APPENDIX B

STREAM MANAGEMENT MASTER PLAN
EXECUTIVE SUMMARY

Executive Summary

What is the SMMP?

The Zone 7 Water Agency's mission is to provide a reliable supply of high quality water and an effective flood control system for the Livermore-Amador Valley (Valley). In order to meet this mission in a fiscally responsible, innovative, proactive and environmentally sensitive manner, Zone 7 began development of the Stream Management Master Plan (SMMP) in September 2002. The SMMP, which will serve as an update to Zone 7's 1966 Flood Control Master Plan, recognizes the challenges of balancing flood protection with water supply, water quality, habitat and environment, and recreation and trails objectives for the Valley. As such, the SMMP is developed around six major resources areas affected by management of streams and arroyos:

- Flood Protection and Drainage
- Erosion and Sedimentation
- Water Supply
- Water Quality
- Habitat and Environment
- Trails, Recreation, and Public Education

In this manner, the SMMP is a multi-benefit program that is developed to fulfill stream management goals and objectives of Zone 7 and other local and regional agencies and stakeholders. Upon completion, the SMMP will provide Zone 7 and other participating agencies with a road map for achieving the goals and objectives for stream management in the Valley through build-out of local agency general plans in a cost-effective and environmentally-effective manner. A separate Implementation Plan will be issued by Zone 7 that documents project priorities, funding, and scheduling in a capital improvement plan (CIP).

SMMP

This SMMP was developed utilizing a collaborative approach with Zone 7 staff, staff from other agencies in the Valley, and representatives from regional stakeholder groups. The stakeholders involved provided input through a series of workshops and meetings held between September 2002 and March 2005, as outlined in Table ES-1. Through these workshops, the stakeholders and Zone 7 staff worked together to provide input on goals and objectives for the SMMP, stream management needs and opportunities, and recommended projects for the SMMP Program. This work resulted in this SMMP which presents:

- Background and introduction to the SMMP
- SMMP goals and objectives
- Needs and opportunities identified for the SMMP resource areas
- Approach to regional flood protection
- SMMP project descriptions and estimated costs
- Implementation strategies for the SMMP

Table ES-1: SMMP Workshops

Date	Workshop Topic
December 2002	Goals and Objectives Workshop
February 2003	Needs & Opportunities Workshop #1
March 2003	Needs & Opportunities Workshop #2
April 2003	Needs & Opportunities Workshop #3
June 2003	Regional Flood Protection Approach
August 2003	SMMP Project Concepts Workshop #1
September 2003	SMMP Project Concepts Workshop #2
December 2003	SMMP Program Description and Costs
March 2005	Update on SMMP Phase 2 Activities

SMMP Study Area

The SMMP study area lies within the greater Alameda Creek watershed and includes approximately 426 square miles of the watershed within the Zone 7 service area. The general drainage pattern of the study area is east to west through three major arroyos, Arroyo las Positas, Arroyo Mocho, and Arroyo del Valle. These arroyos join Arroyo de la Laguna (ADLL) in Pleasanton which drains the Valley in a southerly direction 18 miles to San Francisco Bay via Niles Canyon and Alameda Creek. The study area includes the urbanized areas of Livermore, Dublin, and Pleasanton as well as grassland and rural areas in the upper watershed. A general vicinity map showing the Zone 7 service area and SMMP study area is provided on Figure ES-1.

