Santa Margarita Water District

Plan of Works for Improvement Districts 4C, 4E, 5 & 6

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E.1 Overview

Rancho Mission Viejo (RMV) is planning the development of approximately 9,000 acres of land located north and east of the City of San Juan Capistrano that will include nine development areas and approximately 14,000 dwelling units (Planning Area). The Planning Area is within Improvement Districts 4C, 4E, 5, and 6 of the Santa Margarita Water District (SMWD or District). The purpose of this Plan of Works is to develop planning level domestic water, non-domestic water, and wastewater systems for the Planning Area.

E.2 Domestic Water System

The District receives domestic water supply from the South County Pipeline (SCP), which conveys imported water from the Metropolitan Water District of Southern California (MWD) to south Orange County via the Allen-McColloch Pipeline (AMP). The District has identified that capacity exists in this imported water system to satisfy the estimated ultimate demands of the Planning Area, which is estimated to be 8,647 acre-feet per year (afy). IDs 4C and 4E already own capacities in the SCP. However, these capacity ownerships will need to be adjusted based on actual demands. IDs 5 and 6 will need to purchase capacities from the District in SCP reaches utilized to receive supply.

The San Juan Groundwater Basin, which underlies the Planning Area, is another potential supply source for IDs 4C, 4E, 5 and 6. RMV has historically taken up to 3,500 afy from this basin for agricultural irrigation. However, because water rights and water quality have not been established at this time, it is assumed for this Plan of Works that 100 percent of the domestic water supply for the Planning Area will come from imported water via the SCP.

Sixteen reservoirs located throughout the Planning Area with a combined storage capacity of 34.6 million gallons (MG) are required to fulfill operational and fire-protection storage requirements. Emergency storage will be provided in several local (lined and covered) earthen reservoirs that will also provide supplemental emergency storage for other improvement districts within SMWD. Emergency storage will be equivalent to 20 days of average-day demand volume.

As a part of the 1994 agreement to purchase the AMP, MWD agreed to provide member agencies with peak week supply. As a result, SMWD has currently abandoned plans to construct a seasonal storage reservoir for the domestic water system.

Supply from the South County Pipeline is envisioned to come from four turnouts. The peak-week supply from these turnouts is estimated at approximately 24.4 cubic feet per second. (cfs).

The proposed domestic water transmission system includes nine booster pump stations required to lift water into four service or pressure zones that are located within the nine proposed development areas.

The standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area. Lowering the pressure elevations eliminated the need for Zone 2 booster pump stations (water can now be taken directly from the South County Pipeline) and also decreased the number of Zone 1 Reservoirs.

Centralized irrigation with domestic water in-lieu of non-domestic water is proposed for several Zone 3 and Zone 4 service areas in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

E.3 Wastewater System

Wastewater flows from IDs 4C, 4E, 5 and 6 will be conveyed to the Chiquita Water Reclamation Plant (CWRP) for treatment. The plant, which is owned and operated by the District, was master planned for an ultimate secondary treatment capacity of 21.0 mgd. The current secondary capacity of the plant is 6.0 mgd with an additional 3.0 mgd of treatment capacity currently under construction. The District now estimates ultimate flows from the current capacity owners at 8.1 mgd, which is lower than the original master planned estimates that totaled 14.6 mgd. It is estimated in this Plans of Work that average wastewater flow of 5.14 mgd will be conveyed to CWRP from IDs 4C, 4E, 5 and 6. These improvement districts will need to purchase capacity in future expansions of the plant, or in some cases, capacities available from other improvement districts.

The existing Talega Lift Station, which is located in the southeast corner of ID 7, currently pumps Talega (ID 7) wastewater flows north to the existing Ortega Lift Station for ultimate pumped conveyance to CWRP. Analysis presented in this Plan of Works show that capacity is available in the Talega wastewater conveyance system consisting of 19,000 linear feet of dual parallel forcemains and 5,600 linear feet of sewer to convey flows from Christianitos Meadows, Cristianitos Canyon, and TRW (Southern ID 6 flows). It is recommended that the Talega Lift Station be expanded to house new pumping facilities to pump the Southern ID 6 flows through this conveyance system north to the Ortega Lift Station.

A large lift station is also required to pump the Southern ID 6 flows across the proposed Foothill Transportation Corridor to an expanded Talega Lift Station.

The existing Ortega Lift Station, which is located immediately to the south of San Juan Creek, currently pumps Talega flows to CWRP. It is proposed that the existing Ortega Lift Station be expanded to house new pumping facilities to pump the Southern ID 6 flows and flows from Trampas Canyon across San Juan Creek to a proposed 21-inch sewer in Central Gobernadora. The existing Talega flows would continue to be pumped by the existing pumps to CWRP via existing dual parallel forcemains.

The proposed 21-inch sewer would convey the Southern ID 6 and Trampas Canyon flows to the proposed Gobernadora Lift Station, which would pump these flows as well as flows from ID 5 and ID 4C to CWRP.

It is assumed for this Plans of Work that 100% of flows from Ortega Gateway (average flow of approximately 210 gpm) would be conveyed to the existing San Juan Creek Lift Station for pumped conveyance to CWRP. The San Juan Creek Lift Station currently pumps and would continue to pump flows from Ladera to CWRP. It is estimated that two small lift stations will be required to pump Ortega Gateway flows south of Ortega Highway to the San Juan Creek Lift Station. However, as an alternative, these flows south of Ortega Gateway (estimated at an average flow of approximately 190 gpm) could be conveyed to the City of San Juan Capistrano's (SJC) wastewater collection system if an agreement could be reached with SJC to purchase capacity in their system. Doing so would eliminate the need for the two small lift stations south of Ortega Highway.

The District indicated that it should be estimated for this Plans of Work that a package wastewater treatment plant would be constructed within Gabino Canyon to treat the majority of Gabino Canyon flows (approximately 40-gpm average flow).

E.4 Non-Domestic Water System

The Chiquita Water Reclamation Plant (CWRP) has an existing tertiary treatment capacity of 5.0 mgd. The District estimates an ultimate tertiary capacity of 13.0 mgd. IDs 4C, 4E, 5 and 6, with an estimated ultimate demand of 7.4 mgd (8,281 afy), will need to purchase capacity in future expansions of the plant, or in some cases, capacities available from other improvement districts.

Groundwater supply from San Juan Groundwater basin could relieve some of the reclaimed water supply needed from CWRP. Although the water is high in TDS, treatment might not be required for landscape and golf course irrigation. However, it is assumed for this report that this groundwater will not be available.

A seasonal storage volume of 2,236 ac-ft has been estimated for the planning area to store and supply water based on seasonal demand variations. Seasonal storage will be provided in several local (lined and covered) earthen reservoirs that will also provide supplemental seasonal storage for other improvement districts within SMWD.

Ten reservoirs have been located throughout the Planning Area to provide 22.6 MG of operational storage and 1.0 MG of transmission storage (23.6 MG total storage).

A transmission pipeline approximately 6.6 miles long is required to supply reclaimed water from CWRP to south ID 6. An intermediate pump station is proposed at the midway point of the transmission pipeline to limit the pumping head at CWRP with transmission storage allocated at this pump station site.

Eight booster pump stations are required to lift water into four pressure zones. The standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area.

E.5 Summary of Phased Development, Water Demands and Wastewater Generation

Based on current planned development phasing, a summary of phased development characteristics, domestic and non-domestic water demands, and wastewater generation is shown in Table E-1.

E.6 Summary of Costs

Planning-level construction and capital cost estimates were developed for pump stations, reservoirs, transmission pipelines/valves, distribution pipelines/valves, pressure reducing stations, and fire hydrants (domestic water system only) for the domestic water system and non-domestic water system; and for trunk sewers, sewers, manholes, lift stations, and forcemains in the wastewater system. Cost estimates for emergency storage and seasonal storage facilities and to purchase capacities in the District's domestic water, non-domestic water, and wastewater treatment and conveyance facilities, either existing or expanded, are not included in this Plans of Work.

Cost estimates were broken down into capital costs per year based on the current planned development phasing. Costs were also broken down into costs to be paid by the District and costs to be paid by the Developer. The Developer will pay for all domestic water and non-domestic water distribution system costs, which are all piping, valves, hydrants, and appurtenances for piping 8-inches and smaller. The developer will also pay for sewers, manholes and appurtenances for sewers 8 inches and smaller. Sewer laterals, which will also be paid for by the Developer, are not included in the cost estimates. The District will pay for all water pipelines and sewers 12 inches and larger and for all booster pump stations, reservoirs, sewage lift stations.

Locations and quantity estimates for sewers and distribution pipelines are very conceptual at this time. A 25% contingency was applied to all construction costs. Capital costs were developed assuming 25% for technical, legal, and administrative costs. A summary of capital costs for the domestic water, non-domestic water, and wastewater facilities by year through build-out are shown in Table E-2.

Table E-1. Summary of Phased Development, Water Demands and Wastewater Generation

Year	Gross Land Area[(a)] (Ac)	Building Area (ksf)	Dwelling Units (DUs)	Students	Average Domestic Water Demand (AFY)	Annual Non-Dom Water Demand (AFY)	Total Water Demand (AFY)	Average Wastewater Generation (MGD)
2005		-		-	-	-	-	-
2010	2,169	2,845	2,925	2,300	2,281	2,298	4,580	1.4
2015	4,223	3,750	7,629	5,300	4,994	4,575	9,569	3.0
2020	6,976	3,820	11,608	5,300	6,798	6,467	13,265	4.0
2023	9,095	5,090	14,000	6,100	8,647	8,281	16,927	5.2

Table E-2. Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities by Year[a]

Improvement District	Total Capital Cost[b]	Capital Cost by Year																	
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ID4E - District Capital Cost	$ 11,722,813	$ 10,432,813	$ -	$ 1,290,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 4E - Developer Capital Cost	$ 16,261,250	$ 5,420,417	$ 5,420,417	$ 5,420,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 4E - Total Cost	**$ 27,984,063**	**$ 15,853,230**	**$ 5,420,417**	**$ 6,710,417**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
ID 4C - District Capital Cost	$ 26,158,238	$ 4,325,625	$ -	$ 21,832,613	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 4C - Developer Capital Cost	$ 19,893,250	$ -	$ -	$ 3,614,167	$ 3,614,167	$ 6,631,083	$ 3,016,917	$ 3,016,917	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 4C - Total Cost	**$ 46,051,488**	**$ 4,325,625**	**$ -**	**$ 25,446,779**	**$ 3,614,167**	**$ 6,631,083**	**$ 3,016,917**	**$ 3,016,917**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
ID 5 - District Capital Costs	$ 47,540,743	$ 578,063	$ -	$ 3,026,205	$ -	$ 20,456,058	$ 7,328,802	$ 6,289,829	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,111,079	$ -	$ -	$ -	$ -	$ -
ID 5 - Developer Capital Cost	$ 50,659,375	$ -	$ -	$ -	$ -	$ 3,478,281	$ 8,260,365	$ 9,504,650	$ 9,564,442	$ 4,782,359	$ 4,782,359	$ 4,521,317	$ 4,521,317	$ 1,244,286	$ -	$ -	$ -	$ -	$ -
ID 5 - Total Cost	**$ 98,200,118**	**$ 578,063**	**$ -**	**$ 3,026,205**	**$ -**	**$ 23,733,090**	**$ 15,589,167**	**$ 15,794,479**	**$ 11,515,833**	**$ 6,532,500**	**$ 6,532,500**	**$ 6,271,458**	**$ 6,271,458**	**$ 2,355,365**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
ID 6 - District Capital Costs	$ 89,083,719	$ 937,500	$ -	$ -	$ -	$ 3,097,313	$ 914,167	$ 132,917	$ 132,917	$ -	$ -	$ 27,273,750	$ 1,820,000	$ 28,185,313	$ 3,073,750	$ 1,253,750	$ 17,305,677	$ 2,478,333	$ 2,478,333
ID 6 - Developer Capital Cost	$ 118,862,500	$ -	$ -	$ -	$ -	$ -	$ 4,409,583	$ 9,142,083	$ 9,142,083	$ 4,732,500	$ 1,502,500	$ 9,490,000	$ 9,490,000	$ 15,618,333	$ 15,618,333	$ 6,128,333	$ 11,196,250	$ 11,196,250	$ 11,196,250
ID 6 - Total Cost	**$ 207,946,219**	**$ 937,500**	**$ -**	**$ -**	**$ -**	**$ 3,097,313**	**$ 5,323,750**	**$ 9,275,000**	**$ 9,275,000**	**$ 4,732,500**	**$ 1,502,500**	**$ 36,763,750**	**$ 11,310,000**	**$ 43,803,646**	**$ 18,692,083**	**$ 7,382,083**	**$ 28,501,927**	**$ 13,674,583**	**$ 13,674,583**
Grand Total - District Capital Cost	**$ 174,505,512**	**$ 16,274,001**	**$ -**	**$ 26,148,818**	**$ -**	**$ 23,553,371**	**$ 8,242,969**	**$ 6,422,746**	**$ 1,883,058**	**$ 1,750,141**	**$ 1,750,141**	**$ 29,023,891**	**$ 3,570,141**	**$ 29,296,391**	**$ 3,073,750**	**$ 1,253,750**	**$ 17,305,677**	**$ 2,478,333**	**$ 2,478,333**
Grand Total - Developer Capital Cost	**$ 205,676,375**	**$ 5,420,417**	**$ 5,420,417**	**$ 9,034,583**	**$ 3,614,167**	**$ 10,109,365**	**$ 15,686,865**	**$ 21,663,650**	**$ 18,706,525**	**$ 9,514,859**	**$ 6,284,859**	**$ 14,011,317**	**$ 14,011,317**	**$ 16,862,619**	**$ 15,618,333**	**$ 6,128,333**	**$ 11,196,250**	**$ 11,196,250**	**$ 11,196,250**
Grand Total - Total Capital Cost	**$ 380,181,886**	**$ 21,694,417**	**$ 5,420,417**	**$ 35,183,401**	**$ 3,614,167**	**$ 33,461,486**	**$ 23,929,833**	**$ 28,086,396**	**$ 20,790,833**	**$ 11,265,000**	**$ 8,035,000**	**$ 43,035,208**	**$ 17,581,458**	**$ 46,159,010**	**$ 18,692,083**	**$ 7,382,083**	**$ 28,501,927**	**$ 13,674,583**	**$ 13,674,583**

(a) All costs are in year 2003 dollars, i.e. no inflation escalation and no consideration of project financing.
(b) Technical, legal and administrative costs estimated at 25% of construction cost (construction includes 25% contingency).

1.1 Overview

Rancho Mission Viejo (RMV or Developer) is planning for nine development areas on approximately 9,000 of the approximately 23,000 acres of land it owns north and east of the City of San Juan Capistrano. The remaining land between and surrounding the nine development areas will remain as open space. The proposed development includes approximately 14,000 dwelling units ranging from apartments to estate lots. The planned development will take place within Improvement Districts 4E, 4C, 5, and 6 of the Santa Margarita Water District (SMWD or District). The nine proposed development areas within the four Improvement Districts constitute the Planning Area for this proposed development.

Domestic water, non-domestic water, and sanitary sewer (wastewater) systems will need to be designed and constructed for the Planning Area. IDs 4E, 4C, 5, and 6 will also need to purchase capacities in the District's domestic water, non-domestic, and wastewater treatment and conveyance facilities, either existing or expanded.

The purpose of this Plan of Works is to develop planning level domestic water, non-domestic water, and wastewater systems for the Planning Area. Supply and treatment issues as they relate to current or planned capacities, as well as water storage requirements will be presented herein. Planning-level cost estimates for domestic water, non-domestic water, and wastewater pipelines/sewers and facilities are also presented in this report.

1.2 Planning Area

The Planning Area is shown on Figure 1-1. The nine proposed development areas consist of Chiquita Canyon, Ortega Gateway, Northeast Gobernadora, Central Gobernadora, Ortega East, Gabino Canyon, Trampas Canyon, Christianitos Meadows, Christianitos Canyon, and TRW. As shown on Figure 1-1, the proposed development areas are dispersed within SMWD Improvement Districts 4C, 4E, 5, and 6. The Planning Area is located to the east and south of Ladera (ID 4D) and west and north of Talega (ID 7), which are currently in the process of development. San Juan Creek separates the Planning Area into San Juan Creek North and South. A proposed extension of the Foothill Transportation Corridor would run north and south down the middle of the Planning Area.

The area has hilly terrain with valley elevations near San Juan Creek as low as 120 feet and ridge elevations in Trampas Canyon as high as 1,100 feet. Environmental issues include habitat sensitive to the Gnatcatcher, the Arroyo Toad, and the Riverside Shrimp. The Planning Area lies either within the San Juan Watershed or the San Mateo Watershed.

Land use planned within the proposed development areas include residential, senior residential, estate residential, schools, commercial, urban activity centers, business parks, and golf courses. The land use, commercial building area, and residential dwelling units for each proposed development area are shown in Table 1-1 (San Juan Creek North) and Table 1-2 (San Juan Creek South and Total). The gross area of the Planning Area is approximately 9,095 acres.

Figure 1-1. Planning Area

Table 1-1. Land Use Characteristics of Planning Area (San Juan Creek North)

Development Area (Planned Phasing)	Improvement District	Gross Land Area (ac)	Commercial Building Area (ksf)	Dwelling Units
Ortega Gateway (2006-8)	4E			
Senior Residential		241	-	893
Residential		153	-	124
Urban Activity Center/Business Park		146	1,205	-
Subtotal		540	1,205	1,017
Chiquita Canyon (2007–11)	4C			
Upper Chiquita Golf Course		100	-	-
Lower Chiquita A Residential		565	-	438
Lower Chiquita A Golf Course		200	-	-
Lower Chiquita B Residential		726	-	742
Lower Chiquita B Business Park		40	610	-
Subtotal		1,631	610	1,180
Northeast Gobernadora (2012–18)	5			
Residential		653	-	1,281
Senior Residential		309	-	600
Apartments		60	-	480
Estate Residential		318	-	159
Business Park		49	745	-
High School		50	-	-
Elementary School		10	-	-
Commercial		11	110	-
Subtotal		1,460	855	2,520
Central Gobernadora (2010–17)	5			
Residential		343	-	2,255
Senior Residential		131	-	385
Apartments		105	-	840
Elementary School		10	-	-
Middle School		20	-	-
Business Park		51	780	-
Urban Activity Center		22	140	-
Commercial		11	110	-
Cow Camp		40	-	-
Community Meadows		20	-	-
Sports Park		45	-	-
Subtotal		1,460	855	-
Ortega East (2011 – 2013)	5 & 6			
Residential – Estate		211	-	150
Commercial		5	50	-
Subtotal		216	50	150
Total San Juan North		4,645	3,750	8,350

Table 1-2. Land Use Characteristics of Planning Area (San Juan Creek South & Total)

Development Area (Planned Phasing)	Improvement District	Gross Land Area (ac)	Commercial Building Area (ac)	Dwelling Units
Trampas Canyon (2016-19)	6			
Senior Residential		826	-	2,280
Residential		160	-	160
Golf Course		200	-	-
Commercial		5	50	-
Subtotal		1,191	50	2,440
Christianitos Meadows (2016–19)	6			
Residential		100	-	110
Golf Course		175	-	-
Subtotal		274	-	110
Chrisianitos Canyon (2021–23)	6			
Residential		850	-	850
Senior Residential		600	-	600
Estate Residential		30	-	30
Commercial		-	-	-
Subtotal		1,350	20	1,480
Gabino Canyon (2011-2013)	6			
Large Lot Estate Residential		200	-	100
Residential – Casitas		20	-	120
Golf Course		200	-	-
Subtotal		585	-	220
TRW (2018–20)	6			
Residential		528	-	920
Apartments		38	-	300
Estate Residential		234	-	75
Elementary School		10	-	-
Commercial		5	-	-
Business Park		80	50	-
Golf Course		200	1,220	-
Resort		20	-	-
Golf Course Estate Residential		100	-	105
Subtotal		1,214	1,270	1,400
Total San Juan Creek South		4,450	1,340	5,650
Grand Total	-	9,095	5,090	14,000

As shown in Tables 1-1 and 1-2, preliminary development phasing has been estimated by RMV for the proposed development areas. The years shown are for planned occupancy. Initial development is planned to occur in Ortega Gateway with occupancy occurring between 2006 and 2008. Christianitos Canyon is planned to be the last area developed, with occupancy occurring between 2021 and 2023. This estimated phasing is subject to change.

1.3 Objectives and Scope of Work

The objectives and scope of work of this Plan of Works for Improvement Districts 4C, 4E, 5, and 6 include the following:

- Address supply and treatment capacity issues including available supply in reaches of the South County Pipeline, existing and planned ultimate treatment capacities of the Chiquita Water Reclamation Plant, planned capacity ownership of other improvement districts, and possible alternative supply sources.

- Develop and estimate average and peak demands in the domestic water and non-domestic water systems through build-out.

- Develop and estimate wastewater flows in the wastewater collection and treatment system through build-out

- Develop ultimate storage, transmission, and conveyance systems consistent with District and Orange County Fire Department standards, while striving to optimize system efficiency.

- Address emergency and seasonal storage needed by the Planning Area.

- Develop preliminary sizing of reservoirs, pump stations, and water mains in the domestic and non-domestic water systems. Develop locations for these facilities and estimate phased construction.

- Develop preliminary sizing of lift stations, forcemains and sewers in the wastewater system. Develop locations for these facilities and estimate phased construction.

- Develop planning-level construction and capital cost estimates for pump stations, reservoirs, transmission pipelines/valves, distribution pipelines/valves, pressure reducing stations, and fire hydrants (domestic water system only) for the domestic water system and non-domestic water system.

- Develop planning-level construction and capital cost estimates for trunk sewers, sewers, manholes, lift stations, and forcemains in the wastewater system.

Cost estimates for emergency storage and seasonal storage facilities and to purchase capacities in domestic water, non-domestic water, and wastewater treatment and conveyance facilities from the District or other agencies/cities either existing or expanded are not included in this Plan of Works.

2.1 Overview

- The sole domestic (potable) water supply for the District comes from imported water.
- The District has identified sufficient capacity in the South County Pipeline to supply the estimated ultimate demands of the Planning Area, which is estimated at 8,647 acre-feet per year (afy).
- Sixteen reservoirs located throughout the Planning Area with a combined storage capacity of 34.6 million gallons (MG) are required to fulfill operational and fire-protection storage requirements.
- Emergency storage will be provided in several local (lined and covered) earthen reservoirs that will also provide supplemental emergency storage for other improvement districts within SMWD. Emergency storage will be equivalent to 20 days of average-day demand volume.
- The standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area. Lowering the pressure elevations eliminated the need for Zone 2 booster pump stations (water can now be taken directly from the South County Pipeline) and also decreased the number of Zone 1 Reservoirs and booster pump stations.
- Centralized irrigation with domestic water in-lieu of non-domestic water is proposed for several Zone 3 and Zone 4 service areas in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

2.2 Supply

Regional water supply facilities for which the District owns capacity include the South County Pipeline (treated imported water), the Baker Pipeline (untreated imported water), and the Irvine Lake Pipeline (untreated imported water). The San Juan Groundwater Basin, which underlies the planning area, is another potential supply source for IDs 4C, 4E, 5 and 6.

2.2.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline (AMP), which was completed in 1979 as a joint project of the Municipal Water District of Orange County (MWDOC) and eleven local water agencies including SMWD, supplies the easterly and southerly portions of Orange County with treated water from the Diemer Filtration Plant. MWD purchased the AMP in 1994 and is the operator of this facility. The AMP delivers water to the South County Pump Station at the terminus of the pipeline.

2.2.2 South County Pipeline

The South County Pipeline (SCP) was constructed as a joint SMWD/MWD project to deliver water from the AMP to the southerly portions of the MWDOC service area including improvement districts within SMWD. The South County Pump Station located at OC 88 pumps water into the SCP. A plan of the SCP from Phase I, Reach V through Phase II Reach IVB is shown on Figure 2-1. A 3.0 MG reservoir is connected to Reach IVA to equalize and regulate flow in the SCP (SCP Regulating Reservoir). The hydraulic capacity of the SCP is approximately 240 cubic feet per second (cfs). By agreement, SMWD and MWD share capacity in the SCP through Phase II, Reach IV as shown in Table 2-1.

SCP capacities by reach for each current capacity owner and estimates for IDs 4C, 4E, 5 and 6 through Phase II, Reach II are shown in Table 2-2. SCP Capacities including the estimates for IDs 4C, 4E, 5 and 6 from Phase II, Reach IIIA through Phase II, Reach IVB are shown in Table 2-3.

Projected ultimate demands are based on the current adopted Plan of Works for IDs 1, 2, 3, 7 & 8 and the 1996 Draft Plan of Works for ID 4. IDs 4C and 4E already own capacities in the SCP (ID 4C: 8.06 cfs through Phase II/Reach I and ID 4E: 0.56 cfs through Phase I/Reach V). These capacity ownerships will need to be adjusted based on actual demands, i.e. ID 4E might need to purchase additional capacity and ID 4C might be able to sell excess capacity considering the demands estimated for IDs 4E and 4C in this Plan of Works. IDs 5 and 6 will need to purchase capacities in SCP reaches utilized to receive supply. The methodology for estimating the ultimate demands for IDs 4C, 4E, 5 and 6 is discussed in Section 2.3 of this Chapter.

As part of the 1994 AMP purchase agreement, MWD agreed to provide additional water supplies to all MWDOC agencies including SMWD. As a result, SMWD's potential supply from capacities in Reaches IA through IVA can exceed the 1990 Agreement capacity of 48.59 cfs. Because MWD is committed to supplying peak week demands, the allocation of SMWD capacity to each improvement district becomes a budgetary issue rather than a hydraulic constraint.

Table 2-1. MWD/SMWD Capacity Shares in the SCP

SCP Pipeline Segment	Included Reaches	Shared Capacity (cfs)	MWD Capacity (cfs)	SMWD Capacity (cfs)
Phase I	IA, IB, IIA, IIB, III, IVB, IVA, V	120.00	71.41	48.59
Phase II to Ortega Hwy	I, II	120.00	71.41	48.59
Phase II - Ortega Hwy through Reach IV	III, IV	63.00	47.25	15.75

Figure 2-1. Plan of South County Pipeline

Table 2-2. SCP Capacities (Phase I, Reach IA – Phase II, Reach II)

Current or Proposed SCP Capacity Owner	Ultimate Demand[a] (cfs)	Less Alicia Trans Main (cfs)	SCP Capacity (cfs)			
			Ph 1/ Rch IA-IVA	Ph 1/ Rch V	PhII/ Rch I	PhII/ Rch II
Current Owner[b]						
ID 1	0.00	0.00	0.00	0.00	0.00	0.00
ID 2	2.00	0.00	2.00	2.00	2.00	0.00
ID 3	7.22	(3.50)	3.72	0.00	0.00	0.00
ID 4A	30.12	(15.00)	15.12	0.00	0.00	0.00
ID 4B	4.45	0.00	4.45	0.00	0.00	0.00
ID 4D	15.35	0.00	15.35	15.35	0.00	0.00
ID 7	10.71	0.00	10.71	10.71	10.71	10.71
ID 8	0.35	0.00	0.35	0.00	0.00	0.00
Subtotal	70.20	(18.50)	51.70	28.06	12.71	10.71
Proposed Owner						
ID 4C[b]	0.89	0.00	0.89	0.89	0.89	0.89
ID 4E[b]	1.01	0.00	1.01	1.01	1.01	1.01
ID 5	4.63	0.00	4.63	4.63	4.63	4.63
ID 6	5.41	0.00	5.41	5.41	5.41	5.41
Subtotal	11.95	0.00	11.95	11.95	11.95	11.95
Total	84.09	(18.50)	63.65	40.01	24.66	22.66
SMWD Capacity[c]	NA	NA	48.59	48.59	48.59	48.59
MWD Capacity[c]	NA	NA	71.41	71.41	71.41	71.41
Shared Capacity)	NA	NA	120.00	120.00	120.00	120.00

(a) Estimates from adopted Plan of Works for IDs 2, 3, 7 & 8 and 1996 Draft Plan of Work for ID 4 for IDs 4A, 4B, and 4D. Estimates for IDs 4C, 4E, 5 and 6 from this Plan of Works.
(b) IDs 4C and 4E currently own capacities in the SCP (ID 4C: 8.06 cfs through PhII/Rch I and ID 4E: 0.56 cfs through Ph I/Rch V). However, these capacities are not shown in order to instead show the capacities for these IDs as estimated in this Plan of Works.
(c) Agreement No. 2178 between SMWD and MWD.

Table 2-3. SCP Capacities (Phase II, Reach IIIA – Phase II, Reach IVB)

Current or Proposed SCP Capacity Owner	Ultimate Demand[(a)] (cfs)	SCP Capacity (cfs)			
		Ph 1I/ Rch IIIA	Ph 1I/ Rch IIIB	PhII/ Rch IVA	PhII/ Rch IVB
Current Owner					
ID 7	10.71	10.71	10.71	10.71	10.71
Subtotal	10.71	10.71	10.71	10.71	10.71
Proposed Owner					
ID 6	6.00	6.00	1.44	0.00	0.00
Subtotal	6.00	6.00	1.44	0.00	0.00
Total	24.60	17.71	12.15	10.71	10.71
SMWD Capacity[(b)]	NA	15.75	15.75	15.75	15.75
MWD Capacity[(b)]	NA	47.25	47.25	47.25	47.25
Shared Capacity	NA	63.00	63.00	63.00	63.00

(a) Estimates from adopted Plan of Works for IDs 2, 3, 7 & 8 and 1996 Draft Plan of Work for ID 4 for IDs 4A, 4B, and 4D. Estimates for IDs 4C, 4E, 5 and 6 from this Plan of Works.
(b) By Agreement between SMWD and MWD.

MWD has considered extending the SCP to provide north San Diego County with a secondary source of supply. However, if this concept is implemented, any impact to IDs 4C, 4E, 5 and 6 would appear to be insignificant considering MWD's commitment to supply peak week demands to MWDOC member agencies that includes SMWD.

2.2.3 Seasonal Storage Facilities

Seasonal storage facilities are constructed to store water supply in the winter months when more supply is available and demands are low, then used to supply higher summer demands when these demands are in excess of the available supply. These facilities would be needed if it were determined that supply from MWD would not meet the higher summer demands. In addition, a seasonal storage facility can be used to accommodate emergency supply.

At one time, SMWD developed a plan to construct a seasonal storage facility in Verdugo Canyon to supply peak system demands as it was determined that sufficient supply would not be available from MWD. Under this concept, the SCP would supply the inflow to the reservoir during the winter months when excess supply was available, then transmit the flow from the reservoir to the system during the summer months. Because the reservoir would be "open" to the environment, a treatment plant would be necessary to treat the water coming out of the reservoir prior to entering the potable system.

However, as a part of the 1994 agreement to purchase the AMP, MWD agreed to provide member agencies with supply up to that member agency's peak week demands, which are the highest demands that occur in any one week of the year. As a result of this committed supply, SMWD abandoned plans for a Verdugo Seasonal Storage Reservoir due to the significant cost to construct and operate the reservoir and treatment plant.

2.2.4 Irvine Lake Pipeline

The Irvine Lake Pipeline conveys MWD untreated water and local runoff from Irvine Lake to Irvine Ranch Water District, the Irvine Company, and several nurseries. SMWD owns 25.6 cfs of capacity in the pipeline, but this capacity is currently not used. The capacity was purchased at a time when pipeline capacity was at a premium and the ability to construct further facilities was in question. Since that time, the SCP was constructed to supply SMWD with treated water from the AMP. SMWD does not have any rights to water sources to fill the pipeline, nor is it feasible to directly connect to the pipeline at this time because the pipeline is located a large distance away from SMWD. Potential uses of the pipeline are to sell it to another agency or to bring an alternative source of water, other than MWD water, into SMWD.

2.2.5 Baker Pipeline

The Baker Pipeline was constructed in 1961 to deliver MWD untreated water to central and south Orange County. Capacity ownership in the Baker Pipeline ranges from 104.9 cfs at upstream reach 1U to 39.5 cfs at downstream reach 5U. The Baker Pipeline parallels the AMP and terminates in the vicinity of the South County Pump Station (where MWD treated water from the AMP is pumped to south Orange County through the South County Pipeline).

