CHAPTER 1
INTRODUCTION AND SUMMARY

AUTHORIZATION AND SCOPE OF WORK

City of Adelanto approved a proposal with So & Associates Engineers, Inc. in April of 2005 to develop and prepare comprehensive Water and Sewer Master Plans. The purpose of the Water Master Plan is to enable the City of Adelanto to meet its current and future water demands for areas within the existing City. The water study reviews past water usage information, current system deficiencies, and recommends system improvements (water supply, storage, and transmission grid) over the next 5 to 20 years and near built-out for the parcels within the City limit. The scope of the Water Master Plan includes the following tasks:

(1) Attend an initial project coordination meeting with the City of Adelanto water department staff to discuss study scope/approach to complete the study, planning assumption, areas of concerns, and data required from the City. Information from the 2004 focus water study for Assessment District No. 1A will be integrated to the master plan.

(2) Discuss existing land use information and possible revisions (if any). Identify development density per land use category in the City's general plan (medium density, high density, and commercial etc.) for the parcels to be served. This information will be used to estimate the total equivalent dwelling units (EDUs) under near built-out development.

(3) Based on historical water production/usage data (past 10 years), identify the water usage per equivalent dwelling unit (gpd/EDU). Project the future water requirements after discussing the average daily water use per EDU with City staff. Discuss with City staff (and Fire Department staff) relative to fire protection requirements and include this consideration in the computer flow simulations.

(4) The water facility map (for H2O-Net Model) will be updated to include all existing facilities (pipelines etc.) in place to prepare hydraulic simulations under steady-state conditions and at near saturation development (under a proposed 1/2 mile distribution grid system) to verify existing system deficiencies and future piping requirements. Pressure zone boundaries will be reviewed at the same time.

(5) Computer modeling (calibration) will be run by simulating maximum day demands and fire flows at specific grid locations (those shown in report) of the City. Fire flows at other nodes were checked during computer simulation process.

(6) Based on the computer simulations, review and discuss with City staff the system improvement needs such as: water supply, storage (including site selection), booster pump and transmission pipelines to meet the projected demand in 5-year increments and near built-out within the City limit plus portion of land that may be considered for annexation by the City. Due to City's location in the upper Mojave groundwater basin, the need and feasibility to purchase imported water will be discussed.

(7) Provide an estimate of the preliminary project cost for the proposed capital improvements including construction, engineering, administration etc. City's current connection fee will also be reviewed and discussed. In addition, the feasibility to utilize municipal bonds to finance the capital improvements would also be considered.

(8) Provide a Master Plan report summarizing the above findings.

SUMMARY OF FINDINGS

This chapter provides a brief summary of findings and conclusions presented in the Water Master Plan. Chapters 2 through 5 includes review of City of Adelanto's existing and future water system. Upon completion of engineering analyses, new water facilities were proposed to expand the current system capacity to accommodate a specific rate of growth towards near-saturation. Estimated cost of improvements were further reviewed in Chapter 6 and current connection fee is adjusted to adequately finance the required improvements

Chapter 2 – Land Use And Water Requirements

This chapter provides information on land-use, historical meter connections, and water usage. Population estimates are made using combined equivalent residential dwelling units (EDUs) as basis for projection. An equivalent dwelling unit water duty is described as the amount of water that a typical single-family residential connection would use per day. Connections based on other land uses are then converted into EDUs. These data permits the Project staff to estimate future growth and water requirements. In addition to the 5-year initial planning period, the projections for 10-year, 20-year period, and near saturation have been included to enable the project staff to make a more accurate assessment of the future water supply and facility needs. In the Master Plan, each equivalent dwelling unit is assigned with water duty coefficients of 700 gallons per day, 600 gallons per day, and 500 gallons per day. The projected water requirement (supply and storage) up to near-saturation development (Table 2-8) is presented herein below:

Chapter 3 – Existing Water Facilities (Supply Source, Storage, and Pipeline)

