar to the existing system analysis, the tanks are deactivated during these scenarios. If the tanks are active, since this is a steady state run, the model will use a large amount of tank water to meet the demands, which is unrealistic and unsustainable.

3.2.1 Base Simulation

The Base scenario will be compared to the other scenarios to determine the effect of the alternatives on the distribution system. **Table 5** shows the minimum and maximum pressure and the highest headloss in the system during the baseline scenario with the future demands.

Table 5
Future Baseline Scenario Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Wells (gpm)
JustWells (MDD)	44 PSI at end of Kent Place	148 PSI at Monarch Blvd and Stonemont Dr.	7.39 ft/1000 ft on 8 inch pipeline on Oxford Dr. and Monarch Blvd.	3,514

3.2.2 Alternatives 1 and 2

In Scenario 1 and 2, the model is still able to meet all the demands if the demands in the system are scaled up to 3,500 gpm. The results of this scenario with an increased demand are observed in the first row of **Table 6**.

3.2.2.1 Scenario_1_2.1

The first row of **Table 6** portrays the water from the new CPNMD WTP that is conveyed into the existing 12-inch main on Mira Vista. During this analysis, there is 11.1 ft/1000 ft of headloss on Mira Vista Ln and the velocity in the pipeline through Mira Vista Ln is 5.82 ft/sec. A velocity of 5.82 feet per second is relatively high and is not a desired velocity for an extended period. With a headloss of 11.1 ft/1000 ft, there is approximately 27 feet of headloss on Mira Vista Ln with an additional 10 feet of headloss along Monarch Blvd before the 12-inch main reaches the 18 inch main. Therefore, there is a total drop of 37 feet (16 PSI) before the water reaches the distribution main.

3.2.2.2 Scenario_1_2.2

To address the headloss, a 4,560 ft segment of 12-inch pipeline is suggested parallel to the 12-inch line on Mira Vista Ln. and recommended to attach the 18-inch distribution main on Monarch Blvd just north of Oxford Drive. This pipeline would run in parallel to the existing 12-inch pipeline instead of replacing the pipeline since this existing pipeline is constructed between

1994 and 2009, and has a long time before its useful life. The velocity in the pipeline on Mira Vista Ln is reduced to 3.42 feet per second adding this parallel line. The results of this analysis are presented in **Table 6**.

3.2.2.3 Scenario_1_2.3

Row four of **Table 6** further reduces the headloss and high velocity in the system by upsizing the proposed 4,560 foot parallel 12-inch pipeline to a parallel 16-inch pipeline, and is seen in **Figure 3**. A 16-inch main leads to a velocity of 2.3 ft/sec in Mira Vista Ln. A parallel 16-inch pipeline with the existing 12-inch pipeline has an equivalent diameter of a 20-inch pipeline.

Table 6
Future Alternative 1 and 2 Scenario Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss
Scenario_1_2.1 (MDD) (head of 6,666 at CPNMD WTP)	32 PSI at end of Kent Place	130 PSI at Monarch Blvd and Stonemont Dr.	19.03 ft/1000 ft on 8 inch pipeline on Village Square Ter. 11.1 ft/1000 ft through Mira Vista Ln
Scenario_1_2.2 (MDD) (head of 6,666 at CPNMD WTP) Two segment of parallel 12-inch pipeline	40.4 PSI at end of Kent Place	140 PSI at Monarch Blvd and Stonemont Dr.	8.68 ft/1000 ft on 8 inch pipeline on Village Square Ter. 4.1 ft/1000 ft through Mira Vista Ln
Scenario_1_2.3 (MDD) (head of 6,666 at CPNMD WTP) Two segment of pipeline parallel 16 - inch pipeline	43 PSI at end of Kent Place	143 PSI at Monarch Blvd and Stonemont Dr.	7.6 ft/1000 ft on 14-inch pipeline on Monarch Blvd and W Castle Pines Pkw. 2 ft/1000 ft through Mira Vista Ln

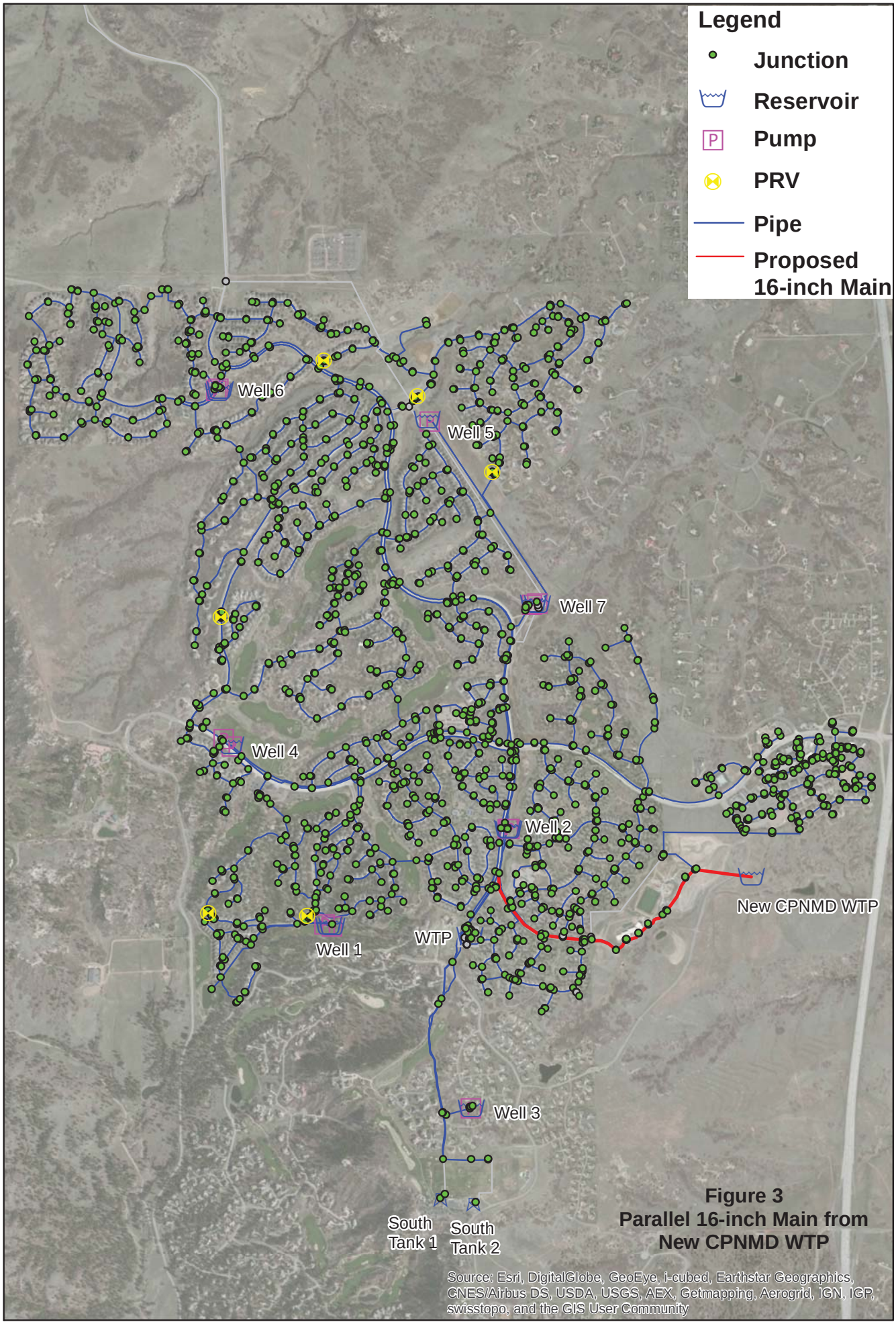


Figure 3
Parallel 16-inch Main from New CPNMD WTP

3.2.3 Alternative 3

Alternative 3 assumes that the Centennial Water Treatment Plant (CWTP) is able to provide 4 MGD during summer months, which is enough supply to meet the MDD demand for existing demands but is not capable of meeting the assumed max month of 5 MGD. Therefore, it is assumed that 4 MGD will be supplied by CWTP and the rest will be supplied by the existing wells.

As seen in **Table 7**, pressure and headloss appear to be unaffected by changing the source water through the three connection points instead of through the WTP.

Table 7
Future Scenario 3 Analysis Summary

Scenario	Lowest Pressure	Highest Pressure	Largest Headloss	Flow from Wells (gpm)
Scenario_3 (MDD) (head of 6,666 at CWTP) CWTP supplies 4 MGD	43 PSI at end of Kent Place	147 PSI at Monarch Blvd and Stonemont Dr.	2.6 ft/1000 ft on 8-inch pipeline on Tenby Way and Somerset Ct.	744

3.2.4 ASR Wells

Since the future ASR wells will be used during the winter months and the demand will be closer to the average day demand, future demands for ASR well injection is not evaluated. The system has proven that it can handle increased flows for ASR injection as specified in **Section 3.1.4.**

4 Conclusion

The purpose of developing a model is to determine the effects of the three alternatives on the distribution system. The model is developed using GIS pipeline, valve, tank, and well information as well as communications with the District's operation staff. The demands in the model are determined from the 2011 billing data, and are distributed to the appropriate junctions through a geocoding process, which distributes the demands based upon the meter's addresses. The demands in the model are then scaled up to represent the maximum day demands. The model is evaluated based upon the maximum daily demand, which is determined from the maximum well production in 2014, since the MDD has the greatest stress on the system. The ASR evaluations are done during ADD, since the ADD is typical of the winter months when ASR would be performed. The model is also evaluated using maximum month build-out demands. Since the maximum month build-out demands are the largest and have the greatest impact on the existing system, the recommendations will be based on the analysis using the maximum month build-out demands.

As mentioned previously in the report and reiterated here, the model is not calibrated or validated with any field data. Therefore, the accuracy of the numeric values is undetermined. The benefit of this study is to determine the effects of the system at a fixed point that historically has low (Kent Place) and high (Monarch Blvd and Stonemont Dr.) pressures, as well as looking at

locations where the largest headloss per thousand feet occurs. Headloss per thousand feet is the best indicator to determine if a pipeline is undersized.

The conclusion of this analysis is focused on the alternative's implications to the distribution system, and not the efficiency or recommendations associated with the process before the distribution system. A baseline scenario, which is composed of the raw water from the wells being distributed to the distribution system through the WTP, is first analyzed. The alternative scenarios are then compared to the baseline scenario.

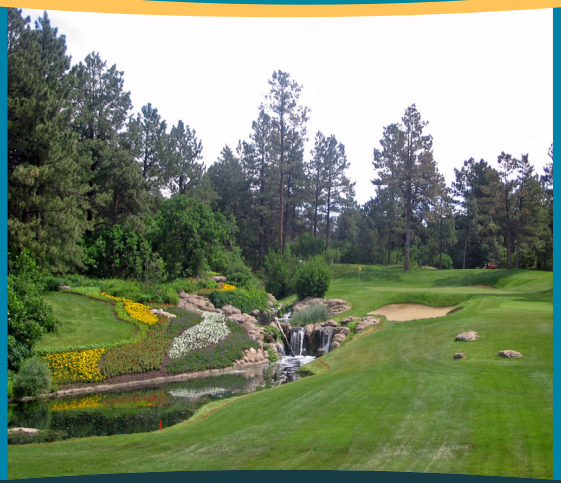
Alternatives 1 and 2 have the largest effect on the pressure in the system if water is conveyed through the existing 12 inch-distribution main on Mira Vista Ln. As seen in **Table 6**, there is approximately 16 PSI headloss to the system with high headloss and high velocity in the existing distribution main on Mira Vista Ln. Therefore, MWH recommends a 4,560 foot parallel 16-inch distribution main from the new CPNMD WTP to the 18-inch distribution main on Monarch Blvd just north of Oxford Drive.

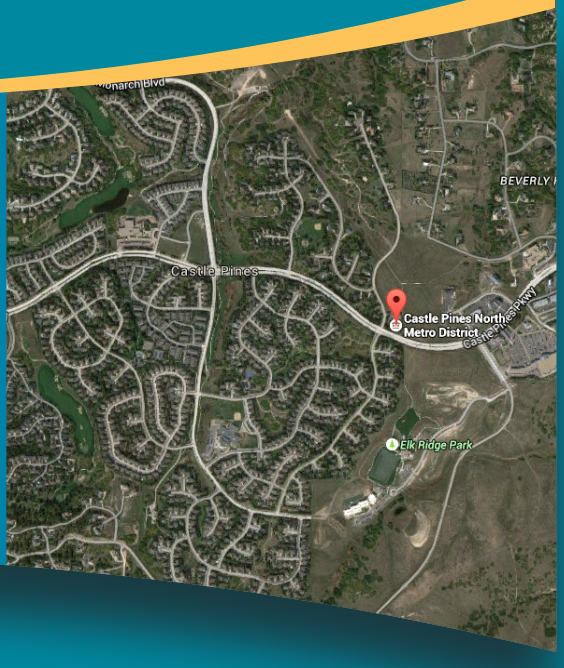
Alternative 3 has the smallest effect on the pressures and headloss in the system. The CWTP mains already distribute the water to the primary distribution main on Monarch Blvd at three different points, which reduces the headloss in the system. The pressure on Kent Place dropped by a few PSI since the water is now being distributed in the upper portion of the system instead of the southern portion. Alternative 3 also does not require any additional capital funding since the pipelines are already existing. Alternative 3 distributes water close to the existing well locations and no problems are observed for ASR injection.

The ASR scenarios analyzed the three alternatives during ADD and assumed and additional 300 gpm to be supplied to Well 2, Well 6 and Well 7 locations. These well locations are chosen since they are located along large distribution mains. The analysis shows that the additional demand due to the ASR wells has little effect on the pressures and headlosses in the system and that ASR wells would work with any of the three alternatives. The ASR wells also analyze if only one ASR well with an injection of 1,000 gpm is located at either Well 2, Well 6, or Well 7 location. The analysis shows that a demand of 1,000 gpm at Well 6 for scenarios 1 and 2 have the largest headloss due to a bottleneck on the 10-inch pipeline on Monarch Blvd north of Briar Dale Dr. Therefore, MWH suggests converting Well 2 and Well 7 to ASR wells first. As noted previously, this recommendation is based on minimizing effects to the existing conveyance system and does not incorporate the best location to inject based on aquifer characteristics.

APPENDIX H

Review of Permitting Level of Effort for CPN's Top Three Alternatives





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BUILDING A BETTER WORLD

1110 - B Elkton Drive
Colorado Springs, CO 80907

TEL 719 594 4535
FAX 719 594 4516
www.mwhglobal.com

Date: May 20, 2015

To: File

From: Alec Hart, CHMM PMP
Principle Environmental Services Lead

Subject: Review of Permitting Level of Effort for CPN's Top Three Alternatives

MWH reviewed the 25-March-2015 memorandum from Hamre, Rodriguez, Ostrander and Dingess PC, titled "SRWIP – Legal Issues and Other Considerations for CPN's Top Three Alternatives" (H.R.O.D. memo) and found the summary of issues to have had the appropriate level of detail and a comprehensive discussion of required permits and related issues with the three alternatives being considered.

With each of the alternatives, the 404 permitting requirement will make the U.S. Army Corps of Engineers (Corps) the "lead agency" for NEPA review. As contemplated in the H.R.O.D. memo, the level of effort for this review can vary based on specific factors associated with each project scope and location. In an attempt to clarify this, a figure showing the NEPA review process has been attached and is referenced below as it relates to the top three alternatives.

The MWH preliminary schedules for Alternatives 6, 7 and 8 were also reviewed. Permitting activities are grouped along with "legal" and "right-of-way" activities which appeared in most cases to initiate at 30% design stage. While legal and ROW issues can be initiated at this stage of design, there are two clarifications that need to made regarding the permitting effort:

1. For projects requiring NEPA review and approval, the process must be started well ahead of 30% design, with preliminary plans and concepts formalized to the point that public comment periods and impact assessments can be initiated. (e.g., property mapping, aerial overlays, artist renderings, identification of sensitive habitat, etc.) Additionally, the purpose and need of the project, as discussed in the H.R.O.D. memo needs to be crafted carefully at this stage to help "steer" the long-lead NEPA review process.

2. For planning and construction submittals, agencies generally need 60% design to accompany permit submittals. Applications with less than this level of detail often risk unnecessary delay in the approval process if multiple Requests for Information (RFIs) are received. This risk can be significantly reduced if permit submittals are made using 90% designs.

With these two points in mind, the following discussion on potential timeframes for permitting the top three alternatives is offered. It should be noted, the discussion of water rights and storage capacity which are critical components of each alternative have NOT been incorporated in the following discussion of timeframes as these issues fall outside the area of the reviewers expertise.

<u>Alternative 6 - Plum Creek Reservoir/WTP/ASR</u>
The H.R.O.D. memo touches on the complexity of the NEPA review process that will be required by the Corps during 404 permitting. Given the need for public input, potential for push back from political or special interests, consultation with other agencies and complexity of preparing a full Environmental Impact Study (EIS), NEPA impact analysis and public input for a project of this type can often take 10 years or longer. The process flow is diagramed on the right hand of the attached figure. Without more information on endangered species, species of

concern, special interest or private opposition to the project, or the political acceptability of a reservoir on EPC, it is difficult to make a reasonable estimate of time to permit this alternative. An optimistic estimate may be 5 to 7 years, with a more conservative estimate being 5 to 10 years. Other required permits could be applied for simultaneously and obtained prior to a Record of Decision (ROD). The following table summarizes the major permits associated with this alternative and a rough level of effort (time required) to obtain each. Note the estimated start dates shown are not tied to the project schedule at this time but are provided for comparative purposes only.

Alternative 6 Permitting Level of Effort:	Est. Start	Est. Finish
404 NEPA Environmental Impact Study	01/03/2017	01/01/2027
Floodplain Overlay	12/01/2025	04/30/2026
Use by Special Review	09/01/2025	04/01/2026
HB 1041 (if needed)	09/01/2025	04/01/2026
Section 32 Review	12/01/2025	04/30/2026
Other (including WTP and ASR)	12/01/2025	12/01/2026

Alternative 7 – Plum Creek Diversion/ASR

This alternative may allow avoidance of full NEPA review, but the significance of environmental effects may be interpreted differently, and as discussed in the H.R.O.D. memo. Clearances for construction of a diversion structure and pumping forebay in Waters of the United States can be considerable. While public input would be a component through the 404 permitting process, if the project purpose and need were prepared carefully, the Corps may consider preparation an Environmental Assessment, or "EA" (the middle track on the NEPA process figure) with the resulting number and length of public comment periods significantly shorter than those required during a full Environmental Impact Statement process.

While shorter in duration, an EA process is still time consuming and a reasonable permitting period may range from 3 to 5 years. As shown on the attached figure, if significant environmental risks are identified during the EA process, an EIS can still be required. Other required permits could be applied for simultaneously and obtained prior to the Corps issuing a Finding of No Significant Impact (FONSI). The following table summarizes the major permits associated with this alternative and rough level of effort (time required) to obtain each. Again, the estimated start dates shown are for illustrative purposes only.

Alternative 7 Permitting Level of Effort:	Est. Start	Est. Finish
404 NEPA Environmental Assessment	01/03/2017	01/03/2022
Floodplain Overlay	12/01/2020	04/30/2021
Use by Special Review	09/01/2020	04/01/2021
HB 1041 (if needed)	09/01/2020	04/01/2021
Section 32 Review	12/01/2020	04/30/2021
Other (including WTP and ASR)	12/01/2020	12/01/2021

Alternative 9 – Lower South Platte/ASR

With the least amount of infrastructure, Alternative 9 potentially also has the shortest permitting timeline. Relying on existing capacity and relatively easily permitted ASR wells, if as has been contemplated during early planning, the wetland impacts requiring §404 approval were addressed by the gravel operator, these would not present a permitting issue to CPN.

Avoiding the federal nexus and NEPA review suggests this alternative could be permitted within 1 to 2 years with the Use by Special Review or HB 1041 permits being the "long-lead" permits. Other required permits could be applied for and obtained in this timeframe. Uncertainty surrounding pending 404 rule changes and the expected 10 year timeframe to extract the 5,000 acre foot gravel pit may make the shorter permitting timeline inconsequential. The table below summarizes the major permits associated with this alternative and a rough level of effort to obtain each.

Alternative 9 Permitting Level of Effort:	Est. Start	Est. Finish
Floodplain Overlay (if required)	12/01/2017	05/30/2018
Use by Special Review (if required)	09/01/2018	09/01/2019
HB 1041	09/01/2018	09/01/2019
Section 32 Review	12/01/2017	05/30/2018
Other (including ASR)	12/01/2017	12/01/2018

General Comments

Absent in the H.R.O.D. memo or preliminary schedules were discussion of 401 certification, or construction permits which can impact project schedules. 401 water quality certification under the Clean Water Act is required for:

> *"…any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters…"*

Return flows shown for Alternatives 6 and 7 may trigger 401 certification or modification to an existing certification (if any).

Although not typically costly or difficult to obtain, construction permits would include:

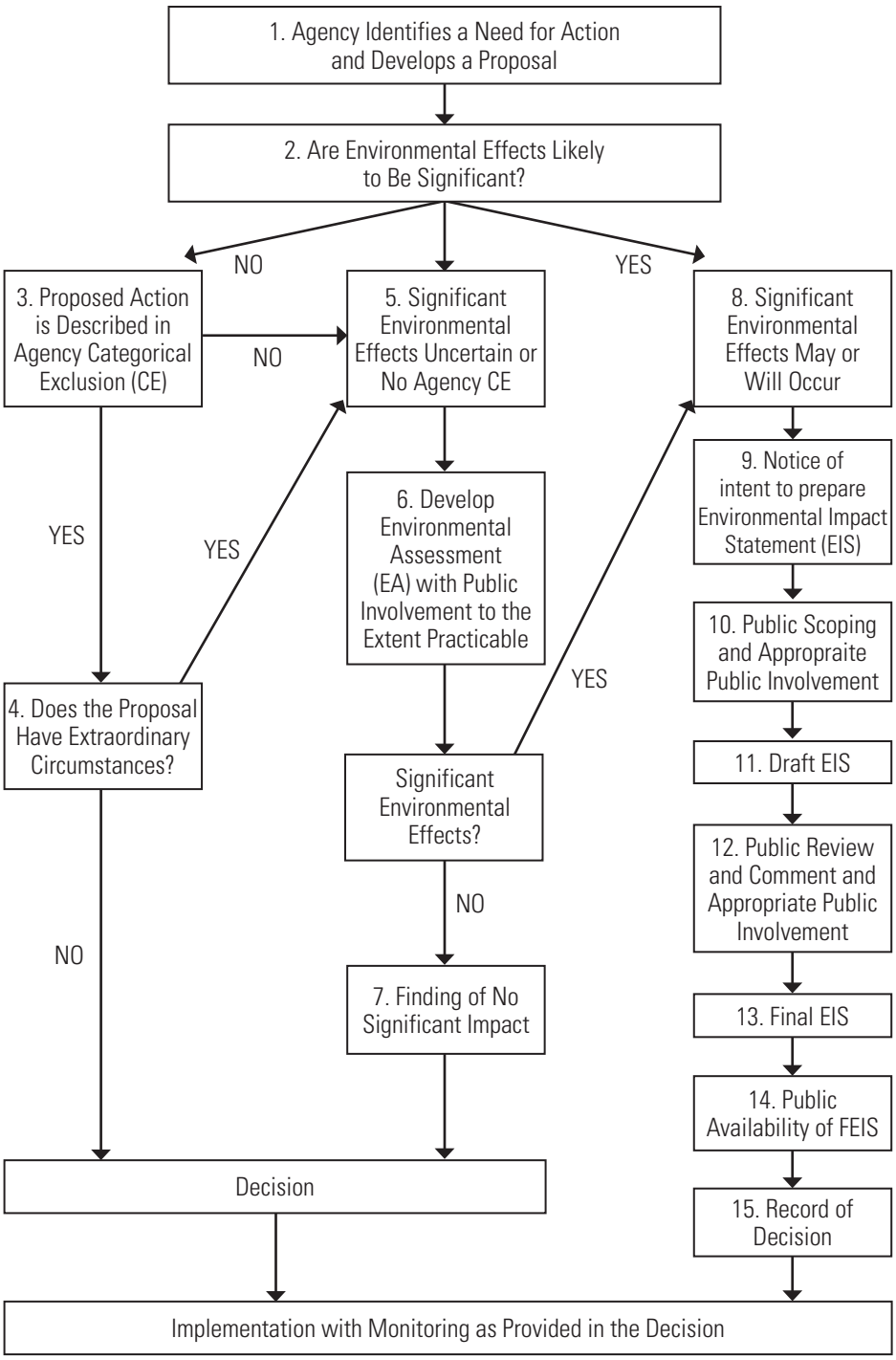
- Construction Storm water Management (SWM)
- Grading, Erosion and Sediment Control (GESC)
- Air Pollution Emissions Notification (APEN)
- Dewatering and hydrostatic discharge permits

Each of these required should be identified for the selected alternative and captured in subsequent project schedules as these are refined.

