Appendix G: Summary of Cost Assumptions (Section 8.4 of the City of San Diego 2012 Recycled Water Study)

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8.4 Financial Evaluation of Alternatives

A financial evaluation was performed, which included each Integrated Reuse Alternative considered in this Study. The financial evaluation was prepared to ultimately help decision-makers compare the costs of different water reuse approaches and to aid in making decisions about whether to invest in the water reuse system. The guiding principles for the evaluation included:

- Provide transparent costing of alternatives.
- Provide multiple opportunities at workshops and Stakeholder meetings to review, discuss, and debate project costs.
- Prepare a comparative financial evaluation of the Integrated Reuse Alternatives and include financing costs.
- Compare the water reuse alternative costs to other options facing the City and Participating Agencies.

The financial evaluation included a Net Present Value financial spreadsheet model (financial model). The financial model was used to calculate and compare unit costs (in terms of dollars per acre foot) for each Integrated Reuse Alternative against the current cost of imported untreated water. The financial model included fixed and variable inputs, which were used to perform a sensitivity analysis.

8.4.1 Financial Model Cost Components

The costing process consisted of a multi-step approach. The following summarizes the major steps:

- **Development of Unit Costs for Infrastructure.** Unit costs for treatment and conveyance facilities were prepared to estimate infrastructure costs. The unit costs were based on 23 Bid Summaries, two formal agency estimating tools, 14 project cost estimates, and insight and experience from the three national consulting team members performing this Study. The unit costs were first reviewed in the Coarse Screening Session and updated through the course of the project. One revision included modifying the unit costs to provide economy of scale adjustments (i.e. larger facilities are less expensive to build and operate than smaller facilities with similar processes and construction methods). This adjustment was based on City cost data and the EPA's *Guide to the Selection of Cost-Effective Wastewater Treatment Systems* (EPA-430/9-75-002; July 1975).
- **Integrated Reuse Alternative Costs.** Costs for each alternative were developed and reviewed in the Coarse Screening Session and the Fine Screening Session. The costs included:
  - **Capital Costs.** Capital costs were developed using the Study's unit costs described above. Capital costs were multiplied by cost factors related to the difficulty of construction at each site. Factors varied from 1.0 to 1.5 times the unit costs. Tunneling allowances were also included as an allowance for utility conflicts and for avoiding high traffic areas, streams, freeways, rail, or sensitive environmental areas.
  - **Operation and Maintenance Costs.** Operation and maintenance costs were also developed based on the Study's unit costs (for treatment facilities) and values developed in the 2005 Water Reuse Study (for conveyance facilities including pipelines, pump stations and reservoirs). Treatment facility costs included labor, chemicals, energy, and materials. Costs for conveyance facilities were calculated as a percentage of the capital costs. An electricity cost of $0.12 per kilowatt-hour was used for treatment and pump station operations.
  - **Soft Costs.** A 50-percent soft cost allowance was provided for Engineering, Administration, Legal, Construction Management and Environmental Permitting costs

  - **Land Acquisition.** Although a majority of the facilities planned are located on City parcels, additional land or alignments may need to be acquired. A cost equal to 4 percent of the estimated construction cost was included for these purposes.

- **Financial Model Assumptions.** Financial model assumptions were coordinated for consistency with other City financial model assumptions. These assumptions were fixed for all scenarios. It is the practice of the City to finance 20-percent of all capital projects with rates and fees. Funds derived from rates are the main source of funds for day-to-day operational and maintenance costs and debt coverage requirements. The assumptions related to financing include the following:
  - Interest rate of 5.5 percent on revenue bonds and 2.5 percent on State Revolving Fund (SRF) loans
  - Repayment period of 30 years on revenue bonds and 20 years on SRF loans
  - Issuance costs of 2.5 percent on revenue bonds and 1.0 percent on SRF loans
  - Debt coverage of 1.25 percent on revenue bonds and 1.2 percent on SRF loans
  - Maximum loan under SRF of $50 million per year
  - Complying with revenue bonds requires a reserve amount equal to one payment to be set aside at issuance
  - O&M escalation for chemical, energy, and labor set at 4.0 percent; Capital cost escalation set at 3.0 percent
  - Net Present Value analysis for 50 years
  - ENR Los Angeles cost basis index of 10051.30