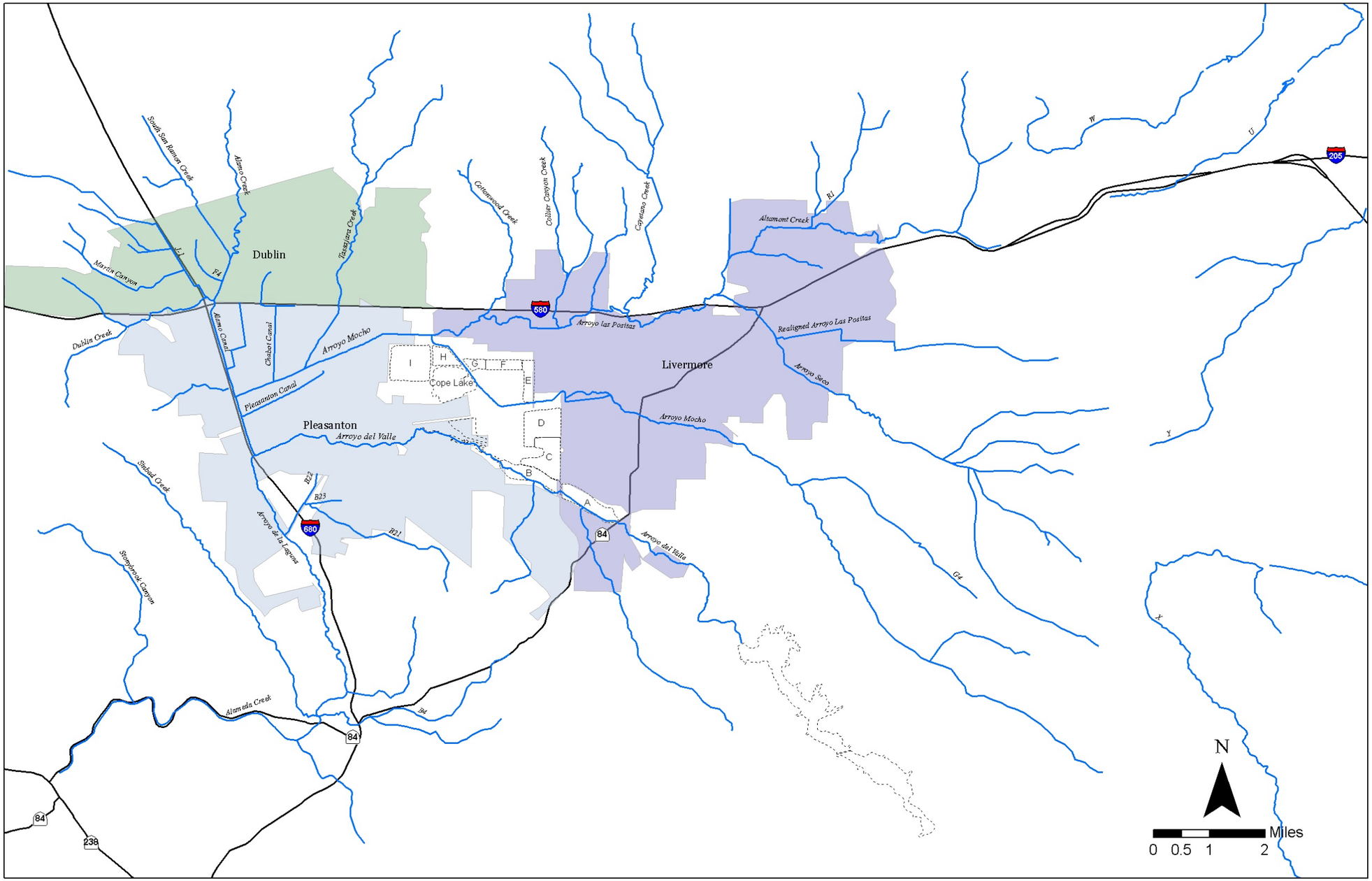
Figure ES-1: Vicinity Map

Zone 7 Service Area and Responsibilities

The Zone 7 service area covers the Valley and includes the cities of Pleasanton, Dublin, Livermore, and unincorporated Alameda County. Zone 7 is responsible for providing flood control and water resources to the Valley. The mission of Zone 7's flood control section is to "provide for the control of flood and storm waters and for the protection of life and property from damage or destruction of such waters." Currently, Zone 7 owns and maintains about 39 miles of flood control channels, ranging from trapezoidal shaped concrete lined channels to natural creeks. The streams and flood control channels included in the Zone 7 service area are shown on Figure ES-2.

As the Valley's water wholesaler, Zone 7 sells treated water primarily to four retail water agencies: California Water Services Company, the cities of Livermore and Pleasanton, and Dublin San Ramon Services District (DSRSD). Zone 7 also sells untreated water directly to agricultural customers.

Figure ES-2: Streams and Flood Control Channels Located in the Zone 7 Service Area and SMMP Study Area



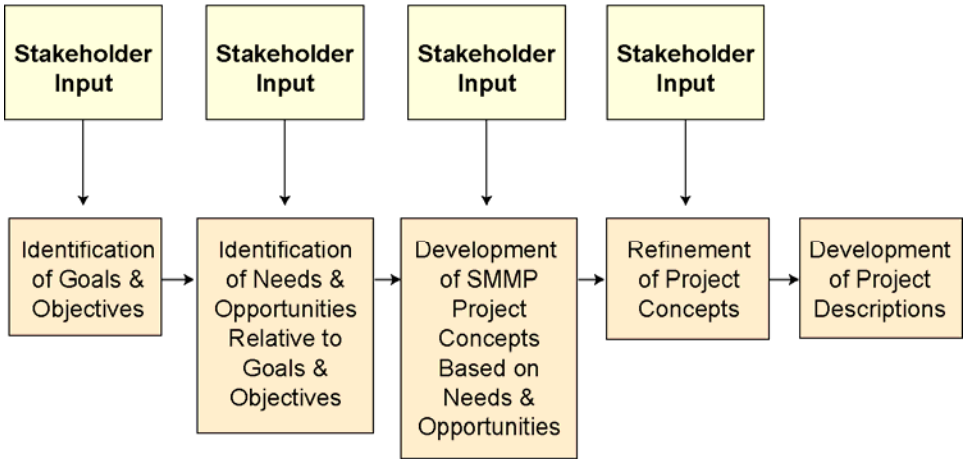
Approach to SMMP Development

The development of the SMMP Program outlined in this SMMP was an iterative process that included:

- Identification of goals and objectives for the SMMP
- Identification of needs and opportunities relative to SMMP goals and objectives
- Development of project concepts to meet the identified needs and opportunities
- Refinement of the project concepts to develop the SMMP Program included in the Interim Report (released in March 2004)
- Further project concept refinement and incorporation of stakeholder comments on the Interim Report to develop the SMMP

This process is summarized on Figure ES-3, and, as shown in the figure, stakeholder input was an essential part of this process.

Figure ES-3: Approach to Project Development



Goals and Objectives

The goals and objectives developed for the SMMP serve as the foundation for the identification and development of the SMMP program. The development of goals and objectives was a flexible, iterative process that took advantage of emerging opportunities and stakeholder input in order to obtain consensus and support needed for development and implementation of a multiple benefit stream management program. Goals and objectives were modified as additional input was received from stakeholders during review of the Interim Report and during Phase 2 SMMP activities.

Goals and objectives were developed for each of the six SMMP resource areas. For each resource area, one goal and multiple objectives were developed. The goals are summarized in Table ES-2. Objectives can be found in Section 2 of this SMMP.