Utilization of the Baker Aqueduct has decreased to about 10 percent of its capacity due to the construction of the AMP and the decline of area agriculture, which has been displaced by urban development. SMWD owns approximately 25 cfs capacity in the Baker Pipeline. However, SMWD does not take any supply from the pipeline at this time. Of the eight capacity owners, only Irvine Ranch Water District (IRWD) and Trabuco Canyon Water District are currently using the pipeline.

The Santiago Aqueduct Commission (SAC) authorized the Baker Pipeline Future Use Study in 1997 to study alternative uses for the pipeline. The study concluded that the most promising alternative was to utilize the Baker Aqueduct to convey groundwater from the Orange County Groundwater Basin. However, this groundwater conveyance system plan is only conceptual at this time.

2.2.6 San Juan Groundwater Basin

A portion of the San Juan Groundwater Basin underlies the Planning Area. Groundwater from the basin is high in total dissolved solids (TDS). Currently, RMV withdraws groundwater from the basin for agricultural irrigation. The San Juan Basin Authority (SJBA) and other water purveyors have recently studied the prospects of developing a managed clean water supply from the San Juan Groundwater Basin. SJBA has recently submitted an application to the State for the determination of basin groundwater rights. SJBA's application has identified 3,500 AFY of historical use by RMV.

Because water rights and water quality have not been established at this time, it is assumed for this Plan of Works that groundwater from the San Juan Groundwater Basin will not be available and 100 percent of the domestic water supply for IDs 4C, 4E, 5 and 6 will come from imported water via the SCP.

2.3 Demand

Average-day, maximum-day, and peak-hour demands were developed from unit water use and peaking factors consistent with other improvement districts within SMWD. The Fire-flow demand requirements presented in this Section are consistent with Orange County Fire Department standards. Demand development for each proposed development area is presented in Appendix A.

2.3.1 Average-Day Demand

Average-day demands were developed by applying unit-water use factors to respective units such as residential dwelling units, commercial building square footage, or (high school, middle school, or elementary school) students. These factors are shown in Table 2-4. The unit water use factor for residential of 345 gallons per day (gpd)/residential dwelling unit is a recent historical five-year average of residential water use within the District, which is applicable to all residential classifications. The ultimate or built-out unit quantities for each proposed development area were multiplied by its respective water use factor to develop the ultimate average-day demands shown in Table 2-5. The demands include an additional 5% to account for lost water (unaccounted-for water), i.e. leakage, unmetered water, meter inaccuracies, and hydrant testing and flushing. This percentage is consistent with historical unaccounted-for water in the District.

Table 2-4. Unit Water Use Factors

Land Use Designation	Units	Unit Water Use Factor (gpd/Unit)
All Residential	Dwelling Unit	345
Commercial, Business Park, Urban Activity Center, Retail	1,000 square feet of building area	225
High School	Student	15
Middle School	Student	12
Elementary School	Student	10
Resort	Room	200

The ultimate average-day demand for all of the proposed development areas within IDs 4C, 4E, 5 and 6 is estimated at 8,647 afy (5,361 gpm). The ultimate average-day demands developed for IDs 4C, 4E, 5 and 6 are compared to the ultimate average-day demands projected for the other improvement districts in Table 2-6.

Table 2-5. Estimated Ultimate Average-Day Demands

Improvement District/ Development Area	Ultimate Demand (gpm)	Ultimate Demand (afy)	% of Total
ID 4E			
Ortega Gateway	455	733	-
Subtotal	455	733	8.5
ID 4C			
Upper Chiquita	2	3	-
Lower Chiquita A	112	181	-
Lower Chiquita B	287	462	-
Subtotal	401	646	7.5
ID 5			
Northeast Gobernadora	990	1,597	-
Central Gobernadora	1,065	1,718	-
Ortega East	23	37	-
Subtotal	2,078	3,352	38.8
ID 6			
Ortega East	23	37	-
Trampas Canyon	900	1,451	-
Christianitos Meadows	29	47	-
Gabino Canyon	157	254	-
Christianitos Canyon	670	1,081	-
TRW	648	1,045	-
Subtotal	2,427	3,915	45.2
Total	5,361	8,647	100.0

Table 2-6. Ultimate SMWD ID Demand Estimates

Improvement District	Ultimate Demand [(a)] (afy)	% of Total
ID 1	26,900	28.6
ID 2	8,900	9.5
ID 3	5,500	5.8
ID 4A	21,800	23.2
ID 4B (Las Flores)	3,200	3.4
ID 4D (Ladera)	11,100	11.8
ID 7	7,800	8.3
ID 8	250	0.3
Subtotal	85,450	90.8
ID 4C (Chiquita Canyon)	646	0.7
ID 4E (Ortega)	733	0.8
ID 5	3,352	3.6
ID 6	3,915	4.2
Subtotal	8,647	9.2
Total	94,097	100.00

(a) Estimates from adopted Plan of Works for IDs 2, 3, 7 & 8 and 1996 Draft Plan of Work for ID 4 for IDs 4A, 4B, and 4D. Estimates for IDs 4C, 4E , 5 and 6 from this Plan of Works.

Centralized irrigation with domestic water in-lieu of non-domestic water is proposed for several Zone 3 and Zone 4 service areas in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

2.3.2 Maximum-Day Demand

Maximum-day demand is the largest demand day of the year. Based on historical District data a maximum-day to average-day demand factor of 2.4 will be used to analyze maximum-day demands within IDs 4C, 4E, 5 and 6. Applying this factor to the average-day demand of 5,361 gpm results in a maximum-day demand of 12,866 gpm for IDs 4C, 4E, 5 and 6.

2.3.3 Peak-Hour Demand

Peak-hour demand is the largest single-hour demand of the year. Peak-hour demand may or may not occur on the maximum-demand day of the year. A peak-hour to average-day demand factor of 3.5 will be used to analyze peak-hour demands within IDs 4C, 4E, 5 and 6. This factor is consistent with peak-hour factors used in other area cities and water districts including SMWD. Applying this factor to the average-day demand of 5,361 gpm results in a peak-hour 18,764 gpm for IDs 4C, 4E, 5 and 6.

2.3.4 Fire-Flow Demands

The County of Orange, the City of Mission Viejo and the City of San Clemente are the three public agencies responsible for fire protection within the SMWD service area. The Orange County Fire Department (OCFD) serves both the County as well as the City of Mission Viejo, which includes IDs 1 through 8.

Water distribution facilities for each service area within SMWD are to be designed in accordance with the fire-protection agency that has jurisdiction for that service area. Per SMWD standards, water distribution systems for future development areas within the District are to be designed in accordance with OCFD standards including the fire-flow requirements shown in Table 2-7. The fire flows are to be met with a residual pressure of 20 psi at the fire-service hydrants.

2.4 Storage

Storage facilities will need to be constructed to provide the Planning Area with the following storage components:

- Operational Storage – Storage to meet peak demands that exceed the capabilities of other supply sources. Typically demands above average demand including average demand on the maximum-demand day of the year.
- Fire Storage – Storage to meet fire-flow requirements.
- Emergency Storage – Storage to meet demands during times when normal supplies are reduced or unavailable due to unusual circumstances.

Storage facilities can be constructed as District standard 32-foot high concrete or steel reservoirs or as lined and covered earthen reservoirs. The later is more common for the storage of large seasonal or emergency supply volumes. As discussed later in this Section, seasonal storage is not considered necessary for the Planning Area at this time.

2.4.1 Operational Storage

Operational storage is the storage typically required to supply peak hourly demands above maximum-day demand. Supply from the South County Pipeline will be limited to peak-week demand. Demands above peak-week demand up to peak-hour demand will need to be provided by area storage reservoirs. Per SMWD requirements, operational storage equivalent to one day of maximum-day demand has been allocated to area storage reservoirs within IDs 4C, 4E, 5 and 6.

Table 2-7. Maximum Fire Flow Service Levels within OCFD Service Area [(a)]

Land Use Designation	Maximum Fire Flow (gpm)	Flow Duration (hrs)	Fire Flow Volume (gal)	Number of Hydrants
Single-Family Detached Residential	2,500	3	450,000	2
Multi-Family Attached Residential	3,000	3	540,000	2
Elementary, Intermediate and High Schools	3,500	4	840,000	3
Neighborhood/Local Commercial	5,000	5	1,500,000	4
Regional Shopping Centers, Business/Industrial Parks	6,000	6	2,160,000	4

(a) Per Santa Margarita Water District Design Standards for Improvement Districts Nos. 1 - 8. Maximum fire flow service at a 20 psi residual pressure.

2.4.2 Fire Storage

Fire-flow volume requirements as shown in Table 2-7 will be stored in area reservoirs consistent with the land use served by each reservoir. Each reservoir will carry a fire-flow volume equivalent to one fire for the land use served with the largest fire-flow requirement.

2.4.3 Emergency Storage

At this time, SMWD receives 100 percent of its domestic (treated) water supply from imported water supplies. There are no back-up supply sources at this time. The AMP and other MWD pipelines that convey treated water to south Orange County traverse hundreds of miles in areas with high seismic potential. This makes imported water supply pipelines susceptible to damage in a seismic event. Water contamination could be another reason for a possible shutdown of the imported water supply.

Based on recommendations made by the Municipal Water District of Orange County (MWDOC) in their Phase I South Orange County Reliability Study and the Future Seasonal and Emergency Water Storage Needs Report prepared for SMWD by Henry Miedema & Associates in August 2003, the District's criteria is to have emergency storage equivalent to 20-days of average-day demand for the entire District.

The emergency storage requirement for IDs 4C, 4E, 5 and 6 as well as supplemental emergency storage for the other SMWD improvement districts to meet 20 days of average-day demand will be located in new lined and covered earthen reservoirs located within the District. The 2003 Miedema

Study evaluated 20 potential storage sites and the District has narrowed that list down to four potential sites: Site Nos. 1, 2, 3, and 14. These four potential sites are shown on Figure 2-2, which is presented later in this chapter.

2.4.4 Seasonal Storage

Seasonal storage facilities are utilized to store water in the winter months, which is then used to supply higher summer demands. At this time, seasonal storage facilities are not required as a primary supply source because of MWD's commitment to supply peak week demands. However, seasonal or regional storage projects might be considered by the District in the future to increase system reliability.

2.4.5 Storage Requirements

The operational and fire-protection storage requirements for the Planning Area, which will be will be provided in District standard 32-foot high concrete or steel reservoirs located throughout IDs 4C, 4E, 5 and 6, are shown in Table 2-8. Also shown in Table 2-8 is the emergency storage requirement for IDs 4C, 4E, 5 and 6, which will be located in new District lined and covered earthen reservoirs.

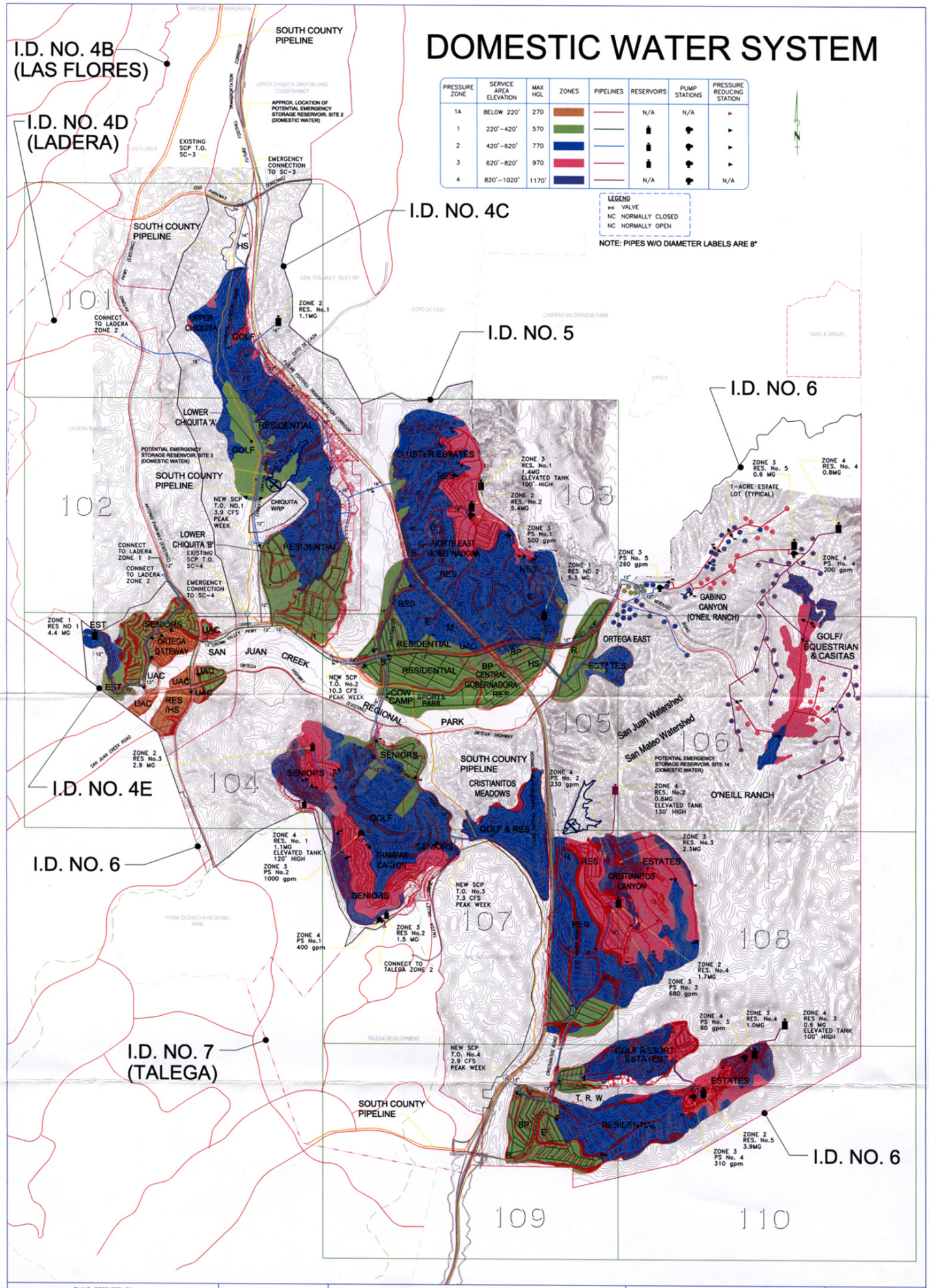
Table 2-8. Storage Requirements

Storage Component	Storage Volume (MG)	Storage Volume (AF)
Operational Storage	18.53	-
Fire Storage	16.32	-
Subtotal	34.85	-
Emergency Storage	-	474

Reservoir volumes will need to be turned over in a timely manner to avoid water quality problems. Pump stations will also need to be sized taking into consideration reservoir turnover. The District practices off-peak pumping in order to attain off-peak electric rates. Reservoirs are typically filled within a 14-hour time frame between 10 p.m. and 12 p.m. Per the District's "Facility Standards", which is included in Appendix D, disinfection equipment including a chlorination generator and equipment (housed in a building to include bulk chemical storage) will be located at all domestic water reservoirs constructed in IDs 4C, 4E, 5 and 6.

2.5 Storage and Transmission System

The proposed domestic water storage and transmission system along with conceptually laid out distribution pipelines for IDs 4C, 4E, 5 and 6 is shown on Figure 2-2. A larger map is included in Appendix A (Figure A-1). Transmission pipelines transmit large volumes of water from supply sources to demand areas. Distribution pipelines distribute water from a transmission pipeline to all



PLANS PREPARED BY:
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SCALE: 1"=2000'

RANCHO MISSION VIEJO

PLAN OF WORKS FOR ID's 4C, 4E, 5 & 6
DOMESTIC WATER SYSTEM

FIG. A-1

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users within a demand area. At this time dwelling units and commercial buildings have not been located and only rough grading plans have been developed. However, distribution mains have been laid out "conceptually" in order to garner a magnitude of distribution facilities and to estimate overall distribution system costs. The pipe diameters shown on Figure 2-2 are estimated. No hydraulic modeling was performed to calculate sizes at this time in that distribution system planning is very conceptual at this time. Sizing for each proposed reservoir and pump station in the system is presented in Appendix A.

2.5.1 System Reliability and Redundancy

As shown on Figure 2-2, the water systems of each proposed development area are interconnected to provide a continuous system where water can be conveyed between development areas. Also, interconnections will be made with the Ladera (Zone 1 and Zone 2) and Talega (Zone 2) domestic water systems to provide further system redundancy. As shown on Figure 2-1, emergency connections will also be made at existing South County Pipeline Turnouts SC-3 and SC-4.

2.5.2 South County Pipeline Turnouts

Supply from the South County Pipeline is envisioned to come from four turnouts. Turnout No. 1 would primarily supply water to Chiquita Canyon and Ortega Gateway. Turnout No. 2 would primarily supply water to Central Gobernadora, Northeast Gobernadora, East Ortega, and Gabino Canyon. Turnout No. 3 would primarily supply water to Trampas Canyon, Christianitos Meadows, and Christianitos Canyon. Turnout No. 3 would primarily supply water to TRW. The estimated supplies for Turnout Nos. 1, 2, 3, and 4 are shown in Table 2-9. Peak week supply is estimated to be approximately 2.0 times higher than average supply or approximately 85 percent of maximum-day demand.

Table 2-9. Proposed SCP Turnouts

Proposed SCP Turnouts for Planning Area	Estimated Average Supply (cfs)	Estimated Peak Week Supply (cfs)
Turnout No. 1	1.9	3.9
Turnout No. 2	5.0	10.3
Turnout No. 3	3.6	7.3
Turnout No. 4	1.4	2.9
Total	11.9	24.4

The summertime hydraulic grade for Turnout Nos. 1 and 2 is estimated to approximately 835 to 840 feet at SC-3, down to approximately 820 feet at SC-5. The hydraulic grades of the SCP are slightly lower in the summer due than in the winter due to higher demands.

2.5.3 Service Zones and Pressures

The standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area. Lowering the pressure elevations eliminated the need for Zone 2 booster pump stations (water can now be taken directly from the South

County Pipeline) and also decreased the number of Zone 1 Reservoirs and booster pump stations. The service zones are tabulated in Table 2-10 and are shown on Figure 2-2. Per District design standards, service pressures are to be maintained between 40 and 80 psi during normal operating conditions including peak-hour demand. In the event of a fire, a minimum residual pressure of 20 psi is required at each fire hydrant in service.

Table 2-10. Proposed Water Service Zones for Planning Area

Pressure Zone	Maximum Hydraulic Grade (ft)	Service Area Elevation (ft)
1A	270	Below 220
1	570	220 to 420
2	770	420 to 620
3	970	620 to 820
4	1,170	820 to 1,020

2.5.4 Domestic Water Centralized Irrigation in Eight Zones

Centralized irrigation with domestic water in-lieu of non-domestic water is proposed in Zones 3 and 4 in Trampas Canyon, Zone 3 in Northeast Gobernadora, Zones 3 and 4 in Christianitos Canyon, Zone 4 in TRW, and for all of Gabino Canyon (except the golf course) in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (as discussed below most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

2.5.5 Storage Reservoirs

As shown on Figure 2-2, sixteen reservoirs have been located throughout the planning area to fulfill the storage requirements discussed in Section 2.4. Storage characteristics for each reservoir are shown in Table 2-11. In order to satisfy District pressure criteria, the reservoirs in Zones 4 of Trampas

Canyon, Zone 3 of Northeast Gobernadora, Zone 4 of Christianitos Canyon, and Zone 4 of TRW will need to be elevated tanks approximately 100 to 130 feet high (the projected height of each elevated tank is shown on Figure 2-2). The other reservoirs are estimated to be District standard 32-foot high reservoirs. The reservoirs are located strategically to more evenly distribute storage volume and to strive for equal spacing between reservoirs with a common pump station. Where possible domestic water reservoirs and non-domestic water reservoirs are located at the same proposed site to limit the number of reservoir sites. The District's "Facility Standards", which is included in Appendix D, presents design criteria for the reservoir sites.

Table 2-11. Storage Reservoir Characteristics

Reservoir	Location	IDs Served	Maximum Day Demand (mgd)	Operational Storage (MG)	Fire Storage (MG)	Total Storage (MG)
Zone 1						
Reservoir No. 1	Ortega Gateway	4C & 4E	2.27	2.27	2.16	4.4
Reservoir No. 2	Northeast Gobernadora	5	3.15	3.15	2.16	5.3
Subtotal	-	-	5.42	5.42	4.32	9.7
Zone 2						
Reservoir No. 1	Chiquita Canyon	4C	0.68	0.68	0.45	1.1
Reservoir No. 2	Northeast Gobernadora	5	3.16	3.16	2.16	5.3
Reservoir No. 3	Trampas Canyon	6	1.39	1.39	1.50	2.9
Reservoir No. 4	Christianitos Canyon	6	1.27	1.27	0.45	1.7
Reservoir No. 5	TRW	6	1.70	1.70	2.16	3.9
Subtotal	-	-	8.20	8.20	6.72	14.9
Zone 3						
Reservoir No. 1	Northeast Gobernadora	5	0.85	0.85	0.54	1.4
Reservoir No. 2	Trampas Canyon	6	1.02	1.02	0.45	1.5
Reservoir No. 3	Christianitos Canyon	6	0.76	0.76	1.50	2.3
Reservoir No. 4	TRW	6	0.43	0.43	0.54	1.0
Reservoir No. 5	Gabino Canyon	6	0.11	0.11	0.45	0.6
Subtotal	-	-	3.17	3.17	3.48	6.65
Zone 4						
Reservoir No. 1	Trampas Canyon	6	0.68	0.68	0.45	1.1
Reservoir No. 2	Christianitos Canyon	6	0.39	0.39	0.45	0.8
Reservoir No. 3	TRW	6	0.11	0.11	0.45	0.6
Reservoir No. 4	Gabino Canyon	6	0.33	0.33	0.45	0.8
Subtotal	-	-	1.51	1.51	1.80	3.3
Total	-	-	**18.3**	**18.3**	**16.3**	**34.6**

2.5.6 Pump Stations

The characteristics of the domestic water pump stations are shown in Table 2-12. The total dynamic pumping heads are estimated based on static lifts between reservoir sites and rough estimates on dynamic losses. The pump stations will need to be more accurately sized during preliminary design of system facilities utilizing hydraulic model simulations. The District's "Facility Standards", which is included in Appendix D, presents design criteria for the booster pump station sites.

2.5.7 Cost Estimates

Cost estimates for domestic water pipelines and facilities are prefaced and summarized in Chapter 5 with the actual cost estimates presented in Appendix D.

Table 2-12. Domestic Water Pump Stations

Pump Station	Estimated Capacity (gpm)	Estimated Total Dynamic Head (ft)
Zone 3		
Pump Station No. 1	500	220
Pump Station No. 2	1,000	225
Pump Station No. 3	680	220
Pump Station No. 4	320	220
Pump Station No. 5	260	220
Zone 4		
Pump Station No. 1	400	220
Pump Station No. 2	230	215
Pump Station No. 3	65	210
Pump Station No. 4	200	215

3.1 Overview

- Wastewater flows from IDs 4C, 4E, 5 and 6 (Planning Area) would be conveyed to the Chiquita Water Reclamation Plant (CWRP) for treatment.

- It is anticipated that CWRP, which was originally master planned for an ultimate secondary treatment capacity of 21.0 mgd, can be expanded to treat the estimated ultimate flows from the Planning Area of 5.14 mgd. Capacity might also be purchased from other improvement districts.

- Four large lift stations are required to convey flows from the Planning Area to CWRP:

    1. Southern ID 6 Lift Station No. 1 – located at the western edge of TRW to pump flows from Cristianitos Meadows, Cristianitos Canyon, and TRW (southern ID 6 flows) across the proposed Foothill Transportation Corridor to the existing Talega Lift Station.

    2. Southern ID 6 Lift Station No. 2 - Expand the existing Talega Lift Station and locate new pumping facilities to pump the southern ID 6 flows north to an expanded existing Ortega Lift Station via existing 10-inch and 16-inch forcemains that currently convey and would continue to convey Talega (ID 7) flows.

    3. Southern ID 6 Lift Station No. 3 - Expand existing Ortega Lift Station and locate new pumping facilities to pump southern ID 6 flows and flows and flows from Trampas Canyon across San Juan Creek to a proposed 21-inch sewer in Central Gobernadora

    4. Gobernadora Lift Station – located at the western edge of Central Gobernadora to pump flows from a portion of Gabino Canyon, from East Ortega, from Northeast and Central Gobernadora, from Lower Chiquita B, and from the Southern ID 6 Lift Station No. 3 (located in the expanded Ortega Lift Station) to CWRP.

- It is assumed for this Plans of Work that 100% of flows from Ortega Gateway (average flow of approximately 210 gpm) would be conveyed to the existing San Juan Creek Lift Station for pumped conveyance to CWRP. The San Juan Creek Lift Station currently pumps and would continue to pump flows from Ladera to CWRP. It is estimated that two small lift stations will be required to pump Ortega Gateway flows south of Ortega Highway to the San Juan Creek Lift Station. However, as an alternative, these flows south of Ortega Gateway (estimated at an average flow of approximately 190 gpm) could be conveyed to the City of San Juan Capistrano's (SJC) wastewater collection system if an agreement could be reached with SJC to purchase capacity in their system. Doing so would eliminate the need for the two small lift stations south of Ortega Highway.

- The District indicated that it should be estimated for this Plan of Works that a package wastewater treatment plant would be constructed within Gabino Canyon to treat the majority of Gabino Canyon flows (approximately 40-gpm average flow).

3.2 Regional Wastewater Treatment/Conveyance Facilities

SMWD owns and operates CWRP, where a majority of the District's wastewater is conveyed for primary and secondary treatment. The District also owns wastewater treatment capacity in the Oso Creek Water Reclamation Plant, the 3A Plant (SMWD owns secondary treatment capacity), and the South Orange County Wastewater Authority (SOCWA) Jay B. Latham Regional Treatment Plant.

Wastewater from IDs 4C, 4E, 5 and 6 would be conveyed to CWRP for treatment. Wastewater treated to secondary treatment standards at CWRP is conveyed via the Chiquita Land Outfall to the SERRA Ocean Outfall for ocean disposal. Wastewater that receives tertiary treatment at CWRP would be distributed into the non-domestic water system as reclaimed water. CWRP currently does not have tertiary capacity. The non-domestic system is discussed in Chapter 4.

3.2.1 Chiquita Water Reclamation Plant

CWRP has an existing secondary treatment capacity of 6.0 mgd with an additional 3.0 mgd of treatment capacity currently under construction. The plant was originally master planned for an ultimate secondary treatment capacity of 21.0 mgd with expansions in 3.0-mgd increments. However, the District has recently revised the estimated ultimate flows to the plant down to 15.0 mgd. Current flows to the plant average approximately 4.3 mgd.

Ultimate, average wastewater flows that were master planned for CWRP capacity owners are shown in Table 3-1. ID 1 has capacities in the Oso Creek, SERRA, and 3A treatment plants and does not require capacity in CWRP or the Chiquita Land Outfall. In addition to capacity ownership by SMWD Improvement Districts, Irvine Ranch Water District and Trabuco County Water District also own capacity. The original master planned flow estimates were done using conservative wastewater generation factors. The District has recently revised these estimates lower based on historical flow data as shown in Table 3-1. The revised numbers assume that IRWD and TCWD flows would be diverted to the Los Alisos Water Reclamation Plant.

Wastewater estimates for IDs 4C, 4E, 5 and 6 as estimated in this Plan of Works are also shown in Table 3-1. The methodology for estimating the flows for IDs 4C, 4E, 5 and 6 would be discussed later in this Chapter. As shown in Table 3-1, a collective wastewater flow of 12.66 mgd is forecast for CWRP including the estimates for IDs 4C, 4E, 5, and 6. Wastewater treatment capacity estimated at 5.14 mgd would need to be purchased by IDs 4C, 4E, 5, and 6 either from the District via plant expansion or from existing capacity owners that are now estimated to have surplus capacities.

3.2.2 Chiquita Land Outfall

Wastewater treated to secondary treatment standards at CWRP is conveyed via the Chiquita Land Outfall to the SERRA Ocean Outfall for ocean disposal. The Chiquita Land Outfall has a hydraulic capacity of 42.0 mgd, which is the ultimate CWRP capacity of 21.0 mgd multiplied by a 2.0 peaking factor.

3.3 Wastewater Flow Estimates

Ultimate wastewater flows were developed using unit wastewater generation factors and peaking factors that are consistent with the same District factors used for other improvement districts. District criteria stipulating maximum depth of flow in a sewer for peak dry-weather flow was also followed to help ensure sewer capacity to carry peak wet-weather flows without surcharging and causing sanitary sewer overflows.

Table 3-1. CWRP Wastewater Flow Estimates

Current or Proposed CWRP Capacity Owner	Original Master-Planned Flow Estimate [a] (mgd)	Current or Revised Flow Estimate[b] (mgd)
Current Capacity Owner		
ID 1	0.00	0.00
ID 2	1.93	1.20
ID 3	1.13	0.82
ID 4A	5.25	2.69
ID 4B (Las Flores)	0.67	0.37
ID 4D (Ladera)	2.30	2.08
ID 7	2.00	1.40
ID 8	0.07	0.07
IRWD	0.64	0.00
TCWD	0.56	0.20
Subtotal	14.55	8.83
Proposed Capacity Owner		
ID 4C (Chiquita Canyon)	-	0.50
ID 4E (Ortega)	-	0.58
ID 5	-	2.07
ID 6[c]	-	1.99
Subtotal	-	5.14
Total	-	13.97

(a) Estimates from adopted Plan of Works for IDs 2, 3, 7 & 8 and 1996 Draft Plan of Work for ID 4 for IDs 4A, 4B, and 4D.
(b) District-revised estimates for current or original capacity owners. Estimates for IDs 4C, 4E, 5 and 6 from this Plan of Works.
(c) It is assumed that 0.06 mgd of flow from Gabino Canyon would be treated at a development-site package treatment plant.

3.3.1 Average Dry-Weather Wastewater Flows

Average, dry-weather wastewater flows were developed by applying unit-wastewater generation factors to respective units such as dwelling units or acres. These unit factors, which are shown in

Table 3-2, are consistent with unit factors of other improvement districts within SMWD. The ultimate or built-out unit quantities for each planning area was multiplied by its respective unit factor to develop the ultimate average dry-weather wastewater flows shown in Table 3-3.

Table 3-2. Unit Wastewater Generation Factors

Land Use Designation	Units	Unit Wastewater Generation Factor (gpd/Unit)
Residential including Senior and Estates	Dwelling Unit	300
High Density Residential – Apartments	Dwelling Unit	175
Commercial, Business Park, Urban Activity Center, Retail	1,00 Square Feet of Building Area	225
High School	Student	15
Middle School	Student	10
Elementary School	Student	10
Resort	Room	200

The ultimate average dry-weather wastewater flow for all of the proposed development areas within IDs 4C, 4E, 5 and 6 is estimated at 5.20 mgd (3,610 gpm). However, it is assumed for this Plans of Work that a package treatment plant could be built within Gabino Canyon to treat a majority (approximately 43 gpm) of wastewater from this development area. It is estimated that wastewater from 20 estates in Gabino Canyon would be treated at CWRP. Development of flows for each of the development areas by land use category is presented in Appendix B.

3.3.2 Peak Dry-Weather Wastewater Flows

A peak dry-weather flow factor of 3.0 was used to develop peak dry-weather flows for sewers and lift stations serving less than 2,000 dwelling units. For sewers and lift stations serving more than 2,000 dwelling units, a peak-dry weather flow factor of 2.0 was used. However, for large regional flows such as at the Gobernadora Lift Station (4.4 mgd average flow), the District's peaking formula ($Q_{peak} = 1.84*(Q_{avg})^{0.92}$, where Q is expressed in cubic feet per second) was used to develop peak dry-weather wastewater flows. The total peak dry-weather flow that would be conveyed from the Planning Area to CWRP for treatment is calculated at 8.01 mgd using the District's peaking formula for a peaking factor of 1.56 (8.01/5.14).