This chapter provides an accounting of the existing water system facilities including water supply wells, storage reservoirs, booster pump stations, and distribution piping

Projected Water Requirements Near Saturation (same as Table 2-8)

Water Supply Requirement

Water Duty Coefficient	Existing Water Supply GPM	EDU	Average Day Demand	Maximum Day Demand[1]	Modified Supply Capacity "A"[2]	Modified Supply Capacity "B"[3]
			GPM	GPM	GPM	GPM
700gpd/EDU	6,718	87,163 68,349 AFY	42,371	105,927	84,742	63,556
		Incremental Demand		-99,209	-78,024	-56,838
600gpd/EDU	6,718	87,163 58,585 AFY	36,318	90,795	72,636	54,477
		Incremental Demand		-84,077	-65,918	-47,759
500gpd/EDU	6,718	87,163 48,821 AFY	30,265	75,662	60,530	45,397
		Incremental Demand		-68,944	-53,812	-38,679

Water Storage Requirement

Water Duty Coefficient	EDU	Maximum-Day Demand[1]	Fire flow	Maximum-Day Demand + Fireflow	Operational Storage[4]	Maximum-Day Demand+ Fireflow + Operational Storage
		Gallons	Gallons	MG	MG	MG
700gpd/EDU	87,163	152,535,250	300,000	152.84	45.76	198.60
600gpd/EDU	87,163	130,744,500	300,000	131.04	39.22	170.27
500gpd/EDU	87,163	108,953,750	300,000	109.25	32.69	141.94

1. The Total Maximum-Day Demand (MDD) = 2.5 X ADD
2. Modified Supply Capacity "A" - All wells pumping over 12-hours per day.
3. Modified Supply Capacity "B" - All wells pumping & water treatment plant running over 16-hours per day.
4. Operational storage = 30 % of Maximum-Day Demand
5. MG = million gallons

(shown in Figure 3-1). This section also presents a discussion on the computer hydraulic modeling (using the H2ONet software). At present, the City's facilities consist of the following:

- 342,750 lineal feet (64.91 miles) of main transmission lines ranging in size from 6-inch to 24 inch;

- 14 active vertical wells with total pumping capacity of approximately 6,718 gpm actual capacity varies depending on static water level in the aquifer and the pump performance and 2 inactive vertical wells which are currently under rehabilitation;
- 5 welded steel storage reservoirs (total 16.75 million gallons), for domestic and fire flow supply;
- 4 booster stations which transmit water from lower to upper pressure zones, 4 pressure reducing stations, which transfer water from upper pressure zones to lower zones.

Chapter 4 – Proposed water System Improvements

This chapter provides a review of recommended water system improvements for near-saturation development. A description is included to explain how the proposed improvements were being analyzed to correct the existing system deficiency as growth occurs. Modeling of the system required updating of the City's water system map and incorporation of projections of future connections and growth rates. The required capital improvements and probable project costs for build-out stage are as follows:

- Install/Upgrade 985,443 lineal feet at 700gpd/EDU, 890,199 lineal feet at 600gpd/EDU and 869,564 lineal feet at 500gpd/EDU of transmission lines (from 10 to 24 inch). Pipe lengths vary due to extent of pipelines to be paralleled or replaced.
- Construct 36 new reservoirs (5 MG capacity) at 700gpd/EDU, 31 new reservoirs at 600gpd/EDU, and 25 new reservoirs at 500gpd/EDU.
- Construct and equip up to 4 new wells (500 gpm more or less capacity) and 10 new booster stations. Remaining water supply requirement is recommended to be provided from alternative sources (Chapter 5), hence water treatment plants for imported water is also considered in the cost estimate.
- Install 9 pressure reducing stations including associated piping.