As a final comment on timeframes and schedule risk, the 1041 permit has shown to be a platform for local opposition and sometimes arbitrary (political) restriction. With Douglas County representing both a land owner and regulatory agency for Alternatives 6 and 7, it would be recommended that public outreach and political collaboration be considered early. This is seen as a strategic risk mitigation measure for any of the alternatives being considered.

Figure Attached: The NEPA Process

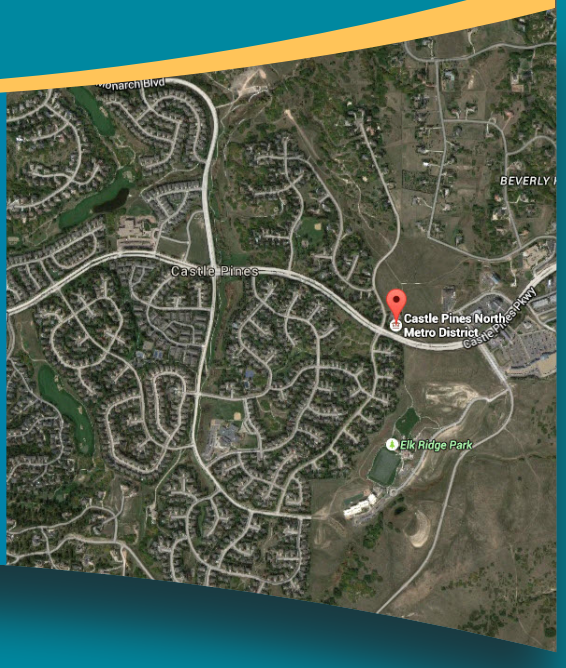
The NEPA Process



**Significant new circumstances or information relevant to environmental concerns or substantial changes in the proposed action that are relevant to environmental concerns may necessitate preparation of a supplemental EIS following either the draft or final EIS or the Record of Decision (CEQ NEPA Regulations, 40 C.F.R. § 1502.9(c)).*

APPENDIX I

Proposed Schedules for CPN's Top Three Alternatives



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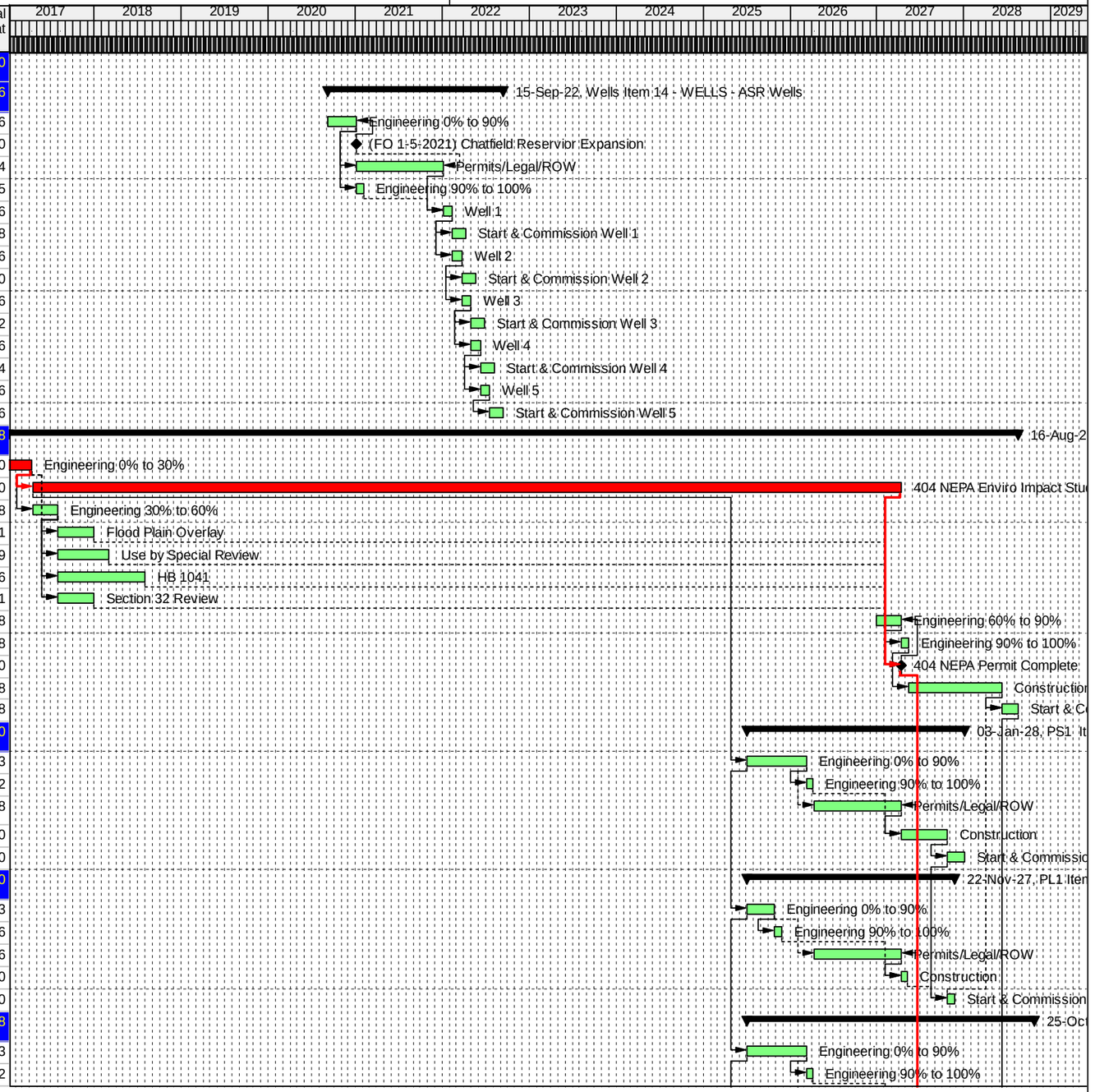
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Castle Pines Program Alternate 6 Rev 1 5-13-2015		0			0
Wells Item 14 - WELLS - ASR Wells		529	07-Sep-20	15-Sep-22	1746
14000	Engineering 0% to 90%	86	07-Sep-20	04-Jan-21	1746
14120	(FO 1-5-2021) Chatfield Reservior Expansion	0		04-Jan-21*	0
14010	Permits/Legal/ROW	365	05-Jan-21	04-Jan-22	2444
14130	Engineering 90% to 100%	22	05-Jan-21	03-Feb-21	1985
14040	Well 1	28	04-Jan-22	11-Feb-22	1746
14080	Start & Commission Well 1	42	11-Feb-22	12-Apr-22	1858
14050	Well 2	28	11-Feb-22	23-Mar-22	1746
14090	Start & Commission Well 2	42	23-Mar-22	20-May-22	1830
14060	Well 3	28	23-Mar-22	02-May-22	1746
14100	Start & Commission Well 3	42	02-May-22	29-Jun-22	1802
14070	Well 4	28	02-May-22	09-Jun-22	1746
14110	Start & Commission Well 4	42	09-Jun-22	08-Aug-22	1774
14030	Well 5	28	09-Jun-22	19-Jul-22	1746
14020	Start & Commission Well 5	42	19-Jul-22	15-Sep-22	1746
RES Item 3 - RES 1 Reservior Plum Creek		3020	03-Jan-17	16-Aug-28	108
3080	Engineering 0% to 30%	74	03-Jan-17	14-Apr-17	0
3010	404 NEPA Enviro Impact Study	3650	15-Apr-17	12-Apr-27	0
3090	Engineering 30% to 60%	75	17-Apr-17	01-Aug-17	2258
3040	Flood Plain Overlay	150	02-Aug-17	29-Dec-17	3391
3050	Use by Special Review	212	02-Aug-17	01-Mar-18	3329
3060	HB 1041	365	02-Aug-17	01-Aug-18	3176
3070	Section 32 Review	150	02-Aug-17	29-Dec-17	3391
3000	Engineering 60% to 90%	75	28-Dec-26	12-Apr-27	108
3100	Engineering 90% to 100%	22	12-Apr-27	12-May-27	108
3110	404 NEPA Permit Complete	0		12-Apr-27	0
3030	Construction	280	12-May-27	07-Jun-28	108
3020	Start & Commission	50	07-Jun-28	16-Aug-28	108
PS1 Item 1 - PS 1 Plum Creek Intake to Plumb Creek Res		654	01-Jul-25	03-Jan-28	270
1000	Engineering 0% to 90%	180	01-Jul-25	10-Mar-26	203
1040	Engineering 90% to 100%	22	10-Mar-26	09-Apr-26	532
1010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	378
1020	Construction	140	12-Apr-27	25-Oct-27	270
1030	Start & Commission	50	25-Oct-27	03-Jan-28	270
PL1 Item 2 - PL 1 Plum Creek to Plum Creek Reservoir		624	01-Jul-25	22-Nov-27	270
2000	Engineering 0% to 90%	86	01-Jul-25	29-Oct-25	203
2040	Engineering 90% to 100%	22	29-Oct-25	28-Nov-25	746
2010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	546
2030	Construction	20	12-Apr-27	10-May-27	390
2020	Start & Commission	20	25-Oct-27	22-Nov-27	270
PS2 Item 4 - PS 2 Plum Creek Res to Castle Pines No. W		866	01-Jul-25	25-Oct-28	108
4000	Engineering 0% to 90%	180	01-Jul-25	10-Mar-26	203
4040	Engineering 90% to 100%	22	10-Mar-26	09-Apr-26	602



Actual Work | Remaining Work | Level of effort | Level of Effort | Critical Remaining Work | Milestone

Alternative 6

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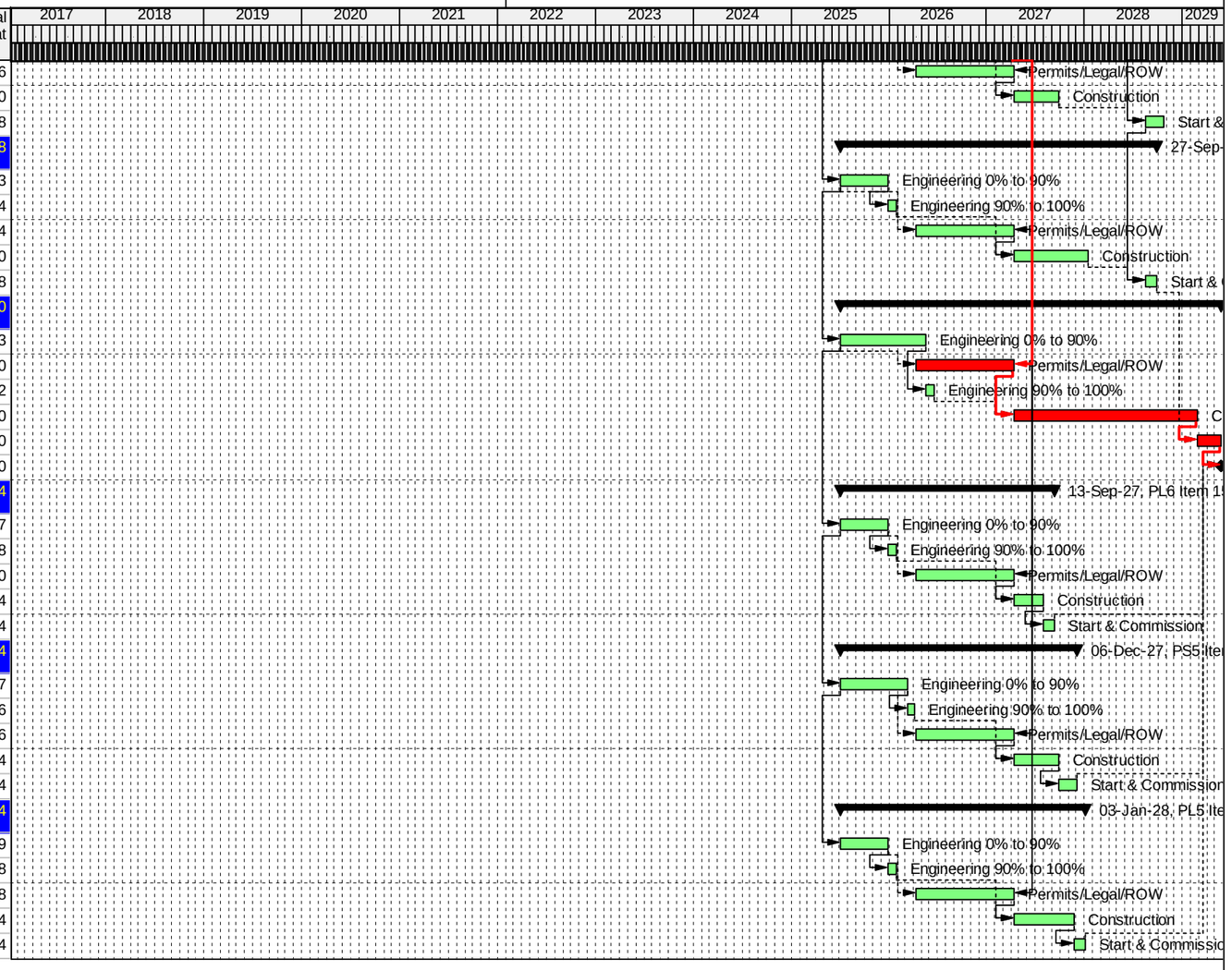
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
4010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	476
4030	Construction	120	12-Apr-27	27-Sep-27	340
4020	Start & Commission	50	16-Aug-28	25-Oct-28	108
PL2 Item 5 - PL 2 Plum Creek Res to Castle Pines No. WT		846	01-Jul-25	27-Sep-28	108
5000	Engineering 0% to 90%	128	01-Jul-25	26-Dec-25	203
5040	Engineering 90% to 100%	22	26-Dec-25	27-Jan-26	574
5010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	364
5030	Construction	200	12-Apr-27	17-Jan-28	260
5020	Start & Commission	30	16-Aug-28	27-Sep-28	108
**WTP Item 12 - WTP Castle Pines No. WTP with Finished **		1018	01-Jul-25	25-May-29	0
12000	Engineering 0% to 90%	230	01-Jul-25	19-May-26	203
12010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	0
12040	Engineering 90% to 100%	22	19-May-26	18-Jun-26	212
12030	Construction	490	12-Apr-27	26-Feb-29	0
12020	Start & Commission	64	26-Feb-29	25-May-29	0
4050	Finish WTP	0		25-May-29	0
PL6 Item 15 - PL6 Castle Pines No. WTP FWPS to CPNMI		574	01-Jul-25	13-Sep-27	444
15000	Engineering 0% to 90%	128	01-Jul-25	26-Dec-25	407
15040	Engineering 90% to 100%	22	26-Dec-25	27-Jan-26	758
15010	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	620
15030	Construction	80	12-Apr-27	02-Aug-27	444
15020	Start & Commission	30	02-Aug-27	13-Sep-27	444
**PS5 Item 10 - PS 5 Router Hess Res to Castle Pines No. **		634	01-Jul-25	06-Dec-27	384
15100	Engineering 0% to 90%	180	01-Jul-25	10-Mar-26	407
15140	Engineering 90% to 100%	22	10-Mar-26	09-Apr-26	646
15110	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	536
15130	Construction	120	12-Apr-27	27-Sep-27	384
15120	Start & Commission	50	27-Sep-27	06-Dec-27	384
PL5 Item 11 - PL5 Router Hess Res to Castle Pines No. W		654	01-Jul-25	03-Jan-28	364
15050	Engineering 0% to 90%	128	01-Jul-25	26-Dec-25	439
15090	Engineering 90% to 100%	22	26-Dec-25	27-Jan-26	678
15060	Permits/Legal/ROW	365	13-Apr-26	12-Apr-27	508
15080	Construction	160	12-Apr-27	22-Nov-27	364
15070	Start & Commission	30	22-Nov-27	03-Jan-28	364



Actual Work | Remaining Work | Level of effort
Level of Effort | Critical Remaining Work | Milestone

Alternative 6

WBS View

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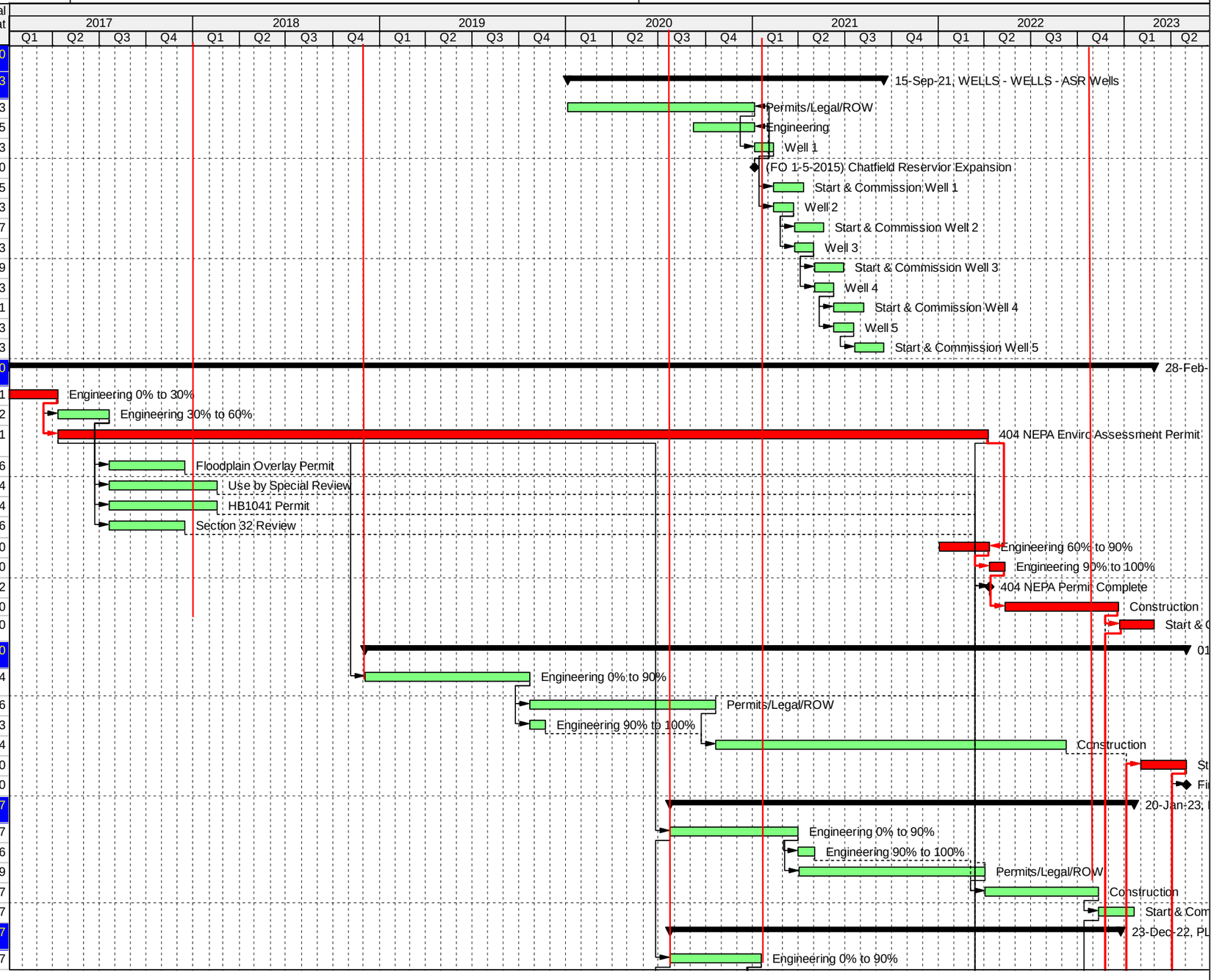
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Castle Pines Program Alterna		0			0
WELLS - WELLS - ASR Wells		443	06-Jan-20	15-Sep-21	453
14010	Permits/Legal/ROW	365	06-Jan-20	05-Jan-21	633
14000	Engineering	86	07-Sep-20	05-Jan-21	635
14040	Well 1	28	05-Jan-21	11-Feb-21	453
14120	(FO 1-5-2015) Chatfield Reservior	0		05-Jan-21*	0
14080	Start & Commission Well 1	42	12-Feb-21	12-Apr-21	565
14050	Well 2	28	12-Feb-21	23-Mar-21	453
14090	Start & Commission Well 2	42	24-Mar-21	20-May-21	537
14060	Well 3	28	24-Mar-21	30-Apr-21	453
14100	Start & Commission Well 3	42	03-May-21	29-Jun-21	509
14070	Well 4	28	03-May-21	09-Jun-21	453
14110	Start & Commission Well 4	42	10-Jun-21	06-Aug-21	481
14030	Well 5	28	10-Jun-21	19-Jul-21	453
14020	Start & Commission Well 5	42	20-Jul-21	15-Sep-21	453
PS4 - PS4 Booster PS to Rou		1594	03-Jan-17	28-Feb-23	0
8040	Engineering 0% to 30%	70	03-Jan-17	10-Apr-17	-1
8000	Engineering 30% to 60%	70	11-Apr-17	19-Jul-17	1092
8010	404 NEPA Enviro Assessment Permit	1825	11-Apr-17	09-Apr-22	-1
8050	Floodplain Overlay Permit	150	20-Jul-17	16-Dec-17	1606
8060	Use by Special Review	212	20-Jul-17	16-Feb-18	1544
8070	HB1041 Permit	212	20-Jul-17	16-Feb-18	1544
8080	Section 32 Review	150	20-Jul-17	16-Dec-17	1606
8090	Engineering 60% to 90%	70	03-Jan-22	11-Apr-22	0
8100	Engineering 90% to 100%	22	11-Apr-22	10-May-22	0
8110	404 NEPA Permit Complete	0		11-Apr-22	22
8030	Construction	160	11-May-22	20-Dec-22	0
8020	Start & Commission	50	21-Dec-22	28-Feb-23	0
WTP - WTP Castle Pines No.		1149	03-Dec-18	01-May-23	30
12000	Engineering 0% to 90%	230	03-Dec-18	22-Oct-19	104
12010	Permits/Legal/ROW	365	23-Oct-19	21-Oct-20	146
12060	Engineering 90% to 100%	22	23-Oct-19	21-Nov-19	343
12030	Construction	490	21-Oct-20	07-Sep-22	104
12020	Start & Commission	64	01-Feb-23	01-May-23	0
12050	Finish WTP	0		01-May-23	30
PS3 - PS3 Plum Creek Intake		651	23-Jul-20	20-Jan-23	27
6040	Engineering 0% to 90%	180	23-Jul-20	01-Apr-21	27
6000	Engineering 90% to 100%	22	01-Apr-21	03-May-21	266
6010	Permits/Legal/ROW	365	02-Apr-21	01-Apr-22	39
6030	Construction	160	01-Apr-22	11-Nov-22	27
6020	Start & Commission	50	11-Nov-22	20-Jan-23	27
PL3 - PL3 Plum Creek to Boc		631	23-Jul-20	23-Dec-22	27
7000	Engineering 0% to 90%	128	23-Jul-20	19-Jan-21	27

