

## 10. Capital Improvement Plan

This chapter describes the methodology used in developing Anacortes' water system Capital Improvement Plan (CIP).

### 10.1. Development of CIP

The CIP was developed from the following two elements:

- **WSP System Analysis:** As described in Section 6, Anacortes' source, storage, and distribution facilities were analyzed as to whether they have sufficient capacity to meet current and future demands. When deficiencies were identified, HDR worked and consulted with Anacortes staff to develop projects to rectify the deficiencies.
- **Anacortes CIP:** Anacortes staff had previously identified several projects, which were included in the Anacortes Capital Improvement Plan from the *2010 Revenue Requirements Analysis & Retail Rate Review*. Any recurring or annual capital projects related to system maintenance (e.g., water main replacement programs) are included in this list.

### 10.2. CIP Projects Identified by System Analysis

The CIP projects identified through the system analysis work for the 20-year planning horizon are summarized in Table 10-1 and the locations are shown on Figure 10-1. These projects include approximately \$5.0 million in improvements (in 2010 dollars).

The majority of the projects were developed to address inadequate fire flows, with other projects to remedy low pressures. The projects include upsizing small diameter pipes, building new pipes to loop the existing system, upgrading piping material, relocating services, adjusting pressure zones, and creating a new pressure zone.

Descriptions of each project are as follows.

- **P-1:** This project is located at the Fidalgo Bay Estates Pump Station. The project will add a fire pump and adjust the pressure zone boundary to include services in the Fidalgo Bay Estates pressure zone.
- **P-2:** This project is located on Haddon Road, Saint Mary's Drive, and R Avenue near the 3-MG Reservoir. The project includes the addition of a booster pump station to create a new pressure zone for services on these roads since they are the highest in the High Zone and have low pressures during a fire flow.
- **P-3:** This project is located at the 3-MG Pump Station. The project involves upgrading the pump station to improve the operability of the Skyline Reservoir during periods of high demand as well as provide adequate source for the Anacortes system. The project was studied by HDR and by Anacortes staff and this is the long term solution to better utilizing the Skyline Reservoir.

- **D-1:** This project is located west of the intersection of Cabana Lane and Skyline Way. The project will replace existing 6-inch pipe with 12-inch pipe to the first hydrant and with 8-inch pipe to the other two hydrants.
- **D-2:** This project is located north of the intersection of Twin Place and Devonshire Drive. The project will replace existing 6-inch pipe with 8-inch pipe.
- **D-3:** This project is located on Sterling Drive near Bradley Drive. The project will adjust the pressure zone boundary of the High Zone to include hydrants with low available fire flow on Sterling Drive and Heather Drive.
- **D-4:** This project is located on 28th Street west of M Avenue. The project will replace existing 4-inch pipe with 8-inch pipe to hydrant and to a 6-inch pipe after the hydrant.
- **D-5:** This project is located in the Pointe Pressure Zone. The project will replace existing plastic pipe with new ductile iron pipe and adjust the pressure zone boundary to include highest services of the High Zone into the Pointe Zone. It should be noted that a detailed analysis of the existing pump station should be conducted prior to any detailed design due to potential pressure deficiencies on the suction side of the pumps during fire flows in the High Zone.
- **D-6:** This project is located on Oakes Avenue from Glasgow Way (PRV-10) to Ferry Terminal Road. The project will replace existing 8-inch pipe with 12-inch pipe.
- **D-7:** This project is located on 6<sup>th</sup> Street, T Avenue, 4<sup>th</sup> Street and R Avenue. The project will construct new 12-inch pipe from intersection of 6th Street and R Avenue east to 6th Street and Rotary/T Ave, North along Rotary/T Avenue to Rotary/T Avenue and 4th Street and west to 4th Street and Commercial Avenue to connect into an existing 12-inch pipe. The project will also complete a 6-inch loop on R Avenue between 4th Street and 3rd Street.
- **D-8:** This project is located at Commercial Avenue and 13th Street. The project will construct new 6-inch pipe from intersection of Commercial Avenue and 13th Street east to an existing 12-inch pipe.
- **D-9:** This project is located South of and parallel to 30th Street from V Place to W Avenue. The project will replace existing 6-inch pipe with 8-inch pipe.
- **D-10:** This project is located on Whistle Lake Road/Terrace from the 3-MG Reservoir to Fidalgo Bay Estates. The project will construct new 8-inch pipe in the High Zone and relocate existing services from the existing 20-inch transmission line to the 8-inch distribution line to eliminate low pressures.
- **D-11:** This project is located North of the intersection of Q Avenue and 3rd Street. The project will replace existing 6-inch pipe with 8-inch pipe.
- **D-12:** This project is located on 7th Street and W Avenue. The project will replace existing 6-inch pipe with 8-inch pipe.