Per District deign criteria, sewers are sized to carry peak dry-weather flows at the follow maximum wastewater depth to sewer diameter (d/D) ratios:

- 8 to 12-inch diameter pipe: maximum d/D = 0.5
- 15-inch and greater diameter sewer; maximum d/D = 0.75

The remaining capacity is available to carry peak wet-weather flows, which is a combination of peak-dry-weather flows plus inflow and infiltration from a rain event.

Table 3-3. Estimated Ultimate Average Wastewater Flows

Improvement District/ Development Area	Ultimate Wastewater Flow (gpm)	Ultimate Wastewater Flow (mgd)
ID 4E		
Ortega Gateway	401	0.58
Subtotal	401	0.58
ID 4C		
Upper Chiquita	2	0.002
Lower Chiquita A	93	0.13
Lower Chiquita B	250	0.36
Subtotal	345	0.49
ID 5		
Northeast Gobernadora	587	0.85
Central Gobernadora	832	1.20
Ortega East	20	0.03
Subtotal	1,439	2.08
ID 6		
Ortega East	19	0.03
Trampas Canyon	518	0.74
Christianitos Meadows	25	0.04
Christianitos Canyon	311	0.45
Gabino Canyon	47	0.07
TRW	506	0.73
Subtotal	1,426	2.06
Total	3,611	5.20

3.4 Wastewater Conveyance System

The proposed wastewater conveyance system for IDs 4C, 4E, 5 and 6 is shown on Figure 3-1. A larger map of the proposed system is included in Appendix B (Figure B-1). Major trunk sewers, forcemains, and lift stations were sized by a spreadsheet analysis that is included in Appendix B. The trunk sewered were sized using a Mannings friction (n) coefficient of 0.013.

3.4.1 Conveyance of Southern ID 6 Flows- Southern ID 6 Lift Station Nos. 1 and 2

Wastewater flows from Talega (ID 7) are conveyed to the existing Talega Lift Station located at the southwest corner of the Avenida Pico and C Street intersection. Existing 10 and 16-inch forcemains are routed from the lift station to a high point located approximately 19,000 linear feet (3.6 miles) north of the station (within Christianitos Meadows). From the high point, a 15-inch sewer is routed to the existing Ortega Lift Station. The sewer is approximately 5,600 linear feet (1.1 miles) long.

The ultimate peak Talega wastewater flow has been estimated at 1,570 gpm (2.3 mgd). Talega Flowrates up to 900 gpm are to be conveyed through the 10-inch forcemain at a design pumping head of 412 feet. For Talega flowrates above 900 gpm up to the ultimate flow of 1,570 gpm, the existing pumps, which are in-series pump pairs with variable speed drives, are designed to pump only through the 16-inch forcemain at a design total dynamic head of 326 feet.

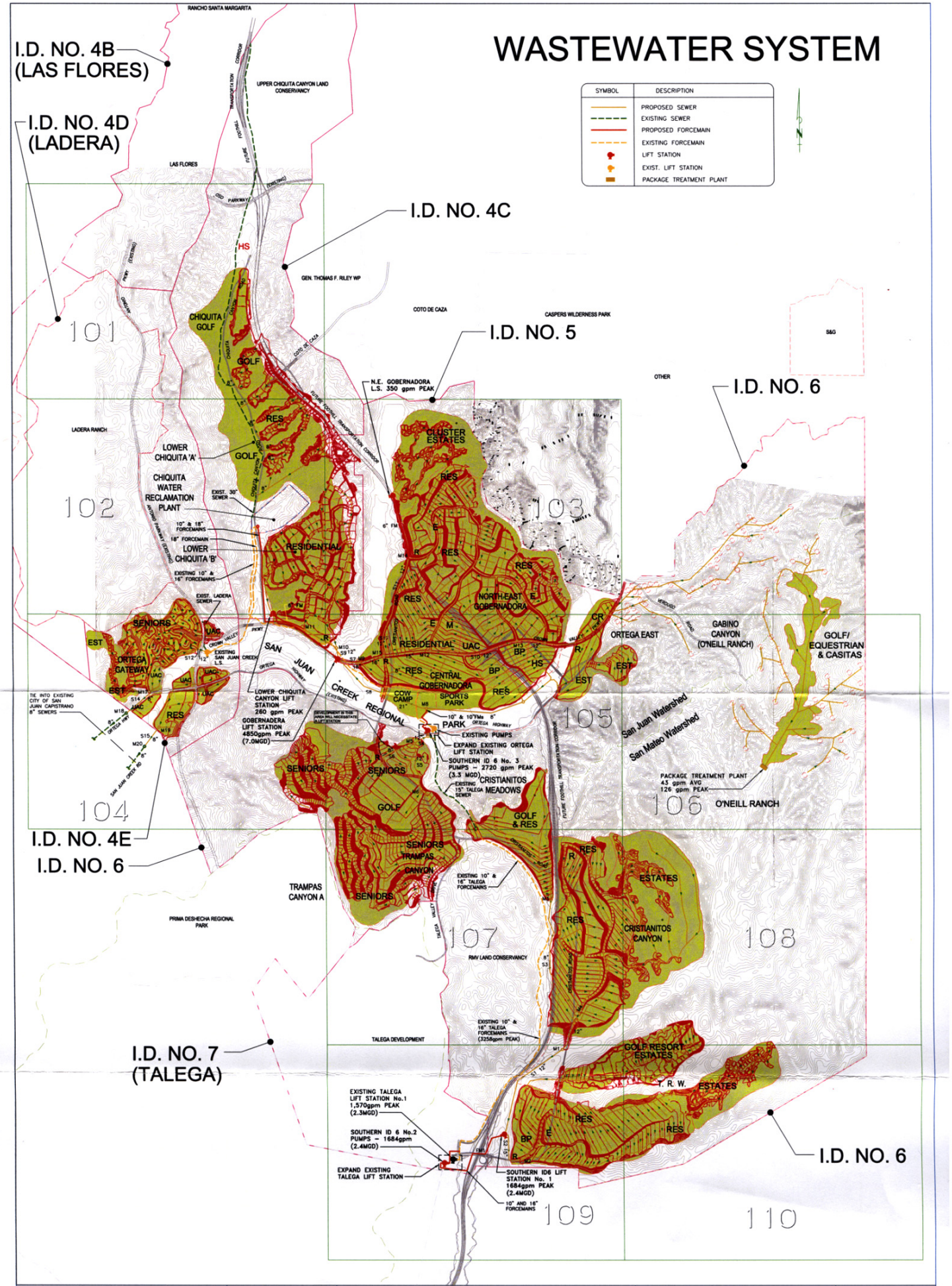
It is proposed that flows from Christianitos Meadows, Christianitos Canyon, and TRW (southern ID 6 flows) be conveyed to the Talega Lift Station, which would need to be expanded. The ultimate peak dry-weather flow from these developments is calculated at 1,684 gpm with an estimated peaking factor of 2.0. The combined peak ultimate Talega flow and peak ultimate southern ID 6 flow equates to 3,254 gpm. This combine peak flow can be pumped through both existing forcemains at an estimated total dynamic head of 348 feet (assuming a Hazen Williams C factor of 120) at a velocity of 3.7 feet per second.

The as-built drawings for the existing 15-inch PVC sewer were reviewed to evaluate its capacity in regard to conveying the combined peak flow. The District standard for a 15-inch sewer is a maximum depth to diameter ratio (d/D) of 0.75 at peak dry-weather flow. The District standard Manning's friction value for a PVC sewer is 0.011. Using this friction value it was determined that the entire length of sewer would be able to carry the combined peak flow at a d/D below 0.75 and that no sewer replacement would be required. Using a more conservative friction value of 0.12 resulted in only one 268-foot segment of sewer requiring replacement in order to achieve the d/D of 0.75. This segment would have a d/D value just slightly higher than 0.75.

The pumping facilities that would be located within the expanded Talega Lift Station will be labeled Southern ID 6 Lift Station No. 2. A lift station would also be required at the western edge of TRW to pump the southern ID 6 flows across the proposed Foothill Transportation Corridor to the expanded Talega Lift Station. This lift station will be labeled Southern ID 6 Lift Station No. 1.

3.4.2 Conveyance of Trampas Canyon Flows – Southern ID 6 Lift Station No. 3

The Talega wastewater flows are conveyed to the existing Ortega Lift Station located just south of San Juan Creek. Flows are pumped from this lift station to CWRP via existing 10-inch and 16-inch forcemains. As discussed in the previous section, it is proposed that flow from Southern ID 6 be conveyed to the Ortega Lift Station, which would need to be expanded. It is also proposed that flow



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SCALE: 1"=2000'

RANCHO MISSION VIEJO

PLAN OF WORKS FOR ID's 4C, 4E, 5 & 6
WASTEWATER SYSTEM

FIG. B-1

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from Trampas Canyon be conveyed to this lift station. One alternative (Alternative 1) is to continue to pump the Talega flow through the existing forcemain(s), but construct new forcemains (two parallel 10-inch forcemains 1,300 linear feet long) to convey the Southern ID 6 and Trampas Canyon flows (combined peak flow of 2,720 gpm) across San Juan Creek to a proposed 21-inch sewer in Central Gobernadora (total dynamic head of approximately 36 feet). The flow would then be routed in the sewer for approximately 7,000 linear feet to the Gobernadora Lift Station where it would then be pumped along with flows from ID 5 and ID 4C to CWRP.

Alternative 2 is to modify the existing pumps at the Ortega Lift Station and pump the total combined Talega, Southern ID 6, and Trampas Canyon flows (peak flow of 4,290 gpm) through the existing 10" and 16" forcemains (velocity of 4.9 fps) to CWRP. Alternative 1 might prove to be more viable because of a possible lower energy cost considering the Southern ID 6 and Trampas Canyon flows would also be conveyed through a 7,000 linear foot sewer in Central Gobernadora as opposed to being pumped the entire way to CWRP in Alternative 2. Alternative 1 conveyance is assumed for this Plan of Works. The pumping facilities that would be constructed in the expanded Ortega Lift Station will be labeled Southern ID 6 Lift Station No. 3.

3.4.3 Conveyance of Gobernadora and Lower Chiquita Flows - Gobernadora Lift Station

It is proposed that flow from approximately 20 estates in western Gabino Canyon, from Ortega East, from Northeast and Central Gobernadora, and from lower Chiquita B be sewered to a proposed lift station located at the western edge of Central Gobernadora (Gobernadora Lift Station). Flow from the Southern ID 6 Lift Station No. 3 would discharge into the 21-inch sewer in Central Gobernadora and would also be routed to the Gobernadora Lift Station.

The Gobernadora Lift Station would pump a total peak flow of approximately 4,850 gpm (7.0 mgd) to CWRP through 18-inch and 10-inch forcemains at a velocity of 4.7 fps. The parallel forcemains would be approximately 9,000 linear feet long. The total dynamic head to pump from the Gobernadora Lift Station to CWRP is estimated to be approximately 97 feet. Early phased development flows would be pumped through the 10-inch forcemain.

A small lift station would be required in Lower Chiquita B to pump a peak flow of 255 gpm over a ridge and into a sewer that would convey the flow to the Gobernadora Lift Station (Lower Chiquita Lift Station). A small lift station would also be required in Northeast Gobernadora to pump a peak flow of 350 gpm over a ridge and into a sewer that would convey the flow to the Gobernadora Lift Station (Northeast Gobernadora Lift Station).

3.4.3 Conveyance of Ortega Gateway Flows – San Juan Creek Lift Station

It is assumed for this Plans of Work that 100% of flows from Ortega Gateway (average flow of 209 gpm) would be conveyed to the existing San Juan Creek Lift Station for pumped conveyance to CWRP. The San Juan Creek Lift Station currently pumps and would continue to pump flows from Ladera to CWRP. It is estimated that two small lift stations will be required to pump Ortega Gateway flows south of Ortega Highway to the San Juan Creek Lift Station.

However, as an alternative, these flows south of Ortega Gateway (estimated at an average flow of approximately 192 gpm) could be conveyed to the City of San Juan Capistrano's (SJC) wastewater collection system if an agreement could be reached with SJC to purchase capacity in their system. Doing so would eliminate the need for the two small lift stations south of Ortega Highway.

3.4.4 Conveyance of Upper Chiquita Canyon Flows

It is proposed that flows from upper Chiquita Canyon be conveyed to the existing SMWD 30-inch sewer located in Chiquita Canyon Road. The District indicated that capacity should be available considering that Las Flores flows are no longer routed to the 30-inch sewer (the Las Flores Lift Station was recently taken out of service). The total peak flow from this area is estimated at 190 gpm.

3.4.5 Conveyance and Treatment of Gabino Canyon Flows

The District indicated that a package wastewater treatment plant should be estimated to treat Gabino Canyon flows from 80 estates, the golf course, and the casitas located around the golf course (estimated peak flow of 129 gpm). The package treatment plant would be located at the southern end of the golf course. Flows from 20 estates to be located in far western Gabino Canyon would be sewered into the CWRP collection system as shown on Figure 3-1.

3.4.6 Lift Station Capacities and Heads

Lift Station Capacities and total dynamic heads are presented in Table 3-4. The District's "Facility Standards", which is included in Appendix D, presents design criteria for the lift station sites.

3.4.7 Cost Estimates

Cost estimates for sewers, manholes, and lift stations are prefaced and summarized in Chapter 5 with the actual cost estimates presented in Appendix D.

Table 3-4. Wastewater Lift Stations

Lift Station	Ultimate Average Flow (gpm)	Ultimate Peak Flow (gpm)	Ultimate Peak Flow (mgd)	Ultimate Peak TDH [(a)] (ft)
Large Lift Stations[(b)]				
Southern ID 6 Lift Station No. 1	840	1,690	2.4	122
Southern ID 6 Lift Station No. 2	840	1,690	2.4	348
Southern ID 6 Lift Station No. 3	1,360	2,720	3.9	36
Gobernadora Lift Station	3,070	4,850	7.0	97
Small Lift Stations				
Lower Chiquita Canyon Lift Station	85	255	-	81
Ortega Gateway Lift Station No. 1	95	280		27
Ortega Gateway Lift Station No. 2	190	580		70
Northeast Gobernadora Lift Station	117	350	-	79

(a) TDH based on a Hazen-Williams friction factor of 120.

4.1 Overview

- The Chiquita Water Reclamation Plant (CWRP) has an existing tertiary treatment capacity of 5.0 mgd. The District estimates an ultimate tertiary capacity of 13.0 mgd. IDs 4C, 4E, 5 and 6, with an estimated ultimate demand of 7.4 mgd (8,281 afy), will need to purchase capacity in future expansions of the plant.

- A seasonal storage volume of 2,236 ac-ft has been estimated for the planning area to store and supply water based on seasonal demand variations. Seasonal storage will be provided in several earthen lined reservoirs that will also provide supplemental seasonal storage for other improvement districts within SMWD.

- Ten reservoirs have been located throughout the Planning Area to provide 22.6 MG of operational storage and 1.0 MG of transmission storage (23.6 MG total storage).

- A transmission pipeline approximately 6.6 miles long is required to supply reclaimed water from CWRP to south ID 6. An intermediate pump station is proposed at the midway point of the transmission pipeline to limit the pumping head at CWRP with transmission storage allocated at this pump station site.

- Eight booster pump stations are required to lift water into four pressure zones. The standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area.

- Centralized irrigation with domestic water in-lieu of non-domestic water is proposed for several Zone C and Zone D service areas in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

4.2 Supply

CWRP will require an additional expansion of tertiary treatment capacity to treat the non-domestic water demands estimated for the Planning Area.

4.2.1 Chiquita Water Reclamation Plant

Wastewater flows from the Planning Area will be conveyed to CWRP as discussed in Chapter 3. CWRP has an existing secondary treatment capacity of 6.0 mgd (with an additional 3.0 mgd of treatment capacity currently under construction) and an existing tertiary treatment capacity of 5.0 mgd. The District estimates an ultimate tertiary treatment capacity of 13.0 mgd for the plant. As will be discussed in Section 4.3, a non-domestic water demand of 7.4 mgd (8,281 afy) has been estimated for IDs 4C, 4E, 5, and 6 in this Plan of Works. These IDs will need to purchase capacity in future tertiary plant expansions.

The existing reclaimed water demands for CWRP as well as the approved new development demands and the demands estimated for IDs 4C, 4E, 5, and 6 that will be served by CWRP are shown in Table 4-1.

Table 4-1. Reclaimed Water Demands for CWRP

Reclaimed Water Demand	Demand (afy)
Existing Demand	3,323
Approved New Development	435
Demands for IDs 4C, 4E, 5 and 6	8,281
Total	12,039

4.2.2 San Juan Groundwater Basin

A portion of the San Juan Groundwater Basin underlies the Planning Area. Currently, RMV withdraws groundwater from the basin for agricultural irrigation. The San Juan Basin Authority (SJBA) has recently submitted an application to the State for the determination of basin groundwater rights. SJBA's application includes 3,500 AFY of historical use by RMV.

Groundwater supply from the basin could relieve some of the reclaimed water supply needed from CWRP. Although the water is high in TDS, treatment might not be required for landscape and golf course irrigation. However, because water rights and water quality have not been established at this time, it is assumed for this Plans of Work that groundwater from the San Juan Groundwater Basin will not be available and 100 percent of the non-domestic water supply for IDs 4C, 4E, 5 and 6 will come as reclaimed water from CWRP.

4.3 Demand

Average, maximum-day, and peak-hour demands were developed from unit non-domestic irrigation use and peaking factors consistent with other improvement districts within SMWD. Demand development for each proposed development area is presented in Appendix C.

4.3.1 Average Demand

Unit irrigation factors to respective units such as dwelling units or acres to develop average non-domestic water demands. These unit irrigation factors, which are shown in Table 4-2, are consistent with water-use factors of other improvement districts within SMWD. The estimated percentage of gross land that will be irrigated with non-domestic water is also shown in Table 4-2.

The ultimate or built-out unit quantities for each proposed development area were multiplied by its respective irrigation factor and percentage irrigation to develop the ultimate average demands shown in Table 4-3 (8,281 afy total demand). The demands include an additional 7.5% to account for lost water.

Table 4-2. Unit Non-Domestic Irrigation Factors & Percent Irrigation

Land Use Designation	% of Gross Land Irrigated	Unit Water Use Factor (ac-ft/ac)
Estate Residential	20%	3.5
Residential & Senior Residential	25%	3.5
High Density Residential - Apartments	35%	3.5
Commercial, Business Park, Urban Activity Center, Retail	27.5%	3.5
Commercial Recreation – Sports Park	50%	3.5
School	50%	4.0
Resort	25%	3.5
Community Meadows	80%	4.0
Golf Course	50%	4.0

Only demands that will receive reclaimed water from CWRP are included in Table 4-3. It is estimated in this Plan of Works that the golf course in Gabino Canyon will receive reclaimed water produced from a package plant located in Gabino Canyon (400 afy). This reclaimed water demand is not included in Table 4-3. The remainder of Gabino Canyon will be irrigated with domestic water.

4.3.2 Maximum-Day Demand

Maximum-day demand is the largest demand day of the year. A maximum-day to average demand factor of 3.0 will be used to analyze maximum-day demands within IDs 4C, 4E, 5 and 6, which is consistent with irrigation demands within other water districts. Applying this factor to the average demand of 5,134 gpm results in a maximum-day demand of 15,400 gpm for IDs 4C, 4E, 5 and 6.

4.3.3 Peak-Hour Demand

Peak-hour demand is the largest single-hour demand of the year. Peak-hour demand may or may not occur on the maximum-demand day of the year. Peak-hour demand in a non-domestic water system is of greater magnitude than in a domestic water system because of concentrated nighttime irrigation. This results both from Department of Health Services (DOHS) regulations concerning the use of reclaimed or non-domestic water and by the increased efficiency of nighttime irrigation.

Table 4-3. Estimated Ultimate Average Demands

Improvement District/ Development Area	Ultimate Demand (gpm)	Ultimate Demand (afy)	% of Total
ID 4E			
Ortega Gateway	324	521	-
Subtotal	324	521	6.3
ID 4C			
Upper Chiquita	267	430	-
Lower Chiquita A	597	961	-
Lower Chiquita B	449	725	-
Subtotal	1,313	2,116	25.6
ID 5			
Northeast Gobernadora	687	1,108	-
Central Gobernadora	594	959	-
Ortega East	51	82	-
Subtotal	1,332	2,149	26.0
ID 6			
Ortega East	51	82	-
Trampas Canyon	569	917	-
Christianitos Meadows	325	525	-
Gabino Canyon[(a)]	0	0	-
Christianitos Canyon	420	678	-
TRW	801	1,292	-
Subtotal	2,166	3,494	42.2
Total	5,134	8,281	100.0

(a) Gabino Canyon will be irrigated with domestic water with the exception of the golf course, which will be irrigated with reclaimed water produced from a development-site package treatment plant.

The District stipulates a 12-hour non-domestic water irrigation period between the hours of 7 p.m. and 7 a.m. Based on this irrigation approach, a peak-hour to average demand factor of 6.0 is appropriate. The exceptions are golf courses. Because of their large demands, golf courses are required to take non-domestic water over 24 hours and to use on-site lakes or reservoirs to meet peak-hour demands. Hence, the peak-hour demand factor for a golf course is 1.0. Applying these factors to the average demands results in a peak-hour demand of 28,400 gpm for IDs 4C, 4E, 5 and 6.

4.4 Storage

Storage facilities will need to be constructed to provide the Planning Area with the following storage components:

- Operational Storage – Storage to regulate variations in demand and to meet peak demands that exceed the capacities of other supply sources.
- Transmission Storage – Storage supplied at intermediate points along a long transmission pipeline where intermediate pump stations are located.
- Seasonal Storage – Storage to store water when demands are low such as in the winter season and to supply water when demands are high such as in the summer season.

Storage facilities can be constructed as District standard 32-foot high concrete or steel reservoirs or as earthen, lined reservoirs. The former is typical for operational and transmission storage reservoirs. The later is typical for a seasonal storage reservoir because of the large volume of water to be stored.

4.4.1 Operational Storage

Operational storage is the storage required to regulate variations in demand above and below the normal daily supply, which comes from pump stations sized to supply non-domestic water up to the normal maximum-day demand. The reservoirs fill during low demand periods and supply water during peak-hour irrigation periods. The District indicated that operational storage equivalent to one day of maximum-day demand should be provided in reservoirs located throughout the planning area. This requirement is consistent with peak demands from a 12-hour non-domestic water irrigation period and a 6.0 peak-hour demand factor.

4.4.2 Transmission Storage

Transmission storage is storage allocated at intermediate points along a long transmission pipeline to regulate supply between pump stations and to buffer a sudden shutdown in the transmission system that could result in hydraulic surges. Transmission reservoirs can also supply operational storage as discussed in Section 4.5.

4.4.3 Seasonal Storage

Monthly non-domestic water demand factors developed by the District were used in conjunction with the estimated ultimate demand for the Planning Area of 8,281 afy to estimate seasonal storage requirements for the Planning Area. Seasonal non-domestic water demand, supply, and storage estimates for the Planning Area are shown in Table 4-4. A seasonal storage volume of 2,236 ac-ft has been estimated.

The "Future Seasonal and Emergency Water Storage Needs Report" prepared for SMWD by Henry Miedema & Associates in August 2003, evaluated 20 potential storage sites. Four potential seasonal storage sites are now under consideration: Site Nos. 12, 15, 16, and 20. These four potential sites are shown on Figure 4-1.

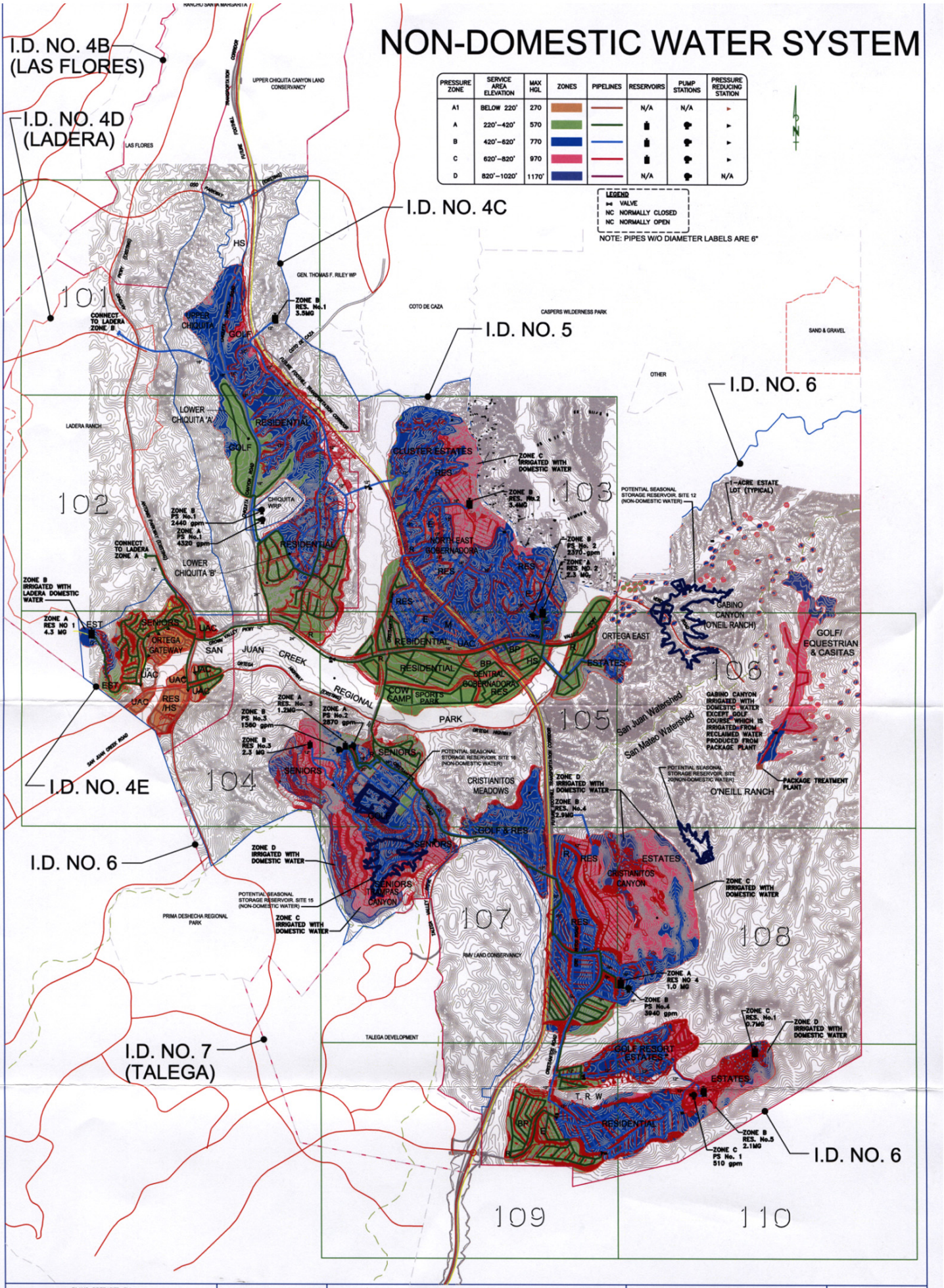
NON-DOMESTIC WATER SYSTEM
I.D. NO. 4B (LAS FLORES)
I.D. NO. 4D (LADERA)
I.D. NO. 4C
I.D. NO. 5
I.D. NO. 6
I.D. NO. 4E
I.D. NO. 6
I.D. NO. 7 (TALEGA)
I.D. NO. 6
PRESSURE ZONE
SERVICE AREA ELEVATION
MAX HGL
ZONES
PIPELINES
RESERVOIRS
PUMP STATIONS
PRESSURE REDUCING STATION
A1 BELOW 220' 270 N/A N/A
A 220'–420' 570
B 420'–620' 770
C 620'–820' 970
D 820'–1020' 1170' N/A N/A
LEGEND
VALVE
NC NORMALLY CLOSED
NC NORMALLY OPEN
NOTE: PIPES W/O DIAMETER LABELS ARE 6"
N
UPPER CHIQUITA CANYON LAND CONSERVANCY
LAS FLORES
GEN. THOMAS F. RILEY WP
COTO DE CAZA
CASPERS WILDERNESS PARK
SAND & GRAVEL
OTHER
LADERA RANCH
CONNECT TO LADERA ZONE B
CONNECT TO LADERA ZONE A
ZONE B RES. No.1 3.5MG
ZONE B PS No.1 2440 gpm
ZONE A PS No.1 4320 gpm
UPPER CHIQUITA GOLF
LOWER CHIQUITA 'A'
LOWER CHIQUITA 'B'
CHIQUITA WRP
RESIDENTIAL
GOLF
CLUSTER ESTATES
ZONE C IRRIGATED WITH DOMESTIC WATER
ZONE B RES. No.2 3.4MG
ZONE B PS No. 2 2370 gpm
ZONE A RES. NO. 2 2.3 MG
NORTH EAST CORNER GOBERNADORA
ZONE B IRRIGATED WITH LADERA DOMESTIC WATER
ZONE A RES NO 1 4.3 MG
SENIORS
ORTEGA GATEWAY
SAN JUAN CREEK
UAC
RES /HS
EST
REGIONAL
COW CAMP
SPORTS PARK
PARK
BP CENTRAL GOBERNADORA RES
ZONE A RES. No. 3 1.2MG
ZONE A PS No.2 2870 gpm
ZONE B PS No.3 1560 gpm
ZONE B RES No.3 2.5 MG
SAN JUAN CREEK ROAD
POTENTIAL SEASONAL STORAGE RESERVOIR, SITE 16 (NON-DOMESTIC WATER)
CRISTIANITOS MEADOWS
GOLF & RES
ZONE D IRRIGATED WITH DOMESTIC WATER
ZONE D RES. No.4 12.9MG
ESTATES
CRISTIANITOS CANYON
ZONE C IRRIGATED WITH DOMESTIC WATER
POTENTIAL SEASONAL STORAGE RESERVOIR, SITE 15 (NON-DOMESTIC WATER)
PRIMA DESHECHA REGIONAL PARK
RMV LAND CONSERVANCY
TALEGA DEVELOPMENT
GOLF RESORT ESTATES
T.R.W.
ZONE A RES NO 4 1.0 MG
ZONE B PS No.4 3940 gpm
ZONE C RES. No.1 9.7MG
ZONE D IRRIGATED WITH DOMESTIC WATER
ZONE B RES. No.5 2.1MG
ZONE C PS No. 1 510 gpm
POTENTIAL SEASONAL STORAGE RESERVOIR, SITE 12 (NON-DOMESTIC WATER)
1-ACRE ESTATE LOT (TYPICAL)
GABINO CANYON (O'NEILL RANCH)
ORTEGA EAST
GOLF/ EQUESTRIAN & CASITAS
GABINO CANYON IRRIGATED WITH DOMESTIC WATER EXCEPT GOLF COURSE WHICH IS IRRIGATED FROM RECLAIMED WATER PRODUCED FROM PACKAGE PLANT
San Juan Watershed
San Mateo Watershed
POTENTIAL SEASONAL STORAGE RESERVOIR, SITE 20(NON-DOMESTIC WATER)
O'NEILL RANCH
PACKAGE TREATMENT PLANT
101
102
103
104
105
106
107
108
109
110
PLANS PREPARED BY:
TETRA TECH
16241 Laguna Canyon Road, Suite 200
Irvine, California 92618
(949) 727-7099
(949) 727-7087 FAX
0 2000 4000
SCALE: 1"=2000'
RANCHO MISSION VIEJO
PLAN OF WORKS FOR ID's 4C, 4E, 5 & 6
NON-DOMESTIC WATER SYSTEM
FIG. C-1
C:\Temp\Archive\RMV\PWA\shnwtm100--color--grading.dwg 11/19/2003 16:17

Table 4-4. Seasonal Storage Estimate for Planning Area

Month	Non-Domestic Demand		Reclaimed Water Supply (ac-ft)		Seasonal Storage (ac-ft)	
	Monthly Factor	Demand (ac-ft)	CWRP	Excess CWRP	Store	Supply
Jan	0.36	248	690	442	442	0
Feb	0.24	166	690	524	524	0
Mar	0.12	83	690	607	607	0
Apr	0.48	331	690	359	359	0
May	0.96	662	690	28	28	0
Jun	1.32	911	690	0	0	-221
Jul	1.56	1,077	690	0	0	-386
Aug	1.92	1,325	690	0	0	-635
Sep	1.92	1,325	690	0	0	-635
Oct	1.44	994	690	0	0	-304
Nov	1.08	745	690	0	0	-55
Dec	0.60	414	690	276	276	0
Total	-	8,281	8,281	2,236	2,236	(2,236)

4.5 Storage and Transmission System

The proposed non-domestic water storage and transmission system along with conceptually laid out distribution pipelines for IDs 4C, 4E, 5 and 6 is shown on Figure 4-1. A larger map is included in Appendix C (Figure C-1). Transmission pipelines transmit large volumes of water from supply sources to demand areas. Distribution pipelines distribute water from a transmission pipeline to all users within a demand area. At this time dwelling units and commercial buildings have not been located and only rough grading plans have been developed. However, distribution mains have been laid out "conceptually" in order to garner a magnitude of distribution facilities and to estimate overall distribution system costs. The pipe diameters shown on Figure 4-1 are estimated. No hydraulic modeling was performed to calculate sizes at this time in that distribution system planning is very conceptual at this time. Sizing for each proposed reservoir and pump station in the system is presented in Appendix C.