Table ES-2: Resource Area Goals Developed for the Report

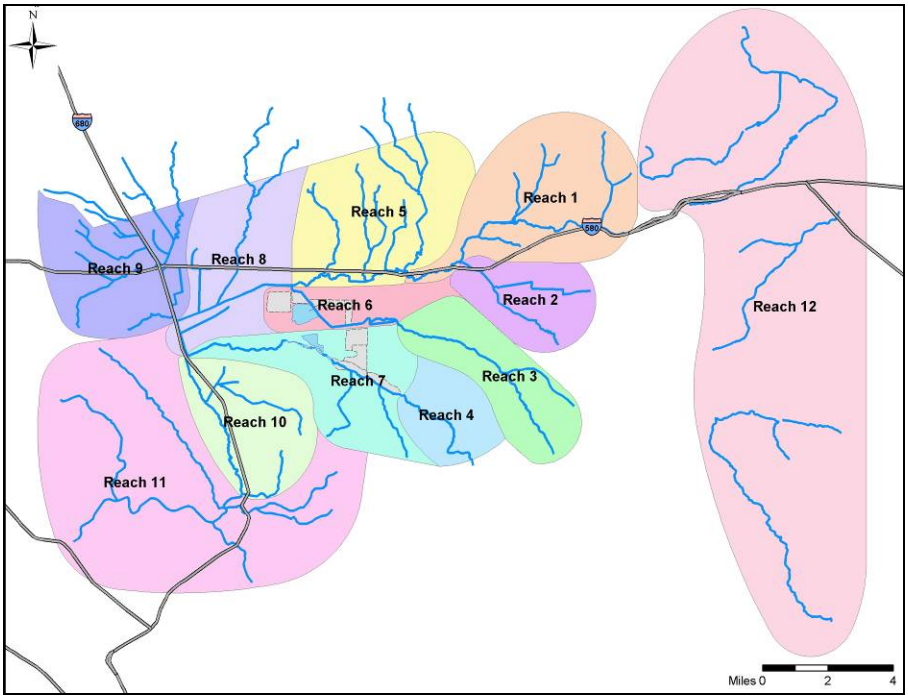
Resource Area	Goal
Flood Protection and Drainage	Protect people, property, and stream corridors from damaging drainage and floods.
Erosion and Sedimentation	Reduce or manage erosion and sedimentation in a manner that is compatible with other stream resources.
Water Supply	Provide adequate conveyance of water for recharge and storage needs.
Water Quality	Protect and enhance water quality of streams and groundwater.
Habitat and Environment	Protect and enhance aquatic and riparian habitat associated with streams and wetlands.
Trails, Recreation, and Public Education	Promote recreational, alternative transportation, and public education opportunities along streams and the Chain of Lakes.

Identification of Needs and Opportunities

Identification of needs and opportunities is essentially the "gaps analysis" portion of the SMMP. Where a goal or objective is not being met for any given resource area, a need to meet the objective was identified. Opportunities to meet the need or enhance the conditions of the resource area were also identified and became the basis for the SMMP program development.

To effectively identify needs and opportunities in the SMMP study area, the area was divided into twelve sub-reaches, as shown on Figure ES-4. The identification of needs and opportunities for each of the SMMP resource areas was then conducted using the reach-by-reach approach through literature review, field investigation, and stakeholder input. Stakeholder input on needs and opportunities was obtained through a series of three workshops held in the spring of 2003. The needs and opportunities identified for each reach are summarized in Section 3 of the SMMP.

Figure ES-4: SMMP Study Reaches



SMMP Program Development

Approach to SMMP Program Development

The SMMP goals and objectives developed for each resource area, and needs and opportunities identified for each reach, were the basis for development of the SMMP projects that make up the SMMP Program outlined in this SMMP. Like needs and opportunities, projects were developed for each of the twelve sub-reaches delineated for the SMMP. The development of SMMP projects was a multi-step process that included development of project concepts and refinement of the project concepts based on stakeholder feedback.

Projects developed for the SMMP are intended to be multidisciplinary, that is, they are intended to meet as many resource area objectives as possible in order to provide multiple benefits. Developing multidisciplinary project alternatives to meet the needs of a given reach allows the SMMP Program to address all resource areas affected by management of the streams and arroyos in an integrated fashion. Multidisciplinary projects also allow for development of funding and partnership opportunities that can facilitate project implementation.

Preliminary SMMP Program

The 45 projects included in this SMMP make up the preliminary capital component of the SMMP Program. By meeting multiple goals and objectives, the projects are intended to help meet the 100-year flood protection objective for the Valley while including components that help meet other SMMP resource area objectives.

The projects included in this SMMP were refined from those presented in the March 2004 Phase I Interim Report. The Phase 2 SMMP activities included the environmental analysis, financial and benefits analysis, additional stakeholder input, and additional conceptual engineering. Based on the results of these activities, several projects included in the Interim Report were significantly modified or removed, and new projects were added to the SMMP Program.

Location and design details of projects and project components are conceptual and were developed to an appropriate level of detail to verify feasibility and estimate facility costs and size. Facility location, sizing and other design details will be finalized closer to project implementation.

SMMP Project Descriptions

Section 5 of this SMMP provides a summary description of each of the recommended SMMP projects by reach. The project descriptions included in the report are structured around the project summary tables, which provide the details of each project including location, project description, cost estimate, implementation issues, project precursors and project benefits. Table ES-3 provides a summary table of the projects within this report.