- **D-13:** This project is located south of 37<sup>th</sup> Street and D Avenue. The project will replace existing 6-inch pipe with 8-inch pipe.

After the CIP projects are developed, they are typically scheduled over the 20-year planning period. Projects of higher priority (i.e., those that address current system needs) are typically scheduled for implementation within the six-year planning horizon (2010-2015). Projects less critical to system operation are typically scheduled for implementation between the six-year and 20-year planning horizons (2016 and 2029). For this water system plan, Anacortes has contracted with a separate financial consulting firm to develop the scheduling of the CIP projects to be integrated with other on-going financial obligations. Therefore, the projects developed through the system analysis work are not presented with a schedule within this sub-section.

Planning-level (AACE<sup>2</sup> Class 4) cost estimates have been developed for each capital project identified through system analysis. Generally, each project cost includes the following components:

- **Base construction cost:** Includes all labor and material costs needed to construct a project. For pipeline and valving projects, construction costs were estimated based on unit construction costs derived from similar water pipeline projects in Western Washington from approximately 2006 to 2008. Due to a slowing economy and high competition from contractors, recent bids for utility construction projects in Western Washington have been far below the Engineer's cost estimate. Anacortes did not want to under-estimate the costs of future project and elected not to use those recent unit prices to calculate the base construction cost for the CIP projects.
- **Sales tax:** Calculated as 8.2 percent (the 2010 local tax rate) of the base construction cost.
- **Construction contingency:** Takes into account the uncertainties associated with estimating project costs at this planning level. Calculated as 20 percent of the sum of the base construction and sales tax.
- **Design engineering/geotechnical/surveying/permitting/construction administration:** Includes Anacortes and consultant design costs, and other related cost items, such as geotechnical engineering, surveying, permitting and construction administration. Calculated as 25 percent of the sum of the base construction cost, sales tax, and construction contingency.

These four components are summed to determine the total project-level cost estimate for a project, as expressed in 2010 dollars. Since the scheduling of the system analysis identified CIP projects was determined separately, the costs in this sub-section do not include any factors for inflation or for the increase of construction costs over time.

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<sup>2</sup> Association for the Advancement of Cost Engineering.