IMPROVEMENT COST ESTIMATE (same as Table 4-1)

Water Duty Coefficient			700 GPD/EDU			600 GPD/EDU			500 GPD/EDU		
Max-day Water Demand (gpm)			105,927			90,795			75,662		
	Unit cost		Quantities		Sum ($)	Quantities		Sum ($)	Quantities		Sum ($)
Storage Reservoirs											
Capacity (5 MG)	$2,500,000	/MG	36	Ea.	$90,000,000	31	Ea.	$77,500,000	25	Ea.	$62,500,000
Sub-Total					$90,000,000			$77,500,000			$62,500,000
Water Supply Wells											
Capacity (500 gpm)	$1,200,000	/Each	4	Ea.	$4,800,000	4	Ea.	$4,800,000	4	Ea.	$4,800,000
Sub-Total					$4,800,000			$4,800,000			$4,800,000
Water Treatment Plants											
Capacity (5 MGD)	$16,000,000	/Each	16	Ea.	$312,000,000	14	Ea.	$273,000,000	11	Ea.	$214,500,000
Back-up Wells (Recharge)	$3,500,000	/Each									
Sub-Total					$312,000,000			$273,000,000			$214,500,000
Booster Pumps											
Capacity (1,000 gpm)	$375,000	/Each	10	Ea.	$3,750,000	8	Ea.	$3,000,000	6	Ea.	$2,250,000
Sub-Total					$3,750,000			$3,000,000			$2,250,000
Pressure Reducing Valves											
6" PRVs	$18,525	/Each	9	Ea.	$166,725	9	Ea.	$166,725	9	Ea.	$166,725
Sub-Total					$166,725			$166,725			$166,725
Pipelines											
10" Dia.	$68.80	/L.F.	36,400	L.F.	$2,504,312	22,246	L.F.	$1,530,531	16597.14	L.F.	$1,141,883
12" Dia.	$81.61	/L.F.	672,518	L.F.	$54,884,186	684,781	L.F.	$55,885,016	736927.4	L.F.	$60,140,643
16" Dia	$110.02	/L.F.	87,714	L.F.	$9,650,294	113,201	L.F.	$12,454,388	82599.59	L.F.	$9,087,607
18" Dia.	$127.28	/L.F.	49,636	L.F.	$6,317,708	38,665	L.F.	$4,921,251	18971.38	L.F.	$2,414,677
20" Dia.	$141.95	/L.F.	15,983	L.F.	$2,268,815	3,379	L.F.	$479,658		L.F.	$0
24" Dia.	$156.92	/L.F.	123,192	L.F.	$19,331,289	27,927	L.F.	$4,382,261	14468.5	L.F.	$2,270,397
Sub-Total			985,443		$94,956,604	890,199		$79,653,104	869,564		$75,055,207
				Total Cost	$505,673,329			$438,119,829			$359,271,932
				Contingency (10%)	$50,567,333			$43,811,983			$35,927,193
Add 15% for Eng., Admin., CEQA, etc.					$75,850,999			$65,717,974			$53,890,790
				TOTAL	$632,091,661			$547,649,787			$449,089,915

Chapter 5 – Alternative Water Supply Sources

This Chapter discusses the need to develop alternate supply sources. Discussions include water conservation, imported water (from California aqueduct via the Mojave Water Agency), and water reclamation (water recycling). A 30% conservation goal is recommended in this Master Plan. All new developments will be required to pay a fee component equivalent to purchasing ten years of imported water (discussed in Chapter 6). Water recycling is the third component discussed in this chapter. Water reclamation

(recycling) will supplement the existing ground water well supply and to meet the area's long term water requirements. Estimated cost of the recommended recycled water system is presented in Table 5-1.