8.4.2 Comparative Costs Basis Using a Sensitivity Analysis

The costs for the reuse program proposed in this Study will be compared to the cost of imported untreated water, and other alternative water supply projects (such as desalination). It is important to note that the cost presented for the reuse alternatives in this Study are fully loaded (including capital, O&M and financing costs). It is common for other new alternative water supply costs to be partial costs, including overly optimistic assumptions or certain exclusions. The costs for the alternatives presented in this Report were prepared to provide thorough and realistic budgetary estimates

8.4.3 Gross Costs

Gross Costs were calculated to determine the investment required for each Integrated Reuse Alternative. To achieve a realistic picture of Gross Costs, the financial evaluation included a sensitivity analysis with bracketed (bookend) conditions, using variables described as follows and summarized in Table 8-12:

- **Favorable Condition.** The favorable condition assumed the best-case scenario using the most favorable cost variables. This included 30-percent grant funding, $450 per acre-foot local resource program credits for 20 years, and a 20-percent project contingency.
- **Unfavorable Condition.** The unfavorable condition assumed the worst-case scenario related to the variable costs. This condition included 10-percent grant funding, $100 per acre-foot local resource program credits for 20 years, and a 40-percent project contingency.

Table 8-12. Gross Costs Variables				
Item	**Description**	**Favorable Scenario**	**Unfavorable Scenario**	**Average**
Grants	To help offset the costs associated with projects, the City can apply for grants to help finance a portion of the capital projects. Grants usually consist of funds that are obtained from state or federal agencies and do not need to be paid back. This is the preferred option among municipal utilities. The grants usually have stipulations regarding the type of projects that can be included and how the money is managed; therefore, additional administrative costs also come with the funds. Typically, grant amounts vary depending on the project type. Projects promoting water reuse have generally been well supported, with multiple programs such as the Bureau of Reclamation's Title XVI Program and California's bond measures. The analysis assumes receiving grant funding offsetting 10 to 30-percent of each Integrated Reuse Alternative's capital costs.	30%	10%	20%
Local Resource Program	To help offset the costs associated with new water projects, the City has participated in the Local Resource Program offered by MWD and the Local Water Supply Development funding provided by the SDCWA (these two programs are collectively referred to herein as the LRP). The LRP was created to promote the development of water recycling and groundwater recovery projects in order to replace an existing demand or prevent a new demand on imported water supplies. Since the City relies indirectly on imported water from MWD/SDCWA, it may be eligible to receive a credit up to $450 per acre-foot produced. The program is dependent on available funding and agency approvals and usually comes with a fixed term. For this Study, a 20-year term and a funding level of $100 to $450 per acre-foot were assumed. One caveat is that the LRP credit is discontinued once the cost to produce the alternative water supply source becomes cheaper than the cost of imported water.	$450/acre-foot, 20 years	$100/acre-foot, 20 years	$275/acre-foot, 20 years
Project Contingency	A project contingency was added to the construction costs of all alternatives. Contingencies are important at this level of planning to account for unknown conditions or additional facilities needed once more detailed evaluations or design is complete. The analysis assumes project contingencies adding 20-percent to 40-percent to the Integrated Reuse Alternative's capital costs.	20%	40%	30%

8.4.4 Net Costs

Net Costs are considered "real" or "true" costs for the purposes of comparing reuse projects to imported untreated water and other alternative water sources. Net Costs account for savings, offsets and credits that occur as a result of the reuse projects. For example, constructing a new reuse plant upstream of the Point Loma Plant reduces flows to the Point Loma Plant, resulting in lower capital and operational costs at the Point Loma Plant. These reduced costs are subtracted from the Gross Costs to get the Net Costs or "true" program cost. This is similar to the Orange County Groundwater Replenishment System, which was responsible for substantial savings by avoiding costly outfall improvements.