Table ES-3: Project Summary Table

Reach No.	Project Name	Project No.	Stream Name
1	Altamont Creek Improvements	R.1-1	Altamont Creek
	Alkali Sink Management	R.1-2	Altamont Creek
	Springtown Improvements	R.1-3	Altamont Creek
	Springtown Golf Course Improvements	R.1-4	Arroyo las Positas
	Arroyo las Positas Habitat Enhancement and Recreation Project	R.1-5	Arroyo las Positas
	Arroyo las Positas Multi-Purpose Project	R.1-6	Arroyo las Positas
	Capacity Improvement at Arroyo las Positas	R.1-7	Arroyo las Positas
2	Velocity Control Project	R.2-1	Realigned Arroyo las Positas
	Arroyo Seco Improvements	R.2-2	Arroyo Seco
	Arroyo Seco Trail Project	R.2-3	Arroyo Seco
3	South Bay Aqueduct Turnout Construction and Low-Flow Crossings	R.3-1	Arroyo Mocho
	Robertson Park Enhancement Project and Levee Construction	R.3-2	Arroyo Mocho
	Parks Floodplain Dedication and Levee Construction	R.3-3	Arroyo Mocho
	Holmes Street Sedimentation Basin and Granada/Murrieta Protection and Enhancement Project	R.3-4	Arroyo Mocho
	Fish Barrier Removal at Stanley Boulevard and Railroad Overcrossing	R.3-5	Arroyo Mocho
4	Sycamore Grove Recharge Bypass Project	R.4-1	Arroyo del Valle
	Sycamore Grove Park Trail Connections	R.4-2	Arroyo del Valle
5	North of I-580 Trail System	R.5-1	Cottonwood Creek, Collier Creek, and Cayetano Creek
	Airway Improvement Project	R.5-2	Arroyo las Positas
	Arroyo Las Positas Diversion Project	R.5-3	Arroyo las Positas
6	Arroyo Mocho Management Plan	R.6-1	Arroyo Mocho
	Arroyo Mocho Bypass and Regional Storage at Chain of Lakes	R.6-2	Arroyo Mocho
7	Upper Chain of Lakes Trail Network and Bypass	R.7-1	Arroyo del Valle
	EBRPD Trail Connections	R.7-2	Arroyo del Valle
	Lower Arroyo del Valle Restoration and Enhancement Project	R.7-3	Arroyo del Valle
8	Tassajara Creek Improvement Project	R.8-1	Tassajara Creek
	Chabot Canal Improvement Project	R.8-2	Chabot Canal
	Lower Arroyo Mocho Improvement Project	R.8-3	Arroyo Mocho
	Upper Arroyo de la Laguna (ADLL) Improvement Project	R.8-4	Arroyo de la Laguna
9	Alamo Canal/South San Ramon Creek Erosion Control	R.9-1	Alamo Canal, South San Ramon Creek
	Line F-4 Concrete Lining	R.9-2	Line F-4
	Line J-1, J-3, and J-5 Improvements	R.9-3	Line J-1, Line J-3, Line J-5
	Line T Crossing Retrofit	R.9-4	Line T

Reach No.	Project Name	Project No.	Stream Name
	I-580 Trail Gap Elimination	R.9-5	Alamo Canal
	Line G-1-1 Maintenance Plan	R.9-6	Line G-1-1
	Alamo Canal Flood Control Program	R.9-7	Alamo Canal
10	ADLL Improvement Project 1	R.10-1	Arroyo de la Laguna
	ADLL Improvement Project 2	R.10-2	Arroyo de la Laguna
	ADLL Improvement Project 3	R.10-3	Arroyo de la Laguna
	ADLL Improvement Project 4	R.10-4	Arroyo de la Laguna
	ADLL Improvement Project 5	R.10-5	Arroyo de la Laguna
11	Alameda Creek Trail	R.11-1	Alameda Creek
	Sinbad Creek Project	R.11-2	Sinbad Creek
12	Patterson Run Enhancement Program	R.12-1	Patterson Run
	Corral Hollow Creek Landowner Grant Program	R.12-2	Corral Hollow Creek

Estimated Program Cost

The recommended SMMP Program includes 45 projects, with a total estimated cost of approximately $727M. This cost includes approximately $479M in flood protection and erosion/sediment improvements, $127M in habitat and environment improvements, and $120M in other resource area improvements such as water supply, water quality and recreation, trails and education. Costs estimates for each reach for flood protection and habitat and other resources area improvements are summarized in Table ES-4. Additional information on cost estimates is provided in Appendix G.

Table ES-4: Summary of SMMP Cost Estimates by Reach (San Francisco CCI ENR in December 2005 is 8462)

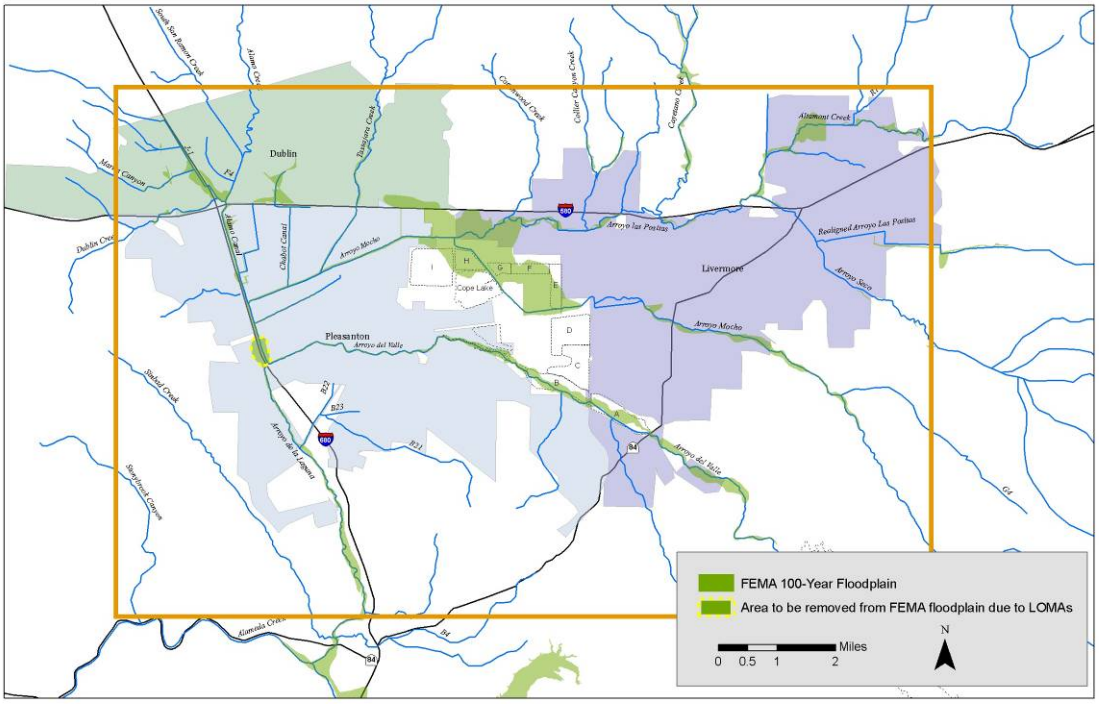
Reach	Flood Protection and Erosion/Sediment Improvements ($millions)	Habitat Improvements ($millions)	Other Resource Area Improvements ($millions)	Total Improvements ($millions)
1	$ 10.9	$ 11.6	$ 33.0	$ 55.5
2	$ 7.0	$ 15.2	$ 2.2	$ 24.4
3	$ 39.4	$17.0	$ 13.1	$ 69.5
4	$0.0	$0.0	$ 3.5	$ 3.5
5	$ 169.2	$4.7	$ 22.3	$ 196.2
6	$ 120.8	$10.0	$ 9.6	$ 140.4
7	$ 0.1	$ 16.9	$ 15.5	$ 32.5
8	$ 78.5	$ 23.3	$ 5.9	$ 107.7
9	$ 27.9	$ 9.8	$ 0.9	$ 38.6
10	$ 24.1	$ 18.7	$ 11.5	$ 54.3
11	$ 0.3	$ 0.1	$ 3.0	$ 3.4
12	$ 1.0	$ 0.0	$ 0.0	$ 1.0
Total	$ 479.2	$127.3	$ 120.2	$ 726.7