4.5.1 System Reliability and Redundancy

As shown on Figure 4-1, the transmission and storage systems of each proposed development area are interconnected and also connected with the Ladera and Talega non-domestic water systems so as to provide system reliability and redundancy.

4.5.2 Service Zones and Pressures

As discussed in Chapter 2, the standard District pressure zone hydraulic grade and service area elevations were lowered 80 feet to more efficiently and effectively service the Planning Area. Lowering the pressure elevations eliminated the need for Zone 2 booster pump stations in the domestic water system and it is more efficient to have the non-domestic water system operate at the same elevation and hydraulic grade ranges as the domestic water system, i.e. domestic water and non-domestic water reservoirs can be located at the same site in many cases, etc. The proposed water service zones are shown in Table 4-5. Per District design standards, non-domestic water facilities are to be designed to operate at a minimum pressure of 55 psi at the meter.

Table 4-5. Proposed Water Service Zones for Planning Area

Pressure Zone	Maximum Hydraulic Grade (ft)	Service Area Elevation (ft)
A1	270	Below 220
A	570	220 to 420
B	770	420 to 620
C	970	620 to 820
D	1,170	820 to 1,020

4.5.3 Domestic Water Centralized Irrigation in Eight Zones

Centralized irrigation with domestic water in-lieu of non-domestic water is proposed in Zones C and D in Trampas Canyon, Zone C in Northeast Gobernadora, Zones C and D in Christianitos Canyon, Zone D in TRW, and for all of Gabino Canyon (except the golf course) in order to eliminate non-domestic water booster pump stations and reservoirs for these small service areas (as discussed below most of these areas require elevated storage tanks) while creating a more equal balance between domestic water supply (8,647 afy) and non-domestic water supply (8,281 afy).

4.5.4 Storage Reservoirs

As shown on Figure 4-1, ten reservoirs have been located throughout the Planning Area to fulfill the storage requirements discussed in Section 4.4. Storage characteristics for each reservoir are shown in Table 4-6. The reservoirs carry an operational storage volume equivalent to one maximum day of demand that totals 22.6 MG.

Table 4-6. Non-Domestic Water Storage Reservoirs

Reservoir	Location	IDs Served	Maximum Day Demand (mgd)	Operational Storage (MG)	Transmiss. Storage (MG)	Total Storage (MG)
Zone A						
Reservoir No. 1	Ortega Gateway	4C & 4E	4.29	4.29	-	4.3
Reservoir No. 2	Northeast Gobernadora	5 & 6	2.28	2.28	-	2.3
Reservoir No. 3	Trampas Canyon	6	0.20	0.20	1.0	1.2
Reservoir No. 4	Christianitos Canyon	6	1.01	1.01	-	1.0
Subtotal	-	-	7.78	7.78	1.0	8.8
Zone B						- -
Reservoir No. 1	East of Chiquita Canyon	4C	3.51	3.51	-	3.5
Reservoir No. 2	Northeast Gobernadora	5	3.42	3.42	-	3.4
Reservoir No. 3	Trampas Canyon	6	2.25	2.25	-	2.3
Reservoir No. 4	Christianitos Canyon	6	2.86	2.86	-	2.9
Reservoir No. 5	TRW	6	2.08	2.08	-	2.1
Subtotal	-	-	14.12	14.12	-	14.1
Zone C						- -
Reservoir No. 1	Trampas Canyon	6	0.73	0.73	-	0.7
Subtotal	-	-	0.73	0.73	-	0.7
Total	-	-	**22.63**	**22.63**	**1.0**	**23.63**

A transmission pipeline approximately 35,000 feet long (6.6 miles) is required to supply reclaimed water from CWRP to south ID 6 as shown on Figure 4-1. An intermediate pump station is proposed in Trampas Canyon, which is the midway point of the transmission pipeline, to limit the pumping head at CWRP. Storage is allocated at this pump station and at the terminus of the transmission pipeline in Cristianitos Canyon, both to regulate supply between pump stations and to buffer a sudden shutdown in the transmission system that could result in hydraulic surges.

Zone A Reservoir No. 3 carries 1.0 MG of transmission storage as well as 0.2 MG of operational storage for Trampas Canyon. Zone A Reservoir No. 4 is sized for 1.0 MG of operational storage for Cristianitos Canyon and TRW. The total storage volume for the 10 reservoirs is 23.63 MG.

The reservoirs are located at ground elevations necessary to fulfill the hydraulic grade requirements with a District standard 32-foot high reservoir. The reservoirs are also located strategically to more evenly distribute storage volume and to strive for equal spacing between reservoirs with a common pump station. Most of the non-domestic water reservoirs are located at proposed domestic water reservoir sites in order to limit the total number of reservoir sites.

The District's "Facility Standards", which is included in Appendix D, presents design criteria for the reservoir sites.

4.5.5 Pump Stations

The characteristics of the non-domestic water pump stations are shown in Table 4-7. The District's "Facility Standards", which is included in Appendix D, presents design criteria for the booster pump station sites.

4.5.6 Cost Estimates

Cost estimates for non-domestic water pipelines and facilities are prefaced and summarized in Chapter 5 with the actual cost estimates presented in Appendix D.

Table 4-7. Non-Domestic Water Pump Stations

Pump Station	Estimated Capacity (gpm)	Estimated Total Dynamic Head (ft)
Zone A		
Pump Station No. 1	2,440	445
Pump Station No. 2	2,870	75
Zone B		
Pump Station No. 1	4,320	300
Pump Station No. 2	2,370	240
Pump Station No. 3	1,560	230
Pump Station No. 4	1,990	235
Pump Station No. 5	3,950	240
Zone C		
Pump Station No. 1	510	220

5.1 Overview

Planning-level construction and capital cost estimates were developed for pump stations, reservoirs, transmission pipelines/valves, distribution pipelines/valves, pressure reducing stations, and fire hydrants (domestic water system only) for the domestic water system and non-domestic water system; and for trunk sewers, sewers, manholes, lift stations, and forcemains in the wastewater system.

Cost estimates for emergency storage and seasonal storage facilities and to purchase capacities in domestic water, non-domestic water, and wastewater treatment and conveyance facilities from the District or other agencies/cities either existing or expanded are not included in this Plan of Works.

Cost estimates were broken down into capital costs per year based on the current planned development phasing. Costs were also broken down into costs to be paid by the District and costs to be paid by the Developer. The Developer will pay for all domestic water and non-domestic water distribution system costs, which are all piping, valves, hydrants, and appurtenances for piping 8-inches and smaller. The developer will also pay for sewers, manholes and appurtenances for sewers 8 inches and smaller. Sewer laterals, which will also be paid for by the Developer, are not included in the cost estimates. The District will pay for all water pipelines and sewers 12 inches and larger and for all turnouts, booster pump stations, reservoirs, and sewage lift stations.

Locations and quantity estimates for sewers and distribution pipelines are very conceptual at this time. A 25% contingency was applied to all construction costs. Capital costs were developed assuming 25% for technical, legal, and administrative costs. Detailed cost estimates are presented in Appendix D.

APPENDIX A

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Gross Land Area (Ac)	Net Land Area (Ac)	Building Area (ksf)	Ultimate Dwelling Units (DUs)	Dwelling Units (DUs)	Students or Rooms	DU/ Net Acre	Interior + Exterior Demand				In-Lieu Non-Domestic Water Demand (Additional Exterior)				Total Demand	
										Demand/ DU (gpd/DU)	Demand/ Building Area (gpd/ksf)	Demand/ Student or Room (gpcd)	Average Day Demand (AFY)	% Gross Area Irrigated Domestic Water	Area Irrigated Domestic Water (Ac)	DW Irrigate Factor (AFY/Ac)	Demand/ Irrigate Demand (AFY)	Average Day Demand (AFY)	Average Day Demand (gpm)
San Juan Creek North																			
Ortega Gateway (2006-08)	4E																		
Senior Residential		241	241	96	-	893	893	-	9.3	345	-	-	345	0%	-	3.5	-	345	214
Residential		153	153	61	-	127	127	-	2.1	345	-	-	49	0%	-	3.5	-	49	30
Business Park		38	38	19	575	-	-	-	-	-	225	-	145	0%	-	3.5	-	145	90
Urban Activity Center		108	108	54	630	-	-	-	-	-	225	-	159	0%	-	3.5	-	159	98
Total		540	540	231	1,205	1,020	1,020	-	-	-	-	-	698	0%	-	-	-	698	433
Chiquita Canyon																			
Upper Chiquita (2010-12)	4C																		
Golf Course		100	100	100	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Total		100	100	100	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Chiquita Canyon																			
Lower Chiquita A (2010-12)	4C																		
Cluster Residential		565	565	226	-	438	438	-	1.9	345	-	-	169	0%	-	3.5	-	169	105
Golf Course		200	200	200	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Total		765	765	426	-	438	438	-	-	-	-	-	172	0%	-	-	-	172	107
Chiquita Canyon																			
Lower Chiquita B (2008-10)	4C																		
Residential		726	726	290	-	742	742	-	2.6	345	-	-	287	0%	-	3.5	-	287	178
Business Park		40	40	20	610	-	-	-	-	-	225	-	154	0%	-	3.5	-	154	95
Total		766	766	310	610	742	742	-	-	-	-	-	440	0%	-	-	-	440	273
Northeast Gobernadora (2012-18)	5																		
Residential		653	653	261	-	1,281	1,281	-	4.9	345	-	-	495	6%	42	3.5	148	643	398
Senior Residential		309	309	124	-	600	600	-	4.9	345	-	-	232	6%	20	3.5	70	302	187
Apartments		60	60	24	-	480	480		20.0	345	-	-	185	6%	4	3.5	14	199	123
Estate Residential		318	318	159	-	159	159	-	1.0	345	-	-	61	5%	16	3.5	55	116	72
Business Park		49	49	25	745	-	-	-	-	-	225	-	188	0%	-	3.5	-	188	116
High School		50	50	50	-	-	-	2,200	-	-	-	15	37	0%	-	3.5	-	37	23
Elementary School		10	10	10	-	-	-	800	-	-	-	10	9	0%	-	3.5	-	9	6
Commercial		11	11	6	110	-	-	-	-	-	225	-	28	0%	-	3.5	-	28	17
Total		1,460	1,460	658	855	2,520	2,520	3,000	-	-	-	-	1,235	6%	82	3.5	286	1,521	943
Central Gobernadora (2010-17)	5																		
Residential		343	343	137	-	1,715	1,715	-	12.5	345	-	-	663	0%	-	3.5	-	663	411
Senior Residential		77	77	31	-	385	385	-	12.5	345	-	-	149	0%	-	3.5	-	149	92
Apartments		105	105	42	-	840	840	-	20.0	345	-	-	325	0%	-	3.5	-	325	201
Residential		54	54	22	-	540	540	-	25.0	345	-	-	209	0%	-	3.5	-	209	129
Elementary School		10	10	10	-	-	-	800	-	-	-	10	9	0%	-	3.5	-	9	6
Middle School		20	20	20	-	-	-	1,500	-	-	-	10	17	0%	-	3.5	-	17	10
Business Park		51	51	26	780	-	-	-	-	-	225	-	197	0%	-	3.5	-	197	122
Urban Activity Center		22	22	11	140	-	-	-	-	-	225	-	35	0%	-	3.5	-	35	22
Commercial		11	11	6	110	-	-	-	-	-	225	-	28	0%	-	3.5	-	28	17
Cow Camp		40	40	40	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Community Meadows		20	20	20	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-
Sports Park		45	45	45	-	-	-	-	-	-	-	-	3	0%	-	3.5	-	3	2
Total		798	798	409	1,030	3,480	3,480	2,300	-	-	-	-	1,636	0%	-	-	-	1,636	1,014

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Gross Land Area (Ac)	Net Land Area (Ac)	Building Area (ksf)	Ultimate Dwelling Units (DUs)	Dwelling Units (DUs)	Students or Rooms	DU/ Net Acre	Interior + Exterior Demand				In-Lieu Non-Domestic Water Demand (Additional Exterior)				Total Demand	
										Demand/ DU (gpd/DU)	Demand/ Building Area (gpd/ksf)	Demand/ Student or Room (gpcd)	Average Day Demand (AFY)	% Gross Area Irrigated Domestic Water	Area Irrigated Domestic Water (Ac)	DW Irrigate Factor (AFY/Ac)	Demand/ Irrigate Demand (AFY)	Average Day Demand (AFY)	Average Day Demand (gpm)
East Ortega (2011-2013)	5 & 6																		
Estate Residential		211	211	106	-	150	150	-	1.4	345	-	-	58	0%	-	3.5	-	58	36
Commercial		5	5	3	50	-	-	-	-	-	225	-	13	0%	-	3.5	-	13	8
Total		216	216	108	50	150	150	-	-	-	-	-	71	0%	-	-	-	71	44
Unaccounted-For Water (5%)		-	-	-	-	-	-	-	-	-	-	-	213	-	-	-	14	227	141
San Juan North Total		**4,645**	**4,645**	**2,241**	**3,750**	**8,350**	**8,350**	**5,300**	**-**	**-**	**-**	**-**	**4,468**	**2%**	**82**	**3.7**	**300**	**4,768**	**2,956**
San Juan Creek South																			
Trampas Canyon (2016-19)	6																		
Senior Residential		826	826	330	-	2,280	2,280	-	6.9	345	-	-	881	12%	101	3.5	355	1,236	766
Residential		160	160	64	-	160	160	-	2.5	345	-	-	62	12%	20	3.5	69	131	81
Golf Course		200	200	200	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Commercial		5	5	3	50	-	-	-	-	-	225	-	13	0%	-	3.5	-	13	8
Total		1,191	1,191	597	50	2,440	2,440	-	-	-	-	-	958	4%	121	3.5	424	1,382	857
Cristianitos Meadows (2016-19)	6																		
Residential		100	100	40	-	110	110	-	2.8	345	-	-	43	0%	-	3.5	-	43	26
Golf Course		175	175	175	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Total		275	275	215	-	110	110	-	-	-	-	-	45	4%	-	-	-	45	28
Christianitos Canyon (2021-23)	6																		
Residential		423	423	169	-	850	850	-	5.0	345	-	-	328	11%	46	3.5	160	489	303
Senior Residential		299	299	120	-	600	600	-	5.0	345	-	-	232	11%	32	3.5	113	345	214
Estate Residential		626	626	313	-	30	30	-	0.1	345	-	-	12	8%	51	3.5	180	192	119
Commercial		2	2	1	20	-	-	-	-	-	225	-	5	0%	-	3.5	-	5	3
Total		1,350	1,350	603	20	1,480	1,480	-	-	-	-	-	577	10%	130	3.5	453	1,030	639
Gabino Canyon (2011-2013)	6																		
Large Lot Estate Residential		200	200	100	-	100	100	-	1.0	345	-	-	39	20%	40	3.5	140	179	111
Casitas[a]		20	20	8	-	120	120	-	15.0	345	-	-	46	20%	4	3.5	14	60	37
Golf Course[a]		200	200	200	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Total		420	420	308	-	220	220	-	-	-	-	-	88	10%	44	3.5	154	242	150
TRW (2018-20)	6																		
Residential		528	528	211	-	920	920	-	4.4	345	-	-	356	0%	-	3.5	-	356	220
Apartments		38	38	15	-	300	300	-	20.0	345	-	-	116	0%	-	3.5	-	116	72
Estate Residential		234	234	117	-	75	75	-	0.6	345	-	-	29	8%	19	3.5	66	95	59
Elementary School		10	10	10	-	-	-	800	-	-	-	10	9	0%	-	3.5	-	9	6
Commercial		5	5	3	50	-	-	-	-	-	225	-	13	0%	-	3.5	-	13	8
Business Park		80	80	40	1,220	-	-	-	-	-	225	-	307	0%	-	3.5	-	307	191
Golf Course		200	200	200	-	-	-	-	-	-	-	-	3	0%	-	-	-	3	2
Resort		20	20	20	-	-	-	250	-	-	-	200	56	0%	-	3.5	-	56	35
Golf Course Estate Residential		100	100	50	-	105	105	-	2.1	345	-	-	41	0%	-	3.5	-	41	25
Total		1,214	1,214	666	1,270	1,400	1,400	1,050	-	-	-	-	929	2%	19	3.5	66	995	617
Unaccounted-For Water (5%)		-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	55	185	115
San Juan South Total		**4,450**	**4,450**	**2,388**	**1,340**	**5,650**	**5,650**	**1,050**	**-**	**-**	**-**	**-**	**2,727**	**7%**	**314**	**3.7**	**1,152**	**3,879**	**2,405**
Grand Total		**9,095**	**9,095**	**4,630**	**5,090**	**14,000**	**14,000**	**6,350**	**-**	**-**	**-**	**-**	**7,195**	**4%**	**395**	**3.7**	**1,452**	**8,647**	**5,361**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Domestic Water Demand

Area & Land Use	I.D.	Net Land Area[a] (Ac)	Average Day Demand (gpm)	Average Day Demand (AFY)	Average Day Demand (gpd/Ac)
San Juan Creek North					
Ortega Gateway (2006-08)	4E				
Senior Residential		96	214	345	3,196
Residential		61	30	49	716
Business Park		19	90	145	6,809
Urban Activity Center		54	98	159	2,625
Total		231	433	698	2,702
Chiquita Canyon					
Upper Chiquita (2010-12)	4C				
Golf Course		100	2	3	25
Total		100	2	3	25
Chiquita Canyon					
Lower Chiquita A (2010-12)	4C				
Cluster Residential		226	105	169	669
Golf Course		200	2	3	13
Total		426	107	172	361
Chiquita Canyon					
Lower Chiquita B (2008-10)	4C				
Residential		290	178	287	882
Business Park		20	95	154	6,863
Total		310	273	440	1,267
Northeast Gobernadora (2012-18)	5				
Residential		261	398	643	2,197
Senior Residential		124	187	302	2,179
Apartments		24	123	199	7,404
Estate Residential		159	72	116	651
Business Park		25	116	188	6,842
High School		50	23	37	660
Elementary School		10	6	9	800
Commercial		6	17	28	4,500
Total		658	943	1,521	2,064
Central Gobernadora (2010-17)	5				
Residential		137	411	663	4,313
Senior Residential		31	92	149	4,313
Apartments		42	201	325	6,900
Residential		22	129	209	8,625
Elementary School		10	6	9	800
Middle School		20	10	17	750
Business Park		26	122	197	6,882
Urban Activity Center		11	22	35	2,864
Commercial		6	17	28	4,500
Cow Camp		40	2	3	63
Community Meadows		20	-	-	-
Sports Park		45	2	3	56
Total		409	1,014	1,636	3,574

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Domestic Water Demand

Area & Land Use	I.D.	Net Land Area[a] (Ac)	Average Day Demand (gpm)	Average Day Demand (AFY)	Average Day Demand (gpd/Ac)
East Ortega (2011-2013)	5 & 6				
Estate Residential		106	36	58	491
Commercial		3	8	13	4,500
Total		108	44	71	583
Unaccounted-For Water (5%)		-	141	227	-
San Juan North Total		2,241	2,956	4,768	1,899
San Juan Creek South					
Trampas Canyon (2016-19)	6				
Senior Residential		330	766	1,236	3,340
Residential		64	81	131	1,822
Golf Course		200	2	3	13
Commercial		3	8	13	4,500
Total		597	857	1,382	2,067
Cristianitos Meadows (2016-19)	6				
Residential		40	26	43	949
Golf Course		175	2	3	14
Total		215	28	45	188
Christianitos Canyon (2021-23)	6				
Residential		169	303	489	2,578
Senior Residential		120	214	345	2,575
Estate Residential		313	119	192	547
Commercial		1	3	5	4,500
Total		603	639	1,030	1,526
Gabino Canyon (2011-2013)	6				
Large Lot Estate Residential		100	111	179	1,595
Casitas[a]		8	37	60	6,737
Golf Course[a]		200	2	3	13
Total		308	150	242	701
TRW (2018-20)	6				
Residential		211	220	356	1,504
Apartments		15	72	116	6,900
Estate Residential		117	59	95	727
Elementary School		10	6	9	800
Commercial		3	8	13	4,500
Business Park		40	191	307	6,863
Golf Course		200	2	3	13
Resort		20	35	56	2,500
Golf Course Estate Residential		50	25	41	725
Total		666	617	995	1,335
Unaccounted-For Water (5%)		-	115	185	-
San Juan South Total		2,388	2,405	3,879	1,450
Grand Total		4,630	5,361	8,647	1,667

Maximum Day Factor =	2.4	
Maximum Day Demand =	12,866	gpm
Peak Hour Factor =	3.5	
Peak Hour Demand =	18,763	gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Required System Storage		
Operational Storage = 100% Maximum Day Demand	**18.53**	**MG**
Fire Storage:		
Zone 1 Reservoir No. 1	**2.16**	**MG**
Zone 1 Reservoir No. 2	**2.16**	**MG**
Zone 2 Reservoir No. 1	**0.45**	**MG**
Zone 2 Reservoir No. 2	**2.16**	**MG**
Zone 2 Reservoir No. 3	**1.50**	**MG**
Zone 2 Reservoir No. 4	**0.45**	**MG**
Zone 2 Reservoir No. 5	**2.16**	**MG**
Zone 3 Reservoir No. 1	**0.54**	**MG**
Zone 3 Reservoir No. 2	**0.45**	**MG**
Zone 3 Reservoir No. 3	**1.50**	**MG**
Zone 3 Reservoir No. 4	**0.54**	**MG**
Zone 3 Reservoir No. 5	**0.45**	**MG**
Zone 4 Reservoir No. 1	**0.45**	**MG**
Zone 4 Reservoir No. 2	**0.45**	**MG**
Zone 4 Reservoir No. 3	**0.45**	**MG**
Zone 4 Reservoir No. 4	**0.45**	**MG**
Total Fire Storage	**16.32**	**MG**
Emergency Storage	**0.00**	**MG**
Total Required Storage	**34.85**	**MG**

Zone 2 Reservoir No. 1 Capacity [redacted]

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Upper Chiquita (2009-11)	4C				
Golf Course		100	100%	2	3
Subtotal		100	-	2	3
Lower Chiquita "A" (2009-11)	4C				
Cluster Residential		226	100%	110	178
Golf Course		200	15%	0	0
Subtotal		426	-	110	178
Lower Chiquita B (2007-09)	4C				
Residential		290	45%	84	135
Subtotal		290	-	84	135
Total		**816**	**-**	**196**	**317**

Maximum Day Demand = 2.4 x ADD = **471 gpm**

Operational Storage = 100% Maximum Day Demand =	**0.68**	**MG**
Fire Storage = 2,500 gpm x 3 hr =	**0.45**	**MG**
Total	**1.13**	**MG**

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 1 Reservoir No. 1 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Upper Chiquita (2009-11)	4C				
Golf Course		100	0%	-	-
Total		100	-	-	-
Lower Chiquita A (2009-11)	4C				
Cluster Residential		226	0%	-	-
Golf Course		200	85%	2	3
Total		426	-	2	3
Lower Chiquita B (2007-09)	4C				
Residential		290	55%	103	166
Business Park		20	100%	100	161
Total		310	-	203	327
Ortega Gateway (2005-07)	4E				
Senior Residential		96	100%	225	362
Residential		61	90%	29	46
Business Park		19	100%	94	152
Urban Activity Center		54	100%	103	167
Subtotal		231	-	451	728
Total		**1,067**	**-**	**655**	**1,057**

Maximum Day Demand = 2.4 x ADD = 1,573 gpm

Operational Storage = 100% Maximum Day Demand =	**2.27**	**MG**
Fire Storage = 6,000 gpm x 6 hr =	**2.16**	**MG**
Total	**4.43**	**MG**

Zone 3 Reservoir No. 1 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Northeast Gobernadora (2011-17)	5				
Residential		261	30%	126	202
Senior Residential		124	30%	59	95
Apartments		24	30%	39	63
Estate Residential		159	30%	23	37
Total		**568**	**-**	**246**	**397**

Maximum Day Demand = 2.4 x ADD = 590 gpm

Operational Storage = 100% Maximum Day Demand =	**0.85**	**MG**
Fire Storage = 3,000 gpm x 3 hr =	**0.54**	**MG**
Total	**1.39**	**MG**

Zone 3 Pump Station No. 1 Capacity

Maximum Week Demand = 85%MDD
Zone 3 Reservoir No. 1 Service Area MWD 502 gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 2 Reservoir No. 2 Capacity [redacted]

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Northeast Gobernadora (2011-17)	5				
Residential		261	70%	293	472
Senior Residential		124	70%	137	222
Apartments		24	67%	87	140
Estate Residential		159	70%	53	85
Elementary School		10	100%	6	9
Business Park		25	0%	-	-
Commercial		6	100%	18	29
Subtotal		602	-	576	929
Central Gobernadora (2009-16)	5				
Residential		137	30%	129	209
Senior Residential		31	30%	29	47
Apartments		42	30%	63	102
Residential		22	30%	41	66
Elementary School		10	100%	6	9
Middle School		20	100%	11	18
Business Park		26	0%	-	-
Urban Activity Center		11	100%	23	37
Commercial		6	0%	-	-
Subtotal		304	-	302	488
East Ortega	5 & 6	-			
Estate Residential		106	45%	17	27
Commercial		3	0%	-	-
Subtotal		108	-	17	27
Gabino Canyon	6	-			
Large Lot Estate Residential		100	25%	29	47
Casitas		25	0%	-	-
Golf Course		50	0%	-	-
Subtotal		175	0	29	47
Total		1,283	-	924	1,473

Maximum Day Demand = 2.4 x ADD = 2,218 gpm

Operational Storage = 100% Maximum Day Demand =	3.19 MG
Fire Storage = 6,000 gpm x 6 hr	2.16 MG
Total	5.35 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 1 Reservoir No. 2 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Northeast Gobernadora (2011-17)	5				
Residential		261	0%	-	-
Senior Residential		124	0%	-	-
Apartments		24	3%	3.9	6.3
Estate Residential		159	0%	-	-
Business Park		25	100%	122.2	197.2
High School		50	100%	24.1	38.8
Elementary School		10	0%	-	-
Commercial		6	0%	-	-
Subtotal		658	-	150	242
Central Gobernadora (2009-16)	5				- -
Residential		137	70%	302	487
Senior Residential		31	70%	68	109
Apartments		42	70%	148	239
Residential		22	70%	95	153
Elementary School		10	0%	-	-
Middle School		20	0%	-	-
Business Park		26	100%	128	206
Urban Activity Center		11	0%	-	-
Commercial		6	100%	18	29
Cow Camp		40	100%	2	3
Community Meadows		20	100%	-	-
Sports Park		45	100%	2	3
Subtotal		409	-	762	1,230
East Ortega	5 & 6	- -			
Estate Residential		106	55%	21	33
Commercial		3	100%	8	13
Subtotal		108	-	29	47
Gabino Canyon	6	- -			
Large Lot Estate Residential		100	0%	-	-
Casitas		8	0%	-	-
Golf Course		200	0%	-	-
Subtotal		308	-	-	-
Total		-	-	913	1,472

Maximum Day Demand = 2.4 x ADD = 2,190 gpm

Operational Storage = 100% Maximum Day Demand =	3.15 MG
Fire Storage = 6,000 gpm x 6 hr	2.16 MG
Total	5.31 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 4 Reservoir No. 1 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Trampas Canyon (2015-18)	6	-			
Senior Residential		330	22%	177	286
Residential		64	22%	19	30
Total		394	-	196	316

Maximum Day Demand = 2.4 x ADD = 470 gpm

Operational Storage = 100% Maximum Day Demand =	0.68 MG
Fire Storage = 2,500 gpm x 3 hr =	0.45 MG
Total	1.13 MG

Zone 4 Pump Station No. 1 Capacity

Maximum Week Demand = 85%MDD
Zone 4 Reservoir No. 1 Service Area MWD 399 gpm

Zone 3 Reservoir No. 2 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Trampas Canyon (2015-18)	6	-			
Senior Residential		330	33%	266	428
Residential		64	33%	28	45
Total		394	-	294	474

Maximum Day Demand = 2.4 x ADD = 705 gpm

Operational Storage = 100% Maximum Day Demand =	1.01 MG
Fire Storage = 2,500 gpm x 3 hr =	0.45 MG
Total	1.46 MG

Zone 3 Pump Station No. 2 Capacity

Maximum Week Demand = 85%MDD

Zone 3 Reservoir No. 2 Service Area MWD	599 gpm
Zone 4 Reservoir No. 1 Service Area MWD	399 gpm
Total	998 gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 2 Reservoir No. 3 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Trampas Canyon (2015-18)	6				
Senior Residential		330	45%	362	584
Residential		64	45%	38	62
Golf Course		200	100%	2	3.0
Commercial		3	100%	8	13.2
Total		594	-	402	649

Maximum Day Demand = 2.4 x ADD = **965 gpm**

Operational Storage = 100% Maximum Day Demand =	**1.39**	**MG**
Fire Storage = 5,000 gpm x 5 hr =	**1.50**	**MG**
Total	**2.89**	**MG**

Zone 4 Reservoir No. 2 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
		-			
Christianitos Canyon (2020-22)	6	-			
Residential		169	17%	54	87
Senior Residential		120	17%	38	62
Estate Residential		313	17%	21	34
Commercial		1	0%	-	-
Total		603	-	113	183

Maximum Day Demand = 2.4 x ADD = **272 gpm**

Operational Storage = 100% Maximum Day Demand =	**0.39**	**MG**
Fire Storage = 2,500 gpm x 3 hr =	**0.45**	**MG**
Total	**0.84**	**MG**

Zone 4 Pump Station No. 2 Capacity

Maximum Week Demand = 85%MDD
Zone 4 Reservoir No. 2 Service Area MWD **231 gpm**

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 3 Reservoir No. 3 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Christianitos Canyon (2020-22)	6	-			
Residential		169	33%	105	169
Senior Residential		120	33%	74	120
Estate Residential		313	33%	41	66
Commercial		1	0%	-	-
Total		603	-	220	355

Maximum Day Demand = 2.4 x ADD = 529 gpm

Operational Storage = 100% Maximum Day Demand =	0.76	MG
Fire Storage = 5,000 gpm x 5 hr =	1.50	MG
Total	2.26	MG

Zone 3 Pump Station No. 3 Capacity

Maximum Week Demand = 85% MDD		
Zone 3 Reservoir No. 3 Service Area MWD	449	gpm
Zone 4 Reservoir No. 2 Service Area MWD	231	gpm
Total	681	gpm

Zone 2 Reservoir No. 4 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Cristianitos Meadows (2015-18)	6				
Residential		40	100%	28	45
Golf Course		175	100%	2	3
Subtotal		215	-	30	47.6
Christianitos Canyon (2020-22)	6				
Residential		169	50%	159	256
Senior Residential		120	50%	112	181
Estate Residential		313	50%	62	101
Commercial		1	100%	3	5
Subtotal		603	-	337	543.5
Total		-	-	366	591

Maximum Day Demand = 2.4 x ADD = 880 gpm

Operational Storage = 100% Maximum Day Demand =	1.27	MG
Fire Storage = 2,500 gpm x 3 hr =	0.45	MG
Total	1.72	MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 4 Reservoir No. 3 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
TRW (2017-19)	6				
Residential		211	0%	-	-
Apartments		15	0%	-	-
Estate Residential		117	50%	31	50
Elementary School		10	0%	-	-
Commercial		3	0%	-	-
Business Park		40	0%	-	-
Golf Course		200	0%	-	-
Resort		20	0%	-	-
Golf Course Estate Residential		50	0%	-	-
Total		666	-	31	50