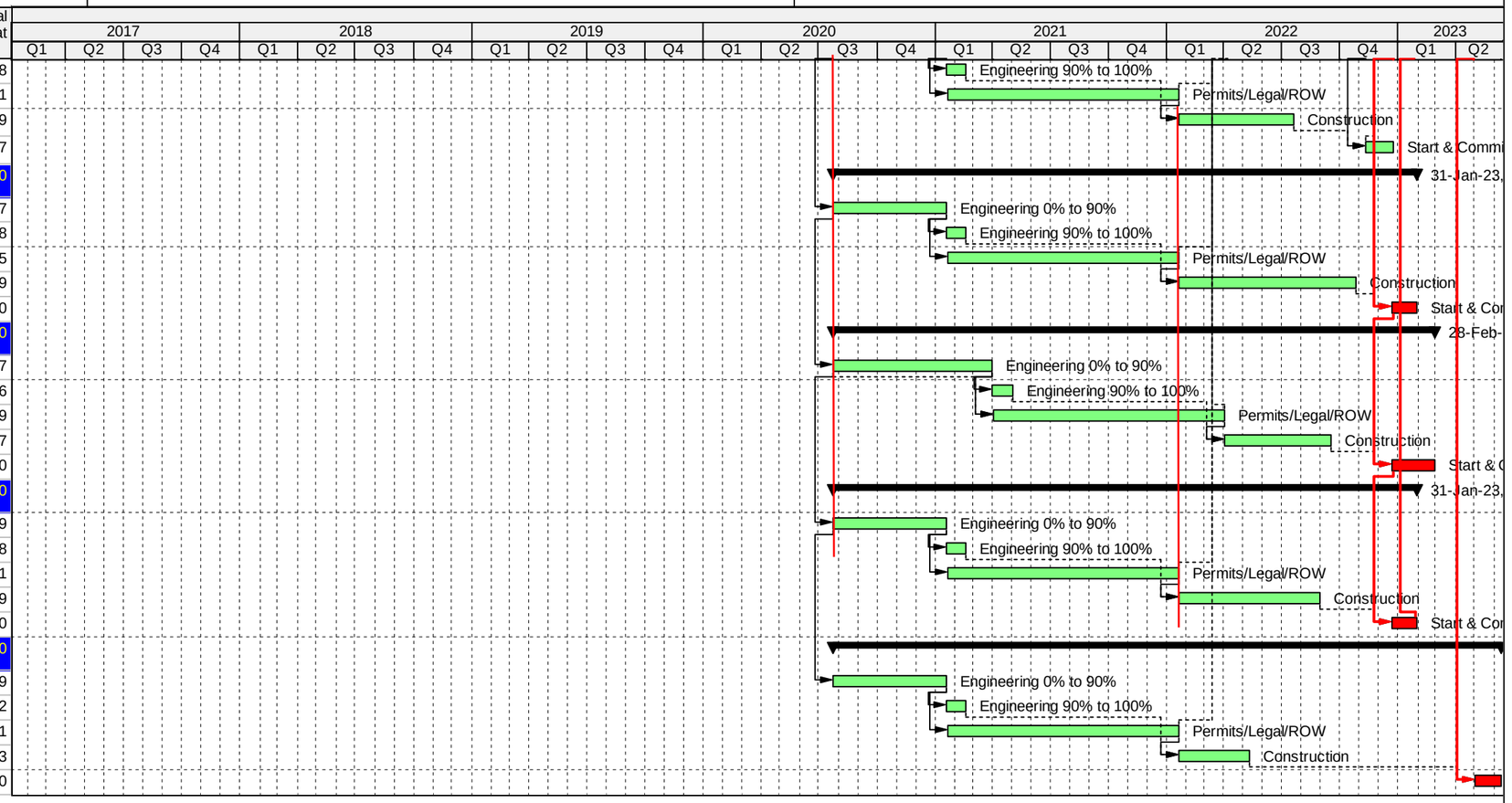


Actual Work | Remaining Work | Level of effort | Level of Effort | Critical Remaining Work | Milestone

Alternative 7

WBS View 15-May-15 13:40

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
7040	Engineering 90% to 100%	22	19-Jan-21	18-Feb-21	348
7010	Permits/Legal/ROW	365	20-Jan-21	19-Jan-22	111
7030	Construction	130	19-Jan-22	20-Jul-22	109
7020	Start & Commission	30	11-Nov-22	23-Dec-22	27
PL4 - PL4 Booster PS to Rou		658	23-Jul-20	31-Jan-23	0
9040	Engineering 0% to 90%	128	23-Jul-20	19-Jan-21	27
9000	Engineering 90% to 100%	22	19-Jan-21	18-Feb-21	278
9010	Permits/Legal/ROW	365	20-Jan-21	19-Jan-22	55
9030	Construction	200	19-Jan-22	26-Oct-22	39
9020	Start & Commission	30	21-Dec-22	31-Jan-23	0
PS5 - PS5 Router Hess Res t		678	23-Jul-20	28-Feb-23	0
10000	Engineering 0% to 90%	180	23-Jul-20	01-Apr-21	27
10040	Engineering 90% to 100%	22	01-Apr-21	03-May-21	306
10010	Permits/Legal/ROW	365	02-Apr-21	01-Apr-22	39
10030	Construction	120	01-Apr-22	16-Sep-22	67
10020	Start & Commission	50	21-Dec-22	28-Feb-23	0
PL5 - PL5 Router Hess Res t		658	23-Jul-20	31-Jan-23	0
11000	Engineering 0% to 90%	128	23-Jul-20	19-Jan-21	79
11040	Engineering 90% to 100%	22	19-Jan-21	18-Feb-21	318
11010	Permits/Legal/ROW	365	20-Jan-21	19-Jan-22	111
11030	Construction	160	19-Jan-22	31-Aug-22	79
11020	Start & Commission	30	21-Dec-22	31-Jan-23	0
PL6- PL6 Castle Pines No. W		752	23-Jul-20	12-Jun-23	0
15000	Engineering 0% to 90%	128	23-Jul-20	19-Jan-21	79
15040	Engineering 90% to 100%	22	19-Jan-21	18-Feb-21	492
15010	Permits/Legal/ROW	365	20-Jan-21	19-Jan-22	111
15030	Construction	80	19-Jan-22	11-May-22	253
15020	Start & Commission	30	02-May-23	12-Jun-23	0



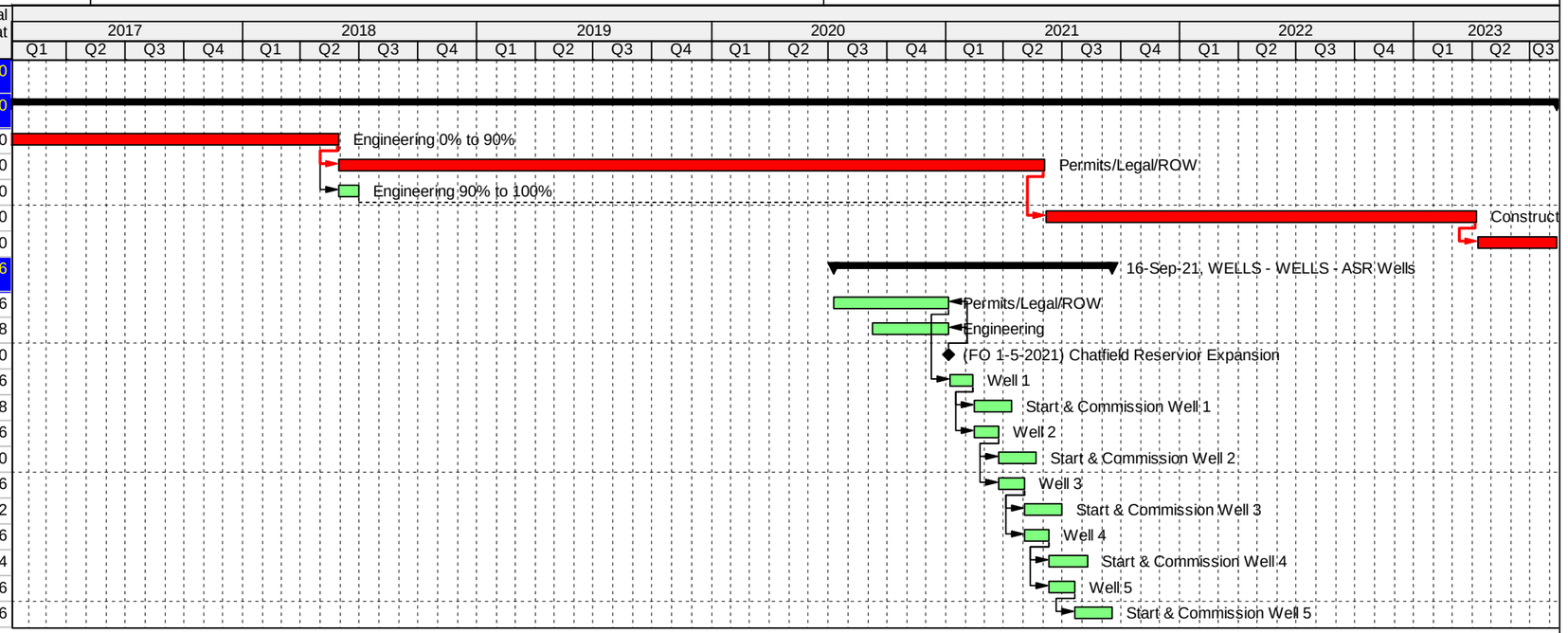
Actual Work Remaining Work Level of effort
Level of Effort Critical Remaining Work Milestone

Alternative 7

WBS View

15-May-15 13:44

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Castle Pines Program Alterna		0			0
RES - RES 2 South Platte		1712	03-Jan-17	11-Aug-23	0
13000	Engineering 0% to 90%	360	03-Jan-17	29-May-18	0
13010	Permits/Legal/ROW	782	30-May-18	04-Jun-21	0
13040	Engineering 90% to 100%	22	30-May-18	29-Jun-18	760
13030	Construction	480	07-Jun-21	07-Apr-23	0
13020	Start & Commission	90	10-Apr-23	11-Aug-23	0
WELLS - WELLS - ASR Wells		310	10-Jul-20	16-Sep-21	496
14010	Permits/Legal/ROW	128	10-Jul-20	05-Jan-21	496
14000	Engineering	86	08-Sep-20	05-Jan-21	678
14120	(FO 1-5-2021) Chatfield Reservior	0		05-Jan-21*	0
14040	Well 1	28	06-Jan-21	12-Feb-21	496
14080	Start & Commission Well 1	42	15-Feb-21	13-Apr-21	608
14050	Well 2	28	15-Feb-21	24-Mar-21	496
14090	Start & Commission Well 2	42	25-Mar-21	21-May-21	580
14060	Well 3	28	25-Mar-21	03-May-21	496
14100	Start & Commission Well 3	42	04-May-21	30-Jun-21	552
14070	Well 4	28	04-May-21	10-Jun-21	496
14110	Start & Commission Well 4	42	11-Jun-21	09-Aug-21	524
14030	Well 5	28	11-Jun-21	20-Jul-21	496
14020	Start & Commission Well 5	42	21-Jul-21	16-Sep-21	496

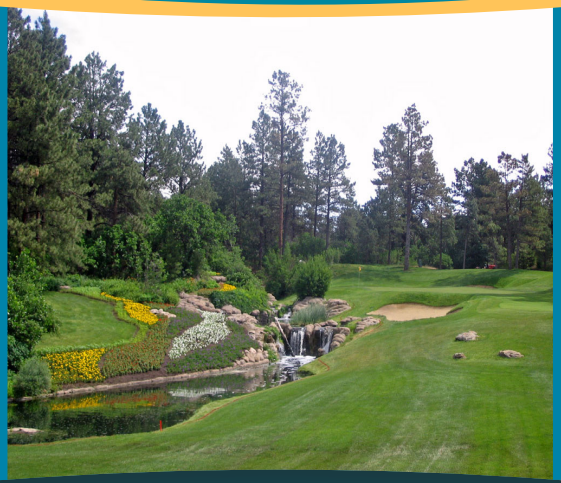


Actual Work | Remaining Work | Level of effort
Level of Effort | Critical Remaining Work | Milestone

Alternative 9

APPENDIX J

Detailed Financial Results for CPN's Top Three Alternatives
Alternate 6



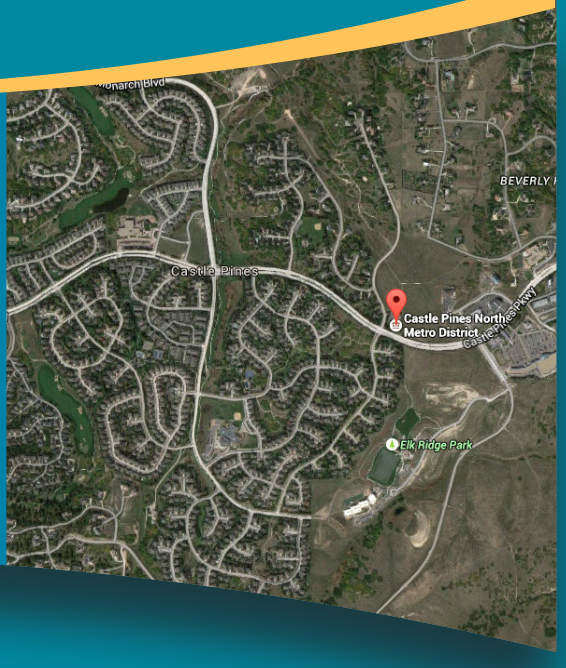


Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Model Summary Results & Balance