Regional Flood Protection

It has been known that there is a potential for flooding in the Valley for some time; and even smaller events, such as the 10- to 15-year event in 1998, have caused significant flooding in localized areas. As a result, the development of a regional approach to flood protection was a major priority of the SMMP activities. A summary of the SMMP regional flood protection approach is provided in this Executive Summary; more detailed discussions are provided in Sections 3 and 4 and in Appendix B through Appendix E of this report.

Most previous flood protection studies conducted within the Zone 7 service area have recognized the linkages between peak flows in the upstream and downstream arroyos, and the importance of evaluating the timing of the peaks for each arroyo. For the Interim Report, an assessment of the major arroyos from a regional system perspective was completed, in order to develop recommended improvements required for the reduction or elimination of the projected 100-year floodplain at build-out. The area of focus for this regional flood protection analysis is shown on Figure ES-5 below.

Figure ES-5: Focus of Regional Flood Protection Analysis

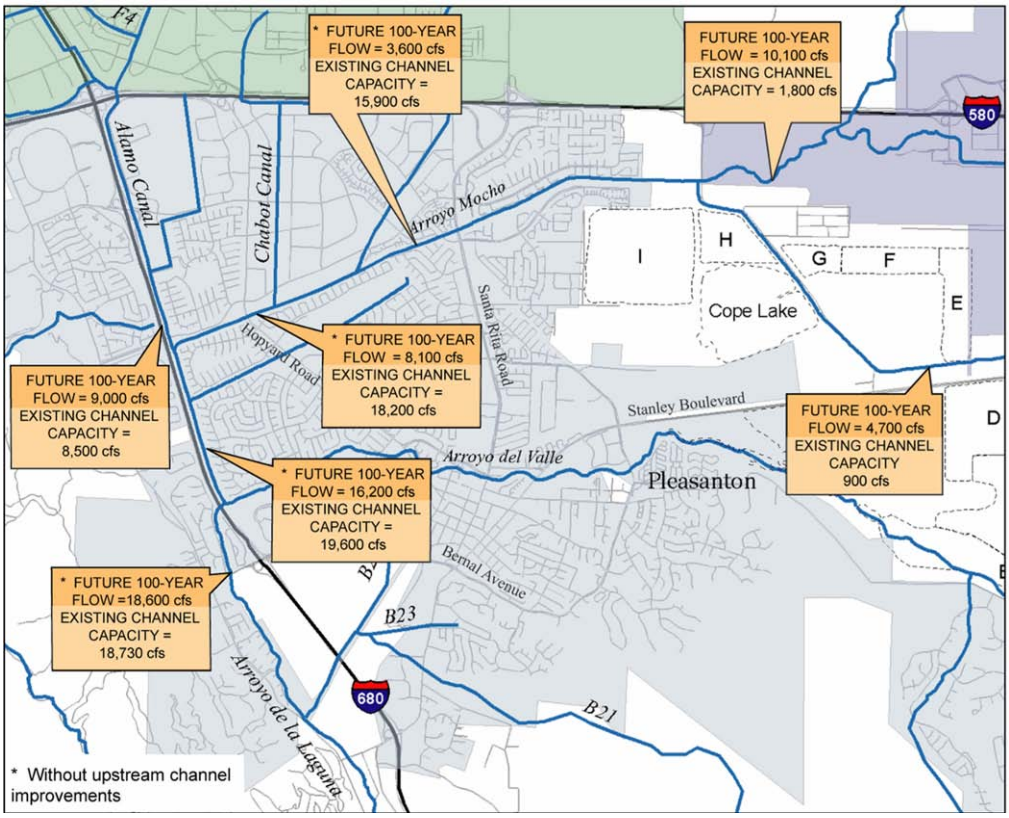


Flood Protection Challenges

The approach taken in this SMMP was to develop an approach to regional flood protection that maximizes benefits in several resource areas, minimizes costs, enhances the potential for funding partnerships and enhances the potential for regulatory and public support. There are numerous institutional and financial challenges to developing and implementing a regional flood protection solution for the Valley. There are also numerous physical and environmental challenges including:

- Challenge No. 1 – Major arroyos are under capacity, as shown on Figure ES-6.
- Challenge No. 2 – Sediment accumulation along key reaches further restricts arroyo capacity.
- Challenge No. 3 – Expanding trapezoidal channels is not viable in some areas.