The variables associated with the Net Cost calculations are described in Table 8-13. Additional information regarding Net Costs is included in a Cost Methodology Summary included in Appendix H. The Cost Methodology Summary is presented in an informative, frequently asked question (FAQ) format. This document summarizes direct and indirect wastewater savings calculations and includes a graphical comparison of the key wastewater facilities included in this Study with the City's September 2011 Draft Wastewater Master Plan facilities.

Table 8-13. Net Cost Variables

Component	Description	Savings
Tier 1 - Direct Wastewater System Savings • Reduction of flows to downstream facilities • Remaining Point Loma capacity is upgraded to Secondary	The Study's Alternatives achieve the goal of offloading flows away from the Point Loma Plant, resulting in reduced capital and operating costs at downstream wastewater facilities. The direct wastewater system savings were calculated by comparing the size of the Point Loma Plant proposed in the City's September 2011 Draft Wastewater Master Plan (adjusted to a secondary treatment option) to the smaller Point Loma Plant size (which includes secondary treatment) in this Study (assuming the reuse projects in this Recycled Water Study are implemented). The cost difference is the savings directly attributable to these reuse projects. See Appendix H for additional details.	$557 million (capital savings) $27.6 million/year (operation and maintenance savings)
Tier 2 - Salt Reduction Credit • Water quality improvements to water & wastewater systems due to indirect potable reuse • Homeowner and business benefits not included in total	Similar to the 2005 Water Reuse Study, a salt credit was considered to account for the benefits of salinity reduction in the watershed. The salt credit basis is from the 1999 Salinity Management Study (MWD, USBR). The quantitative credit shown is the financial benefits of extending the life of the municipal water and wastewater treatment systems from having lower salinity levels in the water and wastewater flows. The San Vicente and Otay Lakes Reservoirs could see dramatic reductions in salinity levels from the proposed indirect potable reuse projects. Downstream agency facilities including drinking water treatment plants and the Harbor Drive advanced water purification facilities would benefit from this reduced salinity. In addition to the benefit shown, there is a benefit to water customers, since water heaters, clothes washers, dishwashers, and fixtures will also last longer with lower salinity levels. The combined savings included in the City's 2005 Water Reuse Study was $250/AF. The $100/AF value used in this Study only accounts for the estimated municipal treatment equipment savings.	$100/acre foot (not including customer savings)
Tier 3 - Indirect Wastewater System Savings • Remaining Point Loma capacity maintained at CEPT • Quantifies savings if this approach is attributable to the reuse program	The Point Loma Plant will either continue to use chemically enhanced primary treatment or will require upgrades to secondary treatment. This Study does not provide an opinion on whether CEPT or secondary treatment processes should be employed at the Point Loma Plant. However, it is prudent to summarize the reduced Point Loma capital and operational costs if CEPT status could be maintained for the remaining Point Loma Plant capacity after reuse projects and with the South Bay Diversion. The indirect wastewater savings are therefore calculated as the avoided secondary treatment costs at the Point Loma Plant. See Appendix H for additional details.	$463 million (capital savings) $13.0 million/year (operation and maintenance savings).
Qualitative Water System Savings	The local, regional and statewide water systems were considered for potential savings from increasing water reuse. Since quantitative costs could not be developed with current available information, qualitative benefits were considered, particularly at the regional and statewide level. The region's local water treatment plants treat water from local runoff (which is limited) and imported untreated water from the SDCWA and MWD (which is subject to cutbacks and higher price fluctuations). Indirect potable reuse projects provide a reliable, uninterruptable untreated water equivalent that would help supply the local water treatment plants that ratepayers have invested in over the past decade. Indirect potable reuse projects may defer or eliminate the need to expand the imported untreated water conveyance system needed to serve these treatment plants. The SDCWA Master Plan (currently underway) may help quantify what these benefits are in future updates to this Study. In addition, Stakeholders emphasized an additional benefit related to the need to fix water supply conditions in the California Bay-Delta (which has the potential for substantial cost impacts for Southern California). Water reuse projects reduce the burden on importing water from the Bay-Delta, providing an additional benefit for these projects.	Quantitative benefits are speculative, therefore this category is currently considered qualitatively