Maximum Day Demand = 2.4 x ADD = 74 gpm

Operational Storage = 100% Maximum Day Demand =	0.11 MG
Fire Storage = 2,500 gpm x 3 hr =	0.45 MG
Total	0.56 MG

Zone 4 Pump Station No. 3 Capacity

Maximum Week Demand = 85%MDD
Zone 4 Reservoir No. 3 Service Area MWD 63 gpm

Zone 3 Reservoir No. 4 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
TRW (2017-19)	6				
Residential		211	25%	58	93
Apartments		15	25%	19	30
Estate Residential		117	50%	31	50
Elementary School		10	0%	-	-
Commercial		3	0%	-	-
Business Park		40	0%	-	-
Golf Course		200	10%	0	0
Resort		20	25%	9	15
Golf Course Estate Residential		50	25%	7	11
Total		666	-	124	199

Maximum Day Demand = 2.4 x ADD = 297 gpm

Operational Storage = 100% Maximum Day Demand =	0.43 MG
Fire Storage = 3,000 gpm x 3 hr =	0.54 MG
Total	0.97 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 3 Pump Station No. 4 Capacity

Maximum Week Demand = 85% MDD

Zone 3 Reservoir No. 4 Service Area MWD	252 gpm
Zone 4 Reservoir No. 3 Service Area MWD	63 gpm
Total	315 gpm

Zone 2 Reservoir No. 5 Capacity

Area & Land Use	I.D.	Total Land Area[a] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
TRW (2017-19)	6				
Residential		211	75%	174	280
Apartments		15	75%	57	91
Estate Residential		117	0%	-	-
Elementary School		10	100%	6	9
Commercial		3	100%	8	13
Business Park		40	100%	200	323
Golf Course		200	90%	2	3
Resort		20	75%	27	44
Golf Course Estate Residential		50	75%	20	32
Total		666	-	493	795

Maximum Day Demand = 2.4 x ADD = 1,184 gpm

Operational Storage = 100% Maximum Day Demand =	1.70 MG
Fire Storage = 6,000 gpm x 6 hr =	2.16 MG
Total	3.86 MG

Zone 4 Reservoir No. 4 Capacity

Area & Land Use	I.D.	Total Land Area[a] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Gabino Canyon	6				
Large Lot Estate Residential		100	47%	55	88
Casitas		8	100%	39	63
Golf Course		200	100%	2	3
Total		308	-	96	155

Maximum Day Demand = 2.4 x ADD = 230 gpm

Operational Storage = 100% Maximum Day Demand =	0.33 MG
Fire Storage = 2,500 gpm x 3 hr =	0.45 MG
Total	0.78 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Domestic Water System Facilities

Zone 4 Pump Station No. 4 Capacity

Maximum Week Demand = 85% MDD
Zone 3 Reservoir No. 4 Service Area MWD **195 gpm**

Zone 3 Reservoir No. 5 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Gabino Canyon	6				
Large Lot Estate Residential		100	28%	33	53
Casitas		8	0%	-	-
Golf Course		200	0%	-	-
Total		308	-	33	53

Maximum Day Demand = 2.4 x ADD = **78 gpm**

Operational Storage = 100% Maximum Day Demand	**0.11**	**MG**
Fire Storage = 2,500 gpm x 3 hr	**0.45**	**MG**
Total	**0.56**	**MG**

Zone 3 Pump Station No. 5 Capacity

Maximum Week Demand = 85% MDD

Zone 3 Reservoir No. 5 Service Area MWD	**66**	**gpm**
Zone 4 Reservoir No. 4 Service Area MWD	**195**	**gpm**
Total	**262**	**gpm**

APPENDIX B

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Wastewater Flows

Area & Land Use	I.D.	Gross Land Area[(a)] (Ac)	Net Land Area[(a)] (Ac)	Building Area (ksf)	Dwelling Units (DUs)	Students or Rooms	DU/Acre	Unit Flow (gpd/DU)	Unit Flow (gpd/Ac)	Unit Flow (gpd/ksf)	Unit Flow (gpcd)	Average Flow (gpm)
San Juan Creek North												
Ortega Gateway (2006-08)	4E											
Senior Residential		241	96	-	893	-	9.3	300	-	-	-	186
Residential		153	61	-	127	-	2.1	300	-	-	-	26
Business Park		38	19	575	-	-	-	-	-	225	-	90
Urban Activity Center		108	54	630	-	-	-	-	-	225	-	98
Total		540	231	1,205	1,020	-	-	-	-	-	-	401
Chiquita Canyon												
Upper Chiquita (2010-12)	4C											
Golf Course		100	100	-	-	-	-	-	-	-	-	2
Total		100	100	-	-	-	-	-	-	-	-	2
Chiquita Canyon												
Lower Chiquita A (2010-12)	4C											
Cluster Residential		565	226	-	438	-	1.9	300	-	-	-	91
Golf Course		200	200	-	-	-	-	-	-	-	-	2
Total		765	426	-	438	-	-	-	-	-	-	93
Chiquita Canyon												
Lower Chiquita B (2008-10)	4C											
Residential		726	290	-	742	-	2.6	300	-	-	-	155
Business Park		40	20	610	-	-	-	-	-	225	-	95
Total		766	310	610	742	-	-	-	-	-	-	250
Northeast Gobernadora (2012-18)	5											
Residential		653	261	-	1,281	-	4.9	300	-	-	-	267
Senior Residential		309	124	-	600	-	4.9	300	-	-	-	125
Apartments		60	24	-	480		20.0	175				
Estate Residential		318	159	-	159	-	1.0	300	-	-	-	33
Business Park		49	25	745	-	-	-	-	-	225	-	116
High School		50	50	-	-	2,200	-	-	-	-	15	23
Elementary School		10	10	-	-	800	-	-	-	-	10	6
Commercial		11	6	110	-	-	-	-	-	225	-	17
Total		1,460	658	855	2,520	3,000	-	-	-	-	-	587

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Wastewater Flows

Area & Land Use	I.D.	Gross Land Area[(a)] (Ac)	Net Land Area[(a)] (Ac)	Building Area (ksf)	Dwelling Units (DUs)	Students or Rooms	DU/Acre	Unit Flow (gpd/DU)	Unit Flow (gpd/Ac)	Unit Flow (gpd/ksf)	Unit Flow (gpcd)	Average Flow (gpm)
Central Gobernadora (2010-17)	5											
Residential		343	137	-	1,715	-	12.5	300	-	-	-	357
Senior Residential		77	31	-	385	-	12.5	300	-	-	-	80
Apartments		105	42	-	840	-	20.0	175	-	-	-	102
Residential		54	22	-	540	-	25.0	300	-	-	-	113
Elementary School		10	10	-	-	800	-	-	-	-	10	6
Middle School		20	20	-	-	1,500	-	-	-	-	10	10
Business Park		51	26	780	-	-	-	-	-	225	-	122
Urban Activity Center		22	11	140	-	-	-	-	-	225	-	22
Commercial		11	6	110	-	-	-	-	-	225	-	17
Cow Camp		40	40	-	-	-	-	-	-	-	-	2
Community Meadows		20	20	-	-	-	-	-	-	-	-	-
Sports Park		45	45	-	-	-	-	-	-	-	-	2
Total		798	409	1,030	3,480	2,300	-	-	-	-	-	832
East Ortega (2011-2013)	5 & 6											
Estate Residential		211	106	-	150	-	1.4	300	-	-	-	31
Commercial		5	3	50	-	-	-	-	-	225	-	8
Total		216	108	50	150	-	-	-	-	-	-	39
San Juan North Total		**4,645**	**2,241**	**3,750**	**8,350**	**5,300**	**-**	**-**	**-**	**-**	**-**	**2,204**
San Juan Creek South												
Trampas Canyon (2016-19)	6											
Senior Residential		826	330	-	2,280	-	6.9	300	-	-	-	475
Residential		160	64	-	160	-	2.5	300	-	-	-	33
Golf Course		200	200	-	-	-	-	-	-	-	-	2
Commercial		5	3	50	-	-	-	-	-	225	-	8
Total		1,191	597	50	2,440	-	-	-	-	-	-	518
Cristianitos Meadows (2016-19)	6											
Residential		100	40	-	110	-	2.8	300	-	-	-	23
Golf Course		175	175	-	-	-	-	-	-	-	-	2
Total		275	215	-	110	-	-	-	-	-	-	25

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Wastewater Flows

Area & Land Use	I.D.	Gross Land Area[(a)] (Ac)	Net Land Area[(a)] (Ac)	Building Area (ksf)	Dwelling Units (DUs)	Students or Rooms	DU/Acre	Unit Flow (gpd/DU)	Unit Flow (gpd/Ac)	Unit Flow (gpd/ksf)	Unit Flow (gpcd)	Average Flow (gpm)
Christianitos Canyon (2021-23)	6											
Residential		423	169	-	850	-	5.0	300	-	-	-	177
Senior Residential		299	120	-	600	-	5.0	300	-	-	-	125
Estate Residential		626	313	-	30	-	0.1	300	-	-	-	6
Commercial		2	1	20	-	-	-	-	-	225	-	3
Total		1,350	603	20	1,480	-	-	-	-	-	-	311
Gabino Canyon (2011-2013)	6											
Large Lot Estate Residential		112	56	-	20	-	0.4	300	-	-	-	4
Large Lot Estate Residential[(a)]		88	44	-	80	-	1.8	-	-	-	-	-
Casitas[(a)]		20	8	-	120	-	15.0	-	-	-	-	-
Golf Course[(a)]		200	200	-	-	-	-	-	-	-	-	-
Total		420	308	-	220	-	-	-	-	-	-	4
TRW (2018-20)	6											
Residential		528	211	-	920	-	4.4	300	-	-	-	192
Apartments		38	15	-	300	-	20.0	175	-	-	-	36
Estate Residential		234	117	-	75	-	0.6	300	-	-	-	16
Elementary School		10	10	-	-	800	-	-	-	-	10	6
Commercial		5	3	50	-	-	-	-	-	225	-	8
Business Park		80	40	1,220	-	-	-	-	-	225	-	191
Golf Course		200	200	-	-	-	-	-	-	-	-	2
Resort		20	20	-	-	250	-	-	-	-	200	35
Golf Course Estate Residential		100	50	-	105	-	2.1	300	-	-	-	22
Total		1,214	666	1,270	1,400	1,050	-	-	-	-	-	506
San Juan South Total		4,450	2,388	1,340	5,650	1,050	-	-	-	-	-	1,364
Grand Total		9,095	4,630	5,090	14,000	6,350	-	-	-	-	-	3,568

(a) Assumed that wastewater treated at package plant

Average Flow =	3,568	gpm	=	5.14	mgd
Peak Flow =	5,562	gpm	=	8.01	mgd
Peak Flow Factor =	1.56				

$Q_{peak} = 1.84*(Q_{avg})^{0.92}$ where Q is expressed in cfs

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Wastewater Flows

Area & Land Use	I.D.	Gross Land Area[(a)] (Ac)	Net Land Area[(a)] (Ac)	Building Area (ksf)	Dwelling Units (DUs)	Students or Rooms	DU/Acre	Unit Flow (gpd/DU)	Unit Flow (gpd/Ac)	Unit Flow (gpd/ksf)	Unit Flow (gpcd)	Average Flow (gpm)
Gabino Canyon- Package Plant	6											
Large Lot Estate Residential		88	44	-	80	-	1.8	300	-	-	-	16.7
Casitas		20	8		120	-	15.0	300	-	-	-	25.0
Golf Course		200	200	-	-	-	-	-	-	-	-	1.7
Total		308	252	-	200	-	-	-	-	-	-	43.4

Average Flow =	43	gpm	=	0.06 mgd
Peak Flow =	130	gpm	=	0.19 mgd
Peak Flow Factor =	3.00			

Rancho Mission Viejo Company - Plan of Works for IDs 4C, 4E, 5, & 6

Wastewater System Sizing Calculations

Sewer	Up MH to Down MH	Length (ft)	Up MH Invert Elev. (ft)	Down MH Invert Elev. (ft)	Slope (%)	Flow Component	Average Flow Input (cfs)	Total Average Flow (cfs)	Total Peak Flow (cfs)	Peaking Factor	Minimum Pipe Dia. d/D = 0.5 (in)	Minimum Pipe Dia. d/D = 0.75 (in)	Pipe Dia. (in)
Cristianitos Meadows & Christianitos Canyon													
3	3 to 4	6,220	440	400	0.64%	100%CM	0.00	0.05	0.16	3.0	5.3	-	8
1	1 to SID6LS1	5,525	320	220	1.81%	100%CM & 100%CC	0.00	0.75	2.25	3.0	11.7	-	12
TRW													
2	2 to SID6LS1	2,240	275	220	2.46%	100%TRW	0.00	1.13	3.38	3.0	12.9	10.3	15

Lift Station	Forcemain	Total Forcemain Length (ft)	Discharge Elev. (ft)	L.S. Elev. (ft)	Intermediate High Point Elev. (ft)	Intermediate High Point Length (ft)	Static Head (ft)	Average Flow (cfs)	Peak Flow (cfs)	Peak Flow (gpm)	Forcemain Dia. (in)	Peak Forcemain Velocity (ft/sec)	Pump TDH (ft)
Southern ID 6 LS No. 1 - 100% CM +100% CC + 100% TRW - Must temporarily pump to existing Talega 15" Sewer via 4" forcemain until CC developed													
SID6LS1	1	3,200	299	220	-	-	79	0.05	0.16	74	10	0.3	94
Southern ID 6 LS No. 1 - 100% CM + 100% CC; PF = 3.0													
SID6LS1	1	3,200	299	220	-	-	79	0.75	2.25	1,008	10	4.1	117
Southern ID 6 LS No. 1 - 100% CM + 100% CC + 100% TRW; PF =2.0											10"+ 6"		C =120
SID6LS1	1	3,200	299	220	-	-	79	1.88	3.75	1,684	11.7	5.0	122
Southern ID 6 LS No. 2 - Southern ID 6 Peak Flow + Trampas Canyon Peak Flow (PF = 2.0) + Talega Peak Flow (1,570 gpm)											Exist. 16"+10"		C = 120
SID6LS2	2	19,000	570	291	-	-	279	1.88	7.26	3,258	18.9	3.73	348

Sewer	Up MH to Down MH	Length (ft)	Up MH Invert Elev. (ft)	Down MH Invert Elev. (ft)	Slope (%)	Flow Component	Average Flow Input (cfs)	Total Average Flow (cfs)	Total Peak Flow (cfs)	Peaking Factor	Minimum Pipe Dia. d/D = 0.5 (in)	Minimum Pipe Dia. d/D = 0.75 (in)	Pipe Dia. (in)
Trampas Canyon													
6	7 to 5	2,380	410	368	1.76%	35% TC	0.00	0.40	1.21	3.0	9.3	-	12
5	6 to 5	2,560	410	368	1.64%	65% TC	0.00	0.75	2.25	3.0	11.9	-	12
4	5 to SID6LS3	970	368	280	9.07%	100%TC	0.00	1.15	3.46	3.0	10.2	-	12

Lift Station	Forcemain	Total Forcemain Length (ft)	Discharge Elev. (ft)	L.S. Elev. (ft)	Intermediate High Point Elev. (ft)	Intermediate High Point Length (ft)	Static Head (ft)	Average Flow (cfs)	Peak Flow (cfs)	Peak Flow (gpm)	Forcemain Dia. (in)	Peak Forcemain Velocity (ft/sec)	Pump TDH (ft)
Southern ID 6 Lift Station No. 3 - 100% TC; PF = 3.0													
SID6LS3	3	1,300	290	280	-	-	10	1.15	3.46	1,554	10	6.35	46
Southern ID 6 Lift Station No. 3 - 100% TC + 100% SID6LS2; PF = 2.0											10"+10"		
SID6LS3	3	1,300	290	280	-	-	10	3.03	6.06	2,720	14.2	5.51	36

Rancho Mission Viejo Company - Plan of Works for IDs 4C, 4E, 5, & 6

Wastewater System Sizing Calculations

Sewer	Up MH to Down MH	Length (ft)	Up MH Invert Elev. (ft)	Down MH Invert Elev. (ft)	Slope (%)	Flow Component	Average Flow Input (cfs)	Total Average Flow (cfs)	Total Peak Flow (cfs)	Peaking Factor	Minimum Pipe Dia. d/D = 0.5 (in)	Minimum Pipe Dia. d/D = 0.75 (in)	Pipe Dia. (in)
Lower Chiquita 'B' & NE Gobernadora & Central Gobernadora & Ortega East & Gabino Canyon							0.34400						
11	14 to 15	5250	420	350	1.33%	50%NEG	0.00	0.65	1.96	3.0	11.8	-	12
10	13 to 12	4490	430	400	0.67%	30%NEG+25%OE+GC	0.00	0.42	1.27	3.0	11.4	-	12
9	10 to GLS	700	250	240	1.43%	100% Chiquita B	0.00	0.56	1.67	3.0	10.9	-	12
7	9 to GLS	1180	260	240	1.69%	90%CG+95%NEG+25%EO+GC	0.00	2.94	8.83	3.0	-	15.8	18
8	8 to GLS	5250	290	240	0.95%	LS+10%CG+5%NEG+75%EO	0.00	3.35	10.04	3.0	-	18.5	21

Lift Station	Forcemain	Total Forcemain Length (ft)	Discharge Elev. (ft)	L.S. Elev. (ft)	Static Head (ft)	Average Flow (cfs)	Peak Flow (cfs)	Peak Flow (gpm)	Forcemain Dia. (in)	Peak Forcemain Velocity (ft/sec)	Pump TDH (ft)
NE Gobernadora Lift Station to MH 14 (20% NE Gobernadora flow); PF = 3.0											
NEGLS	4	3,310	420	390	30	0.26	0.78	350	6.0	3.97	79
Lower Chiquita Lift Station to MH 11 (35% Lower Chiquita B flow); PF = 3.0											
LCLS	5	1,870	310	250	60	0.19	0.57	256	6.0	2.90	81
Gobernadora Lift Station to CWRP - 100%LCB; PF = 3.0											
GLS	6	9,000	287	240	47	0.56	1.67	750	10	3.06	100
Gobernadora Lift Station to CWRP - 100% SID6LS3 + 100% CG + 100% NEG + 100% OE + 100% GC + 100% LCB; PF = 1.58 (District Formula)									10"+18"		
GLS	6	9,000	287	240	47	6.85	10.80	4,847	21	4.67	97

Sewer	Up MH to Down MH	Length (ft)	Up MH Invert Elev. (ft)	Down MH Invert Elev. (ft)	Slope (%)	Flow Component	Average Flow Input (cfs)	Total Average Flow (cfs)	Total Peak Flow (cfs)	Peaking Factor	Minimum Pipe Dia. d/D = 0.5 (in)	Minimum Pipe Dia. d/D = 0.75 (in)	Pipe Dia. (in)
Ortega Gateway Flows Conveyed to Existing San Juan Creek Lift Station								209 gpm					
13	to Ladera Sew	300	260	240	6.67%	33% UAC	0.00	0.07	0.22	3.0	3.8	-	8
12	16 to LS	525	183	176	1.33%	90%SenRes+33%Res	0.00	0.39	1.18	3.0	9.7	-	12

Lift Station	Forcemain	Total Forcemain Length (ft)	Discharge Elev. (ft)	L.S. Elev. (ft)	Static Head (ft)	Average Flow (cfs)	Peak Flow (cfs)	Peak Flow (gpm)	Forcemain Dia. (in)	Peak Forcemain Velocity (ft/sec)	Pump TDH (ft)
Ortega Gateway Flows Conveyed to Ortega Gateway Lift Station No. 1 (PF = 3.0)											
OGLS1	7	1,300	158	150	8	0.21	0.62	280	6.0	3.18	27
Ortega Gateway Flows Conveyed to Ortega Gateway Lift Station No. 2 (PF = 3.0)											
OGLS2	8	5,800	176	158	18	0.43	1.28	576	8.0	3.67	70

APPENDIX C

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Phased Gross Land Area (Ac)	Net Land Area (Ac)	% Gross Land Non-Water (%)	Land Irrigated Non-Water (Ac)	Non-Domestic Water Demand Factor (AFY/	Annual Non-Water Demand (AFY)	Annual Non-Water Demand (gpm)	Max Day Non-Water Demand (gpm)	Peak Hour Non-Water Demand (gpm)	Annual Non-Water Demand (gpd/GrAc
San Juan Creek North												
Ortega Gateway (2006-08)	4E											
Senior Residential		241	241	96	25%	60	3.5	211	131	392	784	781
Residential		153	153	61	25%	38	3.5	134	83	249	498	781
Business Park		38	38	19	28%	10	3.5	37	23	68	136	859
Urban Activity Center		108	108	54	28%	30	3.5	104	64	193	387	859
Total		540	540	231	26%	139	3.5	485	301	903	1,805	802
Chiquita Canyon												
Upper Chiquita (2010-12)	4C											
Golf Course		100	100	100	50%	50	4.0	400	248	744	744	3,571
Total		100	100	100	50%	50	8.0	400	248	744	744	3,571
Chiquita Canyon												
Lower Chiquita A (2010-12)	4C											
Cluster Residential		565	565	226	25%	141	3.5	494	307	920	1,839	781
Golf Course		200	200	200	50%	100	4.0	400	248	744	744	1,786
Total		765	765	426	32%	241	3.7	894	555	1,664	2,583	1,044
Chiquita Canyon												
Lower Chiquita B (2008-10)	4C											
Residential		726	726	290	25%	182	3.5	635	394	1,182	2,363	781
Business Park		40	40	20	28%	11	3.5	39	24	72	143	859
Total		766	766	310	25%	193	3.5	674	418	1,253	2,506	785
Northeast Gobernadora (2012-18)	5											
Residential		653	653	261	19%	122	3.5	426	264	793	1,586	583
Senior Residential		309	309	124	19%	58	3.5	202	125	375	750	583
Apartments		60	60	24	29%	17	3.5	60	37	112	224	896
Estate Residential		318	318	159	15%	48	3.5	169	105	315	629	475
Business Park		49	49	25	25%	12	3.5	43	27	80	159	781
High School		50	50	50	50%	25	4.0	100	62	186	372	1,786
Elementary School		10	10	10	50%	5	4.0	20	12	37	74	1,786
Commercial		11	11	6	28%	3	3.5	11	7	20	39	859
Total		1,460	1,460	658	20%	290	3.6	1,031	639	1,917	3,834	630

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Phased Gross Land Area (Ac)	Net Land Area (Ac)	% Gross Land Non-Water (%)	Land Irrigated Non-Water (Ac)	Non-Domestic Water Demand Factor (AFY/	Annual Non-Water Demand (AFY)	Annual Non-Water Demand (gpm)	Max Day Non-Water Demand (gpm)	Peak Hour Non-Water Demand (gpm)	Annual Non-Water Demand (gpd/GrAc
Central Gobernadora (2010-17)	5											
Residential		343	343	137	25%	86	3.5	300	186	558	1,116	781
Senior Residential		77	77	31	25%	19	3.5	67	42	125	251	781
Apartments		105	105	42	35%	37	3.5	129	80	239	478	1,094
Residential		54	54	22	25%	14	3.5	47	29	88	176	781
Elementary School		10	10	10	50%	5	4.0	20	12	37	74	1,786
Middle School		20	20	20	50%	10	4.0	40	25	74	149	1,786
Business Park		51	51	26	28%	14	3.5	49	30	91	183	859
Urban Activity Center		22	22	11	28%	6	3.5	21	13	39	79	859
Commercial		11	11	6	28%	3	3.5	11	7	20	39	859
Cow Camp		40	40	40	0%	-	-	-	-	-	-	-
Community Meadows		20	20	20	80%	16	4.0	64	40	119	238	2,857
Sports Park		45	45	45	80%	36	4.0	144	89	268	268	2,857
Total		798	798	409	31%	245	3.6	892	553	1,660	3,051	998
East Ortega (2011-2013)	5 & 6											
Estate Residential		211	211	106	20%	42	3.5	148	92	275	549	625
Commercial		5	5	3	28%	1	3.5	5	3	9	18	859
Total		216	216	108	20%	44	3.5	153	95	284	567	630
Unaccounted-For Water (7.5%)		-	-	-	-	-	-	340	211	632	1,132	-
San Juan North Total		4,645	4,645	2,241	26%	1,202	4.05	4,869	3,019	9,056	18,111	936
San Juan Creek South												
Trampas Canyon (2016-19)	6											
Senior Residential		826	826	330	13%	107	3.5	376	233	699	1,398	406
Residential		160	160	64	13%	21	3.5	73	45	135	271	406
Golf Course		200	200	200	50%	100	4.0	400	248	744	744	1,786
Commercial		5	5	3	28%	1	3.5	5	3	9	18	859
Total		1,191	1,191	597	19%	230	3.7	853	529	1,587	2,431	640

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Phased Gross Land Area (Ac)	Net Land Area (Ac)	% Gross Land Non-Water (%)	Land Irrigated Non-Water (Ac)	Non-Domestic Water Demand Factor (AFY/	Annual Non-Water Demand (AFY)	Annual Non-Water Demand (gpm)	Max Day Non-Water Demand (gpm)	Peak Hour Non-Water Demand (gpm)	Annual Non-Water Demand (gpd/GrAc
Cristianitos Meadows (2016-19)	6											
Residential		100	100	40	25%	25	3.5	88	54	163	326	781
Golf Course		175	175	175	50%	88	4.6	400	248	744	744	2,041
Total		275	275	215	41%	113	4.3	488	302	907	1,070	1,583
Christianitos Canyon (2021-23)	6											
Residential		423	423	169	15%	61	3.5	215	133	399	799	453
Senior Residential		299	299	120	15%	43	3.5	152	94	282	564	453
Estate Residential		626	626	313	12%	75	3.5	263	163	489	978	375
Commercial		2	2	1	28%	1	3.5	2	1	4	7	859
Total		1,350	1,350	603	13%	180	3.5	631	391	1,174	2,348	417
Gabino Canyon (2011-2013)	6											
Large Lot Estate Residential		200	200	100	0%	-	3.5	-	-	-	-	-
Casitas		20	20	8	0%	-	-	-	-	-	-	-
Golf Course[a]		200	200	200	0%	-	-	-	-	-	-	-
Total		420	420	308	0%	-	-	-	-	-	-	-
TRW (2018-20)	6											
Residential		528	528	211	25%	132	3.5	462	286	859	1,717	781
Apartments		38	38	15	35%	13	3.5	46	28	85	171	1,094
Estate Residential		234	234	117	13%	30	3.5	104.91	65	195	390	400
Elementary School		10	10	10	50%	5	4.0	20	12	37	74	1,786
Commercial		5	5	3	28%	1	3.5	5	3	9	18	859
Business Park		80	80	40	28%	22	3.5	77	48	143	286	859
Golf Course		200	200	200	50%	100	4.0	400	248	744	744	1,786
Resort		20	20	20	25%	5	3.5	18	11	33	65	781
Golf Course Estate Residential		100	100	50	20%	20	3.5	70	43	130	260	625
Total		1,214	1,214	666	27%	328	3.7	1,202	745	2,235	3,726	884
Unaccounted-For Water (7.5%)		-	-	-	-	-	-	238	148	443	718	-
San Juan South Total		**4,450**	**4,450**	**2,388**	**19%**	**851**	**4.01**	**3,412**	**2,115**	**6,346**	**10,293**	**685**
Grand Total		**9,095**	**9,095**	**4,630**	**23%**	**2,052**	**4.03**	**8,281**	**5,134**	**15,402**	**28,404**	**813**

(a) Non-domestic water demand assumed to be provided by development-site package plant.