Projected Improvements for Proposed Reclaimed Water Facilities (same as Table 5-1)

Recycle Water Storage Requirement					
Water Duty Coefficient	EDU	Average-Day Demand[1] Gallons	No. Of Storage 5 MG Each	Unit Cost ($)	Total Cost ($)
150gpd/EDU	80,263	15,651,285	3	$2,500,000	$7,825,643

Pipeline Requirement				
Pipe Size (inch)	Water Duty Coefficient 150gpd/EDU Length Feet	Mile	Unit Cost ($)	Total Cost ($)
8	47,949	9.08	$55.62	$2,666,923
12	4,491	0.85	$81.61	$366,511
16	3,884	0.74	$110.02	$427,318
24	23,880	4.52	$156.92	$3,747,250
Total	80,204	15.19		$7,208,001

Booster Pump Requirement				
Water Duty Coefficient	Capacity (gpm)	Quantities (4,000 GPM Each)	Unit Cost ($)	Total Cost ($)
150gpd/EDU	10,869	3	$375,000	$1,018,964
			Sub Total	$16,052,608
			Contingency (10%)	$1,605,261
			Eng., Admin., CEQA, etc (15%)	$2,407,891
			Total	**$20,065,759**

(1) Including operational storage (30% of storage)

Chapter 6 – Financing of the proposed Improvements

This Chapter completes a review of the capital improvements required to ensure adequate water service to existing and future developments within the City of Adelanto. Total system improvement costs identified in chapter 4 for the three water duty coefficients (700, 600, and 500 gpd/EDU) were considered in conjunction with the reclaimed water component presented in Chapter 5 and supplemental water connection fee discussed in this Chapter. In order to have the ability to adequately serve future developments, the

City will target at least a 30% water conservation effort by requiring new developments to adopt drought tolerant landscaping and eliminate front and back-yard lawns. The water allotment (or water duty coefficient) per EDU will be limited to 500gpd. The City may consider more stringent potable water conservation goals in the future if availability of imported water is limited. The proposed connection fee for the three water duty coefficients from the Chapter 6 are presented herein. City staff is recommending the City Council to adopt the proposed connection fee schedule for the 500 gpd/EDU water duty at $8,265 per EDU.

	700 gpd /EDU	**600 gpd /EDU**	**500 gpd /EDU**
Regular Connection Fee (Source, Storage, Transmission)	$ 7,875.26	$ 6,823.19	$ 5,595.23
Supplemental Water Fee	$ 3,387.09	$ 2,903.22	$ 2,419.35
Reclaimed Water Fee	$ 250.00	$ 250.00	$ 250.00
Total	*$ 11,512.36*	*$ 9,976.42*	*$ 8,264.59*
Recommended Fee	**$ 11,512.00**	**$ 9,976.00**	**$ 8,265.00**

RECOMMENDATION

City of Adelanto attempts to provide adequate high quality water supply, storage for fire flow protection, and distribution capacity to all developments within its service boundary. However, this objective of Adelanto's water department is affected by declining ground-water table, and the need to construct additional water storage facilities, and expanding distribution system. This Water Master Plan was prepared to review existing water system/future water needs and analyze its ability to produce, store and distribute future water under the three water duty coefficient scenarios. System expansion (supply, storage and transmission capacity) to meet future growth will be funded through capital connection fees (AB 1600 funds). Adjustment to the current connection fee will be proposed including the elements of "reclaimed water" and "supplemental water cost".

Based on discussions with staff, the recommended near future capital improvements are as follows:

- 22,459 lineal feet of 12-inch, 16-inch, 18-inch & 24-inch transmission pipelines;
- Two 5-MG storage reservoir immediately (one in 2007, one in 2008); additional ten(10) 5-MG storage reservoirs within 10 years;
- Two new wells initially Wells 15 and 16, with several smaller local wells for Year 2008 to 2010 in conjunction with the proposed City water treatment plant.
- Investigate feasibility to secure imported water via the Mojave Water Agency, treat and deliver to existing storage and distribution system;
- Develop program to rehabilitate or replace nearly all of the existing wells at the former GAFB well-field, and Well No. 8 at Stater Bros Stadium site.
- Financing for the above improvements will be based on the AB1600 revenues.