8.4.5 Cost Summary for Integrated Reuse Alternatives

The Integrated Reuse Alternative costs are summarized in Table 8-14. The table includes a tiered breakout of summary level costs based on the Gross Costs and Net Costs categories described above. As shown, the costs for A1, A2 and B3 are nearly identical to each other, and slightly higher than B1 and B2. For the A1/A2

comparison to B1/B2, the increased costs occur mainly due to the additional wastewater facilities and pumping needed to divert flows from Morena to the North City Plant. For the B3 comparison to B1/B2, B3 adds an additional plant and does not have the same economy of scale that the B1 and B2 Alternatives have. Implementation steps are included later in this Chapter, which include steps to further develop the Alternatives and look for additional cost savings.

Table 8-14. Cost Summary (2011 $/AF)

Alternative	Average Gross Costs	Net Costs		
		Tier 1 - Direct Wastewater System Savings	Tier 2 - Salt Reduction Credit	Tier 3 - Indirect Wastewater System Savings
		Remaining Point Loma capacity upgraded to Secondary	*Water Quality Benefit to Water/Wastewater System*	*Remaining Point Loma capacity maintained at CEPT*
A1: North City 45 mgd; Split Harbor Dr. AWPF	$1,900	$1,300	$1,200	$800
A2: North City 45 mgd; Consolidated Harbor Dr. AWPF	$1,900	$1,300	$1,200	$800
B1: North City 30 mgd; Split Harbor Dr. AWPF	$1,700	$1,100	$1,000	$600
B2: North City 30 mgd; Consolidated Harbor Dr. AWPF	$1,700	$1,100	$1,000	$600
B3: North City 30 mgd; Consolidated Harbor Dr. AWPF; Mission Gorge AWPF	$1,900	$1,300	$1,200	$800

Notes:

- *All Alternatives include South Bay Option C2 expansion with the Spring Valley No. 8 Diversion*
- *Direct and indirect wastewater system savings based on a comparison between the City's September 2011 Draft Wastewater Master Plan and the reduced wastewater facility sizing and pumping required as a resulted of the projects included in this Recycled Water Study (see Appendix H).*
- *Totals are in 2011 dollars (ENR Los Angeles Index value of 10,051.30, June 2011) and are based on a net present value analysis using a detailed financial model.*
- *Financial model sensitivity analysis generally produced cost ranging +/- $200/AF of the values shown. Favorable conditions could result in lower costs than shown.*

Key Study Conclusion

The Alternative Net Costs represent the costs that should be compared to other water sources – particularly imported untreated water. The average costs of the Alternatives above are:

- Cost assuming direct wastewater savings = $1,200/AF
- Cost assuming above plus salt credit = $1,100/AF
- Cost assuming above plus indirect wastewater savings = $700/AF

These costs compare well to the 2011 untreated water cost of $904 per acre foot, and are more economical than most other new water supply concepts being proposed.

The net cost tiers are summarized as follows:

- **Tier 1: Net Costs with Direct Wastewater System Savings.** This tier includes the Direct Wastewater System Savings that occur as a result of the water reuse projects in this Study which help to avoid approximately 100 mgd of secondary treatment improvements at the Point Loma Plant. This tier represents the first threshold in which the Alternative costs should be considered for comparison to the cost of other water sources – such as imported untreated water or other new water sources. The comparison, as outlined in the next section, is very favorable compared to untreated water and more economical than most water supply concepts being proposed at this time.
- **Tier 2: Net Costs with the Salt Credit (Including Tier 1 Savings).** This tier includes the Salt Reduction Credit Savings and adds a $100/acre-foot credit occurring as a result of the water quality benefits created by implementing indirect potable reuse projects. The savings included is attributable to benefits received by agency facilities downstream of the new projects, including wastewater facilities. Additional savings (not accounted for in this total) would be experienced by homeowners and business as described in Chapter 6. Although these benefits are real, the ability to recover these savings and allocate them to the reuse program led to extracting this element as a separate unit cost tier so it may be considered separately from other savings.
- **Tier 3: Net Costs with Indirect Wastewater System Savings (including Tier 1 and Tier 2 Savings).** As described in the table above, this Study does not provide an opinion on whether the Point Loma Plant should continue to use CEPT treatment processes or upgrade to secondary processes. However, it was considered appropriate to list the Net Costs of the new water if the water reuse program proposed in this Study led to maintaining CEPT treatment for the remaining flows that reach the Point Loma Plant (i.e., the remaining flows that are not recycled upstream).