Figure ES-6: Major Arroyos are under Capacity



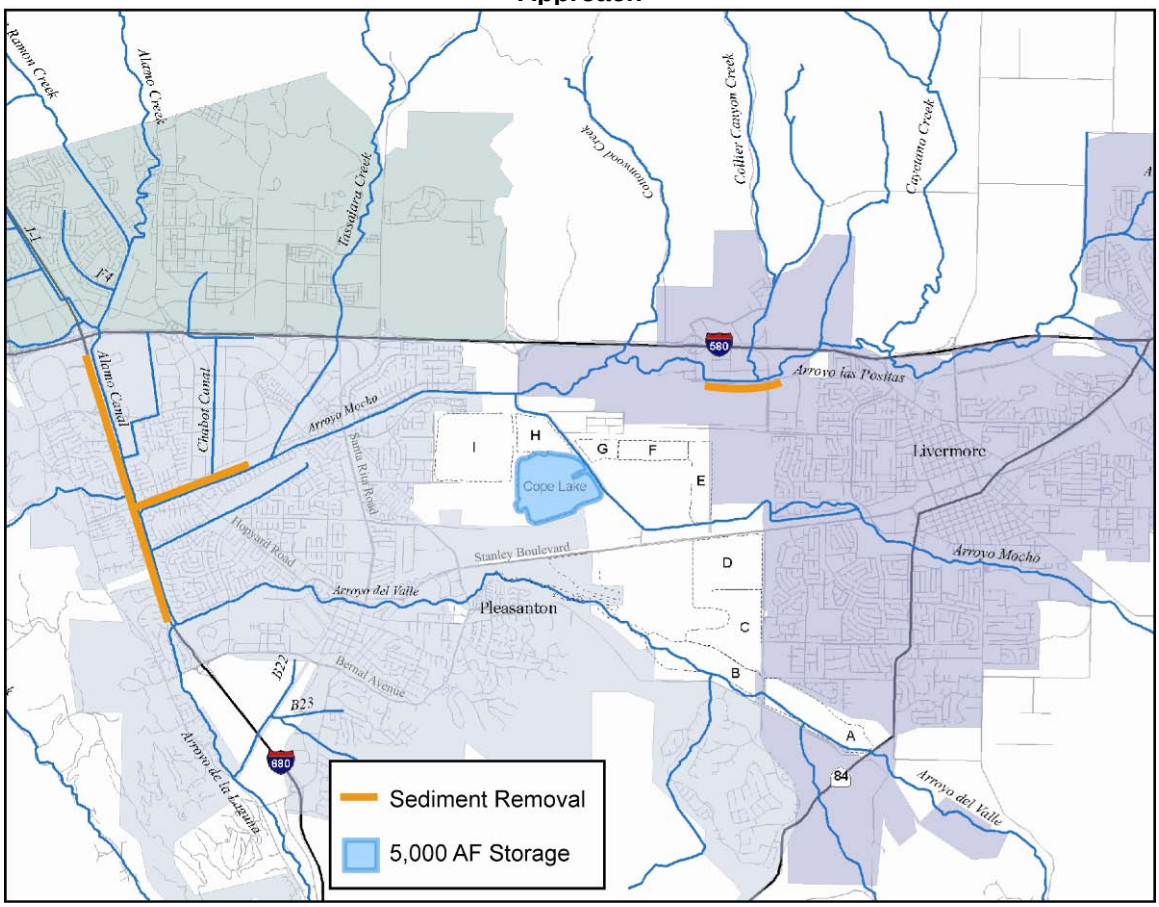
Recommended Approach to Regional Flood Protection

Based upon a detailed review of past flood control studies, stakeholder meetings and workshops, and an assessment of the major flood protection challenges, a regional approach to flood protection was developed. This approach, shown on Figure ES-7 includes two major features:

- Diversion of peak flows from Arroyo Las Positas and Arroyo Mocho to Cope Lake and other areas in the Chain of Lakes region for detention storage. A total of approximately 5,000 acre-feet (AF) of regional storage is required.
- Removal of excess sediment, which has accumulated along critical reaches of Arroyo las Positas, Arroyo Mocho, Alamo Canal, and ADLL.

Location and design details of projects and project components are conceptual and were developed to an appropriate level of detail to verify hydraulic feasibility and estimate facility costs and size. Facility location, sizing and other design details will be finalized closer to project implementation.