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Ultimate Gross Land Area (Ac)	Phased Gross Land Area (Ac)	Net Land Area (Ac)	% Gross Land Non-Water (%)	Land Irrigated Non-Water (Ac)	Non-Domestic Water Demand Factor (AFY/	Annual Non-Water Demand (AFY)	Annual Non-Water Demand (gpm)	Max Day Non-Water Demand (gpm)	Peak Hour Non-Water Demand (gpm)	Annual Non-Water Demand (gpd/GrAc
Gabino Canyon Package Plant	6											
Large Lot Estate Residential[(a)]		180	180	90	0%	-	3.5	-	-	-	-	-
Casitas[(a)]		20	20	8	0%	-	3.5	-	-	-	-	-
Golf Course		200	200	200	50%	100.0	4.0	400	248	744.0	1,488.0	1,786
Total		220	220	208	45%	100.0	4.0	400	248	744.0	1,488.0	1,623

(a) Irrigated with domestic water

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Net Land Area (Ac)	Average Day Demand (gpm)	Average Day Demand (AFY)	Average Day Demand (gpd/Ac)
San Juan Creek North					
Ortega Gateway (2006-08)	4E				
Senior Residential		96	131	211	1,953
Residential		61	83	134	1,953
Business Park		19	23	37	1,719
Urban Activity Center		54	64	104	1,719
Total		231	301	485	1,879
Chiquita Canyon					
Upper Chiquita (2010-12)	4C				
Golf Course		100	248	400	3,571
Total		100	248	400	3,571
Chiquita Canyon					
Lower Chiquita A (2010-12)	4C				
Cluster Residential		226	307	494	1,953
Golf Course		200	248	400	1,786
Total		426	555	894	1,874
Chiquita Canyon					
Lower Chiquita B (2008-10)	4C				
Residential		290	394	635	1,953
Business Park		20	24	39	1,719
Total		310	418	674	1,938
Northeast Gobernadora (2012-18)	5				
Residential		261	264	426	1,457
Senior Residential		124	125	202	1,457
Apartments		24	37	60	2,239
Estate Residential		159	105	169	950
Business Park		25	27	43	1,562
High School		50	62	100	1,786
Elementary School		10	12	20	1,786
Commercial		6	7	11	1,719
Total		658	639	1,031	1,399
Central Gobernadora (2010-17)	5				
Residential		137	186	300	1,953
Senior Residential		31	42	67	1,953
Apartments		42	80	129	2,734
Residential		22	29	47	1,953
Elementary School		10	12	20	1,786
Middle School		20	25	40	1,786
Business Park		26	30	49	1,719
Urban Activity Center		11	13	21	1,719
Commercial		6	7	11	1,719
Cow Camp		40	-	-	-
Community Meadows		20	40	64	2,857
Sports Park		45	89	144	2,857
Total		409	553	892	1,950

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Ultimate Projected Non-Domestic Water Demand

Area & Land Use	I.D.	Net Land Area (Ac)	Average Day Demand (gpm)	Average Day Demand (AFY)	Average Day Demand (gpd/Ac)
East Ortega (2011-2013)	5 & 6				
Estate Residential		106	92	148	1,250
Commercial		3	3	5	1,719
Total		108	95	153	1,261
Unaccounted-For Water (7.5%)		-	211	340	-
San Juan North Total		2,241	3,019	4,869	1,939
San Juan Creek South					
Trampas Canyon (2016-19)	6				
Senior Residential		330	233	376	1,016
Residential		64	45	73	1,016
Golf Course		200	248	400	1,786
Commercial		3	3	5	1,719
Total		597	529	853	1,277
Cristianitos Meadows (2016-19)	6				
Residential		40	54	88	1,953
Golf Course		175	248	400	2,041
Total		215	302	488	2,024
Christianitos Canyon (2021-23)	6				
Residential		169	133	215	1,133
Senior Residential		120	94	152	1,133
Estate Residential		313	163	263	750
Commercial		1	1	2	1,719
Total		603	391	631	935
Gabino Canyon (2011-2013)	6				
Large Lot Estate Residential		100	-	-	-
Casitas[a]		8	-	-	-
Golf Course[a]		200	-	-	-
Total		308	-	-	-
TRW (2018-20)	6				
Residential		211	286	462	1,953
Apartments		15	28	46	2,734
Estate Residential		117	65	105	801
Elementary School		10	12	20	1,786
Commercial		3	3	5	1,719
Business Park		40	48	77	1,719
Golf Course		200	248	400	1,786
Resort		20	11	18	781
Golf Course Estate Residential		50	43	70	1,250
Total		666	745	1,202	1,612
Unaccounted-For Water (7.5%)		-	148	238	-
San Juan South Total		2,388	2,115	3,412	1,276
Grand Total		4,630	5,134	8,281	1,597

Maximum Day Factor =	3.0	
Maximum Day Demand =	15,402	gpm
Peak Hour Factor =	6.0	
Peak Hour Demand =	30,804	gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Required System Storage		
Operational Storage = 100% Maximum Day Demand	22.63	MG
Transmission Storage =	1.00	MG
Total	23.63	MG

Zone B Reservoir No. 1 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Upper Chiquita (2009-11)	4C				
Golf Course		100	100%	267	430
Subtotal		100	-	267	430
Lower Chiquita "A" (2009-11)	4C				
Cluster Residential		226	100%	330	531
Golf Course		200	10%	27	43
Subtotal		426	-	356	574
Lower Chiquita B (2007-09)	4C				
Residential		290	45%	191	307
Subtotal		290	-	191	307
Total		816	-	813	1,312

Maximum Day Demand = 3.0 x ADD = 2,440 gpm

Operational Storage = 100% Maximum Day Demand = 3.51 MG

Zone B Pump Station No. 1 Capacity

100% Maximum Day Demand
Zone B Reservoir No. 1 Service Area MDD 2,440 gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Zone A Reservoir No. 1 Capacity [redacted]

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Total Served (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Upper Chiquita (2009-11)	4C				
Golf Course		100	0%	-	-
Total		100	-	-	-
Lower Chiquita A (2009-11)	4C				
Cluster Residential		226	0%	-	-
Golf Course		200	90%	240	387
Total		426	-	240	387
Lower Chiquita B (2007-09)	4C				
Business Park		20	55%	14	23
Residential		290	100%	423	683
Total		310	-	438	706
Ortega Gateway (2005-07)	4E				
Senior Residential		96	100%	141	227
Residential		61	90%	80	130
Business Park		19	100%	24	39
Urban Activity Center		54	100%	69	112
Subtotal		231	-	315	507
Total		**1,067**	**-**	**992**	**1,600**

Maximum Day Demand = 3.0 x ADD = 2,976 gpm

Operational Storage = 100% Maximum Day Demand = 4.29 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Zone B Reservoir No. 2 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B Served[a] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Northeast Gobernadora (2011-17)	5				
Residential		261	100%	284	458
Senior Residential		124	100%	134	217
Apartments		24	97%	39	63
Estate Residential		159	100%	113	182
Elementary School		10	100%	13	22
Business Park		25	0%	-	-
Commercial		6	100%	7	11
Subtotal		602	-	584	941
Central Gobernadora (2009-16)	5				
Residential		137	30%	60	97
Senior Residential		31	30%	13	22
Apartments		42	30%	26	41
Residential		22	30%	9	15
Elementary School		10	100%	13	22
Middle School		20	100%	27	43
Business Park		26	0%	-	-
Urban Activity Center		11	100%	14	23
Commercial		6	0%	-	-
Subtotal		304	-	163	263
East Ortega	5 & 6				
Estate Residential		106	45%	44	71
Commercial		3	0%	-	-
Subtotal		108	-	44	71
Gabino Canyon	6				
Large Lot Estate Residential		100	0%	-	-
Casitas		8	0%	-	-
Golf Course		8	0%	-	-
Subtotal		116	-	-	-
Total		1,283	-	791	1,275

(a) Zone C in NE Gobernadora not served

Maximum Day Demand = 3.0 x ADD = 2,372 gpm

Operational Storage = 100% Maximum Day Demand = 3.42 MG

Zone B Pump Station No. 2 Capacity

100% Maximum Day Demand

Zone B Reservoir No. 2 Service Area MDD 2,372 gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Zone A Reservoir No. 2 Capacity [redacted]

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Northeast Gobernadora (2011-17)	5				
Residential		261	0%	-	-
Senior Residential		124	0%	-	-
Apartments		24	3%	1	1.9
Estate Residential		159	0%	-	-
Business Park		25	100%	29	46.1
High School		50	100%	67	107.5
Elementary School		10	0%	-	-
Commercial		6	0%	-	-
Subtotal		658	-	96	156
Central Gobernadora (2009-16)	5				-
Residential		137	70%	140	226
Senior Residential		31	70%	31	51
Apartments		42	70%	60	97
Residential		22	70%	22	36
Elementary School		10	0%	-	-
Middle School		20	0%	-	-
Business Park		26	100%	33	53
Urban Activity Center		11	0%	-	-
Commercial		6	100%	7	11
Cow Camp		40	100%	-	-
Community Meadows		20	100%	43	69
Sports Park		45	100%	96	155
Subtotal		409	-	432	697
East Ortega	5 & 6				
Estate Residential		106	55%	54	87
Commercial		3	100%	3	5
Subtotal		108	-	57	93
Gabino Canyon	6				
Large Lot Estate Residential		100	0%	-	-
Casitas		8	0%	-	-
Golf Course		8	0%	-	-
Subtotal		116	-	-	-
Total		-	-	528	852

(a) Zone C in NE Gobernadora not served

Maximum Day Demand = 3.0 x ADD = 1,585 gpm

Operational Storage = 100% Maximum Day Demand = 2.28 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Zone B Reservoir No. 3 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Trampas Canyon (2015-18)	6				
Senior Residential		330	85%	213	343
Residential		64	85%	41	67
Golf Course		200	100%	267	430.0
Commercial		3	0%	-	-
Total		594	-	521	840

(a) Zones C and D not served

Maximum Day Demand = 3.0 x ADD = 1,562 gpm

Operational Storage = 100% Maximum Day Demand = 2.25 MG

Zone B Pump Station No. 3 Capacity

100% Maximum Day Demand

Zone B Reservoir No. 3 Service Area MDD 1,562 gpm

Zone A Reservoir No. 3 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Trampas Canyon (2015-18)	6				
Senior Residential			15%	-	-
Residential		211	15%	46	74
Golf Course		15	0%	-	-
Commercial		117	100%	70	113
Total		226	-	46	74

(a) Zones C and D not served

Maximum Day Demand = 3.0 x ADD = 138 gpm

Operational Storage = 100% Maximum Day Demand = 0.20 MG

Transmission Storage = 1.00 MG

Total 1.20 MG

Zone B Reservoir No. 4 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Cristianitos Meadows (2015-18)	6				
Residential		40	100%	58	94
Golf Course		175	100%	267	430
Subtotal		215	-	325	524
Christianitos Canyon (2020-22)	6				
Residential		169	80%	114	185
Senior Residential		120	80%	81	131
Estate Residential		313	80%	140	226
Commercial		1	100%	1	2
Subtotal		603	-	337	543
Total		-	-	662	1,067

(a) Zones C and D in Christianitos Canyon not served

Maximum Day Demand = 3.0 x ADD = 1,985 gpm

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Operational Storage = 100% Maximum Day Demand = 2.86 MG

Zone A Reservoir No. 4 Capacity

Area & Land Use	I.D.	Total Net Land Area (Ac)	Percent Zones A+ B + C Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
Christianitos Canyon (2020-22)	6				
Residential		169	20%	29	46
Senior Residential		120	20%	20	33
Estate Residential		313	20%	35	57
Commercial		1	0%	-	-
Subtotal		603	-	84	135
TRW (2017-19)	6				
Residential		211	15%	46	74
Apartments		15	15%	5	7
Estate Residential		117	0%	-	-
Elementary School		10	100%	13	22
Commercial		3	100%	3	5
Business Park		40	100%	51	83
Golf Course		200	10%	27	43
Resort		20	0%	-	-
Golf Course Estate Residential		50	10%	5	8
Subtotal		666	-	150	242
Total		-	-	234	377

(a) Zone D in TRW not served

Maximum Day Demand = 3.0 x ADD = 701 gpm

Operational Storage = 100% Maximum Day Demand = 1.01 MG

Zone C Reservoir No. 1 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Zones A+ B + C Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
TRW (2017-19)	6				
Residential		211	25%	77	124
Apartments		15	25%	8	12
Estate Residential		117	100%	70	113
Elementary School		10	0%	-	-
Commercial		3	0%	-	-
Business Park		40	0%	-	-
Golf Course		200	0%	-	-
Resort		20	25%	3	5
Golf Course Estate Residential		50	25%	12	19
Total		666	-	169	273

(a) Zone D in TRW not served

Maximum Day Demand = 3.0 x ADD = 507 gpm

Operational Storage = 100% Maximum Day Demand = 0.73 MG

Rancho Mission Viejo- Plans of Work for IDs 4C, 4E, 5 & 6
Non-Domestic Water System Facilities

Zone C Pump Station No. 1 Capacity

100% Maximum Day Demand
Zone C Reservoir No. 1 Service Area MDD 507 gpm

Zone B Reservoir No. 5 Capacity

Area & Land Use	I.D.	Total Land Area[(a)] (Ac)	Percent Zones A+ B + C Served[(a)] (%)	Average Day Demand (gpm)	Average Day Demand (AFY)
TRW (2017-19)	6				
Residential		211	60%	185	298
Apartments		15	60%	18	30
Estate Residential		117	0%	-	-
Elementary School		10	0%	-	-
Commercial		3	0%	-	-
Business Park		40	0%	-	-
Golf Course		200	90%	240	387
Resort		20	75%	9	14
Golf Course Estate Residential		50	65%	30	49
Total		666	-	482	777

(a) Zone D in TRW not served
Maximum Day Demand = 3.0 x ADD = 1,446 gpm

Operational Storage = 100% Maximum Day Demand = 2.08 MG

Zone B Pump Station No. 4 Capacity

100% Maximum Day Demand
Zone B Reservoir No. 4 Service Area MDD 1,985 gpm
Zone B Reservoir No. 5 Service Area MDD 1,446 gpm
Zone C Reservoir No. 1 Service Area MDD 507 gpm
Total 3,938 gpm

Zone A Pump Station No. 1 Capacity

100% Average Day Demand for Entire Service Area 5,134 gpm
Minus Zone B Reservoir No. 1 Service Area ADD (813) gpm
Total 4,321 gpm

Zone A Pump Station No. 2 Capacity

Zone A Reservoir No. 4 Service Area ADD 234 gpm
Zone B Reservoir No. 4 Service Area ADD 1,985 gpm
Zone B Reservoir No. 5 Service Area ADD 482 gpm
Zone C Reservoir No. 1 Service Area ADD 169 gpm
Total 2,870 gpm

APPENDIX D

Sewer Lift Stations

Pumps

A. Dry Pit Submersible

B. 100% Redundant Backup/Peak Flow

Storage

A. Emergency Storage Well/One-Hour/Average

B. Bypass System from Primary Wetwell to Emergency

Surge Protection

A. Surge Tank

Emergency Power

A. Backup Generator

B. UPS Power

Controls

A. VFD with Starter Bypass

B. Solid State Transfer Switch

C. Controls & Equipment Housed Inside Protected Building

D. Utility Room/Meter

Metering Equipment

A. Flow Meter Located in Drywell

B. Flow Recorder in Control Room

Level Controls

A. Ultra Sonic Level Transmitter – Primary System

B. Float System – Backup System

C. Level Recorder in Control Room

Bathroom/Washroom Optional

Building

A. Match Adjoining Development

Odor Control

A. Containment Area for Chemical Storage

B. Provide Area for Scrubber/Bio-Filter as Required

Access

A. Commercial Driveway

B. Minimum 35-Feet on Three-Sides of Facility

C. Access to Top of Wetwell

Site Security

A. Minimum Six-Foot Chain Link Fencing with Three-Stand Barbed Wire

B. 20-Foot Locking Gate, 10' X 10'

C. Fencing Upgradeable at Developer's Expense

Site Improvements

A. Paved Access with Concrete Curbing

B. Storm Drain and Site Drainage

C. No Off-Site Drainage onto Site

Site Landscaping

A. Minimal On-Site Landscaping/Native

B. Upgraded at Developer's Expense

C. Maintained by Developer/Association

Location Relative to Development

A. Perimeter to Site Shall Not Be Less Than 500-Feet from Residential, Commercial, Park or School Areas

B. Gravity Sewer from Force Main to Destination Shall Have an Odor Easement Not Less Than 500-Feet from Residential, Commercial, Park, or School Areas Along Entire Length.

Water Booster Pump Stations

Pumps

A. Vertical Turbine

B. 50% Backup/Peak (Open System)

C. 100% Backup/Peak (Interim Closed System Operation)

Valves

A. Pump Control Valve MOV or Hydraulic Actuated Ball Valves

Surge Protection

A. Surge Tank/Surge Analysis

B. Surge Relief Valve Hydraulic

Emergency Power

A. Back up Generator

B. UPS Power

Controls

A. Solid State Starter with Bypass

B. All Controls Inside Protected Building

C. Utility Meter Room

Metering Equipment

A. Flow Meter Inside Pump Room

B. Flow Recorder in Control Room

Level Controls

A. Levels Transmitted to Station from Receiving Reservoir

B. Level Recorder in Control Room

Building

A. Match Adjoining Development

Access

A. Commercial Driveway

B. Minimum 35 Feet, Three-Sides of Building

Site Security

A. Minimum Fencing 6-Foot Chain Link with Three-Stand Barbed Wire

B. 20-Foot Locking Gate, 10' X 10'

C. Upgradeable at Developer's Expense

D. Operational Security Cams

Site Improvements

A. Paved Access with Concrete Curbing

B. Storm Drain and Site Drainage

C. Sanitary Sewer

Site Landscaping

A. Minimal Landscaping/Native

B. Upgrade at Developer's Expense

C. Maintained by Developer/Association

Bathroom/Optional

Reservoirs

Storage

A. Maximum Day Plus Fire Flow

B. Seven-Days/Peak Demand

Access

A. Commercial Driveway

B. Paved Access to Tank/Reservoir

C. 20-Foot Access Clearing Around Reservoir

Valves

A. Separate Inlet/Outlet with Slant Disc Check Valves on Domestic Reservoirs

B. Altitude Valve on Recycled Reservoir, Single I.O.

Site Security

A. Minimum Six-Foot Chain Link Fence with Three-Stand Barbed Wire

B. 20-Foot Locking Gate, 10' X 10'

C. Upgrade at Developer's Expense

D. Security Cams/Optional

E. No Public Access/Domestic Sites

Disinfection Equipment

A. Chlorination Generator and Equipment Housed in Building to Include Bulk Chemical Storage Room

Site Improvements

A. Paved Access with Concrete Curbing

B. Site Drainage/Storm Drains

C. Sanitary Sewer for Recycled Reservoirs

Site Landscaping

A. Minimal Landscape/Native

B. Upgradeable at Developer's Expense

Telemetry

A. Equipment per District SCADA Standards

Pressure Reducing Stations

Valves

A. Three Hydraulic Diaphragm Valves to Meet Minimum to Maximum Fire Flow Conditions

B. Backup Valve with Bypass for Maintenance/Service

C. Pressure Relief Valve

Meters

A. Turbo or Magnetic Transmitted to Recorder and Totalizer

Building

A. All Equipment and P.R.V.'s Located Inside Building

B. Match Adjoining Development

Pressure Controls

A. Pressure Transmitter and Recorder Inside Building

Access

A. Commercial Driveway

B. 20-Foot Access One Side of Building

Site Security

A. Minimum Six-Foot Chain Link with Three-Stand Barbed Wire

B. 20-Foot Locking Gate, 10' X 10'

C. Upgrade at Developer's Expense

Site Improvements

A. Storm Drain

B. Sanitary Sewer for Recycled Facilities

C. Paved Access with Concrete Curbing

Site Landscaping

A. Upgrades at Developer's Expense

B. Maintained by Developer/Association

SF/mlw

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 4E (2006 -2008)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Domestic Water System								
District-Paid Facilities								
SCP Turnout No. 1 (Peak Week Supply)	2005	CFS	3.9	LS	$ 1,875,000	53%	$ 993,750	$ 1,242,188
Zone 1 Reservoir No. 1	2005	GAL	4,600,000	0.6	$ 3,450,000	69%	$ 2,380,500	$ 2,975,625
Transmission Pipelines/Appurtenances	2005	LF	21,000	LS	$ 2,184,000	100%	$ 2,184,000	$ 2,730,000
Subtotal	-	-	-	-	-	-	$ 5,558,250	$ 6,947,813
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances	2005-07	LF	50,000	LS	$ 5,217,000	100%	$ 5,217,000	$ 6,521,250
Subtotal	-	-	-	-	-	-	$ 5,217,000	$ 6,521,250
Non-Domestic Water System								
District-Paid Facilities								
Zone A Pump Station No. 1 (ADD)	2005	GPM/TDH	4,320/300	LS	$ 1,500,000	7%	$ 105,000	$ 131,250
Zone A Reservoir No. 1	2007	GAL	4,300,000	0.6	$ 3,225,000	32%	$ 1,032,000	$ 1,290,000
Transmission Pipelines/Appurtenances	2005	LF	14,000	LS	$ 1,498,000	100%	$ 1,498,000	$ 1,872,500
Subtotal	-	-	-	-	-	-	$ 2,635,000	$ 3,293,750
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances	2005-07	LF	45,000	LS	$ 2,749,000	100%	$ 2,749,000	$ 3,436,250
Subtotal	-	-	-	-	-	-	$ 2,749,000	$ 3,436,250
Wastewater System								
District-Paid Facilities								
Ortega Gateway Lift Station No. 1 (PDWF)	2005	GPM/TDH	280/30	LS	$ 560,000	100%	$ 560,000	$ 700,000
Ortega Gateway Lift Station No. 2 (PDWF)	2005	GPM/TDH	580/70	LS	$ 625,000	100%	$ 625,000	$ 781,250
12" & Larger Sewers & Manholes	2005	LF	0	LS	$ -	100%	$ -	$ -
Subtotal	-	-	-	-	-	-	$ 1,185,000	$ 1,481,250

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 4E (2006 -2008)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Developer-Paid Facilities								
8" Sewers & Manholes	2005-07	LF	43,000	LS	$ 5,043,000	100%	$ 5,043,000	$ 6,303,750
Subtotal	-	-	-	-	-	-	$ 5,043,000	$ 6,303,750
Total District Costs	-	-	-	-	-	-	$ 9,378,250	$ 11,722,813
Total Developer Costs	-	-	-	-	-	-	$ 7,966,000	$ 9,957,500

(a) Total construction cost of the facility including a 25% construction contingency.
(b) Percentage of construction cost allocated to ID 4C based on percentage of use/demand relative to other IDs that will use the facility.
(c) Technical, legal and administrative costs assumed to be 25% of construction cost.

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 4C (2008 -2012)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Domestic Water System								
District-Paid Facilities								
SCP Turnout No. 1 (Peak Week Supply)	2007	CFS	3.9	LS	$ 1,875,000	47%	$ 881,250	$ 1,101,563
Zone 2 Reservoir No. 1	2007	GAL	1,100,000	1.0	$ 1,375,000	100%	$ 1,375,000	$ 1,718,750
Zone 1 Reservoir No. 1	2005	GAL	4,600,000	0.6	$ 3,450,000	31%	$ 1,069,500	$ 1,336,875
Transmission Pipelines/Appurtenances	2007	LF	45,000	LS	$ 5,431,000	100%	$ 5,431,000	$ 6,788,750
Subtotal	-	-	-	-	-	-	$ 8,756,750	$ 10,945,938
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances - LCB	2007 - 09	LF	39,000	LS	$ 3,736,000	100%	$ 3,736,000	$ 4,670,000
Distribution Pipelines/Appurt. - UC & LCA	2009 - 11	LF	15,000	LS	$ 1,571,600	100%	$ 1,571,600	$ 1,964,500
Subtotal	-	-	-	-	-	-	$ 5,307,600	$ 6,634,500
Non-Domestic Water System								
District-Paid Facilities								
Zone A Pump Station No. 1 (ADD)	2005	GPM/TDH	4,320/300	LS	$ 1,500,000	13%	$ 198,000	$ 247,500
Zone B Reservoir No. 1	2007	GAL	3,500,000	0.6	$ 2,625,000	100%	$ 2,625,000	$ 3,281,250
Zone B Pump Station No. 1 (MDD)	2007	GPM/TDH	2,440/445	LS	$ 1,250,000	100%	$ 1,250,000	$ 1,562,500
Zone A Reservoir No. 1	2005	GAL	4,300,000	0.6	$ 3,225,000	68%	$ 2,193,000	$ 2,741,250
Transmission Pipelines/Appurt. - LCB	2007	LF	5,000	LS	$ 859,000	100%	$ 859,000	$ 1,073,750
Transmission Pipelines/Appurt. - UC & LCA	2007	LF	31,000	LS	$ 3,906,000	100%	$ 3,906,000	$ 4,882,500
Subtotal	-	-	-	-	-	-	$ 10,833,000	$ 13,541,250
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances - LCB	2007 - 09	LF	32,000	LS	$ 1,713,000	100%	$ 1,713,000	$ 2,141,250
Distribution Pipelines/Appurt. - UC & LCA	2009 - 11	LF	27,000	LS	$ 1,753,000	100%	$ 1,753,000	$ 2,191,250
Subtotal	-	-	-	-	-	-	$ 3,466,000	$ 4,332,500

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 4C (2008 -2012)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[a]	% of Total Cost[b]	ID4C Construct Cost	ID4C Capital Cost[c]
Wastewater System								
District-Paid Facilities								
Lower Chiquita B Lift Station (PDWF)	2007	GPM/TDH	260/80	LS	$ 625,000	100%	$ 625,000	$ 781,250
Lower Chiquita B LS Forcemain	2007	LF	1,900	LS	$ 100,000	100%	$ 100,000	$ 125,000
Gobernadora Lift Station (PDWF)	2007	GPM/TDH	4850/110	LS	$ 3,125,000	8%	$ 250,000	$ 312,500
Gobernadora LS Forcemains	2007	LF	9,000	LS	$ 2,048,000	8%	$ 163,840	$ 204,800
12" & Larger Sewers & Manholes	2007	LF	0	LS	$ -	100%	$ -	$ -
Subtotal	-	-	-	-	-	-	$ 1,138,840	$ 1,423,550
Developer-Paid Facilities								
8" Sewers & Manholes - LCB	2007 - 09	LF	22,000	LS	$ 3,225,000	100%	$ 3,225,000	$ 4,031,250
8" Sewers & Manholes - UC & LCA	2009 - 11	LF	33,000	LS	$ 3,916,000	100%	$ 3,916,000	$ 4,895,000
Subtotal	-	-	-	-	-	-	$ 7,141,000	$ 8,926,250
Total District Costs	-	-	-	-	-	-	$ 20,728,590	$ 25,910,738
Total Developer Costs	-	-	-	-	-	-	$ 8,773,600	$ 10,967,000

(a) Total construction cost of the facility including a 25% construction contingency.
(b) Percentage of construction cost allocated to ID 4C based on percentage of use/demand relative to other IDs that will use the facility.
(c) Technical, legal and administrative costs assumed to be 25% of construction cost.

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 5 (2010 -2018)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[a]	% of Total Cost[b]	ID4C Construct Cost	ID4C Capital Cost[c]
Domestic Water System								
District-Paid Facilities								
SCP Turnout No. 2 (Peak Week Supply)	2009	CFS	10.3	LS	$ 1,875,000	92%	$ 1,725,000	$ 2,156,250
Zone 3 Reservoir No. 1 (Elevated 100'High)	2011	GAL	1,390,000	1.3	$ 2,258,750	100%	$ 2,258,750	$ 2,823,438
Zone 3 Pump Station No. 1	2011	GPM/TDH	500/220	LS	$ 575,000	100%	$ 575,000	$ 718,750
Zone 2 Reservoir No. 2	2010	GAL	5,350,000	0.6	$ 4,012,500	100%	$ 4,012,500	$ 5,015,625
Zone 1 Reservoir No. 2	2009	GAL	5,310,000	0.6	$ 3,982,500	98%	$ 3,918,780	$ 4,898,475
Transmission Pipelines/Appurtenances - CG	2009	LF	27,000	LS	$ 3,529,000	100%	$ 3,529,000	$ 4,411,250
Transmission Pipelines/Appurtenances - EO	2010	LF	5,000	LS	$ 532,000	100%	$ 532,000	$ 665,000
Transmission Pipelines/Appurt. - NEG	2010 - 17	LF	33,000	LS	$ 3,829,000	100%	$ 3,829,000	$ 4,786,250
Subtotal	-	-	-	-	-	-	$ 20,380,030	$ 25,475,038
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances - CG	2009 - 16	LF	102,000	LS	$ 10,052,000	100%	$ 10,052,000	$ 12,565,000
Distribution Pipelines/Appurtenances - EO	2012 - 14	LF	6,600	LS	$ 626,500	100%	$ 626,500	$ 783,125
Distribution Pipelines/Appurtenances - NEG	2011 - 17	LF	110,000	LS	$ 10,813,000	100%	$ 10,813,000	$ 13,516,250
Subtotal	-	-	-	-	-	-	$ 21,491,500	$ 26,864,375
Non-Domestic Water System								
District-Paid Facilities								
Zone A Pump Station No. 1 (ADD)	2005	GPM/TDH	4,320/300	LS	$ 1,500,000	31%	$ 462,450	$ 578,063
Zone B Reservoir No. 2	2009	GAL	3,400,000	0.67	$ 2,847,500	100%	$ 2,847,500	$ 3,559,375
Zone B Pump Station No. 2	2009	GPM/TDH	2,370/240	LS	$ 1,100,000	100%	$ 1,100,000	$ 1,375,000
Zone A Reservoir No. 2	2009	GAL	2,300,000	0.85	$ 2,443,750	98%	$ 2,404,650	$ 3,005,813
Transmission Pipelines/Appurtenances - CG	2009 - 16	LF	16,000	LS	$ 2,765,000	100%	$ 2,765,000	$ 3,456,250
Transmission Pipelines/Appurtenances - EO	2010 - 12	LF	0	LS	$ -	100%	$ -	$ -
Transmission Pipelines/Appurt. - NEG	2009 - 17	LF	24,000	LS	$ 2,958,000	100%	$ 2,958,000	$ 3,697,500
Subtotal	-	-	-	-	-	-	$ 12,537,600	$ 15,672,000
Developer-Paid Facilities								
Distribution Pipelines/Appurtenances - CG	2009 - 16	LF	70,000	LS	$ 4,020,000	100%	$ 4,020,000	$ 5,025,000
Distribution Pipelines/Appurtenances - EO	2010 - 12	LF	9,000	LS	$ 483,000	100%	$ 483,000	$ 603,750
Distribution Pipelines/Appurtenances - NEG	2011 - 17	LF	65,000	LS	$ 3,729,000	100%	$ 3,729,000	$ 4,661,250
Subtotal	-	-	-	-	-	-	$ 8,232,000	$ 10,290,000

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 5 (2010 -2018)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Wastewater System								
District-Paid Facilities								
NE Gobernadora Lift Station (PDWF)	2011	GPM/TDH	350/80	LS	$ 625,000	100%	$ 625,000	$ 781,250
NE Gobernadora LS Forcemain	2011	LF	3,300	LS	$ 173,000	100%	$ 173,000	$ 216,250
Gobernadora Lift Station (PDWF)	2007	GPM/TDH	4,850/110	LS	$ 3,125,000	47%	$ 1,462,500	$ 1,828,125
Gobernadora LS Forcemains	2007	LF	9,000	LS	$ 2,048,000	47%	$ 958,464	$ 1,198,080
12" & Larger Sewers & Manholes -CG	2009 - 16	LF	18,400	LS	$ 1,325,000	100%	$ 1,325,000	$ 1,656,250
12" & Larger Sewers & Manholes - EO	2010 - 12	LF	0	LS	$ -	100%	$ -	$ -
12" & Larger Sewers & Manholes - NEG	2011 - 17	LF	4,100	LS	$ 571,000	100%	$ 571,000	$ 713,750
Subtotal	-	-	-	-	-	-	$ 5,114,964	$ 6,393,705
Developer-Paid Facilities								
8" Sewers & Manholes - CG	2009 - 16	LF	65,400	LS	$ 6,901,000	100%	$ 6,901,000	$ 8,626,250
8" Sewers & Manholes - EO	2010 - 12	LF	6,100	LS	$ 664,000	100%	$ 664,000	$ 830,000
8" Sewers & Manholes - NEG	2011 - 17	LF	22,000	LS	$ 3,239,000	100%	$ 3,239,000	$ 4,048,750
Subtotal	-	-	-	-	-	-	$ 10,804,000	$ 13,505,000
Total District Costs	-	-	-	-	-	-	$ 38,032,594	$ 47,540,743
Total Developer Costs	-	-	-	-	-	-	$ 29,723,500	$ 37,154,375

(a) Total construction cost of the facility including a 25% construction contingency.
(b) Percentage of construction cost allocated to ID 4C based on percentage of use/demand relative to other IDs that will use the facility.
(c) Technical, legal and administrative costs assumed to be 25% of construction cost.

