4.0 IMPROVEMENTS TO EXISTING SYSTEM

4.1 Overview

This chapter presents preliminary facilities improvements and preliminary cost estimates for rehabilitating existing spreading basins. Improvements at existing basins will improve the ability to recharge storm water, recycled water, and imported water to meet the replenishment obligation in the Chino Basin. Proposed improvements include minor and extensive rehabilitation of existing spreading and flood control basins, new conveyance facilities to convey supplemental water to the spreading grounds, and geotechnical investigations.

4.2 Recharge Capacity and Proposed Recharge Mix at Each Basin

The average annual stormwater recharge is the annual recharge that is expected to occur in a basin over an extended period of time. As discussed in Chapters 1 and 2, the estimates were derived from simulation models developed by the Watermaster and CBWCD [Ref. 1]. The average annual recharge statistic is based on 41 years of daily runoff estimated with the models. The models and data used herein have been completely revised since the Phase 1 Recharge Master Plan was published. Major revisions include incorporation of depth-percolation rate relationships obtained from the CBWCD percolation monitoring program, revised basin geometry and outlet hydraulics, and updates to the input and output features of the Runoff and Router modules. Table 4-1 lists the management zone and storm water and imported water recharge capacity for each basin. The recharge capacities shown in Table 4-1 assume the proposed improvements to the basins have been constructed and the basins are operated to maximize recharge.

Table 4-1
Recharge Capacity and Proposed Recharge Mix at Each Basin

Basin	Mgmt Zone	Range in Storm Water Recharge Capacity [1] (acre-ft/yr)	Range in Imported Water Recharge Capacity [1] (acre-ft/yr)
Brooks Street Basin	1	1,600 to 1,800	2,200 to 3,300
College Heights Basin	1	70 to 100	5,300 to 7,900
Montclair Basin No. 1	1	400 to 400	2,600 to 3,900
Montclair Basin No. 2	1	800 to 800	5,200 to 7,800
Montclair Basin No. 3	1	400 to 400	1,200 to 1,700
Montclair Basin No. 4	1	500 to 500	1,300 to 1,900
Seventh and Eighth Street Basins	1	1,100 to 1,600	1,400 to 2,100
Upland Basin	1	1,000 to 1,000	5,800 to 8,700
Subtotal Management Zone 1		5,870 to 6,600	25,000 to 37,300
Ely Basins	2	2,300 to 2,800	3,400 to 5,100
Etiwanda Spreading Basins [2]	2	1,200 to 1,700	5,800 to 8,600
Hickory Basin	2	600 to 900	3,100 to 4,600
Lower Day Basin	2	400 to 500	2,800 to 4,200
San Sevaine Basin No. 1	2	800 to 900	8,600 to 12,800
San Sevaine Basin No. 2	2	20 to 100	2,900 to 4,400
San Sevaine Basin No. 3	2	600 to 700	3,700 to 5,500
San Sevaine Basin Nos. 4 and 5	2	400 to 500	5,400 to 8,100
Turner Basin No. 1	2	700 to 900	600 to 900
Turner Basin Nos. 2, 3, and 4	2	1,300 to 1,800	2,300 to 3,400
Victoria Basin	2	800 to 1,000	3,400 to 5,100
Subtotal Management Zone 2		9,120 to 11,800	42,000 to 62,700
Banana Basin	3	600 to 800	2,400 to 3,600
Declez Basin	3	200 to 300	1,200 to 1,800
Etiwanda Conservation Ponds	3	800 to 1,100	3,900 to 5,800
IEUA RP-3 Basins	3	1,200 to 1,700	5,800 to 8,600
Jurupa Basin	3	500 to 700	800 to 1,200
Wineville Basin	3	500 to 700	700 to 1,100
Subtotal Management Zone 3		3,800 to 5,300	14,800 to 22,100
Total		18,790 to 23,700	81,800 to 122,100

Notes:

(1) Low estimate assumes recycled water is 20 percent of the total recharge in the basin; high estimate assumes recycled water is 50 percent of the total recharge in the basin.