CHAPTER 1
INTRODUCTION

AUTHORIZATION AND SCOPE OF WORK

City of Adelanto approved a proposal with So & Associates Engineers, Inc. in April of 2005 to develop and prepare Comprehensive Water and Sewer Master Plans. The purpose of the Sewer Master Plan is to conduct a comprehensive review of the existing trunk and force main sewer system, and to identify the current system deficiencies and recommend improvements necessary to maintain a reliable sewage conveyance system over the next 5 to 20 years and near built-out for the parcels within the City limit. The scope of the Sewer Master Plan includes the following tasks:

(1) Attend an initial project coordination meeting with the City of Adelanto staff to discuss study scope/approach to complete the study, planning assumption, areas of concerns, and data required from the City. Information from the 2004 focus sewer study for Assessment District No. 1A will be integrated to the master plan.

(2) Discuss existing land use information and possible revisions (if any). Identify development density per land use category in the City's general plan (medium density, high density, and commercial etc.) for the parcels to be served. This information will be used to estimate the total equivalent dwelling units (EDUs) under near build-out development. City's 2 feet interval contour map will be used to plan future trunk sewers.

(3) Based on historical wastewater flow data (past 10 years), identify the wastewater flow per equivalent dwelling unit (gpd/EDU). Project the future sewage flow after discussing the average daily wastewater flow per EDU with City staff to enable the Project Team to project future wastewater flows to project treatment plant and effluent disposal expansion needs.

(4) Sewer hydraulic model (using H2O Map Sewer) will be developed to include pipeline maps and to perform hydraulic simulations for existing condition and at near saturation development (proposed 0.5 mile distribution grid system) to verify existing system deficiencies and future piping requirements. Develop a database (pipe diameter, manhole number designation, invert elevations for the collection and trunk sewer system) utilizing sewer plans previously prepared for City of Adelanto. The sewer model will be set up from upstream to downstream flow sequence.

(5) Based on the computer simulations, review and discuss with the City staff the current conditions and proposed improvements in 5-year increments and near built-out within the City limit plus portion of land that may be considered for annexation by the City.

(6) Provide an estimate of the preliminary project cost for the proposed capital improvements including construction, engineering, administration etc. City's current connection fee will also be reviewed and discussed. In addition, the feasibility to utilize municipal bonds to finance the capital improvements would also be considered.

(7) Discuss with City staff to identify location(s) of a future upstream water reclamation plant. Effluent will be used as reclaimed (recycle) water. Location of the site, sizing of the plant, proposed treatment unit operations, and estimated costs will be presented for consideration by the City Council.

(8) Provide a Master Plan report summarizing the above findings.

RECOMMENDTAION

City of Adelanto attempts to provide reliable sewer system to all developments within its service boundary. This Sewer Master Plan was prepared to review existing sewer system, future needs, and to analyze existing waste-water treatment plant and proposed sub-regional plant. System expansion (relief sewer, trunk sewer, lift station etc) to meet new growth will be funded through capital connection fees (AB 1600 funds). Adjustment to the current connection fee will be proposed. Based on discussions with staff, the recommended initial near capital improvements are as follows:

- Downstream trunk sewers to convey wastewater into the existing treatment plant and future expanded plant.
- Expand the existing wastewater treatment plant from current 1.5 MGD capacity to about 4.0 MGD initially and ultimately to 8.0 MGD.
- Proposed two sub-regional waste water treatment plants (6.0 MGD and 3.0 MGD), constructed in incremental capacities.

SUMMARY OF FINDINGS

This chapter provides a brief summary of findings and conclusions presented in the Sewer Master Plan. Chapters 2 through 5 include review of City of Adelanto's existing and future sewer system. Upon completion of engineering analyses, sewer systems are proposed to expand the current system to accommodate a specific rate of growth towards near-saturation. Estimated cost of improvements were reviewed in Chapter 6 and current connection fee is adjusted to adequately finance the required improvements

Chapter 2 – Land Use And Wastewater Flow

This chapter provides information on land-use, historical sewer connections and wastewater flow. Population estimates are made using combined equivalent residential dwelling units (EDUs) as basis for projection. An equivalent dwelling unit flow is

described as being the amount of waste-water that a typical single-family residential connection would produce per day. Connections based on other land uses are then converted into EDUs. These data permits the Project Staff to estimate future growth and waste-water flow. In addition to the 5-year initial planning period, the projections for 10-year, 20-year period, and near saturation have been included to enable the project staff to make a more accurate assessment of the future sewer system capacity and facility needs.