Figure ES-7: Regional Flood Protection Approach



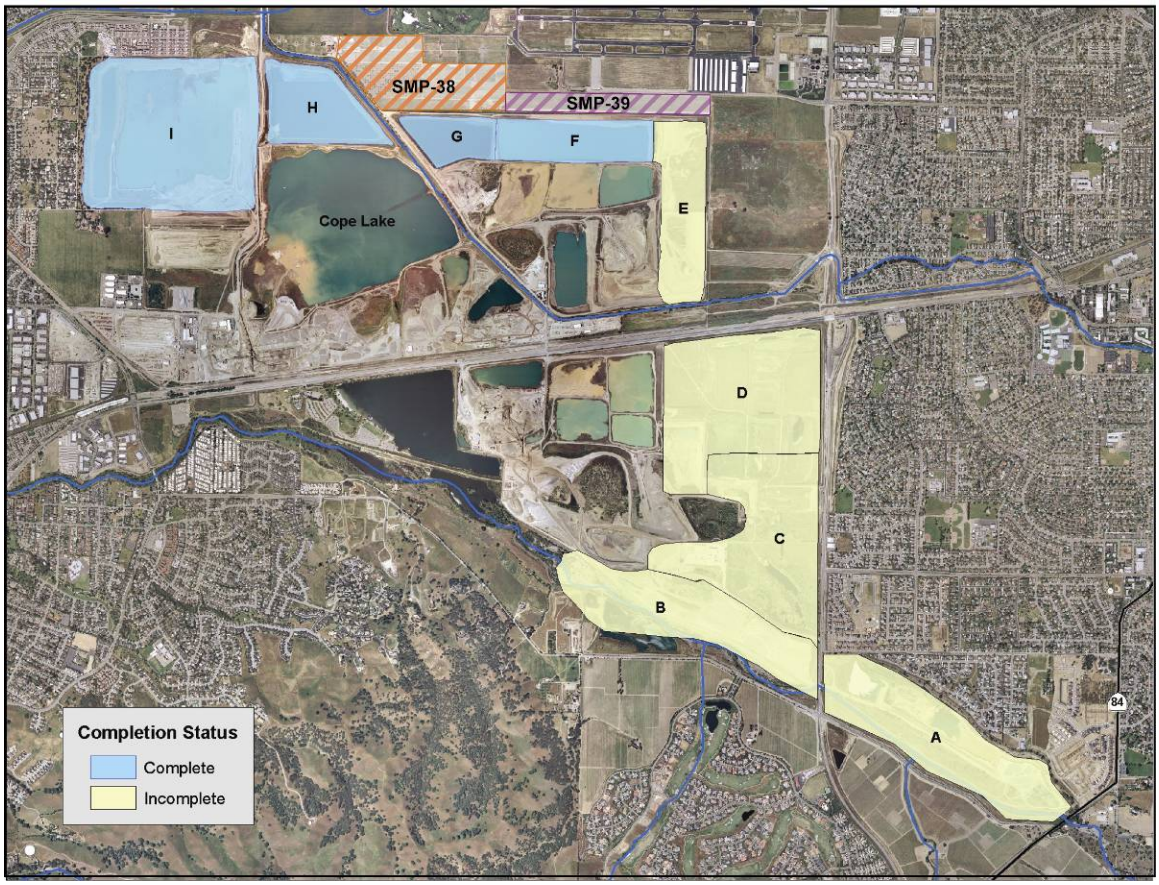
Predicted Results of Regional Approach

The detention of peak flows from Arroyo las Positas and Arroyo Mocho in the Chain of Lakes area and the removal of sediment from critical reaches will significantly reduce the predicted peak flows downstream of the Chain of Lakes, thereby reducing the potential for flooding. These predicted reductions in peak flows are shown graphically on Figure ES-6.

Detention Storage in Chain of Lakes Region

A major component of the approach to regional flood protection includes detention of flood water in the Chain of Lakes region. The Chain of Lakes is being created by the mining of natural deposits of gravel in the center of the Valley, south of Interstate I-580. Once mining activities are complete, the lakes are turned over to Zone 7. Cope Lake and Lakes F, G, H, and I have been completed as shown on Figure ES-8. Other lakes are scheduled to be mined and available for use by Zone 7 in the next 10 to 30 years.

Figure ES-8: Chain of Lakes Completion Status (January 2004)



Zone 7 and other local agencies have identified multiple potential uses for the Chain of Lakes. Lakes A through I are important to Zone 7, from a potable water supply perspective, and will eventually provide surface water storage of up to 100,000 AF. Lake I is currently providing recharge of Zone 7's groundwater basin through its west face and is expected to continue providing that function in the future. Zone 7, DSRSD and the City of Livermore have expressed an interest in utilizing some portion of the Chain of Lakes area (not connected to potable supplies in Lakes A through I) for storage of recycled water.

The potential locations for storage of stormwater in the Chain of Lakes are Cope Lake, and Lakes G, F, and E. It appears that Cope Lake would be the best site to handle baseline capacity requirements for storm water storage. Cope Lake is not planned to be used for potable supply, it is adjacent to Arroyo Mocho, and has a silt bottom, which precludes infiltration of storm water into the groundwater basin.

The proposed mining sites north of Lakes G and F, SMP 38 and 39, could potentially be utilized for floodplain purposes, thus providing additional detention volume. Lakes G, F, and E, which are planned primarily for potable storage, could also provide additional secondary storage sites after Cope Lake is filled. An Operations Plan will be required to define exactly how and when stormwater is diverted to detention storage.