Project Description	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015	2016
Ending Fund Balance	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631	$8,350,930
Minimum Fund Balance - Target	872,000	2,151,306	1,233,000	1,551,000	1,897,000	2,536,000	2,396,000
Fund Variance	**4,234,079**	**(307,165)**	**8,283,715**	**3,882,847**	**3,677,811**	**2,792,631**	**5,954,930**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	2.0	2.3	1.5	0.7	0.8	2.9	5.5
Minimum FC Ratio Target	0.0	1.0	0.3	0.4	0.5	0.6	0.7
Adjustments/Actions:							
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-
Revenue Bond Proceeds	-	-	-				
Projected Net Revenues (after debt svc.)	**$2,148,851**	**$1,228,787**	**$11,244,163**	**$842,367**	**$1,041,083**	**$1,508,550**	**$3,268,197**
Proposed Adjustments to Rate Revenues	0.0%	0.0%	0.0%	9.6%	4.0%	7.8%	7.8%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	Projected 2017	2018	2019	2020	2021	Projected 2022	2023	2024
Ending Fund Balance	$10,462,259	$13,777,651	$18,019,945	$22,832,845	$27,562,666	$24,580,845	$31,273,883	$38,123,939
Minimum Fund Balance - Target	2,374,000	2,395,000	2,422,000	2,449,000	2,477,000	2,506,000	2,535,000	2,566,000
Fund Variance	**8,088,259**	**11,382,651**	**15,597,945**	**20,383,845**	**25,085,666**	**22,074,845**	**28,738,883**	**35,557,939**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	6.6	6.5	6.9	7.4	8.0	8.5	7.5	7.5
Minimum FC Ratio Target	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:								
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-	-
Revenue Bond Proceeds								
Projected Net Revenues (after debt svc.)	**$4,087,553**	**$4,464,651**	**$5,001,495**	**$5,592,541**	**$6,242,796**	**$6,957,783**	**$7,743,526**	**$7,928,633**
Proposed Adjustments to Rate Revenues	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	2025	2026	2027	2028	Projected 2029	2030
Ending Fund Balance	$35,945,100	$31,845,405	$62,303,010	$13,353,008	$12,867,569	$12,397,152
Minimum Fund Balance - Target	2,597,000	2,629,000	7,723,858	7,757,858	9,484,858	9,597,858
Fund Variance	**33,348,100**	**29,216,405**	**54,579,153**	**5,595,150**	**3,382,711**	**2,799,294**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.77**	**1.80**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	7.8	6.1	2.2	1.3	1.0	1.0
Minimum FC Ratio Target	1.0	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:						
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-
Revenue Bond Proceeds			87,529,815	-	-	
Projected Net Revenues (after debt svc.)	**$8,585,611**	**$8,802,578**	**$6,863,200**	**$5,613,036**	**$3,857,578**	**$4,003,957**
Proposed Adjustments to Rate Revenues	7.8%	7.8%	7.8%	13.5%	13.5%	2.9%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013
General Inflation Factor					n/a	0.0%	0.0%	0.0%
Demand Growth					0.0%	0.2%	0.3%	0.5%
OPERATING EXPENSES								
Salaries - Salaried		90%	125,859	128,517	144,057	$104,089	$111,159	$114,425
Salaries - Hourly		90%	7,686	13,365	18,289	18,867	16,020	16,139
Salaries - OT and Standby		90%	11,593	6,900	7,427	9,596	10,436	14,586
PERA Employer Contrib.		90%	15,467	18,266	20,615	17,021	17,892	19,231
Unemployment		90%	272	278	338	415	398	402
Workers Comp		90%	1,189	1,585	1,663	1,744	2,154	2,006
Employer Contrib Health Plan		90%	23,547	24,262	32,564	26,978	28,399	26,253
Employer Contrib Medicare		90%	1,992	2,072	2,382	1,912	1,894	2,084
PERA Matchmaker Contributions		90%	2,180	2,078	3,096	2,876	1,952	2,406
Accounting And Payroll		90%				21,803	28,542	31,677
Credit Card Fees		90%	1,492	3,054	6,392	4,316	9,279	7,763
District Management		90%				46,783	46,793	37,577
Professional Services		90%	372	3,180	5,899	2,019	10,141	0
Legal Services		100%	-	-	-	0	0	0
Engineering Services		100%	75,775	29,373	9,593	5,891	36,395	51,657
Software Support		90%	5,514	7,605	5,547	3,441	5,210	7,864
Water Rights - Prof Svcs		100%	85,414	67,333	128,594	202,937	577,403	457,783
Lab Testing		90%	2,831	1,532	3,475	7,627	1,340	1,124
Water Rebates		90%	-	44,859	20,727	16,301	20,000	39,402
Water Auditing		90%	-	-	10,023	19,243	20,000	12,438
Telephone/Alarms		90%	4,986	5,180	5,090	2,825	2,124	5,457
Trash removal		90%	339	644	330	925	942	2,015
Reuse Pumping		90%	81,841	70,217	93,637	67,964	116,817	68,549
Elec for Well Pumping		90%	557,708	460,857	552,012	735,326	703,857	489,145
Elec for WTP		90%	70,850	60,026	85,818	83,406	86,741	68,014
Elec for Booster Pump and Rocky Heights		50%	8,931	11,827	12,876	12,711	12,241	13,579
Memberships/Subscriptions		50%	950	645	703	368	1,233	1,470
Travel/Education/Conferences		90%	1,618	339	1,307	0	739	1,469
Insurance - Property and Liability		90%	7,270	8,082	7,518	9,663	10,551	13,155
Postage and Freight		90%	7,314	5,129	6,743	7,129	7,200	9,000
Printing and Copying		90%	3,085	2,708	4,135	8,255	6,123	4,704
Operating Supplies		90%	5,127	3,531	2,550	3,680	4,337	5,816
Water Meters		90%	37,581	22,430	31,928	38,475	38,737	42,576
Equip Rental		90%	-	-	-	0	0	0
Small Tools		90%	3,542	2,978	801	1,704	2,388	7,381
SMWSA - Base		90%	24,074	24,074	31,685	19,697	2,739	13,333
SMWSA - Participation		90%	-	-	21,093	25,524	29,300	15,000
South Metro Special Projects-Chambers Line		90%						
DougCo Water Res Auth		90%	5,000	10,000	8,500	8,600	10,000	10,750
South Platte Recovery System		0%	6,250	4,322	3,363	3,429	3,429	3,467
Vehicles R&M		90%	4,109	4,217	4,028	3,057	4,035	9,034
Vehicle Fuel Expense		90%	3,438	2,624	3,384	4,597	4,369	3,696
Wells R&M		90%	68,594	75,322	15,834	68,132	25,616	265,420
WTP R&M		90%	53,685	103,040	175,268	89,359	116,772	400,759
Water Dist R&M		90%	72,158	81,675	53,781	47,556	101,455	93,980
Purchased Water from Denver/Pueblo		90%		20,729	-	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%		-	200,000	200,000	200,000	400,000
Centennial Treatment Charge		90%		-	-	0	82	200,533
REMOVED		90%		-	-	0	0	0
REMOVED		90%		-	-	0	0	0
REMOVED		90%		-	-	0	0	0
Rate Study		90%		-	-	0	28,752	11,928
Centennial Zone 4B Expansion Design		90%		-	-	0	0	0
REMOVED		90%		-	-	0	0	0
REMOVED		90%		-	-	0	0	0
IPP Pumping Costs from House to CPN		90%		-	-	0	0	50,910
Bad debts written-off		90%		-	-	0	0	0
Reimbursable Engineering Costs		90%		-	-	0	0	25,304
Reimbursable Legal Costs		90%		-	-	0	0	21,430
ALTERNATIVE 6 O&M Costs		90%		-	-	0	0	0
Chatfield Expansion (1005 AF)		90%		-	-	0	0	0
Centennial Treatment Costs		90%				0	0	0
Plum Creek Reservoir (850 AF)		90%				0	0	0
CPN WTP (5 MGD Capacity)		90%				0	0	0
PS#1 - Plum Creek Intake to PC Res		90%				0	0	0
Pipeline PC PS to PCR		90%				0	0	0
Pipeline - PCR to CPN WTP		90%				0	0	0
PS#2 - Pump Station - PCR to CPN WTP		90%				0	0	0
PS#5 - RHR to CPN WTP		90%				0	0	0
Pipeline - RHR to CPN WTP		90%				0	0	0
ASR		90%				0	0	0
Pipeline - CPN WTP PS to CPN Dist Sys		90%				0	0	0
DENVER BASIN WELLS		90%				0	0	0
Total Operating Expenses			**$1,389,633**	**$1,334,850**	**$1,743,066**	**$1,956,243**	**$2,465,987**	**$3,102,692**
% Change from Previous Year			n/a	-3.9%	30.6%	12.2%	26.1%	25.8%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Budget 2014	Projected 2015	2016	2017	2018	2019
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			0.6%	0.9%	1.9%	1.8%	1.8%	1.8%
OPERATING EXPENSES								
Salaries - Salaried		90%	$151,323	$144,722	$148,612	$152,601	$156,691	$160,887
Salaries - Hourly		90%	16,208	16,600	17,046	17,503	17,972	18,454
Salaries - OT and Standby		90%	9,689	10,500	10,782	11,072	11,368	11,673
PERA Employer Contrib.		90%	22,952	22,101	22,695	23,304	23,929	24,570
Unemployment		90%	503	484	497	510	524	538
Workers Comp		90%	2,776	4,250	4,364	4,481	4,601	4,725
Employer Contrib Health Plan		90%	47,282	38,471	39,505	40,565	41,652	42,768
Employer Contrib Medicare		90%	2,429	2,339	2,402	2,467	2,533	2,600
PERA Matchmaker Contributions		90%	5,026	4,840	4,970	5,103	5,240	5,380
Accounting And Payroll		90%	30,500	33,050	33,938	34,849	35,783	36,741
Credit Card Fees		90%	9,000	10,000	10,269	10,544	10,827	11,117
District Management		90%	0	0	0	0	0	0
Professional Services		90%	4,000	8,000	8,215	8,435	8,662	8,894
Legal Services		100%	0	0	0	0	0	0
Engineering Services		100%	55,000	50,000	51,250	52,531	53,845	55,191
Software Support		90%	10,000	11,000	11,296	11,599	11,910	12,229
Water Rights - Prof Svcs		100%	230,000	230,000	50,000	51,250	52,531	53,845
Lab Testing		90%	4,400	4,400	4,518	4,640	4,764	4,891
Water Rebates		90%	20,000	15,000	15,403	15,817	16,241	16,675
Water Auditing		90%	27,900	27,900	28,650	29,419	30,207	31,016
Telephone/Alarms		90%	8,000	8,000	8,215	8,435	8,662	8,894
Trash removal		90%	1,000	1,000	1,027	1,054	1,083	1,112
Reuse Pumping		90%	70,000	70,000	71,881	73,811	75,789	77,819
Elec for Well Pumping		90%	451,500	450,000	462,094	492,700	505,908	519,453
Elec for WTP		90%	65,000	65,000	66,747	60,719	62,347	64,016
Elec for Booster Pump and Rocky Heights		50%	13,400	13,400	13,861	14,335	14,823	15,325
Memberships/Subscriptions		50%	1,200	1,200	1,241	1,284	1,327	1,372
Travel/Education/Conferences		90%	2,500	3,200	3,286	3,374	3,465	3,557
Insurance - Property and Liability		90%	14,731	16,204	16,640	17,086	17,544	18,014
Postage and Freight		90%	8,100	8,100	8,318	8,541	8,770	9,005
Printing and Copying		90%	11,333	7,000	7,188	7,381	7,579	7,782
Operating Supplies		90%	5,000	6,000	6,161	6,327	6,496	6,670
Water Meters		90%	80,000	70,000	71,881	73,811	75,789	77,819
Equip Rental		90%	0	0	0	0	0	0
Small Tools		90%	2,000	3,000	3,081	3,163	3,248	3,335
SMWSA - Base		90%	13,200	13,200	13,555	13,919	14,292	14,674
SMWSA - Participation		90%	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%						
DougCo Water Res Auth		90%	10,750	10,750	11,039	11,335	11,639	11,951
South Platte Recovery System		0%	3,321	3,500	3,653	3,812	3,976	4,146
Vehicles R&M		90%	2,000	3,500	3,594	3,691	3,789	3,891
Vehicle Fuel Expense		90%	5,000	5,000	5,134	5,272	5,414	5,558
Wells R&M		90%	0	120,000	123,225	17,931	18,412	18,905
WTP R&M		90%	140,000	120,000	123,225	126,532	129,924	133,403
Water Dist R&M		90%	155,000	265,000	165,000	169,429	173,971	178,629
Purchased Water from Denver/Pueblo Centennial		90%	0	0	0	0	0	0
Capacity Readiness Charge (to CIP) Centennial		90%	400,000	400,000	400,000	400,000	400,000	400,000
Treatment Charge		90%	232,658	233,000	239,262	245,684	0	0
		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	30,000	30,000	30,806	31,633	32,481	33,351
Rate Study		90%	0	0	0	0	0	0
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	61,000	66,573	68,362	70,197	72,079	74,009
IPP Pumping Costs from House to CPN		90%	0	0	0	0	0	0
Bad debts written-off		90%	34,250	22,500	0	0	0	0
Reimbursable Engineering Costs		90%	34,250	22,500	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0	0
ALTERNATIVE 6 O&M Costs		90%	0	0	0	0	69,998	71,872
Chatfield Expansion (1005 AF) Centennial		90%	0	0	0	0	171,944	176,548
Treatment Costs		90%	0	0	0	0	0	0
Plum Creek Reservoir (850 AF)		90%	0	0	0	0	0	0
CPN WTP (5 MGD Capacity)		90%	0	0	0	0	0	0
PS#1 - Plum Creek Intake to PC Res Pipeline		90%	0	0	0	0	0	0
PC PS to PCR		90%	0	0	0	0	0	0
Pipeline - PCR to CPN WTP		90%	0	0	0	0	0	0
PS#2 - Pump Station - PCR to CPN WTP		90%	0	0	0	0	0	0
PS#5 - RHR to CPN WTP		90%	0	0	0	0	0	0
Pipeline - RHR to CPN WTP		90%	0	0	0	0	0	0
ASR		90%	0	0	0	0	0	0
Pipeline - CPN WTP PS to CPN Dist Sys		90%	0	0	0	0	0	0
DENVER BASIN WELLS		90%	0	0	0	0	0	0
		90%	0	0	0	0	0	0
Total Operating Expenses			**$2,504,181**	**$2,671,284**	**$2,392,887**	**$2,348,145**	**$2,390,029**	**$2,443,302**
% Change from Previous Year			-19.3%	6.7%	-10.4%	-1.9%	1.8%	2.2%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Projected 2020	2021	2022	2023	2024	2025
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
OPERATING EXPENSES								
Salaries - Salaried		90%	$165,190	$169,607	$174,144	$178,801	$183,583	$188,493
Salaries - Hourly		90%	18,947	19,454	19,974	20,508	21,057	21,620
Salaries - OT and Standby		90%	11,985	12,305	12,635	12,972	13,319	13,676
PERA Employer Contrib.		90%	25,227	25,901	26,594	27,305	28,036	28,785
Unemployment		90%	552	567	582	598	614	630
Workers Comp		90%	4,851	4,981	5,114	5,251	5,391	5,535
Employer Contrib Health Plan		90%	43,911	45,086	46,292	47,530	48,801	50,106
Employer Contrib Medicare		90%	2,670	2,741	2,815	2,890	2,967	3,047
PERA Matchmaker Contributions		90%	5,524	5,672	5,824	5,979	6,139	6,303
Accounting And Payroll		90%	37,724	38,733	39,769	40,832	41,925	43,046
Credit Card Fees		90%	11,414	11,720	12,033	12,355	12,685	13,024
District Management		90%	0	0	0	0	0	0
Professional Services		90%	9,131	9,376	9,626	9,884	10,148	10,420
Legal Services		100%	0	0	0	0	0	0
Engineering Services		100%	56,570	57,985	59,434	60,920	62,443	64,004
Software Support		90%	12,556	12,891	13,236	13,590	13,954	14,327
Water Rights - Prof Svcs		100%	55,191	56,570	57,985	59,434	60,920	62,443
Lab Testing		90%	5,022	5,157	5,294	5,436	5,581	5,731
Water Rebates		90%	17,121	17,579	18,049	18,532	19,028	19,537
Water Auditing		90%	31,846	32,697	33,572	34,470	35,392	36,338
Telephone/Alarms		90%	9,131	9,376	9,626	9,884	10,148	10,420
Trash removal		90%	1,141	1,172	1,203	1,235	1,269	1,302
Reuse Pumping		90%	79,900	82,037	84,231	86,483	88,796	91,171
Elec for Well Pumping		90%	533,346	547,610	562,255	577,292	592,732	608,584
Elec for WTP		90%	65,728	67,486	69,291	71,144	73,047	75,000
Elec for Booster Pump and Rocky Heights		90%	15,842	16,376	16,928	17,499	18,089	18,699
Memberships/Subscriptions		90%	1,419	1,466	1,516	1,567	1,620	1,675
Travel/Education/Conferences		50%	3,653	3,750	3,851	3,954	4,059	4,168
Insurance - Property and Liability		50%	18,496	18,990	19,498	20,020	20,555	21,105
Postage and Freight		90%	9,246	9,493	9,747	10,007	10,275	10,550
Printing and Copying		90%	7,990	8,204	8,423	8,648	8,880	9,117
Operating Supplies		90%	6,849	7,032	7,220	7,413	7,611	7,815
Water Meters		90%	79,900	82,037	84,231	86,483	88,796	91,171
Equip Rental		90%	0	0	0	0	0	0
Small Tools		90%	3,424	3,516	3,610	3,706	3,806	3,907
SMWSA - Base		90%	15,067	15,470	15,883	16,308	16,744	17,192
SMWSA - Participation		90%	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%						
DougCo Water Res Auth		90%	12,270	12,598	12,935	13,281	13,637	14,001
South Platte Recovery System		90%	4,322	4,505	4,696	4,896	5,104	5,320
Vehicles R&M		90%	3,995	4,102	4,212	4,324	4,440	4,559
Vehicle Fuel Expense		90%	5,707	5,860	6,016	6,177	6,343	6,512
Wells R&M		0%	19,411	19,930	20,463	21,010	21,572	22,149
WTP R&M		90%	136,971	140,634	144,395	148,257	152,222	156,293
Water Dist R&M		90%	183,406	188,311	193,347	198,518	203,828	209,279
Purchased Water from Denver/Pueblo Centennial		90%	0	0	0	0	0	0
Capacity Readiness Charge (to CIP) Centennial		90%	400,000	400,000	400,000	400,000	400,000	400,000
Treatment Charge		90%	0	0	0	0	0	0
		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
Rate Study		90%	34,243	35,159	36,099	37,064	38,056	39,073
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%	75,988	78,020	80,107	82,249	84,449	86,708
Bad debts written-off		90%	0	0	0	0	0	0
Reimbursable Engineering Costs		90%	0	0	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0	0
ALTERNATIVE 6 O&M Costs		90%	0	0	0	0	0	0
Chatfield Expansion (1005 AF) Centennial		90%	73,794	75,768	77,794	79,875	82,011	84,204
Treatment Costs		90%	181,269	186,117	191,095	196,206	201,453	206,841
Plum Creek Reservoir (850 AF)		90%	0	0	0	0	0	0
CPN WTP (5 MGD Capacity)		90%	0	0	0	0	0	0
PS#1 - Plum Creek Intake to PC Res		90%	0	0	0	0	0	0
Pipeline PC PS to PCR		90%	0	0	0	0	0	0
Pipeline - PCR to CPN WTP		90%	0	0	0	0	0	0
PS#2 - Pump Station - PCR to CPN WTP		90%	0	0	0	0	0	0
PS#5 - RHR to CPN WTP		90%	0	0	0	0	0	0
Pipeline - RHR to CPN WTP		90%	0	0	0	0	0	0
ASR		90%	0	0	0	0	0	0
Pipeline - CPN WTP PS to CPN Dist Sys		90%	0	0	0	0	0	0
DENVER BASIN WELLS		90%	0	0	0	0	0	0
		90%	0	0	0	0	0	0
Total Operating Expenses			**$2,497,940**	**$2,554,041**	**$2,611,645**	**$2,670,791**	**$2,731,522**	**$2,793,879**
% Change from Previous Year			2.2%	2.2%	2.3%	2.3%	2.3%	2.3%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Projected 2026	2027	2028	2029	2030
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			1.7%	1.7%	1.7%	1.7%	1.7%
OPERATING EXPENSES							
Salaries - Salaried		90%	$193,534	$198,710	$204,024	$209,480	$215,083
Salaries - Hourly		90%	22,198	22,792	23,402	24,027	24,670
Salaries - OT and Standby		90%	14,041	14,417	14,803	15,198	15,605
PERA Employer Contrib.		90%	29,555	30,346	31,157	31,991	32,846
Unemployment		90%	647	665	682	701	719
Workers Comp		90%	5,683	5,835	5,991	6,152	6,316
Employer Contrib Health Plan		90%	51,446	52,822	54,235	55,685	57,174
Employer Contrib Medicare		90%	3,128	3,212	3,298	3,386	3,476
PERA Matchmaker Contributions		90%	6,472	6,645	6,823	7,005	7,193
Accounting And Payroll		90%	44,197	45,379	46,593	47,839	49,118
Credit Card Fees		90%	13,373	13,730	14,098	14,475	14,862
District Management		90%	0	0	0	0	0
Professional Services		90%	10,698	10,984	11,278	11,580	11,889
Legal Services		100%	0	0	0	0	0
Engineering Services		100%	65,604	67,244	68,926	70,649	72,415
Software Support		90%	14,710	15,103	15,507	15,922	16,348
Water Rights - Prof Svcs		100%	64,004	65,604	67,244	68,926	70,649
Lab Testing		90%	5,884	6,041	6,203	6,369	6,539
Water Rebates		90%	20,059	20,596	21,146	21,712	22,293
Water Auditing		90%	37,310	38,308	39,332	40,384	41,464
Telephone/Alarms		90%	10,698	10,984	11,278	11,580	11,889
Trash removal		90%	1,337	1,373	1,410	1,447	1,486
Reuse Pumping		90%	93,609	96,113	98,683	101,323	104,032
Elec for Well Pumping		90%	624,860	641,572	658,730	0	0
Elec for WTP		90%	77,006	79,065	81,180	0	0
Elec for Booster Pump and Rocky Heights		90%	19,329	19,981	20,655	21,352	22,072
Memberships/Subscriptions		50%	1,731	1,789	1,850	1,912	1,977
Travel/Education/Conferences		50%	4,279	4,394	4,511	4,632	4,756
Insurance - Property and Liability		90%	21,669	22,249	22,844	23,455	24,082
Postage and Freight		90%	10,832	11,122	11,419	11,724	12,038
Printing and Copying		90%	9,361	9,611	9,868	10,132	10,403
Operating Supplies		90%	8,024	8,238	8,459	8,685	8,917
Water Meters		90%	93,609	96,113	98,683	101,323	104,032
Equip Rental		90%	0	0	0	0	0
Small Tools		90%	4,012	4,119	4,229	4,342	4,459
SMWSA - Base		90%	17,652	18,124	18,609	19,107	19,618
SMWSA - Participation		90%	0	0	0	0	0
South Metro Special Projects-Chambers Line DougCo		90%					
Water Res Auth		90%	14,376	14,760	15,155	15,560	15,976
South Platte Recovery System		0%	5,546	5,781	6,027	6,283	6,549
Vehicles R&M		90%	4,680	4,806	4,934	5,066	5,202
Vehicle Fuel Expense		90%	6,686	6,865	7,049	7,237	7,431
Wells R&M		90%	22,741	23,349	23,974	0	0
WTP R&M		90%	160,473	164,765	169,171	0	0
Water Dist R&M		90%	214,876	220,623	226,523	232,581	238,801
Purchased Water from Denver/Pueblo Centennial		90%	0	0	0	0	0
Capacity Readiness Charge (to CIP) Centennial		90%	400,000	400,000	400,000	400,000	400,000
Treatment Charge		90%	0	0	0	0	0
		90%	0	0	0	0	0
		90%	0	0	0	0	0
		90%	0	0	0	0	0
REMOVED		90%	0	0	0	0	0
REMOVED		90%	0	0	0	0	0
REMOVED		90%	0	0	0	0	0
Rate Study		90%	40,118	41,191	42,293	43,424	44,585
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0
REMOVED		90%	0	0	0	0	0
REMOVED		90%	0	0	0	0	0
IPP Pumping Costs from House to CPN Bad debts written-off		90%	89,027	91,407	93,852	96,362	98,939
Reimbursable Engineering Costs		90%	0	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0
		90%	0	0	0	0	0
ALTERNATIVE 6 O&M Costs		90%	0	0	0	0	0
Chatfield Expansion (1005 AF) Centennial		90%	86,456	88,768	91,143	93,580	96,083
Treatment Costs		90%	212,373	218,052	223,884	229,872	236,019
Plum Creek Reservoir (850 AF)		90%	0	0	0	186,513	191,501
CPN WTP (5 MGD Capacity)		90%	0	0	0	2,740,989	2,857,326
PS#1 - Plum Creek Intake to PC Res Pipeline		90%	0	0	0	156,861	163,519
PC PS to PCR		90%	0	0	0	5,440	5,671
Pipeline - PCR to CPN WTP		90%	0	0	0	132,410	138,030
PS#2 - Pump Station - PCR to CPN WTP PS#5 - RHR to CPN WTP		90%	0	0	0	369,605	385,292
Pipeline - RHR to CPN WTP		90%	0	0	0	119,014	124,065
ASR		90%	0	0	0	98,173	102,340
Pipeline - CPN WTP PS to CPN Dist Sys		90%	0	0	0	393,413	410,111
DENVER BASIN WELLS		90%	0	0	0	17,620	18,368
		90%	0	0	0	123,338	128,572
Total Operating Expenses			**$2,857,907**	**$2,923,650**	**$2,991,154**	**$6,445,833**	**$6,672,800**
% Change from Previous Year			2.3%	2.3%	2.3%	115.5%	3.5%

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

Project Category / Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Treatment	$0	$1,053,801	$970,415	$39,985	$0	$0	$0	$0
T&D	1,237,548	74,969	0	171,581	25,041	0	55,000	0
Pumping	0	0	0	0	0	0	0	0
General	0	0	1,829,969	0	0	0	31,598	0
Source of Supply	191,588	193,820	0	4,201,024	3,403,934	5,013,350	525,120	504,330
Fire Protection	0	0	0	0	0	0	0	0
Wells	0	954,281	0	70,675	210,000	0	159,000	1,056,000
Storage	69,374	32,303	0	30,469	29,228	22,966	35,000	0
RW Alternative	0	0	0	0	0	0	100,000	2,000,000
Unused	0	0	0	0	0	0	0	0
Grand Total	**$1,498,510**	**$2,309,174**	**$2,800,384**	**$4,513,734**	**$3,668,202**	**$5,036,316**	**$905,718**	**$3,560,330**
Annual Replacement Funding Budget	$0	$1,110,000	$1,070,000	$1,010,000	$1,120,000	$1,210,000	$1,340,000	$517,078
Annual Inflation Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Future Value Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

	Projected				Projected			
Project Category / Description	2016	2017	2018	2019	2020	2021	2022	2023
Treatment	$0	$0	$0	$0	$0	$0	$0	$0
T&D	0	0	0	768,737	46,485	0	0	1,067,239
Pumping	0	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0	0
Source of Supply	0	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0	0
Wells	0	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0	0
RW Alternative	2,050,000	4,338,738	1,156,529	0	745,409	1,528,089	9,955,243	0
Unused	0	0	0	0	0	0	0	0
Grand Total	**$2,050,000**	**$4,338,738**	**$1,156,529**	**$768,737**	**$791,895**	**$1,528,089**	**$9,955,243**	**$1,067,239**
Annual Replacement Funding Budget	$595,042	$642,794	$737,925	$768,737	$791,895	$815,751	$854,928	$1,067,239
Annual Inflation Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.0250	1.0506	1.0769	1.1038	1.1314	1.1597	1.1887	1.2184

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

				Projected			
Project Category / Description	2024	2025	2026	2027	2028	2029	2030
Treatment	$0	$0	$0	$0	$0	$0	$0
T&D	1,099,390	0	0	0	0	4,350,881	4,481,951
Pumping	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0
Source of Supply	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0
Wells	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0
RW Alternative	0	16,895,228	12,922,604	69,025,504	54,585,729	0	0
Unused	0	0	0	0	0	0	0
Grand Total	**$1,099,390**	**$16,895,228**	**$12,922,604**	**$69,025,504**	**$54,585,729**	**$4,350,881**	**$4,481,951**
Annual Replacement Funding Budget	$1,099,390	$1,132,509	$1,489,761	$1,769,014	$3,201,063	$4,350,881	$4,481,951
Annual Inflation Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.2489	1.2801	1.3121	1.3449	1.3785	1.4130	1.4483

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

Project Description	Category (select)	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015	Proje 2016
Impact/Development Fee	dev. Fees	597,500	112,500	248,700	412,895	250,500	150,500	58,000	58,000	825,000
Infrastructure Fee	other	89,100	40,500	0	0					
Water Connect Fee	dev. Fees	0	448,000							
General Fund Transfer	other	375,000	375,000	0	0	-	-	-	-	-
IREA Reimbursement	other						211,181	36,071	35,000	35,000
CWCB Loan for Chatfield Project	other								1,800,000	1,800,000
COP Transfer to pay for Interconnect Project	other					10,364,205				
Power Rebate	other				19,218					
Transfer from Stormwater to Water to balance assets	other	`			-	-				
Insurance Proceeds	other					87,300	103,101	-		
Sale of Assets	other									
Total		$1,061,600	$976,000	$248,700	$432,113	$10,702,005	$464,782	$94,071	$1,893,000	$2,660,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

	ected			Projected				
Project Description	2017	2018	2019	2020	2021	2022	2023	2024
Impact/Development Fee	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Infrastructure Fee								
Water Connect Fee								
General Fund Transfer	-	-	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
CWCB Loan for Chatfield Project	2,356,871							
COP Transfer to pay for Interconnect Project								
Power Rebate								
Transfer from Stormwater to Water to balance assets								
Insurance Proceeds								
Sale of Assets								
Total	$3,491,871	$1,135,000	$1,135,000	$1,135,000	$1,135,000	$1,135,000	$1,135,000	$585,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

		Projected				
Project Description	2025	2026	2027	2028	2029	2030
Impact/Development Fee	495,000	0	0	0	0	0
Infrastructure Fee						
Water Connect Fee						
General Fund Transfer	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	
CWCB Loan for Chatfield Project						
COP Transfer to pay for Interconnect Project						
Power Rebate						
Transfer from Stormwater to Water to balance assets						
Insurance Proceeds						
Sale of Assets	6,108,563					
Total	$6,638,563	$35,000	$35,000	$35,000	$35,000	$0