(2) Joint use of Etiwanda Debris Basin

The daily recharge at each basin was estimated using the daily runoff and routing model. Monthly and annual recharge estimates were developed by aggregating daily recharge values. Other statistics include standard deviation, coefficient of variance, maximum, and minimum, the frequency of recharge occurring in a given month, and the fraction of annual recharge that occurs in a given month. These statistics are not included herein. Imported water recharge is the estimated maximum theoretical annual volume of imported water recharge that can occur for a given monthly operating scheme and utilization, and with the proposed improvements described in this Report. The monthly operating scheme used to develop the anticipated imported water recharge capacity assumed that recharge would occur during the months of October through March and imported water would be in the basins nine out of ten days.

Assuming the proposed improvements identified in this Report are constructed, the average annual recharge capacity for Management Zones 1 through 3 is between 119,380 to 169,500 acre-ft/yr as follows: 18,790 to 23,700 acre-ft/yr storm water; 81,800 to 122,100 acre-ft/yr imported water; and 18,790 to 23,700 acre-ft/yr recycled water. It was assumed that the recycled water recharge capacity would be the same as storm water. As discussed in Chapter 2, DHS criteria for recycled water contribution (RWC) may increase from 20 to 50 percent. If the 50 percent regulation is adopted, the total amount of recycled water recharge capacity could be significantly increased.

4.3 Basis of Design

Preliminary plans and facility improvements were developed for existing spreading basins that can be used to recharge storm water, recycled water, and imported water.

Preliminary operating plans and facilities improvements were developed for the existing spreading basins, using field investigations and drawings of the existing spreading basins from SBCFCD and CBWCD. The facilities were designed in conjunction with feedback from CBWCD, IEUA, and SBCFCD to ensure compatibility with other planned improvements in the Chino Basin. The designs of the basins are at the planning-level and will require significant revision in the final design for construction. The goal of a planning-level design is to determine all major facilities that will need to be constructed, create a general layout of those facilities, and estimate a preliminary cost for the proposed improvements. Improvements to the basins were divided into three different categories: storm water, recycled water, and imported water.

Improvements to increase storm water recharge consist mainly of earthwork to increase percolation and basin storage capacity, new basin inlets, modification of existing inlets to

increase conveyance to the basin, and modification of basin outlets to optimize storage and conservation.

The use of imported water for recharge in the spreading basins will require diversions from Metropolitan's Rialto Pipeline and conveyance facilities to each spreading basin. Existing Metropolitan turnouts in the pipeline will be used to divert imported water wherever possible. Expansion of many of these existing turnouts and the construction of several new turnouts will be needed. Once imported water is diverted from the Rialto Pipeline, it will be conveyed to the spreading basins through existing channel systems in the Chino Basin or through proposed pipelines. If an existing channel is used, a diversion structure to divert water from the channel into the basin may be needed.

The use of recycled water in the spreading basins will require the construction of inlet structures, conveyance facilities, and turnouts from the proposed IEUA Regional Recycled Water Distribution System. The IEUA's distribution system will be constructed in phases over the next 10 years, ultimately providing an un-interruptible recycled water source for the majority of the Chino Basin. The proposed improvements to facilitate delivery of recycled water to the spreading basins should be constructed simultaneously with the construction of IEUA's distribution system.

Cost opinions for the proposed improvements were estimated using preliminary cost figures from the CBWCD, cost comparisons from similar projects in California, and material quantity cost estimates. The cost opinions were adjusted to include a contingency factor, an engineering design cost, and an indirect cost.

4.4 Descriptions of Improvements to Existing Basins

The following pages discuss improvements to the basins described in Chapter 3. Potential recharge capacity is defined, and proposed improvements/facilities' costs are presented for storm water, recycled water, and imported water. Preliminary layouts of the proposed facilities are also provided for each basin.