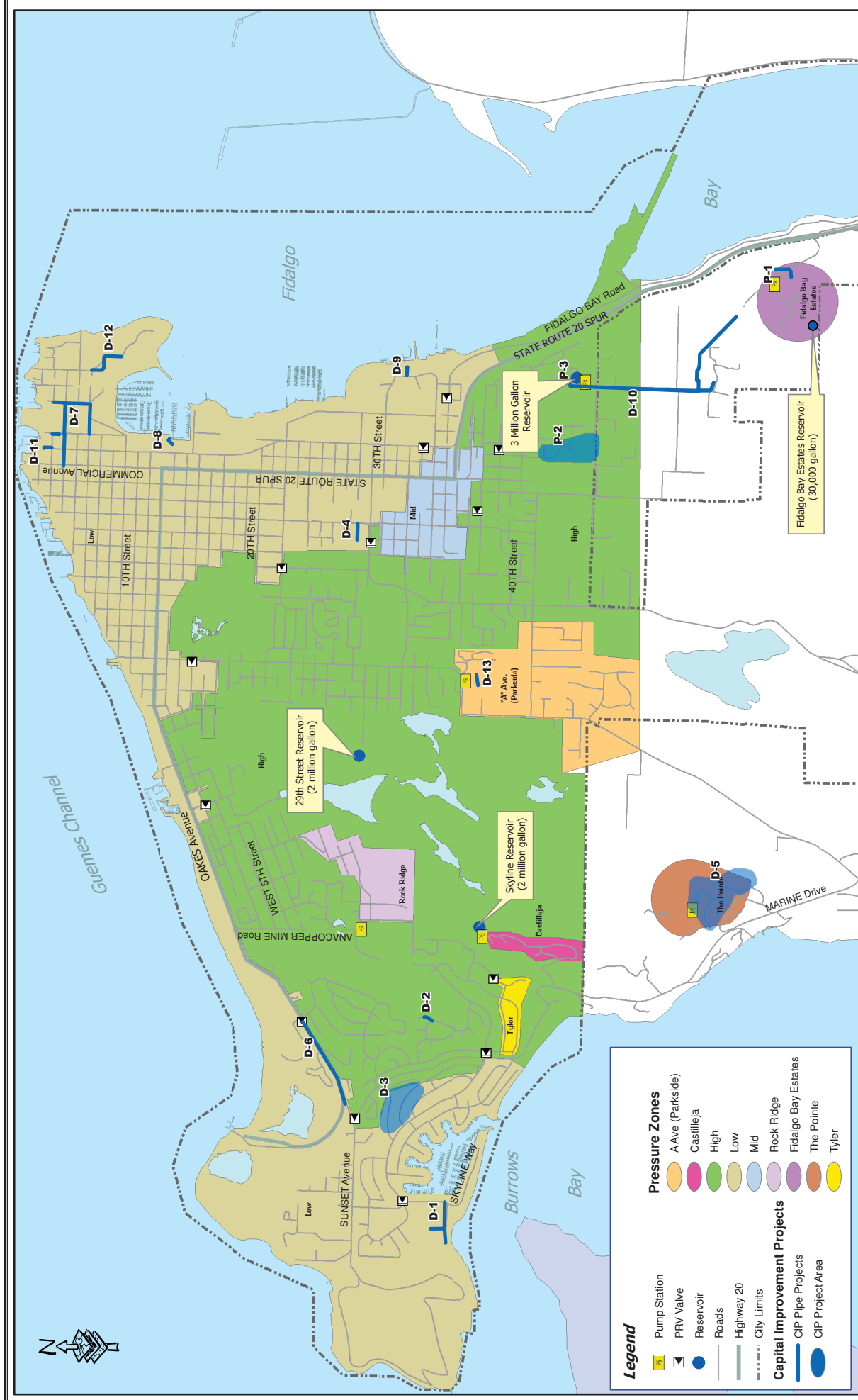
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Table 10-1 CIP Projects Identified by System Analysis

PROJECT NUMBER	DESCRIPTION	EXISTING DIAMETER (Inch)	NEW DIAMETER (Inch)	TOTAL LENGTH (LF)	JUSTIFICATION	BASE PROJECT COST 1
<b>Water Booster Pump Stations</b>						
P-1	Fidalgo Bay Zone - Add fire pump and adjust the pressure zone boundary to include services in the Fidalgo Bay Estates pressure zone.		6	532	Fire Flow	\$344,000
P-2	Haddon Road, Saint Mary's Drive, and R Avenue near the 3 MG Reservoir. Create a new pressure zone for services on these roads as they are the highest in the High Zone and have low pressures during a fire flow.				Low Pressure, Low FF	\$325,000
P-3	Upgrade 3MG Pump Station				Skyline Reservoir	\$573,000
<b>Water Distribution System</b>						
D-1	West of the intersection of Cabana Lane and Skyline Way. Replace existing 6 inch pipe with 12 inch to the first hydrant and with 8 inch to the other two hydrants.	6	12	347	Fire Flow	\$267,000
D-2	North of the intersection of Twin Place and Devonshire Drive. Replace existing 6 inch pipe with 8 inch.	6	8	972	Fire Flow	\$57,000
D-3	Sterling Drive near Bradley Drive. Adjust zone boundary of the High Zone to include hydrants with low available fire flow on Sterling Drive and Heather Drive.	6	8	222	Fire Flow	
D-4	28th Street west of M Avenue. Replace existing 4 inch pipe with 8 inch to hydrant and to a 6 inch after the hydrant	4	6	138	Fire Flow	\$74,000
		4	8	246		
		12	12	2,128		
D-5	The Pointe Pressure Zone. Replace existing plastic pipe with new DI pipe and adjust zone boundary to include highest services of the High Zone into the Pointe Zone.	8	8	1,592	Fire Flow	\$905,000
			8	1,100		
D-6	Oakes Avenue from Glasgow Way (PRV-10) to Ferry Terminal Road. Replace existing 8 inch pipe with 12 inch.	8	12	2,345	Fire Flow	\$350,000
D-7	Construct new 12 inch pipe from intersection of 6th Street and R Avenue east to 6th Street and Rotary/T Ave. north along Rotary/T Avenue to Rotary/T Avenue and 4th Street and west to 4th Street and Commercial Avenue to connect into an existing 12 inch diameter pipe. In addition complete 6 inch loop on "R" Avenue between 4th Street and 3rd Street.		12	721		
			12	595	Fire Flow	\$432,000
			12	1,509		
			6	170		
D-8	Construct new 6 inch pipe from intersection of Commercial Avenue and 13th Street east to an existing 12-inch-diameter pipe.		6	181	Fire Flow	\$28,000
D-9	South of and parallel to 30th Street from V Place to W Avenue. Replace existing 6 inch pipe with 8 inch.	6	8	211	Fire Flow	\$55,000
D-10	Whistle Lake Road/Terrace from 3 MG Reservoir to Fidalgo Bay Estates. Construct new 8 inch pipe in the High Zone and relocate existing services from the existing 20 inch transmission line to the 8 inch distribution line to eliminate low pressures.		8	5,840	Low Pressure	\$1,271,000
D-11	North of the intersection of Q Avenue and 3rd Street. Replace existing 6 inch pipe with 8 inch.	6	8	206	Fire Flow	\$54,000
D-12	7th Street and W Avenue. Replace existing 6 inch pipe with 8 inch.	6	8	1,008	Fire Flow	\$232,000
D-13	South of 37th Street and D Avenue. Replace existing 6 inch pipe with 8 inch.	6	8	259	Fire Flow	\$64,000
<b>PROJECT TOTALS</b>				<b>20,323</b>		<b>\$5,031,000</b>