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Rate of Return on Avg. Fund Balance	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override			0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$3,551,302	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811
Sources of Funds								
Retail Rate Revenues	3,198,028	2,996,554	3,522,276	3,539,240	3,607,538	3,471,350	3,307,880	3,992,421
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	183,478	177,980	140,234	285,909	232,353	135,599	143,312	94,412
Projected Debt Proceeds	0	0	0	0	0	0	0	0
Total Other Capital Inflows	464,100	415,500	0	19,218	10,451,505	314,282	36,071	1,835,000
Total Development Fees	597,500	560,500	248,700	412,895	250,500	150,500	58,000	58,000
Interest/Investment Earnings	112,145	21,967	10,725	3,791	9,314	7,980	5,600	5,600
Total Sources of Funds	$4,555,251	$4,172,501	$3,921,935	$4,261,053	$14,551,209	$4,079,711	$3,550,863	$5,985,433
Uses of Funds								
Operating and Maintenance Expenses	$1,389,633	$1,334,850	$1,743,066	$1,956,243	$2,465,987	$3,102,692	$2,504,181	$2,671,284
Debt Service Payments - Outstanding Bonds	0	0	19,293	1,053,014	744,446	23,572	0	0
Debt Service Payments - Projected Issues	0	0	0	0	0	0	0	0
Capital Project Costs	1,498,510	2,309,174	2,800,384	4,513,734	3,668,202	5,036,316	905,718	3,560,330
Costs of Bond Issuance	0	0	0	0	0	0	0	0
Year - End Adjustments								
Total Uses of Funds	$2,888,143	$3,644,024	$4,562,743	$7,522,991	$6,878,635	$8,162,580	$3,409,899	$6,231,614
Total Change in Fund Balance	$1,667,108	$528,477	($640,808)	($3,261,938)	$7,672,574	($4,082,868)	$140,965	($246,180)
Available Fund Balance (net of required reserves)	$4,523,410	$5,079,887	$4,234,079	($307,165)	$8,283,715	$3,882,847	$3,677,811	$2,792,631
Ending Fund Balance	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$5,328,631	$8,350,930	$10,462,259	$13,777,651	$18,019,945	$22,832,845	$27,562,666	$24,580,845
Sources of Funds								
Retail Rate Revenues	4,601,672	5,283,456	5,821,168	6,409,754	7,053,894	7,758,689	8,529,703	9,373,000
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	199,412	200,912	202,427	203,957	205,503	207,064	208,640	210,232
Projected Debt Proceeds	0	0	0	0	0	0	0	0
Total Other Capital Inflows	1,835,000	2,391,871	35,000	35,000	35,000	35,000	35,000	35,000
Total Development Fees	825,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Interest/Investment Earnings	4,103	5,642	7,270	9,536	12,252	15,114	15,638	16,751
Total Sources of Funds	$7,465,187	$8,981,880	$7,165,865	$7,758,248	$8,406,649	$9,115,867	$9,888,981	$10,734,984
Uses of Funds								
Operating and Maintenance Expenses	$2,392,887	$2,348,145	$2,390,029	$2,443,302	$2,497,940	$2,554,041	$2,611,645	$2,670,791
Debt Service Payments - Outstanding Bonds	0	183,669	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	0	0	0	0	0	0	0	0
Capital Project Costs	2,050,000	4,338,738	1,156,529	768,737	791,895	1,528,089	9,955,243	1,067,239
Costs of Bond Issuance	0	0	0	0	0	0	0	0
Year - End Adjustments								
Total Uses of Funds	$4,442,887	$6,870,552	$3,850,473	$3,515,953	$3,593,750	$4,386,045	$12,870,803	$4,041,946
Total Change in Fund Balance	$3,022,300	$2,111,329	$3,315,392	$4,242,294	$4,812,899	$4,729,822	($2,981,822)	$6,693,038
Available Fund Balance (net of required reserves)	$5,954,930	$8,088,259	$11,382,651	$15,597,945	$20,383,845	$25,085,666	$22,074,845	$28,738,883
Ending Fund Balance	$8,350,930	$10,462,259	$13,777,651	$18,019,945	$22,832,845	$27,562,666	$24,580,845	$31,273,883

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	2024	2025	2026	2027	2028	2029	2030
				Projected			
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$31,273,883	$38,123,939	$35,945,100	$31,845,405	$62,303,010	$13,353,008	$12,867,569
Sources of Funds							
Retail Rate Revenues	10,167,229	10,939,941	11,714,295	12,542,003	14,059,670	15,757,201	16,163,840
Wholesale/Contract Revenues	0	0	0	0	0	0	0
Other Revenues	211,841	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	0	93,466,971	0	0	0
Total Other Capital Inflows	35,000	6,143,563	35,000	35,000	35,000	35,000	0
Total Development Fees	550,000	495,000	0	0	0	0	0
Interest/Investment Earnings	20,813	22,214	20,331	28,236	22,690	7,864	7,577
Total Sources of Funds	$10,984,883	$17,814,184	$11,984,731	$106,288,973	$14,335,796	$16,020,190	$16,393,250
Uses of Funds							
Operating and Maintenance Expenses	$2,731,522	$2,793,879	$2,857,907	$2,923,650	$2,991,154	$6,445,833	$6,672,800
Debt Service Payments - Outstanding Bonds	303,915	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	0	0	0	2,703,000	5,405,000	5,405,000	5,405,000
Capital Project Costs	1,099,390	16,895,228	12,922,604	69,025,504	54,585,729	4,350,881	4,481,951
Costs of Bond Issuance	0	0	0	875,298	0	0	0
Year - End Adjustments							
Total Uses of Funds	$4,134,827	$19,993,022	$16,084,426	$75,831,368	$63,285,798	$16,505,629	$16,863,667
Total Change in Fund Balance	$6,850,056	($2,178,839)	($4,099,695)	$30,457,605	($48,950,003)	($485,439)	($470,417)
Available Fund Balance (net of required reserves)	$35,557,939	$33,348,100	$29,216,405	$54,579,153	$5,595,150	$3,382,711	$2,799,294
Ending Fund Balance	$38,123,939	$35,945,100	$31,845,405	$62,303,010	$13,353,008	$12,867,569	$12,397,152

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$0	$0	$0
Operating Reserve	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,252,000	$1,336,000
Well Reserve Fund							645,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,897,000	$2,536,000

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$0	$0	$0
Operating Reserve	$1,196,000	$1,174,000	$1,195,000	$1,222,000	$1,249,000	$1,277,000	$1,306,000	$1,335,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$2,396,000	$2,374,000	$2,395,000	$2,422,000	$2,449,000	$2,477,000	$2,506,000	$2,535,000

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

				Projected			
Project Description	2024	2025	2026	2027	2028	2029	2030
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$5,061,858	$5,061,858	$5,061,858	$5,061,858
Operating Reserve	$1,366,000	$1,397,000	$1,429,000	$1,462,000	$1,496,000	$3,223,000	$3,336,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund							
Total	$2,566,000	$2,597,000	$2,629,000	$7,723,858	$7,757,858	$9,484,858	$9,597,858

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash-Needs Revenue Requirements

Project Description	Estimated 2013	Budget 2014	Projected 2015	2016	2017	2018
Operating and Maintenance Expenses	$3,102,692	$2,504,181	$2,671,284	$2,392,887	$2,348,145	$2,390,029
Annual Debt Service - Outstanding Debt	23,572	0	0	0	183,669	303,915
Annual Debt-Service - Projected Issues	0	0	0	0	0	0
Capital Projects	5,036,316	905,718	3,560,330	2,050,000	4,338,738	1,156,529
Bond Issuance Costs	0	0	0	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	(4,082,868)	140,965	(246,180)	3,022,300	2,111,329	3,315,392
Total Revenue Requirement	$4,079,711	$3,550,863	$5,985,433	$7,465,187	$8,981,880	$7,165,865
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	135,599	143,312	94,412	199,412	200,912	202,427
Projected Debt Proceeds	0	0	0	0	0	0
Total Other Capital Inflows	314,282	36,071	1,835,000	1,835,000	2,391,871	35,000
Total Development Fees	150,500	58,000	58,000	825,000	1,100,000	1,100,000
Interest/Investment Earnings	7,980	5,600	5,600	4,103	5,642	7,270
Total Non-Rate Related Revenue/Income	$608,361	$242,983	$1,993,012	$2,863,515	$3,698,425	$1,344,697
Required User Charge Revenue	$3,471,350	$3,307,880	$3,992,421	$4,601,672	$5,283,456	$5,821,168

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash-Needs Revenue Requirements

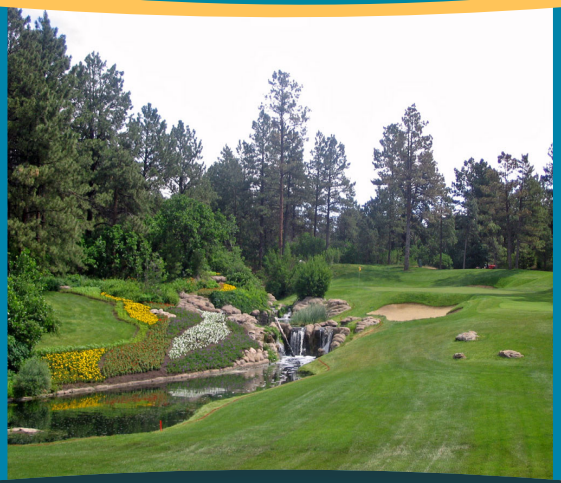
Project Description	Projected 2019	2020	2021	2022	2023	2024
Operating and Maintenance Expenses	$2,443,302	$2,497,940	$2,554,041	$2,611,645	$2,670,791	$2,731,522
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	0	0	0	0	0	0
Capital Projects	768,737	791,895	1,528,089	9,955,243	1,067,239	1,099,390
Bond Issuance Costs	0	0	0	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	4,242,294	4,812,899	4,729,822	(2,981,822)	6,693,038	6,850,056
Total Revenue Requirement	$7,758,248	$8,406,649	$9,115,867	$9,888,981	$10,734,984	$10,984,883
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	203,957	205,503	207,064	208,640	210,232	211,841
Projected Debt Proceeds	0	0	0	0	0	0
Total Other Capital Inflows	35,000	35,000	35,000	35,000	35,000	35,000
Total Development Fees	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Interest/Investment Earnings	9,536	12,252	15,114	15,638	16,751	20,813
Total Non-Rate Related Revenue/Income	$1,348,493	$1,352,755	$1,357,178	$1,359,278	$1,361,983	$817,654
Required User Charge Revenue	$6,409,754	$7,053,894	$7,758,689	$8,529,703	$9,373,000	$10,167,229

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash-Needs Revenue Requirements

Project Description	2025	2026	2027	2028	2029	2030
			Projected			
Operating and Maintenance Expenses	$2,793,879	$2,857,907	$2,923,650	$2,991,154	$6,445,833	$6,672,800
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	0	0	2,703,000	5,405,000	5,405,000	5,405,000
Capital Projects	16,895,228	12,922,604	69,025,504	54,585,729	4,350,881	4,481,951
Bond Issuance Costs	0	0	875,298	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	(2,178,839)	(4,099,695)	30,457,605	(48,950,003)	(485,439)	(470,417)
Total Revenue Requirement	$17,814,184	$11,984,731	$106,288,973	$14,335,796	$16,020,190	$16,393,250
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	93,466,971	0	0	0
Total Other Capital Inflows	6,143,563	35,000	35,000	35,000	35,000	0
Total Development Fees	495,000	0	0	0	0	0
Interest/Investment Earnings	22,214	20,331	28,236	22,690	7,864	7,577
Total Non-Rate Related Revenue/Income	$6,874,242	$270,436	$93,746,969	$276,126	$262,990	$229,410
Required User Charge Revenue	$10,939,941	$11,714,295	$12,542,003	$14,059,670	$15,757,201	$16,163,840

APPENDIX J

Detailed Financial Results for CPN's Top Three Alternatives
Alternate 7



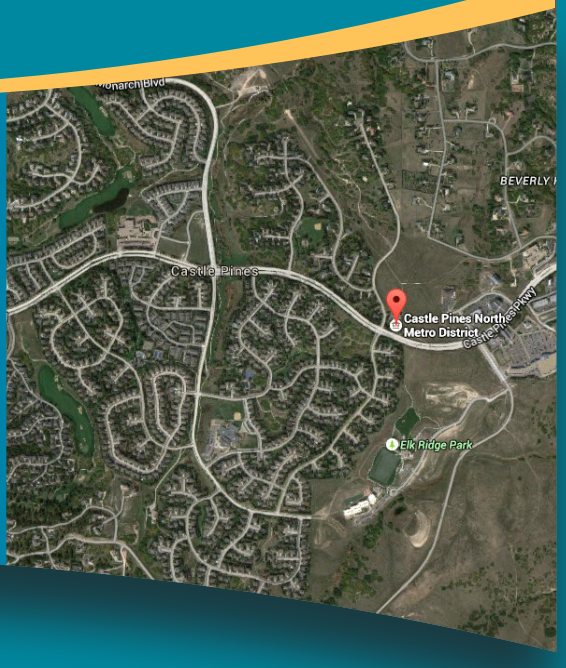


Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Model Summary Results & Balance