Table 4-2 provides a summary of the proposed basin improvements for storm water and imported water recharge. (Specific facilities associated with recharge of recycled water will be identified as part of IEUA's expanded recycled water program.) Facilities improvements for two new basins, College Heights and RP-3 Recharge Basins, are also shown on Table 4-2 (descriptions of improvements to these new basins are presented in Chapter 5). As shown on the table, the

expansion of an existing or construction of a new Metropolitan turnout is a common improvement to many of the recharge basins. Also, modification of existing or construction of new inlet and outlet structures is proposed for all but three of the recharge basins. Optimization of basin geometry (i.e. earthwork, clearing and grubbing, etc.) is proposed for more than half of the recharge basins, while new diversion structures are proposed for approximately one-third of the basins.

Table 4-2
Summary of Proposed Basin Improvements for Storm Water and Imported Water Recharge

Recharge Basin	Proposed Improvement							
	Expand/Construct New Metropolitan Turnout	Construct Pipeline from Turnout to Creek/Channel	Construct Channel Diversion Structure	Construct Pipeline from Diversion Structure to Basin	Modify/Construct Inlet/Outlet Works	Modify/Provide SCADA Monitoring	Optimize Basin Geometry	Construct Facilities for Conveyance Between Two Basins
Brooks Street Basin			●	●	●			
Montclair Basins							●	
7th & 8th Street Basins	●(1)	●			●	●	●	
Upland Basin					●		●	●(7)
Ely Basins	●	●			●	●		
Etiwanda Spreading Basins	●(2)							
Hickory Basin	●(3)	●	●		●		●	●(8)
Lower Day Basin	●(4)	●			●			
San Sevaine Basin Nos. 1-3	●(5)							
San Sevaine Basin Nos. 4 and 5	●				●		●	
Turner Basin No. 1	●(6)		●		●		●	
Turner Basin Nos. 2, 3, and 4	●		●		●		●	
Victoria Basin	●				●			
Banana Basin	●	●	●		●		●	●
Declez Basin	●	●			●			
Etiwanda Conservation Ponds	●				●		●	
Jurupa Basin	●	●			●			●(9)
Wineville Basin	●	●			●	●	●	
College Heights Basin	●		●		●		●	●
RP3 Recharge Basins	●	●	●		●		●	●

Notes:
(1) Shared with Ely Basin.
(2) Shared with Victoria Basin and Etiwanda Conservation Ponds.
(3) Shared with Banana, Declez, Jurupa, and RP-3 Basins.
(4) Shared with Wineville Basin.
(5) Shared with San Sevaine Basin Nos. 4 and 5.
(6) Shared with Turner Basin Nos. 2, 3, and 4.
(7) Facilities provided for conveyance with College Heights Basin.
(8) Facilities provided for conveyance with Banana Basin.
(9) Facilities provided for conveyance with RP-3 Basin.

Figure 4-1 presents the preliminary locations of the proposed expanded/new turnouts. The exact locations will be determined upon close coordination with Metropolitan staff and the SBCFCD.

Table 4-3 provides a summary of the recharge capacity and improvement costs for each basin. The management zone as well as storm water, imported water, and recycled water recharge capacities are summarized for each basin. Also, the estimated capital cost for the proposed improvements is presented. The costs for storm water and imported water recharge facilities are based on the specific facilities identified in Table 4-2. Costs for recycled water facilities will be refined as part of the IEUA program.