Same as TABLE 2-5: WASTEWATER FLOW ESTIMATE FOR NEAR SATURATION

Land Use Type	Total Area (Acres) (w/o Lewis)	Total Area (Acres) (Lewis)	Total Adelanto Area (Acres)	Equivalent Dwelling Units (EDU)		Wastewater Duty Coefficient (gpd/EDU)	Sub-Total Wastewater Flow (gpd)
				Per Ac.	Total		200 gpd/EDU
Single Family Residential (R1)	6,598	1,622	8,220	4	32,880	200	6,576,063
Single Family Residential (R1-.5)	1,404	1,774	3,178	2	6,356	200	1,271,220
Medium Density Residential (R3-8)	829	880	1,709	6	10,252	200	2,050,371
General Commercial (C)	2,225	559	2,784	2	5,568	200	1,113,562
Commercial Restricted (CR)	334		334	2	668	200	133,600
Card Room (CR-2)	122		122	2	244	200	48,800
Community Facility (CF)	313	39	352	2	705	200	140,989
Desert Living (DL-2.5)	687		687	0.40	275	200	54,960
Desert Living (DL-5)	1,690		1,690	0.20	338	200	67,600
Desert Living (DL-9)	0		0	0.11	0	200	0
Open Space/Public Land (OS)	1,306	228	1,534	0.00	0	200	0
School (OS)	67		67	5	335	200	67,000
Public Facility (PF)	15		15	4	65	200	13,043
Airport Development District (ADD)	2,528		2,528	2	5,496	200	1,099,130
Specific Plan Area (SPA)	0		0	0	0	200	0
Airport Park (AP)	349		349	1	349	200	69,800
Light Manufacturing (LM)	445	167	612	2	1,331	200	266,247
Manufacturing/Industrial (MI)	9,870		9,870	2	21,457	200	4,291,304
Mobile Home Subdivision (MHS)	50		50	6	311	200	62,112
Mobile Home Park (MHP)	43		43	12	534	200	106,832
Total	28,875	5,270	34,145		87,163		17,432,635

* gpd = gallons per day

Chapter 3 – Existing Sewer Facilities

This chapter provides an accounting of the existing sewer system facilities that will also govern future facilities expansion. A computer hydraulic model was developed for the

existing sewer system to evaluate the capacity of the system and identify deficient segments as flow increases. This section also presents a discussion on the computer hydraulic modeling (using the H2OMap software).

Chapter 4 – Proposed Sewer System Improvements

This chapter provides a review of how the computer model was used to identify the deficient segments of the existing sewer system, capable of handling the near-saturation flows. The required trunk sewers and relief sewers were then identified.

Same as TABLE 4-2: SEWER IMPROVEMENT COST ESTIMATE
(Near Saturation Condition)