Project Description	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015	2016
Ending Fund Balance	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631	$8,577,189
Minimum Fund Balance - Target	872,000	2,151,306	1,233,000	1,551,000	1,897,000	2,536,000	2,396,000
Fund Variance	**4,234,079**	**(307,165)**	**8,283,715**	**3,882,847**	**3,677,811**	**2,792,631**	**6,181,189**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	2.0	2.3	1.5	0.7	0.8	2.9	5.9
Minimum FC Ratio Target	0.0	1.0	0.3	0.4	0.5	0.6	0.7
Adjustments/Actions:							
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-
Revenue Bond Proceeds	-	-	-				
Projected Net Revenues (after debt svc.)	**$2,148,851**	**$1,228,787**	**$11,244,163**	**$842,367**	**$1,041,083**	**$1,508,550**	**$3,494,388**
Proposed Adjustments to Rate Revenues	0.0%	0.0%	0.0%	9.6%	4.0%	7.8%	13.3%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	Projected 2017	2018	2019	2020	2021	Projected 2022	2023	2024
Ending Fund Balance	$11,521,247	$15,867,764	$14,706,395	$9,761,522	$84,580,627	$13,222,865	$11,383,858	$10,459,184
Minimum Fund Balance - Target	2,374,000	2,519,000	2,549,000	2,579,000	8,760,184	8,792,184	10,353,184	10,459,184
Fund Variance	**9,147,247**	**13,348,764**	**12,157,395**	**7,182,522**	**75,820,443**	**4,430,681**	**1,030,674**	**0**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.33**	**1.49**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	7.4	7.3	8.4	8.2	1.9	1.2	0.8	0.9
Minimum FC Ratio Target	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:								
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-	-
Revenue Bond Proceeds					106,331,893			
Projected Net Revenues (after debt svc.)	**$4,594,498**	**$5,069,557**	**$6,021,396**	**$7,117,103**	**$5,094,415**	**$3,260,101**	**$1,868,877**	**$2,895,961**
Proposed Adjustments to Rate Revenues	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	2025	2026	2027	2028	Projected 2029	2030
Ending Fund Balance	$10,568,184	$10,682,184	$10,818,681	$10,972,943	$11,139,930	$11,279,273
Minimum Fund Balance - Target	10,568,184	10,682,184	10,800,184	10,923,184	11,051,184	11,183,184
Fund Variance	**0**	**0**	**18,497**	**49,759**	**88,746**	**96,089**
Debt Service Coverage - ALL DEBT	**1.66**	**1.68**	**1.70**	**1.73**	**1.75**	**1.76**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	1.0	1.0	1.0	1.0	1.0	1.0
Minimum FC Ratio Target	1.0	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:						
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-
Revenue Bond Proceeds						
Projected Net Revenues (after debt svc.)	**$4,045,173**	**$4,168,874**	**$4,313,641**	**$4,457,349**	**$4,599,806**	**$4,705,807**
Proposed Adjustments to Rate Revenues	9.9%	5.7%	2.4%	2.4%	2.4%	2.4%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014
General Inflation Factor					n/a	0.0%	0.0%	0.0%	2.5%
Demand Growth					0.0%	0.2%	0.3%	0.5%	0.6%
OPERATING EXPENSES									
Salaries - Salaried		90%	125,859	128,517	144,057	$104,089	$111,159	$114,425	$151,323
Salaries - Hourly		90%	7,686	13,365	18,289	18,867	16,020	16,139	16,208
Salaries - OT and Standby		90%	11,593	6,900	7,427	9,596	10,436	14,586	9,689
PERA Employer Contrib.		90%	15,467	18,266	20,615	17,021	17,892	19,231	22,952
Unemployment		90%	272	278	338	415	398	402	503
Workers Comp		90%	1,189	1,585	1,663	1,744	2,154	2,006	2,776
Employer Contrib Health Plan		90%	23,547	24,262	32,564	26,978	28,399	26,253	47,282
Employer Contrib Medicare		90%	1,992	2,072	2,382	1,912	1,894	2,084	2,429
PERA Matchmaker Contributions		90%	2,180	2,078	3,096	2,876	1,952	2,406	5,026
Accounting And Payroll		90%				21,803	28,542	31,677	30,500
Credit Card Fees		90%	1,492	3,054	6,392	4,316	9,279	7,763	9,000
District Management		90%				46,783	46,793	37,577	0
Professional Services		90%	372	3,180	5,899	2,019	10,141	0	4,000
Legal Services		100%	-	-	-	0	0	0	0
Engineering Services		100%	75,775	29,373	9,593	5,891	36,395	51,657	55,000
Software Support		90%	5,514	7,605	5,547	3,441	5,210	7,864	10,000
Water Rights - Prof Svcs		100%	85,414	67,333	128,594	202,937	577,403	457,783	230,000
Lab Testing		90%	2,831	1,532	3,475	7,627	1,340	1,124	4,400
Water Rebates		90%	-	44,859	20,727	16,301	20,000	39,402	20,000
Water Auditing		90%	-	-	10,023	19,243	20,000	12,438	27,900
Telephone/Alarms		90%	4,986	5,180	5,090	2,825	2,124	5,457	8,000
Trash removal		90%	339	644	330	925	942	2,015	1,000
Reuse Pumping		90%	81,841	70,217	93,637	67,964	116,817	68,549	70,000
Elec for Well Pumping		90%	557,708	460,857	552,012	735,326	703,857	489,145	451,500
Elec for WTP		90%	70,850	60,026	85,818	83,406	86,741	68,014	65,000
Elec for Booster Pump and Rocky Heights		50%	8,931	11,827	12,876	12,711	12,241	13,579	13,400
Memberships/Subscriptions		50%	950	645	703	368	1,233	1,470	1,200
Travel/Education/Conferences		90%	1,618	339	1,307	0	739	1,469	2,500
Insurance - Property and Liability		90%	7,270	8,082	7,518	9,663	10,551	13,155	14,731
Postage and Freight		90%	7,314	5,129	6,743	7,129	7,200	9,000	8,100
Printing and Copying		90%	3,085	2,708	4,135	8,255	6,123	4,704	11,333
Operating Supplies		90%	5,127	3,531	2,550	3,680	4,337	5,816	5,000
Water Meters		90%	37,581	22,430	31,928	38,475	38,737	42,576	80,000
Equip Rental		90%	-	-	-	0	0	0	0
Small Tools		90%	3,542	2,978	801	1,704	2,388	7,381	2,000
SMWSA - Base		90%	24,074	24,074	31,685	19,697	2,739	13,333	13,200
SMWSA - Participation		90%	-	-	21,093	25,524	29,300	15,000	0
South Metro Special Projects-Chambers Line		90%							
DougCo Water Res Auth		90%	5,000	10,000	8,500	8,600	10,000	10,750	10,750
South Platte Recovery System		0%	6,250	4,322	3,363	3,429	3,429	3,467	3,321
Vehicles R&M		90%	4,109	4,217	4,028	3,057	4,035	9,034	2,000
Vehicle Fuel Expense		90%	3,438	2,624	3,384	4,597	4,369	3,696	5,000
Wells R&M		90%	68,594	75,322	15,834	68,132	25,616	265,420	0
WTP R&M		90%	53,685	103,040	175,268	89,359	116,772	400,759	140,000
Water Dist R&M		90%	72,158	81,675	53,781	47,556	101,455	93,980	155,000
Purchased Water from Denver/Pueblo		90%		20,729	-	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%		-	200,000	200,000	200,000	400,000	400,000
Centennial Treatment Charge		90%		-	-	0	82	200,533	232,658
REMOVED		90%		-	-	0	0	0	0
REMOVED		90%		-	-	0	0	0	0
REMOVED		90%		-	-	0	0	0	0
Rate Study		90%		-	-	0	28,752	11,928	30,000
Centennial Zone 4B Expansion Design		90%		-	-	0	0	0	0
REMOVED		90%		-	-	0	0	0	0
REMOVED		90%		-	-	0	0	0	0
IPP Pumping Costs from House to CPN		90%		-	-	0	0	50,910	61,000
Bad debts written-off		90%		-	-	0	0	0	0
Reimbursable Engineering Costs		90%		-	-	0	0	25,304	34,250
Reimbursable Legal Costs		90%		-	-	0	0	21,430	34,250
ALTERNATIVE 7 O&M Costs		90%		-	-	0	0	0	0
Chatfield Expansion (1005 AF)		90%		-	-	0	0	0	0
Centennial Treatment Costs		90%				0	0	0	0
Reuter-Hess Expansion (No Longer Needed)		90%				0	0	0	0
CPN WTP (5 MGD Capacity)		90%				0	0	0	0
PS#3 - Plum Creek Intake to Booster PS		90%				0	0	0	0
Pipeline: Plum Creek to Booster PS		90%				0	0	0	0
PS#4 - Booster PS to RH Res		90%				0	0	0	0
Pipeline - PCR to RHR		90%				0	0	0	0
PS#5 - RHR to CPN WTP		90%				0	0	0	0
Pipeline - RHR to CPN WTP		90%				0	0	0	0
ASR		90%				0	0	0	0
Pipeline - CPN WTP PS to CPN Dist Sys		90%				0	0	0	0
DENVER BASIN WELLS		90%				0	0	0	0
Total Operating Expenses			**$1,389,633**	**$1,334,850**	**$1,743,066**	**$1,956,243**	**$2,465,987**	**$3,102,692**	**$2,504,181**
% Change from Previous Year			n/a	-3.9%	30.6%	12.2%	26.1%	25.8%	-19.3%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Projected 2015	2016	2017	2018	Projected 2019	2020	2021	2022
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			0.9%	1.9%	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%
OPERATING EXPENSES										
Salaries - Salaried		90%	$144,722	$148,612	$152,601	$156,691	$160,887	$165,190	$169,607	$174,144
Salaries - Hourly		90%	16,600	17,046	17,503	17,972	18,454	18,947	19,454	19,974
Salaries - OT and Standby		90%	10,500	10,782	11,072	11,368	11,673	11,985	12,305	12,635
PERA Employer Contrib.		90%	22,101	22,695	23,304	23,929	24,570	25,227	25,901	26,594
Unemployment		90%	484	497	510	524	538	552	567	582
Workers Comp		90%	4,250	4,364	4,481	4,601	4,725	4,851	4,981	5,114
Employer Contrib Health Plan		90%	38,471	39,505	40,565	41,652	42,768	43,911	45,086	46,292
Employer Contrib Medicare		90%	2,339	2,402	2,467	2,533	2,600	2,670	2,741	2,815
PERA Matchmaker Contributions		90%	4,840	4,970	5,103	5,240	5,380	5,524	5,672	5,824
Accounting And Payroll		90%	33,050	33,938	34,849	35,783	36,741	37,724	38,733	39,769
Credit Card Fees		90%	10,000	10,269	10,544	10,827	11,117	11,414	11,720	12,033
District Management		90%	0	0	0	0	0	0	0	0
Professional Services		90%	8,000	8,215	8,435	8,662	8,894	9,131	9,376	9,626
Legal Services		100%	0	0	0	0	0	0	0	0
Engineering Services		100%	50,000	51,250	52,531	53,845	55,191	56,570	57,985	59,434
Software Support		90%	11,000	11,296	11,599	11,910	12,229	12,556	12,891	13,236
Water Rights - Prof Svcs		100%	230,000	50,000	51,250	52,531	53,845	55,191	56,570	57,985
Lab Testing		90%	4,400	4,518	4,640	4,764	4,891	5,022	5,157	5,294
Water Rebates		90%	15,000	15,403	15,817	16,241	16,675	17,121	17,579	18,049
Water Auditing		90%	27,900	28,650	29,419	30,207	31,016	31,846	32,697	33,572
Telephone/Alarms		90%	8,000	8,215	8,435	8,662	8,894	9,131	9,376	9,626
Trash removal		90%	1,000	1,027	1,054	1,083	1,112	1,141	1,172	1,203
Reuse Pumping		90%	70,000	71,881	73,811	75,789	77,819	79,900	82,037	84,231
Elec for Well Pumping		90%	450,000	462,094	492,700	505,908	519,453	533,346	547,610	562,255
Elec for WTP		90%	65,000	66,747	60,719	62,347	64,016	65,728	67,486	69,291
Elec for Booster Pump and Rocky Heights		50%	13,400	13,861	14,335	14,823	15,325	15,842	16,376	16,928
Memberships/Subscriptions		50%	1,200	1,241	1,284	1,327	1,372	1,419	1,466	1,516
Travel/Education/Conferences		90%	3,200	3,286	3,374	3,465	3,557	3,653	3,750	3,851
Insurance - Property and Liability		90%	16,204	16,640	17,086	17,544	18,014	18,496	18,990	19,498
Postage and Freight		90%	8,100	8,318	8,541	8,770	9,005	9,246	9,493	9,747
Printing and Copying		90%	7,000	7,188	7,381	7,579	7,782	7,990	8,204	8,423
Operating Supplies		90%	6,000	6,161	6,327	6,496	6,670	6,849	7,032	7,220
Water Meters		90%	70,000	71,881	73,811	75,789	77,819	79,900	82,037	84,231
Equip Rental		90%	0	0	0	0	0	0	0	0
Small Tools		90%	3,000	3,081	3,163	3,248	3,335	3,424	3,516	3,610
SMWSA - Base		90%	13,200	13,555	13,919	14,292	14,674	15,067	15,470	15,883
SMWSA - Participation		90%	0	0	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%								
DougCo Water Res Auth		90%	10,750	11,039	11,335	11,639	11,951	12,270	12,598	12,935
South Platte Recovery System		0%	3,500	3,653	3,812	3,976	4,146	4,322	4,505	4,696
Vehicles R&M		90%	3,500	3,594	3,691	3,789	3,891	3,995	4,102	4,212
Vehicle Fuel Expense		90%	5,000	5,134	5,272	5,414	5,558	5,707	5,860	6,016
Wells R&M		90%	120,000	123,225	17,931	18,412	18,905	19,411	19,930	20,463
WTP R&M		90%	120,000	123,225	126,532	129,924	133,403	136,971	140,634	144,395
Water Dist R&M		90%	265,000	165,000	169,429	173,971	178,629	183,406	188,311	193,347
Purchased Water from Denver/Pueblo		90%	0	0	0	0	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Centennial Treatment Charge		90%	233,000	239,262	245,684	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
Rate Study		90%	30,000	30,806	31,633	32,481	33,351	34,243	35,159	36,099
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%	66,573	68,362	70,197	72,079	74,009	75,988	78,020	80,107
Bad debts written-off		90%	0	0	0	0	0	0	0	0
Reimbursable Engineering Costs		90%	22,500	0	0	0	0	0	0	0
Reimbursable Legal Costs		90%	22,500	0	0	0	0	0	0	0
ALTERNATIVE 7 O&M Costs		90%	0	0	0	0	0	0	0	0
Chatfield Expansion (1005 AF)		90%	0	0	0	69,998	71,872	73,794	75,768	77,794
Centennial Treatment Costs		90%	0	0	0	419,333	430,560	442,075	453,898	466,038
Reuter-Hess Expansion (No Longer Needed)		90%	0	0	0	0	0	0	0	0
CPN WTP (5 MGD Capacity)		90%	0	0	0	0	0	0	0	0
PS#3 - Plum Creek Intake to Booster PS		90%	0	0	0	0	0	0	0	0
Pipeline: Plum Creek to Booster PS		90%	0	0	0	0	0	0	0	0
PS#4 - Booster PS to RH Res		90%	0	0	0	0	0	0	0	0
Pipeline - PCR to RHR		90%	0	0	0	0	0	0	0	0
PS#5 - RHR to CPN WTP		90%	0	0	0	0	0	0	0	0
Pipeline - RHR to CPN WTP		90%	0	0	0	0	0	0	0	0
ASR		90%	0	0	0	0	0	0	0	0
Pipeline - CPN WTP PS to CPN Dist Sys		90%	0	0	0	0	0	0	0	0
DENVER BASIN WELLS		90%	0	0	0	0	0	0	0	0
Total Operating Expenses			**$2,671,284**	**$2,392,887**	**$2,348,145**	**$2,637,417**	**$2,697,314**	**$2,758,746**	**$2,821,822**	**$2,886,587**
% Change from Previous Year			6.7%	-10.4%	-1.9%	12.3%	2.3%	2.3%	2.3%	2.3%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	2023	2024	2025	2026	2027	2028	2029	2030
			Projected							
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
OPERATING EXPENSES										
Salaries - Salaried		90%	$178,801	$183,583	$188,493	$193,534	$198,710	$204,024	$209,480	$215,083
Salaries - Hourly		90%	20,508	21,057	21,620	22,198	22,792	23,402	24,027	24,670
Salaries - OT and Standby		90%	12,972	13,319	13,676	14,041	14,417	14,803	15,198	15,605
PERA Employer Contrib.		90%	27,305	28,036	28,785	29,555	30,346	31,157	31,991	32,846
Unemployment		90%	598	614	630	647	665	682	701	719
Workers Comp		90%	5,251	5,391	5,535	5,683	5,835	5,991	6,152	6,316
Employer Contrib Health Plan		90%	47,530	48,801	50,106	51,446	52,822	54,235	55,685	57,174
Employer Contrib Medicare		90%	2,890	2,967	3,047	3,128	3,212	3,298	3,386	3,476
PERA Matchmaker Contributions		90%	5,979	6,139	6,303	6,472	6,645	6,823	7,005	7,193
Accounting And Payroll		90%	40,832	41,925	43,046	44,197	45,379	46,593	47,839	49,118
Credit Card Fees		90%	12,355	12,685	13,024	13,373	13,730	14,098	14,475	14,862
District Management		90%	0	0	0	0	0	0	0	0
Professional Services		90%	9,884	10,148	10,420	10,698	10,984	11,278	11,580	11,889
Legal Services		100%	0	0	0	0	0	0	0	0
Engineering Services		100%	60,920	62,443	64,004	65,604	67,244	68,926	70,649	72,415
Software Support		90%	13,590	13,954	14,327	14,710	15,103	15,507	15,922	16,348
Water Rights - Prof Svcs		100%	59,434	60,920	62,443	64,004	65,604	67,244	68,926	70,649
Lab Testing		90%	5,436	5,581	5,731	5,884	6,041	6,203	6,369	6,539
Water Rebates		90%	18,532	19,028	19,537	20,059	20,596	21,146	21,712	22,293
Water Auditing		90%	34,470	35,392	36,338	37,310	38,308	39,332	40,384	41,464
Telephone/Alarms		90%	9,884	10,148	10,420	10,698	10,984	11,278	11,580	11,889
Trash removal		90%	1,235	1,269	1,302	1,337	1,373	1,410	1,447	1,486
Reuse Pumping		90%	86,483	88,796	91,171	93,609	96,113	98,683	101,323	104,032
Elec for Well Pumping		90%	0	0	0	0	0	0	0	0
Elec for WTP		90%	0	0	0	0	0	0	0	0
Elec for Booster Pump and Rocky Heights		50%	17,499	18,089	18,699	19,329	19,981	20,655	21,352	22,072
Memberships/Subscriptions		50%	1,567	1,620	1,675	1,731	1,789	1,850	1,912	1,977
Travel/Education/Conferences		90%	3,954	4,059	4,168	4,279	4,394	4,511	4,632	4,756
Insurance - Property and Liability		90%	20,020	20,555	21,105	21,669	22,249	22,844	23,455	24,082
Postage and Freight		90%	10,007	10,275	10,550	10,832	11,122	11,419	11,724	12,038
Printing and Copying		90%	8,648	8,880	9,117	9,361	9,611	9,868	10,132	10,403
Operating Supplies		90%	7,413	7,611	7,815	8,024	8,238	8,459	8,685	8,917
Water Meters		90%	86,483	88,796	91,171	93,609	96,113	98,683	101,323	104,032
Equip Rental		90%	0	0	0	0	0	0	0	0
Small Tools		90%	3,706	3,806	3,907	4,012	4,119	4,229	4,342	4,459
SMWSA - Base		90%	16,308	16,744	17,192	17,652	18,124	18,609	19,107	19,618
SMWSA - Participation		90%	0	0	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%								
DougCo Water Res Auth		90%	13,281	13,637	14,001	14,376	14,760	15,155	15,560	15,976
South Platte Recovery System		0%	4,896	5,104	5,320	5,546	5,781	6,027	6,283	6,549
Vehicles R&M		90%	4,324	4,440	4,559	4,680	4,806	4,934	5,066	5,202
Vehicle Fuel Expense		90%	6,177	6,343	6,512	6,686	6,865	7,049	7,237	7,431
Wells R&M		90%	0	0	0	0	0	0	0	0
WTP R&M		90%	0	0	0	0	0	0	0	0
Water Dist R&M		90%	198,518	203,828	209,279	214,876	220,623	226,523	232,581	238,801
Purchased Water from Denver/Pueblo		90%	0	0	0	0	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Centennial Treatment Charge		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
Rate Study		90%	37,064	38,056	39,073	40,118	41,191	42,293	43,424	44,585
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%	82,249	84,449	86,708	89,027	91,407	93,852	96,362	98,939
Bad debts written-off		90%	0	0	0	0	0	0	0	0
Reimbursable Engineering Costs		90%	0	0	0	0	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0	0	0	0
ALTERNATIVE 7 O&M Costs		90%	0	0	0	0	0	0	0	0
Chatfield Expansion (1005 AF)		90%	79,875	82,011	84,204	86,456	88,768	91,143	93,580	96,083
Centennial Treatment Costs		90%	478,501	491,299	504,438	517,929	531,781	546,003	560,605	575,598
Reuter-Hess Expansion (No Longer Needed)		90%	0	0	0	0	0	0	0	0
CPN WTP (5 MGD Capacity)		90%	2,373,144	2,473,867	2,578,866	2,688,321	2,802,422	2,921,366	3,045,358	3,174,613
PS#3 - Plum Creek Intake to Booster PS		90%	351,234	366,142	381,682	397,882	414,769	432,373	450,725	469,855
Pipeline: Plum Creek to Booster PS		90%	59,592	62,121	64,758	67,507	70,372	73,359	76,472	79,718
PS#4 - Booster PS to RH Res		90%	285,195	297,300	309,918	323,072	336,784	351,078	365,979	381,513
Pipeline - PCR to RHR		90%	124,679	129,971	135,487	141,238	147,232	153,481	159,996	166,786
PS#5 - RHR to CPN WTP		90%	243,763	254,109	264,894	276,137	287,857	300,075	312,811	326,088
Pipeline - RHR to CPN WTP		90%	84,655	88,248	91,993	95,898	99,968	104,211	108,634	113,245
ASR		90%	246,108	256,554	267,443	278,794	290,627	302,962	315,821	329,225
Pipeline - CPN WTP PS to CPN Dist Sys		90%	15,193	15,838	16,511	17,211	17,942	18,703	19,497	20,325
DENVER BASIN WELLS		90%	89,577	93,379	97,342	101,474	105,780	110,270	114,950	119,829
Total Operating Expenses			**$6,008,524**	**$6,219,324**	**$6,438,345**	**$6,665,917**	**$6,902,381**	**$7,148,097**	**$7,403,434**	**$7,668,781**
% Change from Previous Year			108.2%	3.5%	3.5%	3.5%	3.5%	3.6%	3.6%	3.6%

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

Project Category / Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014
Treatment	$0	$1,053,801	$970,415	$39,985	$0	$0	$0
T&D	1,237,548	74,969	0	171,581	25,041	0	55,000
Pumping	0	0	0	0	0	0	0
General	0	0	1,829,969	0	0	0	31,598
Source of Supply	191,588	193,820	0	4,201,024	3,403,934	5,013,350	525,120
Fire Protection	0	0	0	0	0	0	0
Wells	0	954,281	0	70,675	210,000	0	159,000
Storage	69,374	32,303	0	30,469	29,228	22,966	35,000
RW Alternative	0	0	0	0	0	0	100,000
Unused	0	0	0	0	0	0	0
Grand Total	**$1,498,510**	**$2,309,174**	**$2,800,384**	**$4,513,734**	**$3,668,202**	**$5,036,316**	**$905,718**
Annual Replacement Funding Budget	$0	$1,110,000	$1,070,000	$1,010,000	$1,120,000	$1,210,000	$1,340,000
Annual Inflation Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Future Value Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

Project Category / Description	2015	Projected 2016	2017	2018	2019	Projected 2020	2021	2022
Treatment	$0	$0	$0	$0	$0	$0	$0	$0
T&D	0	0	0	380,940	0	0	0	0
Pumping	0	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0	0
Source of Supply	504,330	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0	0
Wells	1,056,000	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0	0
RW Alternative	2,000,000	2,050,000	4,013,338	350,315	7,191,934	17,468,395	42,784,682	74,647,195
Unused	0	0	0	0	0	0	0	0
Grand Total	**$3,560,330**	**$2,050,000**	**$4,013,338**	**$731,254**	**$7,191,934**	**$17,468,395**	**$42,784,682**	**$74,647,195**
Annual Replacement Funding Budget	$517,078	$595,042	$642,794	$731,254	$753,284	$907,969	$1,274,810	$2,164,166
Annual Inflation Rate	0.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.0000	1.0250	1.0506	1.0769	1.1038	1.1314	1.1597	1.1887

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

					Projected			
Project Category / Description	2023	2024	2025	2026	2027	2028	2029	2030
Treatment	$0	$0	$0	$0	$0	$0	$0	$0
T&D	3,715,263	3,827,186	3,942,480	4,061,247	4,183,592	4,309,623	4,439,450	4,573,188
Pumping	0	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0	0
Source of Supply	0	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0	0
Wells	0	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0	0
RW Alternative	0	0	0	0	0	0	0	0
Unused	0	0	0	0	0	0	0	0
Grand Total	**$3,715,263**	**$3,827,186**	**$3,942,480**	**$4,061,247**	**$4,183,592**	**$4,309,623**	**$4,439,450**	**$4,573,188**
Annual Replacement Funding Budget	$3,715,263	$3,827,186	$3,942,480	$4,061,247	$4,183,592	$4,309,623	$4,439,450	$4,573,188
Annual Inflation Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.2184	1.2489	1.2801	1.3121	1.3449	1.3785	1.4130	1.4483

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

Project Description	Category (select)	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Impact/Development Fee	dev. Fees	597,500	112,500	248,700	412,895	250,500	150,500	58,000	58,000
Infrastructure Fee	other	89,100	40,500	0	0				
Water Connect Fee	dev. Fees	0	448,000						
General Fund Transfer	other	375,000	375,000	0	0	-	-	-	-
IREA Reimbursement	other						211,181	36,071	35,000
CWCB Loan for Chatfield Project	other								1,800,000
COP Transfer to pay for Interconnect Project	other					10,364,205			
Power Rebate	other				19,218				
Transfer from Stormwater to Water to balance assets	other	`							
Insurance Proceeds	other					87,300	103,101	-	
Sale of Assets	other								
Total		$1,061,600	$976,000	$248,700	$432,113	$10,702,005	$464,782	$94,071	$1,893,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

	ected			Projected				
Project Description	2017	2018	2019	2020	2021	2022	2023	2024
Impact/Development Fee	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Infrastructure Fee								
Water Connect Fee								
General Fund Transfer	-	-	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
CWCB Loan for Chatfield Project	2,356,871							
COP Transfer to pay for Interconnect Project								
Power Rebate								
Transfer from Stormwater to Water to balance assets								
Insurance Proceeds								
Sale of Assets				5,399,080				
Total	$3,491,871	$1,135,000	$1,135,000	$6,534,080	$1,135,000	$1,135,000	$1,135,000	$585,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

				Projected			
Project Description	2024	2025	2026	2027	2028	2029	2030
Impact/Development Fee	550,000	495,000	0	0	0	0	0
Infrastructure Fee							
Water Connect Fee							
General Fund Transfer	-	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	35,000	
CWCB Loan for Chatfield Project							
COP Transfer to pay for Interconnect Project							
Power Rebate							
Transfer from Stormwater to Water to balance assets							
Insurance Proceeds							
Sale of Assets							
Total	$585,000	$530,000	$35,000	$35,000	$35,000	$35,000	$0

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Rate of Return on Avg. Fund Balance	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override			0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$3,551,302	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811
Sources of Funds								
Retail Rate Revenues	3,198,028	2,996,554	3,522,276	3,539,240	3,607,538	3,471,350	3,307,880	3,992,421
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	183,478	177,980	140,234	285,909	232,353	135,599	143,312	94,412
Projected Debt Proceeds	0	0	0	0	0	0	0	0
Total Other Capital Inflows	464,100	415,500	0	19,218	10,451,505	314,282	36,071	1,835,000
Total Development Fees	597,500	560,500	248,700	412,895	250,500	150,500	58,000	58,000
Interest/Investment Earnings	112,145	21,967	10,725	3,791	9,314	7,980	5,600	5,600
Total Sources of Funds	$4,555,251	$4,172,501	$3,921,935	$4,261,053	$14,551,209	$4,079,711	$3,550,863	$5,985,433
Uses of Funds								
Operating and Maintenance Expenses	$1,389,633	$1,334,850	$1,743,066	$1,956,243	$2,465,987	$3,102,692	$2,504,181	$2,671,284
Debt Service Payments - Outstanding Bonds	0	0	19,293	1,053,014	744,446	23,572	0	0
Debt Service Payments - Projected Issues	0	0	0	0	0	0	0	0
Capital Project Costs	1,498,510	2,309,174	2,800,384	4,513,734	3,668,202	5,036,316	905,718	3,560,330
Costs of Bond Issuance	0	0	0	0	0	0	0	0
Year - End Adjustments								
Total Uses of Funds	$2,888,143	$3,644,024	$4,562,743	$7,522,991	$6,878,635	$8,162,580	$3,409,899	$6,231,614
Total Change in Fund Balance	$1,667,108	$528,477	($640,808)	($3,261,938)	$7,672,574	($4,082,868)	$140,965	($246,180)
Available Fund Balance (net of required reserves)	$4,523,410	$5,079,887	$4,234,079	($307,165)	$8,283,715	$3,882,847	$3,677,811	$2,792,631
Ending Fund Balance	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$5,328,631	$8,577,189	$11,521,247	$15,867,764	$14,706,395	$9,761,522	$84,580,627	$13,222,865
Sources of Funds								
Retail Rate Revenues	4,827,863	5,790,400	6,673,462	7,683,668	8,839,262	10,161,089	11,672,963	13,402,084
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	199,412	200,912	202,427	203,957	205,503	207,064	208,640	210,232
Projected Debt Proceeds	0	0	0	0	0	113,544,395	0	0
Total Other Capital Inflows	1,835,000	2,391,871	35,000	35,000	5,434,080	35,000	35,000	35,000
Total Development Fees	825,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Interest/Investment Earnings	4,170	6,028	8,214	9,169	7,338	28,294	29,332	7,380
Total Sources of Funds	$7,691,445	$9,489,210	$8,019,103	$9,031,794	$15,586,183	$125,075,842	$13,045,935	$14,754,696
Uses of Funds								
Operating and Maintenance Expenses	$2,392,887	$2,348,145	$2,637,417	$2,697,314	$2,758,746	$2,821,822	$2,886,587	$6,008,524
Debt Service Payments - Outstanding Bonds	0	183,669	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	0	0	0	0	0	3,283,000	6,566,000	6,566,000
Capital Project Costs	2,050,000	4,013,338	731,254	7,191,934	17,468,395	42,784,682	74,647,195	3,715,263
Costs of Bond Issuance	0	0	0	0	0	1,063,319	0	0
Year - End Adjustments								
Total Uses of Funds	$4,442,887	$6,545,152	$3,672,587	$10,193,163	$20,531,056	$50,256,738	$84,403,697	$16,593,703
Total Change in Fund Balance	$3,248,559	$2,944,058	$4,346,517	($1,161,369)	($4,944,873)	$74,819,105	($71,357,762)	($1,839,007)
Available Fund Balance (net of required reserves)	$6,181,189	$9,147,247	$13,348,764	$12,157,395	$7,182,522	$75,820,443	$4,430,681	$1,030,674
Ending Fund Balance	$8,577,189	$11,521,247	$15,867,764	$14,706,395	$9,761,522	$84,580,627	$13,222,865	$11,383,858

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	2024	2025	2026	2027	2028	2029	2030
					Projected		
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$11,383,858	$10,459,184	$10,568,184	$10,682,184	$10,818,681	$10,972,943	$11,139,930
Sources of Funds							
Retail Rate Revenues	15,188,360	16,609,969	17,454,601	17,834,175	18,221,925	18,618,029	19,022,670
Wholesale/Contract Revenues	0	0	0	0	0	0	0
Other Revenues	211,841	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	0	0	0	0	0
Total Other Capital Inflows	35,000	35,000	35,000	35,000	35,000	35,000	0
Total Development Fees	550,000	495,000	0	0	0	0	0
Interest/Investment Earnings	6,551	6,306	6,373	6,448	6,536	6,632	6,724
Total Sources of Funds	$15,991,752	$17,359,740	$17,711,079	$18,092,385	$18,481,896	$18,879,787	$19,251,227
Uses of Funds							
Operating and Maintenance Expenses	$6,219,324	$6,438,345	$6,665,917	$6,902,381	$7,148,097	$7,403,434	$7,668,781
Debt Service Payments - Outstanding Bonds	303,915	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	6,566,000	6,566,000	6,566,000	6,566,000	6,566,000	6,566,000	6,566,000
Capital Project Costs	3,827,186	3,942,480	4,061,247	4,183,592	4,309,623	4,439,450	4,573,188
Costs of Bond Issuance	0	0	0	0	0	0	0
Year - End Adjustments							
Total Uses of Funds	$16,916,425	$17,250,740	$17,597,079	$17,955,888	$18,327,635	$18,712,800	$19,111,885
Total Change in Fund Balance	($924,674)	$109,000	$114,000	$136,497	$154,262	$166,987	$139,342
Available Fund Balance (net of required reserves)	$0	$0	$0	$18,497	$49,759	$88,746	$96,089
Ending Fund Balance	$10,459,184	$10,568,184	$10,682,184	$10,818,681	$10,972,943	$11,139,930	$11,279,273

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$0	$0	$0
Operating Reserve	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,252,000	$1,336,000
Well Reserve Fund							645,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,897,000	$2,536,000

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$6,149,184	$6,149,184	$6,149,184
Operating Reserve	$1,196,000	$1,174,000	$1,319,000	$1,349,000	$1,379,000	$1,411,000	$1,443,000	$3,004,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$2,396,000	$2,374,000	$2,519,000	$2,549,000	$2,579,000	$8,760,184	$8,792,184	$10,353,184