The Study Alternative's Net Costs were extrapolated based on a 3.5-percent inflation rate and compared to projected untreated imported water rate as shown in Figure 8-8. The 2011 SDCWA municipal and industrial untreated imported water rate was $904 per acre foot. The existing rate was inflated through 2020 based on the "low-rate" scenario values provided by the SDCWA in April 2011 (which averages to a 5.8-percent annual increase). Beyond 2020, the untreated water cost projectionswere bracketed based on various infiltration scenarios ranging from 3 to 6 percent (shown as the shaded area). These scenarios compare well to the Net Costs of the Study's Alternatives (shown as solid lines). The Study's Net Costs shown are the average of all the Study Alternatives and an average of the Favorable and Unfavorable scenario (i.e., the lower cost B1/B2 Alternatives and the favorable scenario would lower the reuse costs further). As shown, the average Tier 1 and Tier 2 cost curves have Net Costs lower than most of the untreated imported water rate scenarios. If the Tier 3 savings are attributed to the projects in this Study, the program would have significantly lower Net Costs than all untreated imported water rate scenarios. An additional consideration is the long-term effects that other local water projects and reduced demands are causing to MWD/SDCWA rates. As purchases decline, rates must increase to cover fixed costs. This is likely to cause imported water costs to inflate faster than locally controlled projects. Overall, the conclusion of this analysis supports the water reuse program proposed in this Study.