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 6 (2011 -2023)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Domestic Water System								
District-Paid Facilities								
SCP Turnout No. 2 (Peak Week Supply)	2009	CFS	10.3	LS	$ 1,875,000	8%	$ 150,000	$ 187,500
SCP Turnout No. 3 (Peak Week Supply)	2015	CFS	7.3	LS	$ 1,875,000	100%	$ 1,875,000	$ 2,343,750
SCP Turnout No. 4 (Peak Week Supply)	2017	CFS	2.9	LS	$ 1,875,000	100%	$ 1,875,000	$ 2,343,750
Zone 4 Reservoir No. 1 (Elevated 100' High)	2015	GAL	1,130,000	1.3	$ 1,836,250	100%	$ 1,836,250	$ 2,295,313
Zone 4 Pump Station No. 1	2015	GPM/TDH	400/220	LS	$ 550,000	100%	$ 550,000	$ 687,500
Zone 3 Reservoir No. 2	2015	GAL	1,460,000	0.95	$ 1,733,750	100%	$ 1,733,750	$ 2,167,188
Zone 3 Pump Station No. 2	2015	GPM/TDH	1,000/225	LS	$ 625,000	100%	$ 625,000	$ 781,250
Zone 2 Reservoir No. 3	2015	GAL	2,890,000	0.75	$ 2,709,375	100%	$ 2,709,375	$ 3,386,719
Zone 4 Reservoir No. 2 (Elevated 130' High)	2020	GAL	840,000	1.5	$ 1,575,000	100%	$ 1,575,000	$ 1,968,750
Zone 4 Pump Station No. 2	2020	GPM/TDH	230/215	LS	$ 475,000	100%	$ 475,000	$ 593,750
Zone 3 Reservoir No. 3	2020	GAL	2,260,000	0.9	$ 2,542,500	100%	$ 2,542,500	$ 3,178,125
Zone 3 Pump Station No. 3	2020	GPM/TDH	680/220	LS	$ 600,000	100%	$ 600,000	$ 750,000
Zone 2 Reservoir No. 4	2020	GAL	1,710,000	0.95	$ 2,030,625	100%	$ 2,030,625	$ 2,538,281
Zone 4 Reservoir No. 3 (Elevated 100' High)	2017	GAL	560,000	1.3	$ 910,000	100%	$ 910,000	$ 1,137,500
Zone 4 Pump Station No. 3	2017	GPM/TDH	65/210	LS	$ 300,000	100%	$ 300,000	$ 375,000
Zone 3 Reservoir No. 4	2017	GAL	970,000	1.0	$ 1,212,500	100%	$ 1,212,500	$ 1,515,625
Zone 3 Pump Station No. 4	2017	GPM/TDH	320/220	LS	$ 550,000	100%	$ 550,000	$ 687,500
Zone 2 Reservoir No. 5	2017	GAL	3,860,000	1.0	$ 4,825,000	100%	$ 4,825,000	$ 6,031,250
Zone 4 Reservoir No. 4	2015	GAL	780,000	1.1	$ 1,072,500	100%	$ 1,072,500	$ 1,340,625
Zone 4 Pump Station No. 4 Capacity	2015	GPM/TDH	200/215	LS	$ 475,000	100%	$ 475,000	$ 593,750
Zone 3 Reservoir No. 5 Capacity	2015	GAL	560,000	1.15	$ 805,000	100%	$ 805,000	$ 1,006,250
Zone 3 Pump Station No. 5 Capacity	2015	GPM/TDH	260/220	LS	$ 475,000	100%	$ 475,000	$ 593,750
Transmission Pipelines/Appurt. - EO	2010 - 12	LF	0	LS	$ -	100%	$ -	$ -
Transmission Pipelines/Appurt. - TC, CM	2015 - 18	LF	25,000	LS	$ 2,678,000	100%	$ 2,678,000	$ 3,347,500
Transmission Pipelines/Appurt. - GC	2010 - 12	LF	3,000	LS	$ 319,000	100%	$ 319,000	$ 398,750
Transmission Pipelines/Appurt. - TRW	2017 - 19	LF	13,000	LS	$ 1,379,000	100%	$ 1,379,000	$ 1,723,750
Transmission Pipelines/Appurt. - CC	2020 - 22	LF	20,000	LS	$ 2,149,000	100%	$ 2,149,000	$ 2,686,250
Subtotal	-	-	-	-	-	-	$ 35,727,500	$ 44,659,375

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 6 (2011 -2023)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[a]	% of Total Cost[b]	ID4C Construct Cost	ID4C Capital Cost[c]
Developer-Paid Facilities								
Distribution Pipelines/Appurt. - EO	2010 - 12	LF	11,000	LS	$ 1,056,000	100%	$ 1,056,000	$ 1,320,000
Distribution Pipelines/Appurt. - TC, CM	2015 - 18	LF	115,000	LS	$ 11,433,000	100%	$ 11,433,000	$ 14,291,250
Distribution Pipelines/Appurt. - GC	2010 - 12	LF	87,000	LS	$ 8,861,000	100%	$ 8,861,000	$ 11,076,250
Distribution Pipelines/Appurt. - TRW	2017 - 19	LF	114,000	LS	$ 11,386,000	100%	$ 11,386,000	$ 14,232,500
Distribution Pipelines/Appurt. - CC	2020 - 22	LF	148,000	LS	$ 14,058,000	100%	$ 14,058,000	$ 17,572,500
Subtotal	-	-	-	-	-	-	$ 46,794,000	$ 58,492,500
Non-Domestic Water System								
District-Paid Facilities								
Zone A Pump Station No. 1 (ADD)	2005	GPM/TDH	4,320/300	LS	$ 1,500,000	50%	$ 750,000	$ 937,500
Zone A Pump Station No. 2 (ADD)	2015	GPM/TDH	2,870/75	LS	$ 1,250,000	50%	$ 625,000	$ 781,250
Zone B Reservoir No. 3	2015	GAL	2,250,000	0.9	$ 2,531,250	100%	$ 2,531,250	$ 3,164,063
Zone B Pump Station No. 3	2015	GPM/TDH	1560/230	LS	$ 650,000	100%	$ 650,000	$ 812,500
Zone A Reservoir No. 3	2015	GAL	2,850,000	0.75	$ 2,671,875	100%	$ 2,671,875	$ 3,339,844
Zone B Reservoir No. 4	2020	GAL	2,900,000	0.75	$ 2,718,750	100%	$ 2,718,750	$ 3,398,438
Zone B Pump Station No. 4	2020	GPM/TDH	1990/235	LS	$ 670,000	100%	$ 670,000	$ 837,500
Zone A Reservoir No. 4	2020	GAL	1,000,000	1.0	$ 1,250,000	100%	$ 1,250,000	$ 1,562,500
Zone C Reservoir No. 1	2017	GAL	750,000	1.1	$ 1,031,250	100%	$ 1,031,250	$ 1,289,063
Zone C Pump Station No. 1	2017	GPM/TDH	510/220	LS	$ 475,000	100%	$ 475,000	$ 593,750
Zone B Reservoir No. 5	2017	GAL	2,100,000	0.9	$ 2,362,500	100%	$ 2,362,500	$ 2,953,125
Zone B Pump Station No. 5	2017	GPM/TDH	3940/240	LS	$ 1,500,000	100%	$ 1,500,000	$ 1,875,000
Transmission Pipelines/Appurt. - EO	2010 - 12	LF	0	LS	$ -	100%	$ -	$ -
Transmission Pipelines/Appurt. - TC, CM	2015 - 18	LF	23,000	LS	$ 3,146,000	100%	$ 3,146,000	$ 3,932,500
Transmission Pipelines/Appurt. - GC	2010 - 12	LF	0	LS	$ -	100%	$ -	$ -
Transmission Pipelines/Appurt. - TRW	2017 - 19	LF	14,000	LS	$ 1,630,000	100%	$ 1,630,000	$ 2,037,500
Transmission Pipelines/Appurt. - CC	2020 - 22	LF	19,000	LS	$ 2,583,000	100%	$ 2,583,000	$ 3,228,750
Subtotal	-	-	-	-	-	-	$ 24,594,625	$ 30,743,281

Table . Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities
Improvement District 6 (2011 -2023)

System Characteristic	Construct Year	Units	Quantity	Unit Cost	Total Construct Cost[(a)]	% of Total Cost[(b)]	ID4C Construct Cost	ID4C Capital Cost[(c)]
Developer-Paid Facilities								
Distribution Pipelines/Appurt. - EO	2010 - 12	LF	11,000	LS	$ 592,000	100%	$ 592,000	$ 740,000
Distribution Pipelines/Appurt. - TC, CM	2015 - 18	LF	35,000	LS	$ 3,338,000	100%	$ 3,338,000	$ 4,172,500
Distribution Pipelines/Appurt. - GC	2010 - 12	LF	13,000	LS	$ 74,000	100%	$ 74,000	$ 92,500
Distribution Pipelines/Appurt. - TRW	2017 - 19	LF	61,000	LS	$ 3,322,000	100%	$ 3,322,000	$ 4,152,500
Distribution Pipelines/Appurt. - CC	2020 - 22	LF	54,000	LS	$ 2,903,000	100%	$ 2,903,000	$ 3,628,750
Subtotal	-	-	-	-	-	-	$ 10,229,000	$ 12,786,250
Wastewater System								
District-Paid Facilities								
Gobernadora Lift Station (PDWF)	2009	GPM/TDH	4850/110	LS	$ 3,125,000	45%	$ 1,406,250	$ 1,757,813
Gobernadora LS Forcemains	2009	LF	9,000	LS	$ 2,048,000	45%	$ 921,600	$ 1,152,000
Southern ID 6 LS No. 1	2017	GPM/TDH	1,470/120	LS	$ 2,800,000	100%	$ 2,800,000	$ 3,500,000
Southern ID 6 LS No. 1 Forcemains	2017	LF	3,200	LS	$ 448,000	100%	$ 448,000	$ 560,000
Southern ID 6 LS No. 2 - Expand Talega LS 1	2017	GPM/TDH	1,470/340	LS	$ 1,800,000	100%	$ 1,800,000	$ 2,250,000
Southern ID 6 LS No. 3 - Expand Talega LS 2	2015	GPM/TDH	2,300/30	LS	$ 1,500,000	100%	$ 1,500,000	$ 1,875,000
Southern ID 6 LS No. 3 Forcemains	2015	LF	1,300	LS	$ 228,000	100%	$ 228,000	$ 285,000
Gabino Canyon Package Treatment Plant	2010	-	-	LS	$ 625,000	100%	$ 625,000	$ 781,250
12" & Larger Sewers & Manholes -TC, CM	2015 - 18	LF	0	LS	$ -	100%	$ -	$ -
12" & Larger Sewers & Manholes -TRW	2011 - 18	LF	0	LS	$ -	100%	$ -	$ -
12" & Larger Sewers & Manholes - CC	2020 - 22	LF	7,500	LS	$ 1,216,000	100%	$ 1,216,000	$ 1,520,000
12" & Larger Sewers & Manholes - EO, GC	2011 - 13	LF	0	LS	$ -	100%	$ -	$ -
Subtotal	-	-	-	-	-	-	$ 10,944,850	$ 13,681,063
Developer-Paid Facilities								
8" Sewers & Manholes - TC, CM	2015 - 18	LF	92,000	LS	$ 10,789,000	100%	$ 10,789,000	$ 13,486,250
8" Sewers & Manholes - TRW	2011 - 18	LF	82,000	LS	$ 9,616,000	100%	$ 9,616,000	$ 12,020,000
8" Sewers & Manholes - CC	2020 - 22	LF	84,500	LS	$ 9,910,000	100%	$ 9,910,000	$ 12,387,500
8" Sewers & Manholes - EO, GC	2011 - 13	LF	66,000	LS	$ 7,752,000	100%	$ 7,752,000	$ 9,690,000
Subtotal	-	-	-	-	-	-	$ 38,067,000	$ 47,583,750
Total District Costs	-	-	-	-	-	-	$ 71,266,975	$ 89,083,719
Total Developer Costs	-	-	-	-	-	-	$ 57,023,000	$ 71,278,750

(a) Total construction cost of the facility including a 25% construction contingency.
(b) Percentage of construction cost allocated to ID 4C based on percentage of use/demand relative to other IDs that will use the facility.
(c) Technical, legal and administrative costs estimated at 25% of construction cost.

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Fire Hydrant Quantity (no)	Construct Cost [a]	Capital Cost[b]
ID 4E							
Ortega Gateway (2007-09)							
Developer Costs							
8" Mains	$ 56	50,000				$ 3,500,000	$ 4,375,000
8" Shutoff Valves	$ 900		65			$ 73,125	$ 91,406
8" PRV Stations	$ 35,000			9		$ 393,750	$ 492,188
Fire hydrants	$ 5,000				200	$ 1,250,000	$ 1,562,500
Developer Subtotal		50,000	65	9	200	$ 5,216,875	$ 6,521,094
Ortega Gateway (2007-09)							
District Costs							
12" Mains	$ 84	20,500				$ 2,152,500	$ 2,690,625
12" Shutoff Valves	$ 1,400		18			$ 31,500	$ 39,375
District Subtotal		20,500	18	-	-	$ 2,184,000	$ 2,730,000
Total ID 4E - Developer		**50,000**	**65**	**9**	**200**	**$ 5,216,875**	**$ 6,521,094**
Total ID 4E - District		**20,500**	**18**	**-**	**-**	**$ 2,184,000**	**$ 2,730,000**
ID 4C							
Lower Chiquita B (2009-11)							
Developer Costs							
8" Mains	$ 56	38,603				$ 2,702,210	$ 3,377,763
8" Shutoff Valves	$ 900		22			$ 24,750	$ 30,938
8" PRV Stations	$ 35,000			1		$ 43,750	$ 54,688
Fire hydrants	$ 5,000				154	$ 965,075	$ 1,206,344
Developer Subtotal		38,603	22	1	154	$ 3,735,785	$ 4,669,731
Lower Chiquita B (2009-11)							
District Costs							
12" Mains	$ 84	12,124				$ 1,273,020	$ 1,591,275
12" Shutoff Valves	$ 1,400		14			$ 24,500	$ 30,625
16" Mains	$ 112	991				$ 138,740	$ 173,425
16" Shutoff Valves	$ 2,100		4			$ 10,500	$ 13,125
District Subtotal		13,115	18	-	-	$ 1,446,760	$ 1,808,450
ID 4C							
Lower Chiquita A/Upper Chiquita (2011-13)							
Developer Costs							
8" Mains	$ 56	15,350				$ 1,074,500	$ 1,343,125
8" Shutoff Valves	$ 900		23			$ 25,875	$ 32,344
8" PRV Stations	$ 35,000			2		$ 87,500	$ 109,375
Fire hydrants	$ 5,000				61	$ 383,750	$ 479,688
Developer Subtotal		15,350	23	2	61	$ 1,571,625	$ 1,964,531
Lower Chiquita A/Upper Chiquita (2011-13)							
District Costs							
12" Mains	$ 84	16,131				$ 1,693,755	$ 2,117,194
12" Shutoff Valves	$ 1,400		30			$ 52,500	$ 65,625
16" Mains	$ 112	15,611				$ 2,185,540	$ 2,731,925
16" Shutoff Valves	$ 2,100		20			$ 52,524	$ 65,655
District Subtotal		31,742	50	-	-	$ 3,984,319	$ 4,980,399
Total ID 4C - Developer		**53,953**	**45**	**3**	**216**	**$ 5,307,410**	**$ 6,634,263**
Total ID 4C - District		**44,857**	**68**	**-**	**-**	**$ 5,431,079**	**$ 6,788,849**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Fire Hydrant Quantity (no)	Construct Cost [a]	Capital Cost[b]
ID 5							
Northeast Gobernadora (2013-19)							
Developer Costs							
8" Mains	$ 56	109,500				$ 7,665,000	$ 9,581,250
8" Shutoff Valves	$ 900		93			$ 104,625	$ 130,781
8" PRV Stations	$ 35,000			7		$ 306,250	$ 382,813
Fire hydrants	$ 5,000				438	$ 2,737,500	$ 3,421,875
Developer Subtotal		109,500	93	7	438	$ 10,813,375	$ 13,516,719
Northeast Gobernadora (2013-19)							
District Costs							
12" Mains	$ 84	23,000				$ 2,415,000	$ 3,018,750
12" Shutoff Valves	$ 1,400		30			$ 52,500	$ 65,625
16" Mains	$ 112	9,500				$ 1,330,000	$ 1,662,500
16" Shutoff Valves	$ 2,100		12			$ 31,500	$ 39,375
District Subtotal		32,500	42	-	-	$ 3,829,000	$ 4,786,250
ID 5							
Central Gobernadora (2011-18)							
Developer Costs							
8" Mains	$ 56	102,000				$ 7,140,000	$ 8,925,000
8" Shutoff Valves	$ 900		127			$ 142,875	$ 178,594
8" PRV Stations	$ 35,000			5		$ 218,750	$ 273,438
Fire hydrants	$ 5,000				408	$ 2,550,000	$ 3,187,500
Developer Subtotal		102,000	127	5	408	$ 10,051,625	$ 12,564,531
Central Gobernadora (2009-16)							
District Costs							
12" Mains	$ 84	16,000				$ 1,680,000	$ 2,100,000
12" Shutoff Valves	$ 1,400		26			$ 45,500	$ 56,875
16" Mains	$ 112	8,500				$ 1,190,000	$ 1,487,500
16" Shutoff Valves	$ 2,100		6			$ 15,750	$ 19,688
24" Mains	$ 190	2,500				$ 593,750	$ 742,188
24" Valves	$ 500		6			$ 3,750	$ 4,688
District Subtotal		27,000	38	-	-	$ 3,528,750	$ 4,410,938
ID 5							
East Ortega							
Developer Costs							
8" Mains	$ 56	6,500				$ 455,000	$ 568,750
8" Shutoff Valves	$ 900		8			$ 9,000	$ 11,250
Fire hydrants	$ 5,000				26	$ 162,500	$ 203,125
Developer Subtotal		6,500	8	-	26	$ 626,500	$ 783,125
East Ortega							
District Costs							
12" Mains	$ 84	5,000				$ 525,000	$ 656,250
12" Shutoff Valves	$ 1,400		4			$ 7,000	$ 8,750
District Subtotal		5,000	4	-	-	$ 532,000	$ 665,000
Total ID 5 - Developer		**218,000**	**228**	**12**	**872**	**$ 21,491,500**	**$ 26,864,375**
Total ID 5 - District		**76,103**	**46**	**-**	**-**	**$ 7,063,210**	**$ 8,829,013**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Fire Hydrant Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 6							
Trampas Canyon (2016-19)							
Developer Costs							
8" Mains	$ 56	89,000				$ 6,230,000	$ 7,787,500
8" Shutoff Valves	$ 900					$ -	$ -
8" PRV Stations	$ 35,000		50	11		$ 481,250	$ 601,563
Fire hydrants	$ 5,000				356	$ 2,225,000	$ 2,781,250
Developer Subtotal		89,000	50	11	356	$ 8,936,250	$ 11,170,313
Trampas Canyon (2016-19)							
District Costs							
12" Mains	$ 84	17,000				$ 1,785,000	$ 2,231,250
12" Shutoff Valves	$ 1,400		20			$ 35,000	$ 43,750
District Subtotal		17,000	20	-	-	$ 1,820,000	$ 2,275,000
ID 6							
East Ortega							
Developer Costs							
8" Mains	$ 56	11,000				$ 770,000	$ 962,500
8" Shutoff Valves	$ 900		10			$ 11,250	$ 14,063
Fire hydrants	$ 5,000				44	$ 275,000	$ 343,750
Developer Subtotal		11,000	10	-	44	$ 1,056,250	$ 1,320,313
East Ortega							
District Costs							
12" Mains	$ 84					$ -	$ -
12" Shutoff Valves	$ 1,400					$ -	$ -
District Subtotal		-	-	-	-	$ -	$ -
ID 6							
Cristianitos Meadows (2016-19)							
Developer Costs							
8" Mains	$ 56	26,000				$ 1,820,000	$ 2,275,000
8" Shutoff Valves	$ 900		24			$ 27,000	$ 33,750
Fire hydrants	$ 5,000				104	$ 650,000	$ 812,500
Developer Subtotal		26,000	24	-	104	$ 2,497,000	$ 3,121,250
Cristianitos Meadows (2016-19)							
District Costs							
12" Mains	$ 84	8,000				$ 840,000	$ 1,050,000
12" Shutoff Valves	$ 1,400		10			$ 17,500	$ 21,875
District Subtotal		8,000	10	-	-	$ 857,500	$ 1,071,875
ID 6							
Christianitos Canyon (2021-23)							
Developer Costs							
8" Mains	$ 56	148,000				$ 9,945,600	$ 12,432,000
8" Shutoff Valves	$ 900		130			$ 140,400	$ 175,500
8" PRV Stations	$ 35,000			10		$ 420,000	$ 525,000
Fire hydrants	$ 5,000				592	$ 3,552,000	$ 4,440,000
Developer Subtotal		148,000	130	10	592	$ 14,058,000	$ 17,572,500

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Fire Hydrant Quantity (no)	Construct Cost [a]	Capital Cost[b]
Christianitos Canyon (2020-22)							
District Costs							
12" Mains	$ 84	20,000				$ 2,100,000	$ 2,625,000
12" Shutoff Valves	$ 1,400		28			$ 49,000	$ 61,250
District Subtotal		20,000	28	-	-	$ 2,149,000	$ 2,686,250
ID 6							
TRW (2018-20)							
Developer Costs							
8" Mains	$ 56	114,000				$ 7,980,000	$ 9,975,000
8" Shutoff Valves	$ 900		144			$ 162,000	$ 202,500
8" PRV Stations	$ 35,000			9		$ 393,750	$ 492,188
Fire hydrants	$ 5,000				456	$ 2,850,000	$ 3,562,500
Developer Subtotal		114,000	144	9	456	$ 11,385,750	$ 14,232,188
TRW (2018-20)							
District Costs							
12" Mains	$ 84	13,000				$ 1,365,000	$ 1,706,250
12" Shutoff Valves	$ 1,400		8			$ 14,000	$ 17,500
District Subtotal		13,000	8	-	-	$ 1,379,000	$ 1,723,750
ID 6							
Gabino Canyon							
Developer Costs							
8" Mains	$ 56	87,000				$ 6,090,000	$ 7,612,500
8" Shutoff Valves	$ 900		24			$ 27,000	$ 33,750
8" PRV Stations	$ 35,000			13		$ 568,750	$ 710,938
Fire hydrants	$ 5,000				348	$ 2,175,000	$ 2,718,750
Developer Subtotal		87,000	24	13	348	$ 8,860,750	$ 11,075,938
Gabino Canyon							
District Costs							
12" Mains	$ 84	3,000				$ 315,000	$ 393,750
12" Shutoff Valves	$ 1,400		2			$ 3,500	$ 4,375
District Subtotal		3,000	2	-	-	$ 318,500	$ 398,125
Total ID 6 - Developer		**375,000**	**322**	**32**	**1,500**	**$ 36,801,500**	**$ 46,001,875**
Total ID 6- District		**44,000**	**48**	**-**	**-**	**$ 4,704,000**	**$ 5,880,000**
Grand Total - Developer		**696,953**	**660**	**56**	**2,788**	**$ 68,817,285**	**$ 86,021,606**
Grand Total - District		**185,460**	**180**	**-**	**-**	**$ 19,382,289**	**$ 24,227,861**

(a) Including a 25% construction contingency.
(b) Technical, legal and administrative costs equal to 25% of construction cost.

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Non-Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 4E						
Ortega Gateway (2006-08)						
Developer Costs						
6" Mains	$ 42	45,000			$ 2,362,500	$ 2,953,125
6" Shutoff Valves	$ 700		92		$ 80,500	$ 100,625
6" PRV Stations	$ 35,000			7	$ 306,250	$ 382,813
Developer Subtotal		45,000	92	7	$ 2,749,250	$ 3,436,563
Ortega Gateway (2006-08)						
District Costs						
12" Mains	$ 84	14,000			$ 1,470,000	$ 1,837,500
12" Shutoff Valves	$ 1,400		16		$ 28,000	$ 35,000
District Subtotal		14,000	16	-	$ 1,498,000	$ 1,872,500
Total ID 4E - Developer		**45,000**	**92**	**7**	**$ 2,749,250**	**$ 3,436,563**
Total ID 4E - District		**14,000**	**16**	**-**	**$ 1,498,000**	**$ 1,872,500**
ID 4C						
Lower Chiquita B (2008-10)						
Developer Costs						
6" Mains	$ 42	32,000			$ 1,680,000	$ 2,100,000
6" Shutoff Valves	$ 700		38		$ 33,250	$ 41,563
Developer Subtotal		32,000	38	-	$ 1,713,250	$ 2,141,563
Lower Chiquita B (2008-10)						
District Costs						
12" Mains	$ 84	2,000			$ 210,000	$ 262,500
12" Shutoff Valves	$ 1,400		2		$ 3,500	$ 4,375
24" Mains	$ 168	3,000			$ 630,000	$ 787,500
24" Valves	$ 5,000		3		$ 15,625	$ 19,531
District Subtotal		5,000	5	-	$ 859,125	$ 1,073,906
ID 4C						
Lower Chiquita A/Upper Chiquita (2010-12)						
Developer Costs						
6" Mains	$ 42	14,610			$ 767,025	$ 958,781
6" Shutoff Valves	$ 700		28		$ 24,500	$ 30,625
8" Mains	$ 56	12,432			$ 870,240	$ 1,087,800
8" Shutoff Valves	$ 900		3		$ 3,375	$ 4,219
8" PRV Stations	$ 35,000			2	$ 87,500	$ 109,375
Developer Subtotal		27,042	31	2	$ 1,752,640	$ 2,190,800
Lower Chiquita A/Upper Chiquita (2010-12)					$ -	
District Costs						
12" Mains	$ 84	15,679			$ 1,646,295	$ 2,057,869
12" Shutoff Valves	$ 1,400		18		$ 31,500	$ 39,375
16" Mains	$ 112	15,280			$ 2,139,200	$ 2,674,000
16" Shutoff Valves	$ 2,100		34		$ 88,550	$ 110,688
District Subtotal		30,959	52	-	$ 3,905,545	$ 4,881,931
Total ID 4C - Developer		**59,042**	**69**	**2**	**$ 3,465,890**	**$ 4,332,363**
Total ID 4C - District		**35,959**	**56**	**-**	**$ 4,764,670**	**$ 5,955,838**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Non-Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 5						
Northeast Gobernadora (2012-18)						
Developer Costs						
6" Mains	$ 42	65,000			$ 3,412,500	$ 4,265,625.0
6" Shutoff Valves	$ 700		62		$ 54,250	$ 67,812.5
6" PRV Stations	$ 35,000			6	$ 262,500	$ 328,125
Developer Subtotal		65,000	62	6	$ 3,729,250	$ 4,661,563
Northeast Gobernadora (2012-18)						
District Costs						
12" Mains	$ 84	14,000			$ 1,470,000	$ 1,837,500
12" Shutoff Valves	$ 1,400		14		$ 24,500	$ 30,625
16" Mains	$ 112	10,000			$ 1,400,000	$ 1,750,000
16" Shutoff Valves	$ 2,100		24		$ 63,875	$ 79,844
District Subtotal		24,000	38	-	$ 2,958,375	$ 3,697,969
ID 5						
Central Gobernadora (2010-17)						
Developer Costs						
6" Mains	$ 42	70,000			$ 3,675,000	$ 4,593,750
6" Shutoff Valves	$ 700		94		$ 82,250	$ 102,813
6" PRV Stations	$ 35,000			6	$ 262,500	$ 328,125
Developer Subtotal		70,000	94	6	$ 4,019,750	$ 5,024,688
Central Gobernadora (2010-17)						
District Costs						
12" Mains	$ 84	2,000			$ 210,000	$ 262,500
12" Shutoff Valves	$ 1,400		2		$ 3,500	$ 4,375
16" Mains	$ 112	6,000			$ 840,000	$ 1,050,000
16" Shutoff Valves	$ 2,100		19		$ 49,875	$ 62,344
20" Mains	$ 140	3,000			$ 525,000	$ 656,250
20" Valves	$ 3,000		10		$ 35,625	$ 44,531
24" Mains	$ 168	5,000			$ 1,050,000	$ 1,312,500
24" Valves	$ 5,000		8		$ 51,042	$ 63,802
District Subtotal		16,000	39	-	$ 2,765,042	$ 3,456,302
ID 5						
East Ortega						
Developer Costs						
6" Mains	$ 42	9,000			$ 472,500	$ 590,625
6" Shutoff Valves	$ 700		12		$ 10,500	$ 13,125
Developer Subtotal		9,000	12	-	$ 483,000	$ 603,750
East Ortega						
District Costs						
12" Mains	$ 84				$ -	$ -
12" Shutoff Valves	$ 1,400				$ -	$ -
District Subtotal		-	-	-	$ -	$ -
Total ID 5 - Developer		**144,000**	**168**	**12**	**$ 8,232,000**	**$ 10,290,000**
Total ID 5 - District		**24,000**	**38**	**-**	**$ 2,958,375**	**$ 3,697,969**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Non-Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Construct Cost [(a)]	Capital Cost [(b)]
ID 6						
Trampas Canyon (2016-19)						
Developer Costs						
6" Mains	$ 42	32,000			$ 1,680,000	$ 2,100,000
6" Shutoff Valves	$ 700		20		$ 17,500	$ 21,875
8" Mains	$ 56	3,000			$ 210,000	$ 262,500
8" Shutoff Valves	$ 900		1		$ 1,125	$ 1,406
8" PRV Stations	$ 35,000			2	$ 87,500	$ 109,375
Developer Subtotal		35,000	21	2	$ 1,996,125	$ 2,495,156
Trampas Canyon (2016-19)						
District Costs						
12" Mains	$ 84	4,000			$ 420,000	$ 525,000
12" Shutoff Valves	$ 1,400		13		$ 22,050	$ 27,563
16" Mains	$ 112	7,000			$ 980,000	$ 1,225,000
16" Shutoff Valves	$ 2,100		6		$ 15,313	$ 19,141
20" Mains	$ 140	4,000			$ 700,000	$ 875,000
20" Valves	$ 3,000		5		$ 20,000	$ 25,000
District Subtotal		15,000	24	-	$ 2,157,363	$ 2,696,703
ID 6						
East Ortega						
Developer Costs						
6" Mains	$ 42	11,000			$ 577,500	$ 721,875
6" Shutoff Valves	$ 700		16		$ 14,000	$ 17,500
Developer Subtotal		11,000	16	-	$ 591,500	$ 739,375
East Ortega						
District Costs						
12" Mains	$ 84				$ -	$ -
12" Shutoff Valves	$ 1,400				$ -	$ -
District Subtotal		-	-	-	$ -	$ -
ID 6						
Cristianitos Meadows (2016-19)						
Developer Costs						
6" Mains	$ 42	25,000			$ 1,312,500	$ 1,640,625
6" Shutoff Valves	$ 700		34		$ 29,750	$ 37,188
Developer Subtotal		25,000	34	-	$ 1,342,250	$ 1,677,813
Cristianitos Meadows (2016-19)						
District Costs						
12" Mains	$ 84	4,000			$ 420,000	$ 525,000
16" Mains	$ 112	4,000			$ 560,000	$ 700,000
16" Shutoff Valves	$ 2,100		3		$ 8,750	$ 10,938
District Subtotal		8,000	3	-	$ 988,750	$ 1,235,938

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Non-Domestic Water Pipelines/Appurtenances

Water Pipeline/Appurtenances	Unit Cost	Pipeline Quantity (lf)	Shutoff Valve Quantity (no)	PRV Station Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 6						
Christianitos Canyon (2021-23)						
Developer Costs						
6" Mains	$ 42	54,000			$ 2,835,000	$ 3,543,750
6" Shutoff Valves	$ 700		78		$ 68,250	$ 85,313
Developer Subtotal		54,000	78	-	$ 2,903,250	$ 3,629,063
Christianitos Canyon (2021-23)						
District Costs						
12" Mains	$ 84	4,000			$ 420,000	$ 525,000
12" Shutoff Valves	$ 1,400		4		$ 7,000	$ 8,750
16" Mains	$ 112	15,000			$ 2,100,000	$ 2,625,000
16" Shutoff Valves	$ 2,100		22		$ 56,438	$ 70,547
District Subtotal		19,000	26	-	$ 2,583,438	$ 3,229,297
ID 6						
TRW (2018-20)						
Developer Costs						
6" Mains	$ 42	61,000			$ 3,202,500	$ 4,003,125
6" Shutoff Valves	$ 700		136		$ 119,000	$ 148,750
8" PRV Stations	$ 35,000	7			$ -	$ -
Developer Subtotal		61,007	136	-	$ 3,321,500	$ 4,151,875
TRW (2018-20)						
District Costs						
12" Mains	$ 84	11,000			$ 1,155,000	$ 1,443,750
12" Shutoff Valves	$ 1,400		20		$ 35,000	$ 43,750
16" Mains	$ 112	3,000			$ 420,000	$ 525,000
16" Shutoff Valves	$ 2,100		8		$ 19,688	$ 24,609
District Subtotal		14,000	28	-	$ 1,629,688	$ 2,037,109
ID 6						
Gabino Canyon						
Developer Costs						
6" Mains	$ 42	13,000			$ 682,500	$ 853,125
6" Shutoff Valves	$ 700		10		$ 8,750	$ 10,938
8" PRV Stations	$ 35,000			1	$ 43,750	$ 54,688
Developer Subtotal		13,000	10	1	$ 735,000	$ 918,750
Gabino Canyon						
District Costs						
12" Mains	$ 84				$ -	$ -
12" Shutoff Valves	$ 1,400				$ -	$ -
District Subtotal		-	-	-	$ -	$ -
Total ID 6 - Developer		**153,007**	**258**	**1**	**$ 8,302,000**	**$ 10,377,500**
Total ID 6- District		**41,000**	**56**	**-**	**$ 5,201,875**	**$ 6,502,344**
Grand Total - Developer		**401,049**	**587**	**22**	**$ 22,749,140**	**$ 28,436,425**
Grand Total - District		**114,959**	**167**	**-**	**$ 14,422,920**	**$ 18,028,650**

(a) Including a 25% construction contingency.

(b) Technical, legal and administrative costs equal to 25% of construction cost.