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

				Projected		
Project Description	2025	2026	2027	2028	2029	2030
Debt Service Reserve Requirements - Prj. Issues	$6,149,184	$6,149,184	$6,149,184	$6,149,184	$6,149,184	$6,149,184
Operating Reserve	$3,219,000	$3,333,000	$3,451,000	$3,574,000	$3,702,000	$3,834,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund						
Total	$10,568,184	$10,682,184	$10,800,184	$10,923,184	$11,051,184	$11,183,184

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash-Needs Revenue Requirements

Project Description	Estimated 2013	Budget 2014	2015	Projected 2016	2017
Operating and Maintenance Expenses	$3,102,692	$2,504,181	$2,671,284	$2,392,887	$2,348,145
Annual Debt Service - Outstanding Debt	23,572	0	0	0	183,669
Annual Debt-Service - Projected Issues	0	0	0	0	0
Capital Projects	5,036,316	905,718	3,560,330	2,050,000	4,013,338
Bond Issuance Costs	0	0	0	0	0
Other	0	0	0	0	0
Change in Fund Balance	(4,082,868)	140,965	(246,180)	3,248,559	2,944,058
Total Revenue Requirement	$4,079,711	$3,550,863	$5,985,433	$7,691,445	$9,489,210
Wholesale/Contract Revenues	$0	$0	$0	$0	$0
Other Revenues	135,599	143,312	94,412	199,412	200,912
Projected Debt Proceeds	0	0	0	0	0
Total Other Capital Inflows	314,282	36,071	1,835,000	1,835,000	2,391,871
Total Development Fees	150,500	58,000	58,000	825,000	1,100,000
Interest/Investment Earnings	7,980	5,600	5,600	4,170	6,028
Total Non-Rate Related Revenue/Income	$608,361	$242,983	$1,993,012	$2,863,582	$3,698,810
Required User Charge Revenue	$3,471,350	$3,307,880	$3,992,421	$4,827,863	$5,790,400

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Ba
Cash-Needs Revenue Requirements

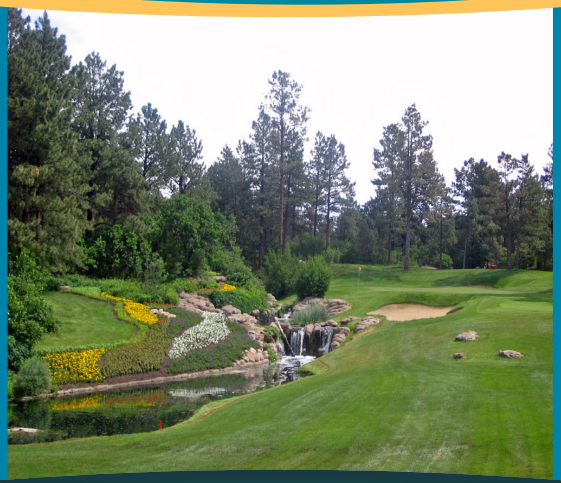
Project Description	Projected 2018	2019	2020	2021	2022	2023	2024
Operating and Maintenance Expenses	$2,637,417	$2,697,314	$2,758,746	$2,821,822	$2,886,587	$6,008,524	$6,219,324
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	0	0	0	3,283,000	6,566,000	6,566,000	6,566,000
Capital Projects	731,254	7,191,934	17,468,395	42,784,682	74,647,195	3,715,263	3,827,186
Bond Issuance Costs	0	0	0	1,063,319	0	0	0
Other	0	0	0	0	0	0	0
Change in Fund Balance	4,346,517	(1,161,369)	(4,944,873)	74,819,105	(71,357,762)	(1,839,007)	(924,674)
Total Revenue Requirement	$8,019,103	$9,031,794	$15,586,183	$125,075,842	$13,045,935	$14,754,696	$15,991,752
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0	$0
Other Revenues	202,427	203,957	205,503	207,064	208,640	210,232	211,841
Projected Debt Proceeds	0	0	0	113,544,395	0	0	0
Total Other Capital Inflows	35,000	35,000	5,434,080	35,000	35,000	35,000	35,000
Total Development Fees	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Interest/Investment Earnings	8,214	9,169	7,338	28,294	29,332	7,380	6,551
Total Non-Rate Related Revenue/Income	$1,345,641	$1,348,126	$6,746,921	$114,914,754	$1,372,972	$1,352,612	$803,392
Required User Charge Revenue	$6,673,462	$7,683,668	$8,839,262	$10,161,089	$11,672,963	$13,402,084	$15,188,360

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Ba
Cash-Needs Revenue Requirements

Project Description	2025	2026	2027	Projected 2028	2029	2030
Operating and Maintenance Expenses	$6,438,345	$6,665,917	$6,902,381	$7,148,097	$7,403,434	$7,668,781
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	6,566,000	6,566,000	6,566,000	6,566,000	6,566,000	6,566,000
Capital Projects	3,942,480	4,061,247	4,183,592	4,309,623	4,439,450	4,573,188
Bond Issuance Costs	0	0	0	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	109,000	114,000	136,497	154,262	166,987	139,342
Total Revenue Requirement	$17,359,740	$17,711,079	$18,092,385	$18,481,896	$18,879,787	$19,251,227
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	0	0	0	0
Total Other Capital Inflows	35,000	35,000	35,000	35,000	35,000	0
Total Development Fees	495,000	0	0	0	0	0
Interest/Investment Earnings	6,306	6,373	6,448	6,536	6,632	6,724
Total Non-Rate Related Revenue/Income	$749,771	$256,478	$258,210	$259,972	$261,758	$228,557
Required User Charge Revenue	$16,609,969	$17,454,601	$17,834,175	$18,221,925	$18,618,029	$19,022,670

APPENDIX J

Detailed Financial Results for CPN's Top Three Alternatives
Alternate 9



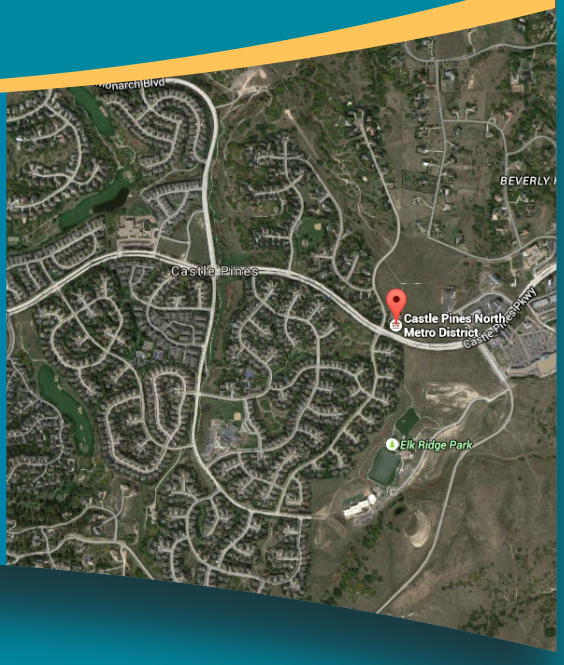


Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Model Summary Results & Balance

Project Description	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015	2016
Ending Fund Balance	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631	$8,493,300
Minimum Fund Balance - Target	872,000	2,151,306	1,233,000	1,551,000	1,897,000	2,536,000	2,396,000
Fund Variance	**4,234,079**	**(307,165)**	**8,283,715**	**3,882,847**	**3,677,811**	**2,792,631**	**6,097,300**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	2.0	2.3	1.5	0.7	0.8	2.9	5.7
Minimum FC Ratio Target	0.0	1.0	0.3	0.4	0.5	0.6	0.7
Adjustments/Actions:							
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-
Revenue Bond Proceeds	-	-	-				
Projected Net Revenues (after debt svc.)	**$2,148,851**	**$1,228,787**	**$11,244,163**	**$842,367**	**$1,041,083**	**$1,508,550**	**$3,410,524**
Proposed Adjustments to Rate Revenues	0.0%	0.0%	0.0%	9.6%	4.0%	7.8%	11.3%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	Projected 2017	2018	2019	2020	2021	Projected 2022	2023
Ending Fund Balance	$8,938,706	$11,834,919	$16,419,435	$22,020,099	$60,173,743	$22,230,487	$9,022,229
Minimum Fund Balance - Target	2,374,000	2,519,000	2,549,000	2,579,000	6,656,477	6,688,477	7,026,477
Fund Variance	**6,564,706**	**9,315,919**	**13,870,435**	**19,441,099**	**53,517,266**	**15,542,009**	**1,995,752**
Debt Service Coverage - ALL DEBT	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**1.25**	**2.21**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	7.1	6.5	7.1	7.9	2.4	1.4	1.3
Minimum FC Ratio Target	0.8	0.9	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:							
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-
Revenue Bond Proceeds					69,954,528		
Projected Net Revenues (after debt svc.)	**$4,404,020**	**$4,745,035**	**$5,529,873**	**$6,419,107**	**$5,265,799**	**$4,244,706**	**$4,923,223**
Proposed Adjustments to Rate Revenues	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%

Table 1
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Bas
Model Summary Results & Balance

Project Description	2024	2025	2026	2027	2028	Projected 2029	2030
Ending Fund Balance	$8,543,477	$8,648,477	$8,757,477	$8,877,810	$9,005,860	$9,137,781	$9,234,477
Minimum Fund Balance - Target	8,543,477	8,648,477	8,757,477	8,870,477	8,987,477	9,108,477	9,234,477
Fund Variance	**0**	**0**	**0**	**7,333**	**18,383**	**29,303**	**0**
Debt Service Coverage - ALL DEBT	**1.69**	**1.85**	**1.88**	**1.90**	**1.93**	**1.95**	**1.97**
Management DSC Goal	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Management Goal w/o Dev. Fees	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fixed Charge Coverage Ratio	1.0	1.1	1.1	1.1	1.1	1.1	1.0
Minimum FC Ratio Target	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Adjustments/Actions:							
Non-Debt Funding/ Grants, etc.	-	-	-	-	-	-	-
Revenue Bond Proceeds							
Projected Net Revenues (after debt svc.)	**$2,697,563**	**$3,377,272**	**$3,479,941**	**$3,592,913**	**$3,705,325**	**$3,817,045**	**$3,892,931**
Proposed Adjustments to Rate Revenues	11.3%	7.4%	6.4%	2.5%	2.5%	2.5%	2.5%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
General Inflation Factor					n/a	0.0%	0.0%	0.0%	2.5%	2.5%
Demand Growth					0.0%	0.2%	0.3%	0.5%	0.6%	0.9%
OPERATING EXPENSES										
Salaries - Salaried		90%	125,859	128,517	144,057	$104,089	$111,159	$114,425	$151,323	$144,722
Salaries - Hourly		90%	7,686	13,365	18,289	18,867	16,020	16,139	16,208	16,600
Salaries - OT and Standby		90%	11,593	6,900	7,427	9,596	10,436	14,586	9,689	10,500
PERA Employer Contrib.		90%	15,467	18,266	20,615	17,021	17,892	19,231	22,952	22,101
Unemployment		90%	272	278	338	415	398	402	503	484
Workers Comp		90%	1,189	1,585	1,663	1,744	2,154	2,006	2,776	4,250
Employer Contrib Health Plan		90%	23,547	24,262	32,564	26,978	28,399	26,253	47,282	38,471
Employer Contrib Medicare		90%	1,992	2,072	2,382	1,912	1,894	2,084	2,429	2,339
PERA Matchmaker Contributions		90%	2,180	2,078	3,096	2,876	1,952	2,406	5,026	4,840
Accounting And Payroll		90%				21,803	28,542	31,677	30,500	33,050
Credit Card Fees		90%	1,492	3,054	6,392	4,316	9,279	7,763	9,000	10,000
District Management		90%				46,783	46,793	37,577	0	0
Professional Services		90%	372	3,180	5,899	2,019	10,141	0	4,000	8,000
Legal Services		100%	-	-	-	0	0	0	0	0
Engineering Services		100%	75,775	29,373	9,593	5,891	36,395	51,657	55,000	50,000
Software Support		90%	5,514	7,605	5,547	3,441	5,210	7,864	10,000	11,000
Water Rights - Prof Svcs		100%	85,414	67,333	128,594	202,937	577,403	457,783	230,000	230,000
Lab Testing		90%	2,831	1,532	3,475	7,627	1,340	1,124	4,400	4,400
Water Rebates		90%	-	44,859	20,727	16,301	20,000	39,402	20,000	15,000
Water Auditing		90%	-	-	10,023	19,243	20,000	12,438	27,900	27,900
Telephone/Alarms		90%	4,986	5,180	5,090	2,825	2,124	5,457	8,000	8,000
Trash removal		90%	339	644	330	925	942	2,015	1,000	1,000
Reuse Pumping		90%	81,841	70,217	93,637	67,964	116,817	68,549	70,000	70,000
Elec for Well Pumping		90%	557,708	460,857	552,012	735,326	703,857	489,145	451,500	450,000
Elec for WTP		90%	70,850	60,026	85,818	83,406	86,741	68,014	65,000	65,000
Elec for Booster Pump and Rocky Heights		50%	8,931	11,827	12,876	12,711	12,241	13,579	13,400	13,400
Memberships/Subscriptions		50%	950	645	703	368	1,233	1,470	1,200	1,200
Travel/Education/Conferences		90%	1,618	339	1,307	0	739	1,469	2,500	3,200
Insurance - Property and Liability		90%	7,270	8,082	7,518	9,663	10,551	13,155	14,731	16,204
Postage and Freight		90%	7,314	5,129	6,743	7,129	7,200	9,000	8,100	8,100
Printing and Copying		90%	3,085	2,708	4,135	8,255	6,123	4,704	11,333	7,000
Operating Supplies		90%	5,127	3,531	2,550	3,680	4,337	5,816	5,000	6,000
Water Meters		90%	37,581	22,430	31,928	38,475	38,737	42,576	80,000	70,000
Equip Rental		90%	-	-	-	0	0	0	0	0
Small Tools		90%	3,542	2,978	801	1,704	2,388	7,381	2,000	3,000
SMWSA - Base		90%	24,074	24,074	31,685	19,697	2,739	13,333	13,200	13,200
SMWSA - Participation		90%	-	-	21,093	25,524	29,300	15,000	0	0
South Metro Special Projects-Chambers Line		90%								
DougCo Water Res Auth		90%	5,000	10,000	8,500	8,600	10,000	10,750	10,750	10,750
South Platte Recovery System		0%	6,250	4,322	3,363	3,429	3,429	3,467	3,321	3,500
Vehicles R&M		90%	4,109	4,217	4,028	3,057	4,035	9,034	2,000	3,500
Vehicle Fuel Expense		90%	3,438	2,624	3,384	4,597	4,369	3,696	5,000	5,000
Wells R&M		90%	68,594	75,322	15,834	68,132	25,616	265,420	0	120,000
WTP R&M		90%	53,685	103,040	175,268	89,359	116,772	400,759	140,000	120,000
Water Dist R&M		90%	72,158	81,675	53,781	47,556	101,455	93,980	155,000	265,000
Purchased Water from Denver/Pueblo		90%		20,729	-	0	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%		-	200,000	200,000	200,000	400,000	400,000	400,000
Centennial Treatment Charge		90%		-	-	0	82	200,533	232,658	233,000
REMOVED		90%		-	-	0	0	0	0	0
REMOVED		90%		-	-	0	0	0	0	0
REMOVED		90%		-	-	0	0	0	0	0
Rate Study		90%		-	-	0	28,752	11,928	30,000	30,000
Centennial Zone 4B Expansion Design		90%		-	-	0	0	0	0	0
REMOVED		90%		-	-	0	0	0	0	0
REMOVED		90%		-	-	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%		-	-	0	0	50,910	61,000	66,573
Bad debts written-off		90%		-	-	0	0	0	0	0
Reimbursable Engineering Costs		90%		-	-	0	0	25,304	34,250	22,500
Reimbursable Legal Costs		90%		-	-	0	0	21,430	34,250	22,500
ALTERNATIVE 9 O&M Costs		90%		-	-	0	0	0	0	0
Chatfield Expansion (1005 AF)		90%		-	-	0	0	0	0	0
Centennial Treatment Costs		90%				0	0	0	0	0
Chatfield Expansion (2005 AF)		90%				0	0	0	0	0
Centennial WTP Summer Expansion (5 MGD)		90%				0	0	0	0	0
ASR		90%				0	0	0	0	0
LSP Gravel Pit Reservoir		90%				0	0	0	0	0
DENVER BASIN WELLS		90%				0	0	0	0	0
Total Operating Expenses			**$1,389,633**	**$1,334,850**	**$1,743,066**	**$1,956,243**	**$2,465,987**	**$3,102,692**	**$2,504,181**	**$2,671,284**
% Change from Previous Year			n/a	-3.9%	30.6%	12.2%	26.1%	25.8%	-19.3%	6.7%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			1.9%	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%
OPERATING EXPENSES										
Salaries - Salaried		90%	$148,612	$152,601	$156,691	$160,887	$165,190	$169,607	$174,144	$178,801
Salaries - Hourly		90%	17,046	17,503	17,972	18,454	18,947	19,454	19,974	20,508
Salaries - OT and Standby		90%	10,782	11,072	11,368	11,673	11,985	12,305	12,635	12,972
PERA Employer Contrib.		90%	22,695	23,304	23,929	24,570	25,227	25,901	26,594	27,305
Unemployment		90%	497	510	524	538	552	567	582	598
Workers Comp		90%	4,364	4,481	4,601	4,725	4,851	4,981	5,114	5,251
Employer Contrib Health Plan		90%	39,505	40,565	41,652	42,768	43,911	45,086	46,292	47,530
Employer Contrib Medicare		90%	2,402	2,467	2,533	2,600	2,670	2,741	2,815	2,890
PERA Matchmaker Contributions		90%	4,970	5,103	5,240	5,380	5,524	5,672	5,824	5,979
Accounting And Payroll		90%	33,938	34,849	35,783	36,741	37,724	38,733	39,769	40,832
Credit Card Fees		90%	10,269	10,544	10,827	11,117	11,414	11,720	12,033	12,355
District Management		90%	0	0	0	0	0	0	0	0
Professional Services		90%	8,215	8,435	8,662	8,894	9,131	9,376	9,626	9,884
Legal Services		100%	0	0	0	0	0	0	0	0
Engineering Services		100%	51,250	52,531	53,845	55,191	56,570	57,985	59,434	60,920
Software Support		90%	11,296	11,599	11,910	12,229	12,556	12,891	13,236	13,590
Water Rights - Prof Svcs		100%	50,000	51,250	52,531	53,845	55,191	56,570	57,985	59,434
Lab Testing		90%	4,518	4,640	4,764	4,891	5,022	5,157	5,294	5,436
Water Rebates		90%	15,403	15,817	16,241	16,675	17,121	17,579	18,049	18,532
Water Auditing		90%	28,650	29,419	30,207	31,016	31,846	32,697	33,572	34,470
Telephone/Alarms		90%	8,215	8,435	8,662	8,894	9,131	9,376	9,626	9,884
Trash removal		90%	1,027	1,054	1,083	1,112	1,141	1,172	1,203	1,235
Reuse Pumping		90%	71,881	73,811	75,789	77,819	79,900	82,037	84,231	86,483
Elec for Well Pumping		90%	462,094	492,700	505,908	519,453	533,346	547,610	562,255	0
Elec for WTP		90%	66,747	60,719	62,347	64,016	65,728	67,486	69,291	0
Elec for Booster Pump and Rocky Heights		50%	13,861	14,335	14,823	15,325	15,842	16,376	16,928	17,499
Memberships/Subscriptions		50%	1,241	1,284	1,327	1,372	1,419	1,466	1,516	1,567
Travel/Education/Conferences		90%	3,286	3,374	3,465	3,557	3,653	3,750	3,851	3,954
Insurance - Property and Liability		90%	16,640	17,086	17,544	18,014	18,496	18,990	19,498	20,020
Postage and Freight		90%	8,318	8,541	8,770	9,005	9,246	9,493	9,747	10,007
Printing and Copying		90%	7,188	7,381	7,579	7,782	7,990	8,204	8,423	8,648
Operating Supplies		90%	6,161	6,327	6,496	6,670	6,849	7,032	7,220	7,413
Water Meters		90%	71,881	73,811	75,789	77,819	79,900	82,037	84,231	86,483
Equip Rental		90%	0	0	0	0	0	0	0	0
Small Tools		90%	3,081	3,163	3,248	3,335	3,424	3,516	3,610	3,706
SMWSA - Base		90%	13,555	13,919	14,292	14,674	15,067	15,470	15,883	16,308
SMWSA - Participation		90%	0	0	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%								
DougCo Water Res Auth		90%	11,039	11,335	11,639	11,951	12,270	12,598	12,935	13,281
South Platte Recovery System		0%	3,653	3,812	3,976	4,146	4,322	4,505	4,696	4,896
Vehicles R&M		90%	3,594	3,691	3,789	3,891	3,995	4,102	4,212	4,324
Vehicle Fuel Expense		90%	5,134	5,272	5,414	5,558	5,707	5,860	6,016	6,177
Wells R&M		90%	123,225	17,931	18,412	18,905	19,411	19,930	20,463	0
WTP R&M		90%	123,225	126,532	129,924	133,403	136,971	140,634	144,395	0
Water Dist R&M		90%	165,000	169,429	173,971	178,629	183,406	188,311	193,347	198,518
Purchased Water from Denver/Pueblo		90%	0	0	0	0	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Centennial Treatment Charge		90%	239,262	245,684	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
Rate Study		90%	30,806	31,633	32,481	33,351	34,243	35,159	36,099	37,064
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%	68,362	70,197	72,079	74,009	75,988	78,020	80,107	82,249
Bad debts written-off		90%	0	0	0	0	0	0	0	0
Reimbursable Engineering Costs		90%	0	0	0	0	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0	0	0	0
ALTERNATIVE 9 O&M Costs		90%	0	0	0	0	0	0	0	0
Chatfield Expansion (1005 AF)		90%	0	0	69,998	71,872	73,794	75,768	77,794	0
Centennial Treatment Costs		90%	0	0	419,333	430,560	442,075	453,898	466,038	770,215
Chatfield Expansion (2005 AF)		90%	0	0	0	0	0	0	0	94,846
Centennial WTP Summer Expansion (5 MGD)		90%	0	0	0	0	0	0	0	823,838
ASR		90%	0	0	0	0	0	0	0	84,933
LSP Gravel Pit Reservoir		90%	0	0	0	0	0	0	0	187,920
DENVER BASIN WELLS		90%	0	0	0	0	0	0	0	23,507
Total Operating Expenses			**$2,392,887**	**$2,348,145**	**$2,637,417**	**$2,697,314**	**$2,758,746**	**$2,821,822**	**$2,886,587**	**$3,562,266**
% Change from Previous Year			-10.4%	-1.9%	12.3%	2.3%	2.3%	2.3%	2.3%	23.4%

Table 5
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Projected Operating and Maintenance Expenses - Department-Wide