Table 4-3
Basin Recharge Capacity and Costs

Recharge Facility	Mgmt. Zone	Potential Recharge Capacity (acre-ft/yr) [1]									Project Capital Cost
		Storm Water			Imported Water			Recycled Water [2]			
Existing Basins											
Brooks Street Basin	1	1,600	to	1,800	2,200	to	3,300	1,600	to	1,800	$1,466,000
Montclair Basin Nos. 1-4	1	2,100	to	2,100	10,300	to	15,300	2,100	to	2,100	$1,858,000
Seventh and Eighth Street Basin	1	1,100	to	1,600	1,400	to	2,100	1,100	to	1,600	$2,048,000
Upland Basin	1	1,000	to	1,000	5,800	to	8,700	1,000	to	1,000	$1,205,000
Ely Basins	2	2,300	to	2,800	3,400	to	5,100	2,300	to	2,800	$2,686,000
Etiwanda Spreading Basins	2	1,200	to	1,700	5,800	to	8,600	1,200	to	1,700	$523,000
Hickory Basin	2	600	to	900	3,100	to	4,600	600	to	900	$2,340,000
Lower Day Creek Basin	2	400	to	500	2,800	to	4,200	400	to	500	$2,540,000
San Sevaine Basin Nos. 1-3	2	1,420	to	1,700	15,200	to	22,700	1,420	to	1,700	$783,000
San Sevaine Basin Nos. 4 and 5	2	400	to	500	5,400	to	8,100	400	to	500	$4,123,000
Turner Basin No. 1	2	700	to	900	600	to	900	700	to	900	$3,995,000
Turner Basin Nos. 2, 3, and 4	2	1,300	to	1,800	2,300	to	3,400	1,300	to	1,800	$3,364,000
Victoria Basin	2	800	to	1,000	3,400	to	5,100	800	to	1,000	$589,000
Banana Basin	3	600	to	800	2,400	to	3,600	600	to	800	$3,134,000
Declez Basin	3	200	to	300	1,200	to	1,800	200	to	300	$2,049,000
Etiwanda Conservation Ponds	3	800	to	1,100	3,900	to	5,800	800	to	1,100	$3,118,000
Jurupa Basin	3	500	to	700	800	to	1,200	500	to	700	$1,700,000
Wineville Basin	3	500	to	700	700	to	1,100	500	to	700	$2,884,000
Total	--	17,520	to	21,900	70,700	to	105,600	17,520	to	21,900	$40,405,000

Notes:
(1) Based on optimum recharge operations. Low estimate assumes a recycled water contribution of 20% and the high estimate assumes a recycled water contribution of 50%
(2) It has been assumed that the average annual recharge of recycled water will be the same as storm water. The recycled water recharge capacity is currently under evaluation by IEUA in it's Recycled Water System Feasibility Study.

4.4.1 Brooks Street Basin

Brooks Street Basin currently receives storm water runoff from local storm drains. Recently, physical modifications to the basin have been constructed by CBWCD to improve percolation rates. Total construction costs for Brooks Street Basin improvements are approximately $1,466,000. Table 4-4 provides a breakdown of the cost for improvements. Figure 4-2 illustrates the proposed facility improvements to Brooks Street Basin.

Owner

CBWCD

Location

Ontario, California

Recharge Area

7.7 acres

Percolation Rate

1.5 ft./day

Potential Recharge Capacity

Storm Water	1,600-1,800 ac-ft/yr
Recycled Water	1,600-1,800 ac-ft/yr
Imported Water	2,200-3,300 ac-ft/yr
Total	5,400-6,900 ac-ft/yr

PROPOSED IMPROVEMENTS

Storm Water

- Diversion Structure in San Antonio Creek
- 48" RCP Pipeline from Diversion Structure to Basin
- Inlet Structure to Basin
- Outlet Structure to West State Street Storm Channel

Recycled Water

- 900 Ft. Pipeline from the Proposed Non-Regional Montclair 4 Recycled Water Pipeline
- Inlet Structure to Basin