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Wastewater Sewers and Manholes

Water Pipeline/Appurtenances	Unit Cost	Sewer Quantity (lf)	Manhole Quantity (no)	Construct Cost [(a)]	Capital Cost [(b)]
ID 4E					
Ortega Gateway (2006-08)					
Developer Costs					
8" Sewer	$ 72	43,000		$ 3,870,000	$ 4,837,500
Manholes	$ 6,000		156	$ 1,172,727	$ 1,465,909
Developer Subtotal		43,000	156	$ 5,042,727	$ 6,303,409
Ortega Gateway (2006-08)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
Total ID 4E - Developer		**43,000**	**156**	**$ 5,042,727**	**$ 6,303,409**
Total ID 4E - District		**-**	**-**	**$ -**	**$ -**
ID 4C					
Lower Chiquita B (2008-10)					
Developer Costs					
8" Sewer	$ 72	22,000		$ 1,980,000	$ 2,475,000
Manholes	$ 6,000		80	$ 600,000	$ 750,000
Developer Subtotal		22,000	80	$ 2,580,000	$ 3,225,000
Lower Chiquita B (2008-10)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
ID 4C					
Lower Chiquita A/Upper Chiquita (2010-12)					
Developer Costs					
8" Sewer	$ 72	33,394		$ 3,005,415	$ 3,756,769
Manholes	$ 6,000		121	$ 910,732	$ 1,138,415
Developer Subtotal		33,394	121	$ 3,916,147	$ 4,895,184
Lower Chiquita A/Upper Chiquita (2010-12)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
Total ID 4C - Developer		**55,394**	**201**	**$ 6,496,147**	**$ 8,120,184**
Total ID 4C - District		**-**	**-**	**$ -**	**$ -**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Wastewater Sewers and Manholes

Water Pipeline/Appurtenances	Unit Cost	Sewer Quantity (lf)	Manhole Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 5					
Northeast Gobernadora (2012-18)					
Developer Costs					
8" Sewer	$ 72	21,808		$ 1,962,720	$ 2,453,400
Manholes	$ 6,000		79	$ 594,764	$ 743,455
Developer Subtotal		21,808	79	$ 2,557,484	$ 3,196,855
Northeast Gobernadora (2012-18)					
District Costs					
12" Sewer	$ 108	4,089		$ 552,015	$ 690,019
Manholes	$ 6,000		15	$ 111,518	$ 139,398
District Subtotal		4,089	15	$ 663,533	$ 829,416
ID 5					
Central Gobernadora (2010-17)					
Developer Costs					
8" Sewer	$ 72	65,424		$ 5,652,634	$ 7,065,792
Manholes	$ 6,000		238	$ 1,712,919	$ 2,141,149
Developer Subtotal		65,424	238	$ 7,365,553	$ 9,206,941
Central Gobernadora (2010-17)					
District Costs					
12"Sewer	$ 108	8,178		$ 1,059,869	$ 1,324,836
Manholes	$ 6,000		30	$ 214,115	$ 267,644
15" Sewer	$ 135	2,045		$ -	$ -
Manholes	$ 6,000		7	$ 53,529	$ 66,911
18" Sewer	$ 162	2,726		$ -	$ -
Manholes	$ 6,000		8	$ 56,078	$ 70,097
21" Sewer	$ 189	5,452		$ -	$ -
Manholes	$ 6,000		16	$ 112,155	$ 140,194
District Subtotal		18,401	61	$ 1,495,746	$ 1,869,682
ID 5					
East Ortega (2011 -2013)					
Developer Costs					
8" Sewer	$ 72	6,134		$ 552,015	$ 690,019
Manholes	$ 6,000		22	$ 167,277	$ 209,097
Developer Subtotal		6,134	22	$ 719,292	$ 899,115
East Ortega (2011 -2013)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
Total ID 5 - Developer		**93,366**	**340**	**$ 10,642,329**	**$ 13,302,911**
Total ID 5 - District		**22,490**	**75**	**$ 2,159,279**	**$ 2,699,098**

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Wastewater Sewers and Manholes

Water Pipeline/Appurtenances	Unit Cost	Sewer Quantity (lf)	Manhole Quantity (no)	Construct Cost [a]	Capital Cost [b]
ID 6					
Trampas Canyon (2016-19)					
Developer Costs					
8" Sewer	$ 72	72,921		$ 6,562,845	$ 8,203,556
Manholes	$ 6,000		265	$ 1,988,741	$ 2,485,926
Developer Subtotal		72,921	265	$ 8,551,586	$ 10,689,482
Trampas Canyon (2016-19)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
ID 6					
East Ortega (2011 -2013)					
Developer Costs					
8" Sewer	$ 72	8,860		$ 797,355	$ 996,694
Manholes	$ 6,000		32	$ 241,623	$ 302,028
Developer Subtotal		8,860		$ 1,038,978	$ 1,298,722
East Ortega (2011 -2013)					
District Costs					
12" Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
ID 6					
Cristianitos Meadows (2016-19)					
Developer Costs					
8" Sewer	$ 72	19,082		$ 1,717,380	$ 2,146,725
Manholes	$ 6,000		69	$ 520,418	$ 650,523
Developer Subtotal		19,082	69	$ 2,237,798	$ 2,797,248
Cristianitos Meadows (2016-19)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
ID 6					
Christianitos Canyon (2021-23)					
Developer Costs					
8" Sewer	$ 72	84,506		$ 7,605,540	$ 9,506,925
Manholes	$ 6,000		307	$ 2,304,709	$ 2,880,886
Developer Subtotal		84,506	307	$ 9,910,249	$ 12,387,811

Rancho Mission Viejo Company - Plans of Work for IDs 4C, 4E, 5, & 6
Estimated Costs for Wastewater Sewers and Manholes

Water Pipeline/Appurtenances	Unit Cost	Sewer Quantity (lf)	Manhole Quantity (no)	Construct Cost [(a)]	Capital Cost [(b)]
Christianitos Canyon (2021-23)					
District Costs					
12"Sewer	$ 108	7,497		$ 1,012,028	$ 1,265,034
Manholes	$ 6,000		27	$ 204,450	$ 255,563
District Subtotal		7,497	27	$ 1,216,478	$ 1,520,597
ID 6					
TRW (2018-20)					
Developer Costs					
8" Sewer	$ 72	82,000		$ 7,380,000	$ 9,225,000
Manholes	$ 6,000		298	$ 2,236,364	$ 2,795,455
Developer Subtotal		82,000	298	$ 9,616,364	$ 12,020,455
TRW (2018-20)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
ID 6					
Gabino Canyon (2011 - 2013)					
Developer Costs					
8" Sewer	$ 72	57,246		$ 5,152,140	$ 6,440,175
Manholes	$ 6,000		208	$ 1,561,255	$ 1,951,568
Developer Subtotal		57,246	208	$ 6,713,395	$ 8,391,743
Gabino Canyon (2011 - 2013)					
District Costs					
12"Sewer	$ 108			$ -	$ -
Manholes	$ 6,000			$ -	$ -
District Subtotal		-	-	$ -	$ -
Total ID 6 - Developer		**242,834**	**883**	**$ 28,477,805**	**$ 35,597,257**
Total ID 6- District		**7,497**	**27**	**$ 1,216,478**	**$ 1,520,597**
Grand Total - Developer		**434,593**	**1,580**	**$ 50,659,008**	**$ 63,323,760**
Grand Total - District		**29,986**	**103**	**$ 3,375,756**	**$ 4,219,695**

(a) Including a 25% construction contingency.
(b) Technical, legal and administrative costs equal to 25% of construction cost.

Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities by Year [a]

Pipeline/Facility	Construct Year	% of Total Cost[b]	Total Capital Cost[c]	Capital Cost by Year																	
				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
ID 4E																						
District-Paid Facilities																						
SCP Turnout No. 1 (Peak Week Supply)	2005	53%	$ 1,242,188	$ 1,242,188	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,242,188
Zone 1 Reservoir No. 1	2005	69%	$ 2,975,625	$ 2,975,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,975,625
DW Transmission Pipelines/Appurt.	2005	100%	$ 2,730,000	$ 2,730,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,730,000
Zone A Pump Station No. 1 (ADD)	2005	7%	$ 131,250	$ 131,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 131,250
Zone A Reservoir No. 1	2007	32%	$ 1,290,000	$ -	$ -	$ 1,290,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,290,000
NDW Transmission Pipelines/Appurt.	2005	100%	$ 1,872,500	$ 1,872,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,872,500
Ortega Gateway Lift Station No. 1 (PDWF)	2005	100%	$ 700,000	$ 700,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 700,000
Ortega Gateway Lift Station No. 2 (PDWF)	2005	100%	$ 781,250	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250
12" & Larger Sewers & Manholes	2005	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID4E - District Capital Cost		-	$ 11,722,813	$ 10,432,813	$ -	$ 1,290,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,722,813
Developer-Paid Facilities																						
DW Distribution Pipelines/Appurt.	2005-07	100%	$ 6,521,250	$ 2,173,750	$ 2,173,750	$ 2,173,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,521,250
NDW Distribution Pipelines/Appurt.	2005-07	100%	$ 3,436,250	$ 1,145,417	$ 1,145,417	$ 1,145,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,436,250
8" Sewers & Manholes	2005-07	100%	$ 6,303,750	$ 2,101,250	$ 2,101,250	$ 2,101,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,303,750
ID 4E - Developer Capital Cost		-	$ 16,261,250	$ 5,420,417	$ 5,420,417	$ 5,420,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,261,250
ID 4E - Total Cost		-	**$ 27,984,063**	**$ 15,853,229**	**$ 5,420,417**	**$ 6,710,417**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 27,984,063**
ID 4C																						
District-Paid Facilities																						
SCP Turnout No. 1 (Peak Week Supply)	2007	47%	$ 1,101,563	$ -	$ -	$ 1,101,563	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,101,563
Zone 2 Reservoir No. 1	2007	100%	$ 1,718,750	$ -	$ -	$ 1,718,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,718,750
Zone 1 Reservoir No. 1	2005	31%	$ 1,336,875	$ 1,336,875	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,336,875
DW Transmission Pipelines/Appurt.	2007	100%	$ 6,788,750	$ -	$ -	$ 6,788,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,788,750
Zone A Pump Station No. 1 (ADD)	2005	13%	$ 247,500	$ 247,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247,500
Zone B Reservoir No. 1	2007	100%	$ 3,281,250	$ -	$ -	$ 3,281,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,281,250
Zone B Pump Station No. 1 (MDD)	2007	100%	$ 1,562,500	$ -	$ -	$ 1,562,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,562,500
Zone A Reservoir No. 1	2005	68%	$ 2,741,250	$ 2,741,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,741,250
NDW Transmission Pipelines/Appurt. - LCB	2007	100%	$ 1,073,750	$ -	$ -	$ 1,073,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,073,750
NDW Trans. Pipelines/Appurt. - UC & LCA	2007	100%	$ 4,882,500	$ -	$ -	$ 4,882,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,882,500
Lower Chiquita B Lift Station (PDWF)	2007	100%	$ 781,250	$ -	$ -	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250
Lower Chiquita B LS Forcemain	2007	100%	$ 125,000	$ -	$ -	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 125,000
Gobernadora Lift Station (PDWF)	2007	8%	$ 312,500	$ -	$ -	$ 312,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 312,500
Gobernadora LS Forcemains	2007	8%	$ 204,800	$ -	$ -	$ 204,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 204,800
12" & Larger Sewers & Manholes	2007	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 4C - District Capital Cost	-	-	$ 26,158,238	$ 4,325,625	$ -	$ 21,832,613	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,158,238
Developer-Paid Facilities																						
DW Distribution Pipelines/Appurt. - LCB	2007 - 09	100%	$ 4,670,000	$ -	$ -	1,556,667	1,556,667	1,556,667	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,670,000
DW Distrib. Pipelines/Appurt. - UC & LCA	2009 - 11	100%	$ 1,964,500	$ -	$ -	$ -	$ -	$ 654,833	$ 654,833	$ 654,833	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,964,500
Distribution Pipelines/Appurtenances - LCB	2007 - 09	100%	$ 2,141,250	$ -	$ -	$ 713,750	$ 713,750	$ 713,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,141,250
Distribution Pipelines/Appurt. - UC & LCA	2009 - 11	100%	$ 2,191,250	$ -	$ -	$ -	$ -	$ 730,417	$ 730,417	$ 730,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,191,250
8" Sewers & Manholes - LCB	2007 - 09	100%	$ 4,031,250	$ -	$ -	$ 1,343,750	$ 1,343,750	$ 1,343,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,031,250
8" Sewers & Manholes - UC & LCA	2009 - 11	100%	$ 4,895,000	$ -	$ -	$ -	$ -	$ 1,631,667	$ 1,631,667	$ 1,631,667	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,895,000
ID 4C - Developer Capital Cost	-	-	$ 19,893,250	$ -	$ -	$ 3,614,167	$ 3,614,167	$ 6,631,083	$ 3,016,917	$ 3,016,917	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,893,250
ID 4C - Total Cost	-	-	**$ 46,051,488**	**$ 4,325,625**	$ -	**$ 25,446,779**	**$ 3,614,167**	**$ 6,631,083**	**$ 3,016,917**	**$ 3,016,917**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 46,051,488**
ID 5																						
District-Paid Facilities																						
SCP Turnout No. 2 (Peak Week Supply)	2009	92%	$ 2,156,250	$ -	$ -	$ -	$ -	$ 2,156,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,156,250
Zone 3 Reservoir No. 1 (Elevated 100'High)	2011	100%	$ 2,823,438	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,823,438	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,823,438
Zone 3 Pump Station No. 1	2011	100%	$ 718,750	$ -	$ -	$ -	$ -	$ -	$ -	$ 718,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 718,750
Zone 2 Reservoir No. 2	2010	100%	$ 5,015,625	$ -	$ -	$ -	$ -	$ -	$ 5,015,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,015,625
Zone 1 Reservoir No. 2	2009	98%	$ 4,898,475	$ -	$ -	$ -	$ -	$ 4,898,475	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,898,475
DW Transmission Pipelines/Appurt. - CG	2009	100%	$ 4,411,250	$ -	$ -	$ -	$ -	$ 4,411,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,411,250
DW Transmission Pipelines/Appurt. - EO	2010	100%	$ 665,000	$ -	$ -	$ -	$ -	$ -	$ 665,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 665,000
DW Transmission Pipelines/Appurt. - NEG	2010 - 17	100%	$ 4,786,250	$ -	$ -	$ -	$ -	$ -	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ 598,281	$ -	$ -	$ -	$ -	$ 4,786,250
Zone A Pump Station No. 1 (ADD)	2005	31%	$ 578,063	$ 578,063	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 578,063
Zone B Reservoir No. 2	2009	100%	$ 3,559,375	$ -	$ -	$ -	$ -	$ 3,559,375	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,559,375
Zone B Pump Station No. 2	2009	100%	$ 1,375,000	$ -	$ -	$ -	$ -	$ 1,375,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,375,000
Zone A Reservoir No. 2	2009	98%	$ 3,005,813	$ -	$ -	$ -	$ -	$ 3,005,813	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,005,813
NDW Transmission Pipelines/Appurt. - CG	2009 - 16	100%	$ 3,456,250	$ -	$ -	$ -	$ -	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ 432,031	$ -	$ -	$ -	$ -	$ -	$ 3,456,250
NDW Transmission Pipelines/Appurt. - EO	2010 - 12	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NDW Transmission Pipelines/Appurt. - NEG	2009 - 17	100%	$ 3,697,500	$ -	$ -	$ -	$ -	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ 410,833	$ -	$ -	$ -	$ -	$ 3,697,500
NE Gobernadora Lift Station (PDWF)	2011	100%	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250
NE Gobernadora LS Forcemain	2011	100%	$ 216,250	$ -	$ -	$ -	$ -	$ -	$ -	$ 216,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 216,250
Gobernadora Lift Station (PDWF)	2007	47%	$ 1,828,125	$ -	$ -	$ 1,828,125	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,828,125

Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities by Year [a]

Pipeline/Facility	Construct Year	% of Total Cost[b]	Total Capital Cost[c]	Capital Cost by Year																		
				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Gobernadora LS Forcemains	2007	47%	$ 1,198,080	$ -	$ -	$ 1,198,080	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,198,080
12" & Larger Sewers & Manholes -CG	2009 - 16	100%	$ 1,656,250	$ -	$ -	$ -	$ -	$ 207,031	$ 207,031	$ 207,031	$ 207,031	$ 207,031	$ 207,031	$ 207,031	$ 207,031	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,656,250
12" & Larger Sewers & Manholes - EO	2010 - 12	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12" & Larger Sewers & Manholes - NEG	2011 - 17	100%	$ 713,750	$ -	$ -	$ -	$ -	$ -	$ -	$ 101,964	$ 101,964	$ 101,964	$ 101,964	$ 101,964	$ 101,964	$ 101,964	$ -	$ -	$ -	$ -	$ -	$ 713,750
ID 5 - District Capital Costs	-	-	$ 47,540,743	$ 578,063	$ -	$ 3,026,205	$ -	$ 20,456,058	$ 7,328,802	$ 6,289,829	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,750,141	$ 1,111,079	$ -	$ -	$ -	$ -	$ -	$ 47,540,743
Developer-Paid Facilities																						
DW Distribution Pipelines/Appurt. - CG	2009 - 16	100%	$ 12,565,000	$ -	$ -	$ -	$ -	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ 1,570,625	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,565,000
DW Distribution Pipelines/Appurt. - EO	2012 - 14	100%	$ 783,125	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 261,042	$ 261,042	$ 261,042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 783,125
DW Distribution Pipelines/Appurt. - NEG	2011 - 17	100%	$ 13,516,250	$ -	$ -	$ -	$ -	$ -	$ 4,505,417	$ 4,505,417	$ 4,505,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,516,250
NDW Distribution Pipelines/Appurt. - CG	2009 - 16	100%	$ 5,025,000	$ -	$ -	$ -	$ -	$ 628,125	$ 628,125	$ 628,125	$ 628,125	$ 628,125	$ 628,125	$ 628,125	$ 628,125	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,025,000
NDW Distribution Pipelines/Appurt. - EO	2010 - 12	100%	$ 603,750	$ -	$ -	$ -	$ -	$ -	$ 201,250	$ 201,250	$ 201,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 603,750
NDW Distribution Pipelines/Appurt. - NEG	2011 - 17	100%	$ 4,661,250	$ -	$ -	$ -	$ -	$ -	$ -	$ 665,893	$ 665,893	$ 665,893	$ 665,893	$ 665,893	$ 665,893	$ 665,893	$ -	$ -	$ -	$ -	$ -	$ 4,661,250
8" Sewers & Manholes - CG	2009 - 16	100%	$ 8,626,250	$ -	$ -	$ -	$ -	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ 1,078,281	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,626,250
8" Sewers & Manholes - EO	2010 - 12	100%	$ 830,000	$ -	$ -	$ -	$ -	$ -	$ 276,667	$ 276,667	$ 276,667	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 830,000
8" Sewers & Manholes - NEG	2011 - 17	100%	$ 4,048,750	$ -	$ -	$ -	$ -	$ -	$ -	$ 578,393	$ 578,393	$ 578,393	$ 578,393	$ 578,393	$ 578,393	$ 578,393	$ -	$ -	$ -	$ -	$ -	$ 4,048,750
ID 5 - Developer Capital Cost	-	-	$ 50,659,375	$ -	$ -	$ -	$ -	$ 3,277,031	$ 8,260,365	$ 9,504,650	$ 9,765,692	$ 4,782,359	$ 4,782,359	$ 4,521,317	$ 4,521,317	$ 1,244,286	$ -	$ -	$ -	$ -	$ -	$ 50,659,375
ID 5 - Total Cost	-	-	**$ 98,200,118**	**$ 578,063**	**$ -**	**$ 3,026,205**	**$ -**	**$ 23,733,090**	**$ 15,589,167**	**$ 15,794,479**	**$ 11,515,833**	**$ 6,532,500**	**$ 6,532,500**	**$ 6,271,458**	**$ 6,271,458**	**$ 2,355,365**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 98,200,118**
ID 6																						
District-Paid Facilities																						
SCP Turnout No. 2 (Peak Week Supply)	2009	8%	$ 187,500	$ -	$ -	$ -	$ -	$ 187,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 187,500
SCP Turnout No. 3 (Peak Week Supply)	2015	100%	$ 2,343,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,343,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,343,750
SCP Turnout No. 4 (Peak Week Supply)	2017	100%	$ 2,343,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,343,750	$ -	$ -	$ -	$ -	$ -	$ 2,343,750
Zone 4 Reservoir No. 1 (Elevated 100' High)	2015	100%	$ 2,295,313	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,295,313	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,295,313
Zone 4 Pump Station No. 1	2015	100%	$ 687,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 687,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 687,500
Zone 3 Reservoir No. 2	2015	100%	$ 2,167,188	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,167,188	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,167,188
Zone 3 Pump Station No. 2	2015	100%	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250
Zone 2 Reservoir No. 3	2015	100%	$ 3,386,719	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,386,719	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,386,719
Zone 4 Reservoir No. 2 (Elevated 130' High)	2020	100%	$ 1,968,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,968,750	$ -	$ -	$ 1,968,750
Zone 4 Pump Station No. 2	2020	100%	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750	$ -	$ -	$ 593,750
Zone 3 Reservoir No. 3	2020	100%	$ 3,178,125	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,178,125	$ -	$ -	$ 3,178,125
Zone 3 Pump Station No. 3	2020	100%	$ 750,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 750,000	$ -	$ -	$ 750,000
Zone 2 Reservoir No. 4	2020	100%	$ 2,538,281	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,538,281	$ -	$ -	$ 2,538,281
Zone 4 Reservoir No. 3 (Elevated 100' High)	2017	100%	$ 1,137,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,137,500	$ -	$ -	$ -	$ -	$ -	$ 1,137,500
Zone 4 Pump Station No. 3	2017	100%	$ 375,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 375,000	$ -	$ -	$ -	$ -	$ -	$ 375,000
Zone 3 Reservoir No. 4	2017	100%	$ 1,515,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,515,625	$ -	$ -	$ -	$ -	$ -	$ 1,515,625
Zone 3 Pump Station No. 4	2017	100%	$ 687,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 687,500	$ -	$ -	$ -	$ -	$ -	$ 687,500
Zone 2 Reservoir No. 5	2017	100%	$ 6,031,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,031,250	$ -	$ -	$ -	$ -	$ -	$ 6,031,250
Zone 4 Reservoir No. 4	2015	100%	$ 1,340,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,340,625	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,340,625
Zone 4 Pump Station No. 4 Capacity	2015	100%	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750
Zone 3 Reservoir No. 5 Capacity	2015	100%	$ 1,006,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,006,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,006,250
Zone 3 Pump Station No. 5 Capacity	2015	100%	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750
DW Transmission Pipelines/Appurt. - EO	2010 - 12	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DW Transmission Pipelines/Appurt. - TC, CM	2015 - 18	100%	$ 3,347,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 836,875	$ 836,875	$ 836,875	$ 836,875	$ -	$ -	$ -	$ -	$ 3,347,500
DW Transmission Pipelines/Appurt. - GC	2010 - 12	100%	$ 398,750	$ -	$ -	$ -	$ -	$ -	$ 132,917	$ 132,917	$ 132,917	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 398,750
DW Transmission Pipelines/Appurt. - TRW	2017 - 19	100%	$ 1,723,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 574,583	$ 574,583	$ 574,583	$ -	$ -	$ -	$ 1,723,750
DW Transmission Pipelines/Appurt. - CC	2020 - 22	100%	$ 2,686,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 895,417	$ 895,417	$ 895,417	$ 2,686,250
Zone A Pump Station No. 1 (ADD)	2005	50%	$ 937,500	$ 937,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 937,500
Zone A Pump Station No. 2 (ADD)	2015	50%	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250
Zone B Reservoir No. 3	2015	100%	$ 3,164,063	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,164,063	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,164,063
Zone B Pump Station No. 3	2015	100%	$ 812,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 812,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 812,500
Zone A Reservoir No. 3	2015	100%	$ 3,339,844	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,339,844	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,339,844
Zone B Reservoir No. 4	2020	100%	$ 3,398,438	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,398,438	$ -	$ -	$ 3,398,438
Zone B Pump Station No. 4	2020	100%	$ 837,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 837,500	$ -	$ -	$ 837,500
Zone A Reservoir No. 4	2020	100%	$ 1,562,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,562,500	$ -	$ -	$ 1,562,500
Zone C Reservoir No. 1	2017	100%	$ 1,289,063	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,289,063	$ -	$ -	$ -	$ -	$ -	$ 1,289,063
Zone C Pump Station No. 1	2017	100%	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 593,750	$ -	$ -	$ -	$ -	$ -	$ 593,750
Zone B Reservoir No. 5	2017	100%	$ 2,953,125	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,953,125	$ -	$ -	$ -	$ -	$ -	$ 2,953,125
Zone B Pump Station No. 4	2017	100%	$ 1,875,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,875,000	$ -	$ -	$ -	$ -	$ -	$ 1,875,000
NDW Transmission Pipelines/Appurt. - EO	2010 - 12	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NDW Transmission Pipelines/Appurt. - TC, CM	2015 - 18	100%	$ 3,932,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 983,125	$ 983,125	$ 983,125	$ 983,125	$ -	$ -	$ -	$ -	$ 3,932,500
NDW Transmission Pipelines/Appurt. - GC	2010 - 12	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NDW Transmission Pipelines/Appurt. - TRW	2017 - 19	100%	$ 2,037,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 679,167	$ 679,167	$ 679,167	$ -	$ -	$ -	$ 2,037,500
NDW Transmission Pipelines/Appurt. - CC	2020 - 22	100%	$ 3,228,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,076,250	$ 1,076,250	$ 1,076,250	$ 3,228,750
Gobernadora Lift Station (PDWF)	2009	45%	$ 1,757,813	$ -	$ -	$ -	$ -	$ 1,757,813	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,757,813
Gobernadora LS Forcemains	2009	45%	$ 1,152,000	$ -	$ -	$ -	$ -	$ 1,152,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,152,000
Southern ID 6 LS No. 1	2017	100%	$ 3,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500,000	$ -	$ -	$ -	$ -	$ -	$ 3,500,000
Southern ID 6 LS No. 1 Forcemains	2017	100%	$ 560,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 560,000	$ -	$ -	$ -	$ -	$ -	$ 560,000
Southern ID 6 LS No. 2 - Expand Talega LS 1	2017	100%	$ 2,250,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,250,000	$ -	$ -	$ -	$ -	$ -	$ 2,250,000
Southern ID 6 LS No. 3 - Expand Talega LS 2	2015	100%	$ 1,875,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,875,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,875,000
Southern ID 6 LS No. 3 Forcemains	2015	100%	$ 285,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 285,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 285,000
Gabino Canyon Package Treatment Plant	2010	100%	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ 781,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 781,250

Capital Cost Estimates for Domestic Water, Non-Domestic Water & Wastewater Facilities by Year [a]

Pipeline/Facility	Construct Year	% of Total Cost[b]	Total Capital Cost[c]	Capital Cost by Year																	
				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
12" & Larger Sewers & Manholes -TC, CM	2015 - 18	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12" & Larger Sewers & Manholes -TRW	2011 - 18	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12" & Larger Sewers & Manholes - CC	2020 - 22	100%	$ 1,520,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 506,667	$ 506,667	$ 506,667	$ 1,520,000
12" & Larger Sewers & Manholes - EO, GC	2011 - 13	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
ID 6 - District Capital Costs	-	-	$ 89,083,719	$ 937,500	$ -	$ -	$ -	$ 3,097,313	$ 914,167	$ 132,917	$ 132,917	$ -	$ -	$ 27,273,750	$ 1,820,000	$ 28,185,313	$ 3,073,750	$ 1,253,750	$ 17,305,677	$ 2,478,333	$ 2,478,333	$ 89,083,719
Developer-Paid Facilities																						
DW Distribution Pipelines/Appurt. - EO	2010 - 12	100%	$ 1,320,000	$ -	$ -	$ -	$ -	$ -	$ 440,000	$ 440,000	$ 440,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,320,000
DW Distribution Pipelines/Appurt. - TC, CM	2015 - 18	100%	$ 14,291,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,572,813	$ 3,572,813	$ 3,572,813	$ 3,572,813	$ -	$ -	$ -	$ -	$ 14,291,250
DW Distribution Pipelines/Appurt. - GC	2010 - 12	100%	$ 11,076,250	$ -	$ -	$ -	$ -	$ -	$ 3,692,083	$ 3,692,083	$ 3,692,083	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,076,250
DW Distribution Pipelines/Appurt. - TRW	2017 - 19	100%	$ 14,232,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,744,167	$ 4,744,167	$ 4,744,167	$ -	$ -	$ -	$ 14,232,500
DW Distribution Pipelines/Appurt. - CC	2020 - 22	100%	$ 17,572,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,857,500	$ 5,857,500	$ 5,857,500	$ 17,572,500
NDW Distribution Pipelines/Appurt. - EO	2010 - 12	100%	$ 740,000	$ -	$ -	$ -	$ -	$ -	$ 246,667	$ 246,667	$ 246,667	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 740,000
NDW Distribution Pipelines/Appurt. - TC, CM	2015 - 18	100%	$ 4,172,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,043,125	$ 1,043,125	$ 1,043,125	$ 1,043,125	$ -	$ -	$ -	$ -	$ 4,172,500
NDW Distribution Pipelines/Appurt. - GC	2010 - 12	100%	$ 92,500	$ -	$ -	$ -	$ -	$ -	$ 30,833	$ 30,833	$ 30,833	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 92,500
NDW Distribution Pipelines/Appurt. - TRW	2017 - 19	100%	$ 4,152,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,384,167	$ 1,384,167	$ 1,384,167	$ -	$ -	$ -	$ 4,152,500
NDW Distribution Pipelines/Appurt. - CC	2020 - 22	100%	$ 3,628,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,209,583	$ 1,209,583	$ 1,209,583	$ 3,628,750
8" Sewers & Manholes - TC, CM	2015 - 18	100%	$ 13,486,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,371,563	$ 3,371,563	$ 3,371,563	$ 3,371,563	$ -	$ -	$ -	$ -	$ 13,486,250
8" Sewers & Manholes - TRW	2011 - 18	100%	$ 12,020,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ 1,502,500	$ -	$ -	$ -	$ -	$ 12,020,000
8" Sewers & Manholes - CC	2020 - 22	100%	$ 12,387,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,129,167	$ 4,129,167	$ 4,129,167	$ 12,387,500
8" Sewers & Manholes - EO, GC	2011 - 13	100%	$ 9,690,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,230,000	$ 3,230,000	$ 3,230,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,690,000
ID 6 - Developer Capital Cost	-	-	$ 118,862,500	$ -	$ -	$ -	$ -	$ -	$ 4,409,583	$ 9,142,083	$ 9,142,083	$ 4,732,500	$ 1,502,500	$ 9,490,000	$ 9,490,000	$ 15,618,333	$ 15,618,333	$ 6,128,333	$ 11,196,250	$ 11,196,250	$ 11,196,250	$ 118,862,500
ID 6 - Total Cost	-	-	**$ 207,946,219**	**$ 937,500**	**$ -**	**$ -**	**$ -**	**$ 3,097,313**	**$ 5,323,750**	**$ 9,275,000**	**$ 9,275,000**	**$ 4,732,500**	**$ 1,502,500**	**$ 36,763,750**	**$ 11,310,000**	**$ 43,803,646**	**$ 18,692,083**	**$ 7,382,083**	**$ 28,501,927**	**$ 13,674,583**	**$ 13,674,583**	**$ 207,946,219**
Grand Total - District Capital Cost	-	-	**$ 174,505,511**	**$ 16,274,000**	**$ -**	**$ 26,148,818**	**$ -**	**$ 23,553,371**	**$ 8,242,969**	**$ 6,422,746**	**$ 1,883,058**	**$ 1,750,141**	**$ 1,750,141**	**$ 29,023,891**	**$ 3,570,141**	**$ 29,296,391**	**$ 3,073,750**	**$ 1,253,750**	**$ 17,305,677**	**$ 2,478,333**	**$ 2,478,333**	**$ 174,505,511**
Grand Total - Developer Capital Cost	-	-	**$ 205,676,375**	**$ 5,420,417**	**$ 5,420,417**	**$ 9,034,583**	**$ 3,614,167**	**$ 9,908,115**	**$ 15,686,865**	**$ 21,663,650**	**$ 18,907,775**	**$ 9,514,859**	**$ 6,284,859**	**$ 14,011,317**	**$ 14,011,317**	**$ 16,862,619**	**$ 15,618,333**	**$ 6,128,333**	**$ 11,196,250**	**$ 11,196,250**	**$ 11,196,250**	**$ 205,676,375**
Grand Total - Total Capital Cost	-	-	**$ 380,181,886**	**$ 21,694,417**	**$ 5,420,417**	**$ 35,183,401**	**$ 3,614,167**	**$ 33,461,485**	**$ 23,929,833**	**$ 28,086,396**	**$ 20,790,833**	**$ 11,265,000**	**$ 8,035,000**	**$ 43,035,208**	**$ 17,581,458**	**$ 46,159,010**	**$ 18,692,083**	**$ 7,382,083**	**$ 28,501,927**	**$ 13,674,583**	**$ 13,674,583**	**$ 380,181,886**

(a) All costs are in year 2003 dollars, i.e. no inflation escalation and no consideration of project financing.
(b) Percentage of construction cost allocated to ID based on percentage of use/demand relative to other IDs that will use the facility.
(c) Technical, legal and administrative costs estimated at 25% of construction cost (construction includes 25% contingency).