Description	Notes - Acct #	% Fixed	Projected 2024	2025	2026	2027	2028	2029	2030
General Inflation Factor			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Demand Growth			1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
OPERATING EXPENSES									
Salaries - Salaried		90%	$183,583	$188,493	$193,534	$198,710	$204,024	$209,480	$215,083
Salaries - Hourly		90%	21,057	21,620	22,198	22,792	23,402	24,027	24,670
Salaries - OT and Standby		90%	13,319	13,676	14,041	14,417	14,803	15,198	15,605
PERA Employer Contrib.		90%	28,036	28,785	29,555	30,346	31,157	31,991	32,846
Unemployment		90%	614	630	647	665	682	701	719
Workers Comp		90%	5,391	5,535	5,683	5,835	5,991	6,152	6,316
Employer Contrib Health Plan		90%	48,801	50,106	51,446	52,822	54,235	55,685	57,174
Employer Contrib Medicare		90%	2,967	3,047	3,128	3,212	3,298	3,386	3,476
PERA Matchmaker Contributions		90%	6,139	6,303	6,472	6,645	6,823	7,005	7,193
Accounting And Payroll		90%	41,925	43,046	44,197	45,379	46,593	47,839	49,118
Credit Card Fees		90%	12,685	13,024	13,373	13,730	14,098	14,475	14,862
District Management		90%	0	0	0	0	0	0	0
Professional Services		90%	10,148	10,420	10,698	10,984	11,278	11,580	11,889
Legal Services		100%	0	0	0	0	0	0	0
Engineering Services		100%	62,443	64,004	65,604	67,244	68,926	70,649	72,415
Software Support		90%	13,954	14,327	14,710	15,103	15,507	15,922	16,348
Water Rights - Prof Svcs		100%	60,920	62,443	64,004	65,604	67,244	68,926	70,649
Lab Testing		90%	5,581	5,731	5,884	6,041	6,203	6,369	6,539
Water Rebates		90%	19,028	19,537	20,059	20,596	21,146	21,712	22,293
Water Auditing		90%	35,392	36,338	37,310	38,308	39,332	40,384	41,464
Telephone/Alarms		90%	10,148	10,420	10,698	10,984	11,278	11,580	11,889
Trash removal		90%	1,269	1,302	1,337	1,373	1,410	1,447	1,486
Reuse Pumping		90%	88,796	91,171	93,609	96,113	98,683	101,323	104,032
Elec for Well Pumping		90%	0	0	0	0	0	0	0
Elec for WTP		90%	0	0	0	0	0	0	0
Elec for Booster Pump and Rocky Heights		50%	18,089	18,699	19,329	19,981	20,655	21,352	22,072
Memberships/Subscriptions		50%	1,620	1,675	1,731	1,789	1,850	1,912	1,977
Travel/Education/Conferences		90%	4,059	4,168	4,279	4,394	4,511	4,632	4,756
Insurance - Property and Liability		90%	20,555	21,105	21,669	22,249	22,844	23,455	24,082
Postage and Freight		90%	10,275	10,550	10,832	11,122	11,419	11,724	12,038
Printing and Copying		90%	8,880	9,117	9,361	9,611	9,868	10,132	10,403
Operating Supplies		90%	7,611	7,815	8,024	8,238	8,459	8,685	8,917
Water Meters		90%	88,796	91,171	93,609	96,113	98,683	101,323	104,032
Equip Rental		90%	0	0	0	0	0	0	0
Small Tools		90%	3,806	3,907	4,012	4,119	4,229	4,342	4,459
SMWSA - Base		90%	16,744	17,192	17,652	18,124	18,609	19,107	19,618
SMWSA - Participation		90%	0	0	0	0	0	0	0
South Metro Special Projects-Chambers Line		90%							
DougCo Water Res Auth		90%	13,637	14,001	14,376	14,760	15,155	15,560	15,976
South Platte Recovery System		0%	5,104	5,320	5,546	5,781	6,027	6,283	6,549
Vehicles R&M		90%	4,440	4,559	4,680	4,806	4,934	5,066	5,202
Vehicle Fuel Expense		90%	6,343	6,512	6,686	6,865	7,049	7,237	7,431
Wells R&M		90%	0	0	0	0	0	0	0
WTP R&M		90%	0	0	0	0	0	0	0
Water Dist R&M		90%	203,828	209,279	214,876	220,623	226,523	232,581	238,801
Purchased Water from Denver/Pueblo		90%	0	0	0	0	0	0	0
Centennial Capacity Readiness Charge (to CIP)		90%	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Centennial Treatment Charge		90%	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0
Rate Study		90%	38,056	39,073	40,118	41,191	42,293	43,424	44,585
Centennial Zone 4B Expansion Design		90%	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0
REMOVED		90%	0	0	0	0	0	0	0
IPP Pumping Costs from House to CPN		90%	84,449	86,708	89,027	91,407	93,852	96,362	98,939
Bad debts written-off		90%	0	0	0	0	0	0	0
Reimbursable Engineering Costs		90%	0	0	0	0	0	0	0
Reimbursable Legal Costs		90%	0	0	0	0	0	0	0
ALTERNATIVE 9 O&M Costs		90%	0	0	0	0	0	0	0
Chatfield Expansion (1005 AF)		90%	0	0	0	0	0	0	0
Centennial Treatment Costs		90%	1,973,675	2,026,459	2,080,656	2,136,301	2,193,435	2,252,097	2,312,328
Chatfield Expansion (2005 AF)		90%	162,029	166,362	170,812	175,380	180,070	184,886	189,831
Centennial WTP Summer Expansion (5 MGD)		90%	2,111,084	2,200,685	2,294,089	2,391,458	2,492,959	2,598,768	2,709,068
ASR		90%	212,332	221,344	230,738	240,532	250,741	261,383	272,477
LSP Gravel Pit Reservoir		90%	469,800	489,740	510,526	532,194	554,782	578,329	602,875
DENVER BASIN WELLS		90%	58,767	61,261	63,861	66,572	69,397	72,343	75,413
Total Operating Expenses			**$6,596,173**	**$6,806,660**	**$7,024,680**	**$7,250,515**	**$7,484,457**	**$7,726,812**	**$7,977,896**
% Change from Previous Year			85.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

Project Category / Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Treatment	$0	$1,053,801	$970,415	$39,985	$0	$0	$0	$0
T&D	1,237,548	74,969	0	171,581	25,041	0	55,000	0
Pumping	0	0	0	0	0	0	0	0
General	0	0	1,829,969	0	0	0	31,598	0
Source of Supply	191,588	193,820	0	4,201,024	3,403,934	5,013,350	525,120	504,330
Fire Protection	0	0	0	0	0	0	0	0
Wells	0	954,281	0	70,675	210,000	0	159,000	1,056,000
Storage	69,374	32,303	0	30,469	29,228	22,966	35,000	0
RW Alternative	0	0	0	0	0	0	100,000	2,000,000
Unused	0	0	0	0	0	0	0	0
Grand Total	**$1,498,510**	**$2,309,174**	**$2,800,384**	**$4,513,734**	**$3,668,202**	**$5,036,316**	**$905,718**	**$3,560,330**
Annual Replacement Funding Budget	$0	$1,110,000	$1,070,000	$1,010,000	$1,120,000	$1,210,000	$1,340,000	$517,078
Annual Inflation Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Future Value Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

	Projected				Projected		
Project Category / Description	2016	2017	2018	2019	2020	2021	2022
Treatment	$0	$0	$0	$0	$0	$0	$0
T&D	0	0	0	0	0	0	0
Pumping	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0
Source of Supply	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0
Wells	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0
RW Alternative	2,050,000	6,320,712	1,855,052	953,832	9,079,971	41,136,812	42,212,677
Unused	0	0	0	0	0	0	0
Grand Total	**$2,050,000**	**$6,320,712**	**$1,855,052**	**$953,832**	**$9,079,971**	**$41,136,812**	**$42,212,677**
Annual Replacement Funding Budget	$595,042	$642,794	$778,556	$824,078	$851,563	$1,045,899	$1,899,270
Annual Inflation Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.0250	1.0506	1.0769	1.1038	1.1314	1.1597	1.1887

Table 7
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Capital Improvement Costs - Capital Costs Only (inflated dollars)

					Projected			
Project Category / Description	2023	2024	2025	2026	2027	2028	2029	2030
Treatment	$0	$0	$0	$0	$0	$0	$0	$0
T&D	0	3,181,584	3,277,429	3,376,161	3,477,868	3,582,639	3,690,566	3,801,744
Pumping	0	0	0	0	0	0	0	0
General	0	0	0	0	0	0	0	0
Source of Supply	0	0	0	0	0	0	0	0
Fire Protection	0	0	0	0	0	0	0	0
Wells	0	0	0	0	0	0	0	0
Storage	0	0	0	0	0	0	0	0
RW Alternative	18,140,853	0	0	0	0	0	0	0
Unused	0	0	0	0	0	0	0	0
Grand Total	**$18,140,853**	**$3,181,584**	**$3,277,429**	**$3,376,161**	**$3,477,868**	**$3,582,639**	**$3,690,566**	**$3,801,744**
Annual Replacement Funding Budget	$2,782,911	$3,181,584	$3,277,429	$3,376,161	$3,477,868	$3,582,639	$3,690,566	$3,801,744
Annual Inflation Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Future Value Factor	1.2184	1.2489	1.2801	1.3121	1.3449	1.3785	1.4130	1.4483

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

Project Description	Category (select)	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015	Proje 2016
Impact/Development Fee	dev. Fees	597,500	112,500	248,700	412,895	250,500	150,500	58,000	58,000	825,000
Infrastructure Fee	other	89,100	40,500	0	0					
Water Connect Fee	dev. Fees	0	448,000							
General Fund Transfer	other	375,000	375,000	0	0	-	-	-	-	-
IREA Reimbursement	other						211,181	36,071	35,000	35,000
CWCB Loan for Chatfield Project	other								1,800,000	1,800,000
COP Transfer to pay for Interconnect Project	other					10,364,205				
Power Rebate	other				19,218					
Transfer from Stormwater to Water to balance assets	other	`			-	-				
Insurance Proceeds	other					87,300	103,101	-		
Sale of Assets	other									
Total		$1,061,600	$976,000	$248,700	$432,113	$10,702,005	$464,782	$94,071	$1,893,000	$2,660,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

	ected			Projected				
Project Description	2017	2018	2019	2020	2021	2022	2023	2024
Impact/Development Fee	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Infrastructure Fee								
Water Connect Fee								
General Fund Transfer	-	-	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
CWCB Loan for Chatfield Project	2,356,871							
COP Transfer to pay for Interconnect Project								
Power Rebate								
Transfer from Stormwater to Water to balance assets								
Insurance Proceeds								
Sale of Assets				8,250,000				
Total	$3,491,871	$1,135,000	$1,135,000	$9,385,000	$1,135,000	$1,135,000	$1,135,000	$585,000

Table 11
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Other Funding for Capital Projects

			Projected			
Project Description	2025	2026	2027	2028	2029	2030
Impact/Development Fee	495,000	0	0	0	0	0
Infrastructure Fee						
Water Connect Fee						
General Fund Transfer	-	-	-	-	-	-
IREA Reimbursement	35,000	35,000	35,000	35,000	35,000	
CWCB Loan for Chatfield Project						
COP Transfer to pay for Interconnect Project						
Power Rebate						
Transfer from Stormwater to Water to balance assets						
Insurance Proceeds						
Sale of Assets						
Total	$530,000	$35,000	$35,000	$35,000	$35,000	$0

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Rate of Return on Avg. Fund Balance	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override			0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$3,551,302	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811
Sources of Funds								
Retail Rate Revenues	3,198,028	2,996,554	3,522,276	3,539,240	3,607,538	3,471,350	3,307,880	3,992,421
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	183,478	177,980	140,234	285,909	232,353	135,599	143,312	94,412
Projected Debt Proceeds	0	0	0	0	0	0	0	0
Total Other Capital Inflows	464,100	415,500	0	19,218	10,451,505	314,282	36,071	1,835,000
Total Development Fees	597,500	560,500	248,700	412,895	250,500	150,500	58,000	58,000
Interest/Investment Earnings	112,145	21,967	10,725	3,791	9,314	7,980	5,600	5,600
Total Sources of Funds	$4,555,251	$4,172,501	$3,921,935	$4,261,053	$14,551,209	$4,079,711	$3,550,863	$5,985,433
Uses of Funds								
Operating and Maintenance Expenses	$1,389,633	$1,334,850	$1,743,066	$1,956,243	$2,465,987	$3,102,692	$2,504,181	$2,671,284
Debt Service Payments - Outstanding Bonds	0	0	19,293	1,053,014	744,446	23,572	0	0
Debt Service Payments - Projected Issues	0	0	0	0	0	0	0	0
Capital Project Costs	1,498,510	2,309,174	2,800,384	4,513,734	3,668,202	5,036,316	905,718	3,560,330
Costs of Bond Issuance	0	0	0	0	0	0	0	0
Year - End Adjustments								
Total Uses of Funds	$2,888,143	$3,644,024	$4,562,743	$7,522,991	$6,878,635	$8,162,580	$3,409,899	$6,231,614
Total Change in Fund Balance	$1,667,108	$528,477	($640,808)	($3,261,938)	$7,672,574	($4,082,868)	$140,965	($246,180)
Available Fund Balance (net of required reserves)	$4,523,410	$5,079,887	$4,234,079	($307,165)	$8,283,715	$3,882,847	$3,677,811	$2,792,631
Ending Fund Balance	$5,218,410	$5,746,887	$5,106,079	$1,844,141	$9,516,715	$5,433,847	$5,574,811	$5,328,631

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$5,328,631	$8,493,300	$8,938,706	$11,834,919	$16,419,435	$22,020,099	$60,173,743	$22,230,487
Sources of Funds								
Retail Rate Revenues	4,743,999	5,599,922	6,348,941	7,192,146	8,141,265	9,209,473	10,411,569	11,764,172
Wholesale/Contract Revenues	0	0	0	0	0	0	0	0
Other Revenues	199,412	200,912	202,427	203,957	205,503	207,064	208,640	210,232
Projected Debt Proceeds	0	0	0	0	0	74,699,550	0	0
Total Other Capital Inflows	1,835,000	2,391,871	35,000	35,000	8,285,000	35,000	35,000	35,000
Total Development Fees	825,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Interest/Investment Earnings	4,145	5,228	6,230	8,474	11,528	24,651	24,714	9,373
Total Sources of Funds	$7,607,556	$9,297,933	$7,692,598	$8,539,576	$17,743,296	$85,275,738	$11,779,923	$13,118,777
Uses of Funds								
Operating and Maintenance Expenses	$2,392,887	$2,348,145	$2,637,417	$2,697,314	$2,758,746	$2,821,822	$2,886,587	$3,562,266
Debt Service Payments - Outstanding Bonds	0	183,669	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	0	0	0	0	0	2,160,000	4,320,000	4,320,000
Capital Project Costs	2,050,000	6,320,712	1,855,052	953,832	9,079,971	41,136,812	42,212,677	18,140,853
Costs of Bond Issuance	0	0	0	0	0	699,545	0	0
Year - End Adjustments								
Total Uses of Funds	$4,442,887	$8,852,527	$4,796,384	$3,955,061	$12,142,631	$47,122,094	$49,723,179	$26,327,034
Total Change in Fund Balance	$3,164,669	$445,406	$2,896,214	$4,584,515	$5,600,665	$38,153,644	($37,943,257)	($13,208,257)
Available Fund Balance (net of required reserves)	$6,097,300	$6,564,706	$9,315,919	$13,870,435	$19,441,099	$53,517,266	$15,542,009	$1,995,752
Ending Fund Balance	$8,493,300	$8,938,706	$11,834,919	$16,419,435	$22,020,099	$60,173,743	$22,230,487	$9,022,229

Table 12
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash Fund Activity and Balance

Project Description	2024	2025	2026	2027	2028	2029	2030
					Projected		
Rate of Return on Avg. Fund Balance	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Override	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Beginning Fund Balance	$9,022,229	$8,543,477	$8,648,477	$8,757,477	$8,877,810	$9,005,860	$9,137,781
Sources of Funds							
Retail Rate Revenues	13,120,810	14,064,383	14,878,431	15,215,580	15,560,262	15,912,646	16,272,909
Wholesale/Contract Revenues	0	0	0	0	0	0	0
Other Revenues	211,841	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	0	0	0	0	0
Total Other Capital Inflows	35,000	35,000	35,000	35,000	35,000	35,000	0
Total Development Fees	550,000	495,000	0	0	0	0	0
Interest/Investment Earnings	5,268	5,156	5,220	5,289	5,363	5,441	5,510
Total Sources of Funds	$13,922,919	$14,813,004	$15,133,757	$15,472,631	$15,819,061	$16,173,214	$16,500,252
Uses of Funds							
Operating and Maintenance Expenses	$6,596,173	$6,806,660	$7,024,680	$7,250,515	$7,484,457	$7,726,812	$7,977,896
Debt Service Payments - Outstanding Bonds	303,915	303,915	303,915	303,915	303,915	303,915	303,915
Debt Service Payments - Projected Issues	4,320,000	4,320,000	4,320,000	4,320,000	4,320,000	4,320,000	4,320,000
Capital Project Costs	3,181,584	3,277,429	3,376,161	3,477,868	3,582,639	3,690,566	3,801,744
Costs of Bond Issuance	0	0	0	0	0	0	0
Year - End Adjustments							
Total Uses of Funds	$14,401,671	$14,708,004	$15,024,757	$15,352,298	$15,691,011	$16,041,293	$16,403,555
Total Change in Fund Balance	($478,752)	$105,000	$109,000	$120,333	$128,050	$131,920	$96,697
Available Fund Balance (net of required reserves)	$0	($0)	($0)	$7,333	$18,383	$29,303	($0)
Ending Fund Balance	$8,543,477	$8,648,477	$8,757,477	$8,877,810	$9,005,860	$9,137,781	$9,234,477

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Estimated 2013	Budget 2014	2015
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$0	$0	$0
Operating Reserve	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,252,000	$1,336,000
Well Reserve Fund							645,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$695,000	$667,000	$872,000	$2,151,306	$1,233,000	$1,551,000	$1,897,000	$2,536,000

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

Project Description	Projected 2016	2017	2018	2019	Projected 2020	2021	2022	2023
Debt Service Reserve Requirements - Prj. Issues	$0	$0	$0	$0	$0	$4,045,477	$4,045,477	$4,045,477
Operating Reserve	$1,196,000	$1,174,000	$1,319,000	$1,349,000	$1,379,000	$1,411,000	$1,443,000	$1,781,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund								
Total	$2,396,000	$2,374,000	$2,519,000	$2,549,000	$2,579,000	$6,656,477	$6,688,477	$7,026,477

Table 13
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Minimum Fund Balances/Restricted Reserves

				Projected			
Project Description	2024	2025	2026	2027	2028	2029	2030
Debt Service Reserve Requirements - Prj. Issues	$4,045,477	$4,045,477	$4,045,477	$4,045,477	$4,045,477	$4,045,477	$4,045,477
Operating Reserve	$3,298,000	$3,403,000	$3,512,000	$3,625,000	$3,742,000	$3,863,000	$3,989,000
Well Reserve Fund	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rate Stabilization Fund txfr to Operating Fund							
Total	$8,543,477	$8,648,477	$8,757,477	$8,870,477	$8,987,477	$9,108,477	$9,234,477

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Baseline
Cash-Needs Revenue Requirements

Project Description	Estimated 2013	Budget 2014	Projected 2015	2016	2017	2018
Operating and Maintenance Expenses	$3,102,692	$2,504,181	$2,671,284	$2,392,887	$2,348,145	$2,637,417
Annual Debt Service - Outstanding Debt	23,572	0	0	0	183,669	303,915
Annual Debt-Service - Projected Issues	0	0	0	0	0	0
Capital Projects	5,036,316	905,718	3,560,330	2,050,000	6,320,712	1,855,052
Bond Issuance Costs	0	0	0	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	(4,082,868)	140,965	(246,180)	3,164,669	445,406	2,896,214
Total Revenue Requirement	$4,079,711	$3,550,863	$5,985,433	$7,607,556	$9,297,933	$7,692,598
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	135,599	143,312	94,412	199,412	200,912	202,427
Projected Debt Proceeds	0	0	0	0	0	0
Total Other Capital Inflows	314,282	36,071	1,835,000	1,835,000	2,391,871	35,000
Total Development Fees	150,500	58,000	58,000	825,000	1,100,000	1,100,000
Interest/Investment Earnings	7,980	5,600	5,600	4,145	5,228	6,230
Total Non-Rate Related Revenue/Income	$608,361	$242,983	$1,993,012	$2,863,557	$3,698,011	$1,343,657
Required User Charge Revenue	$3,471,350	$3,307,880	$3,992,421	$4,743,999	$5,599,922	$6,348,941

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Ba
Cash-Needs Revenue Requirements

Project Description	Projected 2019	2020	2021	2022	2023	2024
Operating and Maintenance Expenses	$2,697,314	$2,758,746	$2,821,822	$2,886,587	$3,562,266	$6,596,173
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	0	0	2,160,000	4,320,000	4,320,000	4,320,000
Capital Projects	953,832	9,079,971	41,136,812	42,212,677	18,140,853	3,181,584
Bond Issuance Costs	0	0	699,545	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	4,584,515	5,600,665	38,153,644	(37,943,257)	(13,208,257)	(478,752)
Total Revenue Requirement	$8,539,576	$17,743,296	$85,275,738	$11,779,923	$13,118,777	$13,922,919
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	203,957	205,503	207,064	208,640	210,232	211,841
Projected Debt Proceeds	0	0	74,699,550	0	0	0
Total Other Capital Inflows	35,000	8,285,000	35,000	35,000	35,000	35,000
Total Development Fees	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	550,000
Interest/Investment Earnings	8,474	11,528	24,651	24,714	9,373	5,268
Total Non-Rate Related Revenue/Income	$1,347,431	$9,602,031	$76,066,265	$1,368,354	$1,354,605	$802,109
Required User Charge Revenue	$7,192,146	$8,141,265	$9,209,473	$10,411,569	$11,764,172	$13,120,810

Table 14
Castle Pines North Metropolitan District
Stand-Alone Financial Plan - Water Fund: Ba
Cash-Needs Revenue Requirements

Project Description	Projected 2025	2026	2027	2028	2029	2030
Operating and Maintenance Expenses	$6,806,660	$7,024,680	$7,250,515	$7,484,457	$7,726,812	$7,977,896
Annual Debt Service - Outstanding Debt	303,915	303,915	303,915	303,915	303,915	303,915
Annual Debt-Service - Projected Issues	4,320,000	4,320,000	4,320,000	4,320,000	4,320,000	4,320,000
Capital Projects	3,277,429	3,376,161	3,477,868	3,582,639	3,690,566	3,801,744
Bond Issuance Costs	0	0	0	0	0	0
Other	0	0	0	0	0	0
Change in Fund Balance	105,000	109,000	120,333	128,050	131,920	96,697
Total Revenue Requirement	$14,813,004	$15,133,757	$15,472,631	$15,819,061	$16,173,214	$16,500,252
Wholesale/Contract Revenues	$0	$0	$0	$0	$0	$0
Other Revenues	213,465	215,105	216,762	218,436	220,126	221,833
Projected Debt Proceeds	0	0	0	0	0	0
Total Other Capital Inflows	35,000	35,000	35,000	35,000	35,000	0
Total Development Fees	495,000	0	0	0	0	0
Interest/Investment Earnings	5,156	5,220	5,289	5,363	5,441	5,510
Total Non-Rate Related Revenue/Income	$748,621	$255,325	$257,051	$258,799	$260,567	$227,343
Required User Charge Revenue	$14,064,383	$14,878,431	$15,215,580	$15,560,262	$15,912,646	$16,272,909

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HAWKSLEY CONSULTING

370 Interlocken Blvd.
Ste. 300
Broomfield, Colorado 80021