Imported Water

- None

Table 4-4
Improvement Costs for Brooks Street Basin

Description of Work	Quantity	Unit	Unit Cost	Total
Storm Water Recharge				
Diversion structure @ San Antonio Creek [1]	1	l.s.	$450,000	$450,000
Pipeline for conveyance to Brooks Basin [2]	1,300	ft	144	187,000
Inlet structure [1]	1	l.s.	50,000	50,000
Outlet to West State St.[1]	1	ea.	150,000	150,000
Subtotal Storm Water Recharge				$837,000
Recycled Water Recharge				
Inlet Structure [2]	1	ea.	$58,000	$58,000
Pipeline (from Montclair 4 Pipeline) [2]	900	ft	96	86,000
Subtotal Recycled Water Recharge				$144,000
Imported Water Recharge				
None				
Total Construction Cost				$981,000
Direct Construction Cost (+ 30% Contingency)	1	l.s.	$1,275,300	$1,275,000
Indirect Cost (15% of Direct Construction Cost) [3] [4]	1	l.s.	191,295	191,000
Total Capital Cost				**$1,466,000**

Notes:

(1) CBWCD

(2) B&V

(3) Includes administration, design, and construction management

(4) Values do not include environmental licensing estimate

4.4.2 Montclair Basins

Montclair Basins consist of four existing spreading basins in series – Montclair Basins 1, 2, 3 and 4. These basins receive storm water from the San Antonio Channel and from residential storm drains. If the storage capacity of a basin is exceeded, existing gated or pipe outlets convey water to the subsequent basin downstream and so forth. The second basin contains an emergency spillway that discharges to San Antonio Creek. The fourth and last basin conveys excess water to San Antonio Creek. These basins are currently used: to conserve stormwater, provide minor flood control benefits and for watermaster replenishment. Field observations of the basins revealed that the spreading grounds are in good condition. However, rehabilitating and reshaping the basin floors could increase percolation rates. An existing inlet grate structure at Montclair No. 1 on the San Antonio Channel provides capture of storm water runoff and supplemental imported water for recharge. Total construction costs for the Montclair Basins improvements are approximately $1,858,000. Table 4-5 provides a breakdown of the cost for improvements. Figure 4-3 presents a preliminary layout of the proposed facilities.

Owner

CBWCD

Location

Montclair, California

Recharge Area

28.2 acres

Percolation Rate

1.0 – 2.5 ft./day

Potential Recharge Capacity

Storm Water	2,100 ac-ft/yr
Recycled Water	2,100 ac-ft/yr
Import. Water	10,300-15,300 ac-ft/yr
Total	14,500-19,500 ac-ft/yr

PROPOSED IMPROVEMENTS

Storm Water

- Optimize Basin for Recharge

Recycled Water

- Pipelines from Montclair 1 Non-Regional Recycled Water Pipeline
- Inlet Structure

Imported Water

- None

Table 4-5
Improvement Costs for Montclair Basins

Description of Work	Quantity	Unit	Unit Cost	Total
Storm Water Recharge				
Deepen and optimize basin for recharge [1]	160,000	cy	$5	$800,000
Subtotal Storm Water Recharge				$800,000
Recycled Water Recharge				
Pipelines from Montclair Basin Nos. 1-4 [2]	2,200	ft.	$96	$211,000
Inlet structure [2]	4	ls	58,000	232,000
Subtotal Recycled Water Recharge				$443,000
Imported Water Recharge				
None				
Total Construction Costs				$1,243,000
Direct Construction Cost (+ 30% Contingency)	1	ls	$1,615,900	$1,616,000
Indirect Cost (15% of Direct Construction Cost) [3] [4]	1	ls	242,385	242,000
Total Capital Cost				**$1,858,000**

Notes:

(1) CBWCD

(2) B&V

(3) Includes administration, design, and construction management

(4) Values does not include environmental licensing estimate

4.4.3 Seventh and Eighth Street Basins

Total construction costs for the Seventh and Eighth Street Basins improvements are approximately $2,048,000. Table 4-6 provides a breakdown of the cost for improvements. Figure 4-4 presents a preliminary layout of the proposed facilities.