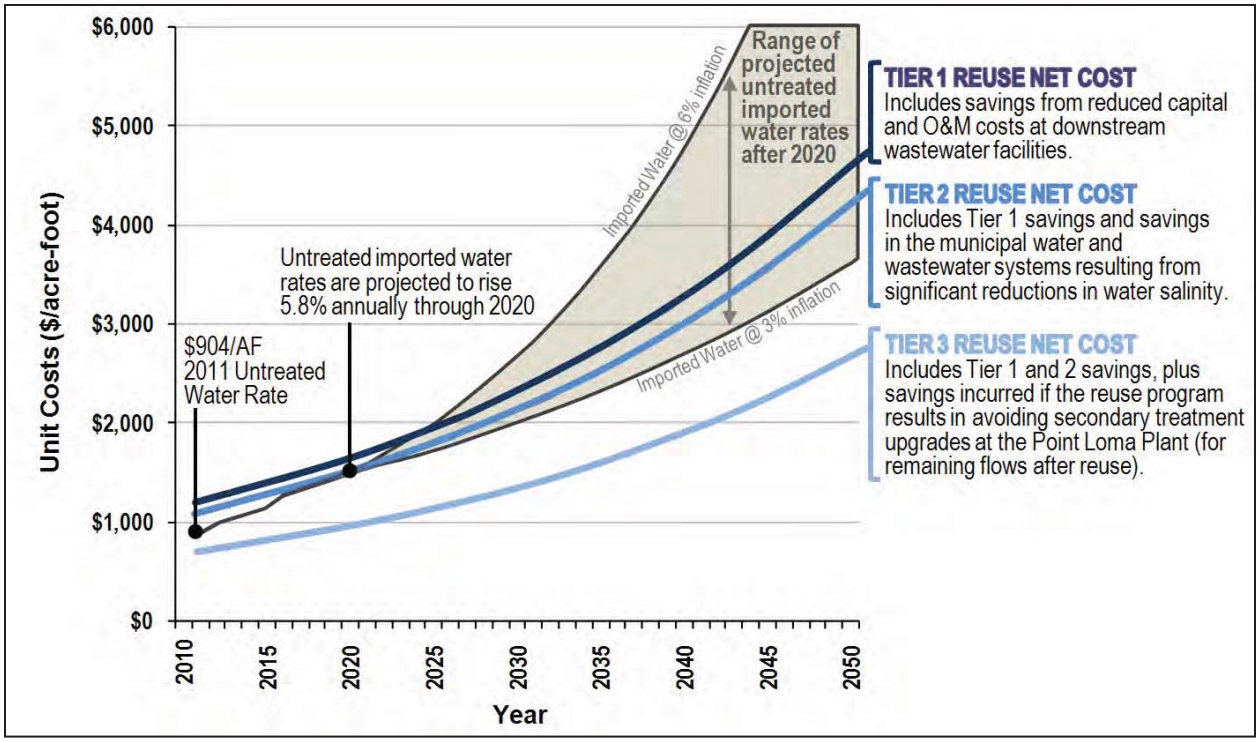

Figure 8-8. Comparison of Reuse Alternative Net Costs to Imported Untreated Water

The Integrated Reuse Alternative Net Costs compare well to projected untreated imported water rates. Untreated water rates are projected to rise 5.8 percent through 2020 and there remain many uncertainties regarding future costs associated with the Bay-Delta fix and imported water.

A detailed cost breakdown for the Favorable and Unfavorable Financial Evaluation scenarios is included in Tables 8-15 and 8-16, respectively. Capital and operation and maintenance cost estimates for each Integrated Reuse Alternative can be found in Appendix F.