1. Base Project Cost includes: construction costs (materials and labor), sales tax (8.2% of construction), construction contingency (20% of construction + sales tax), and design engineering/geotechnical/surveying/permitting/administration (25% of construction + sales tax + contingency)

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**Figure 10-1 - Location of CIP Projects Identified by System Analysis**

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### 10.3.CIP Projects Identified by Anacortes CIP

The CIP projects identified by the Anacortes CIP (from the *2010 Revenue Requirements Analysis & Retail Rate Review*) are summarized in Table 10-2. These projects are related to: 1) retail system improvements to improve aging infrastructure, 2) regional projects that affect the entire system, and 3) a project directly related to the Oak Harbor portion of the regional system. The cost of these projects is approximately \$5.9 million according to information provided to HDR by Anacortes.

The projects costs for the Anacortes CIP projects were not developed as part of this water system plan, but were simply provided to HDR by Anacortes for inclusion into this chapter. The method of estimation, contingency percentage and consultant design costs were developed by Anacortes.

**Table 10-2 CIP Projects Identified by Anacortes CIP**

PROJECT ID	DESCRIPTION	2011	2012	2013	2014	2015	2016
W-105	Pipeline Replacements	\$200,000	\$210,000	\$221,000	\$232,000	\$244,000	\$256,000
W-600	Water Comp Plan Update	\$10,000					\$150,000
W-610	Skagit County Coordinated Water Plan			\$100,000	\$100,000		
WD-309	Relocate 16" Asbestos Waterline				\$350,000		
WD-314	Water Storage Tank						
WD-410	Water Volume Increase to 2 & 3M Water Tanks			\$338,000	\$338,000	\$338,000	
WD-402	Reline 1950's 36" Water Line			\$50,000	\$700,000		
WD-701	PRV Rebuilds	\$30,000					\$30,000
WD-710	Pass Lake 10" Water Line				\$100,000	\$900,000	
WD-711	Sharpes Corner 36" Relocation				\$150,000	\$150,000	
WTP-710	Intake Traveling Water Screen		\$185,000				
WTP-711	Intake Eductor		\$25,000	\$50,000			
WTP-712	Reservoir Internal Maintenance		\$100,000	\$100,000	\$100,000		
WTP-713	3 MG BSP Rebuild			\$50,000			
WTP-714	Intake Painting		\$35,000				
WTP-715	Intake Wash Water Pump Replacement		\$35,000				
WTP-716	Lab Information System			\$20,000			
	<b>PROJECT TOTALS</b>	<b>\$240,000</b>	<b>\$590,000</b>	<b>\$929,000</b>	<b>\$2,070,000</b>	<b>\$1,632,000</b>	<b>\$436,000</b>

Notes:

1. Projects were taken from *City of Anacortes 2010 Revenue Requirements Analysis & Retail Rate Review*.

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## 10.4. Official CIP for 2011-2016

The official CIP for this water system plan is provided in Table 10-3. The projects in Table 10-3 include all of the projects from Table 10-2 CIP Projects Identified by Anacortes CIP and many of the projects from Table 10-1 CIP Projects Identified by System Analysis. Not all of the projects identified by the system analysis are included in Table 10-3 due to funding limitations.