Owner

SBCFCD

Location

Upland, California

Recharge Area

14.5 acres

Percolation Rate

0.5 ft./day

Potential Recharge Capacity

Storm Water	1,100-1,600 ac-ft/yr
Recycled Water	1,100-1,600 ac-ft/yr
Imported Water	1,400-2,100 ac-ft/yr
Total	3,600-5,300 ac-ft/yr

PROPOSED IMPROVEMENTS

Storm Water

- Optimize Basin Geometry
- Modify Inlet
- Weir with Outlet Gate

Recycled Water

- Pipeline Connecting to Grove Regional Recycled Water Pipeline
- Inlet Structure

Imported Water

- New Turnout Near West Cucamonga Creek (shared with Ely Basins)
- Pipeline from Turnout to West Cucamonga Creek (shared with Ely Basins)

Table 4-6
Improvement Costs for Seventh and Eighth Street Basins

Description of Work	Quantity	Unit	Unit Cost	Total
Storm Water Recharge				
Deepen and optimize basin geometry for recharge [1]	30,000	cy	$5	$150,000
Inlet modification [1]	1	ea.	100,000	100,000
Weir w/ outlet gate [1]	1	ea.	25,000	25,000
Subtotal Storm Water Recharge				$275,000
Recycled Water Recharge				
Lateral from Grove Regional Pipeline [2]	1,200	ft.	$96	$115,000
Inlet structure [2]	1	ls	58,000	58,000
Subtotal Recycled Water Recharge				$173,000
Imported Water Recharge				
New turnout near West Cucamonga Creek (split w/ Ely) [2]	0.5	ls	$1,000,000	$500,000
Pipeline to West Cucamonga Creek (split w/ Ely)	2,200.0	ft.	192	422,000
Subtotal Imported Water Recharge				$922,000
Total Construction Cost				$1,370,000
Direct Construction Cost (+ 30% Contingency)	1	ls	$1,781,000	$1,781,000
Indirect Cost (15% of Direct Construction Cost) [3] [4]	1	ls	267,150	267,000
Total Capital Cost				**$2,048,000**

Notes:

(1) CBWCD

(2) B&V

(3) Includes administration, design, and construction management

(4) Values does not include environmental licensing estimate

4.4.4 Upland Basin

Previously a quarry site, Upland Basin is located south of the proposed College Heights Basins. Vegetation growth in and along the spreading grounds would require major site clearing and removal of inert fill. Much of the excavation would be necessary to reshape the basin, grading, and internal hydraulics. The existing basin currently collects local storm water runoff for groundwater recharge. An outlet from the proposed College Heights Basin would provide additional storm water and imported water to Upland Basin for recharge. Total construction costs for the Upland Basin improvements are approximately $1,205,000. Table 4-7 provides a breakdown of the cost for improvements. Figure 4-5 presents a preliminary layout of the proposed facilities.

Owner

City of Upland

Location

Upland, California

Recharge Area

10.1 acres

Percolation Rate

3.0 ft./day

Potential Recharge Capacity

Storm Water	1,000 ac-ft/yr
Recycled Water	1,000 ac-ft/yr
Imported Water	5,800-8,700 ac-ft/yr
Total	7,800-10,700 ac-ft/yr

PROPOSED IMPROVEMENTS

Storm Water

- Inlet Structure
- Deepen and Optimize Basin for Recharge
- Conveyance structure to connect College Heights to Upland
- Spillway Outlet Structure

Recycled Water

- Pipeline from Montclair 1 Pipeline
- Inlet Structure

Imported Water

- None

Table 4-7
Improvement Costs for Upland Basin

Description of Work	Quantity	Unit	Unit Cost	Total
Storm Water Recharge				
Inlet structure [2]	1	ea.	$50,000	$50,000
Deepen and optimize basin geometry for recharge [2]	82,000	cy.	5	410,000
Conveyance structure to connect College Heights to Upland [2] (bore & jack under road)	200	ft.	500	100,000
Spillway outlet structure [2]	1	ls	150,000	150,000
Subtotal Storm Water Recharge				$710,000
Recycled Water Recharge				
Pipeline (from Montclair 1 Pipeline) [2]	400	ea.	$96	$38,400
Inlet structure [2]	1	ea.	58,000	58,000
Subtotal Recycled Water Recharge				$96,400
Imported Water Recharge				
None				
Total Construction Cost				$806,400
Direct Construction Cost (+ 30% Contingency)	1	ls	$1,048,320	$1,048,000
Indirect Cost (15% of Direct Construction Cost) [3] [4]	1	ls	157,248	157,000
Total Capital Cost				**$1,205,000**