Table 8-15. Financial Details for the Favorable Scenario

Item	Theme A1	Theme A2	Theme B1	Theme B2	Theme B3
O&M and Capital Debt					
Interest from Reserve	25,769,150	25,923,958	23,557,882	23,663,931	25,715,525
Operation & Maintenance	1,757,803,600	1,753,642,189	1,612,278,853	1,599,768,756	1,799,893,592
Debt Service	876,467,167	881,123,259	776,617,870	779,795,118	854,165,858
Total PV Cost	$2,608,501,617	$2,608,841,490	$2,365,338,840	$2,355,899,943	$2,628,343,925
Total Cost, Annual Payments	$154,061,888	$154,081,962	$139,700,342	$139,142,867	$155,233,804
Capital (PAYGO Financed)					
PAYGO Financing	321,118,587	322,724,896	283,626,663	284,730,678	311,771,510
Total PV Cost	$321,118,587	$322,724,896	$283,626,663	$284,730,678	$311,771,510
Total Cost, Annual Payments	$18,965,729	$19,060,600	$16,751,402	$16,816,607	$18,413,677
Credits/Avoided Costs					
LRP Credit	200,257,301	200,257,301	191,430,259	191,430,259	196,474,283
Total PV Cost	$200,257,301	$200,257,301	$191,430,259	$191,430,259	$196,474,283
Total Cost, Annual Payments	$11,827,487	$11,827,487	$11,306,149	$11,306,149	$11,604,056
Tier 1: Wastewater O&M Avoided Costs	515,354,315	515,354,315	515,354,315	515,354,315	515,354,315
Wastewater PAYGO/Debt Avoided Costs	436,611,784	436,611,784	436,611,784	436,611,784	436,611,784
Total PV Cost	$951,966,099	$951,966,099	$951,966,099	$951,966,099	$951,966,099
Total Cost, Annual Payments	$56,224,498	$56,224,498	$56,224,498	$56,224,498	$56,224,498
Tier 2: Salt Credit	184,706,087	184,706,087	178,800,483	178,800,483	182,175,128
Total PV Cost	$184,706,087	$184,706,087	$178,800,483	$178,800,483	$182,175,128
Total Cost, Annual Payments	$10,909,009	$10,909,009	$10,560,216	$10,560,216	$10,759,527
Tier 3: CEPT O&M Avoided Costs	242,457,015	242,457,015	242,457,015	242,457,015	242,457,015
CEPT PAYGO/Debt Avoided Costs	362,889,796	362,889,796	362,889,796	362,889,796	362,889,796
Total PV Cost	$605,346,812	$605,346,812	$605,346,812	$605,346,812	$605,346,812
Total Cost, Annual Payments	$35,752,661	$35,752,661	$35,752,661	$35,752,661	$35,752,661
Water Produced (AF)	96,162	96,162	96,162	96,162	96,162
Gross Costs (Includes O&M, Capital, Grants and LRP)					
Total Costs NPV	$2,729,362,903	$2,731,309,085	$2,457,535,244	$2,449,200,361	$2,743,641,152
Total Cost, Annual Payments	$161,200,131	$161,315,075	$145,145,595	$144,653,325	$162,043,425
Total Cost: $/AF (2011)	$1,700	$1,700	$1,500	$1,500	$1,700
Total Cost: $/Gallon (2011)	$0.0052	$0.0052	$0.0046	$0.0046	$0.0052
Net Cost Tier 1 (Direct Wastewater System Savings)					
Total Costs NPV	$1,777,396,804	$1,779,342,987	$1,505,569,145	$1,497,234,263	$1,791,675,053
Total Cost, Annual Payments	$104,975,633	$105,090,577	$88,921,097	$88,428,827	$105,818,927
Total Cost: $/AF (2011)	$1,100	$1,100	$900	$900	$1,100
Total Cost: $/Gallon (2011)	$0.0034	$0.0034	$0.0028	$0.0028	$0.0034
Net Cost Tier 2 (Salt Credit Plus Tier 1 Savings)					
Total Costs NPV	$1,592,690,717	$1,594,636,899	$1,326,768,662	$1,318,433,779	$1,609,499,925
Total Cost, Annual Payments	$94,066,623	$94,181,568	$78,360,881	$77,868,611	$95,059,400
Total Cost: $/AF (2011)	$1,000	$1,000	$800	$800	$1,000
Total Cost: $/Gallon (2011)	$0.0031	$0.0031	$0.0025	$0.0025	$0.0031
Net Cost Tier 3 (Indirect Wastewater System Savings Plus Tier 1 and Tier 2 Savings)					
Total Costs NPV	$987,343,905	$989,290,088	$721,421,850	$713,086,968	$1,004,153,114
Total Cost, Annual Payments	$58,313,963	$58,428,907	$42,608,221	$42,115,950	$59,306,739
Total Cost: $/AF (2011)	$600	$600	$400	$400	$600
Total Cost: $/Gallon (2011)	$0.0018	$0.0018	$0.0012	$0.0012	$0.0018

** See section 8.4 for assumptions. The total costs were adjusted as noted to 2011 $'s for comparison to the SDCWA untreated water costs.*