Item Description	Quantity		Engineering Estimate	
	Number	Unit	Unit Cost ($)	Total
NEAR SATURATION CONDITION				
Without Lewis Homes				
Gravity Sewer Pipe Line = 514,216 L.F				
Gravity Sewer Pipeline (8")	8,440	L.F	$36.72	$309,900
Gravity Sewer Pipeline (10")	8,055	L.F	$57.28	$461,400
Gravity Sewer Pipeline (12")	325,047	L.F	$76.05	$24,719,861
Gravity Sewer Pipeline (15")	116,247	L.F	$103.70	$12,054,806
Gravity Sewer Pipeline (18")	14,623	L.F	$149.27	$2,182,827
Gravity Sewer Pipeline (21")	10,882	L.F	$213.29	$2,321,077
Gravity Sewer Pipeline (27")	30,922	L.F	$354.06	$10,948,109
Force Main Pipe Line = 16,512 L.F				
Force Main Pipe Line (6")	5,200	L.F	$44.50	$231,400
Force Main Pipe Line (12")	11,312	L.F	$81.61	$923,172
Allowance For Manhole @ 350 feet Spacing	1,470	E.A	$3,000.00	$4,410,000
Require AC-Repair*	3,184,370	Sq. ft	$5.00	$15,921,850
Pump Installation	2	E.A	$50,000.00	$100,000
Allowance for Pump Station Upgrade (Piping, Installation etc)				$50,000
			Sub-Total	$74,634,401
Lewis Homes				
Gravity Sewer Pipeline (12")	174,125	L.F	$76.05	$13,242,206
Gravity Sewer Pipeline (15")	15,282	L.F	$103.70	$1,584,743
Gravity Sewer Pipeline (21")	7,641	L.F	$213.29	$1,629,749
Allowance For Manhole @ 350 feet Spacing	563	E.A	$3,000.00	$1,689,000
Rock Removal or Require 50% AC-Repair*	591,144	Sq. ft	$5.00	$2,955,720
			Sub-Total	$21,101,419
			SUBTOTAL (Whole City of Adelanto)	$95,735,820
			Allowance for Project Contingency (10%)	$9,573,582
			Allowance for Engineering, Project Administration, Legal, Financing (20%)	$19,147,164
			ESTIMATED TOTAL COST	$124,456,566

* Assume Pipe trench to be about 6ft. Wide

Chapter 5 – Proposed Sub-Regional Wastewater Reclamation Plant

This chapter presents a brief discussion of the need to construct sub-regional wastewater reclamation plants to enhance water recycling/reuse and also the need of the expansion of the existing regional plant. Chapter 5 also discusses the regulatory agencies and regulatory process to permit the sub-regional wastewater reclamation plants.

Same as TABLE 5-1: WASTEWATER PLANT IMPROVEMENT COST ESTIMATE

Expansion of Existing Downstream WWTP

Q_{avg} (near saturation)	= 8.5 MG
Unit Cost (treatment, solids handling, effluent disposal)	= $ 5/gallon
Sub-total treatment construction cost	= $ 42.5 M
Allowance for 20-Acre site cost (Plant site + percolation ponds)	= $ 1 M
Sub Total Cost	**= $ 43.5 M**

Proposed Upstream Wastewater Sub Regional Plant

Q_{avg} (near saturation)	= 6.0 MG
Unit Cost (treatment, solids handling, effluent disposal)	= $ 5/gallon
Sub-total treatment construction cost	= $ 30 M
Allowance for 20-Acre site cost (Plant site + percolation ponds)	= $ 1 M
Sub Total Cost	**= $ 31.0 M**

Proposed Wastewater Sub Regional Plant (Lewis Homes)

Q_{avg} (near saturation)	= 3.0 MG
Unit Cost (treatment, solids handling, effluent disposal)	= $ 5/gallon
Sub-total treatment construction cost	= $ 15 M
Allowance for 15-Acre site cost (Plant site + percolation ponds)	= $ 750,000
Sub Total Cost	**= $ 15.75 M**
Sub –Total Cost (Whole City of Adelanto)	**= $ 90.25 M**
Allowance for Eng., Admin, Legal, Financing (25%)	= $ 22.5625 M
Allowance for Project Contingency (10%)	= $ 9.025 M
Total Cost	**= $ 121,837,500**

Chapter 6– Financing of the Proposed Improvements

This chapter reviews the future capital facility expansion costs and provides a recommendation to increase the current sewer (pipeline) and the treatment plant (treatment, effluent disposal, biosolids disposal) connection fee(s).

Sewer Connection Fee (APUA)	$ 1,543.72
Treatment Plant Connection Fee (APUA)	$ 1,511.24
Total	*$ 3,054.96*
Recommended Fee	**$ 3,050.00**