Notes:

(1) CBWCD

(2) B&V

(3) Includes administration, design, and construction management

(4) Values does not include environmental licensing estimate

4.4.5 Ely Basins

Ely Basins consist of three separate basins in series located on the West Cucamonga Channel. Ely Basin No. 1 takes runoff from the West Cucamonga through a channel inlet structure. A low flow outlet and spillway structure at the east end of the basin conveys water into Ely Basin No. 2, and similarly water is distributed to Ely Basin No. 3. Existing pipe outlets and a spillway structure in Ely Basin No. 3 divert excess water back into course on the West Cucamonga Channel. All three basins would require geotechnical investigation to determine if the south embankment is adequate to conserve storm water for prolonged periods of time. Total construction costs for the Ely Basins improvements are approximately $2,686,000. Table 4-8 provides a breakdown of the cost for the improvements. Figure 4-6 presents a preliminary layout of the proposed recharge improvements.

Owner

SBCFCD/CBWCD

Location

Ontario, California

Recharge Area

35.7 acres

Percolation Rate

0.5 ft./day

Potential Recharge Capacity

Storm Water	2,300-2,800 ac-ft/yr
Recycled Water	2,300-2,800 ac-ft/yr
Imported Water	3,400-5,100 ac-ft/yr
Total	8,000-10,700 ac-ft/yr

PROPOSED IMPROVEMENTS

Storm Water

- Geotechnical Investigation
- Modification to Outlet Works
- Low Level Control Berms
- Monitoring Wells

Recycled Water

- Inlet Structure
- Lateral from Proposed Regional Pipeline
- SCADA (with Telemetry)

Imported Water

- New Turnout Near West Cucamonga Creek (shared with Seventh and Eighth Street Basins)
- Pipeline from Turnout to West Cucamonga Creek (shared with Seventh and Eighth Street Basins)

Table 4-8
Improvement Costs for Ely Basins

Description of Work	Quantity	Unit	Unit Cost	Total
Storm Water Recharge				
Geotechnical investigation [2]	1	ls	$150,000	$150,000
Modify outlet works for conservation storage [2]	1	ea.	150,000	150,000
Low level control berms to control nuisance flows [2]	1	ls	10,000	10,000
Monitoring Wells	1	ea.	300,000	300,000
Subtotal Storm Water Recharge				$610,000
Recycled Water Recharge				
Inlet structure [2]	1	ls	$58,000	$58,000
Lateral from proposed regional pipeline [2]	2,000	ft.	96	192,000
SCADA (w/ telemetry) [2]	1	ea.	15,000	15,000
Subtotal Recycled Water Recharge				$265,000
Imported Water Recharge				
New turnout near West Cucamonga Creek (split w/ 7th & 8th Street Basins) [2]	0.5	ls	$1,000,000	$500,000
Pipeline to West Cucamonga Creek (split w/ 7th & 8th Street Basins)	2,200	ft.	192	422,000
Subtotal Imported Water Recharge				$922,000
Total Construction Cost				$1,797,000
Direct Construction Cost (+ 30% Contingency)	1	ls	$2,336,100	$2,336,000
Indirect Cost (15% of Direct Construction Cost) [3] [4]	1	ls	350,415	350,000
Total Capital Cost				**$2,686,000**

Notes:

(1) CBWCD

(2) B&V

(3) Includes administration, design, and construction management

(4) Values does not include environmental licensing estimate