Table 8-16. Financial Details for the Unfavorable Scenario

Item	Theme A1	Theme A2	Theme B1	Theme B2	Theme B3
O&M and Capital Debt					-
Interest from Reserve	40,515,384	40,756,326	36,991,977	37,156,991	40,385,393
Operation & Maintenance	1,757,803,600	1,753,642,189	1,612,278,853	1,599,768,756	1,799,893,592
Debt Service	1,385,732,744	1,392,960,001	1,224,977,635	1,229,911,800	1,347,713,119
Total PV Cost	$3,103,020,960	$3,105,845,864	$2,800,264,511	$2,792,523,565	$3,107,221,318
Total Cost, Annual Payments	$183,268,918	$183,435,761	$165,387,683	$164,930,491	$183,516,997
Capital (PAYGO Financed)					
PAYGO Financing	357,032,668	358,816,714	315,338,882	316,565,050	346,633,018
Total PV Cost	$357,032,668	$358,816,714	$315,338,882	$316,565,050	$346,633,018
Total Cost, Annual Payments	$21,086,867	$21,192,235	$18,624,372	$18,696,791	$20,472,649
Credits/Avoided Costs					
LRP Credit	44,501,622	44,501,622	42,540,058	42,540,058	43,660,952
Total PV Cost	$44,501,622	$44,501,622	$42,540,058	$42,540,058	$43,660,952
Total Cost, Annual Payments	$2,628,330	$2,628,330	$2,512,477	$2,512,477	$2,578,679
Tier 1: Wastewater O&M Avoided Costs	515,354,315	515,354,315	515,354,315	515,354,315	515,354,315
Wastewater PAYGO/Debt Avoided Costs	436,611,784	436,611,784	436,611,784	436,611,784	436,611,784
Total PV Cost	$951,966,099	$951,966,099	$951,966,099	$951,966,099	$951,966,099
Total Cost, Annual Payments	$56,224,498	$56,224,498	$56,224,498	$56,224,498	$56,224,498
Tier 2: Salt Credit	184,706,087	184,706,087	178,800,483	178,800,483	182,175,128
Total PV Cost	$184,706,087	$184,706,087	$178,800,483	$178,800,483	$182,175,128
Total Cost, Annual Payments	$10,909,009	$10,909,009	$10,560,216	$10,560,216	$10,759,527
Tier 3: CEPT O&M Avoided Costs	242,457,015	242,457,015	242,457,015	242,457,015	242,457,015
CEPT PAYGO/Debt Avoided Costs	362,889,796	362,889,796	362,889,796	362,889,796	362,889,796
Total PV Cost	$605,346,812	$605,346,812	$605,346,812	$605,346,812	$605,346,812
Total Cost, Annual Payments	$35,752,661	$35,752,661	$35,752,661	$35,752,661	$35,752,661
Water Produced (AF)	96,162	96,162	96,162	96,162	96,162
Gross Costs (Includes O&M, Capital, Grants and LRP)					
Total Costs NPV	$3,415,552,006	$3,420,160,956	$3,073,063,335	$3,066,548,557	$3,410,193,384
Total Cost, Annual Payments	$201,727,454	$201,999,666	$181,499,577	$181,114,805	$201,410,966
Total Cost: $/AF (2011)	$2,100	$2,100	$1,900	$1,900	$2,100
Total Cost: $/Gallon (2011)	$0.0064	$0.0064	$0.0058	$0.0058	$0.0064
Net Cost Tier 1 (Direct Wastewater System Savings)					
Total Costs NPV	$2,463,585,907	$2,468,194,857	$2,121,097,236	$2,114,582,458	$2,458,227,285
Total Cost, Annual Payments	$145,502,956	$145,775,167	$125,275,079	$124,890,306	$145,186,468
Total Cost: $/AF (2011)	$1,500	$1,500	$1,300	$1,300	$1,500
Total Cost: $/Gallon (2011)	$0.0046	$0.0046	$0.0040	$0.0040	$0.0046
Net Cost Tier 2 (Salt Credit Plus Tier 1 Savings)					
Total Costs NPV	$2,278,879,820	$2,283,488,770	$1,942,296,753	$1,935,781,975	$2,276,052,157
Total Cost, Annual Payments	$134,593,947	$134,866,158	$114,714,863	$114,330,091	$134,426,941
Total Cost: $/AF (2011)	$1,400	$1,400	$1,200	$1,200	$1,400
Total Cost: $/Gallon (2011)	$0.0043	$0.0043	$0.0037	$0.0037	$0.0043
Net Cost Tier 3 (Indirect Wastewater System Savings Plus Tier 1 and Tier 2 Savings)					
Total Costs NPV	$1,673,533,008	$1,678,141,958	$1,336,949,941	$1,330,435,163	$1,670,705,346
Total Cost, Annual Payments	$98,841,286	$99,113,498	$78,962,202	$78,577,430	$98,674,280
Total Cost: $/AF (2011)	$1,000	$1,000	$800	$800	$1,000
Total Cost: $/Gallon (2011)	$0.0031	$0.0031	$0.0025	$0.0025	$0.0031

** See section 8.4 for assumptions. The total costs were adjusted as noted to 2011 $'s for comparison to the SDCWA untreated water costs.*

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