There are many factors that affect the timing and prioritization of projects. Projects that replace existing failing facilities, primarily waterlines, tend to receive the highest priority. The next priority is typically projects that improve flow by completing looping or increasing pipe size since these improve both fire flow and water quality. Water projects that are associated with other projects, such as street improvements, may take priority, depending upon the circumstances. The availability of funding may also dictate which projects are implemented. For example, if funds are limited, it may be more desirable to complete all of a smaller project rather than part of a larger project. Conversely, if more funds are available, it may be more desirable to complete a large project verses completing a collection of smaller projects.

**Table 10-3 Capital Improvements (2011-2016)**

CAPITAL COSTS (NOT INCLUDING WTP)	PROJECT ID <sup>1</sup>	2011	2012	2013	2014	2015	2016
<b>RETAIL CAPITAL IMPROVEMENTS</b>							
Pipeline Replacements	W-105 <sup>2</sup>	\$200,000	\$210,000	\$221,000	\$232,000	\$244,000	\$256,000
Relocate 16" Asbestos Waterline	WD-309	-	-	-	\$350,000	-	-
Water Storage Tank	n/a	-	-	-	-	-	-
Water Volume Increase to 2 and 3 M Water Tanks	WD-410 <sup>3</sup>	-	-	\$338,000	\$338,000	\$338,000	-
PRV Rebuilds	WD-701	\$30,000	-	-	-	-	\$30,000
Sharpes Corner 36" Relocation	WD-711	-	-	-	\$150,000	\$150,000	-
Reservoir Internal Maintenance	WTP-712	-	\$100,000	\$100,000	\$100,000	-	-
3 MG BSP Rebuild	WTP-713	-	-	\$50,000	-	-	-
<b>Subtotal</b>		<b>\$230,000</b>	<b>\$310,000</b>	<b>\$709,000</b>	<b>\$1,170,000</b>	<b>\$732,000</b>	<b>\$286,000</b>
<b>REGIONAL AREA CAPITAL IMPROVEMENTS</b>							
Water Comp Plan Update	W-600	\$10,000	-	-	-	-	\$150,000
Skagit County Coordinated Water Plan	W-610	-	-	\$100,000	\$100,000	-	-
Reline 1950's 36" Waterline	WD-402	-	-	\$50,000	\$700,000	-	-
Intake Traveling Water Screen	WD-710	-	\$185,000	-	-	-	-
Intake Eductor	WTP-711	-	\$25,000	\$50,000	-	-	-
Intake Painting	WTP-714	-	\$35,000	-	-	-	-
Intake Wash Water Pump Replacement	WTP-715	-	\$35,000	-	-	-	-
Lab Information System	WTP-716	-	-	\$20,000	-	-	-
<b>Subtotal</b>		<b>\$10,000</b>	<b>\$280,000</b>	<b>\$220,000</b>	<b>\$800,000</b>	<b>-</b>	<b>\$150,000</b>
<b>OAK HARBOR AREA CAPITAL IMPROVEMENTS</b>							
Pass Lake 10" Water Line	WD-710	-	-	-	\$100,000	\$900,000	-
<b>TOTAL</b>		<b>\$240,000</b>	<b>\$590,000</b>	<b>\$929,000</b>	<b>\$2,070,000</b>	<b>\$1,632,000</b>	<b>\$436,000</b>

1. Corresponds to Table 10-2 CIP Projects Identified by Anacortes CIP.
2. The line item "W-105 Pipeline Replacements" in Table 10-2 CIP Projects Identified by Anacortes CIP represents a subset of the Water Distribution Projects (Project IDs D-1 to D-13) in Table 10-1 CIP Projects Identified by System Analysis. The budget for pipeline replacements in Table 10-3 allows for funding of 36% of the total cost of the pipeline replacements from Table 10-1.
3. Project WD-410 is one component of the broader Water Volume Increase to 2 and 3 M Water Tanks project. Therefore, the dollars in this table are larger than those in Table 10-2.