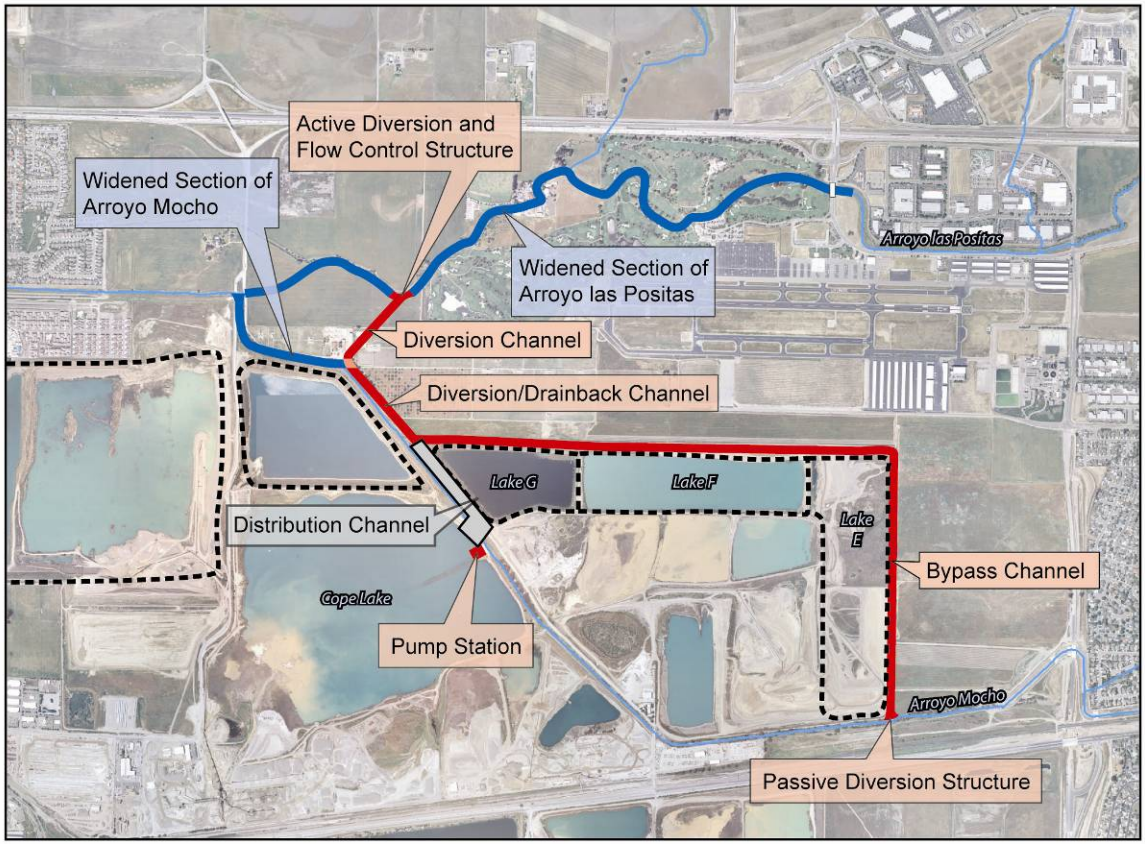
Storage Diversions

The recommended approach to regional flood protection requires diversion of flood waters from both Arroyo las Positas and Arroyo Mocho during high flow events.

Arroyo las Positas Stormwater Diversion

The recommended option for stormwater diversion from Arroyo las Positas is shown on Figure ES-9. This option includes re-construction of the Las Positas Golf Course to increase the capacity of the channel through the course, construction of a flow control structure along Arroyo las Positas, and stormwater diversion through open channels and a box culvert to Cope Lake and Lake G. This diversion would route approximately 6,400-9,400 cfs of stormwater from Arroyo Las Positas, leaving approximately 700-3,700 cfs in the channel during the 100-year peak flow event at build-out conditions.

Figure ES-9: Arroyo las Positas Stormwater Diversion



Arroyo Mocho Stormwater Diversion

Stormwater diversion from Arroyo Mocho would include routing of peak flows into a bypass channel east of Lake E and north of Lakes F and G. This would divert approximately 3,400 cfs in a peak flow event, leaving 1,300 cfs in the channel during the 100-year peak flow event at build-out conditions. The stormwater diversion is shown on Figure ES-9.

Implementation Strategies

As mentioned earlier, the SMMP includes 45 projects with a capital program cost of approximately $727M. Because of the significant size of the SMMP, defining appropriate implementation strategies will be critical to delivering a successful program. Implementation strategies considered in the SMMP include institutional issues, environmental compliance, and public outreach. The following provides a brief discussion of each of these implementation issues. Other critical implementation strategies such as project phasing and funding strategies for

the SMMP program will be evaluated subsequent to adoption of the Final SMMP and Master Environmental Impact Report.

A number of local State and Federal agencies and institutions will be involved with approval and implementation of SMMP projects. Some of the institutional issues that must be addressed for a successful program include project leadership, regulatory compliance, property ownership, and project maintenance. Developing partnerships within the Valley when projects benefit several agencies, and adopting policies that encompass SMMP resource areas are critical aspects to address for a successful program.

Environmental compliance issues associated with the SMMP include environmental documentation, permitting for project construction, and permitting for stream maintenance. The MEIR has been developed concurrently with the SMMP, and is being released jointly with the SMMP. It is also anticipated that project-specific environmental documentation may be required on a case-by-case basis for project implementation. In addition to environmental documentation requirements, the SMMP will require obtaining permits from an array of local, State and Federal agencies. A multi-year maintenance permit should also be pursued to streamline routine stream maintenance activities.

Finally, the many issues and challenges associated with the SMMP require a comprehensive public outreach approach. Public outreach strategies may include general strategies such as establishing a public outreach coordinator, identifying target audiences and developing proposed outreach components such as a program website and logo.

Preliminary implementation strategies for institutional issues, environmental compliance and public outreach are summarized in Table ES-5 below. These strategies will be further developed along with funding strategies, project priorities, and scheduling in a separate Implementation Plan being developed by Zone 7.

Table ES-5: Summary of Action Steps to Address Implementation Issues

Implementation Issue	Action Steps
Institutional Issues	• Initiate joint pursuit of Proposition 50 and other Federal and State funding of SMMP projects or project components. • Conduct partnering workshops to define project priorities, partnering, and formalize agency roles • Investigate development of a formal partnership for regional project implementation and interim floodplain management • Assess policies needed to implement SMMP and initiate policy development and adoption • Develop program approach to regional project implementation
Environmental Compliance	*Project Permitting:* • Develop program permitting matrix to identify permitting requirements for all program components • Initiate permitting activities for near-term local project priorities *Maintenance Permitting* • Pursue development of a multi-year Routine Stream Maintenance Program for stream management activities

Implementation Issue	Action Steps
Public Outreach	• Establish SMMP outreach coordinator • Develop SMMP logo and slogan • Establish SMMP program website • Develop SMMP newsletter template and initial newsletter • Develop SMMP presentation for elected official briefings • Expand SMMP mailing list to include additional key target audiences

How Will the SMMP Be Used?

This Executive Summary provides an overview of activities conducted as part of Phase 1 and Phase 2, the approach to developing the SMMP Program, and the regional flood protection approach. The entire SMMP, including the detailed descriptions for each of the recommended SMMP projects, is available on the Zone 7 website at http://www.zone7water.com. Zone 7 will use the SMMP in collaboration with other agencies to establish priorities and funding approaches for the SMMP projects. A separate Implementation Plan will be issued by Zone 7 that documents priorities, funding, and scheduling in a Capital Improvement Plan (CIP).